

Water System Plan Update

City of Chehalis

Lewis County, Washington

Prepared By:



GIBBS & OLSON

CIVIL ENGINEERS • LAND SURVEYORS

May 2022

Gibbs & Olson Project No. 0155.1078

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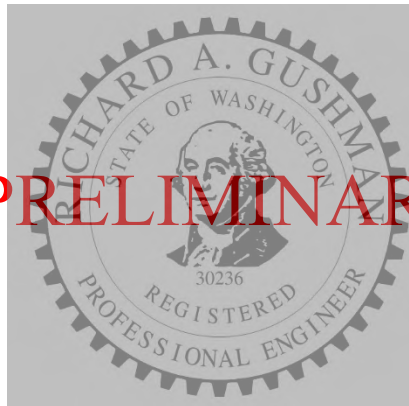
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PRELIMINARY



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**CITY OF CHEHALIS REGIONAL WATER SYSTEM
COMPREHENSIVE WATER SYSTEM PLAN**

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Chapter 1

WATER SYSTEM DESCRIPTION

CHAPTER 1 – WATER SYSTEM DESCRIPTION

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OBJECTIVE

The City of Chehalis (City) distributes drinking water within a large area in Lewis County, Washington. The City has prepared this 2020 Comprehensive Water System Plan (WSP) reflecting its continued commitment to providing safe and reliable water supplies to its retail and wholesale customers.

As required by the State of Washington (Chapter 246-290-100 Washington Administrative Code), this Plan describes the City's water distribution facilities, operations and compliance with state and federal drinking water regulations. It identifies capital project needs for the next 10 and 20 years, as well as the City's financial plan to fund these needs.

This chapter provides a general overview of the water system, including information on the City's management, water service area, history, wholesale customers and adjacent purveyors. A detailed description of the City's existing water facilities is also included in this chapter.

OWNERSHIP AND MANAGEMENT

SYSTEM NAME

The name of the water system on the Washington State Department of Health (DOH) data system is Chehalis Water Department and the Public Water System Id (PWSID) number is 12250P.

TYPE OF OWNERSHIP

Chehalis' water division is managed within the Public Works Department under the direction of the Public Works Director. The Director has direct responsibility over the water system and provides overall management and policy direction and coordinates internal and external communication. Operations of the water system is performed by staff in the Water Division under the direction of the Water Superintendent.

The City of Chehalis operations budget, ordinances and capital expenditures are subject to approval of the city council. This plan, because it addressed budgetary needs of the water system is subject to approval of the city council.

WATER FACILITIES INVENTORY FORMS

The City of Chehalis provides water service to customers both inside and outside Chehalis City Limits. Specific data about the system can be found in the Water Facilities Inventory (included in Appendix A) that the City files annually with the Washington State Department of Health (DOH). Pertinent information from the City's most recent Water Facilities Inventory (WFI) is summarized in Table 1-1. The most recent WFI form

is dated November 11, 2020, and data in Table 1-1 may not match more recent end of the year 2020 data used in future chapters.

TABLE 1-1 Water System Information

System Name:	Chehalis Water Department
System Type:	Group A Community Water System
System ID Number:	12250 P
Type of Ownership:	Local Government
Location:	Lewis County, WA
Service Connections:	3,853
Population Served:	7,200
Source:	N. Fork Newaukum – 2,300 gpm Chehalis River – 3,500 gpm

SYSTEM BACKGROUND

The City of Chehalis is located along Interstate Highway 5 approximately 90 miles south of Seattle, WA and 90 miles north of Portland, OR. The city is located on the Chehalis River approximately at the confluence with the Newaukum River. The location of the City of Chehalis is shown in Figure 1-1.

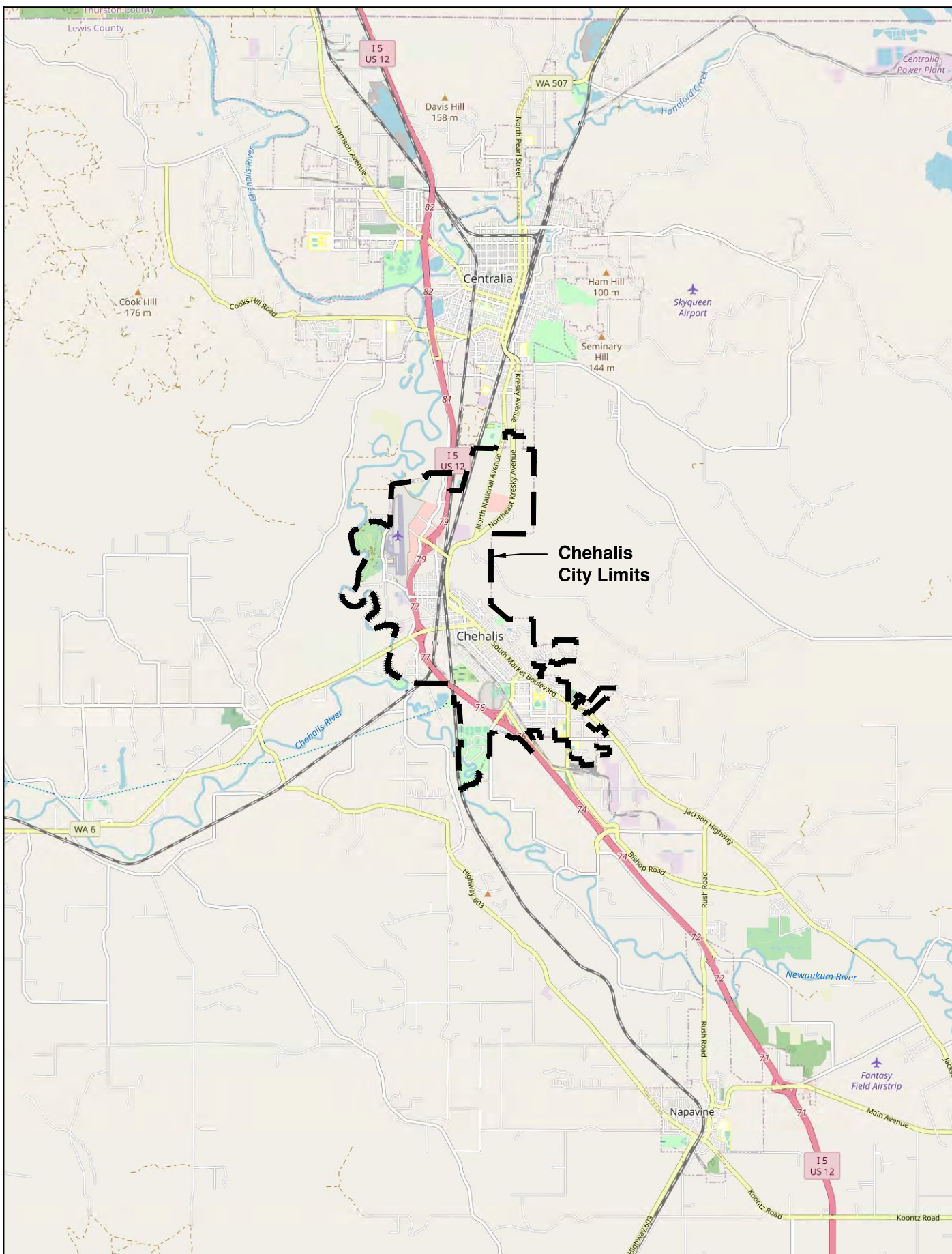
HISTORY OF SYSTEM DEVELOPMENT AND GROWTH

Prior to 1914, the Washington Oregon Corporation, the Chehalis Water Company and the Lewis County Water Company, all under private ownership, furnished water for the City. The water was obtained from groundwater wells and from the Newaukum River south of the City. The water was pumped to an open reservoir located above NE Franklin Street.

In 1909 the City started working on acquiring another source of supply because the existing sources suffered from water quality and quantity problems. In 1912, the citizens of Chehalis approved a bond issue to provide funds to construct a supply line from the North Fork of the Newaukum River (North Fork) to the City, construct a new reservoir, make improvements in the distribution system, and buy out the existing water suppliers.

As the City of Chehalis was developing a water source on the North Fork, the City of Centralia was proceeding along similar lines. This concurrent development raised the question as to which city had initial rights to the river water. Although the State Supreme Court ruled in 1913 that Chehalis had prior right to the water from the North Fork, this issue continued to plague the two cities. In ensuing years, the North Fork began experiencing periods of low flows, causing Chehalis to install a booster pump on the gravity line to increase the capacity from the North Fork source. Although the booster pump increased the flows for Chehalis, it also decreased the flows available to Centralia since their intake facilities were immediately downstream.

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This resulted in the City of Centralia suing Chehalis to prevent the use of the pumping facility. In 1954, the Washington Supreme Court ruled that:

- The City of Chehalis was entitled to the first 2.8 mgd of water from the North Fork.
- The City of Centralia was entitled to the next 4.8 mgd.
- The City of Chehalis was entitled to any remaining available water from the North Fork (in excess of 7.6 mgd).
- Chehalis had a period of five years to develop an alternative source to supplement the water from the North Fork.

The City's attempts to find wells of sufficient quantity and quality to meet the supplemental needs failed. The City began to pursue plans to construct a water intake on the Chehalis River. Since the quality of the Chehalis River water was determined to be unacceptable without treatment, plans also included the construction of a water treatment plant. The alternate source on the Chehalis River was completed in 1961 along with the transmission line and treatment plant. Since completion of the treatment plant, all water entering the water system from both sources has received treatment.

In 1993, the City of Centralia abandoned its intake on the Newaukum River due to the inability to meet requirements of the United States Environmental Protection Agency's (EPA's) Surface Water Treatment Rule (SWTR) established in June 1989. Even so, the City of Chehalis continues to struggle with water availability. During seasonal low flows, the Newaukam River supply capacity is often exhausted before the City's water rights are fully utilized.

The Chehalis River source has more capacity, but City of Chehalis is limited by its current water rights on this river. In 2019, the City of Chehalis submitted a change/transfer of water right application to Department of Ecology which requested a new point of withdrawal downstream of the confluence between the Chehalis and Newaukum River. This new point of withdrawal is anticipated to meet the City of Chehalis water demand as well as provide water with only one composition. Currently, the City of Chehalis adjusts its Water Treatment Plant (WTP) operations when the source of supply is switched between the Newaukum and Chehalis River. The proposed point of withdrawal would eliminate the need to adjust the WTP. This application is currently under review.

Since its original construction in 1914, the City's water distribution system has continued to expand and improve. Much of the system has been replaced and upsized to meet growing demands. The original wood stave transmission line from the North Fork was replaced with ductile iron pipe. Additional storage, pumping and distribution facilities have been added to accommodate growth. In response to the passage of the Federal Safe Drinking Water Act (SDWA), the City was required to eliminate customers that were receiving raw water from the transmission line. This was accomplished in 1979 by installing a "return line" to provide treated water to those customers previously connected

to the transmission line. In addition, in order to improve water quality and disinfection capabilities and to ensure compliance with provisions of the SDWA, the City covered the five-million-gallon Main Reservoir in 1994.

2012 WATER SYSTEM PLAN CAPITAL IMPROVEMENTS

The City last completed a WSP in 2012 which proposed improvements costing over \$32,325,000 in the base project year of 2010. Projects consisted of water treatment plant improvements, raw water intake improvements, construction of a new water treatment plant, new reservoirs, pump station upgrades, construction of a new booster pump station, water line improvements, and a service meter replacement program. Table 1-2 lists the status of capital improvements (CIP) listed in the 2012 Water System Plan. Many of the capital improvements were not completed because they were in the 20-year planning horizon. Other capital improvement projects were not completed because they were dependent on developer driven projects and planned to be fully or partially developer financed. Some of the anticipated developments, including Projects S-7 and PS-2 did not occur. Project D-14 did not occur because it was planned to be completed simultaneously with Project PS-1 which did not occur; this project will be reevaluated, see Chapter 8.

TABLE 1-2 Status of CIP from 2012 Water System Plan

Project No.	Project Title	C/D ⁽¹⁾	Year Scheduled	Status
Water Supply				
S-1	Water Treatment Plant Automation (Phase V)	C	2012	Complete
S-2	Redundant Flocculation Basin	C	2013, 2014	Complete
S-3	Water Treatment Plant Re-Rating	C & D	2016-2029 ⁽²⁾	Not Complete
S-4	Water Treatment Plant Capacity Expansion	D	2016-2029 ⁽²⁾	Not Complete
S-5	Settling Basins Liner	C	2016-2029 ⁽²⁾	Not Complete
S-6	North Fork Newaukum Intake Upgrades	C	2016-2029 ⁽²⁾	Not Complete
S-7	South End Water Treatment Facility	C & D	2015	Not Complete
Water Storage				
ST-1	New Valley View Reservoir	C & D	2016-2029 ⁽²⁾	Not Complete
ST-2	New High-Level Reservoir	C & D	2016-2029 ⁽²⁾	Complete
ST-3	New Main Zone Reservoir (5 MG)	D	2016-2029 ⁽²⁾	Not Complete
Water Pump Station				
PS-1	High Level Pump Station Improvements	C & D	2014, 2015	Complete
PS-2	Valley View Booster Pump Station (Fire)	C & D	2012, 2013	Not Complete
PS-3	Centralia-Alpha Pump Station Upgrade	C	2016-2029 ⁽²⁾	Not Complete
PS-4	18 th St Pump Station Capacity Upgrade (2000 gpm)	D	2016-2029 ⁽²⁾	Not Complete
Water Distribution System (Piping)				
D-1	Annual Water Main Replacement	C	2011-2015	Complete
D-2	Louisiana Ave Extension (1,400 LF – 12’)	D	2011, 2012	Partially Complete
D-3	I-5 Crossing – State Ave to Louisiana Ave (2,500 LF – 12’)	C & D	2014, 2015	Partially Complete

D-4	17 th St Loop – Complete loop from 18 th St to 17 th St (500 LF – 8”)	C	2011	Complete
D-5	Bishop Rd – Sturdevant Rd to Maurin Rd (3,000 LF – 12”)	D	2011	Partially Complete
D-6	Bishop Rd – Maurin Rd to Borovec Rd (4,300 LF – 12”)	D	2011	Complete
D-7	Rush Rd – Oeschili Rd to Bishop Rd (1,400 LF – 12”)	C	2011	Not Complete
D-8	Median St – National Ave to Kresky Ave (550 LF – 12”)	C	2016-2029 ⁽²⁾	Not Complete
D-9	Increase 6” Main on National Ave (2,800 LF – 10”)	C	2016-2029 ⁽²⁾	Not Complete
D-10	Central Business District Improvements (5,000 LF – 8”)	C	2016-2029 ⁽²⁾	Not Complete
D-11	Replace Main Reservoir Transmission Main (1,600 LF – 18”)	C	2016-2029 ⁽²⁾	Not Complete
D-12	Interstate Ave – Complete Loop (500 LF – 8”)	D	2016-2029 ⁽²⁾	Not Complete
D-13	Replace 4” and 6” mains in High Level Zone, Newgard Addition Ph 1 (Evergreen Dr., Parkill to Prospect) & Additional Piping (7,000 LF – 10”)	C	2016-2029 ⁽²⁾	Partially Complete
D-14	Replace 4” main in neighborhood, Newgard Addition Ph II & Additional Piping (2,600 LF – 8”)	C	2012, 2013	Partially Complete
D-15	Replace 6” main in Valley View Zone (1,100 LF – 8”)	C	2016-2029 ⁽²⁾	Not Complete
D-16	Install 16” main from 11 th St and Market Blvd to Yates Reservoir (21,000 LF – 16”)	D	2016-2029 ⁽²⁾	Not Complete
Water Maintenance and Operation				
M-1	Service Meter Replacement Program	C	2011-2015	Complete
M-2	Generator (North Fork Intake)	C	2015	Complete
M-3	Water System Plan Update	C	2015	Complete

1. C for City and D for Developer
2. Exact year unknown, planned for some time between 2016-2029, based on previous 20-year CIP.

GEOGRAPHY

The City of Chehalis is primarily flat with the western portion of the city mostly bounded by the Chehalis River and the eastern portion containing rolling slopes. To the north, the City of Chehalis shares a city boundary with the City of Centralia. Elevations range from a low of approximately 160 feet at the Chehalis River to a high of approximately 630 feet in the hills east of downtown.

AGREEMENTS

Lewis County Water / Sewer District #5

The 2012 Water System Plan identified an interlocal agreement between the City of Chehalis and the Lewis County Water and Sewer District No. 5 (District) enacted in the year 2004. This agreement required the District to make provisions or take actions which were not taken. On February 1, 2019, the City of Chehalis informed the District that due to the lack of actions taken and various other reasons, the interlocal agreement shall be terminated. The formal termination letter is included in Appendix B.

Newaukum Hill Water Association

On April 26, 2017, the City of Chehalis and Newaukum Hill Water Association entered into a water supply agreement effective through December 31, 2025. This agreement contains provisions for the purchase of water from the City of Chehalis by the Newaukum Hill Water Association and is included in Appendix B.

PacifiCorp

The City provides water to PacifiCorp (formerly Chehalis Power) under a contract entered into in the year 2001. This contract allows PacifiCorp to use water on demand up to an established contract limit of, which is set on a not-to-exceed basis on both a maximum day demand and an annual demand amount. The agreement sets an average daily use limit of 162,000 gallons per day and a peak demand use of 850,000 gallons per day. The maximum terms of this contract have been used in developing the demand forecast for the City which can be found in Chapter 2 of this Plan. The City is currently providing water service under the terms of this agreement. The original contract as well as documentation in 2015 showing PacifiCorp has continued as the benefactor of this contract is included in Appendix B.

Thousand Trails

In August 1983, the City of Chehalis and Thousand Trails, Inc. entered into a water service agreement. Thousand Trails Campground is served directly from the North Fork Newaukum raw water line. This service is metered but is charged a reduced rate to reflect the lower cost of supplying the untreated water. The Water Service Agreement with Thousand Trails is included in Appendix B. The City is currently providing raw water service under the terms of this agreement.

City of Centralia

The cities of Centralia and Chehalis are currently pursuing additional water rights from Trans Alta's Skookumchuck location which is approximately 5 miles east of Centralia. Trans Alta is an electricity generator and wholesale marketer of electricity. Obtaining these water rights and receiving water from a wellfield through the intertie with

Centralia's Water System (see System Interties below) would potentially require several water system improvements for which both cities. An agreement would need to be formed between both cities addressing ownership and responsibility. Potential improvements include:

- Reconditioning two existing wells or drilling new wells
- Water treatment facility consisting of chlorination, corrosion control, and fluoridation
- Intertie pump station
- Reservoir on the Chehalis side to receive additional water without adding pressure to the distribution system

ORDINANCES

The City's formally established water system policies are defined in Ordinance Numbers 1007-B and 866-B, 2011. All Ordinances are codified in the Chehalis Municipal Code. Title 13 Public Services contains the following chapters:

- 13.04 Water System
- 13.08 Sewer System
- 13.12 Charges, Rates and Fees for Water System
- 13.16 Charges, Rates and Fees for Sewer System
- 13.20 Small Works Roster
- 13.24 Storm and Surface Water Utility
- 13.28 Storm and Surface Water Utility Charges

Chapters 13.04 and 13.12 relating to the water system can be found in Appendix C. Chapter 13.04 contains codes related to application procedures, cross connections, water services, and construction standards. Specific applications for service are included in Appendix D and current fee schedules are found in Title 13.12

WATER RIGHTS

The City utilizes two surface water sources for their water rights: the North Fork Newaukum River; and the Chehalis River. Table 1-3 Water Rights shows a summary of each water right and Appendix E contains a copy of the records. The total water rights available for the system are an instantaneous rate of 25.94 cfs and an annual rate of 4,116-acre-feet per year with no annual rate on Certificate No. 01185.

TABLE 1-3Water Rights

Record Type	Record / Certificate No.	Priority Date	Source Name	Instantaneous Rate (cfs)	Annual Rate (AFY)
Claim	Record No. S2-302347CL Claim No. 98-002535	1/1/1901	North Fork Newaukam River	4.34	3,136
Certificate	Record No. S2-*00889CWRIS Certificate No. 01185	2/6/1923	North Fork Newaukam River	10.00	-
Certificate	Record No. S2-SWC11303 Certificate No. 11303	11/26/1957	Chehalis River	11.60	980
Change Application	Record No. CS2-SWC1185 Application No. 00889	10/17/2019	Chehalis River	10.00	-
TOTAL				25.94	4,116

The City's current Chehalis River water right is Surface Water Certificate No. 11303 and is for 11.6 cubic feet per second (cfs) and 980 acre-feet per year (AFY). This certificate has a priority date of November 26, 1957 and was issued by the Department of Ecology on February 18, 2009. This recently issued certificate was initially issued in 1959 with a water right of 15.0 cfs with no specified annual quantity and has since been significantly reduced. This permit had received several extensions of time to put the authorized amount of water to beneficial use. The City was informed via a letter from Ecology dated May 9, 2008 that they would issue the certificate for this reduced amount based on the amount of water that the City had put to beneficial use. In addition, on this source, there is a low flow limitation on the City's water right which states the use of water under this right be regulated so that the flow in the Chehalis River shall not be reduced to 50 cfs or less immediately below the pump intake as a result of pumping from this water right.

The City has two documents for their North Fork Newaukam water rights. The first is Water Right Claim No. 302347 (Record No. S2-302347CL), in the amounts of 4.34 cfs and 3,136 AFY. This claim was filed by the City on June 30, 1998 during the open period for filing and registering Water Right Claims and states that the date of first putting water to use was in 1914. This 1914 date of first putting this water to use is considered as the priority date for this water right claim. Since this date of first putting water to beneficial use preceded the State Surface Water Code adopted in 1917, this claim is considered as a vested water right. The other document the City has for the North Fork Newaukam River is Surface Water Certificate No. 01185 and is for 10 cfs as an instantaneous quantity with no specified annual quantity. This certificate was issued in May 1930 with a priority date of February 6, 1923.

INVENTORY OF EXISTING FACILITIES

The City of Chehalis operates a water treatment plant that receives its water supply from the North Fork Newaukum and Chehalis Rivers. In the distribution system, there are five pressure zones served by the water treatment plant, six reservoirs, five pump stations, and a pipeline distribution network. The City's major distribution system facilities are shown in Figure 1-3. A hydraulic profile of the existing system is shown schematically in Figure 1-4. The City's booster stations include four primary booster stations, which transfer water from one pressure zone to another, and one which only boosts pressure internally within the southern portion of the main pressure zone.

SOURCE CHARACTERISTICS

The City currently has two sources of supply: Source 1 is the North Fork of the Newaukum River and Source 2 is the Chehalis River.

Source 1: North Fork of the Newaukum River

This supply system includes intake facilities and equipment consisting of a bar screen, traveling screen, turbidity monitoring and chlorination equipment, and approximately 17.5 miles of raw water transmission line and a booster pump station. The North Fork is the City's primary source of water. The intake site is situated approximately 17 miles from the City, approximately 10 miles east of Jackson Highway, in Section 20, Township 14 North, Range 1 East, W.M. The watershed of the intake encompasses an area of about 18 square miles, predominately owned by the Weyerhaeuser Company.

Chehalis owns the property immediately around the intake and an easement for the pipeline through Weyerhaeuser property to a county road. Elevations in the watershed range from 600 to 2,800 feet. The area has been logged and is now covered with brush, alder, and Douglas Fir forests of various ages. Re-logging of the seasoned second growth timber has taken place in portions of the watershed.

Until 1993, the Cities of Centralia and Chehalis conducted the intake operations jointly and shared operational costs. Provisions of the SDWA prohibited the City of Centralia from using "untreated water" from this source. In 1993, the City of Centralia curtailed their operations and in 1994 ceased their participation in sharing costs associated with the intake.

The WTP Operators monitor and report on water quality and are responsible for daily operation and maintenance of intake facilities.

Source 2: Chehalis River

The Chehalis River pump station and intake were constructed on the bank of the Chehalis River near Riverside Road in 1961-62. This supply system includes an intake, consisting

of a wooden crib lined with rock to act as a screen through a 4-foot diameter steel pipe (CMP) to a reinforced concrete wet well, an automatically cleaned traveling screen, a pump station and 8,000 feet of raw water transmission line. The watershed encompasses a large area and is under multiple ownerships and land uses.

The system is manually operated and serves to augment flow from the North Fork during peak use periods. This source also provides a backup in the event of a failure or problem with the North Fork Supply.

Treatment and Disinfection

Treatment System Capacity

The Water Treatment Plant, constructed in 1960 and 1961, was designed for a peak production of 4.8 million gallons per day (MGD) and has maintained this capacity in the current day utilizing the Main Reservoir (see Section below) to buffer system demand. The treatment plant can receive raw water from either the North Fork or the Chehalis River; however, adjustments are made when the source changes. The plant is a conventional treatment process, consisting of flash mixing, flocculation, sedimentation, filtration, and chlorination. The plant also provides pH adjustment/control and fluoridation. The water surface elevation (maximum) at the treatment plant is 415.7 feet.

Flocculation

As water enters the plant, chlorine is added followed by an injection into the flash mixer basin of a flocculent containing poly-aluminum hydroxide. The plant has six 250-gallon totes for aluminum sulfate storage. The water then flows to two flocculation basins operating in series where mixing is completed, and floc is formed. The pre-settling basin follows the flocculation basin where heavier sediments settle out and are deposited. The flocculation basin commonly has three to four inches of sediment buildup. Both basins are cleaned semi-annually by flushing the accumulated sediment out through mud valves.

Sedimentation

Next, water flows to the two sedimentation basins, which operate in parallel and have the ability to be operated independently. The sedimentation basins also require semi-annual cleaning.

Rapid Sand Filters

The final treatment is provided by two equal capacity anthracite coal and rapid sand filters operating in parallel. Either filter may be taken out of service for routine maintenance and backwashing while the other remains in use; this essentially divides the capacity in half. The frequency of backwash cycles is related directly to the turbidity of the water. Backwash is prompted by filter head loss, reduction in filter flow velocities

and turbidity breakthrough caused by the accumulation of captured material on/in the filters.

Backwashing is accomplished by gravity from two reservoirs located above the plant. Each backwash requires half the backwash storage capacity. The reservoirs are refilled between backwashes by pumping from the clearwell prior to the main reservoir. Filter backwash water flows by gravity to the Water Treatment Residual Treatment Basin facility consisting of two settling basins located about a quarter of a mile from the filter plant. Settled backwash water is then released to Coal Creek. The two settling basins are each equipped with decanters and can hold the volume of two complete backwashes.

Disinfection

City of Chehalis Water primarily uses liquid chlorine for disinfection and occasionally uses a tablet consisting of chlorine, lime and sodium fluorosilicate as a part of the water treatment process. Chlorine is used to provide disinfection, lime is used to soften the water, and fluoride is used to promote dental health. The liquid or tablet is fed to the raw water prior to the flash mixer and again at the clearwell after treatment. Separate equipment is used at each of these locations.

Monitoring and Data Acquisition

The plant has three continually monitoring/recording Hach 1720 turbidimeters, one for each of the filters and one to monitor water in the clearwell. These units are in good condition and receive regular maintenance and calibration. The plant utilizes both chart recorders and the Supervisory Control and Data Acquisition (SCADA) system to collect and record plant data. The SCADA system is also used to collect data on equipment operations.

The City is producing water of very high quality out of the current filter plant and has the capability of providing treatment to a wide range of raw water conditions from both City's sources.

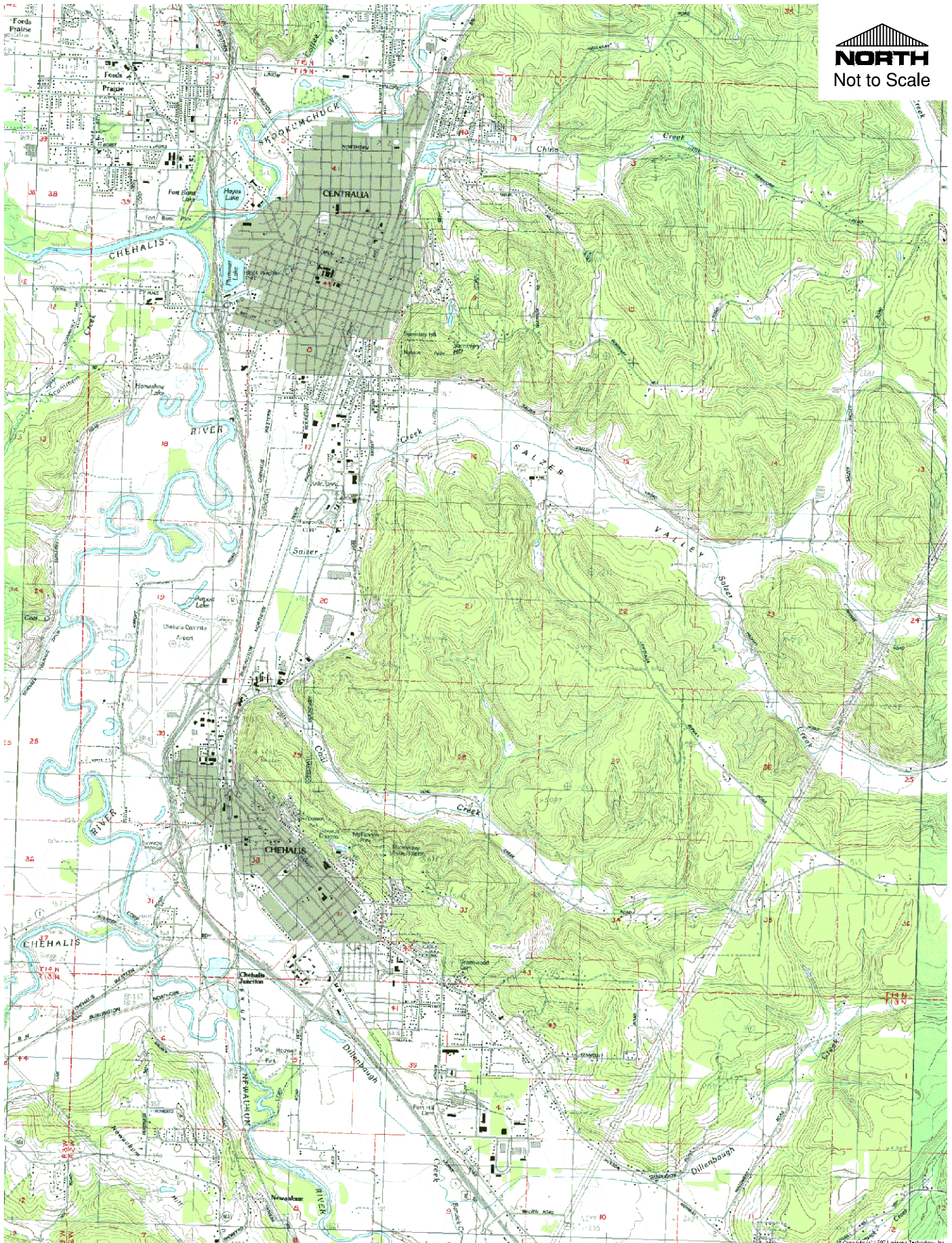
PRESSURE ZONES

Elevations within the City's Retail Service Area range from 166 to 620 feet, as shown in Figure 1-2. Topographic considerations are significant because the City seeks to maintain normal service pressures between 30 and approximately 100 psi. In areas with higher operating pressures, individual customers are responsible for installing and maintaining their own pressure reducing valves (PRVs) to reduce pressures to an acceptable range.

The range of service elevations for each of the City's pressure zones are summarized in Table 1-4. Pressure zone boundaries and major water system facilities are shown in Figure 1-3, and the hydraulic relationship among pressure zones, reservoirs, pump stations and PRVs is schematically shown in Figure 1-4.



DRAWING: T:\PROJECTS\0155 CHEHALIS\078 WATER SYSTEM PLAN UPDATE\FIGURES AND EXHIBITS\01551078 FIGURE 1-2 TOPOGRAPHIC MAP.DWG, LAYOUT TAB: FIGURE 1-2, PLOT DATE: 9/2/2020 11:04:03 AM, DRAWING SAVE DATE: 9/18/2020 8:42:59 AM, PLOTTED BY: GIMCKELSEN
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City of Chehalis
Water System Plan
Topographic Map
Figure 1-2

TABLE 1-4 Pressure Zone Elevations

Pressure Zone	Min. Service Elevation (ft)	Max. Service Elevation (ft)
Main	166	319
High-Level	288	525
Valley View/Fairview	260	628
South End	260	330
Centralia Alpha	336	500

Main Zone

The Main Zone is provided storage by the Main, Kennicott, and Yates reservoirs. This pressure zone supplies water to all other zones in the system. In the year 2020, the Main Zone had 2,316 residential and 845 commercial connections for a total of 3,161 customer connections.

High-Level Zone

The High-Level Zone is supplied by the High-Level Reservoir via the High-Level Booster Pump Station. In the year 2020, the High-Level Zone had 139 customer connections, all of which were residential.

Valley View/Fairview Zone

The Valley View Zone is supplied by Valley View Reservoirs No. 1 and 2 via the Valley View (Prospect) Booster Pump Station. The Fairview Zones’ only source of supply is fed through a Pressure Reducing Valve (PRV) from the Valley View Zone. In the year 2020, the Valley View Zone had 121 customer connections, all of which were residential.

South End Zone

The South End Zone is supplied by the South End Booster Pump Station. There is no reservoir in this zone, and system pressures are determined by the operation of the pump station. This zone also provides water to the Centralia-Alpha Zone. In the year 2020, the South End Zone had 200 residential and 3 commercial connections for a total of 203 customer connections.

Centralia-Alpha Zone

The Centralia-Alpha Zone is supplied by the Centralia-Alpha Booster Pump Station. There is no reservoir in this zone, and system pressures are determined by the operation of the pump station. In the year 2020, the Centralia-Alpha Zone had 39 customer connections, all of which were residential.

STORAGE FACILITIES

The City owns six reservoirs that serve five pressure zones throughout the City for a total of 6,723,000 gallons of storage. A summary of these facilities is presented in Table 1-5.

Main Reservoir

The Main Reservoir has a capacity of five million gallons and is located adjacent to the water treatment plant at Dobson Park on SE Parkhill Drive. It was constructed in 1927 as an open facility with an overflow elevation of 403 feet. The reservoir is divided in half by a concrete wall and either half can operate independent of the other. In 1994, a counter balanced Hypalon floating cover was installed in anticipation of increased regulations and the need to improve water quality to meet disinfection requirements. A polyethylene fabric was installed at the same time to enhance the reservoir's reliability. This reservoir is the primary storage facility for the distribution system and its pressure zones. The water level is controlled by regulating water volumes through the treatment plant and adjusting flows from the intakes.

Kennicott Reservoir

The Kennicott Reservoir is a concrete reservoir with a capacity of one million gallons. It was constructed off Kennicott Road in 1983. The reservoir serves the Main Zone and has an overflow elevation of 398 feet. There is an altitude valve installed to prevent overflow located in a vault below the reservoir. The reservoir is manually supplied by the 18th St Booster Pump Station based on water levels in the Yates Reservoir. The reservoir was installed to alleviate low fire flows and high demand spikes in the southerly portion of the City.

Yates Reservoir

The Yates Reservoir is a riveted steel reservoir with a capacity of 500,000 gallons. It was constructed in 2002 off Yates Road and serves the Main Zone. The reservoir has an overflow elevation of 403.5 feet and is manually supplied by the 18th St Booster Pump Station. The reservoir was constructed to offset demands placed on the system by the new electric generation plant on Bishop Road.

High-Level Reservoir

The original High-Level Reservoir was constructed in 1947 in McFadden Park to serve a higher-pressure zone. It was made of concrete and had a capacity of 89,000 gallons. Due to the need for increased capacity, a new reservoir was constructed of steel in the same location in 2015 and has a capacity of 150,000 gallons. The overflow elevation of 618 feet and base elevation of 605 feet were maintained to work with the existing High Level Pump Station. For the old reservoir, the pumps were signaled to start when the reservoir level dropped four feet below the overflow. The reservoir could be bypassed to provide

water to the High-Level Zone customers directly from the pump station during reservoir maintenance. These settings were maintained for the new High-Level Reservoir.

Valley View Reservoirs

There are two steel reservoirs that serve the Valley View Zone. One was installed in 1979 with a capacity of 67,000 gallons to serve a new development. A second 67,000-gallon reservoir was installed in 1996 to allow development of additional residential sites adjacent to the original subdivision. Both reservoirs are located at the top of the hill east of South Market Boulevard, southeast of McFadden Park, and have an overflow of 703 feet. Water is supplied to the reservoirs by the Valley View (Prospect) Pump Station. The pumps are signaled to start when the water level drops by 3.5 feet from the maximum level. The two reservoirs can be individually isolated to continue to provide water to customers during maintenance.

TABLE 1-5 Storage Facilities

Facility	Type	Location	Year Built	Capacity (mg)	Diameter (ft)	Base Elevation (ft)	Overflow Elevation (ft)	Zone Served	Supply Source
Main Reservoir	Concrete	SE Parkhill Dr	1927	5.0	Varies	383	403.3	Main	Water Treatment Plant
Kennicott Reservoir	Concrete	Kennicott Rd	1983	1.0	84	374	397.9	Main	18 th St Booster PS
Yates Reservoir	Steel	Yates Rd	2002	0.5	56	376	403.5	Main	18 th St Booster PS
High Level Reservoir	Steel	McFadden Park	2015	0.15	45	605	618.0	High Level	High Level Booster PS
Valley View Reservoir No. 1	Steel	SE Prospect St	1979	0.067	12.67	631	703.0	Valley View, Fairview	Prospect Ave Booster PS
Valley View Reservoir No. 2	Steel	SE Prospect St	1996	0.067	12.67	631	703.0	Valley View, Fairview	Prospect Ave Booster PS

BOOSTER PUMP STATIONS

The City owns and operates five booster pumps stations. All pumps are housed within an above ground, concrete block building and the site is fenced. All pump stations are equipped with auxiliary generators. Table 1-5 contains a summary of these facilities.

High-Level Pump Station

The High-Level pump station is located in Dobson Park, adjacent to the water treatment plant. The pump house is a wood structure with metal siding constructed in 2020. The station is equipped with two 40 hp centrifugal pumps which according to manufacturer's documentation, are rated at 360 gpm at 250 feet of total dynamic head. The pumps draw water from the Main Zone between the Main Reservoir and the meter to the Main Zone. Only one pump is operated at a time. The pumps operate automatically and are controlled by a level sensor in the High-Level reservoir. The auxiliary generator with a manual transfer switch is located in a wood structure next to the pump station.

Valley View Pump Station (Prospect)

The Valley View pump station is located on Prospect Street near Evergreen. There are two 30 hp centrifugal pumps rated at 128 gpm each. Level sensors in the Valley View reservoir control the pumps that alternate automatically. The station is equipped with telemetry and flow and hour meters for recording pump use and water pumped. The auxiliary generator is currently a portable unit.

South End Pump Station

The South End pump station is located on Jackson Highway near Yates Road in a modern structure. There are two 10 hp centrifugal pumps each rated at 300 gpm. Both pumps are variable speed and operate off a pressure sensor, which is set to maintain approximately 90 psi. This pressure zone has no storage and fire hydrants; therefore, the pumps must run continuously and have a capacity to meet peak hour demand. The station is equipped with an alternator, an hour meter, a flow meter, and intrusion alarms. The auxiliary generator is equipped with an automatic transfer.

Centralia-Alpha Pump Station

The Centralia-Alpha pump station is located on the North Fork Road at the intersection of the Centralia-Alpha Road. There are two 10 hp centrifugal pumps each rated at 100 gpm that provide water to customers on the easterly end of the North Fork Road. Both pumps are variable speed and operate off a pressure sensor which is set to maintain approximately 90 psi. No storage is provided with the system; therefore, the pumps must run continuously. In order to maintain chlorine residuals beyond the station, a hypochlorite injection system is operated based on incoming chlorine residual. The

station is equipped with an alternator, an hour meter, a flow meter, and intrusion alarms. The auxiliary generator is equipped with an automatic transfer.

18th Street Pump Station

The 18th Street Pump Station is located at the southwestern corner of the intersection of S Market Blvd and SW 18th St. The station was constructed in 2008 and provides both raw and finished water pumping with separate facilities for each. The raw water pump is rated at 2,300 gpm and is used to augment conveyance of flow from the North Fork Intake into the water treatment plant. The finished water pumps, three in total, are each rated at 440 gpm with a combined rating of 1,200 gpm. These pumps are automatic variable speed pumps which run based on the level in the Yates Reservoir, with typically two pumps operating at a time.

TABLE 1-6 Pump Stations

Facility	Year Station Built/(Pump Replaced)	Supply HGL	Pressure Zone Served	Pump No.	Pump Manufacturer	Pump Model	Capacity (gpm)	Rated Head (ft)	Speed (rpm)	Motor Power (hp)	Backup Power
High Level Pump Station	2020	403	High Level	1	Grundfos	20953 LC	360	250	3,550	40	Yes
	2020	403	High Level	2	Grundfos	20953 LC	360	250	3,550	40	Yes
Valley View (Prospect) Pump Station	1979/(2006)	403	Valley View, Fairview	1	American Marsh	2L1X2-10A/RV	128	417	3,500	28	Yes
	1979/(2006)	403	Valley View, Fairview	2	American Marsh	2L1X2-10A/RV	128	417	3,500	28	Yes
South End Pump Station	/(1999)	403	South End	1	Aermotor	GF300-10T	300	110	3,450	10	Yes
	/(1999)	403	South End	2	Aermotor	GF300-10T	300	110	3,450	10	Yes
Centralia-Alpha Pump Station	1979	Varies	Centralia-Alpha	1	Siemens	C810A	100	180	3,500	10	Yes
	1979	Varies	Centralia-Alpha	2	Siemens	C810A	100	180	3,500	10	Yes
18 th St Pump Station	2008	403	Main	1	Grundfos	CR90-2-2	440	155	3,540	25	No
	2008	403	Main	2	Grundfos	CR90-2-2	440	155	3,540	25	No
	2008	403	Main	3	Grundfos	CR90-2-2	440	155	3,540	25	No
	2008	598	Raw Water	1			2,300		1,750	40	No
Chehalis River Pump Station	1961/(1961)	246'-272'	Raw Water	1	Worthington Corporation	12H110 W5	1,200		1,770	100	Yes
	1961/(1991)	246'-272'	Raw Water	2	Jacuzzi	14LC	1,940	68	1,760	150	Yes
	1961/(1993)	246'-272'	Raw Water	3	Fairbanks Morse	Pomona Turbine 6927	1,950		1,770	150	Yes

PRESSURE REDUCING VALVES (PRVS)

The City owns four PRVs as described below and summarized in Table 1-7.

Fairview PRV

The Fairview PRV is located in a vault along SE Oakview Drive and reduces pressures to acceptable levels from the Valley View Zone to a small number of customers along SE Fairview Drive and connecting residential streets.

Interstate Ave PRV

The Interstate Ave PRV is located in a vault just west of the intersection between SW Interstate Ave and Bishop Road. This PRV is in combination with a check valve and works in combination with the SW Snively Ave PRV and the 18th St Pump Station PRV to divide the Main Zone into flow downstream of the 18th Ave Pump Station versus boosted flow upstream of the 18th Ave Pump Station.

SW Snively Ave PRV

The SW Snively Ave PRV is located inside a structure located within SW Snively Ave between SW 18th Street and SW 19th Street. This PRV is in combination with a check valve and works in combination with the Interstate Ave PRV and the 18th St Pump Station PRV to divide the Main Zone into flow downstream of the 18th Ave Pump Station versus boosted flow upstream of the 18th Ave Pump Station.

18th Street Pump Station PRV

The 18th Street Pump Station PRV is located upstream from the 18th Street Pump Station building. This PRV is in combination with a check valve to protect the 18th Street pump. It works in combination with the SW Snively Ave PRV and the Interstate Ave to divide the Main Zone into flow downstream of the 18th Ave Pump Station versus boosted flow upstream of the 18th Ave Pump Station.

TABLE 1-7 Pressuring Reducing Valves

Station/Location	Zone		Size (in)	Setting (psi)	Elevation (ft)	HGL (ft) ¹
	From	To				
Fairview PRV	Valley View	Fairview	2	52	347	467
			6	52	347	467
Interstate Ave PRV	Main	Main	8	NA	191	NA
SW Snively Ave PRV	Main	Main	8	NA	198	NA
18 th St Pump Station PRV	Main	Main	8	NA	223	NA

1. Hydraulic grade line (HGL) calculated based on pressure setting and elevation.
2. NA = Not available.

TRANSMISSION AND DISTRIBUTION SYSTEM CHARACTERISTICS

The transmission and distribution system consists of pipes ranging in size from 2 inches to 18 inches in diameter that carry water through a network of over 100 miles of pipe. The transmission lines from the North Fork Newaukum and Chehalis River are 17.5 miles of 16-inch and 18-inch ductile and cast-iron pipe and 1.5 miles of 18-inch tar wrapped steel pipe, respectively. The North Fork transmission line was installed in 1976 and the Chehalis River transmission line in 1961-62.

The distribution system contains approximately 85 miles of pipe and ranges in age from new to over 100 years. Most of the lines installed prior to the late 1960s are gray cast iron. Those installed since the late 1960s are made of ductile iron. Transmission and distribution system piping is shown in Figure 1-3. Figure 3-9 shows the distribution system by pipe diameter.

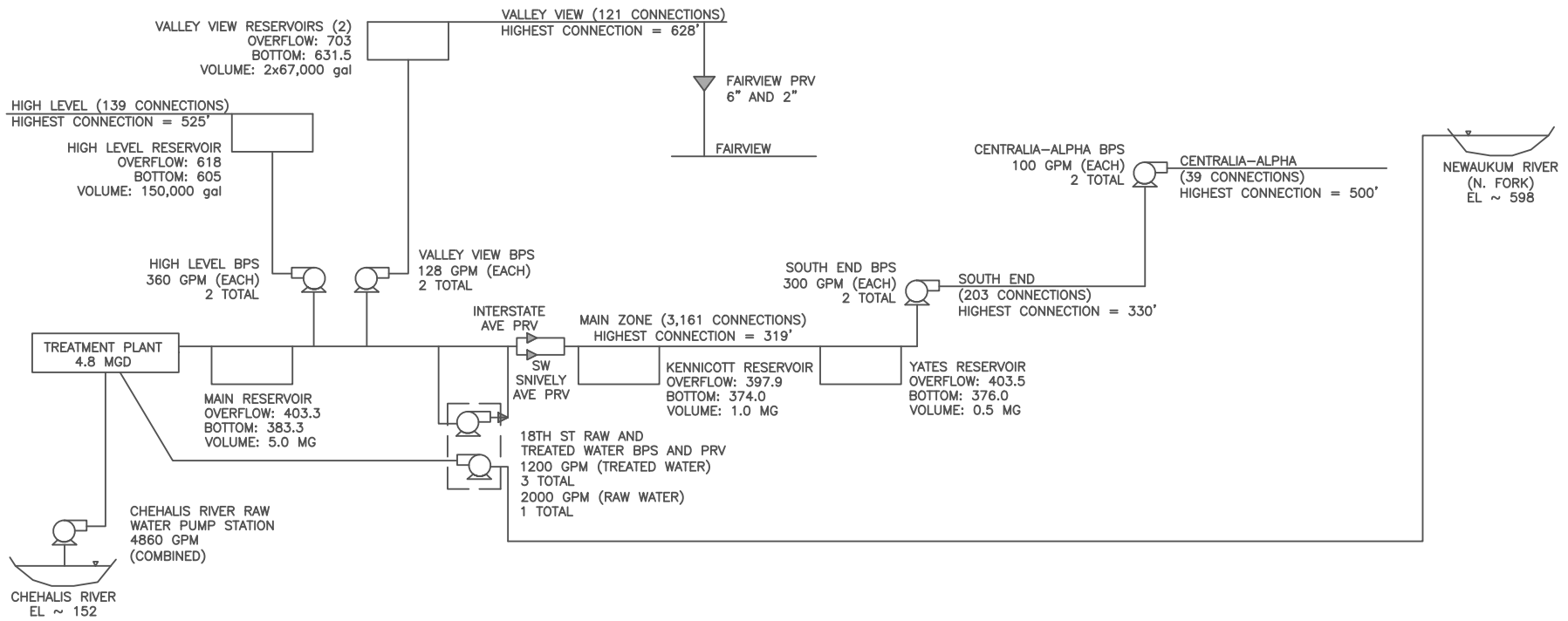
TABLE 1-8 Water System Piping

Diameter (inches)	Total Length (feet)	AC ⁽¹⁾	CI ⁽²⁾	DI ⁽³⁾	PVC ⁽⁴⁾	Copper	PE ⁽⁵⁾
2	5,022	-	-	-	2726	1,323	973
4	43,595	3,749	38,246	1,600	-	-	-
6	138,222	-	97,643	40,579	-	-	-
8	109,099	-	36,975	71,860	264	-	-
10	30,799	-	14,313	16,486	-	-	-
12	106,038	-	2,857	103,181	-	-	-
14	12,573	-	12,573	-	-	-	-
16	1,575	-	-	1,575	-	-	-
Total	446,923	3,749	202,607	235,281	2,990	1,323	973

1. AC = asbestos cement
2. CI = cast iron
3. DI = ductile iron
4. PVC = polyvinyl chloride
5. PE = Polyethylene

TELEMETRY AND CONTROLS CHARACTERISTICS

The water system's telemetry system is approximately 98% complete. The South End Pump Station and the Centralia/Alpha Pump Station both have SCADA equipment that transmits station status and alarms to the filter plant during normal working hours and to the City's self-dialing alarm system when the plant is not staffed. The Valley View Pump Station and High-Level Pump Station are controlled by their respective reservoirs, and both transmit information to the filter plant during normal working hours and to the City's self-dialing alarm system when the plant is not staffed.



SYSTEM INTERTIES

The cities of Centralia and Chehalis have constructed an emergency intertie on Kresky Avenue just north of Salzer Creek on NE Scott Johnson Street, connecting the two cities' water systems. The intertie is currently unmetered, but has two 12-inch valves, one operated by each city. Operation requires cooperation and specific action by both cities. The purpose of this intertie is to provide each city with a source of water, although limited, from the other's water system, during emergency conditions. This intertie cannot supply either city with all the water it normally requires. It can, however, help mitigate each city's supply shortages during emergency conditions.

The static pressures of the two cities' water systems are not equal, but they are compatible. Chehalis' main zone reservoir overflow is 403 feet in elevation; Centralia's reservoir elevation is 417 feet. It is anticipated that during emergencies a portion of the water system in need will be isolated and served by the other city's system. The cities have a formal agreement requiring notification and both cities operating their respective valves in order to use the intertie. The Centralia Intertie Agreement is included in Appendix B.

ASSET INVENTORY

Table 1-9 provides a summary of the remaining life and the cost for replacement of each asset previously described in the above sections.

TABLE 1-9 Asset Inventory

Asset	Year Installed	Condition	Remaining Life	Replacement Cost
North Fork Newaukum River Raw Water Intake and Transmission Line ⁽¹⁾	1976	Good	20+ years	\$28,000,000
Chehalis River Raw Water Intake and Transmission Line ⁽²⁾	1962	Good	0 years	\$7,150,000
Water Treatment Plant	1961	Good	20+ years	\$10,000,000
Reservoirs ⁽³⁾	1927 – 2015 ⁽⁴⁾	Good	20+ years	\$250,000 to \$4,000,000 each
Booster Pump Stations	1947 – 2008 ⁽⁵⁾	Good	20+ years	\$250,000 to \$750,000 each
Distribution System ⁽¹⁾	Varies	Varies	Varies	\$135,000,000

1. Assumes \$300 per linear foot of pipe.
2. The Chehalis River raw water transmission pipe is past an average lifespan expectancy of 54 years for steel pipe. The replacement cost is from Chapter 8.
3. Reservoir maintenance is discussed in Chapter 6.
4. Year of construction for individual reservoirs is given in Table 1-5.
5. Year of construction for individual booster pump stations is given in Table 1-6.

RELATED PLANNING DOCUMENTS

Several plans and studies are related to the Water System Plan and elements contained within these related plans can have an impact on the planning required in this plan. The Washington State Growth Management Act of 1990 (GMA) is the most significant and is discussed below. Other related planning documents include the previous City of Chehalis Water System Plan completed in 2012, the current City of Centralia Water System Plan completed in 2013, and the Lewis County Comprehensive Plan last updated in 2018.

GMA RELATED PLANS, POLICIES, AND DEVELOPMENT REGULATIONS

The Growth Management Act (GMA) requires that county and city governments in rapidly growing counties develop plans for managing anticipated growth. The GMA provides a framework for coordination and comprehensive planning to help local communities manage their growth in a manner that makes sense for each community. The GMA calls for urban growth areas where growth will be encouraged and can be supported with adequate facilities. At the same time, it encourages setting aside other areas for rural uses and resource protection. Establishing these urban growth areas is a major step for local communities to take in managing their growth. Local communities are required to design urban growth areas to include “areas and densities sufficient to accommodate the county’s expected growth for the succeeding 20 years” (GMA, Section 12, RCW 36.70A.12O). Communities will then review and revise their plan every ten years to assure that projected growth for the next ten years can be accommodated. To provide for this growth, local communities will need a thorough understanding of what land is available, is suitable for growth with their communities and may realistically be developed.

The GMA required those counties either mandated to perform growth planning or those counties volunteering to perform such planning to develop a comprehensive plan addressing county growth. Cities within each county were required to establish urban growth areas within which urban levels of utility service would be provided. Each comprehensive plan was expected to set figures for existing and future populations, as well as establish land use policies. Such policies encourage future growth within these urban growth areas for reducing sprawl and its attendant utility and transportation problems.

The cities of Centralia and Chehalis have established urban growth areas to aid in the GMA planning effort. Within these boundaries, efforts will be made to meet urban levels of service established by urban standards. Outside of the urban growth area, only rural standards will need to be met. This structure will provide the most efficient way to spend limited resources in trying to provide high quality and safe water service to the residents of Chehalis and Lewis County.

OTHER RELATED LAND USE AND COMPREHENSIVE PLANS

The following plans were used in the preparation of this Water System Plan:

- City of Chehalis, Water System Plan, 2012. This plan evaluated the Chehalis water system and made recommendations for improvements to meet anticipated growth. The plan is required to account for the 20-year horizon. It evaluated in detail the growth requirements for the first 6-year period and on a more general basis, the balance of the 20 years. All of the recommendations made in this plan have been implemented or are currently being implemented. This plan is mandated by the Washington State Department of Health (DOH) and is required to be updated every 6 years. This plan was reviewed to obtain system history. Information contained in the plan that is still current has been incorporated into this update.
- City of Centralia, Comprehensive Water Plan, 2013. This plan focuses on the City of Centralia's service area and water rights and was reviewed to ensure that the City's planning efforts do not conflict with those in effect for this adjacent jurisdiction.
- Lewis County Comprehensive Plan, 1999, updated 2018. This plan was coordinated under the Urban Growth Management Program. This plan shows UGA designations for the nine incorporated cities within Lewis County (Centralia, Chehalis, Morton, Mossyrock, Napavine, Pe Ell, Toledo, Vader, and Winlock) as well as establishes policies for these UGAs.

COORDINATED WATER SYSTEM PLANS

There are no Public Water System Coordination Act agreements in place and the City of Chehalis does not currently coordinate its Water System Plan with any other entities.

ADJACENT PURVEYOR WATER SYSTEM PLANS

The City of Centralia is the only adjacent water purveyor to the City of Chehalis. The City of Chehalis does not coordinate their Water System Plans with the City of Centralia; however, as previously mentioned, the City of Centralia's most recent Water System Plan is reviewed to ensure that the City of Chehalis's planning efforts do not conflict with those indicated in Centralia's Water System Plan.

WATERSHED PLANNING – WRIA 22 AND 23

The Chehalis Basin Partnership was formed to manage water in the Chehalis Watershed which covers Washington Resource Inventory Areas (WRIA) 22 and 23. The mission of the Chehalis Basin Partnership is to coordinate local, tribal, state, federal and private efforts to reduce the effects of flooding and maintain/enhance beneficial water uses while

at all times recognizing the relationship to economic health and sustainability within the basin. The City of Chehalis has actively participated in the Partnership since its inception in 1998. Through the Partnership, the City has been able to provide input and influence the development of regulations and standards that impact water quality and water rights appropriations within the basin. Recent efforts completed by the Partnership that provide a framework for water resource management in the basin include:

- Chehalis Basin Watershed Management Plan (April 9, 2004)
- Detailed Implementation Plan (June 2009 Update)

ANALYSIS OF COMPATIBILITY WITH EXISTING PLANS

There are no inconsistencies with related plans. The Lewis County Comprehensive Plan is used to obtain population growth forecasting data in Chapter 2.

COMMENTS FROM AGENCIES AND RESOLUTION

In accordance with the Municipal Water Law, copies of the draft plan will be submitted to Lewis County, City of Centralia, City of Chehalis Community Development, and DOH simultaneously for review. Comments from Lewis County and City of Centralia will be addressed and will be forwarded to DOH with Local Government Consistency Determination Forms for inclusion in the final plan. Appendix F is reserved for the signed Local Government Consistency Forms.

RETAIL SERVICE AREA

The City of Chehalis Water System currently (as of December 2020) serves 3,690 water services, of which 2,842 are residential services and the remaining 848 are commercial services. The service area totals approximately 6,735 acres and includes approximately 3,553 acres inside the City Limits and 3,182 acres within the Urban Growth Area (UGA). Figure 1-3 shows the City of Chehalis Water System Retail Service Area, which is coincident with the UGA boundary, and the City's Service Area comprised of the Retail Service Area, Main Zone, South End Zone, and Centralia-Alpha Zone.

Other utilities provided within the Chehalis water service area include a sewage collection and treatment system, telephone, electrical, cable TV, and natural gas. For most of the area, the sewage utility is owned and operated by Chehalis and serves connections both inside and outside the City Limits. Local telephone, internet and cable TV services are provided by CenturyLink or Comcast. Lewis County PUD No. 1 is the local electrical provider. Puget Sound Energy provides natural gas.

WHOLESALE SERVICE AREA

The City currently has no specific policy on wholesaling of water. The City provides water to a number of small water systems, as depicted in Figure 1-3. With the exception

of Thousand Trails, all water provided is metered and charged at the standard commercial rate.

ZONING AND LAND USE

The City of Chehalis Zoning Map is shown in Figure 1-5. The City has adopted an urban growth area (UGA) which has been accepted by Lewis County which is depicted in Figure 1-5. The Zoning Map and UGA guides future land use. The City plans utilities infrastructure for the UGA. Developers and end users will finance water main extensions and other required infrastructure.

WHOLESALE/WHEELING WATER

“Wheeling” refers to the practice of transferring or allowing the transfer of water from one water distribution system through another purveyor’s transmission line(s) or distribution system in order to deliver water from one location to another. Typically, wheeling occurs on larger systems where distribution systems are close together and where service areas are expansive.

The City of Chehalis does not presently wheel water to/from any other entity, has no policy on wheeling of water, and it is highly improbable that the issue or opportunity would present itself.

ANNEXATIONS

The City of Chehalis has established an annexation policy whereby any property outside the corporate limits of the City desiring water and/or sewer service must sign and execute an annexation agreement. This annexation agreement provides that the property owner will not block any attempts by the City to annex the property requesting water and/or sewer service.

DIRECT CONNECTION AND SATELLITE/REMOTE SYSTEMS

Noncontiguous or separate (often-remote) water systems that use separate facilities and infrastructure and may be served by a different source are referred to as satellite systems. The City of Chehalis currently does not operate nor has responsibilities associated with any satellite water systems. The City has further established a policy whereby they will not provide water to proposed satellite systems within or adjacent to the existing service area. Developments or areas requesting water service that are accepted by the City for connection to the City’s existing infrastructure are responsible for providing improvements and infrastructure that meet City standards prior to connection. Such improvements and infrastructure shall be turned over to the City for ownership and operation after construction and approval.

DESIGN PERFORMANCE STANDARDS

Future water system extensions and improvements to the existing water system must meet minimum DOH regulations and standards as outlined in the DOH Water System Design Manual, as well as applicable local fire flow standards. The City has also established Development Guidelines and Public Works Standards that provide directions for property owners, developers and others connected to or desiring connection to the Chehalis water system. Contained within the Development Guidelines and Public Works Standards are the water system construction standards. These Standards have been approved by DOH. Copies of these Development Guidelines and Public Work Standards are available at the Public Works Department and are included in Appendix C.

The Development Guidelines and Public Works Standards clearly delineate developers and/or property owners are responsible for the costs to extend water lines. These guidelines and standards also identify specific requirements with which such line extensions must comply. Plans are to be prepared by a licensed professional engineer (P.E.) and reviewed and approved by the Public Works Director and appropriate governmental authorities. A water main extension shall be inspected by the public works department to ensure the installation meets city standards.

SURCHARGES FOR OUTSIDE CUSTOMERS

The City of Chehalis has established rates for retail water customers located outside the City Limits. This rate structure follows the City's inside the City Limits rate structure with a 10% increase. The rationale for this difference is that travel time for operational and maintenance tasks are generally greater outside of the City Limits and the connection densities are generally less, reducing the efficiency of general operations and maintenance of the outside the City Limits system components.

LID/ULID FORMATION OUTSIDE LEGAL BOUNDARIES

The City is supportive of working cooperatively with property owners outside the City Limits to develop financing strategies which includes providing technical assistance in the formation of local improvement districts (LID) for the provision of water and/or sewer service when and where an LID is the most feasible option.

LATE-COMER AGREEMENTS

The City has a policy whereby developers and property owners required to install improvements can establish latecomer agreements to provide for reimbursement as subsequent connections are made. In order to establish a latecomer agreement and fee structure, the developers or property owners must submit a proposal supporting such fees and charges to the Public Works Director. If accepted, the Public Works Director will establish the latecomer fees and require their collection at the time water connections are made to these improvements. The City will then pass on such payments to the developers or property owners that originally provided for the utility improvements.

OVERSIZING

In accordance with state law, the City has established minimum waterline sizing criteria. In the event future development may require a larger line than the standards might otherwise dictate, the City may require the individual(s) providing for such line extensions to increase the size to the level that it has determined to be necessary to provide for future services. The City may also elect to participate in such line extension oversizing by paying the difference in costs or a portion of the difference in costs over the line size that meets city standards. Latecomer agreements may also be implemented to facilitate the reimbursement of oversizing costs by those future developments that could directly benefit from such work.

CROSS-CONNECTION CONTROL PROGRAM

The City has developed a Cross-Connection Control Program in accordance with state regulations. The Cross-Connection Control Program is detailed in Chapter 6 of this plan. The cross-connection control regulations are codified in Chehalis Municipal Code Title 13.04.070 which can be found in Appendix C. This program provides the City with the means of controlling and preventing cross connections by either removing the cross-connection or requiring the installation of an approved backflow prevention assembly to protect the City's water supply.

The City's cross connection control program requires that an initial evaluation take place at the time application for new service is reviewed. System-wide surveys are conducted and those services where the potential for cross connection exists are required to provide appropriate backflow prevention devices. The City will inspect all premises where the potential for cross connection exists. Owners/operators of the facilities that have cross connection control devices are required to annually test them and demonstrate to the City that they are in satisfactory working order.

CONDITIONS OF SERVICE

Chehalis Municipal Code Title 13.04 establishes conditions of service. Title 13.04 is included in Appendix C.

DUTY TO PROVIDE SERVICE AND PURVEYOR RESPONSIBILITIES

The City has a duty to serve all new connections located within its Retail Service Area, so long as the following four threshold factors are met, as described in WAC 246-290-106:

1. It can be available in a timely and reasonable manner;
2. There is sufficient water rights to provide water service;
3. There is sufficient capacity to serve the water in a safe and reliable manner as determined by the department; and

4. It is consistent with the requirements of local plans and regulations and, for water service by the water utility of a city or town, with the utility service extension ordinances of the city or town.

In keeping with this requirement, typically new developments occurring within City Limits apply for water service from the City, following the process described in 13.04.020 of Ordinance 866-B (see Appendix C), and in more detail in the Water/Sewer/Storm Application Process outlined in Appendix D. An applicant may be required to obtain a building or plumbing permit for the premises where water is being requested.

Ordinance 866-B and the Water/Sewer/Storm Application Process also address the approach to assessing when and where service will be provided to applicants whose premises are located within or outside the UGA. If the proposed service is outside City Limits but within the UGA, a Utility Service Annexation Agreement must be obtained from the City. If the proposed service is not within either City Limits or the UGA, water service is not available except under special circumstances, as determined by the Public Works Department.

CONNECTION FEE SCHEDULE

Chehalis Municipal Code Title 13.12 establishes the connection fee schedule for the City of Chehalis. Title 13.12 is included in Appendix C.

COMPLAINTS

POLICY FOR DEALING WITH COMPLAINTS

The City of Chehalis keeps good documentation of all orders generated by a customer call to Public Works. When a call for inquiry or complaint is received, the information is disseminated from the Public Works office to the correct department, often the water filter plant. Depending on the nature of the issue, a work order is generated to handle the situation. In case of a water taste, smell, color or odor complaint, actions are initiated as soon as possible within the next available timeline. Usually, it turns out to be a water filter system in a customer's home making the odor or smell. On occasion a Bacteriological (Bac-T) sample from a customer's home and one close to their water connection off the water system are collected to verify that integrity of the water system. Once the tests are completed, customers are called in and given the results from the Bac-T test.

RECORD KEEPING

Water quality and compliance records must be retained by the water utility. Some data is required, while some is operational, maintenance, or complaint response in nature. Record keeping requirements for the City are described in WAC 246-290-480.

- **Cross connection:** Records of the master list of service connections and premises isolation shall be kept as long as the premises pose a hazard to the purveyor's system. Records regarding inventory shall be kept for five years or life of the approved backflow prevention device, whichever is less.
- **Source and distribution analysis:** Bacteriological and turbidity results shall be kept for five years.
- **Daily source meter readings:** These shall be kept for ten years. Other records of operation and analyses not specific to water treatment shall be kept for three years.
- **Sanitary Survey:** Correspondence and reports shall be kept for ten years after completion of the survey.
- **Project reports:** Construction document drawings and inspection reports shall be kept for the life of the facility.
- **Daily treatment records:** Chlorine residual, fluoride levels and other analysis must be kept for a minimum of three years.
- **Records of action taken to correct violations:** Violations of primary drinking water standards shall be kept for least three years after the correction.
- **Backflow incidents:** Backflow incidents and annual summary reports shall be kept for five years.

Chapter 2

BASIC PLANNING DATA

CHAPTER 2 - BASIC PLANNING DATA

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APPENDICES

Appendix G 50 Year Demand Projections

OBJECTIVE

The objective of this chapter is to present basic planning data and water demand forecasts needed to assess the current and future capabilities of the water system to provide service – both wholesale and retail. This chapter will provide existing and projected population, service connections, and water use data, and will develop the water demand associated with the planning element known as an equivalent residential unit (ERU). The chapter also includes projected land use and water demands for the 10- and 20-year planning periods, year 2030 and 2040 respectively.

The water use data and water demand forecasts presented in this chapter comprise some of the elements required for the development of a Water Use Efficiency (WUE) program. The final element is implementation of the WUE program and its component parts, which is addressed in Chapter 4.

CURRENT SYSTEM DEMANDS

In this section current system demands are examined in terms of production and sales per connection by customer class. This information is later used to project future water system demands and evaluate water use efficiency.

WATER PRODUCTION

Chehalis' water source is surface water from both the Newaukum and Chehalis Rivers. The Newaukum River is Chehalis' primary source, and the Chehalis River is typically used during the summer peak season. During the years 2015 to 2020, the Newaukum River supplied approximately 95% of Chehalis's total production while the Chehalis River supplied approximately 5%.

Monthly water production for January 2017 to December 2020 is summarized in Figure 2-1 and annual water production for 2017 to 2020 is presented in Table 2-1. The presented data comes from Water Treatment Plant Monthly Report Forms (DOH Form 331-023-F) provided by the city. As with most water utilities, Chehalis' production increases in the summer months due to irrigation use. Reviewing data from the previous 2012 WSP, annual water production has remained relatively constant since 2006.

FIGURE 2-1 Monthly Water Production

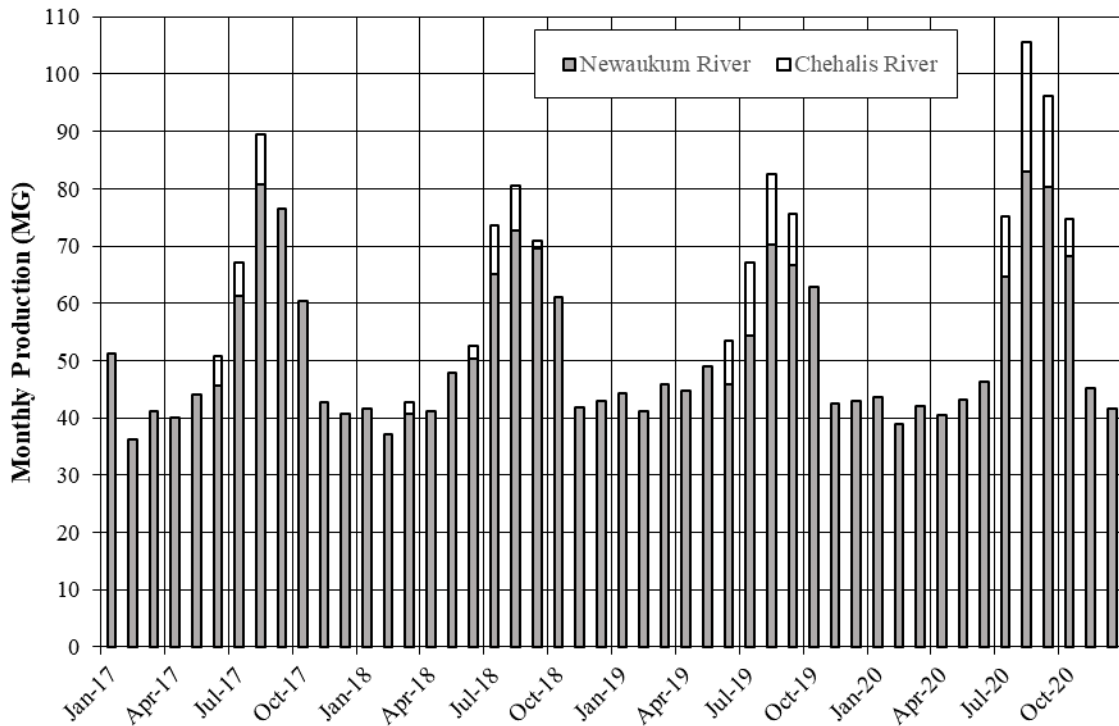


TABLE 2-1 Annual Water Production

Year	Annual Newaukum River Production (MG)	Annual Chehalis River Production (MG)	Annual Total Production (MG)
2015	591.70	43.55	635.25
2016	633.41	27.65	661.06
2017	620.84	19.79	640.63
2018	612.23	21.97	634.20
2019	610.57	41.62	652.20
2020	637.25	55.59	692.84

Table 2-2 shows the maximum day versus average day peaking factors for the most recent four years. The maximum day peaking factor has ranged from 1.78 to 2.13 and the four-year average is 1.90. The maximum day production for each year occurred on August 4, 2017, July 30, 2018, September 9, 2019, and July 25, 2020.

TABLE 2-2 Maximum Day to Average Day Factor

Year	Maximum Day Production (MGD)	Average Day Production (MGD)	Peaking Factor
2017	3.74	1.75	2.13
2018	3.30	1.73	1.91
2019	3.17	1.78	1.78
2020	3.41	1.89	1.80
2017-2020 Average Peaking Factor			1.90

CITY WATER SALES

City Water Sales by Customer Class

Chehalis has the following two customer classes:

- Residential: Water services to a single-family dwelling unit or a water service for residential lawn sprinkling that are obtaining or using service from the water system of the city.
- Commercial: Water services to businesses engaged in the manufacture and/or sale of a commodity or commodities or the rendering of a service, hotels, motels, schools, hospitals, multiple-dwelling units and public office buildings that are obtaining or using service from the water system of the city. The commercial class contains any customer not classified as residential.

Monthly water sales by customer class are shown in Figure 2-2. Commercial customers account for approximately 70% of the total water volume sold and residential customers account for the remaining 30%.

FIGURE 2-2 Monthly Water Sales by Customer Class

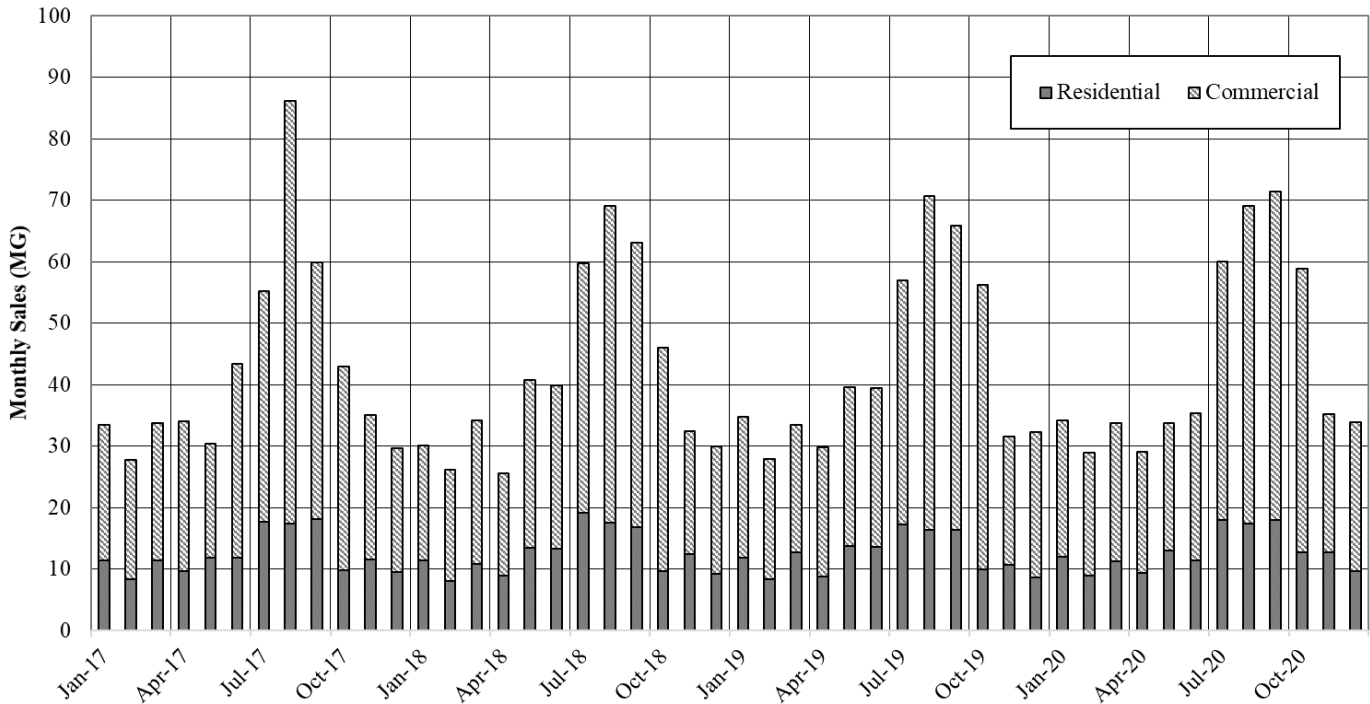
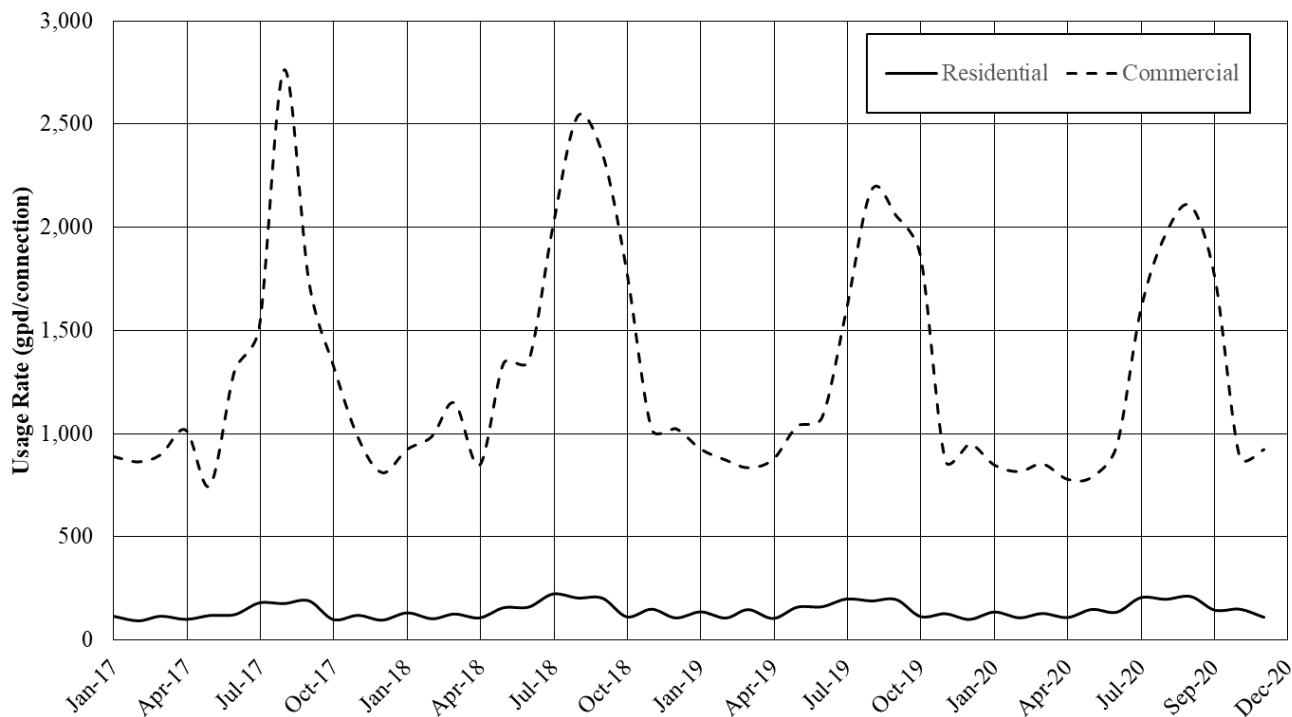


Figure 2-3 shows water use rates by customer class in gallons per day (gpd) per connection. The figure shows commercial customers have a larger usage rate than residential customers and both customer classes have seasonally higher usage rates in the summer and fall. The lowest month residential usage rate was 93 gpd per connection in February of 2017; the highest month residential usage rate was 221 gpd per connection in July of 2018; and the average monthly residential usage rate is 142 gpd per connection. The lowest month commercial usage rate was 746 gpd per connection in May of 2017; the highest month commercial usage rate was 2,763 gpd per connection in August of 2017; and the average commercial usage rate is 1,282 gpd per connection.

FIGURE 2-3 Water Use Rates by Customer Class



DISTRIBUTION SYSTEM LEAKAGE

Distribution System Leakage (DSL) is defined in the Water Use Efficiency Rule as the difference between total water production and authorized water consumption. Monthly DSL is shown in Figure 2-4. The Water Use Efficiency Rule sets a standard of a maximum DSL of 10 percent of production based on a 3-year rolling average. If this standard is exceeded, the water system must take action to reduce DSL, see Chapter 4. Total annual water production, total metered City water sales, DSL, annual percent DSL, and 3-year running average percent DSL are summarized in Table 2-3.

The rolling average for the most recent 3 years of 2018 through 2020, shows distribution system leakage has been 17.4% of water production.

FIGURE 2-4 Monthly Distribution System Leakage

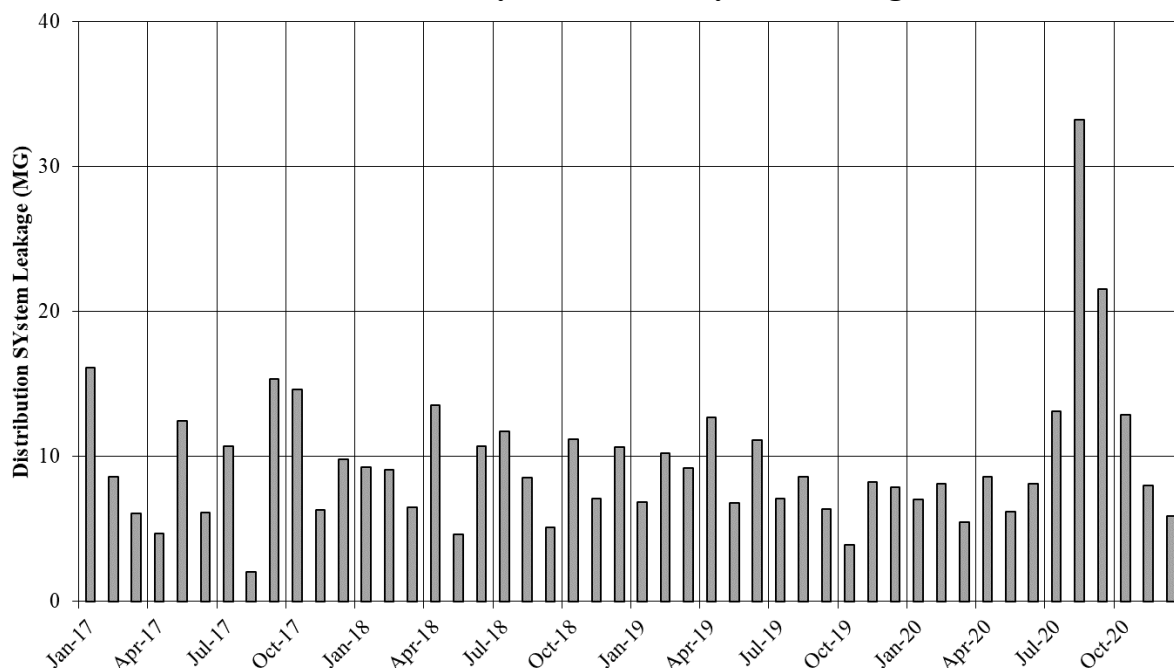


TABLE 2-3 Distribution System Leakage

Year	Water Produced (MG) ¹	Authorized Consumption (MG)			Distribution System Leakage		
		Billed Consumption ²	Unbilled Consumption ³	Filter Backwash ¹	MG	Percent	Three-Year Running Average Percent
2015 ⁴	635.25	522.47			112.78	17.8%	-
2016 ⁴	661.06	539.35			121.71	18.4%	-
2017	640.41	511.63	0.66	15.12	113.00	17.6%	17.9%
2018	634.20	496.60	13.72	15.75	108.13	17.0%	17.7%
2019	652.20	518.76	13.48	20.88	99.08	15.2%	16.6%
2020	692.84	523.28	8.00	23.18	138.38	20.0%	17.4%

- (1) Data Source: Water Treatment Plant Monthly Report Forms except 2015 and 2016
- (2) Data Source: Utility Billing Consumption Service Rate Monthly Forms except 2015 and 2016, results normalized for meter reading occurring after actual usage.
- (3) Unbilled consumption represents tracked or estimated water usage from fire hydrants, construction, or other uses. Data Source: yearly spreadsheets provided by the city except 2015 and 2016.
- (4) 2015 and 2016 Data Source: production and consumption spreadsheet provided by the city. Authorized Consumption was not separated into categories.

CITY WATER SYSTEM DEMAND FACTORS

Average Day Demand

The Water System Design Manual defines Average Day Demand (ADD) as the average day usage per connection of the residential connections on the subject water system. Use

of Equivalent Residential Units (ERUs) is a way to express water use by non-residential customers as an equivalent number of residential customers. The value of an ERU for a given system is calculated by dividing the volume of water utilized in the residential customer classes by the number of residential units served. This number defines the average day residential water use, or one ERU.

When water sales data is available, actual system data should be used for planning. When production data is not available the DOH Water System Design Manual recommends that average day water demand per residential connection be estimated based off rainfall and provides 3 equations as follows:

Equation II-1: Hyperbolic Function

$$ADD = (8000/AAR) + 200$$

ADD = average day demand (gpd/ERU)
AAR = average annual rainfall (in/yr)

Equation II-2: Power Function

$$ADD = 2,500/(AAR)^{1/2}$$

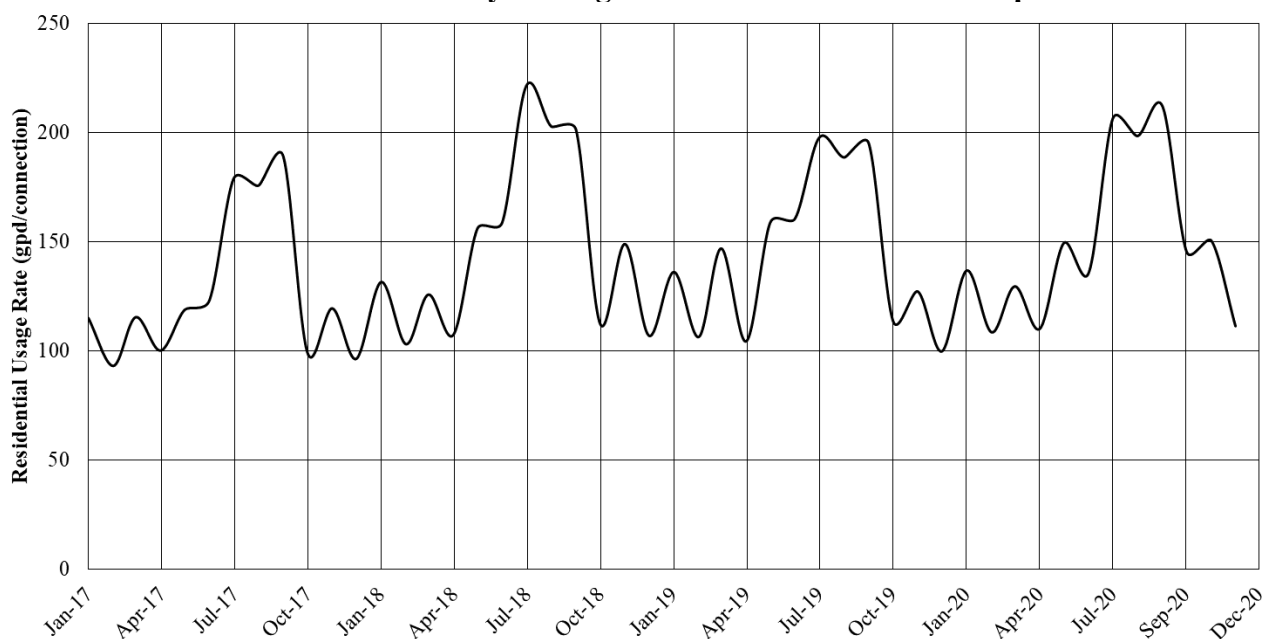
Equation II-3: Modified Power Function

$$ADD = [1,350/(AAR)^{1/2}] + 200$$

Chehalis receives 50 inches of precipitation per year at the nearest weather observing station. Using this value for AAR, Equations II-1, II-2, and II-3 yield 360.0 gpd/ERU, 353.6 gpd/ERU, and 390.9 gpd/ERU respectively. These values are used as a comparison; however, since water use data is available, ADD will be determined from the data. Taking each month's total residential water sales in gallons and dividing it by the total number of residential connections for that year and the total number of days for that month yields the monthly residential water use rate per ERU shown in Figure 2-5.

For 2017, 2018, 2019 and 2020 the single-family residential water use has been 127.2, 148.3, 144.9, and 149.7 gallons per day (gpd) per connection. The 2012 WSP used 140 gallons per day per ERU for average day demand. The data shows a steady daily use rate, on a per-connection basis, for residential water users over the last three years with values slightly higher than the last WSP. The average water use per residential connection over the data period is 142.2 gpd per ERU and the average water use per residential connection over the last 3 years is 147.1 gpd per ERU. This WSP will utilize **150 gpd per ERU for the total system residential average day demand** when projecting future average day water demands. Using this conservative value will account for any unoccupied or temporarily vacant homes that cannot be tracked.

FIGURE 2-5 Monthly Average Residential Water Demand per ERU



Maximum Day Demand

Maximum Day Demand (MDD) is defined in the DOH Water System Design Manual as the maximum day demand of the average residential water system connection, or ERU. Since daily residential water service meter data is generally not available, MDD is often estimated based on maximum day production data. As shown in Table 2-2, the maximum day to average day production peaking factor for 2017 to 2020 is 1.90. This WSP will utilize **285 gpd per ERU for the total system residential maximum day demand** (150 gpd per connection x 1.90). For comparison, the previous 2012 WSP used an average day to maximum day production peaking factor of 1.98 and an MDD of 277 gpd per ERU.

Peak Hour Demand

Peak Hour Demand (PHD) is a value that applies to either the system as a whole or pressure zones, not to any individual service. PHD is determined using Equation 5-3 from the DOH Water System Design Manual, which is as follows:

Equation II-4: Peak Hour Demand

$$PHD = (MDD / 1,440) [(C)(N) + F] + 18$$

PHD = Peak Hour Demand, gallons per minute.

C = Coefficient from Water System Design Manual Table 5-1

N = Number of ERUs served

F = Factor from Water System Design Manual Table 5-1

MDD = Maximum Day Demand per ERU, gallons per day

For a water system with more than 500 ERU's, C and F are 1.6 and 225, respectively. As derived above, MDD for Chehalis' water system is 285 gpd per ERU. Inserting these numbers into the above equation yields the following:

$$\text{PHD} = (285 / 1,440) [(1.6) (N) + 225] + 18$$

$$\text{PHD} = \mathbf{0.317 N + 62.5}$$

A peak hour demand equation is also developed for each individual pressure zone. The City of Chehalis provided a breakdown of the number of customer connections in each zone in the year 2020, see Pressure Zones in Chapter 1. To determine the number of ERU's in each zone, customer or non-residential connections were converted into ERU's using a factor of 3,923 ERU's divided by 838 connections and the top 10 largest non-residential connections were converted into ERU's using a factor of 2,800 ERU's divided by 10 connections, see Table 2-4 below. Non-revenue ERU's were then calculated by multiplying the residential and non-residential ERU's by the 2020 non-revenue percent of consumption of 32.4%, see Table 2-4 below.

For the Main Zone, there are over 500 ERU's and the PHD equation is the same as the total system PHD equation. For the High-Level Zone, there are 139 residential connections and 45 non-revenue ERU's totaling 184 ERU's. For the Valley View/Fairview Zone, there are 121 residential connections and 39 non-revenue ERU's totaling 160 ERU's. For the South End Zone, there are 200 residential connections, 3 non-residential connections (14 ERU's), and 69 non-revenue ERU's totaling 283 ERU's. For the Centralia Alpha Zone, there are 39 residential connections and 13 non-revenue ERU's totaling 52 ERU's.

The High-Level and Valley View/Fairview Pressure Zones have between 101 and 250 ERU's and C and F are 2.0 and 75 respectively. Inserting these numbers into the PHD equation yields the following:

$$\text{PHD} = (285 / 1,440) [(2.0) (N) + 75] + 18$$

$$\text{PHD} = \mathbf{0.396 N + 32.8}$$

The South End Pressure Zone has between 251 and 500 ERU's and C and F are 1.8 and 125 respectively. Inserting these numbers into the PHD equation yields the following:

$$\text{PHD} = (285 / 1,440) [(1.8) (N) + 125] + 18$$

$$\text{PHD} = \mathbf{0.356 N + 42.7}$$

The Centralia Alpha Pressure Zone has between 51 and 100 ERU's and C and F are 2.5 and 25 respectively. Inserting these numbers into the PHD equation yields the following:

$$\text{PHD} = (285 / 1,440) [(2.5) (N) + 25] + 18$$

$$\text{PHD} = \mathbf{0.495 N + 22.9}$$

Equivalent Residential Units

The volume of water used by non-residential customer classes and other categories can be divided by the average single-family residential water use to determine the number of equivalent residential units utilized by the other customer classes or categories. The number of ERUs represented by non-residential users will change from year to year because commercial users do not use the same amount of water every year. The definition of an ERU will also change from year to year because residential users do not use the same amount of water every year. Since the definition of an ERU is the average residential water use over a data period, the total residential water use in any given year will not necessarily match the total number of residential connections multiplied by the water use per ERU. Therefore, the ERU estimates should not be used as exact predictors of water use in any given year, but rather as an estimate of the capacity of the water system to support additional water users. The number of ERUs for all City customer classes and DSL are shown in Table 2-4.

Water use factors are calculated for three customer categories: residential, non-residential, and large non-residential as defined in the footnotes of Table 2-4. Table 2-4 shows the inputs and the results of the calculations.

TABLE 2-4 2020 Water Use Factors and ERU's

Customer Category	Usage (gpd) ⁽⁴⁾	Connections	Usage Rate Per Connection (gpd)	ERUs ⁽⁶⁾
Residential ⁽¹⁾	421,357	2,815	150 ⁽⁵⁾	2,815
Non-Residential ⁽²⁾	588,482	838	702	3,923
Large Non-Residential ⁽³⁾	419,986	10	4,199	2,800
Unbilled including Filter Backwash	85,209	-	-	568
DSL	378,044	-	-	2,520
Total	1,893,079	3,663	-	12,621

(1) This includes single family residential.

(2) This includes commercial, industrial, and multi-family uses, excluding the top 10 users.

(3) Large Non-Residential Users represent the top 10 non-residential users connected to the system.

(4) Data Source: Utility Billing Account History Reports for each customer.

(5) See the Average Day Demand section.

(6) Except for the residential customer category (which was determined in the Average Day Demand section), the number of ERUs is calculated by dividing that customer category's usage by the ERU value.

PROJECTED DEMANDS

To estimate future water system demands, the historic demand factors developed above, historic growth rates, and official population projections provided by planning agencies are utilized.

CITY GROWTH RATES

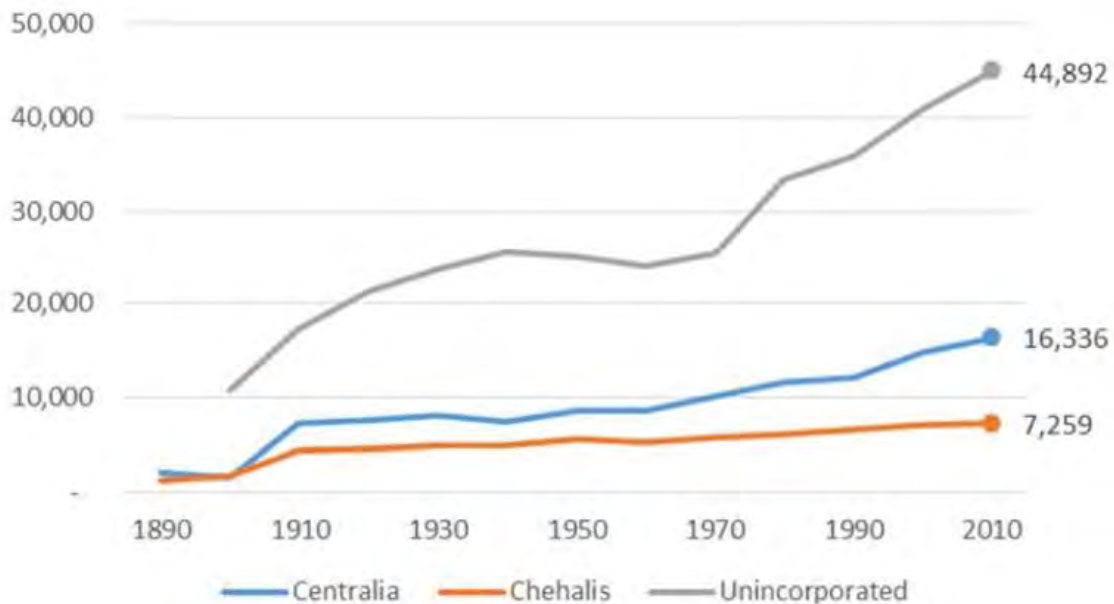
Two demographic units were analyzed for this water system plan. The demographic units are listed below, and information is provided regarding how the demographic units relate to the demand forecast.

- Population: Population growth is presented to provide the growth context and is used as the basis for growth projections where other variables are not forecasted directly.
- Single-Family Households: The number of single-family households is the demographic unit used for the residential component of the demand forecast.

Historic City Population

Figure 2-6, taken from the Lewis County Comprehensive Plan – Economic Development (Lewis County ED-1), shows the historic population estimate for the City of Chehalis. As Figure 2-6 shows, growth has been relatively steady over time. According to the City of Chehalis’ 2017 Comprehensive Plan, this steady growth pattern has meant that the city has grown more slowly during economic booms and has declined only moderately during economic downturns. Such a pattern is common in areas with a diverse economy, such as Chehalis. The largest sectors of the Chehalis economy are government, wholesale and retail trade, and manufacturing.

FIGURE 2-6 Historic Population



(1) Figure from Lewis County Comprehensive Plan – Economic Development (Lewis County ED-1)

City Water Service Connections

Table 2-5 shows end of the year residential, commercial, and total service connections and the associated growth rates. The data shows large deviations and total connections have decreased overall from 2015 to 2020. Because of the inconsistency of the service connection data, using the population growth rate to project future demand is a better approach.

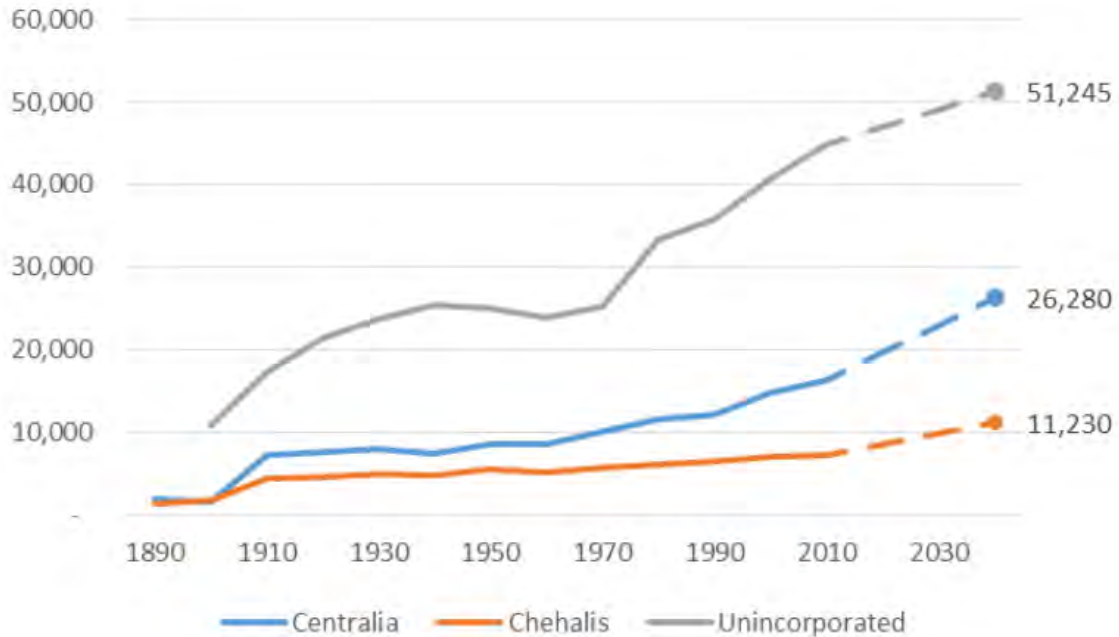
TABLE 2-5 Year-End Service Connections

Year	Residential Connections	Residential Growth Rate	Commercial Connections	Commercial Growth Rate	Total Connections	Total Growth Rate
2015	3,166		791		3,957	
2016	3,134	-1.0%	808	2.1%	3,942	-0.4%
2017	3,201	2.1%	802	-0.7%	4,003	1.5%
2018	2,784	-13.0%	655	-18.3%	3,439	-14.1%
2019	2,804	0.7%	803	22.6%	3,607	4.9%
2020	2,815	0.4%	848	5.6%	3,690	2.3%

Projected City Growth Rate

The City of Chehalis has adopted Lewis County’s growth projections. Figure 2-7, taken from the Lewis County Comprehensive Plan – Economic Development (Lewis County ED-2), shows Chehalis’ historic growth projected at an annual growth rate of 1.465%. The City of Chehalis has developed an Urban Growth Area (UGA) shown in Figure 1-5. This UGA is considered when projecting demands and a large industrial allowance, as discussed in the below Projected Demand section is applied to this WSP’s 20-year planning period. All other areas in the City’s UGA are considered to correlate with the Lewis County growth projections.

FIGURE 2-7 Projected Growth Rate



(1) Figure from Lewis County Comprehensive Plan – Economic Development (Lewis County ED-2)

PROJECTED DEMANDS

The City of Chehalis Water System demand projections are shown in Tables 2-7 and 2-8. Table 2-7 shows demand projections without water use conservation and Table 2-8 shows demand projections with water use conservation as discussed in Chapter 4. Appendix G contains 50-year Maximum Day Demand projections. Average Day Demands are forecasted for the residential, non-residential, and large non-residential customer categories, as defined in the Equivalent Residential Units section, using the base year of 2020 and the annual City of Chehalis growth rate from Lewis County of 1.465%. For the residential category, the number of connections or ERU's is forecasted at the City of Chehalis growth rate, then converted into demand by multiplying by 150 gpd per connection, see the Average Day Demand section.

Customers with large water demands are of interest because their demand could have significant impact on the overall demand for Chehalis. Therefore, Chehalis' 10 largest customers were reviewed to determine whether they require special treatment for the demand forecast. Special treatment was deemed appropriate for one customer, Chehalis Power, which is one of Chehalis' largest customers. Chehalis Power is the only customer with a water purchase contract that could have significant impacts on the City's water production if the full contract terms are exercised since the contract defines a maximum day amount of water to be made available on demand for Chehalis Power. Chehalis Power's water use comprised approximately 17% of Chehalis' total sales and approximately 24% of the non-residential consumption for the years 2019 and 2020. Chehalis Power used greater than the average daily use limit for the years 2019 and 2020.

For demand projection purposes, Chehalis Power ADD will be projected from the current usage amount at an annual rate of 1.465% and the full contract terms will be used to represent Chehalis Power's MDD component.

An allowance for large industrial demands is included, to reflect the possibility of unspecified water use associated with industrial expansion. For planning purposes, this allowance is calculated by applying an industrial unit demand factor of 1,500 gpd per acre to all industrial zoned land that has not yet been developed within both the City Limits and the UGA. Google maps was used in July 2021 to identify approximately 730 acres of undeveloped industrial zoned area as shown in the Figure 1-5 Zoning Map. This results in an allowance of 1.1 mgd. This amount is assumed to be same for both ADD and MDD (i.e., the maximum day and peak hour peaking factors are not applied to it). This amount includes non-revenue water, and the non-revenue percentage does not include this amount. Source: Wastewater Engineering Treatment and Reuse, Fourth Edition; Metcalf and Eddy. From pages 162-163, typical design values for industrial developments range from 1,000 to 1,500 gpd per acre for light industrial, to 1,500 to 3,000 gpd per acre for medium industrial. For planning purposes, Chehalis has assumed potential future industrial development at the upper end of light and lower end of medium industrial water usage (1,500 gpd per acre).

The sum of all demands is multiplied by the 2020 average of non-revenue usage of 32.4% as a percent of billed consumption. Non-revenue water includes unbilled consumption, filter backwash, and DSL as shown in Table 2-3.

Maximum day demands were calculated by multiplying the average day demands, excluding Chehalis Power and the large industrial allowance, by the maximum day demand to average demand factor of 1.90, developed in Table 2-2. The full contract maximum day demand for Chehalis Power of 0.85 mgd was then used to develop the total maximum day demand.

The conservation adjustment in Table 2-8 was projected using the following two goals as described in Chapter 4:

- Reduce seasonal water use by 3% in May, June, July, and August.
- Actively eliminate 2-3% of DSL on a yearly basis to achieve the DSL standard of 10% within 4 to 5 years. For projecting demand, a 2% annual DSL reduction is used.

A seasonal water reduction of 3% results in a smaller than 3% percent annual reduction. Data from the years 2017 to 2020 is used to predict how a seasonal water reduction of 3% effects the percent annual reduction. If a seasonal water reduction of 3% during the years 2017 to 2020 occurred, it would result in an average annual water reduction of 1.2%. This annual percent water reduction was then applied to all customer usage including single family residential, non-residential, large non-residential, and Chehalis Power.

An annual DSL reduction of 2% would appear as a reduction to the non-revenue column in Table 2-6. Non-revenue water includes filter backwash, authorized consumption, and DSL as a percentage of consumption. DSL as a percent of consumption is slightly higher than DSL as a percent of production and needs to be translated before applying it to demand projections. Using 2017 to 2020 data, a 2% reduction in DSL as a percent of production results in a 2.5% reduction in DSL as a percent of production. Table 2-6 shows projected reduction in DSL as a percent of production, the corresponding reduction in DSL as a percent of consumption, and the corresponding reduction in non-revenue water beginning in 2021 until the DSL standard of 10% is achieved in 2027.

TABLE 2-6 Effects on Non-Revenue Water by Achieving the DSL Standard

Year	DSL (% of Production)	3-year rolling average DSL (% of Production)	DSL (% of Consumption)	Non-Revenue (% of Consumption)
2020	20.0%	17.4%	26.4%	32.4%
2021	18.0%	17.7%	23.9%	29.9%
2022	16.0%	18.0%	21.4%	27.4%
2023	14.0%	16.0%	18.9%	24.9%
2024	12.0%	14.0%	16.4%	22.4%
2025	10.0%	12.0%	13.9%	19.9%
2026	10.0%	10.7%	12.4%	18.4%
2027	10.0%	10.0%	12.4%	18.4%

TABLE 2-7 Projected Demands without Conservation

Year	Single Family Residential ERUs ⁽¹⁾	ADD (mgd)							MDD (mgd)			
		Single Family Residential ⁽²⁾	Non-Residential ⁽³⁾	Chehalis Power ⁽⁴⁾	Large Non-Residential ⁽⁵⁾	Total Non-Residential	Subtotal	Non-Revenue ⁽⁶⁾	Total	MDD less Chehalis Power ⁽⁷⁾	Chehalis Power	Total
2020	2,815	0.42	0.59	0.24	0.42	1.01	1.43	0.46	1.89	-	-	3.60
2021	2,856	0.43	0.60	0.24	0.43	1.02	1.45	0.47	1.92	3.19	0.85	4.04
2022	2,898	0.43	0.61	0.24	0.43	1.04	1.47	0.48	1.95	3.24	0.85	4.09
2023	2,941	0.44	0.61	0.25	0.44	1.05	1.49	0.48	1.98	3.29	0.85	4.14
2024	2,984	0.45	0.62	0.25	0.45	1.07	1.52	0.49	2.01	3.34	0.85	4.19
2025	3,027	0.45	0.63	0.26	0.45	1.08	1.54	0.50	2.04	3.38	0.85	4.23
2026	3,072	0.46	0.64	0.26	0.46	1.10	1.56	0.51	2.07	3.43	0.85	4.28
2027	3,117	0.47	0.65	0.26	0.46	1.12	1.58	0.51	2.10	3.48	0.85	4.33
2028	3,162	0.47	0.66	0.27	0.47	1.13	1.61	0.52	2.13	3.54	0.85	4.39
2029	3,209	0.48	0.67	0.27	0.48	1.15	1.63	0.53	2.16	3.59	0.85	4.44
2030	3,256	0.49	0.68	0.28	0.49	1.17	1.65	0.54	2.19	3.64	0.85	4.49
2031	3,303	0.50	0.69	0.28	0.49	1.18	1.68	0.54	2.22	3.69	0.85	4.54
2032	3,352	0.50	0.70	0.28	0.50	1.20	1.70	0.55	2.26	3.75	0.85	4.60
2033	3,401	0.51	0.71	0.29	0.51	1.22	1.73	0.56	2.29	3.80	0.85	4.65
2034	3,451	0.52	0.72	0.29	0.51	1.24	1.75	0.57	2.32	3.86	0.85	4.71
2035	3,501	0.53	0.73	0.30	0.52	1.25	1.78	0.58	2.36	3.91	0.85	4.76
2036	3,553	0.53	0.74	0.30	0.53	1.27	1.81	0.59	2.39	3.97	0.85	4.82
2037	3,605	0.54	0.75	0.30	0.54	1.29	1.83	0.59	2.43	4.03	0.85	4.88
2038	3,657	0.55	0.76	0.31	0.55	1.31	1.86	0.60	2.46	4.09	0.85	4.94
2039	3,711	0.56	0.78	0.31	0.55	1.33	1.89	0.61	2.50	4.15	0.85	5.00
2040	3,765	0.56	0.79	0.32	0.56	2.45 ⁽⁸⁾	3.01 ⁽⁸⁾	0.62 ⁽⁹⁾	3.63 ⁽⁸⁾	5.31 ⁽⁸⁾	0.85	6.16 ⁽⁸⁾

(1) 2020 residential ERU's from Table 2-4 projected at the City of Chehalis annual growth rate of 1.465%.

(2) Projected residential ERU's multiplied by 150 gpd/ERU developed in the Average Day Demand section.

(3) 2020 non-residential usage from Table 2-4 projected at the City of Chehalis annual growth rate of 1.465%.

(4) 2020 Chehalis Power usage projected at the City of Chehalis annual growth rate of 1.465%.

(5) 2020 large non-residential usage from Table 2-4 projected at the City of Chehalis annual growth rate of 1.465%. This value includes Chehalis Power.

(6) Subtotal multiplied by the 2020 percent, non-revenue water of 32.4% as discussed in the above section. Non-revenue water includes authorized consumption, filter backwash, and DSL shown in Table 2-3.

(7) ADD excluding Chehalis Power is multiplied by the MDD to ADD factor of 1.90 developed in the Maximum Day Demand section.

(8) Includes an allowance for large industrial demands beginning in the year 2040 of 1.1 mgd as discussed in the above section. This amount applies for both ADD and MDD and does not use a peaking factor.

(9) The large industrial allowance is not included in non-revenue percentage calculations because this amount already accounts for non-revenue losses.

TABLE 2-8 Projected Demands with Conservation

Year	Single Family Residential ERUs ⁽¹⁾	ADD (mgd)							MDD (mgd)			
		Single Family Residential ⁽²⁾	Non-Residential ⁽³⁾	Chehalis Power ⁽⁴⁾	Large Non-Residential ⁽⁵⁾	Total Non-Residential	Subtotal	Non-Revenue ⁽⁶⁾	Total	MDD less Chehalis Power ⁽⁷⁾	Chehalis Power	Total
2020	2,815	0.42	0.59	0.24	0.42	1.01	1.43	0.46	1.89	-	-	3.60
2021	2,856	0.42	0.59	0.24	0.42	1.01	1.43	0.43	1.86	3.09	0.85	3.94
2022	2,898	0.43	0.60	0.24	0.43	1.03	1.46	0.40	1.85	3.06	0.85	3.91
2023	2,941	0.44	0.61	0.25	0.43	1.04	1.48	0.37	1.84	3.04	0.85	3.89
2024	2,984	0.44	0.62	0.25	0.44	1.06	1.50	0.34	1.83	3.01	0.85	3.86
2025	3,027	0.45	0.63	0.25	0.45	1.07	1.52	0.30	1.82	2.98	0.85	3.83
2026	3,072	0.46	0.63	0.26	0.45	1.09	1.54	0.28	1.83	2.98	0.85	3.83
2027	3,117	0.46	0.64	0.26	0.46	1.10	1.56	0.29	1.85	3.03	0.85	3.88
2028	3,162	0.47	0.65	0.26	0.47	1.12	1.59	0.29	1.88	3.07	0.85	3.92
2029	3,209	0.48	0.66	0.27	0.47	1.14	1.61	0.30	1.91	3.12	0.85	3.97
2030	3,256	0.48	0.67	0.27	0.48	1.15	1.63	0.30	1.94	3.16	0.85	4.01
2031	3,303	0.49	0.68	0.28	0.49	1.17	1.66	0.31	1.96	3.21	0.85	4.06
2032	3,352	0.50	0.69	0.28	0.49	1.19	1.68	0.31	1.99	3.25	0.85	4.10
2033	3,401	0.50	0.70	0.28	0.50	1.20	1.71	0.31	2.02	3.30	0.85	4.15
2034	3,451	0.51	0.71	0.29	0.51	1.22	1.73	0.32	2.05	3.35	0.85	4.20
2035	3,501	0.52	0.72	0.29	0.52	1.24	1.76	0.32	2.08	3.40	0.85	4.25
2036	3,553	0.53	0.73	0.30	0.52	1.26	1.78	0.33	2.11	3.45	0.85	4.30
2037	3,605	0.53	0.74	0.30	0.53	1.28	1.81	0.33	2.14	3.50	0.85	4.35
2038	3,657	0.54	0.76	0.31	0.54	1.29	1.84	0.34	2.17	3.55	0.85	4.40
2039	3,711	0.55	0.77	0.31	0.55	1.31	1.86	0.34	2.21	3.60	0.85	4.45
2040	3,765	0.56	0.78	0.31	0.55	2.43 ⁽⁸⁾	2.99 ⁽⁸⁾	0.35 ⁽⁹⁾	3.34 ⁽⁸⁾	4.76 ⁽⁸⁾	0.85	5.61 ⁽⁸⁾

(1) 2020 residential ERU's from Table 2-4 projected at the City of Chehalis annual growth rate of 1.465%.

(2) Projected residential ERU's multiplied by 150 gpd/ERU developed in the Average Day Demand section and reduced by an annual water usage of 1.2% as developed in the above section.

(3) 2020 non-residential usage from Table 2-4 projected at the City of Chehalis annual growth rate of 1.465% and reduced by an annual water usage of 1.2% as developed in the above section.

(4) 2020 Chehalis Power usage projected at the City of Chehalis annual growth rate of 1.465% and reduced by an annual water usage of 1.2% as developed in the above section.

(5) 2020 large non-residential usage from Table 2-4 projected at the City of Chehalis annual growth rate of 1.465% and reduced by an annual water usage of 1.2% as developed in the above section. This value includes Chehalis Power.

(6) Subtotal multiplied by the percent non-revenue water as shown in Table 2-6. After the year 2026, this percentage remains steady at 18.4%. Non-revenue water includes authorized consumption, filter backwash, and DSL shown in Table 2-3.

(7) ADD excluding Chehalis Power is multiplied by the MDD to ADD factor of 1.90 developed in the Maximum Day Demand section.

(8) Includes an allowance for large industrial demands beginning in the year 2040 of 1.1 mgd as discussed in the above section. This amount applies for both ADD and MDD and does not use a peaking factor.

(9) The large industrial allowance is not included in non-revenue percentage calculations because this amount already accounts for non-revenue losses.

Projected Demands per Zone

In addition to the total system ADD and MDD demand projections, ADD, MDD, and PHD projections are developed per zone for the 10- and 20-year planning periods and are used in Chapter 3 – System Analysis. These demands are provided in Table 2-9. ADD is calculated by projecting the ERU’s per zone given in the Peak Hour Demand section by the annual growth rate of 1.465% and multiplying the ERU’s by 150 gpd/ERU as calculated under the Average Day Demand section. The ADD’s were then totaled to verify they equal the ADD shown in Table 2-7.

MDD is calculated by multiplying the ERU’s per zone, excluding ERU’s from Chehalis Power, by 285 gpd/ERU as calculated under the Maximum Day Demand section. For the year 2030 and 2040, 0.85 mgd is then added to the MDD for Chehalis Power as discussed in the preceding section. The MDD’s were then totaled to verify they equal MDD shown in Table 2-7.

PHD is calculated by inserting the ERU’s per zone into each pressure zone’s peak hour demand equation as developed in the Peak Hour Demand section. The PHD equation uses ERU’s based on MDD. The number of ERU’s used for Chehalis Power in the Main Zone is 2,982 which is calculated by dividing the MDD for Chehalis Power (0.85 mgd) by 285 gpd/ERU. The total system PHD will not equal the sum of each zone peak hour demands because each zone has a different peaking factor.

All industrial areas used to calculate the allowance for large industrial demands as discussed in the previous section are within the Main Pressure Zone. For the year 2040 demands, 1.1 mgd (764 gpm) was added to ADD, MDD, and PHD. As discussed in the preceding section, this allowance does not have any associated peaking factors.

TABLE 2-9 Projected Demands per Zone

Zone	2020 Demands			2030 Demands			2040 Demands		
	ADD (mgd)	MDD (mgd)	PHD (gpm)	ADD (mgd)	MDD (mgd)	PHD (gpm)	ADD (mgd)	MDD (mgd)	PHD (gpm)
Main	1.79	3.41	3,850	2.07	4.27	4,807	3.50	5.90	6,165
High-Level	0.03	0.05	106	0.03	0.06	117	0.04	0.07	130
Valley View/Fairview	0.02	0.05	96	0.03	0.05	106	0.03	0.06	118
South End	0.04	0.08	144	0.05	0.09	159	0.05	0.11	178
Centralia Alpha	0.01	0.01	48	0.01	0.02	52	0.01	0.02	57
Total	1.89	3.60	4,065	2.19	4.49	5,056	3.63	6.16	6,453

Chapter 3

WATER SYSTEM ANALYSIS

CHAPTER 3 - WATER SYSTEM ANALYSIS

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APPENDICES

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Appendix I	Pipe Age Inventory and KYPipe Hydraulic Modeling Reports

OBJECTIVE

The objective of this chapter is to determine system improvements necessary to meet water quality standards and to meet projected demands. This chapter includes the following elements: system design standards; water quality analysis; system description and analysis; and summary of system deficiencies.

SYSTEM DESIGN STANDARDS

The standards for planning and design of the Chehalis Water System are based on state regulatory and commonly accepted standards including the following:

- WAC 246-290, Group A Public Water Systems, Washington State Board of Health (March 19, 2019): This is the primary drinking water regulation used by the Washington State Department of Health (DOH). This regulation sets basic standards to assess capacity, water quality, and system reliability.
- Water System Design Manual DOH Publication 331-123, Washington State Department of Health (June 2020): These standards serve as guidance for the preparation of plans and specifications for Group A public water systems in compliance with WAC 246-290.
- Recommended Standards for Water Works, A Committee Report of the Great Lakes – Upper Mississippi River Board of State Public Health and Environmental Manager (2007): Commonly known as the Ten States Standards, this document formalizes the design standards recommended by a water supply committee representing ten Midwestern and upper Great Lake States and the Province of Ontario. The report of the Water Supply Committee was first published in 1953, and subsequently revised and published in 1962, 1968, 1976, 1982, 1992, 1997, 2003, 2007, 2012, and 2018. The report presents recommendations for both design and construction standards; however, the construction standards are somewhat general in nature with minor emphasis on materials specifications. Since surface water treatment is quite common in the Midwest and Upper Great Lakes, the Committee report tends to concentrate on water treatment plant design and operation.
- Standard Specifications for Road, Bridge, and Municipal Construction, Washington State Department of Transportation, American Public Works Association (2021): These standards include detailed specifications for materials and workmanship of a wide variety of public works projects, including installation of public water facilities.
- City of Chehalis Development Guidelines and Public Works Standards: These standards include detailed specifications for materials and workmanship for installation of public water facilities. Appendix C contains a copy of these standards.

WATER QUALITY ANALYSIS

The following sections evaluate the record of water quality for the Chehalis Water System. Water quality analysis is divided into five categories: Source Water Quality; Finished Water Quality; Delivered Water Quality; Water Quality Reporting; and Water Quality Complaints. The Source Water Quality sections contains summaries of both the city's raw water sources. The quality of treated water is discussed under the Finished Water Quality category. Water quality standards that apply to the water distribution systems, including coliform, lead and copper, disinfectant byproducts and asbestos are discussed under the Delivered Water Quality category. A review of water quality monitoring requirements relative to water quality monitoring completed is included under the Water Quality Reporting category, and a review of water quality problems and complaints is included under the Water Quality Complaints category.

WATER QUALITY PARAMETERS

As a Group A public water system, the City is required to follow Chapter 246-290 WAC that implements the Safe Drinking Water Act (SDWA). The City is required to comply with the monitoring requirements according to this chapter unless DOH allows the City to reduce these requirements. Monitoring frequencies may be decreased by DOH if the previous results show the concentrations of various contaminants are below 50% of the maximum contaminant level (MCL) for a given contaminant.

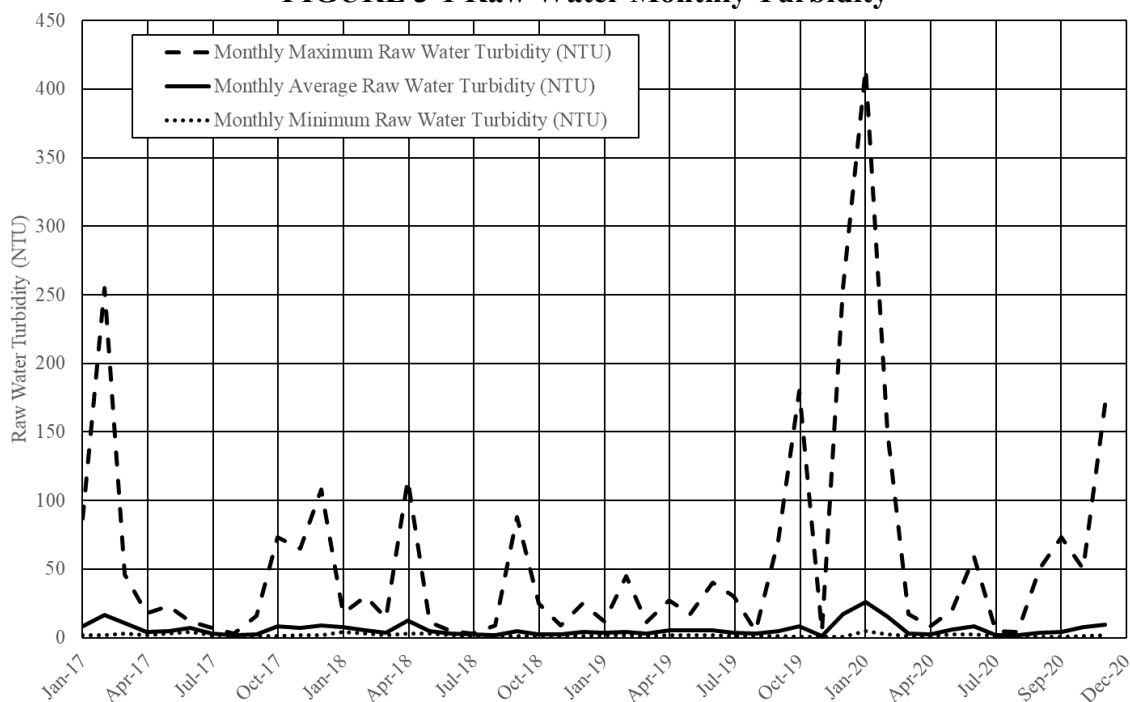
SOURCE WATER QUALITY

The City of Chehalis monitors raw surface water from both the North Fork of the Newaukum River and the Chehalis River. The point of monitoring is located at the entry to the water treatment plant only when the water treatment plant is running and may be different than the water quality from water taken directly from either the North Fork of the Newaukum River or the Chehalis River because water quality may change through the raw water transmission lines and the water is combined before sampling. Raw water is monitored for parameters such as turbidity, temperature, pH, and alkalinity. These parameters are recorded on Water Treatment Plant Monthly Report forms. Table 3-1 summarizes high, average, and low values for these parameters from January 2017 – December 2020. Figure 3-2 shows monthly maximum, average, and minimum raw water turbidity from January 2017 – December 2020. The data is highly variable and turbidity spikes occur more frequently in the fall and winter months.

TABLE 3-1 Raw Water Quality Data Summary

Parameter	Turbidity (NTU)	Temperature (°C)	pH
Minimum	0.6	5.0	5.7
Maximum	415.0	21.0	8.9
Average	6.1	13.0	7.2
Highest Monthly Average	26.2	19.0	7.5
Lowest Monthly Average	1.1	8.0	6.8

FIGURE 3-1 Raw Water Monthly Turbidity



Long Term 2 Enhanced Surface Water Treatment Rule

In 2003, the U.S. EPA published the proposed Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR). This rule is intended to provide additional protection against Cryptosporidium by requiring purveyors with susceptible raw water supplies to provide additional treatment. The rule required purveyors serving less than 10,000 people to measure E. coli levels in their raw water for one year or submit previously collected (grandfathered) data. For systems using a river as their primary source, if the average E. coli concentration was greater than 50 E. coli/100 mL, then the system was required to monitor their raw water for Cryptosporidium. If the Cryptosporidium trigger level is exceeded, the water system may be required to provide additional treatment. In addition, the LT2ESWTR requires all water systems with unfiltered surface water sources to install a second disinfectant or provide filtration and all uncovered finish water reservoirs to be treated or covered.

The City of Chehalis submitted E. coli monitoring data collected between August 2005 and September 2007 to Ecology. The data was accepted and the City was initially classified as Bin 1 meaning no additional treatment is required. Chehalis initiated the monitoring program for Cryptosporidium in April 2010. The sampling location is just upstream of river intake at the Chehalis River. The samples were collected and analyzed using USEPA method 1623. In April 2019, two samples were collected and analyzed. Cryptosporidium was not detected in those samples. Table 3-2 provides a schedule of the LT2 Rule requirements for Chehalis.

TABLE 3-2 Timeline for LT2ESWTR

Milestone	Date
LT2ESWTR is issued	January 4, 2006
E. coli monitoring results submitted to and accepted by Ecology	December 1, 2008
Begin 12 or 24 months of source water monitoring for Cryptosporidium	April 2010
Complete source water monitoring for Cryptosporidium	March 2012
Submit bin classification	September 2012
System must install and operate additional treatment in accordance with their bin classification	September 30, 2014
Begin second round of source water monitoring for E. coli and re-assess bin classification	October 1, 2017
Begin second round of monitoring for Cryptosporidium and re-assess bin classification	April 1, 2019

FINISHED WATER QUALITY

Turbidity

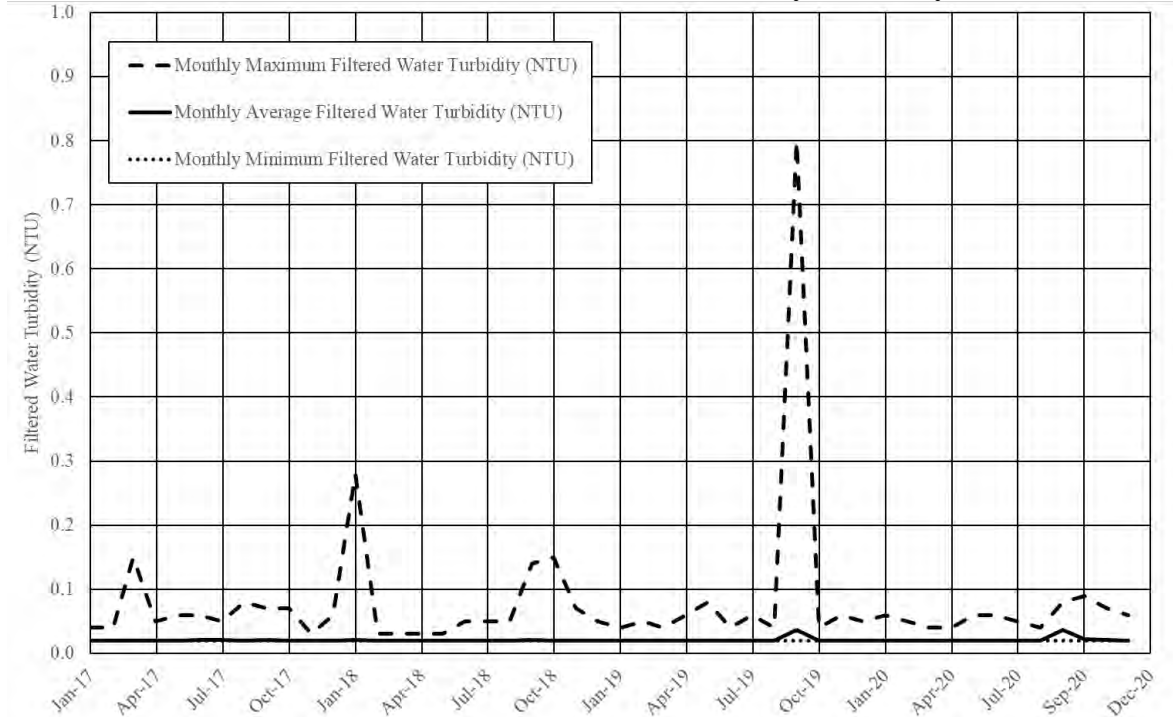
Finished water turbidity is regulated by the Interim Enhanced Surface Water Treatment Rule (IESWTR) issued in 2001 which superseded the Surface Water Treatment Rule (SWTR) issued in 1989. The IESWTR requires turbidity to be less than 0.3 nephelometric turbidity units (NTU) in at least 95 percent of turbidity measurements per month and to be less than 1.0 NTU for all turbidity measurements.

Finished water turbidity is reported on Water Treatment Plant Monthly Reports, and from these DOH prepares annual Surface Water Filtration Plant Performance reports. During water treatment plant operation, one sample is taken every four hours which means 6 samples are taken in a full 24-hour day of operation. Turbidity samples are averaged each day and the daily averages are averaged to give a monthly turbidity average. Water Treatment Plant Monthly Reports and Surface Water Filtration Plant Performance reports were reviewed from January 2017 through December 2020. The daily turbidity samples were reviewed to determine the minimum, average, and maximum turbidity readings for each month. Figure 3-2 shows monthly minimum, maximum and average finished water turbidities for the data period.

Except for September 2019, no finished water turbidity during the data period exceeded 0.3 NTU and all readings were below the required 1.0 NTU. The month of September 2019 was reviewed more closely, and 2.2 percent of the turbidity measurements exceeded 0.3 NTU which satisfies the requirement that 95 percent of turbidity measurements be less than 0.3 NTU.

Chehalis demonstrates treatment effectiveness for *Giardia lamblia* cyst and *Cryptosporidium* oocysts removal by filtration using the turbidity reduction method specified in WAC 246-290-654. This method requires systems to demonstrate either an 80% reduction in source water turbidity based on an average of daily turbidity reductions for each calendar month, or an average daily filtered turbidity less than or equal to 0.1 NTU. Chehalis operates their filtration plant to meet the average daily filtered 0.1 NTU criteria. As shown in Figure 3-2, average daily filtered turbidity is below 0.04 NTU between January 2017 – December 2020.

FIGURE 3-2 Finished Water Monthly Turbidity



Disinfection

Disinfection effectiveness is measured by Inactivation Ratio, which is the ratio of the cumulative CT provided to the CT required, where CT is the product of disinfectant concentration (C) and disinfectant contact time (T). The CT required is based on studies that have shown inactivation rates of various pathogenic micro-organisms in the presence of disinfectants. The CT required varies with water temperature, pH, and disinfectant concentration as well as other treatment processes provided. Thus, it is common to measure Inactivation Ratio in stages, using the CT required and the CT provided in each disinfection

stage with the cumulative inactivation ratios of all stages representing the total Inactivation Ratio of the disinfection process. A minimum Inactivation Ratio of 1 is required.

To meet disinfection performance criteria set in the SWTR, systems must provide at least 0.2 milligrams per liter (mg/L) of residual disinfectant at the distribution system entry point and a detectable level of disinfectant must be present throughout the distribution system. Chehalis continuously monitors disinfection residual chlorine at the distribution system entry point to ensure it stays above 0.2 mg/L, and at sites throughout the distribution system to ensure the presence of a disinfectant residual. A Chem-Trac chlorine analyzer is used to monitor the chlorine level at the distribution system entry point and will alert the operator at the plant if the level drops below 0.2-mg/L of free chlorine. This data is monitored through the water treatment plant SCADA system. The lowest disinfectant residual for the 24-hour period is recorded each day.

The City is required to maintain a detectable disinfectant residual throughout the distribution system or collect heterotrophic bacteria cultures (HBC). This is to be done daily unless approved by DOH. At a minimum, Chehalis is also required to measure a disinfectant residual at the same time and locations of routine or repeat total coliform samples.

The City of Chehalis completes and submits to DOH the monitoring form, “Washington State Department of Health SWTR Disinfection Monthly Report.” Copies of these reports from January 2017 - December 2020 were reviewed and are graphed in Figure 3-3 and 3-4 below. Inactivation ratios range from a maximum of 22.2 in May of 2018 to a minimum of 4.1 in August and September of 2020, with an overall average of 10.6. Figure 3-4 shows monthly average low finished water chlorine residual from January 2017 - December 2020. Monthly average low chlorine residual has remained fairly constant at approximately 0.9 mg/L. Chehalis had no treatment technique violations from January 2017 – December 2020 and is in compliance with the Surface Water Treatment Rules.

FIGURE 3-3 Disinfection Inactivation Ratios

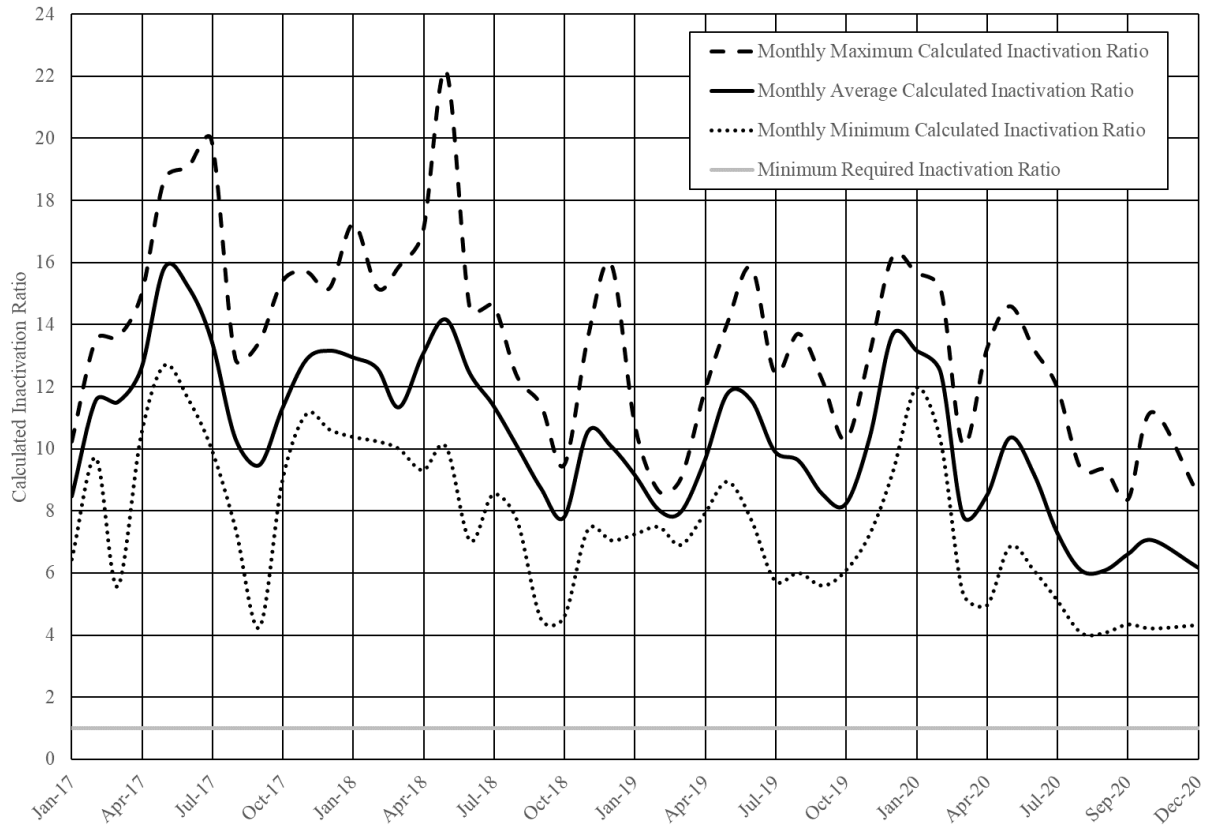
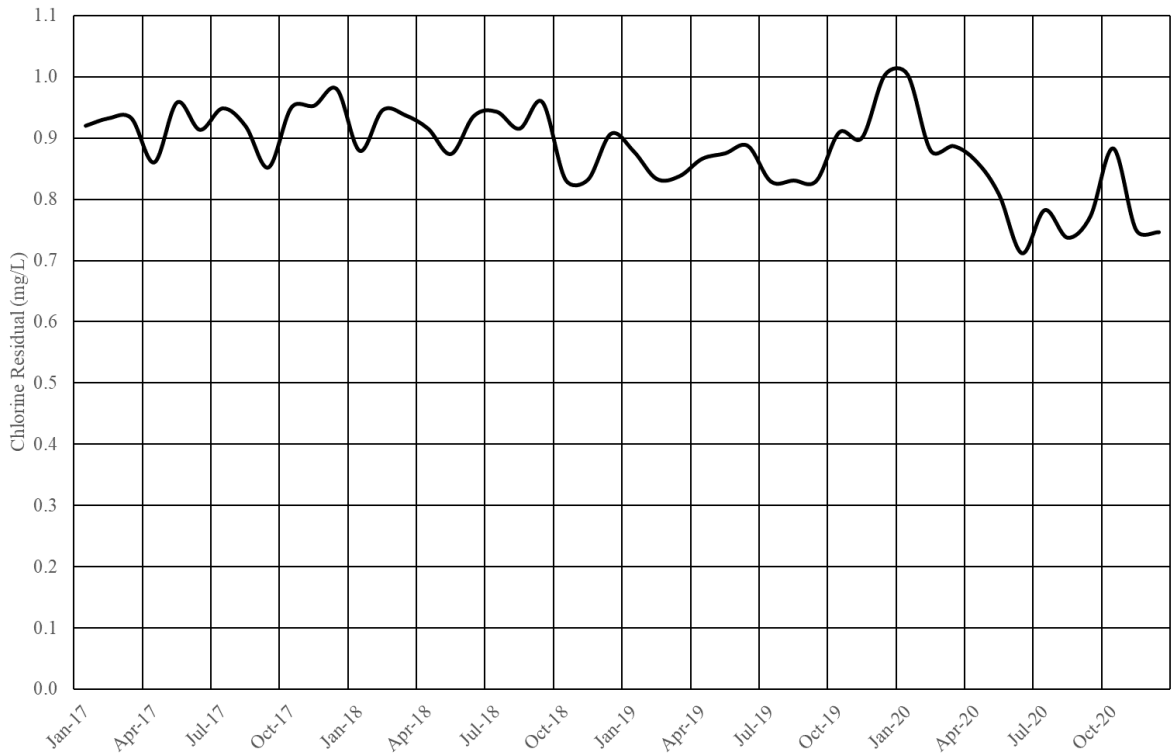


FIGURE 3-4 Monthly Average Low Chlorine Residual



Inorganic Chemical and Physical Water Quality

The Phase I, II, and V, Radionuclides, and Unregulated Contaminant Monitoring Rules apply to drinking water after it has been treated (except for asbestos, which is regulated under Phase II and is monitored in the distribution system). With the exception of the Unregulated Contaminant Monitoring Rule, these regulations establish Maximum Contaminant Levels (MCLs) for inorganic chemicals (IOCs), synthetic organic chemicals (SOCs), volatile organic chemicals (VOCs), and radionuclides.

The City of Chehalis takes one sample at the High-Level Pump Station during the summer months which is representative of both Source 1 and Source 2. DOH has granted the City of Chehalis a waiver to increase the IOC sampling frequency to once every 9 years. The last sample was taken July 14, 2020. Chehalis' monitoring results are compared to the regulatory requirements in Table 3-3. As shown, none of these parameters exceeded the MCL.

With respect to asbestos, Chehalis is required to monitor one sample every 9 years from the distribution system. Chehalis conducted monitoring on September 23, 2013 and will conduct the next round of monitoring in September of 2022. Results from the samples taken on September 23, 2013, yield a quantity of 1.4 million fibers (longer than 10 microns) per liter (MFL). The maximum contaminant level for asbestos is 7.0 MFL.

TABLE 3-3 Primary Inorganic Chemicals - Regulatory Levels and Chehalis' Monitoring Results

Parameter	Result Quantity ⁽¹⁾	MCL
<i>EPA Primary Regulated IOCs</i>		
Antimony	<0.0030 mg/L	0.0060 mg/L
Arsenic	<0.0010 mg/L	0.0104 mg/L
Barium	<0.1000 mg/L	2.0000 mg/L
Beryllium	<0.0003 mg/L	0.0040 mg/L
Cadmium	<0.0010 mg/L	0.0050 mg/L
Chromium	<0.0070 mg/L	0.1000 mg/L
Copper ⁽²⁾	<0.0200 mg/L	NA
Cyanide	<0.0500 mg/L	0.2000 mg/L
Fluoride ⁽³⁾	0.6200 mg/L	4.0000 mg/L
Mercury	<0.0002 mg/L	0.0020 mg/L
Nickel	<0.0050 mg/L	0.1000 mg/L
Nitrate-N ⁽⁴⁾	0.2000 mg/L	10.000 mg/L (as N)
Nitrite-N ⁽⁴⁾	<0.1000 mg/L	1.0000 mg/L (as N)
Nitrate/Nitrate (Total) ⁽⁴⁾	0.4000 mg/L	NA
Selenium	<0.0020 mg/L	0.0500 mg/L
Thallium	<0.0010 mg/L	0.0020 mg/L

<i>EPA Secondary Regulated IOCs</i>		
Chloride	5.50 mg/L	250 mg/L
Iron	<0.10 mg/L	0.30 mg/L
Manganese	<0.01 mg/L	0.05 mg/L
Silver	0.01 mg/L	0.10 mg/L
Sulfate	1.60 mg/L	250 mg/L
Zinc	<0.20 mg/L	5.00 mg/L
<i>State Regulated Physical Characteristics</i>		
Color	5.0 CU	15.0 CU
Conductivity	77.1 Umhos/cm	700.0 Umhos/cm
Hardness	50.0 mg/L	NA
Sodium ⁽⁵⁾	5.4 mg/L	NA

- (1) Values in bold indicate actual values detected. Values not in bold and preceded by < indicate that the chemical, if present, was lower than the detection limit indicated.
- (2) Lead and copper are regulated at the consumer’s tap through the Lead and Copper Rule, see Lead and Copper under Delivered Water Quality below.
- (3) Fluoride has two standards. A Primary Standard of 4 mg/L set for potential health impacts of excessive fluoride, and a secondary standard of 2 mg/L for potential aesthetic impacts of excessive fluoride.
- (4) Nitrate, Nitrite, and combined Nitrate and Nitrite are reported as equivalents of nitrogen.
- (5) The EPA has established a recommended drinking water equivalent level 20 mg/L for sodium. This is a non-enforceable guidance level. Additionally, in 2003, the EPA made a regulatory determination for sodium, indicating that setting an MCL would not provide “a meaningful opportunity to reduce health risk.”

Nitrates

In addition to a complete IOC analysis, the City of Chehalis takes samples at the High-Level Pump Station yearly for nitrate. The High-Level Pump Station is a blended sample and represents both sources. Nitrate data is summarized in Table 3-4 below. All nitrate levels are well below the MCL of 10 mg/L. Some variability of nitrate is to be expected, and so long as upward trends do not continue, nitrate levels are not a concern for the City of Chehalis sources of supply.

TABLE 3-4 Source Nitrate History

Year Sampled	Result Quantity ⁽¹⁾
2013	<0.20
2014	<0.20
2015	<0.20
2016	0.23
2017	0.30
2018	0.22
2019	<0.20
2020	<0.20

- (1) Values in bold indicate actual values detected. Values not in bold and preceded by < indicate that if nitrate is present, it is lower than the detection limit of the test.

Volatile Organic Chemical Water Quality

Under the Phase II Rule, DOH requires water systems to test for 18 VOCs. This group includes solvents, degreasers, and industrial chemicals. DOH has granted the City of Chehalis a waiver to increase the VOC sampling frequency to once every 6 years. The last sample was taken on August 2, 2018, and the next sample is due to be taken in August of 2024. Chehalis River water is pumped only during summer months to supplement the Newaukum River. A blended sample representative of both sources is collected. All samples taken on August 2, 2018, had undetectable levels of VOC's.

Synthetic Organic Chemical Water Quality

SOC's include testing for herbicides (USEPA test method 515.1), pesticides (USEPA test method 525.2), carbamates (USEPA test method 531.1) and paraquat (USEPA test method 549). DOH regulations require that the SOC sample location be located at a point representative of the water after treatment and prior to entry into the distribution system. DOH has granted the City of Chehalis a waiver to reduce the herbicide sampling frequency to once every 9 years. Water quality was last sampled for SOC's on June 18, 2015. The City of Chehalis samples pesticides at the standard 3-year frequency. The most recent samples were taken on March 11, 2021, and the next round of sampling is scheduled for September 2022 for Source 1 and August 2022 for Source 2; however, as previously mentioned, a blended sample representative of both sources is planned to be collected in August. All herbicide samples taken on June 18, 2015, and pesticide samples taken on March 11, 2021, had undetectable levels of SOC's.

Radionuclides

Current monitoring frequency for radionuclides is 1 sample every six years for Radium-228 and Gross Alpha particle activity. The City is required to monitor raw water from both the Newaukum and Chehalis Rivers. The most recent samples of Radium 228 and Gross Alpha were taken on August 3, 2016, and result quantities were below the state reporting limits. The next samples are scheduled to be taken in August of 2022.

DELIVERED WATER QUALITY

Delivered water quality applies to several water quality monitoring requirements applied to the water distribution system. Monitoring of delivered water quality is necessary because some water quality parameters have been demonstrated to change in the distribution system, or in the plumbing of buildings. Chlorine residual decays over time in the distribution system, coliform bacteria can grow in, or can be introduced into the distribution system, disinfectant byproducts develop in the distribution system, asbestos can be released into the distribution system from asbestos cement pipes, and water that is excessively corrosive dissolves lead and copper from building plumbing. For these reasons distribution system or delivered water quality monitoring is required.

The Revised Total Coliform Rule (RTCR), Stage 1 Disinfectant/Disinfection By-products Rule, and Lead and Copper Rule apply primarily to the quality of drinking water present in the distribution system. These regulations establish monitoring, MCLs, Maximum Residual Disinfectant Levels (MRDLs), and action levels for regulated parameters. The following sections summarize delivered water quality monitoring by the City of Chehalis Water System.

Coliform Bacteria Monitoring

The Revised Total Coliform Rule (RTCR) identifies provisions for monitoring for total coliform as an indicator of bacteriological quality. WAC 246-290-300(3) also sets distribution system coliform monitoring requirements, and WAC 246-290-310(2) sets coliform bacteria maximum contaminant levels. Under the RTCR and WAC, water systems must develop a monitoring plan that identifies a prescribed number of monitoring locations based on population. If a sample tests positive for the presence of total coliform, the RTCR outlines resampling procedures and public notification triggers.

DOH requires the City to collect a minimum of 10 samples per calendar month. These samples, analyzed for total coliform, must be collected at locations representative of each pressure zone. The City's Coliform Monitoring Plan is included in Appendix H. Chehalis has been in compliance with the RTCR and state regulations for monitoring and contaminant levels for the 2016 to 2020 period and no positive total coliform samples occurred.

Distribution System Chlorine Residual Monitoring

WAC 246-290-300(7)(c) and WAC 246-290-664(6) require distribution disinfectant residual monitoring at representative points in the distribution system daily and at the same time and locations as coliform sample collection, and WAC 246-290-451(3)(b) requires that a detectable disinfectant residual must be always maintained in the distribution system. The Disinfection section and Figure 3-4 show there were no days indicated between January 2017 – December 2020 with lower than the required detectable chlorine residual. Appendix H contains the City's chlorine residual monitoring plan.

Disinfectant Byproduct Monitoring

The Stage 1 and Stage 2 Disinfectants and Disinfection Byproduct (DBP) Rules (D/DBP) set monitoring requirements and MCLs for DBPs. DBPs include Total Trihalomethanes (TTHMs) and five different species of Halo acetic Acids (HAA5s). Samples are required to be taken for DBPs at a variety of locations in the distribution system. A copy of the City of Chehalis Disinfectant Byproduct Monitoring Plan is in Appendix H.

The Stage 2 D/DBP Rule requires that each individual sample location meet the running annual average MCL. The Stage 2 D/DBP Rule states the system must meet 80 µg/L and 60 µg/L as the Locational Running Annual Averages (LRAAs) for TTHMs and HAA5s, respectively. Systems were required (unless waived) to identify new high TTHM and HAA5 locations by conducting an Initial Distribution System Evaluation (IDSE). The rule also requires population-based monitoring for all systems, with allowances for reduced monitoring

depending on initial monitoring averages and source water type. Chehalis selected the standard monitoring plan (SMP) approach for the IDSE requirements of the rule and has recently completed and submitted its IDSE monitoring plan under the Stage 2 D/DBP Rule. The City of Chehalis Disinfectant Byproduct Monitoring Map is located with the Disinfectant Byproduct Monitoring Plan in Appendix H.

Chehalis chlorinates at the inlet and outlet of the filtration treatment plant and again at the Centralia Alpha pump station. The City currently collects four samples quarterly – three from the Main Pressure Zone and another one from Valley View/Fairview Pressure Zone representing maximum residence time and tests for TTHMs and HAA5s. Table 3-5 summarizes Chehalis’ DBP monitoring results. From 2012 through 2020, the City has been in compliance with the Stage 1 and Stage 2 D/DBP Rules. A few of the fourth quarter 2020 results in the main pressure zone exceeded MCL’s, and future monitoring will need to verify the running annual averages do not exceed MCL’s.

TABLE 3-5 Stage 1 and Stage 2 D/DBP Rule – Regulatory Levels and Chehalis’ Monitoring Results (2012 to 2020)

Date	CHCl ₃ (µg/L)	CHBrCl ₂ (µg/L)	CHBr ₂ Cl (µg/L)	CHBr ₃ (µg/L)	TTHM ⁽¹⁾ (µg/L)	DCAA (µg/L)	TCAA (µg/L)	MCAA (µg/L)	HAA5 ⁽²⁾ (µg/L)
Main Pressure Zone – SW 22nd St and SW Salsbury Ave									
2/8/2012	29.0	2.4	>1.50	>0.6	31.4	ND	5.6	22.0	27.6
5/3/2012	37.0	2.1	>1.50	>0.6	39.1	ND	7.0	27.0	34.0
8/15/2012	57.0	6.3	0.55	>0.6	63.9	ND	5.8	10.0	15.8
11/7/2012	69.0	3.4	>1.50	>0.6	72.4	ND	8.5	34.0	42.5
2/7/2013	36.0	2.0	>1.50	>0.6	38.0	ND	7.8	31.0	38.8
5/9/2013	35.0	3.3	>1.50	>0.6	38.3	ND	7.2	18.0	25.2
8/8/2013	58.0	7.8	0.68	>0.6	66.5	ND	6.5	14.0	20.5
10/30/2013	32.0	2.8	>1.50	>0.6	34.8	ND	6.0	19.0	25.0
1/16/2014	29.0	1.6	>1.50	>0.6	30.6	2.9	9.2	48.0	60.1
6/5/2014	37.0	2.5	>1.50	>0.6	39.5	ND	13.0	30.0	45.0
7/10/2014	43.0	5.9	>1.50	>0.6	48.9	ND	8.1	15.0	23.1
11/20/2014	37.0	2.8	>1.50	>0.6	39.8	ND	4.8	16.0	20.8
1/15/2015	25.0	2.1	>1.50	>0.6	27.1	ND	5.6	22.0	27.6
4/21/2015	35.0	2.4	>1.50	>0.6	37.4	ND	7.8	27.0	34.8
7/9/2015	48.0	4.5	>1.50	>0.6	52.5	ND	6.7	13.0	19.7
10/14/2015	35.0	2.5	>1.50	>0.6	37.5	ND	6.9	15.0	21.9
1/6/2016	22.0	1.7	>1.50	>0.6	23.7	ND	11.0	19.0	30.0
4/14/2016	30.0	3.1	>1.50	>0.6	33.1	ND	6.4	24.0	30.4
7/13/2016	50.0	3.4	>1.50	>0.6	53.4	ND	12.0	32.0	44.0
10/13/2016	52.0	2.9	>1.50	>0.6	54.9	ND	6.8	16.0	22.8

Date	CHCl ₃ (µg/L)	CHBrCl ₂ (µg/L)	CHBr ₂ Cl (µg/L)	CHBr ₃ (µg/L)	TTHM ⁽¹⁾ (µg/L)	DCAA (µg/L)	TCAA (µg/L)	MCAA (µg/L)	HAA5 ⁽²⁾ (µg/L)
1/19/2017	20.0	1.9	>1.50	>0.6	21.9	ND	6.2	17.0	23.2
4/13/2017	28.0	2.6	>1.50	>0.6	30.6	ND	6.5	17.0	23.5
7/13/2017	34.0	3.5	>1.50	>0.6	37.5	ND	6.7	16.0	22.7
10/12/2017	41.5	3.0	>1.50	>0.6	44.5	NA	NA	NA	NA
12/20/2017	NA	NA	NA	NA	NA	ND	6.9	25.0	31.9
1/18/2018	31.0	2.1	>1.50	>0.6	33.1	ND	15.0	39.0	54.0
4/18/2018	38.0	2.2	ND	ND	40.2	ND	17.0	34.0	51.0
7/12/2018	43.0	5.0	ND	ND	48.0	ND	8.8	26.0	34.8
10/18/2018	37.2	2.7	ND	ND	39.9	ND	8.8	30.5	39.3
1/10/2019	29.0	1.8	ND	ND	30.8	ND	4.5	24.0	28.5
4/18/2019	36.0	2.3	ND	ND	38.3	ND	9.1	37.0	46.1
7/16/2019	50.0	3.3	ND	ND	53.3	ND	14.0	33.0	47.0
10/16/2019	44.0	3.3	ND	ND	47.3	ND	7.2	26.0	33.2
1/9/2020	38.0	2.4	ND	ND	40.4	NA	NA	NA	NA
1/29/2020	NA	NA	NA	NA	NA	ND	7.0	38.0	45.0
4/8/2020	33.0	2.3	ND	ND	35.3	ND	12.0	35.0	47.0
7/22/2020	40.0	4.0	ND	ND	44.0	ND	6.7	16.0	22.7
10/15/2020	78.0	3.8	ND	ND	81.8	ND	15.0	67.0	82.0
Minimum	20.0	1.6	0.55	>0.6	21.9	2.9	4.5	10.0	15.8
Maximum	78.0	7.8	0.68	>0.6	81.8	2.9	17.0	67.0	82.0
Average	39.4	3.1	0.62	>0.6	43.6	2.9	8.4	25.9	34.5
Main Pressure Zone – NW Ohio Ave and NW West St									
10/30/2013	33.0	2.7	>1.50	>0.6	35.7	ND	6.0	21.0	27.0
1/16/2014	28.0	1.5	>1.50	>0.6	29.5	2.1	8.3	45.0	55.4
6/5/2014	37.0	2.5	>1.50	>0.6	39.5	2.1	13.0	28.0	43.1
7/10/2014	44.0	5.8	>1.50	>0.6	49.8	ND	8.6	17.0	27.6
11/20/2014	35.0	2.7	>1.50	>0.6	37.7	ND	4.9	17.0	21.9
1/15/2015	26.0	2.2	>1.50	>0.6	28.2	ND	6.0	23.0	29.0
4/21/2015	38.0	2.6	>1.50	>0.6	40.6	ND	8.0	27.0	35.0
7/9/2015	47.0	4.5	>1.50	>0.6	51.5	ND	6.5	13.0	19.5
10/14/2015	34.0	2.4	>1.50	>0.6	36.4	ND	6.7	15.0	21.7
1/6/2016	22.0	2.2	>1.50	>0.6	24.2	ND	11.0	19.0	30.0
4/14/2016	30.0	3.1	>1.50	>0.6	33.1	ND	6.3	23.0	29.3
7/13/2016	54.0	3.8	>1.50	>0.6	57.8	ND	11.0	35.0	46.0
10/13/2016	50.0	2.7	>1.50	>0.6	52.7	ND	7.0	17.0	24.0
1/19/2017	20.0	2.0	>1.50	>0.6	22.0	ND	6.4	18.0	24.4

Date	CHCl ₃ (µg/L)	CHBrCl ₂ (µg/L)	CHBr ₂ Cl (µg/L)	CHBr ₃ (µg/L)	TTHM ⁽¹⁾ (µg/L)	DCAA (µg/L)	TCAA (µg/L)	MCAA (µg/L)	HAA5 ⁽²⁾ (µg/L)
4/13/2017	31.0	2.7	>1.50	>0.6	33.7	ND	7.1	19.0	26.1
7/13/2017	39.0	3.8	>1.50	>0.6	42.8	ND	7.8	19.0	26.8
10/12/2017	41.8	3.0	>1.50	>0.6	44.8	NA	NA	NA	NA
11/20/2017	NA	NA	NA	NA	NA	ND	10.0	48.0	58.0
1/18/2018	34.0	2.2	>1.5	>0.6	36.2	ND	13.0	30.0	43.0
4/18/2018	40.0	2.3	ND	ND	42.3	ND	17.0	37.0	54.0
7/12/2018	44.0	5.2	ND	ND	49.2	ND	8.2	24.9	33.1
10/18/2018	35.8	2.6	ND	ND	38.4	ND	8.6	30.3	38.9
1/10/2019	33.0	2.1	ND	ND	35.1	ND	4.7	25.0	29.7
4/18/2019	37.0	2.4	ND	ND	39.4	ND	9.3	33.0	42.3
7/16/2019	49.0	3.4	ND	ND	52.4	ND	10.0	30.0	40.0
10/16/2019	46.0	3.4	ND	ND	49.4	ND	8.2	26.0	34.2
1/9/2020	42.0	2.5	ND	ND	44.5	NA	NA	NA	NA
1/29/2020	NA	NA	NA	NA	NA	ND	8.4	42.0	50.4
4/8/2020	54.0	2.4	ND	ND	56.4	ND	11.0	37.0	48.0
7/22/2020	39.0	4.0	ND	ND	43.0	ND	6.5	19.0	25.5
10/15/2020	77.0	3.7	ND	ND	80.7	ND	15.0	71.0	86.0
Minimum	20.0	1.5	>1.50	>0.6	22.0	2.1	4.7	13.0	19.5
Maximum	77.0	5.8	>1.50	>0.6	80.7	2.1	17.0	71.0	86.0
Average	39.3	3.0	>1.50	>0.6	42.3	2.1	8.8	27.9	36.9
South End Zone – South End Booster Pump Station									
10/30/2013	49.0	4.0	>1.50	>0.6	53.0	ND	2.5	27.0	29.5
1/16/2014	25.0	1.8	>1.50	>0.6	26.8	2.3	8.4	33.0	43.7
6/5/2014	38.0	2.4	>1.50	>0.6	40.4	ND	13.0	30.0	43.0
7/10/2014	48.0	5.0	>1.50	>0.6	53.0	2.3	10.0	22.0	34.3
11/20/2014	37.0	2.8	>1.50	>0.6	39.8	ND	5.4	19.0	24.4
1/15/2015	29.0	2.2	>1.50	>0.6	31.2	ND	7.8	30.0	37.8
4/21/2015	58.0	3.7	>1.50	>0.6	61.7	ND	11.0	29.0	40.0
7/9/2015	56.0	4.9	>1.50	>0.6	60.9	ND	7.6	14.0	21.6
10/14/2015	41.0	3.8	>1.50	>0.6	44.8	ND	3.1	17.0	20.1
1/6/2016	63.0	3.9	>1.50	>0.6	66.9	ND	10.0	30.0	40.0
4/14/2016	34.0	3.2	>1.50	>0.6	37.2	ND	7.4	23.0	30.4
7/13/2016	57.0	3.6	>1.50	>0.6	60.6	ND	12.0	37.0	49.0
10/13/2016	63.0	3.1	>1.50	>0.6	66.1	ND	9.3	21.0	30.3
1/19/2017	23.0	2.1	>1.50	>0.6	25.1	ND	7.1	19.0	26.1
4/13/2017	38.0	2.9	>1.50	>0.6	40.9	ND	9.5	24.0	33.5

Date	CHCl ₃ (µg/L)	CHBrCl ₂ (µg/L)	CHBr ₂ Cl (µg/L)	CHBr ₃ (µg/L)	TTHM ⁽¹⁾ (µg/L)	DCAA (µg/L)	TCAA (µg/L)	MCAA (µg/L)	HAA5 ⁽²⁾ (µg/L)
7/13/2017	47.0	4.2	>1.50	>0.6	51.2	ND	10.0	22.0	32.0
10/12/2017	48.6	3.4	>1.50	>0.6	52.0	NA	NA	NA	NA
11/20/2017	NA	NA	NA	NA	NA	ND	11.0	48.0	59.0
12/20/2017	NA	NA	NA	NA	NA	ND	6.9	49.0	55.9
1/18/2018	35.0	2.3	>1.50	>0.6	37.3	ND	15.0	34.0	49.0
4/18/2018	42.0	2.5	ND	ND	44.5	ND	18.0	34.0	52.0
7/12/2018	48.0	5.6	0.54	ND	54.1	ND	9.8	28.0	37.8
10/18/2018	46.0	3.1	ND	ND	49.1	ND	11.2	35.8	47.0
1/10/2019	46.0	2.5	ND	ND	48.5	ND	4.6	33.0	37.6
4/18/2019	37.0	2.3	ND	ND	39.3	ND	8.9	35.0	43.9
7/16/2019	51.0	3.4	ND	ND	54.4	2.2	13.0	34.0	49.2
10/16/2019	47.0	3.4	ND	ND	50.4	ND	9.8	29.0	38.8
1/9/2020	41.0	2.7	ND	ND	43.7	NA	NA	NA	NA
1/29/2020	NA	NA	NA	NA	NA	ND	7.7	42.0	49.7
4/8/2020	34.0	2.3	ND	ND	36.3	ND	11.0	39.0	50.0
7/22/2020	54.0	4.8	ND	ND	58.8	ND	ND	30.0	30.0
10/15/2020	58.0	5.5	0.59	ND	64.1	ND	1.6	53.0	54.6
Minimum	23.0	1.8	0.54	>0.6	25.1	2.2	1.6	14.0	20.1
Maximum	63.0	5.6	0.59	>0.6	66.9	2.3	18.0	53.0	59.0
Average	44.6	3.4	0.57	>0.6	48.0	2.3	9.1	30.7	39.7
Valley View / Fairview Pressure Zone – Alderwood Dr & Yankis									
10/30/2013	38.0	3.4	>1.50	>0.6	41.4	ND	8.0	23.0	31.0
1/16/2014	30.0	1.6	>1.50	>0.6	31.6	2.4	9.0	48.0	59.4
6/5/2014	39.0	2.6	>1.50	>0.6	41.6	2.1	14.0	29.0	45.1
7/10/2014	51.0	6.1	>1.50	>0.6	57.1	31.9	9.9	22.0	31.9
11/20/2014	45.0	3.5	>1.50	>0.6	48.5	ND	7.8	21.0	28.8
1/15/2015	31.0	2.5	>1.50	>0.6	33.5	ND	8.9	29.0	37.9
4/21/2015	42.0	2.7	>1.50	>0.6	44.7	ND	9.1	25.0	34.1
7/9/2015	49.0	4.7	>1.50	>0.6	53.7	ND	7.0	13.0	20.0
10/14/2015	39.0	2.7	>1.50	>0.6	41.7	ND	9.2	15.0	24.2
1/6/2016	25.0	2.3	>1.50	>0.6	27.3	2.3	12.0	22.0	36.3
4/14/2016	36.0	3.3	>1.50	>0.6	39.3	ND	8.6	25.0	33.6
7/13/2016	56.0	4.0	>1.50	>0.6	60.0	ND	13.0	31.0	44.0
10/13/2016	52.0	3.2	>1.50	>0.6	55.2	ND	9.2	18.0	27.2
1/19/2017	24.0	2.3	>1.50	>0.6	26.3	ND	7.9	20.0	27.9
4/13/2017	35.0	2.9	>1.50	>0.6	37.9	ND	8.3	20.0	28.3

Date	CHCl ₃ (µg/L)	CHBrCl ₂ (µg/L)	CHBr ₂ Cl (µg/L)	CHBr ₃ (µg/L)	TTHM ⁽¹⁾ (µg/L)	DCAA (µg/L)	TCAA (µg/L)	MCAA (µg/L)	HAA5 ⁽²⁾ (µg/L)
7/13/2017	43.0	4.0	>1.50	>0.6	47.0	ND	9.3	20.0	29.3
10/12/2017	53.6	3.8	>1.50	>0.6	57.4	NA	NA	NA	NA
11/20/2017	NA	NA	NA	NA	NA	ND	12.0	43.0	55.0
1/18/2018	38.0	2.6	>1.50	>0.6	40.6	ND	15.0	29.0	44.0
4/18/2018	40.0	2.7	ND	ND	42.7	NA	NA	NA	NA
6/14/2018	NA	NA	NA	NA	NA	ND	12.0	25.0	37.0
7/12/2018	50.0	6.1	ND	ND	56.1	ND	10.3	25.9	36.2
10/18/2018	49.4	3.0	ND	ND	52.4	ND	12.4	33.2	45.6
1/10/2019	39.0	2.2	ND	ND	41.2	ND	6.8	40.0	46.8
4/18/2019	40.0	2.5	ND	ND	42.5	2.3	11.0	38.0	51.3
7/16/2019	70.0	3.6	ND	ND	73.6	ND	13.0	30.0	43.0
10/16/2019	58.0	3.8	ND	ND	61.8	ND	12.0	34.0	46.0
1/9/2020	43.0	2.8	ND	ND	45.8	NA	NA	NA	NA
1/29/2020	NA	NA	NA	NA	NA	ND	8.9	38.0	46.9
4/8/2020	37.0	2.5	ND	ND	39.5	ND	12.0	37.0	49.0
7/22/2020	42.0	4.3	ND	ND	46.3	ND	7.5	18.0	25.5
10/15/2020	75.0	4.4	ND	ND	79.4	ND	13.0	34.0	47.0
Minimum	24.0	1.6	>1.50	>0.6	26.3	2.1	6.8	13.0	20.0
Maximum	75.0	6.1	>1.50	>0.6	79.4	31.9	15.0	48.0	59.4
Average	43.8	3.3	>1.50	>0.6	47.1	8.2	10.2	27.8	38.4

- (1) TTHM's is Total Trihalomethanes, the sum of trihalomethanes: Chloroform (CHCl₃), Bromodichloromethane (CHBrCl₂), Dibromochloromethane (CHBr₂Cl), and Bromoform (CHBr₃).
- (2) HAA5 is Haloacetic Acids (five), the sum of the five haloacetic acids: Monochloroacetic Acid (MCAA), Dichloroacetic Acid (DCAA), Trichloroacetic Acid (TCAA), Monobromoacetic Acid, (MBAA), and Dibromoacetic Acid (DBAA). MBAA and DBAA are not included in Table 3-6 because neither of these was detected.
- (3) ND indicates "None Detected" at the SRL (State Reporting Limit). The SRL for each individual TTHM's is 0.50 µg/L. The SRL for Monochloroacetic Acid is 2.00 µg/L and 1.00 µg/L for all other HAA5's.
- (4) The "<" symbol indicates samples were less than this value and are excluded from minimums, maximums, and averages.
- (5) NA indicates "Not Analyzed".

Lead and Copper

The Lead and Copper Rule establishes action levels, monitoring, and compliance requirements for lead and copper levels at customers' taps. To meet the established action levels, 90 percent of all samples must have lead levels equal to or less than 0.015 mg/L and copper levels equal to or less than 1.3 mg/L. If these action levels cannot be met, systems must implement public education and a corrosion control treatment strategy for meeting these levels.

The City of Chehalis performs standard monitoring per DOH requirements by taking 30 samples every 3 years. The most recent Lead and Copper samples were taken on June 24, 2020, and lead and copper levels are below the established action levels, see the Lead and Copper Distribution System Report of Analysis in Appendix H. Lead and Copper samples are taken using the following procedures:

- Samples are collected from the cold-water side of a kitchen or bathroom faucet that is used daily.
- Before sampling, the water is ensured it has sat unused in the pipes for at least 6 hours, but no more than 12 hours.
- If sampling from a faucet that has hot water, it is ensured that cold water is the last water to have run through the faucet before it sits.
- Samples are collected between June 1 and September 30.

WATER QUALITY REPORTING

Water quality reporting consists of reporting to customers and reporting to DOH. The Consumer Confidence and Public Notification Rules require systems to provide customers with water quality information on an annual basis, and when a regulatory violation occurs. Chehalis did not have any water quality rule violations and has not needed to issue a public notification during the period of 2012 through 2020. Consumer Confidence Reports are distributed on an annual basis.

DOH has granted the City of Chehalis several water quality monitoring waivers as described in the preceding sections. The City's current Water Quality Monitoring Schedule which summarizes the City's reporting and monitoring requirements is included in Appendix H.

WATER QUALITY COMPLAINTS

The City of Chehalis handles water quality complaints pursuant to their policy for dealing with complaints as described in Chapter 1.

SYSTEM DESCRIPTION & ANALYSIS - (CURRENT, 10- AND 20-YEAR)

The following sections evaluate the existing water system facilities in terms of capacity, physical condition, and performance. Facilities are evaluated relative to existing and projected requirements based on the growth and demand projections developed in Chapter 2.

SOURCE CAPACITY ANALYSIS

According to DOH planning requirements, sources of supply must be sufficient to meet maximum day demand (MDD) for each pressure zone within a system, as well as for the system as a whole. In addition, for any “closed” pressure zone (i.e., a zone that has no storage, and for which pressure is maintained by pumping), sources must be sufficient to meet peak hour demands (PHD’s). The source capacity analyses presented in this section examines the ability of the City’s existing sources of supply to meet these requirements. These analyses are conducted by comparing the City’s water demand forecast, presented in Chapter 2, with current source capacities. All evaluations assume 24-hour-per-day source operation.

Total System

There are multiple factors and system components that impose limitations upon the source capacity of the City’s water system. A limiting factor analysis is required which compares water rights, surface water reliability, raw water pump capacity, raw water transmission line capacity, and treatment capacity with the demand projections developed in Chapter 2. For both the North Fork of the Newaukum River and the Chehalis River, the water rights, surface water reliability, raw water pump capacity, or raw water transmission line capacity could be the limiting factor. Finally, since all water supplied to the City’s distribution system currently passes through the water treatment plant (WTP), treatment capacity needs to be compared against the sum of the river capacities.

Annual Water Right Capacity

System wide source capacity needs to be evaluated on the basis of average day demand (ADD) where the annual rate given by existing water rights can be a limiting factor.

The City of Chehalis has an annual water right capacity on the North Fork of the Newaukum River of 5,376 acre-feet per year (AFY). As shown in Table 1-3, 3,136 AFY (2.80 mgd) is from Water Right Claim No. 302347 and, although there is no annual rate on Certificate No. 01185, the previous 2004 and 2012 City of Chehalis WSP’s used 2,240 AFY (2.00 mgd). The City of Chehalis has an annual water right capacity on the Chehalis River of 980 AFY (0.87 mgd) for a total annual water right capacity of 6,356 AFY (5.67 mgd). The City’s annual water rights exceed existing and projected average day demands as shown in Table 2-7. Copies of water rights records and the Water Right Self-Assessment Form for Water System Plans (DOH Publication 331-372) are included in Appendix E.

North Fork of the Newaukum River Capacity

There are several factors which could limit the capacity supplied by the North Fork of the Newaukum River. The first is the instantaneous water right. As seen in Table 1-3, the City of Chehalis has instantaneous water rights on the North Fork of the Newaukum River of 14.34 cfs (9.27 mgd).

Another factor to consider is the river's capacity. In the past, the City has had issues with the limited amount of source water available during seasonal low flows. On January 25, 2018, a presentation was given to the Port of Chehalis titled "City of Chehalis Water Rights and Water Availability: History and Status of Water Rights and Demands" in which the Newaukum River seasonal low flow capacity was listed as 1,800 gpm (2.60 mgd). As can be seen from production data in Figure 2-1, the maximum month production for the Newaukum River from 2017 through 2020 was 80.3 MG (2.68 mgd) occurring in September 2020. For this WSP, 2.68 mgd is used as the Newaukum River's instantaneous capacity because this number is based on measured data.

Water from the North Fork of the Newaukum River is conveyed to the WTP from the intake via gravity through 17.5 miles of primarily 16-inch diameter, ductile and cast iron, transmission main. The 18th Street Booster Pump Station contains a 2,300-gpm raw water pumping facility that boosts capacity of the transmission system. Previous analyses, summarized in the 2004 WSP and used in the 2012 WSP, have determined that the capacity of the transmission line is approximately 2.80 mgd without pumping. With booster pumping, capacity of the transmission line is maximized at 3.31 mgd. Because there have been no material modifications to this transmission system in recent years, these capacity values were not re-assessed during development of this WSP. Therefore, the capacity of the system to convey water from the North Fork source is assumed to be 3.31 mgd.

In comparison, the limiting factor on the North Fork of the Newaukum River is the river's seasonal low flows of 2.68 mgd.

Chehalis River Capacity

A similar limiting factor analysis performed on the Chehalis River. As seen in Table 1-3, the City of Chehalis has instantaneous water rights on the Chehalis River of 11.60 cfs (7.50 mgd). The Chehalis River is considered to have a capacity greater than the instantaneous water right including the 50 cfs low flow limitation (as described in Chapter 1) because there have not been any past issues with river capacity.

Water from the Chehalis River source is pumped to the WTP via a raw water pump station with a rated capacity of 3,500 gpm (5.0 mgd), through an 18-inch welded steel pipeline. Analysis of pipeline capacity, based upon steel pipe pressure ratings, indicates that the theoretical pipeline capacity should be greater than the pump station capacity. Historically, the pipeline has never conveyed more than approximately 4.0 mgd at peak periods, and flows have rarely reached this amount. Therefore, the integrity of this aging

transmission main and the rated capacity of the raw water pump is unproven at high flow rates.

In comparison, the limiting factor on the Chehalis River is the raw water pump station capacity of 5.0 mgd.

Water Treatment Plant Capacity

All water supplied to the distribution system is treated by the City's water treatment plant (WTP). Therefore, this source capacity evaluation for the system also considers WTP capacity compared against full system-wide demands. The current rated capacity of the WTP is 4.8 mgd and is more limiting than the sum of the Newaukum River and Chehalis River capacities.

As shown in Table 3-6, the current WTP capacity exceeds both current and projected 10-year MDD. However, current WTP capacity is insufficient to meet the projected 20-year MDD and MDD is projected to be exceed WTP capacity in 2036. For the 20-year planning period a supply deficiency of approximately 1.36 mgd is projected.

A detailed analysis of WTP operations was conducted in conjunction with the preparation of the previous 2012 WSP. That analysis indicated that operation of the WTP at or near the rated capacity is difficult to maintain for extended periods of time due primarily to a lack of automation associated with the control of flow through the WTP. Rates of influent raw water and filtered effluent flow are managed with manually adjusted valves. This, combined with very little hydraulic freeboard or equalization throughout the plant, results in challenging operations at high flow rates. Additional capacity increases associated with plant improvements that have the potential to result in capacity re-ratings up to approximately 7.0 mgd are discussed in Chapter 8.

Average Day Demand

Because the City's Chehalis River water right has an annual quantity (Qa) that is significantly more limiting than its instantaneous quantity (Qi), an analysis is made which considers the ability of the most limiting factor for each raw water transmission system to support ADD. For the Chehalis River, the most limiting factor on ADD is the existing annual water right of 0.87 mgd. For the North Fork of the Newaukum River, the most limiting factor on ADD is the river's seasonal low flow of 2.68 mgd. The sum of these two limiting factors is 3.55 mgd which is also more limiting than current WTP capacity.

As shown in Table 3-6, the City's current water rights are sufficient to meet the current and projected 10-year ADD. However, the system is unable to meet the projected 20-year ADD due primarily to the large increase in demand represented by the large industrial allowance. The projected ADD supply deficiency for the 20-year planning period is 0.08 mgd.

TABLE 3-6 Source Capacity Analysis

Year	ADD (mgd)			MDD (mgd)		
	Capacity (1)	Demand (2)	Capacity Surplus (Deficit)	Capacity (3)	Demand (2)	Capacity Surplus (Deficit)
2020	3.55	1.89	1.66	4.80	3.60	1.20
2021	3.55	1.92	1.63	4.80	4.04	0.76
2022	3.55	1.95	1.60	4.80	4.09	0.71
2023	3.55	1.98	1.57	4.80	4.14	0.66
2024	3.55	2.01	1.54	4.80	4.19	0.61
2025	3.55	2.04	1.51	4.80	4.23	0.57
2026	3.55	2.07	1.48	4.80	4.28	0.52
2027	3.55	2.10	1.45	4.80	4.33	0.47
2028	3.55	2.13	1.42	4.80	4.39	0.41
2029	3.55	2.16	1.39	4.80	4.44	0.36
2030	3.55	2.19	1.36	4.80	4.49	0.31
2031	3.55	2.22	1.33	4.80	4.54	0.26
2032	3.55	2.26	1.29	4.80	4.60	0.20
2033	3.55	2.29	1.26	4.80	4.65	0.15
2034	3.55	2.32	1.23	4.80	4.71	0.09
2035	3.55	2.36	1.19	4.80	4.76	0.04
2036	3.55	2.39	1.16	4.80	4.82	(0.02)
2037	3.55	2.43	1.12	4.80	4.88	(0.08)
2038	3.55	2.46	1.09	4.80	4.94	(0.14)
2039	3.55	2.50	1.05	4.80	5.00	(0.20)
2040	3.55	3.63	(0.08)	4.80	6.16	(1.36)

(1) See the Average Day Demand section above.

(2) From Table 2-7.

(3) Capacity is limited by the WTP, see the Water Treatment Plant section above.

Boosted Pressure Zones

Source capacity evaluations were conducted independently for each of the City’s boosted pressure zones, which are supplied water through booster pump stations. Tables 3-7 through 3-10 present the results of these analyses. Because the High Level and Valley View Zones are “open” zones and have storage reservoirs that provide for equalization to aid in meeting peak hour demands, source capacities in these zones are compared against MDD. By contrast, the South End and Centralia-Alpha Zones are “closed” zones, meaning there is no storage present to support any portion of demand. Therefore, source capacities in these zones are compared against PHD. The South End Zone analysis includes the demands of the Centralia-Alpha Zone, since all water conveyed to these two zones is supplied through the South End Booster Pump Station.

In each case, existing source capacities at the pump stations are sufficient to meet current and projected demands. Therefore, no source capacity improvements are identified to address any such deficiencies.

TABLE 3-7 Source Capacity Analysis for High Level Zone

Year	Capacity (gpd) ⁽¹⁾	MDD (gpd) ⁽²⁾	Capacity Surplus (Deficit) (gpd)
2020	518,400	52,441	465,959
2030	518,400	60,650	457,750
2040	518,400	70,144	448,256

- (1) Capacity assumes the High-Level pumps are operating at the maximum production rate: 360 gpm for 24 hours per day, see Table 1-6. Only one pump operates at a time, see the Booster Pump Station Section in Chapter 1.
- (2) MDD from Table 2-9.

TABLE 3-8 Source Capacity Analysis for Valley View/Fairview Zone

Year	Capacity (gpd) ⁽¹⁾	MDD (gpd) ⁽²⁾	Capacity Surplus (Deficit) (gpd)
2020	184,320	45,650	138,670
2030	184,320	52,796	131,524
2040	184,320	61,061	123,259

- (1) Capacity assumes the Valley View pumps are operating at the maximum production rate: 128 gpm for 24 hours per day, see Table 1-6. Only one pump operates at a time, see the Booster Pump Station Section in Chapter 1.
- (2) MDD from Table 2-9.

TABLE 3-9 Source Capacity Analysis for South End Zone

Year	Capacity (gpm) ⁽¹⁾	PHD (gpm) ⁽²⁾	Capacity Surplus (Deficit) (gpm)
2020	300	192	108
2030	300	212	88
2040	300	235	65

- (1) Capacity assumes the South End pumps are operating at the maximum rate to meet peak hour demands: 300 gpm, see Table 1-6. Only one pump operates at a time, see the Booster Pump Station Section in Chapter 1.
- (2) PHD is the sum of both the South End and Centralia Alpha Zones from Table 2-9.

TABLE 3-10 Source Capacity Analysis for Centralia-Alpha Zone

Year	Capacity (gpm) ⁽¹⁾	PHD (gpm) ⁽²⁾	Capacity Surplus (Deficit) (gpm)
2020	100	48	52
2030	100	52	48
2040	100	57	43

- (1) Capacity assumes the Centralia Alpha pumps are operating at the maximum rate to meet peak hour demands: 100 gpm, see Table 1-6. Only one pump operates at a time, see the Booster Pump Station Section in Chapter 1.
- (2) PHD is from Table 2-9.

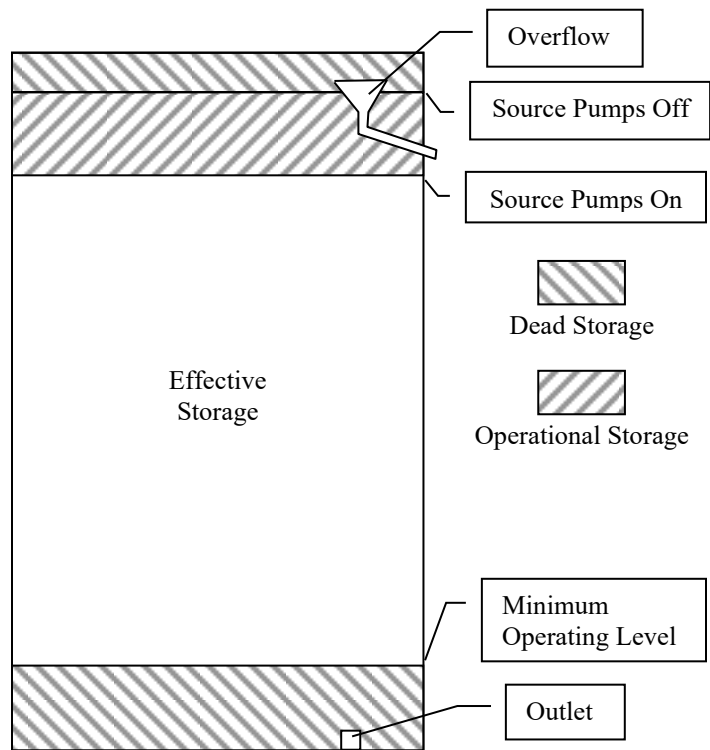
STORAGE ANALYSIS

According to the DOH Water System Design Manual, water system storage volume is comprised of five components:

FIGURE 3-5 Water System Storage Components

- Operational storage (OS)
- Equalizing storage (ES)
- Standby Storage (SS)
- Fire suppression storage (FSS)
- Dead storage (DS)

These required volume components are illustrated in Figure 3-5. Table 3-11 provides equations or methods from the Water System Design Manual to calculate or determine each volume component. A reservoir's effective storage volume is the nominal or total volume less operational storage and dead storage. This volume must be large enough to accommodate the requirements for equalizing storage, standby storage, and fire suppression storage.



Operational Storage

Operational storage is the amount of water that flows in and out of a reservoir during normal system control cycling. Reservoirs typically operate with a maximum water level at which all source pumps are turned off, and a minimum level at which all source pumps are turned on and are set by City operations staff. The amount of water that flows into and out of the reservoir between these two levels depends on the operational control levels and the dimensions of the system reservoirs. Operational storage should be sufficient to avoid source of supply pump cycling (starts/stops per hour) in excess of the pump motor manufacturer's recommendation.

Equalizing Storage

Equalizing storage is the amount of water needed to meet peak system demand for the period of time that system demand exceeds the system source capacity. The DOH Water System Design Manual recommends that this volume be estimated as PHD minus source capacity for 150 minutes, but not less than zero. The equalizing volume of a storage tank must be located at an elevation that provides a minimum service pressure of 30 pounds per square inch (psi) to all customers served by the reservoir.

Standby Storage

Standby Storage is water held in reserve for emergency situations, such as structural, electrical, mechanical, or treatment process failure or source contamination. Standby storage is a direct reflection of the consumers' expectation of water service during these abnormal emergency conditions. The City intends major system emergencies, such as those created by an earthquake, to be covered by emergency system operations planning, because construction of sufficient reserve volume to accommodate sustained system demands under emergency conditions is not economically feasible. The DOH Water System Design Manual recommends that this volume be estimated as one days of maximum day demand for the water system, but not less than 200 gallons per ERU. Based on multiple sources being available, this Water System Plan adopts DOH's recommended standby storage volume of one day of maximum day demand.

Fire Suppression Storage

Fire suppression storage accounts for the volume of water needed to supply fire hydrants during a fire. The required fire suppression storage for a given pressure zone is calculated as the required fire flow multiplied by the required duration, as established by the local fire authority. Required fire flows and durations vary across the City's service area, as it includes multiple zoning designations. The maximum fire suppression storage set by the City of Chehalis Fire Department in each zone is 2,000 gpm for 2 hours within the Main Zone and 1,000 gpm for 2 hours within the High Level and Valley View Zones. These requirements are above the minimum requirements set by the DOH Water System Design Manual. The DOH Water System Design Manual allows for the nesting of standby and fire suppression storage with the larger used for storage volume if approved by the local fire authority. The Chehalis Fire Department has approved of nesting of standby and fire suppression storage. An email showing the Fire Chief confirms of these practices is provided in Appendix F.

Dead Storage

Dead storage is the volume at the bottom of the reservoir that cannot be used because it is either physically too low to provide sufficient service pressure at one or more connection in the distribution system or cannot be withdrawn from the reservoir at the required rates while maintaining the minimum required system pressure or other required operating parameter. The amount of dead storage existing in a system depends on storage system dimensions, elevations, pumping systems, outlet design, and possibly other requirements such as disinfectant contact time. Since fire flow storage is the first component above dead storage, the dead storage volume typically must be at an elevation such that a minimum of 20 psi (approximately 46 feet) distribution system pressure is maintained at the highest connection in the zone supplied by the reservoir when the water level in the reservoir reaches the bottom of the fire flow storage.

TABLE 3-11 Reservoir Storage Component Cross-Section Diagram

	High Level Alarm. Overflow above pump off elevation
Pump(s) Off	<p>Operational Storage (OS) Component Not part of ES</p> <p>Not applicable for continuous pumping systems.</p> <p>Minimum OS volume for pump protection can be conservatively calculated as the pump supply capacity (in gpm) times 2.5 minutes.</p>
Pump(s) On	OS = Operational storage component (gallons).
Maintain 30 psi (required)	<p>Equalizing Storage (ES) Component For call-on-demand:</p> <p>ES = (PHD - Q_s)(150 min.), but in no case less than zero.</p> <p>ES = Equalizing storage component (gallons). PHD = Peak hourly demand (gpm). Q_s = Total of all permanent and seasonal sources (gpm).</p> <p>See WSDM Section 7.1.1.2 for sizing criteria for continuous pumping operations.</p>
Low Level Alarm Maintain 20 psi (required)	<p>Fire Suppression Storage (FSS) Component For Single Sources: FSS = (FF)(t_m)</p> <p>FSS = Fire suppression storage component (gallons). FF = Needed fire flow rate, expressed in gpm as specified by fire authority or the Coordination Act, whichever is greater. t_m = Duration of FF rate, expressed in minutes as specified by fire authority.</p>
Maintain 20 psi (recommended)	<p>Standby Storage (SB) Component SB = (N)(SB_i)(T_d)</p> <p>SB = Total standby storage component, or its equivalent, in gallons. N = Number of ERUs based on the ERU_{MDD} value SB_i = Locally adopted unit SB volume in gallons per day per ERU (number of ERUs based on the ERU_{MDD} value) T_d = Number of days selected to meet water system-determined standard of reliability</p> <p>We recommend a minimum SB volume of at least 200 gal per ERU.</p>
	Dead Storage (DS)
	Portion of a gravity reservoir that does not provide required minimum pressure.

(1) Copied from Table 7-1 in the 2019 Water System Design Manual

Main Zone

The Main, Kennicott, and Yates Reservoirs provide storage to the Main Zone. As indicated in Table 3-12, the largest storage volume requirement for this zone is standby storage (which includes standby storage associated with the South End and Centralia-Alpha pressure zones). Because the system has only one source of supply (the WTP), no multi-source credit is applicable to the zone.

There is sufficient storage capacity to accommodate 10-year and 20-year demand projections for all storage requirements. The previous WSP noted a deficiency of 5.08 million gallons associated with the 20-year planning horizon, due primarily to a significant standby storage need related to the large industrial allowance factored into the demand forecast. The industrial allowance for this WSP is lower than the 2012 WSP as Google maps was utilized to identify approximately 730 acres of undeveloped industrial zoned area which resulted in an allowance of 1.1 mgd. For additional information, please see the projected demands section in Chapter 2.

TABLE 3-12 Storage Capacity Analysis for Main Zone

	Year			
	2020	2030	2040	Max ERU
Projected ERUs and Demand ⁽¹⁾				
Equivalent Residential Units (ERU's)	11,947	13,817	15,980	20,338
Average Day Demand (gpd)	1,792,028	2,072,561	3,497,011	1,792,028
Maximum Day Demand (gpd)	3,404,853	4,265,256	5,899,898	3,404,853
Available Source (gpd) ⁽²⁾				
Water Treatment Plant				
Current Capacity (4.8 mgd)	4,800,000	4,800,000	4,800,000	4,800,000
Total Available Source (gpd)	4,800,000	4,800,000	4,800,000	4,800,000
Multi-Source Credit (gpd) ⁽³⁾	0	0	0	0
Required Storage Calculations (gal)				
Operational Storage ⁽⁴⁾	125,000	125,000	125,000	125,000
Equalizing Storage ⁽⁵⁾	77,448	220,999	424,800	578,446
Standby Storage ⁽⁶⁾	3,404,853	4,265,256	5,899,898	5,796,330
Fire Flow Storage ⁽⁷⁾	240,000	240,000	240,000	240,000
Required Storage				
Greater than 30 psi at highest meter ⁽⁸⁾	202,446	345,998	549,798	703,444
Greater than 20 psi at highest meter ⁽⁹⁾	3,607,300	4,611,254	6,449,696	6,500,000
Existing Storage Greater Than 30 psi (gal) ⁽¹⁰⁾				
Main Reservoir	3,825,000	3,825,000	3,825,000	3,825,000
Kennicott Reservoir	410,379	410,379	410,379	410,379
Yates Reservoir	285,561	285,561	285,561	285,561
Total Existing Storage at 30 psi	4,520,940	4,520,940	4,520,940	4,520,940
Storage Surplus/(Deficiency) at 30 psi (gal)	4,318,492	4,174,941	3,971,140	3,817,494
Existing Storage Greater Than 20 psi (gal) ⁽¹⁰⁾				
Main Reservoir	5,000,000	5,000,000	5,000,000	5,000,000
Kennicott Reservoir	1,000,000	1,000,000	1,000,000	1,000,000
Yates Reservoir	500,000	500,000	500,000	500,000
Total Existing Storage at 20 psi	6,500,000	6,500,000	6,500,000	6,500,000
Storage Surplus/(Deficiency) at 20 psi (gal)	2,892,699	1,888,744	50,302	0

- (1) Projected ERUs and demands from Chapter 2. ERUs calculated as Average Day Demand / ERU water use factor (140 gpd/ERU).
- (2) Available source assumes source pumps are on for 24 hours in a day, at the maximum production rate.
- (3) Multi-source credit assumes largest source is out of service.
- (4) Operational Storage is based on current operating levels. The City is capable of meeting demand within the Main Zone while intaking source supply water at an equivalent rate. This means that fluctuations in the Main Reservoir are negligible, however we have assumed a tank fluctuation of 6-inches. Record drawings do not provide enough information of the reservoir layout to detail its overall volume of 5 mg. A surface area was calculated as follows: $5 \text{ mg} / 7.48 \text{ gal/ft}^3 / 20 \text{ ft} = 33,422 \text{ sf}$. The surface area and 6-inch tank fluctuation were used to determine the Operational Storage of the tank.
- (5) Equalizing Storage is calculated as shown in Table 3-11 from the 2019 Water System Design Manual.
- (6) Standby Storage is calculated as MDD from the main zone multiplied by T_d because $SB_i \times N$ (see Table 3-11) does not account for ERU's associated with the largest industrial users.
- (7) Required Fire Flow Storage = 2,000 gpm x 2 hours.
- (8) Total required storage greater than 30 psi is equal to the total of operational and equalizing storage. Total required storage greater than 20 psi is equal to the total of operational, equalizing, and the greater of standby or fire flow storage. This assumes standby and fire flow storage are nested, as allowed by the City Fire Department.
- (9) The storage volume available in existing reservoirs at 30 and 20 psi is based on the elevation of the highest customer (~319 ft).
- (10) Maximum ERUs served by Available Storage located solely in the Main Zone.

High-Level Zone

The 155,000-gallon High Level Reservoir provides gravity storage to the High-Level Zone. As noted in Table 3-13, this reservoir is not sufficient to meet projected future needs. A deficiency of approximately 13,000 gallons exists.

The previous WSP noted a deficiency of 55,000 gallons within this zone and recommended construction of a new reservoir to obtain the additional required storage volume to eliminate this deficiency. A new reservoir was constructed; however, storage component calculations were revised by DOH in the 2019 DOH Water System Design Manual and utilizing the current guidance calculations a deficiency within the zone still exists as described above.

The largest storage volume requirement for this zone is fire suppression (120,000 gallons). Required fire suppression storage can be satisfied by reducing operational pump range set points (ON/OFF) from 4 feet to 2.9 feet. The required operational storage volume should be lowered by a large enough quantity of water to eliminate the deficiency in this zone and the operational storage volume would be close to what it was before the new High-Level Reservoir was constructed in 2015. The City is in the process of implementing this solution and will monitor the High-Level Pump Station to ensure the number of starts/stops per day is acceptable in conjunction with revising the operational setpoints. Therefore, no Capital Improvement Projects are identified in Chapter 8 to address this deficiency.

TABLE 3-13 Storage Capacity Analysis for High Level Zone

	Year			Max ERU ⁽¹¹⁾
	2020	2030	2040	
Projected ERUs and Demand⁽¹⁾				
Equivalent Residential Units (ERU's)	184	213	246	N/A
Average Day Demand (gpd)	27,600	31,921	36,918	
Maximum Day Demand (gpd)	52,441	60,650	70,144	
Available Source (gpd)⁽²⁾				
Pump 1 (360 gpm)	518,400	518,400	518,400	
Pump 2 (360 gpm)	518,400	518,400	518,400	
Total Available Source (gpd)	1,036,800	1,036,800	1,036,800	
Multi-Source Credit (gpd) ⁽³⁾	518,400	518,400	518,400	
Required Storage Calculations				
Operational Storage (mg) ⁽⁴⁾	47,586	47,586	47,586	
Equalizing Storage (mg) ⁽⁵⁾	0	0	0	
Standby Storage (mg) ⁽⁶⁾	52,989	60,650	70,144	
Fire Flow Storage (mg) ⁽⁷⁾	120,000	120,000	120,000	
Required Storage				
Greater than 30 psi at highest meter (mg) ⁽⁸⁾	47,586	47,586	47,586	
Greater than 20 psi at highest meter (mg) ⁽⁹⁾	167,586	167,586	167,586	
Existing Storage Greater Than 30 psi (mg)⁽¹⁰⁾				
High Level Reservoir No. 1	154,654	154,654	154,654	
Total Existing Storage at 30 psi (mg)	154,654	154,654	154,654	
Storage Surplus/(Deficiency) at 30 psi (mg)	107,068	107,068	107,068	
Existing Storage Greater Than 20 psi (mg)⁽¹⁰⁾				
High Level Reservoir No. 1	154,654	154,654	154,654	
Total Existing Storage at 20 psi (mg)	154,654	154,654	154,654	
Storage Surplus/(Deficiency) at 20 psi (mg)	(12,932)	(12,932)	(12,932)	

- (1) Projected ERUs and demands from Chapter 2.
- (2) Available source assumes source pumps are on for 24 hours in a day, at the maximum production rate.
- (3) Multi-source credit assumes largest source is out of service.
- (4) Operational Storage is based on current operating levels (i.e., first source is called when reservoir level drops 4 feet).
- (5) Equalizing Storage is calculated as shown in Table 3-11 from the 2019 Water System Design Manual.
- (6) Standby Storage is calculated as shown in Table 3-11 from the 2019 Water System Design Manual.
- (7) Required Fire Flow Storage = 1,000 gpm x 2 hours.
- (8) Total required storage greater than 30 psi is equal to the total of operational and equalizing storage.
- (9) Total required storage greater than 20 psi is equal to the total of operational, equalizing, and the greater of standby or fire flow storage. This assumes standby and fire flow storage are nested, as allowed by the City Fire Department.
- (10) The storage volume available in existing reservoirs at 30 and 20 psi is based on the elevation of the highest customer (~525 ft).
- (11) Maximum ERUs served by Available Storage located solely in the High-Level Zone. Not calculated as there is presently a deficiency.

Valley View Zone

The two 68,000-gallon Valley View Reservoirs provide gravity storage to the Valley View Zone. As noted in Table 3-14, these reservoirs are not sufficient to meet projected future needs. A deficiency of approximately 57,000 gallons exists.

The primary cause for the deficiency is the elevation of available storage relative to the elevation of the highest customer service connections. Only a portion of the reservoirs are available at elevations that can provide 20 psi to the highest connections. Therefore, more than half of the current reservoir volume is dead storage.

TABLE 3-14 Storage Capacity Analysis for Valley View Zone

	Year			Max ERU ⁽¹¹⁾
	2020	2030	2040	
Projected ERUs and Demand ⁽¹⁾				
Equivalent Residential Units (ERU's)	160	185	214	N/A
Average Day Demand (gpd)	24,026	27,787	32,137	
Maximum Day Demand (gpd)	45,650	52,796	61,061	
Available Source (mgd)⁽²⁾				
Pump 1 (128 gpm)	184,320	184,320	184,320	
Pump 2 (128 gpm)	184,320	184,320	184,320	
Total Available Source (gpd)	368,640	368,640	368,640	
Multi-Source Credit (gpd) ⁽³⁾	184,320	184,320	184,320	
Required Storage Calculations				
Operational Storage (mg) ⁽⁴⁾	6,602	6,602	6,602	
Equalizing Storage (mg) ⁽⁵⁾	0	0	0	
Standby Storage (mg) ⁽⁶⁾	46,127	52,796	61,061	
Fire Flow Storage (mg) ⁽⁷⁾	120,000	120,000	120,000	
Required Storage				
Greater than 30 psi at highest meter (mg) ⁽⁸⁾	6,602	6,602	6,602	
Greater than 20 psi at highest meter (mg) ⁽⁹⁾	126,602	126,602	126,602	
Existing Storage Greater Than 30 psi (mg)⁽¹⁰⁾				
Valley View Reservoir No. 1	13,203	13,203	13,203	
Valley View Reservoir No. 2	13,203	13,203	13,203	
Total Existing Storage at 30 psi (mg)	26,406	26,406	26,406	
Storage Surplus/(Deficiency) at 30 psi (mg)	19,805	19,805	19,805	
Existing Storage Greater Than 20 psi (mg)⁽¹⁰⁾				
Valley View Reservoir No. 1	34,894	34,894	34,894	
Valley View Reservoir No. 2	34,894	34,894	34,894	
Total Existing Storage at 20 psi (mg)	69,787	69,787	69,787	
Storage Surplus/(Deficiency) at 20 psi (mg)	(56,814)	(56,814)	(56,814)	

- (1) Projected ERUs and demands from Chapter 2.
- (2) Available source assumes source pumps are on for 24 hours in a day, at the maximum production rate.
- (3) Multi-source credit assumes largest source is out of service.
- (4) Operational Storage is based on current operating levels (i.e., first source is called when reservoir level drops 3.5 feet).
- (5) Equalizing Storage is calculated as shown in Table 7-1 from the 2019 Water System Design Manual.
- (6) Standby Storage is calculated as shown in Table 7-1 from the 2019 Water System Design Manual.
- (7) Required Fire Flow Storage = 1,000 gpm x 2 hours.
- (8) Total required storage greater than 30 psi is equal to the total of operational and equalizing storage.
- (9) Total required storage greater than 20 psi is equal to the total of operational, equalizing, and the greater of standby or fire flow storage. This assumes standby and fire flow storage are nested, as allowed by the City Fire Department.
- (10) The storage volume available in existing reservoirs at 30 and 20 psi is based on the elevation of the highest customer (~620 ft).
- (11) Maximum ERUs served by Available Storage located solely in the Valley View Zone. Not calculated as there is presently a deficiency.

DISTRIBUTION SYSTEM

As required by DOH, the City's water distribution system was analyzed and deficiencies were identified for the following two conditions: peak hour demands (PHD), and maximum day demands (MDD) plus fire flow. All modeling calculations were performed using KYPipe 2018 computer based hydraulic modeling software.

Hydraulic Capacity Analysis

The development of a computer hydraulic model, which can accurately and realistically simulate the performance of a water system in response to a variety of conditions and scenarios, has become an increasingly important element in the planning, design, and analysis of municipal water systems. The Washington State Department of Health's WAC 246-290 requires hydraulic modeling as a component of water system plans.

Hydraulic Modeling Software

The City's water system was analyzed using KYPIPE 2018 hydraulic modeling software. The KYPIPE model was created utilizing the City's water system base map.

The KYPIPE model is configured with a graphical user interface. All water system elements, including pipes, control valves, pumps, and reservoirs are assigned a unique graphical representation within the model. Each element is assigned a number of attributes specific to its function in the actual water system. Typical element attributes include spatial coordinates, elevation, water demand, pipe lengths and diameters, and critical water levels for reservoirs. With attributes of each system element as the model input, the KYPIPE software produces the model output in the form of flows and pressures throughout the simulated water system.

Hydraulic Model Development

Prior to the calibration of the hydraulic model, the basic layout of the water system was recreated within the model. The lengths, diameters, and connection points of system piping were assigned using an updated AutoCAD file of the water system provided by the City. Elevations in the model were adjusted with topographic data from Google Earth.

The locations of the water treatment plant, reservoirs, booster pump stations, and pressure reducing valves are found on water system base maps, while the critical elevations of the reservoirs are taken from as-built drawings and past planning documents. In addition, dimensions of the reservoirs and configuration of the pump stations were checked and adjusted based on record drawings and discussions with City staff regarding facility controls and operations. The PRV settings were also adjusted, and several closed valves added according to staff input. The assumptions regarding the modeling of the source of supply and system demands are included in the following sections.

Source

The water system is currently supplied by the Main Reservoir via gravity and is modeled as an at grade reservoir with the base elevation given in Table 1-5 and grade set at the water level elevation.

System Demands

A key element in the hydraulic modeling process is the distribution of demands throughout the water system. Total demand on the system is based on the projected demands from Table 2-7 and 2-9. Existing and future demands are distributed based on the location of existing water service connections. Seven demand sets were used in the hydraulic analysis as follows:

- 2017, 2018, and 2019 Average Daily Demands: These demands from Table 2-2 were used while calibrating the model to hydrant flow tests performed between 2017 and 2019.
- 2020 Maximum Day Demands: These demands are used to evaluate the existing system's ability to provide fire flow during the 2020 maximum day demand at DOH's requirement of 20 psi minimum residual system wide pressure.
- 2020 Peak Hour Demands: These demands were used to verify the system is able to meet the DOH standards to supply domestic water at a minimum system wide pressure of 30 psi.
- 2030 Maximum Day Demands: These demands were used to evaluate the system's ability to provide fire flow at the end of the current 10-year planning period, at DOH's requirement of 20 psi minimum residual system wide pressure with the 10-year Capital Improvement Plan implemented.
- 2030 Peak Hour Demands: These demands were used to verify that the system, with the 10-year Capital Improvement Plan implemented, will be able to meet the DOH standards to supply domestic water at a minimum system wide pressure of 30 psi at the end of the current 10-year planning period.
- 2040 Maximum Day Demands: These demands were used to evaluate the system's ability to provide fire flow at the projected 2040 maximum day demand at DOH's requirement of 20 psi minimum residual system wide pressure with the 20-year Capital Improvement Plan implemented.
- 2040 Peak Hour Demands: These demands were used to verify the system, with the 20-year Capital Improvement Plan implemented, will be able to meet the DOH standards to supply domestic water at a minimum system wide pressure of 30 psi at the projected 20-year system demands.

Hydraulic Model Calibration

A critical step in the development of a hydraulic model, prior to using it as a tool to analyze system performance, is calibration. Calibration consists of measuring pressure and flows in the field and comparing them with the same pressures and flows simulated in the model. For the steady-state calibration, a total of 8 hydrant tests, conducted by City personnel, between 2017 and 2019, were used. Several other tests were also conducted yielding questionable results and these hydrants were either retested or the test results were discarded. The test locations were selected to provide adequate coverage for each pressure zone and to maximize the friction losses across the system by placing the test locations as far from sources of water for each pressure zone as possible. No physical changes have occurred within the Valley View, South End, or Centralia Alpha Zones; therefore, the previous analysis from the 2012 WSP for these zones is still valid and new hydrant testing in this zone was not performed. Table 3-15 provides the hydrant test date and a description of the location for each test.

TABLE 3-15 Hydrant Testing Dates and Locations

Test No.	Test Date	Test Hydrant Node No.	Monitoring Hydrant Node No.	Location
1	9/09/19	H-175	H-347	2530 NE Kresky Ave
2	1/30/18	H-321	H-320	1755 NW Louisiana Ave
3	11/20/18	H-355	H-61	153 NW State Ave
4	10/09/19	H-221	H-425	SW 16 th St & SW Mills Ave
5	10/09/19	H-143	H-140	2100 SW Woodland Cir
6	9/25/17	H-59	H-10	126 Northstar Rd
7	3/07/19	H-6	H-141	Divot Dr & Village Way Dr
8	11/22/19	H-401	H-354	NE Summit Rd & NE Mountain Way

For the hydrant tests, a pressure gage was placed on the monitoring hydrant and pressure was measured under normal operating (where no hydrant was flowing) or “static” conditions. Once the pressure was recorded, a second testing hydrant was opened and the flow at this hydrant was measured using a pitot gage. While the testing hydrant was open, the pressure was observed and recorded at the monitoring hydrant once gage readings stabilized. To conduct calibration, the system operations or boundary conditions were recorded during the time the hydrant tests were conducted. Some of the hydrant tests used had been previously conducted not in association with this WSP. For some of these previous tests, boundary conditions were not recorded and were assumed based on static pressures. Boundary conditions of concern typically include system demands, reservoir levels, pump station flows, and PRV settings. For the City, the levels in the Main, Kennicott, and Yates Reservoirs were recorded for each hydrant test occurring in the Main Pressure Zone with the levels in the High-Level Reservoir were recorded only for the hydrant test that occurred in the High-Level Zone. The flow rates were recorded for the 18th Street, High Level, Valley View, and South End Pump Stations during each flow test, as well. Table 3-16 provides a summary of the boundary conditions for each test.

TABLE 3-16 Hydrant Testing Boundary Conditions

Test No.	Reservoir Levels (feet) ⁽¹⁾	Status of Pumps
1	Max	Off
2	Max	Off
3	385.5	Off
4	Max	Off
5	Max	Off
6	Max	Off
7	396.4	Off
8	Max ⁽²⁾	Off

(1) Maximum reservoir elevations are the Main, Kennicott, and Yates Reservoir overflow elevations listed in Table 1-5. For tests with elevations listed, the Main, Kennicott, and Yates Reservoirs were all assumed to be at the same elevation.

(2) Maximum reservoir elevation is the High-Level Reservoir overflow elevation listed in Table 1-5.

Setting the boundary conditions for each hydrant test within the model, static pressures and residual pressures at the measured hydrant flow rate were generated. The total system demand at the time of the hydrant tests was set as described in the System Demand section above. Model output was generated at points in the model equivalent to the locations of the hydrant tests. Model output for static pressures was generated by running the model at a steady state scenario. Model output for residual pressures was generated at each hydrant test location by placing an added demand equal to the measured hydrant flow rate and recording the resulting pressure.

The system pressures and pipe flow rates determined in the hydraulic analysis are highly dependent on the friction loss characteristics established for each pipe. The friction losses occurring in lengths of pipe and various valves are accounted for in the hydraulic model. The friction factors for the pipes in the modeled system are adjusted throughout the calibration process until the model output best approximates the measured values. Hazen-Williams C-factors between 75 and 140 (based on pipe age and material) are used throughout the system. These friction factors are typical values for most pipe and are generally conservative. The friction factors for the pipe also compensate for system losses through valves and pipe fittings. The model output was produced for two data comparisons: static pressures; and residual pressures. The values measured in the hydrant flow tests are compared to the model output values in Table 3-17. Comparing the model results with the field measurements for static pressures indicates the overall accuracy of the model node elevations, tank elevations, and PRV settings under normal demand conditions. As shown in Table 3-17, the simulated model pressures were within one psi of the observed field pressures, which indicates a reasonable match between modeled and observed conditions.

Comparing the model results with the field measurements for residual pressures aids in determining whether the model piping is connected correctly, and appropriate friction factors have been used. As shown in Table 3-17 for all eight tests, the residual pressures were within five psi.

TABLE 3-17 Calibration Results

Test No.	Flow (gpm)	Field Test Pressures (psi)			Model Pressures (psi)			Difference between Field Tests and Model Pressures (psi) ⁽¹⁾	
		Static	Residual	Drop	Static	Residual	Drop	Static	Drop
1	1,130	90.0	75.0	15.0	89.2	71.7	17.5	0.8	2.5
2	2,109	98.0	60.0	38.0	97.7	60.7	37.0	0.3	1.0
3	1,011	82.0	70.0	12.0	82.1	69.4	12.7	0.1	0.7
4	1,061	84.0	70.0	14.0	83.9	74.6	9.3	0.1	4.7
5	949	85.5	60.0	25.5	85.0	61.0	24.0	0.5	1.5
6	1,711	69.0	40.0	29.0	68.5	40.4	28.1	0.5	0.9
7	1,167	55.0	46.0	9.0	55.2	42.1	13.1	0.2	4.1
8	472	79.0	38.0	41.0	78.8	36.7	42.1	0.2	1.1

(1) The absolute differences between field tests and model results are presented (no negatives are shown).

Hydraulic models are required to be within 5 psi of measured pressure readings for long-range planning, according to Table 6-1 of the DOH Water System Design Manual. For the purposes of comprehensive planning, the City’s model is well calibrated.

Model Scenarios

The City has a distribution system with approximately 85 miles of pipe. Some of these pipes were installed more than 50 years ago and are reaching the end of their useful lives. Aging infrastructure, inadequately sized pipes and increasing demands all contribute to areas of low pressure during peak hour demands and substandard fire flows at locations or areas where the existing system cannot provide adequate service during existing and future maximum day demand conditions. The model was used to identify improvements that would increase the distribution system capacity to meet the required level of service for static pressures and fire flows.

A number of steady state hydraulic analyses were completed for each pressure zone for existing (2020), ten-year (2030), and twenty-year (2040) demand conditions for both peak hour demand and fire flow demand (MDD plus fire flow) conditions. The results of the PHD and fire flow analyses are described in greater detail below. In addition, an analysis was performed on the 18th Street Pump Station capacity to determine if improvements are needed to meet both current and projected demands in the Main Zone southeast of the pump station.

In accordance with WAC 246-290-230, a minimum distribution pressure of 30 psi must be maintained at all customer connections under PHD conditions with operational and equalizing storage depleted in the reservoirs. During PHD conditions, no sources (water treatment plant and booster stations) are operating which simulates the worst-case scenario. A minimum distribution pressure of 20 psi must be maintained under MDD conditions with operational, equalizing and fire suppression storage depleted if fire flow is to be provided. During fire flow conditions, the model is setup such that the booster pump station supplying the zone under

analysis is turned on. Distribution system fire flow is only provided in the Main and High-Level Zones. As previously discussed, the previous 2012 analysis of the Valley View Zone is used. If these criteria could not be met, improvements were identified and through an iterative trial-and-error process, implemented until pressure criteria could be satisfied with a minimum of total pipe and facility additions. Table 3-18 provides the reservoir levels for each scenario.

TABLE 3-18 Reservoir Levels During Model Scenarios

Storage Facility	Overflow Elevation (ft)	PHD Elevation (ft)	MDD Elevation (ft)	Base Elevation (ft)
2020				
Main Reservoir	403.3	402.8	401.5	383
Kennicott Reservoir	397.9	397.9	397.9	374
Yates Reservoir	403.5	402.8	401.5	376
High Level Reservoir	618.0	614.0	605.0	605
2030				
Main Reservoir	403.3	402.0	401.1	383
Kennicott Reservoir	397.9	397.9	397.9	374
Yates Reservoir	403.5	402.0	401.1	376
High Level Reservoir	618.0	614.0	605.0	605
2040				
Main Reservoir	403.3	401.3	400.2	383
Kennicott Reservoir	397.9	397.9	397.9	374
Yates Reservoir	403.5	401.3	400.2	376
High Level Reservoir	618.0	614.0	605.0	605

Peak Hour Demand Modeling Results

Figures 3-6, 3-7, and 3-8 present the PHD pressure results for the years 2020, 2030, and 2040 respectively. Appendix I contains the KYPipe Analysis Reports as well as a pipe age inventory containing year of pipe installation, if known. These results are used to identify areas of low pressure (< 30 psi), areas of high pressure (> 80 psi), and maximum pipe velocities.

As readily observed in the figures, the only areas of low pressure (< 30 psi) during PHD are directly around the reservoirs and WTP where there are no services. Therefore, no significant areas of low pressure are observed throughout the system.

By contrast, there are many nodes which experience pressures greater than 80 psi. The highest system pressures are observed in the lower elevation portions of the High-Level Zone, the east end of the Main Zone, around the intersection of SW Riverside Drive and SW Sylvenus Street in the Main Zone west of I-5, and at the dead end in NW Louisiana Avenue in the Main Zone west of I-5. Some of these high system pressures coincide with aging cast iron, ductile iron, or asbestos cement pipe which is of concern to the City due to the aging pipe's susceptibility to failure at high pressures. This is the primary driver for planned pipe replacement projects in

these areas, as described in Chapter 8. No other improvements have been identified solely to address pressure-related deficiencies.

The KYPipe Analysis Report in Appendix I shows the maximum velocity of any pipe under PHD to be 6.21 feet per second (ft/s) which is less than the maximum DOH recommended velocity in distribution mains of 8 ft/s, per Section 6.2.6 of the DOH Water System Design Manual.

Fire Flow Modeling Results

Fire flow analysis results are provided in Figures 3-9, 3-10, and 3-11 for the years 2020, 2030, and 2040, respectively. These figures indicate available fireflow throughout the system. Detailed results for select key locations are summarized in Table 3-19.

Improved fire flow conditions in the future (except for the Valley View Zone) at the select locations are a result of planned capital improvement projects, which are described in detail in Chapter 8. The improvements that are related to fire flow are specifically called out in Chapter 8 and are comprised primarily of pipeline looping and upsizing.

18th Street Pump Station Analysis

Reservoir storage is sufficient to supply peak hour and fireflow demands; however, a pseudo-extended period (continuous) simulation was performed to determine if the 18th Street Pump Station can fill both the Kennicott and Yates reservoirs under current and projected maximum day demands in the Main Zone southeast of the pump station. The 18th Street Pump Station capacity is compared against MDD because this area is considered an “open” zone due to the Kennicott and Yates Reservoirs.

Demands located in this area of the water system include Chehalis Power, several Large Non-Residential Users, and a significant percentage of the large industrial allowance factor (see Chapter 2, Projected Demands for descriptions) and are presented in Table 3-19.

TABLE 3-19 18th Street Pump Station Capacity Analysis

Year	Capacity (gpd) ⁽¹⁾	MDD (gpd) ⁽²⁾	Capacity Surplus (Deficit) (gpd)
2020	1,728,000	1,693,152	34,848
2030	1,728,000	2,209,968	(481,968)
2040	1,728,000	3,370,464	(1,642,464)

(1) Capacity assumes the 18th Street pumps are operating at the maximum production rate: 1,200 gpm for 24 hours per day.

(2) Residential and non-residential MDD are automatically distributed evenly across the hydraulic water model nodes, then several large non-residential demands, the Chehalis Power MDD, and a percentage of the large industrial demand factor are manually added to calculate a total MDD in the Main Zone southeast of the 18th Street Pump Station. For the year 2020 scenario, Chehalis Power MDD is based on monthly demand data. For the year 2030 and 2040 projections, Chehalis Power MDD is based on the maximum use per the agreement between Chehalis Power and the City.

As seen in Table 3-19, the 18th Street Pump Station can support current demands, but is not able to support 10- and 20-year projected demands, especially associated with industrial development. The existing pump capacity can be increased by upsizing the existing 8-inch pipe upstream and downstream of the 18th Street Pump Station. This will allow the existing pumps to move farther out on their pump curve and pump a higher flow at lower head. Capital Improvement Project D-27 involves upsizing approximately 2,000 linear feet upstream and 2,000 linear feet downstream of the 18th Street Pump Station from 8-inch and 10-inch CI pipe to 16-inch DI pipe.

The 18th Street Pump Station pump curve was input into KYPipe and Capital Improvement Project D-27 was modeled. From this analysis, it was determined CIP D-27 will increase 18th Street Pump Station capacity to 1,700 gpm (2,448,000 gpd) which will meet 2030 MDD. The pumps will need to be replaced with larger pumps to meet 2040 MDD.

SUMMARY OF SYSTEM DEFICIENCIES

From the foregoing discussions, the following are the identified water system deficiencies. No attempt is made here to prioritize the deficiencies. Improvements to correct identified system deficiencies will be prioritized in Chapter 8, Capital Improvements.

SOURCE DEFICIENCIES

The Chehalis River is limited by an annual quantity of 0.87 mgd and the Newaukum River is limited by a seasonal low flow of 2.68 mgd. As shown in Table 3-6, there will be an average day demand deficiency of 0.08 mgd in the planning year 2040 primarily due to the large industrial demand described in Chapter 2. The source analysis did not find any maximum day demand source deficiencies because the Chehalis River has a large 7.50 mgd instantaneous quantity.

The City may also want to consider replacing raw water pumps with variable speed pumps to increase pumping efficiency if this can be shown to create a net cost savings. In addition, the 18th Street Pump Station capacity is deficient by 0.48 mgd in 2030 and 1.64 mgd in 2040 to support projected MDD in the Main Zone southeast of the pump station, especially associated with industrial development. If Capital Improvement Project D-27 is implemented, the pump station capacity is sufficient to support 2030 MDD and would be deficient by 0.92 mgd in 2040.

RAW WATER PUMPING AND TRANSMISSION DEFICIENCIES

The City of Chehalis does not have any raw water pumping or transmission piping deficiencies because the North Fork of the Newaukum River transmission pipe has a greater capacity than the river's seasonal low flow and the Chehalis River pump station and transmission pipe has a large 7.0 mgd capacity.

Raw water pumping and transmission facility capacity appear to be adequate, although the Chehalis River transmission line and intake is past its estimated remaining life and is in need repair or replacement in coming years, see Table 1-9. The City of Chehalis plans to replace this transmission main, see Chapter 8.

WATER TREATMENT DEFICIENCIES

The water treatment plant has a capacity of 4.8 mgd which is shown to be deficient beginning in year 2036, see Table 3-6.

WATER STORAGE DEFICIENCIES

There are no storage deficiencies identified in the 20-year planning period for the Main Zone. The High-Level zone has been identified to have a deficiency of approximately 13,000 gallons for the current, 10-year, and 20-year planning periods. Options for addressing this deficiency have been provided in the High-Level Zone Storage Analysis Section above. The Valley View Zone has been identified to have a deficiency of approximately 57,000 gallons for the current, 10-year, and 20-year planning periods.

WATER DISTRIBUTION SYSTEM DEFICIENCIES

Table 3-19 and Figures 3-9, 3-10, and 3-11 summarize the deficiencies with the City of Chehalis water distribution system from the fireflow analysis.

TABLE 3-20 Distribution System Deficiencies

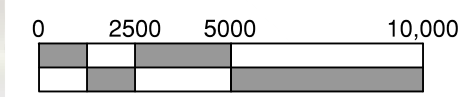
ID	Pressure Zone	Location	Deficiency Notes	Fire Flow Goal (gpm)	Available Fire Flow (gpm)		
					2020	2030 ⁽¹⁾	2040 ⁽¹⁾
A	Main	NE Grove St & NE Alaskan Way	8" Dead End – 3 Hydrants	2,000	1,327-1,542	1,409-1,660	1,361-1,599
B	Main	NW Airport Rd	8" Dead End – 2 Hydrants	2,000	1,796-1,930	1,882-2,006	1,843-1,964
C	Main	Chehalis-Centralia Airport	4" Dead End – 2 Hydrants	2,000	636-1,908	644-2,002	636-1,964
D	Main	NE State Ave	6" Dead End – 2 Hydrants	2,000	1,080-1,218	2,890-3,000+	2,844-3,000+
E	Main	N National Ave, north of NE Kresky Ave	8" Dead End – 1 Hydrant	2,000	1,634	3,000+	3,000+
F	Main	Coal Creek Rd	4" Loop – 2 Hydrants	2,000	562-825	566-833	552-822
G	Main	NW Louisiana Ave	6" Dead End – 1 Hydrant	2,000	857	870	856
H	Main	IL/CG & R1 Zones north of NW Middle St ⁽²⁾	4" & 6" Piping – 8 Hydrants	2,000	981-1,839	2,090-2,570	2,050-2,527
I	Main	N National Ave	6" Loop – 4 Hydrants	2,000	1,262-1,720	3,000+	3,000+
J	Main	NW Florida Ave to NW Shoreline Dr	4" Loop – 6 Hydrants	2,000	149-1,167	149-1,195	146-1,170
K	Main	R4 and CBD Zones north of Park St, east of N Market Blvd ⁽²⁾	High Elevation Nodes & 6" Piping– Multiple Hydrants	2,000	445-2,000+	461-3,000+	2,057-3,000+
L	High Level	NE Jefferson Ave, NE Quarry Terrace, NE Summit Rd, and SE Winchester Hill Dr	4" & 6" Piping – 7 Hydrants	1,000	396-633	1,130-1,721	1,117-1,702
M	Main	NW Hawthorne Pl	6" Loop – 1 Hydrant	2,000	1,967	2,032	3,000+
N	Main	NW Center Street & NW Chehalis Ave	4" Loop – 1 Hydrant	2,000	1,943	2,008	3,000+
O	Main	SE Adams Ave, SE Washington Ave, and S Market Blvd	4" & 6" Piping – Multiple Hydrants	2,000	415-2,000+	2,322-3,000+	2,164-3,000+
P	Main	SW Alfred St & SW Pacific Ave	4" Loop – 1 Hydrant	2,000	1,667	3,000+	3,000+
Q	Main	SW Chehalis Ave	6" Loop – 3 Hydrants	2,000	1,949-1,988	2,035-2,060	1,992-2,047
R	Main	SW Pacific Court	6" Dead End – 2 Hydrants	2,000	1,104-1,261	1,124-1,285	2,468-2,588

S	High Level	SE Prospect St & SE Aust Manor Dr	High Elevation Nodes – 4 Hydrants	1,000	814-939	1,082-1,489	1,285-1,468
T	Valley View ⁽³⁾	Total Zone	Low Pressures & 6” Piping	1,000	500-800	750-1,200	750-1,200
U	Main	SW William Ave	4” Loop – 1 Hydrant	2,000	887	903	3,000+
V	Main	R2 and School Zones in and around W F West High School	4” & 6” Piping – Multiple Hydrants	2,000	689-2,000+	689-3,000+	2,114-3,000+
W	Main	SW Interstate Ave	6” Dead End – 1 Hydrant	2,000	1,300	3,000+	3,000+
X	Main	SE Spring St	High Elevation Node – 1 Hydrant	2,000	1,998	2,056	2,043
Y	Main	Sunflower Ct	4” Dead End – 1 Hydrant	2,000	1,117	1,642	2,216
Z	Main	Stan Hedwall Loop	6” Dead End – 2 Hydrants	2,000	712-1,084	712-1,080	697-1,063
AA	Main	Wallace Rd	8” Dead End – 1 Hydrant	2,000	1,648	1,642	2,985
AB	Main	SW 22 nd St	6” Dead End – 1 Hydrant	2,000	1,041	1,044	2,209
AC	Main	SW Creekside Ln	8” Dead End – 3 Hydrants	2,000	1,404-1,639	1,466-1,734	3,000+
AD	Main	Habein Rd, Sturdevant Rd, and Sears Rd	8” Dead Ends & 10” Piping – 6 Hydrants	2,000	1,300-1,740	1,610-2,662	1,585-2,613
AE	Main	Rice Rd	8” Dead End – 5 Hydrants	2,000	1,370-1,867	1,378-1,899	1,316-1,826
AF	Main	Newaukum Village Dr, Ironwood Ct, Divot Dr, and Newaukum Golf Dr	8” Dead End – 5 Hydrants	2,000	1,823-2,000+	1,800-3,000+	1,756-3,000+
AG	Main	Holloway Dr	8” Dead End – 2 Hydrants	2,000	1,776-1989	2,529-3,000+	2,473-2,974

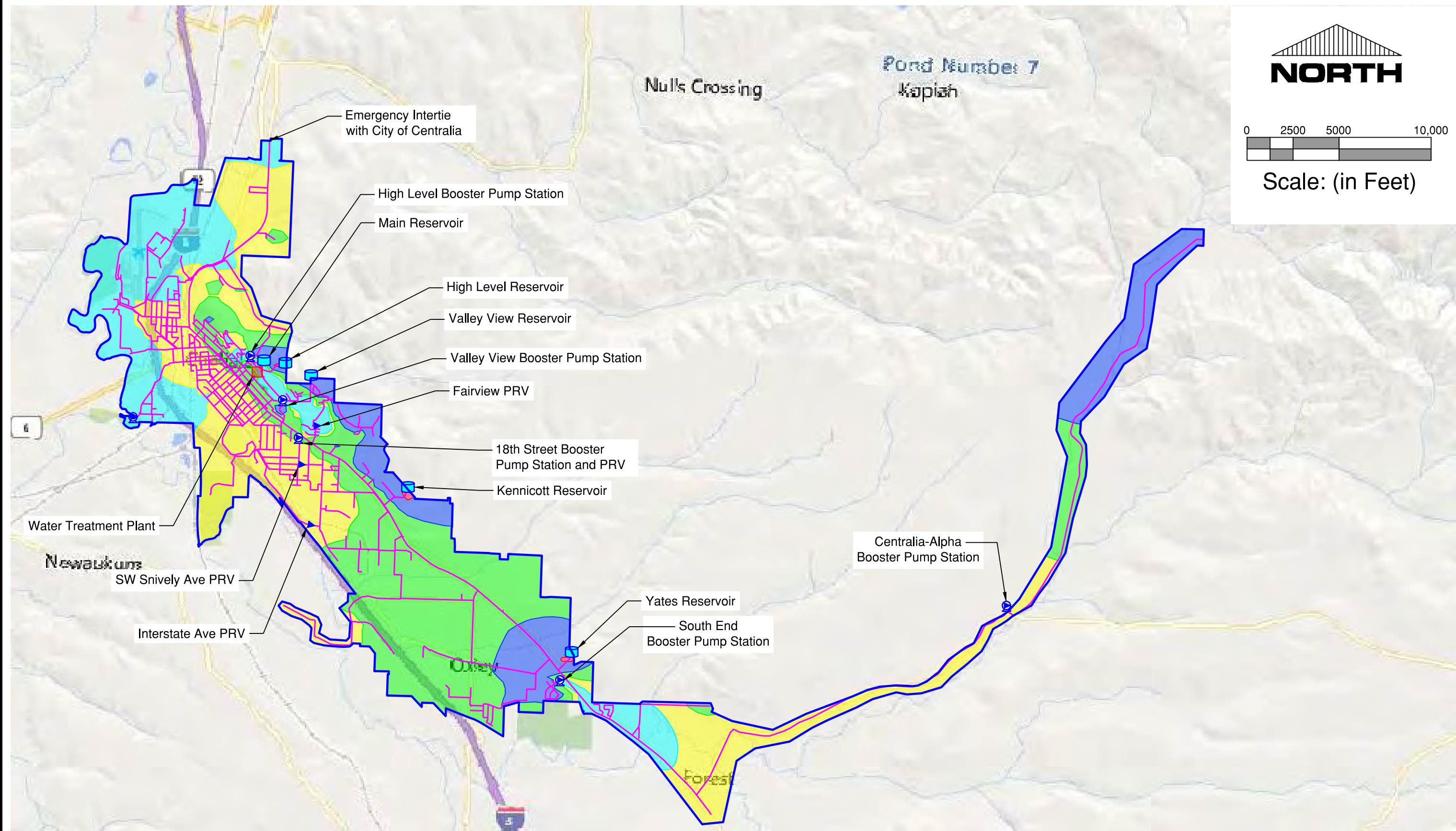
(1) Improved fire flow conditions for the years 2030 and 2040 are a result of modeled Capital Improvement Projects as discussed in Chapter 8.

(2) See the Zoning Map in Figure 1-5.

(3) Deficiencies for the Valley View Zone are copied from the previous 2012 WSP as discussed under the Hydraulic Model Calibration section above.

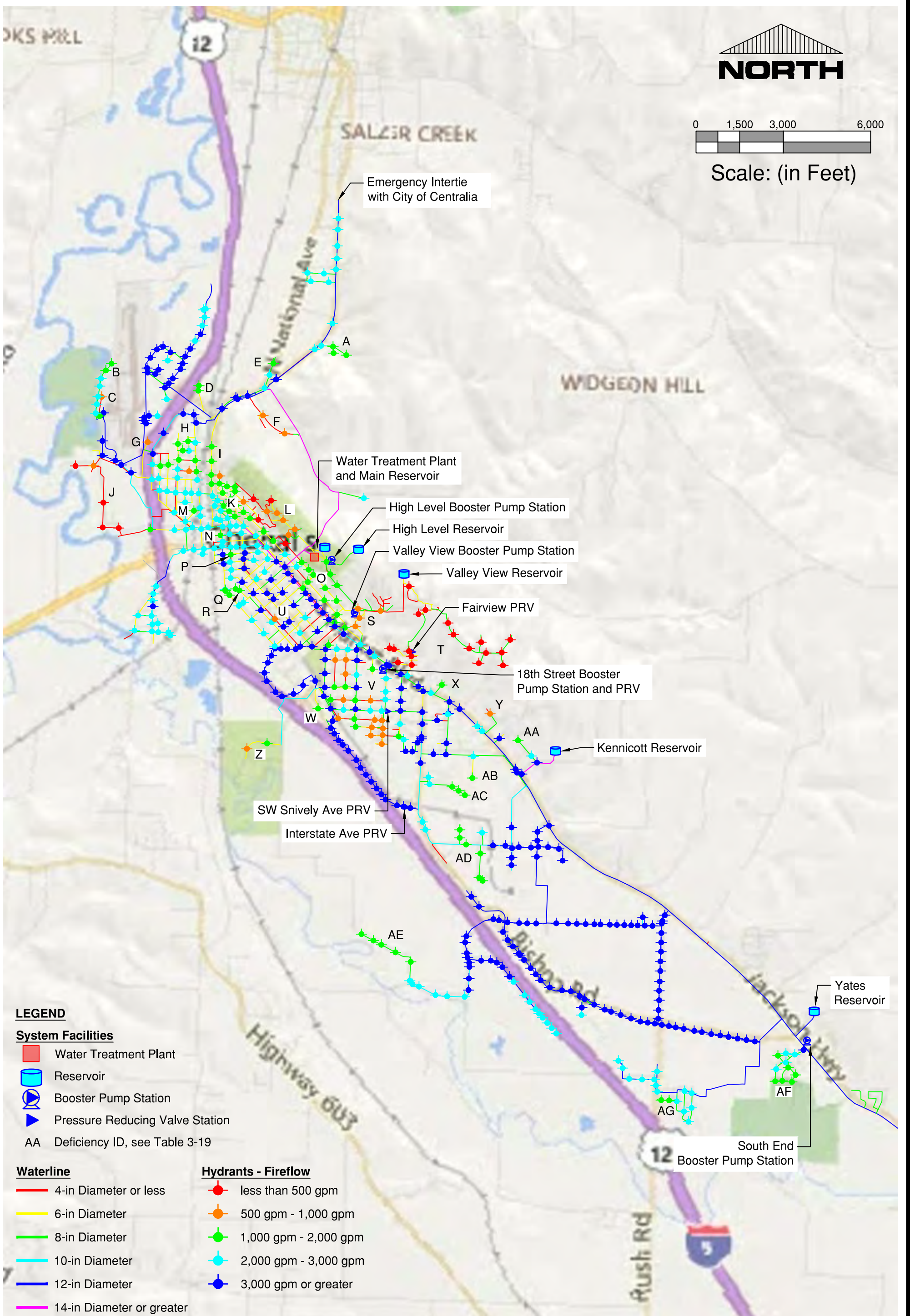


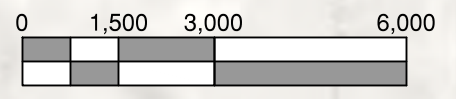
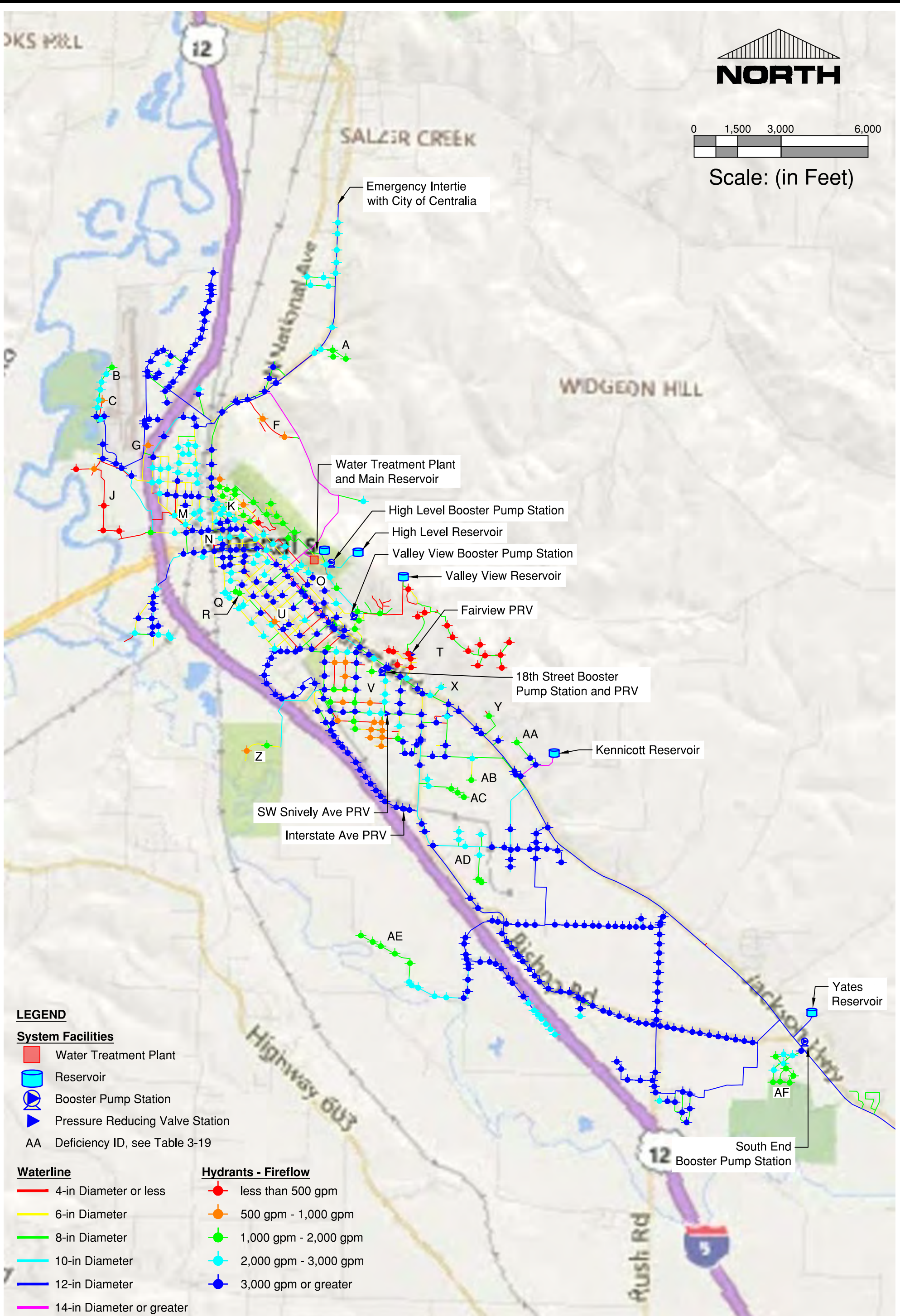
Scale: (in Feet)



- Service Area Boundary
- Retail Water Service Area Boundary
- Water Distribution Pipe
- Reservoir
- Booster Pump Station
- ▶ Pressure Reducing Valve Station
- < 30 psi
- 30 - 60 psi
- 60 - 80 psi
- 80 - 90 psi
- > 90 psi

DRAWING: 11/19/2020 CASE: CHEHALIS WATER SYSTEM PLAN, WATER SYSTEM PLAN, 10/27/2021, 8:46:47 AM, DRAWING SAVE DATE: 9/27/2021 8:46:45 AM, PLOTTED BY: KRIGERS, PLOT DEVICE: GIBBS & OLSON, DWG TO: PROJECT, PLOT STYLE TABLE: GIBBS-OLSON STANDARD COLOR, PAPER SIZE: A, SHEET: 1, 11.00 X 17.00, INCHES





Scale: (in Feet)

LEGEND

System Facilities

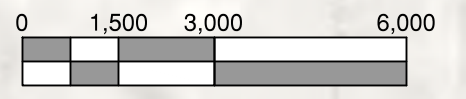
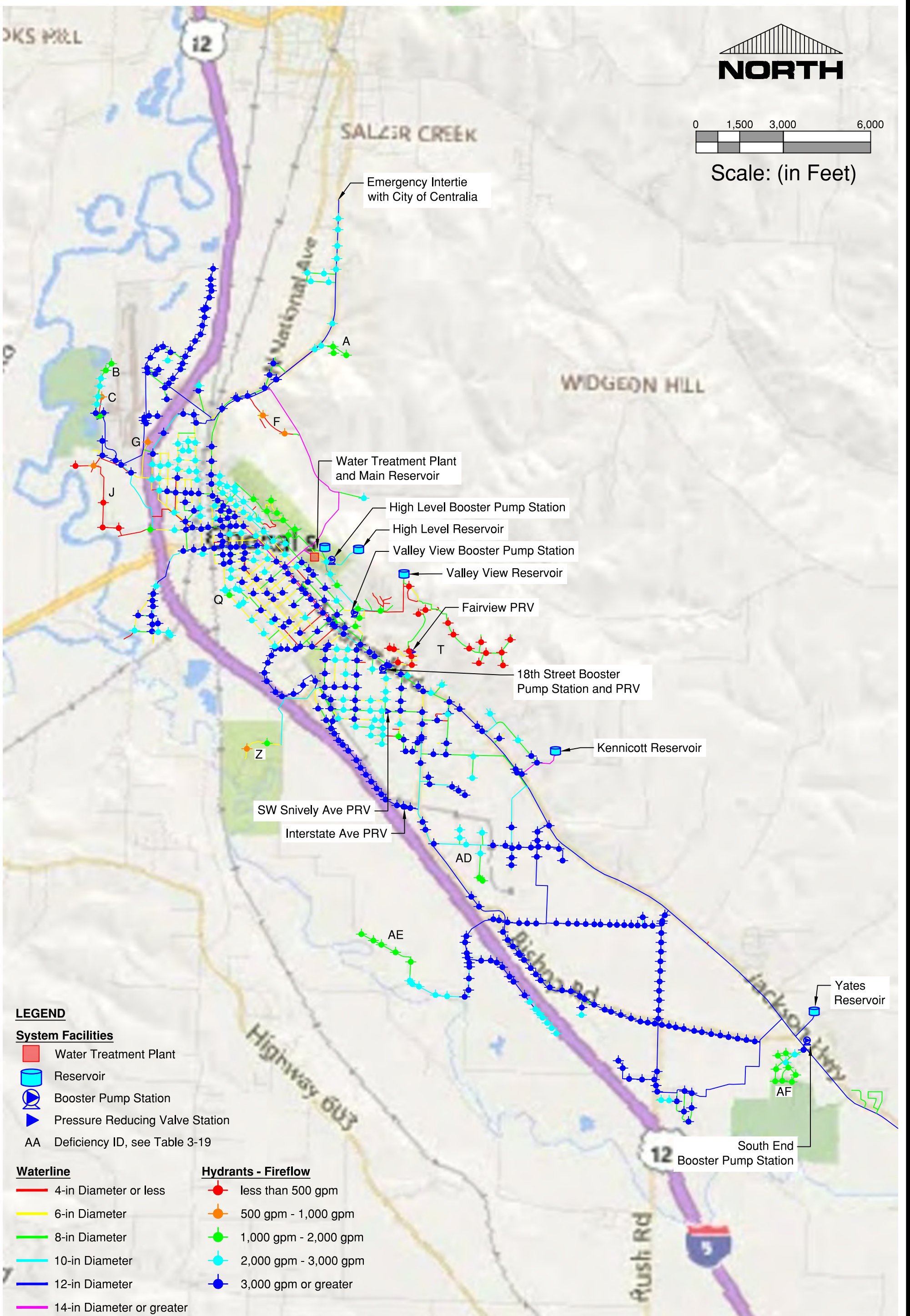
- Water Treatment Plant
- Reservoir
- ⊙ Booster Pump Station
- ▶ Pressure Reducing Valve Station
- AA Deficiency ID, see Table 3-19

Waterline

- 4-in Diameter or less
- 6-in Diameter
- 8-in Diameter
- 10-in Diameter
- 12-in Diameter
- 14-in Diameter or greater

Hydrants - Fireflow

- less than 500 gpm
- 500 gpm - 1,000 gpm
- 1,000 gpm - 2,000 gpm
- 2,000 gpm - 3,000 gpm
- 3,000 gpm or greater



Scale: (in Feet)

LEGEND

System Facilities

- Water Treatment Plant
- Reservoir
- ▶ Booster Pump Station
- ▶ Pressure Reducing Valve Station
- AA Deficiency ID, see Table 3-19

Waterline

- 4-in Diameter or less
- 6-in Diameter
- 8-in Diameter
- 10-in Diameter
- 12-in Diameter
- 14-in Diameter or greater

Hydrants - Fireflow

- less than 500 gpm
- 500 gpm - 1,000 gpm
- 1,000 gpm - 2,000 gpm
- 2,000 gpm - 3,000 gpm
- 3,000 gpm or greater

Chapter 4

WATER USE EFFICIENCY PROGRAM

CHAPTER 4 - WATER USE EFFICIENCY PROGRAM

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APPENDICES

Appendix J	Excerpt from Chehalis, Napavine and Lewis County Sewer District No. 1 Facilities Plan
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OBJECTIVES

Objectives of this chapter are to identify the conservation and water use efficiency requirements pertaining to the Chehalis Water System, evaluate past conservation efforts, and describe the Water System’s water use efficiency plan for the next 10 years.

WATER USE EFFICIENCY PLANNING REQUIREMENTS

In 1989, the Washington Legislature passed the Water Use Efficiency Act (43.20.230 RCW), which directed DOH to develop procedures and guidelines relating to water use efficiency. In response to this mandate, Ecology, the Washington Water Utilities Council, and DOH jointly published a document titled *Conservation Planning Requirements* (1994). In 2003, the Municipal Water Supply – Efficiency Requirements Act (Municipal Water Law) was passed. This legislation amended RCW 90.03 to require additional conservation measures. The Municipal Water Law applies to all Municipal Water Suppliers. Among other things, the Municipal Water law directed DOH to develop the Water Use Efficiency Rule (WUE Rule), which was adopted January 22, 2007. In addition, DOH has developed a WUE Rule guidance document titled “Water Use Efficiency Guidebook” (WUE Guidebook) originally dated July 2007, revised January 2011 and again in January 2017 (DOH Publication #331-375). The WUE Guidebook supersedes and replaces the 1994 Conservation Planning Requirements. Therefore, the WUE Rule and the WUE Guidebook now provide all the currently effective water use efficiency planning requirements.

WATER USE EFFICIENCY RULE

The WUE Rule consists of a series of amendments to existing sections and addition of new sections to WAC 246-290, the Group A Public Water System Regulations, and sets additional requirements for public water purveyors. The WUE Rule is comprised of four sections:

1. Planning requirements
2. Metering requirements
3. Distribution leakage standard
4. Goal setting and performance reporting requirements

The WUE Guidebook is intended to provide guidance and clarification on the requirements of the WUE Rule, and not to establish any additional requirements. The requirements of the WUE Rule are discussed in the following sections.

PLANNING REQUIREMENTS

The Planning Requirements of the WUE Rule include the following:

- Estimation of the amount of water saved through implementation of the system’s WUE program over the past 6 years.

- Description of the water system’s WUE goals.
- Select WUE measures.
- For each WUE measure selected, either:
 - Include a plan to implement the measure, or
 - Evaluate selected water use efficiency measures to show that they are not cost effective.

These WUE Rule planning requirements are addressed in the following sections.

WATER USE EFFICIENCY GOALS

The WUE Rule requires that the “governing body of the public water system shall establish water use efficiency goals within 1 year of the effective date of this rule.” The effective date of the rule was January 22, 2007, so the WUE Goals were to be adopted by the City of Chehalis by January 22, 2008. The WUE Rule further requires that WUE Goals must “be set in a public forum that provides opportunity for consumers and the public to participate and comment on the water use efficiency goals.” The WUE Goals adopted by the City of Chehalis in their 2012 Water System Plan were as follows:

The Chehalis City Council adopted a water-use efficiency goal in 2009 (Resolution 4-2009). This goal was to achieve a year-round average reduction of 25,000 gallons per day by 2015. This is to be measured by comparison with what demand would have been in 2015 if the City’s conservation program were not continued.

TABLE 4-1 Water Savings from 2009 Water-Use Efficiency Goal

Year	Total Water Produced (gal)	Projected Demand (2012 WSP) ⁽¹⁾		Savings (gal) ⁽²⁾	Savings (gal/day) ⁽³⁾
		Without Conservation (gal)	With Conservation (gal)		
2008	708,000,000	708,100,000	708,100,000	N/A	N/A
2009	664,833,000	667,950,000	631,450,000	43,167,000	118,266
2010	646,543,000	697,150,000	671,600,000	18,290,000	50,110
2011	601,597,000	704,450,000	635,100,000	44,946,000	123,140
2012	626,038,000	711,750,000	638,750,000	(24,441,000)	(66,779)
2013	620,304,000	719,050,000	646,050,000	5,734,000	15,710
2014	681,491,000	726,350,000	649,700,000	(61,187,000)	(167,636)
2015	635,249,000	733,650,000	653,350,000	46,242,000	126,690
Total	5,185,055,000	5,668,450,000	5,234,100,000	72,751,000	N/A

- (1) Projected Demand with and without conservation from the 2012 WSP, Tables 4-9 and 4-10.
- (2) Savings calculated by subtracting current year’s Total Water Produced minus previous year’s Total Water Produced.
- (3) Savings calculated by dividing yearly Savings by 365 days per year (366 days in 2012).

As shown in Table 4-1, the City's previous WUE goal of reducing water use by 25,000 gallons per day (9,125,000 gallons per year) has been met according to the Water Use Efficiency Annual Performance Reports found within the Department of Health's Sentry Database. On average between the years of 2008 through 2015, the City saved approximately 28,512 gallons per day.

The City's most recent WUE Goal was re-established through a public forum that was held on June 24, 2019 (Meeting Minutes are included in Appendix F), as shown below:

- Demand Side Goal: Reduce seasonal water use by 3 percent in May, June, July, and August

As the water system continues to grow, it is anticipated that the water use efficiency will continue to improve based upon the City's efforts to promote water conservation, notify consumers of possible service leaks, and assist them by locating the leaks, performing meter testing and replacement programs, and making improvements to the water system.

SELECTED WATER USE EFFICIENCY MEASURES

The WUE Rule requires that water systems with 2,500-9,999 service connections must implement or evaluate a minimum of six water use efficiency measures. The WUE Guidebook further states that water use efficiency measures that are required in other portions of the WUE Rule cannot be counted as measures to be selected under this requirement. Measures required in other portions of the WUE Rule include the following:

- Installation of source and service meters if meters are not already present;
- Regular calibration of meters;
- Development and implementation of a water loss control program if DSL exceeds 10 percent; and
- Education of consumers about water use efficiency practices once per year.

Measures that the WUE Guidebook suggests can count toward satisfying the six required water use efficiency measures include the following:

- Implementation of a conservation rate structure.
- Implementation of a water reclamation program.
- Customer assistance in repair of leaks in customer service lines and in homes. Additional consumer education, such as student education and consumer education at fairs.
- Bills showing water consumption history.

Note that implementation of measures by customer class count as separate measures for each customer class for which they are implemented. Chehalis has adopted the following WUE Measures:

Measures to Meet Supply Side Goal

Adopted WUE measures to meet the supply side goal and their implementation status as of May 10, 2021, are summarized in Table 4-2 below. The City fully meters water production and water sales to all customers. Large customer meters are tested regularly; and 10% of service meters are replaced each year.

TABLE 4-2 WUE Supply Side Measures

Measure	Status
Perform large meter testing annually.	Implemented

Measures to Meet Demand Side Goal

Adopted WUE measures to meet the demand side goal and their implementation status as of May 10, 2021 are summarized in Table 4-3 below.

TABLE 4-3 WUE Demand Side Measures

Measure	Status
Implement conservation-based water billing rate structure.	Implemented
Notify customers of and assist in locating suspected service leaks.	Implemented
Use reclaimed water at Chehalis WWTP for tree farm irrigation.	Implemented
Provide additional consumer education through sponsored outreach programs at local schools, water saving tips on the City website, and promoting WUE practices on local buses and via public radio.	Implemented
Document water consumption history on monthly consumer invoices.	Implemented
Distribute water efficient kits throughout the community.	Implemented

Chehalis is currently implementing six countable WUE measures; therefore, Chehalis is implementing the minimum of six measures required by the WUE Rule based upon the current system size and meets this requirement of the WUE Rule. These measures are further detailed in the following sections.

Customer Outreach

The City provides water consumption history on customer bills; lists water conservation tips in the City's annual Consumer Confidence Report distributed by mail to all customers; and makes DOH conservation brochures available to the public at City Hall. In addition, the City's quarterly newsletter includes promotional information on water conservation.

Schools Outreach

The City sponsors a module on water conservation for the 5th-Grade science curriculum in the Chehalis School District. The curriculum uses the WaterWise™ Program, purchased from Resource Action Programs in Modesto, CA. The City also holds an annual class with 10-grade students in the Chehalis School District to promote awareness

of water use and water conservation opportunities. This class includes a take-home exercise to measure common uses of water in the home.

Residential Kits

Water saving kits are distributed via the 5th Grade science curriculum described above. The WaterWise™ curriculum includes a kit with several water-saving devices, including high-efficiency showerhead, bathroom faucet aerator, kitchen faucet aerator, rain gauge, toilet leak-detection tablets and instructions, a flow-rate test bag; and assorted water information and kit instructions.

Rate Structure

The City has a uniform rate structure that bills customers for every unit of consumption.

IMPLEMENT OR EVALUATE WATER USE EFFICIENCY MEASURES

Chehalis is currently implementing six WUE Measures, which meets the minimum requirement. Since the minimum number of WUE Measures are being implemented, no evaluation of the cost effectiveness of conservation measures is required.

METERING REQUIREMENTS

The WUE Rule requires all sources and customer service connections be metered by January 22, 2007. Chehalis currently meters all sources, and all customers, and implements a water meter replacement program to assure meter accuracy. Therefore, no further action is required to comply with this requirement.

DISTRIBUTION SYSTEM LEAKAGE STANDARD

The WUE Rule set a distribution system leakage (DSL) standard of 10 percent or less of finished water production. DSL is defined as the sum of all water metered into the distribution system over a 3-year time period, less the sum of all metered water uses, and known or credibly estimated unmetered uses, out of the distribution system over the same time period. Known or credibly estimated unmetered uses may include uses such as construction, firefighting, water main flushing, and estimated leakage from leaks that have been repaired.

The City's three-year average DSL as shown in Table 2-3 is 17.4%, which is over the DSL Standard of 10 percent, thus requiring a Water Loss Control Action Plan (WLCAP).

WATER LOSS CONTROL ACTION PLAN (WLCAP)

Water systems must adopt a water loss control action plan (WLCAP) when DSL exceeds an average of 10-percent over the most recent three-year period. Per WAC 246-290-820(4), a WLCAP must include the following:

- The control methods necessary to achieve no more than 10 percent DSL.
- An implementation schedule.
- A budget that shows how the control methods will be funded.
- Any technical or economic concerns that may affect the system’s ability to achieve the standard, including past efforts.
- An assessment of data accuracy and data collection.

Control Methods: The City currently implements water system leak detection of approximately 10 to 15 miles of existing piping, large meter testing, and active annual replacement of up to 10 percent of water meters. The City also works to further define all authorized uses of both metered and unmetered water including firefighting, construction, flushing, treatment plant uses, and uses at City facilities which will result in a DSL that is better indicative of actual leaks.

Implementation and Schedule: The City will continue to perform these efforts and replace any existing water mains found to be contributing to its DSL to actively eliminate approximately 2 to 3 percent of their DSL on a yearly basis to achieve the DSL standard within 6 to 7 years after approval of this WSP.

Financing: The City is capable of self-financing these yearly efforts as they currently complete these control methods through an annual budget for water system improvements.

Technical or Economic Concerns: None.

Data Accuracy and Collection: The City tracked water production and filter backwash on Water Treatment Plant Monthly Report Forms (DOH Form 331-023-F), water sales via monthly utility billings, and kept a log of other authorized consumption. Water consumption data was not provided for the years of 2015-2016; however, this does not affect the three-year average DSL.

GOAL SETTING AND PERFORMANCE REPORTING

Pursuant to the WUE Rule, the City of Chehalis must set water use efficiency goals and report progress annually. The City of Chehalis’ water use efficiency goals have been addressed in preceding sections of this chapter. The annual report must include the following:

- Total source production
- DSL in percentage and volume
- Goal description, schedule, and progress toward meeting goals

GOAL SETTING

The WUE Rule requires that water conservation goals must include a measurable outcome, address water supply or demand characteristics, and include an implementation schedule. The goal setting process must be held through a public forum and be re-evaluated every 6 years. The first water use efficiency goals were to be set by January 22, 2008 for municipal water suppliers with 1,000 or more service connections, and by January 22, 2009 for municipal water suppliers with fewer than 1,000 service connections.

WUE goals described within the previously adopted WSP, their outcome, and subsequently adopted WUE goals are described earlier within this chapter.

WATER USE DATA REPORTING

The WUE Rule requires annual reporting of water use data. The first annual reports were due July 1, 2008, for municipal water suppliers with 1,000 or more service connections, and by July 1, 2009, for municipal water suppliers with fewer than 1,000 service connections, and annually by July 1 each year thereafter. Table 4-4 summarizes the water use data collection requirements.

TABLE 4-4 Summary of Water Use Data Collection

Data Type	Unit of Measure	Collection Frequency	Comments
Water Production	Gallons	Monthly	Total by month and by year.
Interties	Gallons	Monthly	Water transferred through interties (sales to Centralia).
Water Sold	Gallons	Billing Period ⁽¹⁾	Total sold by customer class for each billing period.
Estimated Unmetered Water Use	Gallons	Billing Period ⁽¹⁾	Estimate and record unmetered water uses for each billing period.
Estimated Identified and Corrected Water System Leaks	Gallons	Billing Period ⁽¹⁾	When leaks are discovered and repaired, the leakage rate and duration are estimated and the resultant leakage volume for the billing period is estimated and recorded.
Accounted-for Water	Gallons	Billing Period ⁽¹⁾	The sum of Water Sold, Estimated Unmetered Water Use, and Estimated Identified and Corrected Water System Leaks.
DSL	Gallons	Billing Period ⁽¹⁾	The difference between monthly Water Production and monthly Accounted-for Water.
Percent DSL	Percent	Billing Period ⁽¹⁾	DSL divided by Water Production times 100. Calculate for each billing period, for each year and for a 3-year running average. If 3-year running average exceeds 10 percent, further actions are required to reduce DSL.

(1) For water systems with 1,000 or more connections, seasonal data must be collected to describe the variations in water consumption trends. This data may be collected monthly, every other month, quarterly, or seasonally. The City of Chehalis' billing periods are monthly.

The City of Chehalis has been submitting annual water use efficiency reports to DOH and distributing annual consumer confidence reports.

WATER USE EFFICIENCY PROGRAM DEVELOPMENT AND LEVEL OF IMPLEMENTATION

The following sections describe the City of Chehalis' water use efficiency goals, conservation measures, and the resulting water use projections.

REGIONAL CONSERVATION PROGRAMS

The effects of a customer conservation program extend beyond the water service area. For example, Seattle Public Utilities heavily promoted water conservation to its customers in 2001 and communities throughout Puget Sound experienced a decrease in consumption. The City of Chehalis may also benefit from regional water use efficiency promotion efforts.

TARGET WATER SAVINGS PROJECTIONS

In this section projected water savings that may be realized by meeting the WUE goals are estimated. WUE goals, as stated above, are to reduce DSL by 2 to 3 percent annually over the next 6 to 7 years until the DSL standard of 10 percent can be met. The total cumulative savings over the 20-year planning period based upon the City’s WUE goals can be seen in Table 4-5.

TABLE 4-5 Summary of Water Use Data Collection

Year	Projected ADD w/o Conservation (gpd) ⁽¹⁾	Projected ADD w/ Conservation (gpd) ⁽²⁾	Daily Savings w/ Conservation (gpd) ⁽³⁾	Annual Savings w/ Conservation (MG) ⁽⁴⁾
2020	1,893,972	1,893,972	0	0
2021	1,922,041	1,862,856	59,185	21.60
2022	1,950,199	1,853,770	96,429	35.20
2023	1,978,769	1,844,018	134,751	49.18
2024	2,007,758	1,833,583	174,176	63.57
2025	2,037,172	1,822,446	214,726	78.38
2026	2,067,016	1,825,991	241,025	87.97
2027	2,097,298	1,852,742	244,557	89.26
2028	2,128,024	1,879,884	248,139	90.57
2029	2,159,199	1,907,425	251,775	91.90
2030	2,190,831	1,935,368	255,463	93.24
2031	2,222,927	1,963,722	259,206	94.61
2032	2,255,493	1,992,490	263,003	96.00
2033	2,288,536	2,021,680	266,856	97.40
2034	2,322,063	2,051,298	270,765	98.83
2035	2,356,081	2,081,349	274,732	100.28
2036	2,390,598	2,111,841	278,757	101.75
2037	2,425,620	2,142,779	282,841	103.24
2038	2,461,155	2,174,171	286,984	104.75
2039	2,497,211	2,206,023	291,189	106.28
2040	3,990,210	3,338,341	651,869	237.93
20-Year Cumulative Savings with Conservation Measures				1,841.94

- (1) Projected City Average Day Water Demand from Table 2-7 in gallons per day (gpd) instead of million gallons per day (mgd).
- (2) Projected City Average Day Water Demand from Table 2-8 in gallons per day (gpd) instead of million gallons per day (mgd).
- (3) Daily Savings with Conservation is the difference between the Projected City Average Day Water Demand without Conservation and the Projected City Average Day Water Demand with Conservation.
- (4) Annual Savings with Conservation is Daily Savings with Conservation times 365 days per year and divided by 1,000,000 gallons per MG.

EFFECTIVENESS OF PROGRAM

In order for the City to determine whether their Water Use Efficiency program is successful, they can monitor yearly water sales to verify that DSL is being reduced both seasonally (summer) and annually according to the goal setting discussed earlier within this Chapter.

SOURCE OF SUPPLY ANALYSIS

OPTIMIZING USE OF CURRENT SUPPLIES

The City has increased the efficiency of its water system in the past by replacing problem water mains, finding and repairing water system leaks, promoting water conservation amongst its customers, and by improved water sales accounting. The City plans to continue these efforts to further optimize current water supply as previously described within this Chapter. The Newaukum River transmission line is routinely monitored for potential leakage by comparing diversion data from the intake with metered inflows at the water treatment plant. Transmission line leaks are occasionally identified and promptly repaired.

ENHANCED CONSERVATION MEASURES

As technology for water leak detection and repair advances, and as more water efficient building fixtures and appliances become the standard, water conservation will be enhanced by implementation of standard building codes and replacement of aging fixtures and appliances with newer water efficient units.

WATER RIGHT CHANGES

As discussed in Chapter 3 and shown by the Water Rights Self-Assessment Form included in Appendix E, the City has adequate water rights to meet projected demands; however, due to North Fork of the Newaukum River Capacity being less than the water rights, a change application has been submitted to the Washington Department of Ecology (Ecology) as shown in Table 1-3 and the Water Rights Self-Assessment Form.

ARTIFICIAL RECHARGE

The City of Chehalis does not own or operate groundwater well sources within its water system, thus recharge of aquifers is not applicable as part of this WSP.

WATER RECLAMATION

Water reclamation is one way to improve water use efficiency by utilizing treated wastewater for some water supply needs. The WUE Rule requires that water utilities with more than 1,000 service connections include an evaluation of water reclamation and reuse opportunities in their water system plans. According to the WFI form dated November 9, 2020, the Chehalis water system has 3,853 total service connections. Therefore, an evaluation of water reclamation and reuse opportunities is required. The evaluation includes five elements:

1. Washington State requirements
2. Identification of potential reclaimed water users
3. Estimates of potable water savings if reclaimed water were available
4. Financial feasibility of implementing reclaimed water projects
5. Recommendations for implementing a reclaimed water program

WATER RECLAMATION AND REUSE REQUIREMENTS IN WASHINGTON STATE

“Reclaimed water” is defined in RCW 90.46.010 as “effluent derived in any part from sewage from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for a beneficial use or a controlled use that would not otherwise occur and is no longer considered wastewater.”

In the State of Washington, any type of direct beneficial reuse of municipal wastewater is defined as water reuse or reclamation. The Departments of Health and Ecology have jointly issued *Water Reclamation and Reuse Standards (September 1997)*. This discussion is based on the current standards, which are adopted by reference in RCW Chapter 90.46, Reclaimed Water Use.

Washington State reuse standards are based on similar standards used throughout the United States. Washington’s reuse standards for municipal wastewater can be grouped into four categories:

- Treatment Standards
- Permitted Uses of Reclaimed Water
- Use Area Requirements
- Operational and Reliability Requirements

Washington’s reuse treatment standards call for *continuous* compliance, meaning that the treatment standard must be met on a constant basis, or the treated water cannot be used as reclaimed water.

Treatment Standards

The State of Washington’s standards for municipal wastewater reuse have two classifications based on the type of treatment provided. The classifications are summarized below in Table 4-6.

TABLE 4-6 State of Washington Reclaimed Water Treatment Standards

Reuse Class	Continuously Oxidized ⁽¹⁾	Continuously Coagulated ⁽²⁾	Continuously Filtered ⁽³⁾	Disinfection (Total Coliform Density) ⁽⁴⁾	
				7-Day Median Value	Single Sample
A	Yes	Yes	Yes	≤2.2/100ml	23/100ml
B	Yes	No	No	≤23/100ml	240/100ml

- (1) Oxidized wastewater is defined as wastewater in which organic matter has been stabilized such that the biochemical oxygen demand (BOD) does not exceed 30 mg/L and the total suspended solids (TSS) do not exceed 30 mg/L (monthly average basis), is non-putrescible (does not have a foul smell) and contains dissolved oxygen.
- (2) Coagulated wastewater is defined as an oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated prior to filtration by the addition of chemicals or an equally effective method.
- (3) Filtered wastewater is defined as an oxidized, coagulated wastewater that has been passed through natural undisturbed soils or filter media, such as sand or anthracite, so that the turbidity as determined by an approved laboratory method does not exceed an average operating turbidity of 2 nephelometric turbidity units (NTU), determined monthly, and does not exceed 5 NTU at any time.
- (4) Disinfection is a process which destroys pathogenic organisms by physical, chemical or biological means. The disinfection standards use coliform density as the measure of pathogen destruction. DOH recommends that a chlorine residual of 0.5 mg/L be maintained during conveyance from the reclamation plant to the use area to avoid biological growth in the pipeline and sprinkler heads.

Permitted Uses of Reclaimed Municipal Wastewater

Allowable water reuse methods within the State of Washington are presented in Table 4-7. Most of the allowable reuse methods provide limited opportunity for reuse due to the relatively small quantities and seasonal nature of the reuse demand. Two reuse methods that offer the potential for 100 percent reuse on a year-round basis are groundwater recharge and streamflow augmentation. A more detailed discussion of groundwater recharge and streamflow augmentation is provided after Table 4-7.

TABLE 4-7 Allowable Uses of Reclaimed Water

Use	Class of Reclaimed Water Allowed	
	Class A	Class B
Irrigation of Non-Food Crops		
Trees and fodder, fiber, and seed crops and pastures accessed by milking animals.	YES	NO
Trees and fodder, fiber, and seed crops in pastures to which milking animals do not have access	YES	YES
Uses with public contact	YES	NO
Irrigation of Food Crops		
Spray Irrigation:		
Irrigation of all food crops that do not undergo processing before consumption.	YES	NO
Irrigation – Orchards and vineyards	YES	YES
Irrigation for frost protection of orchards	YES	YES
Irrigation of food crops that undergo physical or chemical processing sufficient to destroy all pathogenic agents	YES	YES
Landscape Irrigation		
Restricted access areas (e.g., freeway landscapes, fenced industrial areas)	YES	YES
Open access areas (e.g., golf courses, parks, playgrounds, common areas, and private property including residential landscapes)	YES	NO
Commercial, and Institutional		
Toilet and urinal flushing	YES	NO
Street washing, Spray	YES	NO
Exterior pressure washing of building and sidewalks	YES	NO
Street sweeping, Brush dampening	YES	YES
Decorative fountains or water features	YES	NO
Flushing/cleaning of sanitary sewers	YES	YES
Washing of corporation yards, lots, and sidewalks	YES	NO
Dust control (Dampening unpaved roads and other surfaces)	YES	YES
Dampening of soil for compaction (at construction sites, landfills, etc.)	YES	YES
Water jetting for consolidation of backfill around pipelines	YES	YES
Aerial firefighting and prevention	YES	YES
Interior fire hydrants or sprinkler systems	YES	NO

Industrial		
Boiler feed-water	YES	YES
Closed loop cooling – No creation of aerosols or other mist	YES	YES
Cooling aerosols or other mist created (e.g., Use in cooling towers, Forced air evaporation, or spraying)	YES	NO
Process water – Without exposure of workers	YES	YES
Process water – With exposure of workers	YES	NO
Ship ballast	YES	YES
Washing aggregate and making concrete	YES	YES
Residential (Indoor)		
Toilet and urinal flushing	YES	NO
Sprinkler systems in buildings	YES	NO
Other indoor uses permitted by local plumbing codes	YES	NO
Residential (Outdoor)		
Lawn and garden irrigation	YES	NO

Groundwater Recharge

Groundwater recharge with reclaimed water is permitted under the water reuse standards. Three categories of groundwater recharge are covered in the water reuse standards:

1. Direct Injection to a Drinking Water Aquifer,
2. Direct Injection to a Non-Drinking Water Aquifer, and
3. Surface Percolation.

Direct Injection to a Drinking Water Aquifer

Direct injection of reclaimed water to a drinking water aquifer must meet the water quality standards for primary contaminants (except nitrate), secondary contaminants, radionuclides and carcinogens contained in Table 1 of WAC 173-200-040, as well as maximum contaminant levels (MCLs) contained in the State Drinking Water Standards, WAC 246-290.

Additionally, for direct injection to a drinking water aquifer, pre-injection treatment must include the following:

1. reverse osmosis treatment
2. turbidity ≤ 0.1 NTU (average) and ≤ 0.5 NTU (maximum)
3. total organic carbon levels ≤ 1.0 mg/L
4. total nitrogen ≤ 10 mg/L as N

Direct Injection to a Non-Drinking Water Aquifer

Direct injection of reclaimed water to a non-drinking water aquifer must meet Class A reclaimed water treatment standards as well as the following additional criteria:

1. $BOD_5 \leq 5$ mg/L
2. $TSS \leq 5$ mg/L
3. any additional criteria deemed necessary by DOH or Ecology

Surface Percolation

Groundwater recharge using surface percolation requires at least Class A reclaimed water unless a lesser level is allowed under a pilot project status by DOH and Ecology. In addition to secondary treatment to provide oxidized wastewater, the process must include a “step to reduce nitrogen prior to final discharge to groundwater.”

Streamflow Augmentation

For small streams where fish habitat has been degraded due to low instream flows, streamflow augmentation is an option allowed under the water reuse regulations and

standards. This reuse method requires an NPDES permit and adherence to the Surface Water Quality Standards (WAC 173-201A). However, the key difference between streamflow augmentation and surface water disposal is that a determination of beneficial use has been established based on a need to increase flows to the stream. To make this determination requires concurrence from the Washington State Department of Fish and Wildlife that the need exists for additional instream flows.

Other Uses

The water reuse standards allow for other uses that are not discussed in detail in this Chapter. However, the general basis for the reuse criteria is that when unlimited public access to the reclaimed water is involved the criteria will require Class A reclaimed water. Essentially, for a water reclamation project to have the flexibility to allow for relatively unrestricted use, the reclaimed water should meet the Class A reuse standard.

Use Area Requirements

The water reuse standards establish criteria for siting and identifying water reclamation projects and their facilities. Water reclamation storage facilities, valves, and piping must be clearly color-coded and labeled and no cross-connections between potable water and reclaimed waterlines are allowed. The potable water system manager must have an approved cross-connection control program pursuant to WAC 246-290-490.

Maximum attainable separation between reclaimed water lines and potable waterlines must be achieved. A minimum horizontal separation of 10 feet is required for buried lines, but when crossing is necessary, a minimum 18-inch vertical separation is required, and the potable waterline must be above the reclaimed waterline.

Reclaimed water may be used to flush toilets in condominiums and apartment complexes if residents do not have access to plumbing systems for repairs or modifications.

Another key requirement for a water reclamation project is setback distance. Table 4-8 summarizes setback requirements for water reclamation facilities. In general, setback distances are minimized with higher levels of treatment and reliability. Class A reclaimed water requires no buffer between irrigated areas and public use areas.

TABLE 4-8 Setback Distances for Reclaimed Water in the State of Washington

Reclaimed Water Use/Facility	Distance (Feet)	
	Class A	Class B
Minimum Distance to Potable Water Well:		
Spray or Surface Irrigation	50	50
Unlined Storage Pond or Impoundment	500	500
Lined Storage Pond or Impoundment	100	100
Pipeline	50	100
Minimum Distance from Irrigation Areas to Public Areas	0	50

Operational and Reliability Requirements

Under the reuse standards, there are several operational and reliability requirements for a water reclamation plant. Key requirements are summarized below.

- Minimum Class III Operator.
- Critical equipment and process failures must be signaled by an alarm.
- Emergency storage and disposal facilities in the event of equipment failure or the intermittent production of effluent that does not meet the reclaimed water standards.
- Operating records provided to DOH as well as Department of Ecology.
- No bypass of untreated or partially treated water.
- Either a standby power supply or long-term disposal or storage facilities for untreated wastewater.

POTENTIAL RECLAIMED WATER USERS

Large Water System Users

Figure 2-2 shows the Monthly Water Sales by Customer Class which indicates that Commercial Customers account for approximately 70-percent of the total water volume with the remaining 30-percent accounted for by Residential Customers. The City has ten large commercial customers:

- Chehalis Power
- Hardel Mutual Plywood Company
- Thousand Trails
- Newaukum Hill Water Association
- Lakewood Investors LLC
- Preservation Partners Development
- National Frozen Foods
- Lewis County Facilities
- Vintage at Chehalis
- Darigold

These Commercial Customers do not utilize reclaimed water on-site.

Parks and Recreational Areas

The City of Chehalis has multiple parks and recreational areas within City limits that would be considered as irrigable properties, as follows:

- Riverside Golf Club
- Stan Hedwell Park
- Penny Playground Recreational Park
- McFadden Park
- James W Lintott Elementary
- Orin C Smith Elementary
- Chehalis Middle School
- WF West High School
- Cascade Elementary
- RE Bennett Elementary

These properties do not currently utilize reclaimed water on-site.

Flushing of Sanitary Sewers

The City does not use reclaimed water to flush wastewater collection piping.

Use at Wastewater Treatment Plant

The City does not currently utilize reclaimed water for wash down and irrigation at the WWTP.

Use at Tree Farm

The Chehalis Regional Water Reclamation Facility (CRWRF) is capable of producing 3.5 mgd of Class A reclaimed water for irrigation of the city's 250-acre poplar tree farm when flows in the Chehalis River drop below 1,000 cubic feet per second. The basis for this activity is described in an excerpt from the City's wastewater facilities plan, as provided in Appendix J. Note that the excerpt references outdated reclaimed water standards which have been revised and published as of 2018. The discussion in this excerpt also considers other potential future uses of reclaimed water within the City (e.g., irrigation of City parks and school areas). At this time, the City has no plans to expand its reclaimed water program, due to the significant costs involved with conveying reclaimed water to other use sites. However, such program expansion will be periodically reviewed.

RECOMMENDATIONS FOR WASTEWATER RECLAMATION

With a current water right of 4,116 ac-ft/yr (Table 1-3) and a projected 20-year water demand of 4,066 ac-ft/yr, the benefit of any savings from reclaimed water does not justify the expense of additional treatment, storage, pumping and distribution piping necessary to utilize reclaimed wastewater for this purpose. Upgrades to the WWTP to produce higher classes of reclaimed wastewater and installation of storage facilities and reclaimed water piping necessary for City-wide reclaimed water distribution is not recommended at this time.

WATER SUPPLY CHARACTERISTICS

The WUE Guidebook indicates that a Water Use Efficiency Program should include a description of the water system source characteristics. The source characteristics for the City of Chehalis water system are thoroughly described in Chapters 1 and 3 of this Water System Plan.

Chapter 5

SOURCE WATER PROTECTION

CHAPTER 5 – SOURCE WATER PROTECTION

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OBJECTIVE

In Washington State, water supply systems using a surface water source must develop and implement a watershed control program in order to protect and, if possible, improve the water supply and the health of water system customers. The term “watershed” refers to the hydrologic drainage basin up gradient of the utility’s surface water intake. The minimum requirements for source water protection are specified in WAC 246-290-135(4) Watershed Control Program and WAC 246-290-668 Watershed Control.

The objective of this chapter is to document the Chehalis Water System’s programs for watershed control to protect and improve source water quality. This program identifies potential pollutants within the watershed that may affect source waters. Protection of these sources can be accomplished through public awareness, monitoring, limiting, and controlling, to the best extent possible, all adverse effects. This chapter has been prepared to fulfill the watershed control program requirements for filtered surface water systems. Since the City has two surface water sources, this chapter will detail each watershed.

WATERSHED CONTROL PROGRAM REQUIREMENTS

Pursuant to WAC 246-290-135 (4)(c), a watershed control program must include the following elements:

- Watershed description and inventory, including location, hydrology, land ownership and activities that may adversely affect source water quality.
- An inventory of all potential surface water contamination sources and activities, including identification of site locations and owner/operators, located within the watershed and having the significant potential to contaminate the source water quality.
- Watershed control measures, including documentation of ownership and relevant written agreements, and monitoring of activities and water quality.
- System operation, including emergency provisions.
- Documentation of water quality trends.

In addition, WAC 246-290-668(3) states that a watershed control program must include the following elements:

- Describe the watershed, characterize the watershed hydrology, and discuss the purveyor's watershed control program.
- Identify and describe conditions/activities in the watershed that are adversely affecting source water quality.
- Identify and describe changes in the watershed that could adversely affect source water quality that have occurred since the last watershed evaluation.

- Describe the monitoring program the purveyor uses to assess the adequacy of watershed protection including an evaluation of sampling results; and
- Recommendations for improved watershed control.

Figure 1-2 contains a Topographic Map of the area surrounding the City of Chehalis and a zoning map showing land use in both watersheds can be found at <https://maps.lewiscountywa.gov>.

NORTH FORK OF THE NEWAUKUM RIVER WATERSHED CONTROL PROGRAM

WATERSHED DESCRIPTION AND CHARACTERISTICS

The Newaukum River watershed is within State Water Resource Inventory Area (WRIA) number 23, as shown in Figure 5-1. The Newaukum source is designated by DOH as source 1 (S01). The intake is located on Lewis County Parcels 035631001000 and 035631002000 which are owned by the City of Chehalis. These parcels are approximately 14.0 acres. The Newaukum River travels northwest and enters the Chehalis River about three-quarters of a mile west of the City of Chehalis.

The Newaukum River watershed is about 155 square miles, and the headwaters are in forestlands about 25 miles East of Chehalis. The watershed of the source intake itself is an area about 18 square miles that is owned by the Weyerhaeuser Company. The City owns the previously described land around the intake and has an easement for the raw water pipeline through Weyerhaeuser property to North Fork Road. The elevation of the intake is 598 feet and is the beginning of 17.6 miles of pipe that carries the raw water by gravity to the treatment plant. Figure 5-1 “Inventory of Potential Contaminant Sources” indicates that no such sites exist within the vicinity of the Newaukum River intake that could degrade water quality and require additional protection and/or control at the intake.

Land Ownership/Written Agreements

Critical areas within the watershed are numerous due to the extreme size of the watershed and public access and ownership. Ownership within the basin includes private and government entities.

Hydrology and Geology

The terrain within the basin varies from the steep snow-covered western slopes of Mount Baker down to the gentler slopes along Interstate 5. The vegetation within the basin is predominantly forestland and agriculture land, with developed towns and communities along Highway 6 and Highway 508. The City of Chehalis diverts water from the North Fork Newaukum River for municipal water use.

The closest downstream stream gage to the intake structure is USGS Station 12025000 located on the Newaukum River near the convergence of the north and south forks. Mean annual flow at the gage for the 80 years of record is 512 cubic feet per second (cfs) and extreme high and low flows are 13,300 cfs and 12 cfs, respectively.

Stream length from gage to drainage basin divide is approximately 33.6 miles. The mean basin elevation is 900 feet above mean sea level. Ninety percent of the land within the basin was covered by forest, as of 1984, and one percent is covered by lakes. Mean annual precipitation in the basin was calculated at 57 inches per year. This basin data was provided in “Streamflow Statistics and Drainage-Basin Characteristics for the Southwestern Regions, Washington, Volume I,” produced by USGS in 1985.

Physical Condition of Intake

Figure 1-3 “Water System Facilities” shows the City’s complete water system infrastructure, including intake locations. The physical condition of the intake is in good order and is protected by various locked locations where public entrance is disallowed. The watershed is identified as “no entry” at the nearby Vail Tree Farm.

IDENTIFICATION OF ACTIVITIES AND LAND USE DETRIMENTAL TO WATER QUALITY

The land owned by Weyerhaeuser is used primarily as a timber resource; therefore, logging is the major activity in this watershed. The areas that have been logged have been replanted with evergreens and are covered with brush, alder and other deciduous trees. This replanting will eventually regenerate the source of timber but can have an immediate impact on the water quality unless care is taken to reduce runoff and erosion before the ground cover is established. In the early 1990’s a landslide resulted from a 100-year storm event. This caused the river to become temporarily unsuitable as a source for the City. The City relied on the alternate source (S02), the Chehalis River, until repairs were completed at the North Fork and the turbidity lowered to treatable levels. Adverse impacts of heavy rains were observed during the heavy storms of 2007-2008, which resulted in flooding and significant erosion in the Chehalis Basin.

Other less direct impacts would be due to on-site septic systems which are prevalent in the basin. The failure rate would need to be extremely high or located near the riverbanks to be detectable and potentially contaminate the Newaukum River. Agricultural land uses are also common in the basin and if located near any of the surface drainage-ways, they could degrade water quality as well.

A review of Ecology’s Facility/Site Identification Database in December 2020 revealed no point sources of potential contamination are located within the Newaukum’s watershed area.

WATERSHED MANAGEMENT AND AWARENESS MEASURES

The most recent Watershed Plan agreement with Weyerhaeuser, Department of Natural Resources, City of Centralia, and City of Chehalis was signed in 1990. A copy of this agreement and a letter written in 2010 indicating Weyerhaeuser and The City still operate under this agreement is included in Appendix B. This agreement has expired, however Weyerhaeuser still operates under and within the original agreement. The City keeps a copy of the Weyerhaeuser forest practices applications on file. Further controls on the watershed are as follows:

- **Wildlife Control.** Wildlife populations are kept under control by Weyerhaeuser. The Department of Fish and Wildlife monitors the fish population and streams.
- **Hazardous Material Control -** Weyerhaeuser has on file a copy of the City's emergency response procedures in the event of any release of hazardous materials.
- **Security.** Weyerhaeuser has locked gates that restrict all but authorized personnel. The only human activities authorized in the watershed are Weyerhaeuser and City employees and hunters with access permits. Signs are also posted listing watershed restrictions.

Monitoring Program

Water quality monitoring and results was previously described in Chapter 3 under Source Water Quality. Required monitoring at the intake structure consists of a combination of continuous turbidity readings, and samples for coliform, temperature, pH, and other parameters. The frequency of source water samples must be at least 10 percent of the Total Coliform Rule samples as covered in the Coliform Monitoring Plan. If at any time the turbidity exceeds 5.0 NTU, staff must collect additional raw water samples for E coli.

System Operation

Water quality at the Newaukum River intake is monitored daily. A river-monitoring log is maintained which records the date, time, river elevations, weather, temperature, and rainfall. Alarms at several key points alert City staff of readings outside the normal range for turbidity, river level, and in the event of a power outage.

As noted throughout the Watershed Control Program, the risk of contamination can never be eliminated. Therefore, the Chehalis Water System is always prepared for contamination of the North Fork of the Newaukum River. Appropriate preparedness and continued operation consist of various tasks such as immediate action to prevent further contamination, remedial action to decontaminate, and intermediate operation until decontamination is complete.

Initial response should be to isolate the contaminated facility from the rest of the system. Other appropriate measures will be determined according to the type, location, nature,

and entry path of the contaminant. The area of contamination and specific cause should be determined as quickly as possible and removed if feasible. This may be a simple matter such as a minor spill or may be a more complicated problem requiring significant resources and specialized assistance.

In addition to their field response, City personnel should ensure that appropriate health authorities are contacted. At a minimum, this includes the DOH Regional Engineer and Lewis County Environmental Health Director. These personnel will then work together to determine, if possible, the extent of the contamination and prepare the appropriate public information program.

Periodic Watershed Evaluation and Updates

The North Fork of the Newaukum River watershed has had no significant changes in use or land activity since the previous Watershed Control Program developed as a part of the 2012 Water System Plan.

The Chehalis Water System will review the North Fork Newaukum Watershed Control Program each time it updates its Comprehensive Water System Plan. DOH now requires Group A water systems to update their Water System Plans every ten years. The Chehalis Water System plans to update the Comprehensive Water System Plan in 2030. At that time, future changes that may occur in land use, ownership, and the potential for contamination will be evaluated.

CHEHALIS RIVER WATERSHED CONTROL PROGRAM

WATERSHED DESCRIPTION AND CHARACTERISTICS

The Upper Chehalis Sub-basin is a sub-basin of the overall Chehalis River Basin as shown in Figures 5-1 and 5-2. The Upper Chehalis River Sub-basin drains approximately 610 square miles and encompasses the North Fork of the Newaukum River Watershed. The Upper Chehalis Sub-basin is located in Lewis, Pacific and Cowlitz Counties. Main tributaries to the Chehalis River within the Upper Chehalis sub-basin include the Main Fork, the South Fork, and the North Fork of the Newaukum River.

The Chehalis River originates in the Willapa Hills, which are part of the Coast Range. Generally, the elevation is below 2,400 feet with Baw Faw Peak being the highest point at 3,110 feet. The river valley on the main fork broadens out below Pe Ell and on the South Fork at the Lewis County/Cowlitz County line. The elevation at Chehalis is approximately 185 feet.

The Chehalis River is the principal river in the Upper Chehalis Sub-basin. Its headwaters are south of Pe Ell. The river flows northeast toward Chehalis then turns northwest and eventually flows into Grays Harbor. The overall Chehalis River watershed is comprised

of approximately 2,600 square miles and drains portions of Wahkiakum, Cowlitz, Pacific, Lewis, Mason, Jefferson, and Grays Harbor counties.

Land Ownership/Written Agreements

Critical areas within the Upper Chehalis River sub-basin are numerous due to the size of the watershed, public access and ownership. Ownership within the basin includes both private and public entities.

Hydrology and Geology

The terrain within the basin varies from the moderately steep slopes of The Rockies of the South Cascades down to the gentler slopes along Interstate 5. The vegetation within the basin is predominantly forestland and agriculture land, with developed towns and communities along Highway 6 and Highway 508. The City of Chehalis diverts water from the Chehalis River for municipal water use.

The closest downstream stream gage to the intake structure is USGS Station 12020000 located on the Chehalis River near Doty, WA. Mean annual flow at the gage for the 80 years of record is 575 cubic feet per second (cfs) and extreme high and low flows are 63,100 cfs and 14 cfs, respectively.

Stream length from gage to drainage basin divide is approximately 26.0 miles. The mean basin elevation is 1,000 feet above mean sea level. Ninety percent of the land within the basin was covered by forest, as of 1984, and zero percent is covered by lakes. Mean annual precipitation in the basin was calculated at 91 inches per year. This basin data was provided in “Streamflow Statistics and Drainage-Basin Characteristics for the Southwestern Regions, Washington, Volume I,” produced by USGS in 1985.

Physical Condition of Intake

Figure 1-3 “Water System Facilities” shows the City’s complete water system infrastructure, including intake locations. The physical condition of the intake is in good order and is protected by fencing with locked gates and no entry placards.

IDENTIFICATION OF ACTIVITIES AND LAND USE DETRIMENTAL TO WATER QUALITY

Various studies conducted in conjunction with development of the Chehalis Basin Watershed Management Plan (see the Watershed Management and Awareness Measures section below) have summarized existing water quality data in the Chehalis River Basin and added to the available data through additional monitoring. A most recent such effort is documented in the State-of-the-River Report for the Chehalis River Basin, 2006-2009 (Green, et al.; September 14, 2009). Through this work, which began in 2006, water samples were collected and analyzed monthly at 83 sites for dissolved oxygen, pH,

temperature, turbidity, and fecal coliform. These parameters have historically been of concern in the basin due to the high degree of sediment runoff that is observed, particularly during times of heavy rainfall. In this work, dissolved oxygen levels varied widely across the basin, with lowest levels in the mainstem Chehalis and at the downstream ends of tributaries near their confluence with the Chehalis.

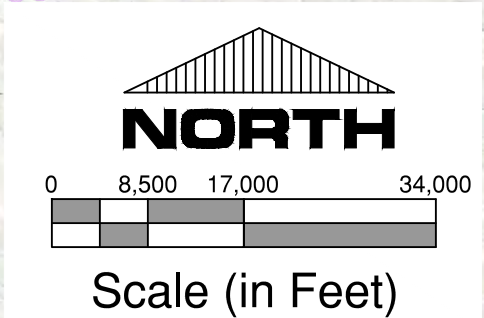
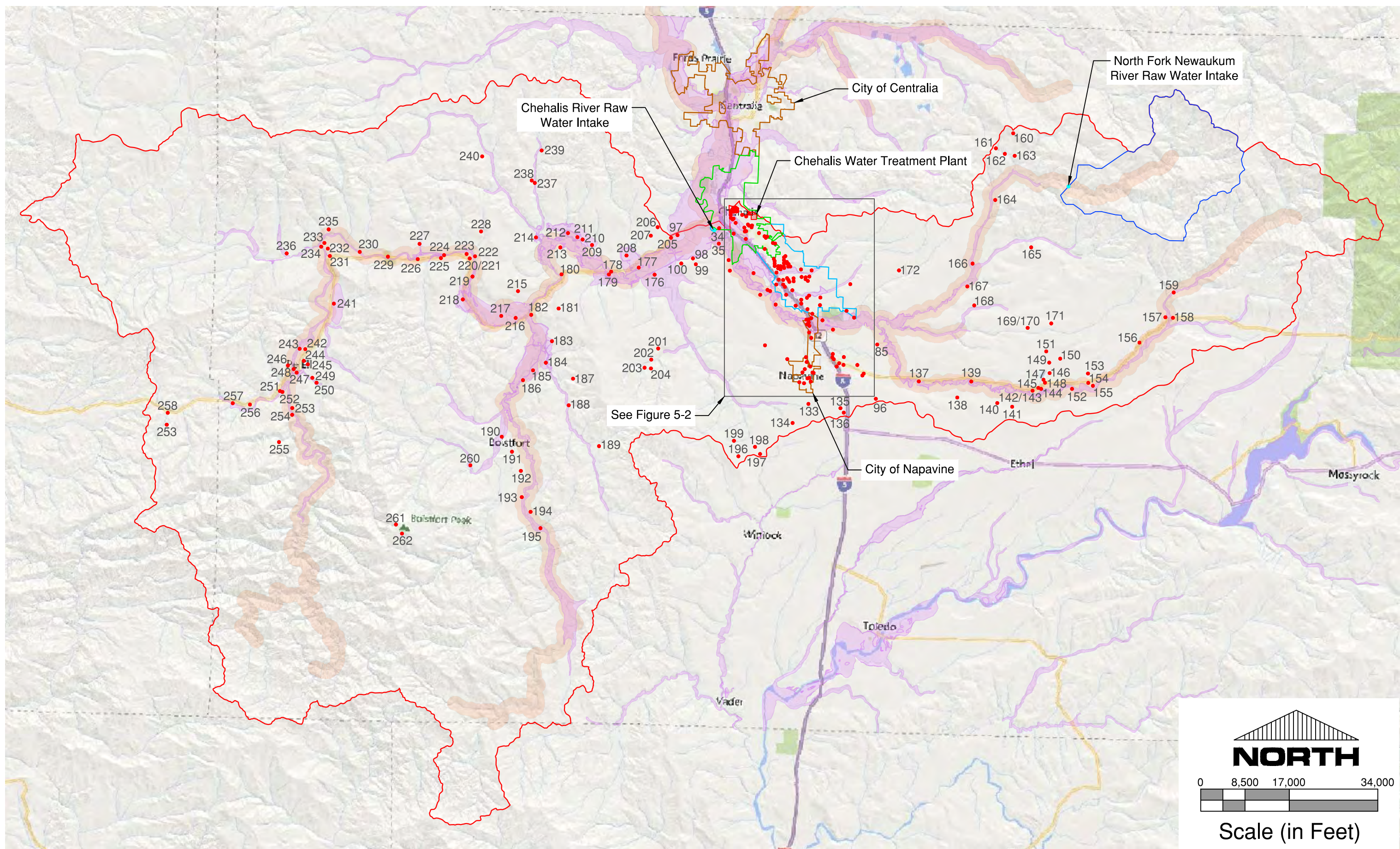
Turbidity tended to be highest during the winter months, particularly after storms and flood events, and lowest during the summer months. Two different categories of high stream turbidity conditions in Chehalis Basin streams were observed: 1) ongoing above average but not extreme turbidity, and 2) extreme high turbidity over a shorter interval during and following storm events. Turbidity in the Chehalis River headwaters and other upper reaches was reflective of the second category and is what is observed at the City's Chehalis River source water. Temperatures in excess of 18°C have been observed throughout the Chehalis River system in most years.

INVENTORY OF POTENTIAL CONTAMINANT SOURCES

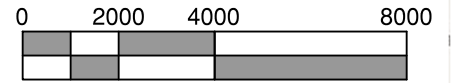
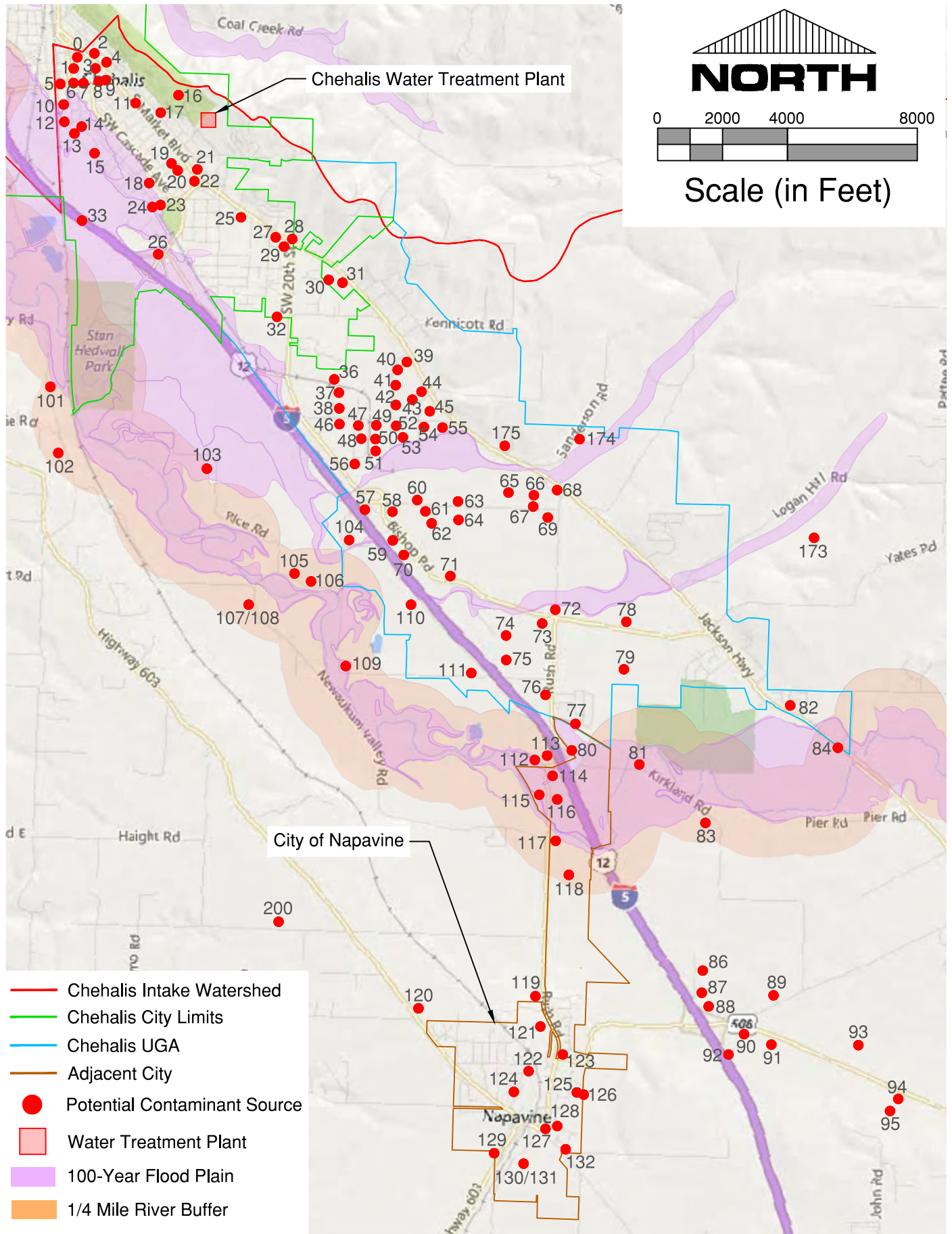
During the development of this Water System Plan, an inventory of potential contaminant sources was developed using Ecology's Facility/Site Identification Database. This database lists any operation that is a potential or active source of pollution. This includes gas stations, automotive stores, dry cleaners, gravel pits, waste management sites, and industrial facilities. Table 5-1 summarizes the review of the database and identifies all sites that are located within the basin. Figures 5-1 and 5-2 show the locations of these potential contaminant sites. Table 5-1, Figure 5-1, and Figure 5-2 notes those sites located within the following areas of most notable concern:

- Within a 0.25-mile buffer from the river or any major tributary.
- Within the 100-year floodplain.
- Within the City's UGA.

DRAWING: T:\PROJECTS\2021\CHEHALIS\WTR WATER SYSTEM PLAN\DWG\FIGURES AND EXHIBITS\2021\FIGURE 5-1.PLOT DATE: 10/19/2021 8:56:13 AM. DRAWING SCALE DATE: 6/24/2021 11:07:50 AM. PLOTTED BY: OMICKELSEN. PLOT DEVICE: GIBBS & OLSON. DWG TO PDF TOOL: GIBBS & OLSON. STANDARD COLOR TABLE: GIBBS & OLSON. FIGURE 5-1 SIZE (LANDSCAPE): 17.00 x 11.00 INCHES.



DRAWING: T:\PROJECTS\155 CHEHALIS\1078 WATER SYSTEM PLAN UPDATE\FIGURES AND EXHIBITS\1551078 FIGURE 5-2.DWG, LAYOUT TAB: FIGURE 5-2, PLOT DATE: 10/19/2021 8:59:59 AM, DRAWING SAVE DATE: 12/14/2020 10:56:47 AM, PLOTTED BY: OMCHELSEN
 PLOT DEVICE: GIBBS & OLSON - DWG TO PDF.PLOT STYLE TABLE: GIBBS-OLSON - STANDARD COLOR.CTB, PAPER SIZE: GIBBS & OLSON - FIGURE A SIZE (PORTRAIT) - 8.50 X 11.00 INCHES



Scale (in Feet)

- Chehalis Intake Watershed
- Chehalis City Limits
- Chehalis UGA
- Adjacent City
- Potential Contaminant Source
- Water Treatment Plant
- 100-Year Flood Plain
- 1/4 Mile River Buffer

TABLE 5-1 Inventory of Potential Contaminant Sources

FID	DOE Facility ID	Facility/Site Name	Type of Point Source	Facility/Site Address	Within 1/4 Mile River Buffer	Within 100-year Flood Plain	Within UGA
0	17843758	French Cleaners Chehalis	Emergency/Haz Chem Rpt TIER2	342 NW Pacific Ave, Chehalis, WA 98532			Y
1	57914337	West Coast Mills UST 497002	Underground Storage Tank	290 NW Chehalis Ave, Chehalis, WA 98532			Y
2	5343293	Gary Holgate	State Cleanup Site	272 N Market Blvd, Chehalis, WA 98532			Y
3	84653941	Anne J Brown DBA Brown Mortuary SVC	Underground Storage Tank	299 N Market, Chehalis, WA 98532			Y
4	36211	Barrys Quality Machine Inc	Revised Site Visit Program	192 N Market Blvd, Chehalis, WA 98532			Y
5	57847147	Lewis County Car Pool	Underground Storage Tank	476 W Main, Chehalis, WA 98532			Y
6	18456994	Lewis County UST 12399	Hazardous Waste Generator	351 NW North St, Chehalis, WA 98532			Y
7	32131	Grants Towing & Auto Repair	Revised Site Visit Program	276 W Main St, Chehalis, WA 98532			Y
8	64768984	Firestone Store	Revised Site Visit Program	36 N Market St, Chehalis, WA 98532			Y
9	96764	Lees Lineup Inc	Revised Site Visit Program	104 W Main St, Chehalis, WA 98532			Y
10	1342693	Lewis County Jail	Underground Storage Tank	28 SW Chehalis Ave, Chehalis, WA 98532			Y
11	23134466	Downeys Subaru	Revised Site Visit Program	224 S Market Blvd, Chehalis, WA 98532			Y
12	43754785	American Crossarm & Conduit Co	Underground Storage Tank	100 SW Chehalis Ave, Chehalis, WA 98532		Y	Y
13	208	American Crossarm & Conduit Co	Federal (Superfund) Cleanup St	100 SW Chehalis Ave, Chehalis, WA 98532		Y	Y
14	18149	Draper Valley Farms Chehalis South Shop	Emergency/Haz Chem Rpt TIER2	80 SW Chehalis Ave, Chehalis, WA 98532		Y	Y
15	73187952	Chehalis School District 302	Underground Storage Tank	261 SW 3rd St, Chehalis, WA 98532		Y	Y
16	95668756	Chehalis WTP	Water Treatment Plant GP	405 SE Parkhill DR, Chehalis, WA 98532			Y
17	76334979	Providence Centralia Hospital	Hazardous Waste Generator	500 SE Washington Ave, Chehalis, WA 98532			Y
18	9049	Mt Capra	Industrial SW GP	279 SW 9th St, Chehalis, WA 98532		Y	Y
19	85416216	Chehalis Co 070060	Underground Storage Tank	167 N Market Blvd, Chehalis, WA 98532			Y
20	99131648	Qwest Chehalis Co	Emergency/Haz Chem Rpt TIER2	1027 S Market Blvd, Chehalis, WA 98532			Y
21	23581	Safeway Store 3525	Hazardous Waste Generator	1100 S Market Blvd, Chehalis, WA 98532			Y
22	49951617	Market St Market	LUST Facility	1249 S Market Blvd, Chehalis, WA 98532			Y
23	44481543	WA DOT Chehalis William	LUST Facility	1155 SW William Ave, Chehalis, WA 98532		Y	Y

24	81172854	WA DSHS Green Hill School JRA	State Cleanup Site	375 SW 11th, Chehalis, WA 98532		Y	Y
25	22876	TNT Radiator Service	Revised Site Visit Program	1755 S Market Rd, Chehalis, WA 98532			Y
26	97631448	Interstate Chevron Food Mart	Underground Storage Tank	119 Interstate, Chehalis, WA 98532		Y	Y
27	47753	Jones Automotive	Revised Site Visit Program	1945 S Market Blvd, Chehalis, WA 98532			Y
28	6184334	Jackpot Station 385	State Cleanup Site	1986 S Market Blvd, Chehalis, WA 98532			Y
29	13588	Former Fund Mfg	Underground Storage Tank	1975 S Market Blvd, Chehalis, WA 98532			Y
30	39118225	Cascade Hardwood LLC	Voluntary Cleanup Sites	158 Ribelin Rd, Chehalis, WA 98532			Y
31	10629	Jackson Highway Multi Family	Construction SW GP	Jackson Highway, Chehalis, WA 98532			Y
32	6411	Chehalis Elementary School	Construction SW GP	1204 Bishop Road, Chehalis, WA 98532			
33	1247905	I-5 MP 76 North	State Cleanup Site	Chehalis, WA 98532		Y	
34	8817759	Weyerhaeuser Co Office Property	Emergency/Haz Chem Rpt TIER2	1100 SW Sylvenus St, Chehalis, WA 98532	Y	Y	Y
35	4507	Donald & Grethe Burbee	Enforcement Final	673 Shorey Rd, Chehalis, WA 98532	Y	Y	
36	22529455	Greenbrier Rail Services	Industrial SW GP	139 Habein Rd, Chehalis, WA 98532			Y
37	9960	Conrad Rail Spur Project	Construction SW GP	121 Melhart Rd; 124 Habein Rd, Chehalis, WA 98532			
38	74959386	Conrad Industries	Energy Recovery	121 Melhart St, Chehalis, WA 98532			Y
39	12980	First Christian Church Chehalis	Construction SW GP	2505 Jackson Hwy, Chehalis, WA 98532			Y
40	6999	Ribelin Rd Project	Construction SW GP	136 Ribelin Rd, Chehalis, WA 98532			Y
41	11511688	National Frozen Foods Corp	Hazardous Waste Management Activity	198 Ribelin Rd, Chehalis, WA 98532			Y
42	51976976	Shelton Lam & Deck	Industrial SW GP	192 Downie Rd, Chehalis, WA 98532			Y
43	15770	Aladdin Mfg Corporation	Industrial SW GP	223 Downie Rd, Chehalis, WA 98532			Y
44	63722174	Ferrellgas Chehalis	Emergency/Haz Chem Rpt TIER2	2811 Jackson Hwy, Chehalis, WA 98532			Y
45	7237	Als Welding & Steel Fabrication Inc	Industrial SW GP	222 Downie Rd, Chehalis, WA 98532			Y
46	49366643	Aristocratic Cabinets Inc Chehalis	Hazardous Waste Planner	151 Sturdevant Rd, Chehalis, WA 98532			Y
47	88424878	CW Nielsen Manufacturing Corp	Industrial SW GP	102 Sears Rd, Chehalis, WA 98532			Y
48	9968638	Pryor Giggey Co	Hazardous Waste Generator	138 Sears Rd, Chehalis, WA 98532			Y
49	5246439	National Frozen Foods Repack Corp	Enforcement Final	188 Sturdevant Rd, Chehalis, WA 98532			Y
50	24336	Lewis Co Work Opportunity	Industrial SW GP	122 Sears Rd, Chehalis, WA 98532			Y
51	5503	Aluminite Northwest	Industrial SW GP	137 Sears Rd, Chehalis, WA 98532			Y
52	26338351	Chehalis Lam Inc	Enforcement Final	195 Ribelin Rd, Chehalis, WA 98532			Y
53	12987	RLD Company Chehalis Plant	Industrial SW GP	199 Ribelin Rd, Chehalis, WA 98532			Y

54	1759295	Alliance Carpet Cushion	Hazardous Waste Planner	223 Downie Rd, Chehalis, WA 98532			Y
55	6543	Cardinal TG	Emergency/Haz Chem Rpt TIER2	214 Downie Rd, Chehalis, WA 98532			Y
56	22403	Industrial Fabrication & Testing	Industrial SW GP	138 Chase Rd, Chehalis, WA 98532			Y
57	34254664	PPG Industries Inc Chehalis	Emergency/Haz Chem Rpt TIER2	1 Maurin Rd, Chehalis, WA 98532			Y
58	5628017	Imperial Fabricating Co Chehalis	Industrial SW GP	206 Maurin Rd, Chehalis, WA 98532			Y
59	11862	T-Mark Binding Site Plan	Construction SW GP	1660 Bishop Rd, Chehalis, WA 98532			Y
60	27355	Hardel Mutual Plywood Corp Chehalis	Industrial SW GP	143 Maurin Rd, Chehalis, WA 98532			Y
61	10813	Chehalis Port	Revised Site Visit Program	321 Maurin Rd, Chehalis, WA 98532			Y
62	5350746	Cresline Northwest LLC	Industrial SW GP	223 Maurin Rd, Chehalis, WA 98532			Y
63	73623	MRIS II	Construction SW GP	207 Maurin Rd, Chehalis, WA 98532			Y
64	15261	Fred Meyer Distribution Center	Emergency/Haz Chem Rpt TIER2	222 Maurin Rd, Chehalis, WA 98532			Y
65	30353	MRIS I Fill & Grade	Construction SW GP	Chehalis, WA 98532			Y
66	25485	McBride Court Grading & Drainage	Construction SW GP	102 McBride Ct, Chehalis, WA 98532			Y
67	9317	Altaquip	Revised Site Visit Program	103 McBride Ct, Chehalis, WA 98532			Y
68	12932	Dawson Road Grading & Drainage	Construction SW GP	2726 Jackson Hwy, Chehalis, WA 98532			Y
69	131290	Fred Meyer Distribution Center	Enforcement Final	Chehalis, WA 98532			Y
70	3828	FMC Chehalis	Construction SW GP	1684 Bishop Rd, Chehalis, WA 98532			Y
71	5587	BPA Napavine Substation	Emergency/Haz Chem Rpt TIER2	1761 Bishop Rd, Chehalis, WA 98532			Y
72	8595768	Rush Road Extension	SEA Mitigation Site	1.5 Miles SE of Chehalis Via Jackson Hwy			Y
73	38712389	Tim L Edmonds Edmonds & Sons Const	Underground Storage Tank	1001 Rush Rd, Chehalis, WA 98532			Y
74	46899	I-5 Corporate Center Chehalis	Construction SW GP	1850 Bishop Rd, Chehalis, WA 98532			Y
75	16745	Braun Northwest	Emergency/Haz Chem Rpt TIER2	150 Northstar Rd, Chehalis, WA 98532			Y
76	74997943	WA DOT UST 6683	Underground Storage Tank	1405 Rush Rd, Chehalis, WA 98532			Y
77	5772	Holloway Spring Phases 2 & 3	Construction SW GP	Intersection of Rose Marie & Rush Rd, Chehalis, WA 98532		Y	Y
78	8509	Maximilain Motor Sports	Revised Site Visit Program	1983 Bishop Rd, Chehalis, WA 98532			Y
79	23419	Kirkland Road Project	Construction SW GP	Kirkland Rd Behind Burger King, Chehalis, WA 98532			Y
80	9207593	Now Truck Stop	State Cleanup Site	1366 Rush Rd, Chehalis, WA 98532		Y	

81	68742314	Lewis County Union Shop	Underground Storage Tank	187 Kirkland Rd, Chehalis, WA 98532	Y	Y	
82	1445133	Osborn Dairy	Dairy	131-22 Brim Rd, Onalaska, WA 98570			Y
83	4426366	Business Enterprises Unlimited Inc	Dairy	282 Kirkland Rd, Chehalis, WA 98532	Y		
84	2615349	Macmillan Rest Home Tap	State Cleanup Site	3188 Jackson Hwy, Chehalis, WA 98532	Y	Y	
85	55886223	Lewis Cnty Central Shop	Enforcement Final	109 E Forest Napavine Rd, Chehalis, WA 98532			
86	1248941	Drybox	Construction SW GP	Napavine, WA 98565			
87	24214	I-5 Auto & Truck Parts	Revised Site Visit Program	190 Estep Rd, Napavine, WA 98532			
88	1181	Eagle Truck Stop	Voluntary Cleanup Sites	110 Estep Rd, Chehalis, WA 98532			
89	13651	Johnson Contracting Inc Wood Recycling Facility	Recycling	110 Estep Rd, Chehalis, WA 98532			
90	6878779	Chehalis Cardlock	LUST Facility	170 State Hwy 508, Chehalis, WA 98532			
91	5495	KC Truck Parts Inc	Industrial SW GP	183 State Hwy 508, Chehalis, WA 98532			
92	2105675	Javier Dominguez	Enforcement Final	Lewis County, WA			
93	80284	Fire Mountain Farms Newaukum Prarie	Hazardous Waste Generator	349 State Route 508, Chehalis, WA 98532			
94	3129697	Fire Mountain Farms Maintenance FAC	Enforcement Final	349 State Route 508, Chehalis, WA 98532			
95	5199325	360Networks Amplification FAC Chehalis	Emergency/Haz Chem Rpt TIER2	376 State Route 508, Chehalis, WA 98532			
96	4411187	Elmer Cook	Enforcement Final	298 Coulson Rd, Chehalis, WA 98532			
97	3432	BTI Truck & Diesel	Revised Site Visit Program	113 Heden Rd, Chehalis, WA 98532		Y	
98	6171496	Andrew & Linda Styger	Dairy	156 Tune Rd, Chehalis, WA 98532			
99	55172369	Coal Creek Site	Underground Storage Tank	SW4 S29 T14N R2W, Chehalis, WA 98532			
100	75867481	Claquato Farms Inc	Dairy	267 Hwy 603, Chehalis, WA 98532			
101	8810012	Ray Johnston	Enforcement Final	935 Shorey Rd, Chehalis, WA 98532	Y		
102	83451612	Worldcom Chehalis	Emergency/Haz Chem Rpt TIER2	N Market Blvd & E Main St, Chehalis, WA 98532	Y		
103	18737	Melvin Eklund	Enforcement Final	2272 Rice Rd, Chehalis, WA 98532		Y	
104	17473	Hamilton Labree Rd PCE	Federal (Superfund) Cleanup St	169 Labree Rd, Chehalis, WA 98532		Y	Y
105	13494413	SC Breen Construction Inc	Hazardous Waste Generator	151 Labree Rd, Chehalis, WA 98532	Y		
106	7586652	Doelman Chehalis Dairy	Dairy	210 Labree Rd, Chehalis, WA 98532	Y		
107	6029991	Joesph Balmelli	Enforcement Final	132 Newaukum Valley Rd, Chehalis, WA 98532	Y		
108	6424090	Balmelli Family LTD Partnership	Enforcement Final	132 Newaukum Valley Rd, Chehalis, WA 98532	Y		

109	93328	Washington Tractor Chehalis	Emergency/Haz Chem Rpt TIER2	127 N Hailton Rd, Chehalis, WA 98532	Y	Y	
110	5972	Stihl Northwest Chehalis	Emergency/Haz Chem Rpt TIER2	215 N Hamilton Rd, Chehalis, WA 98532			Y
111	12479761	UPS Chehalis	Hazardous Waste Management Activity	183 N Hamilton Rd, Chehalis, WA 98532			Y
112	87318335	West Coast Oil Co Pacific Pride	State Cleanup Site	107 Hamilton Rd, Chehalis, WA 98532	Y	Y	Y
113	3970661	WA DOT I-5 Rush Rd to 13th	Non Enforcement Final	Chehalis, WA 98532	Y		
114	62871853	Rush Road Travel Center	Voluntary Cleanup Sites	1284 Rush Rd, Chehalis, WA 98532	Y	Y	
115	13421	Napavine Taco Bell	Construction SW GP	Napavine, WA 98565	Y	Y	
116	16887	Exide Technologies Napavine	Revised Site Visit Program	1276 Rush Rd, Chehalis, WA 98532	Y	Y	
117	4833	Rush Road Water Main and Well Site	Construction SW GP	Napavine, WA 98565	Y		
118	16597985	WA DOT Chehalis Maintenance Facility	Emergency/Haz Chem Rpt TIER2	1411 Rush Rd, Chehalis, WA 98532	Y		
119	1970	Rush Road Plat	Construction SW GP	1054 Rush Rd, Chehalis, WA 98532			
120	44285	Reed Lignin Plant	Construction SW GP	1453 Hwy 603, Chehalis, WA 98532			
121	5930594	Rush Road Development	Non Enforcement Final	1148 Rush Rd, Napavine, WA 98565			
122	34486189	Qwest Communications Co Napavine	Emergency/Haz Chem Rpt TIER2	205 Avery Rd, Napavine, WA 98565			
123	49322	East Stella Apartments	Construction SW GP	Napavine, WA 98565			
124	4610	Patricia Dobyms	Non Enforcement Final	Napavine, WA 98565			
125	16997539	Napavine School Dist 14	Underground Storage Tank	209 E Park St, Napavine, WA 98565			
126	20881	Napavine School Dist Bus Garage	Industrial SW GP	413 E Park, Napavine, WA 98565			
127	13571948	Inland Market	Enforcement Final	112 NE 2nd St, Napavine, WA, 98565			
128	74687269	USWCOM Napavine Co	Emergency/Haz Chem Rpt TIER2	Jefferson & E 4th St, Napavine, WA, 98565			
129	52001	Dollar General Napavine, WA	Construction SW GP	417 SW Birch Ave, Napvine, WA, 98565			
130	6441	Walsh Trucking Co LTD Napavine	Emergency/Haz Chem Rpt TIER2	400 SE 2nd Ave, Napavine, WA 98565			
131	6182	Hampton Lumber Mills Napavine Reload	Emergency/Haz Chem Rpt TIER2	400 SE 2nd St, Napavine, WA 98565			
132	66967357	Old Grader Shop	Underground Storage Tank	Napavine, WA 98565			
133	5468	Janke Trucking Inc Transporter	Hazardous Waste Management Activity	272 Jordan Rd, Winlock , WA 98596			
134	4688227	Clary Lumber Co	State Cleanup Site	2238 Hwy 603, Winlock, WA 98596			
135	21203	Ritchie Bros Napavine Lewis Co	SEA Project Site	I-5 SE of N Military & Kloontz Rd, Napavine, WA, 98565			

136	14767	Marks Equipment Painting LLC	Emergency/Haz Chem Rpt TIER2	214 Ritchie Ln, Chehalis, WA 98532			
137	15579632	Frey Property	Underground Storage Tank	802 State Route 508, Onalaska, WA 98532	Y	Y	
138	9021	Zigler Dump Site	State Cleanup Site	131 Clark Rd, Onalaska, WA 98570			
139	47445233	Allens Grocery	Enforcement Final	2058 Hwy 508, Onalaska, WA 98570	Y		
140	13235	Ridgley Property	State Cleanup Site	509 Gish Rd, Onalaska, WA 98570			
141	1998222	Chris Cheney	Enforcement Final	717 Gish Rd, Onalaska, WA 98570			
142	24416	Onalaska Wood Energy LLC Chehalis	Industrial to POTW/Private SWD	1674 State Hwy 508, Chehalis, WA 98532			
143	12284	Onalaska Wood Energy LLC Chehalis	Hazardous Waste Management Activity	1674 State Hwy 508, Chehalis, WA 98532			
144	13098	Onalaska Wood Energy	Enforcement Final	1674 State Hwy 508, Chehalis, WA 98532	Y	Y	
145	9811992	Lewis County Water Dist No 2	Enforcement Final	1678 State Hwy 508, Chehalis, WA 98532	Y		
146	81384988	Carlisle Lake Dam	Dam Site	Onalaska, WA 98570			
147	6802807	Onalaska Drop Box	Recycling	201 Alexander Rd, Onalaska, WA 98570			
148	17392422	Brendas Country Market	Underground Storage Tank	1753 State Hwy 508, Onalaska, WA 98570	Y	Y	
149	51685491	Deskens Dairy	Dairy	754 Degger Rd, Onalaska, WA 98570			
150	5290	Onalaska School District	Enforcement Final	754 Degger Rd, Onalaska, WA 98570			
151	9540653	Pete F De Young Dairy	Dairy	1330 Middle Fork Rd, Onalaska, WA 98570			
152	19684758	Larson Dairy	Enforcement Final	131 Coughlin Rd, Onalaska, WA 98570	Y	Y	
153	5090679	Dean & Viola Hamilton	Non Enforcement Final	233 Fickett Rd, Onalaska, WA 98570			
154	1171	Extine Petroleum	State Cleanup Site	1819 State Hwy 508, Onalaska, WA 98570	Y		
155	6585978	Daryl Germann Farms	Dairy	346 Jorgensen Rd, Onalaska, WA 98570	Y		
156	49179483	US DEA SR 508 Onalaska	Hazardous Waste Generator	3027 State Hwy 508, Onalaska, WA 98570			
157	320337	William Davis	Enforcement Final	3677 Centralia Alpha Rd, Onalaska, WA 98570	Y		
158	16258	WA DOT SR 508 S Fork Newaukum Bridge	Construction SW GP	State Hwy 508 MP 13.47, Onalaska, WA 98570	Y		
159	9930994	Jack Cartwright	Non Enforcement Final	555 Pigeon Springs Rd, Onalaska, WA 98570	Y	Y	
160	8420	Alco Holdings Meridian Hill Quarry	Sand and Gravel GP	Meridan Hill, Chehalis, WA 98532			
161	609632	Centralia Coal Mine Pond 46A Dam	Dam Site	Lewis County, WA			
162	79784917	Centralia Coal Mine Pond 46A Dam	Dam Site	Lewis County, WA			

163	850351	TransAlta Centralia LLC Mining Pond 46	SEA Project Site	1015 Big Hanaford Rd, Centralia, WA 98531			
164	19720	Ronald Shields	Enforcement Final	1629 N Fork Rd, Chehalis, WA 98532	Y		
165	1253292	MFSA Columbia River	Enforcement Final	Lewis County, WA			
166	2257723	Thomas Senn Irrevocable Trust	Enforcement Final	1071 N Ford Rd, Chehalis, WA 98532	Y	Y	
167	27413953	Austin Powder Co	Emergency/Haz Chem Rpt TIER2	2852 Centralia Alpha Rd, Onalaska, WA 98570	Y		
168	22727	Pond 46 Gallagher Creek Site	SEA Mitigation Site	Lewis County, WA			
169	2066756	SR 508 Emergency Repair Mitigation	SEA Project Site	Lewis County, WA			
170	9986210	SR 508 Emergency Repair Mitigation	Non Enforcement Final	State Hwy 508 at Hyak Rd, Onalaska, WA 98570			
171	57296	Pagel Residential Property	State Cleanup Site	137 Hoyt Rd, Onalaska, WA 98570			
172	5510	Ahmann Dairy DBA Domina Dairy	Dairy Unpermitted	233 Macomber Rd, Chehalis, WA 98532			
173	13727	Intercity Associates	Construction SW GP	Bound by Kresky Fair and Pacific, Centralia, WA 98531			
174	9803253	Reed Property	State Cleanup Site	162 Sanderson Rd, Chehalis, WA 98532			Y
175	5629	Carter & Son	Industrial SW GP	2669 Jackson Hwy, Chehalis, WA 98532			Y
176	24068	Twins Oaks Dairy	Dairy Unpermitted	346 Twin Oaks Rd, Chehalis, WA 98532		Y	
177	2536497	Jason Dix	Enforcement Final	207 Goff Rd, Chehalis, WA 98532	Y	Y	
178	55615446	Adna Grocery	State Cleanup Site	109 Bunker Creek Rd, Chehalis, WA 98532	Y	Y	
179	33259	WA DOT Two Tributaries - Fish Passage	Construction SW GP	Adna, WA 98532	Y	Y	
180	10261	Lewis County PW Bunker Pit	Sand and Gravel GP	307 Spooner Rd, Chehalis, WA 98532	Y		
181	8649410	Boisfort Valley Water Corporation	Non Enforcement Final	442 Curtis Hill Rd, Chehalis, WA 98532			
182	11754555	WA DOT Zeller Property	LUST Facility	2471 State Hwy 6, Chehalis, WA 98532	Y		
183	15075	Christian Property	State Cleanup Site	673 Curtis Hill Rd, Chehalis, WA 98532			
184	1705108	Maple Water Farm	Dairy	774 Curtis Hill Rd, Chehalis, WA 98532	Y	Y	
185	22031	McFarland Cascade Curtis Pole	Industrial SW GP	246 Boistfort Rd, Curtis, WA 98538	Y	Y	
186	61299173	Curtis General Store	Voluntary Cleanup Sites	388 Boistfurt Rd, Curtis, WA 98538	Y	Y	
187	37191343	Follette Dam	Dam Site	Chehalis, WA 98532			
188	21395	King Road Rehabilitation Project CRP 193	Construction SW GP	King Rd, Chehalis, WA 98532			
189	1065194	JB Leonard Logging & Trucking	Enforcement Final	Curtis, WA 98538			
190	36379963	Klein Bicycles Corp	Hazardous Waste Generator	118 Klein Rd, Chehalis, WA 98532			
191	261456	Boistfort Store Property	State Cleanup Site	1300 Boistfort Rd, Curtis, WA 98538			

192	65238	South Bank Dairy Lagoon Dam	Dam Site	Curtis, WA 98538			
193	4628664	John & Mary Mallonee Dairy	Dairy	2066 Wildwood Rd, Curtis, WA, 98538	Y		
194	3121063	Hill Dairy	Dairy	1842 Wildwood Rd, Chehalis, WA 98532	Y		
195	37389283	Walsh Double Diamond Ranch	Dairy	2322 Wildwood Rd, Chehalis, WA 98532	Y	Y	
196	23441	Good Crushing Inc Hale Rd	Sand and Gravel GP	296 W Hale Rd, Winlock, WA 98596			
197	17837	Lewis County Forest Products	Enforcement Final	154 E Hale Rd, Winlock, WA 98596			
198	16600	Lewis County Timber Products	State Cleanup Site	154 E Hale Rd, Winlock, WA 98596			
199	23781	Goods Quarry Tennessee Rd	Sand and Gravel GP	699 Tennessee Rd, Winlock, WA 98596			
200	88818	Draper Valley Farms Inc Production Live S	Emergency/Haz Chem Rpt TIER2	172 Harmon Rd, Chehalis, WA 98532			
201	24868	Brown Rd Quarry	Sand and Gravel GP	1029 W Brown Rd, Chehalis, WA 98532			
202	2567610	Alderbrook Quarry Inc	Enforcement Final	689 Cousins Rd, Chehalis, WA 98532			
203	21496	Mohoric Road Property	Revised Site Visit Program	149 Mohoric Rd, Chehalis, WA 98532			
204	10044	Old Mohoric Dairy	State Cleanup Site	149 Mohoric Rd, Chehalis, WA 98532			
205	61797592	Dashmesh Petroleum	Underground Storage Tank	1133 Hwy 6, Chehalis, WA 98532		Y	
206	16758	Shafer Residence	Revised Site Visit Program	159 Brockway Rd, Chehalis, WA 98532			
207	51418693	Walker Engine & Machine	Underground Storage Tank	249 Chilvers Rd, Chehalis, WA 98532			
208	93988422	Silverado Waterski Pond	AP Aquatic Plant and Algae Management GP	Adna, WA 98532		Y	
209	10725	Addison DeBoer	Non Enforcement Final	430 Bunker Creek Rd, Chehalis, WA 98532		Y	
210	9893012	B & P Dairy	Dairy	451 Bunker Creek Rd, Chehalis, WA 98532	Y	Y	
211	8538	Brunoff Farms Inc	Dairy	482 Bunker Creek Rd, Chehalis, WA 98532	Y	Y	
212	7703608	Sun Ton Dairy	Dairy	616 Bunker Creek Rd, Chehalis, WA 98532	Y	Y	
213	51246	Rosecrest Farm	Dairy	439 Spooner Rd, Chehalis, WA 98532	Y		
214	7429066	Kesting Dairy Inc	Dairy	207 Ceres Hill Rd, Chehalis, WA 98532		Y	
215	5694	AKA Rockscapes Cere Hill Quarry	Sand and Gravel GP	1100 Ceres Hill Rd, Chehalis, WA 98532			
216	4882102	Doelman Curtis Dairy	Dairy	133 Ceres Hill Rd, Chehalis, WA 98532	Y	Y	
217	23688	Cere Hill Long Term Bank Stabilization	Construction SW GP	Ceres Hill Rd, Chehalis, WA 98532	Y	Y	
218	2519956	WA ECY Meskill Drop Box Staging Area	Revised Site Visit Program	3547 State Hwy 6, Chehalis, WA 98532	Y	Y	
219	14047	David & Sherry Garrison	Enforcement Final	254 River Rd, Chehalis, WA 98532	Y	Y	
220	6785917	William Wooton	Non Enforcement Final	3796 State Hwy 6, Chehalis, WA 98532	Y		
221	6826421	Bufford Lawson	Non Enforcement Final	3796 State Hwy 6, Chehalis, WA 98532	Y		
222	3516	Lewis County PW Meskill Pit	Sand and Gravel GP	3796 State Hwy 3, Chehalis, WA 98532	Y		

223	3106166	Guy Bauman	Non Enforcement Final	3796 State Hwy 3, Chehalis, WA 98532	Y		
224	4420	Leudinghaus Bridge No 87 CRP 2123	Construction SW GP	Hatchery Rd & Leudinghaus Rd, Chehalis, WA 98532	Y	Y	
225	1840	Hope Creek Pit	Sand and Gravel GP	3633 Route 6, Doty, WA 98532	Y		
226	20195	Mark Perkins	Enforcement Final	3776 State Hwy, Pe Ell, WA 98572	Y	Y	
227	1634907	Koch Property	State Cleanup Site	181 Labarre Rd, Chehalis, WA 98532			
228	17899	WA DOT QS L-107 River Road Quarry	Sand and Gravel GP	State Hwy MP 38.2, Chehalis, WA 98532			
229	24788926	WA Parks Rainbow Falls State Park	State Cleanup Site	4008 State Hwy 6, Chehalis, WA 98532	Y		
230	6140	Brenda Boardman	Enforcement Final	829 Leudinghaus Rd, Pe Ell, WA 98572	Y	Y	
231	25692844	Doty Garage Towing	Underground Storage Tank	153 Stevens Rd, Doty, WA, 98539	Y		
232	9524376	Harmon Property	State Cleanup Site	388 Doty-Dryad Rd, Chehalis, WA 98532	Y		
233	58393465	Doty General Store	Underground Storage Tank	212 Stevens Rd, Doty, WA 98539	Y		
234	2717237	Pe Ell Central Office	Emergency/Haz Chem Rpt TIER2	212 Front St, Pe Ell, WA 98572	Y	Y	
235	1972223	Robert Feuchter	Non Enforcement Final	560 Chandler Rd, Chehalis, WA 98532	Y		
236	1038862	Jack Rasmussen	Enforcement Final	408 Elk Creek Rd, Chehalis, WA 98532		Y	
237	4053632	Daniel Criscola	Enforcement Final	509 Deep Creek Rd, Chehalis, WA 98532		Y	
238	6760508	Skip & Julie Voetberg	Enforcement Final	477 Deep Creek Rd, Chehalis, WA 98532			
239	1795886	Northfork Construction Inc	Enforcement Final	722 Deep Creek Rd, Chehalis, WA 98532			
240	1346639	Alaska Pacific Powder Co Chehalis	Emergency/Haz Chem Rpt TIER2	1516 Bunker Creek Rd, Chehalis, WA 98532			
241	96576	WA DOT SR 6 Fronia Creek Fish Passage	Construction SW GP	Pe Ell, WA 98572		Y	
242	1160	Utility Transformer Service	State Cleanup Site	5234 State Hwy 6, Pe Ell, WA 98572			
243	6875	Pe Ell Stp	Enforcement Final	1100 N 2nd St, Pe Ell, WA 98572	Y	Y	
244	17851175	Pe Ell Mini Mart	Underground Storage Tank	504 N Main St, Pe Ell, WA 98572			
245	13252812	Janice Cox	LUST Facility	317 N Main St, Pe Ell, WA 98572			
246	9554002	Roger Schang	Enforcement Final	227 Railroad St, Pe Ell, WA 98572	Y		
247	9018	2nd Street N Improvements	Construction SW GP	N 2nd St, Pe Ell, WA 98572			
248	53198956	Lincoln Property	LUST Facility	404 4th Ave, Pe Ell, WA 98572	Y		
249	6821906	Mary Ann & Edenfiel Martinson	Enforcement Final	403 Harkum Rd, Pe Ell, WA 98572		Y	
250	13571	Joseph & Kathleen Krafczyk	Enforcement Final	455 Harkum Rd, Pe Ell, WA 98572			
251	3006	WA DOT Rock Creek Bridges	Construction SW GP	State Hwy 6 MP 25.2 & MP 25.9 to MP 26.9		Y	

252	24358	Muller Fill & Grade	Construction SW GP	State Hwy 6, Pe Ell, WA 98572		Y	
253	59922731	Weyerhaeuser Co Pe Ell	Industrial SW GP	1098 Muller Rd, Pe Ell, WA 98572	Y		
254	5460	Town of Pe Ell	Non Enforcement Final	Pe Ell, WA 98572	Y	Y	
255	6496113	Lester Creek Dam	Dam Site	Pe Ell, WA 98572			
256	10032	WA DOT SR 6 Rock Creek Bridge Replacement	SEA Project Site	Pe Ell, WA 98572			
257	24514	WA DOT SR 6 Rock Creek Consolidated Mitigation Site	SEA Mitigation Site	Pe Ell, WA 98572		Y	
258	94777	WA DOT SR 6 Salmon Creek Fish Passage	Construction SW GP	Pe Ell, WA 98572			
259	15030	Weyerhaeuser Yard	Construction SW GP	State Highway 6 & Rock Creek A Line, Raymond, WA 98577			
260	81654784	Ethan Allen Farms	Dairy	2486 Pe Ell McDonald Rd, Chehalis, WA 98532		Y	
261	65762992	WA State Patrol BAW FAW	Underground Storage Tank	Lat 46 29 21 Long 123 12 51, Pe Ell, 98532			
262	95528	BPA Boisfort Peak Microwave Station	Emergency/Haz Chem Rpt TIER2	40420 Rd 46029, Boistfort, WA 98538			

WATERSHED MANAGEMENT AND AWARENESS MEASURES

The Chehalis Basin Partnership was formed in 1998 to provide a framework for local citizens, interest groups, and government organizations to work collaboratively to identify and address water related issues in the Chehalis River Basin. Partnership members include cities, counties, tribes, water purveyors, state agencies, federal agencies, and citizen stakeholders. The mission of the Chehalis Basin Partnership is “to implement a management plan that will result in effective, economical, and equitable management of the water in the Chehalis Basin to sustain viable and healthy communities and habitat conditions necessary for native fish.” The City of Chehalis has actively participated in the Partnership since its inception. Through the Partnership, the City has been able to provide input and influence the development of regulations and standards that impact water quality and water rights appropriations within the basin. Recent efforts completed by the Partnership that provide a framework for water resource management in the basin include:

- Development of Chehalis Basin Watershed Management Plan (April 9, 2004)
- Detailed Implementation Plan (June 2009)
- Implementation Plan Progress Report (2011)
- Addendum to the Chehalis Basin Watershed Management Plan (November 17, 2020)

Other watershed management actions that have already been taken or are underway in the Chehalis River Basin include:

- A non-point source pollution plan was completed by consensus of river basin users in December 1992.
- The Chehalis Basin Resources Alliance (a nonprofit organization not eligible for tax-deductible gifts) was formed for fund raising and grant applications.
- The Chehalis Basin Resource Trust (a nonprofit organization eligible for tax-deductible gifts, easements, and bequests) was formed.
- The Department of Ecology performs total maximum daily load (TMDL) studies on the middle Chehalis River and tributaries. The most recent studies include The Upper Chehalis River Basin Dissolved Oxygen Total Maximum Daily Load Submittal Report published in March 2000, The Upper Chehalis River Basin Temperature Total Maximum Daily Load published in July 1999 and revised in July 2001, and The Upper Chehalis River Fecal Coliform Bacteria Total Maximum Daily Load published in May 2004.

Monitoring Program

The City’s monitoring of its Chehalis River intake is the same as for its North Fork Newaukum River intake, see the Monitoring Program Subsection under the North Fork of the Newaukum River Watershed Control Program section of this chapter.

System Operation

The City's system operation of its Chehalis River intake is the same as for its North Fork Newaukum River intake, see the System Operation Subsection under the North Fork of the Newaukum River Watershed Control Program section of this chapter.

Periodic Watershed Evaluation and Updates

The Chehalis River watershed has had no significant changes in use or land activity since the previous Watershed Control Program as a part of the 2012 Water System Plan.

The City of Chehalis will review the Chehalis River Watershed Control Program each time it updates its Comprehensive Water System Plan. DOH now requires Group A water systems to update their Water System Plans every ten years. The Chehalis Water System plans to update the Comprehensive Water System Plan in 2030. At that time, future changes that may occur in land use, ownership, and the potential for contamination will be evaluated.

The City will periodically update its inventory of potential contaminant sources. In addition, the City will develop an approach for notifying owners of those sites that are located within the geographical areas of interest previously identified in the Inventory of Potential Contaminants section.

Chapter 6

OPERATION AND MAINTENANCE PROGRAM

CHAPTER 6 – OPERATION AND MAINTENANCE PROGRAM

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OBJECTIVE

This chapter summarizes the programs and procedures used to ensure safe and reliable supply of potable water to the City’s customers in accordance with WAC 246-290-100, -300, -310, -320, -440, -480, and -490, and WAC 246-292-020, -050, and -090. It includes a description of water system management and personnel, system operations and control, the emergency response program, safety procedures, and the cross-connection control program. This chapter provides a brief overview of the Water Shortage Response Plan, and the full plan is included in Appendix L.

WATER SYSTEM MANAGEMENT AND PERSONNEL

The Maintenance and Operations (M&O) Program of the Water System is the responsibility of the City of Chehalis and is managed by the Public Works Department. The City, as owner and operator of the water system, has the authority to set policy and rates for the system. Ordinances affecting Public Works are reviewed and approved by the City Council, but it is the responsibility of the Public Works Department to implement the policies and to maintain and operate the water system.

The Chehalis Public Works Department is responsible for the City’s Water System, Sanitary Sewer System, Storm Water System, Street and Transportation Systems, and Engineering and Mapping. The Public Works Department employs 34 full-time persons, and seasonal help is typically hired each summer to assist with maintenance and construction work.

The State requires the water system to be operated by certified personnel. The certification level is determined by the complexity of the treatment system and the population served by the system. A system of Chehalis’ size requires a Water Distribution Manager (WDM) II or greater as the certified operator. The City is further required to have one staff person certified as Water Treatment Plant Operator (WTPO) III or greater for water treatment plant operations. The Cross-Connection Control Program requires a certified Cross-Connection Control Specialist (CCS). All personnel in the Water Division are certified at the level, or higher, appropriate for their responsibilities. The City currently employs people on staff with the required certification levels. The certification status of the Public Works, Water Division staff is shown in Table 6-1.

TABLE 6-1 Water System Certification Information

Position	Staff Member Name	Certifications
Water Superintendent ⁽¹⁾		
Water Treatment Plant Operator III	Lloyd Gruginski	WTPO 3
Water Treatment Plant Operator II	Gregory Lucht	WTPO 2
Water Treatment Plant Operator II	John Strom	WTPO 2
Water Distribution Operator II	Donald Schmitt	WDM 2
Meter Reader	Kyle Knapp	WDM 1, WDS ⁽¹⁾ , CCS
Water Maintenance/Meter Reader	John Smith	

1. The City is currently working on hiring a new Water Superintendent
2. WDS stands for Water Distribution Specialist

Even though the Department’s employees have their own specific duties, shifting and sharing of personnel and resources occurs regularly, as priorities and workload requirements dictate. Water operations can be separated into three branches under the direction of the Public Works Director. These branches include:

- Water Division
- Engineering Division
- Administrative Support

The responsibilities for the Public Works Director and these branches, as they relate to the management of the water system, are described below.

PUBLIC WORKS DIRECTOR

The Public Works Director is responsible for ensuring that the mission adopted for the Water Utility is carried out. The Public Works Director’s responsibilities include department administration, developing budgetary requirements, assuring effective performance of the water system, project management, and implementing City ordinances and utility policies regarding water service. The Public Works Director provides strategic guidance on regional issues and managing key initiatives for the water system, such as the Capital Improvement Program. Responsibilities also include dissemination of information regarding the utility to City departments, community relations, public information, purveyor communications, media relations, and employee communications.

WATER DIVISION

The Water Division is responsible, under the oversight of the Water Superintendent, for the normal day-to-day operation of the utility. The Water Division provides service to the customers of Chehalis 24 hours per day, 365 days per year. The Division operates, maintains, and improves the source, treatment, and water transmission and distribution system to protect public safety, public health, and the environment. Preventive

maintenance is provided by almost all members of the division depending on their areas of expertise.

The Water Treatment Plant Operators are responsible for the operation of the water filter plant, monitoring the intake facilities, and share duties with the Water Distribution Specialists including water quality monitoring, meter reading and repair, servicing customer accounts (connections and disconnections), customer service, and facilities maintenance. The Water Distribution Specialists are also responsible for water service installation and repair, hydrant and valve testing and maintenance, cross-connection control inspections, customer service, water line repair, and pump station operation and maintenance. These two classifications share responsibilities as priorities require.

The Water Superintendent is responsible for the Cross-Connection Control Program, troubleshooting and maintenance of electrical and electronic components, circuitry and controls, hydraulic and mechanical repair, and recordkeeping.

ENGINEERING DIVISION

The Engineering Division provides technical support for all utility functions. The responsibilities include project engineering, engineering inspection, development review coordination, AutoCAD/GIS/GPS oversight, technical documentation, and customer service.

ADMINISTRATIVE SUPPORT

The administrative support staff provides support for all Public Works. Their responsibilities include administrative support, accounts payable, billing statements, payments, budget support, receptionist duties, dispatching, correspondence, records management, and customer service

PROFESSIONAL GROWTH REQUIREMENTS

Chehalis is committed to meeting the requirements of the Water Works Operator Certification Program administered by the Washington State Department of Health (DOH). Under this program, water systems must employ certified operators to carry out various water system functions as part of their treatment and distribution systems.

Certified operators are either on-site or on-call for all critical water system operations. Chehalis also ensures that certified operators oversee all segments of the water system as appropriate.

All certified personnel for Chehalis renew their certificates on an annual basis and enhance their professional growth in the field by accumulating at least three college-related credits or continuing education units (CEUs) every three years. Personnel meet the CEU requirements through a combination of state and AWWA sponsored classes.

State-sponsored classes include those offered through the Washington Environmental Training Resource Center (WETRC).

In addition to providing CEUs, the City is committed to the safety of its maintenance and operations staff and ensuring the safe operation of all facilities. City personnel follow the safety procedures and training programs shown below:

- City Accident Prevention Program
- State Labor & Industries, Division of Occupational Safety and Health (DOSH) standards outlined in applicable sections of the WAC Chapters 296-24, 296-27, 296-45, 296-62, 296-155, and 296-800 including but not limited to:
 - Trenching and Shoring Safety, Confined Spaces Safety, and Flagger Certification
 - City Lock-Out Tag-Out Training
 - First Aid/AED/CPR Training based on current American Heart Association and DOSH guidelines
- Water and Sewer Risk Management Pool – endorsed programs
- Washington Environmental Training Center Certification Workshops
- Certification Upgrades

The City Accident Prevention Program is adopted by resolution and updated as needed by the City Safety Office, the Safety Committee, and the Management Team. City personnel are routinely and regularly trained on all aspects of the safety programs such as standards, best practices, and safe work procedures. Safety training is provided in house and by subject matter experts that are contracted on a regular basis.

SYSTEM OPERATION AND CONTROL

The purpose of this section is to provide a complete understanding of how Chehalis operates its water system. This section is not intended to provide a description of major system components as these were previously described in Chapter 1. This section begins with an overview of how Chehalis manages the water supplies from available sources and balances drinking water demands with filter plant capacity. This overview is followed by a general description of how Chehalis operates the filter plant and transmission and distribution systems and includes identification of major system components, routine system operation, preventive maintenance, equipment supplies, and chemical listings. It is important to note that the system operations and controls described in this section are not hard and fast rules but represent general management guidelines for operating the system. The locations of major system components are shown in Figure 1-3.

SOURCE OF SUPPLY

Chehalis' water sources consist of surface diversions from the North Fork Newaukum and Chehalis Rivers. Operation of these sources to meet water demands varies with time of year, hydrologic conditions, water quality and level of water consumption.

Management of these resources is the responsibility of Chehalis Water Treatment Plant personnel with oversight from the Water Superintendent.

North Fork of the Newaukum River

Source facilities at the North Fork are monitored regularly for water quality, security, and operation. A simple weir structure diverts water from the North Fork of the Newaukum River through a bar screen where heavy material is removed. The water then passes through a traveling screen and flows by gravity to the filter plant in town. A valve at the inlet to the filter plant controls the volume of flow from the North Fork. The valve at the filter plant is adjusted based on the usage within the system and the water level in the main reservoir. The rate of flow from the intake and through the filter plant is kept as constant as possible by utilizing the storage of the main reservoir as a buffer to system demands. This rate can be augmented using the raw water pump at the 18th Street Pump Station. Plant personnel read the flow meter, which is located at the filter plant.

Chehalis River

The Chehalis River intake and pump station are located west of the City Center on the bank of the Chehalis River. The Chehalis is used primarily as a backup to the North Fork and to augment system needs when the supply from the North Fork is insufficient to meet system demands. Filter plant personnel perform the operation of this pump station when necessary. The pumps are manually controlled and require an operator to be at the pump station for startup. To ensure its reliability and to purge stagnant water from the transmission line, the Chehalis intake system is operated at least once per month. At the same time, the auxiliary generator is operated under load. During monthly tests and during startup, the water bypasses the filter plant to the Water Treatment Residual Treatment Basin (WTRTB) to purge stagnant water. When used as a source, the pumps are turned on and off manually as required to meet system demands.

WATER TREATMENT PLANT

The Water Treatment Plant, described in detail in Chapter 1, is operated 24 hours per day 7 days per week and is staffed at least 8 hours per day, Monday through Friday. On weekends and holidays, operators perform essential treatment duties, including logging readings, record keeping, backwashing filters, and other operational and maintenance duties as required. During periods when no operating personnel are present, alarms are forwarded to a 24-hour alarm center which alert on-call personnel.

The pumps and related facilities are inspected twice per week. Remote-sensing flow meters are installed at the station with the remote reader located at the treatment plant. The facility is fenced.

The filters are generally backwashed at a frequency ranging from 48 to 72 hours. However, during high turbidity periods backwashing may be required more often than

once every 24 hours. Backwashing is currently triggered and controlled manually by the operator.

The plant uses tablets consisting of chlorine, lime, and sodium fluorosilicate at 8 to 10 gallons (saturated) per day and fifty to sixty 50-pound pails are kept on hand. The chemical feed equipment is in good condition. The plant's average liquid chlorine usage is 16 to 20 gallons per day and a 1,000-gallon supply is kept on hand. The plant has a chlorine leak detector/alarm system. The chlorinators are serviced regularly and are in good condition. Liquid chlorine requires suitable respirators and protective clothing for handling. Treatment plant personnel are well versed in the use of this equipment and special handling requirements and the proper MSDS sheets are available and properly posted.

Laboratory chemicals are needed for a variety of required tests and analyses. Supplies are ordered well in advance, with some chemicals shipped on a routine schedule. The plant has six 250-gallon totes for aluminum sulfate storage and orders a refill when down to four totes. Laboratory equipment includes a pH meter, spectrophotometer, and tabletop turbidimeter. The City has backup lab equipment and access to this equipment at other City facilities. The proper MSDS on all chemicals used are available and properly posted.

BOOSTER PUMP STATIONS AND RESERVOIRS

Routine operation and maintenance of all pump stations include cleaning the station, lubrication of pumps, reading and recording all flow and hour meters, exercising auxiliary generators, monitoring fuel supply, and checking all control point settings and alarms. Pump station flow and pump status is metered at the filter plant. The High-Level Pump Station pumps are manually alternated monthly. The South End and Centralia Alpha Pump Stations also transmit system pressure to the filter plant. In addition to routine operation and maintenance, chlorine residual is monitored at the Centralia Alpha Pump Station and chlorine solution is refilled to maintain a chlorine residual between 0.5 and 1 ppm. The chlorine residual analyzer is inspected daily and serviced and calibrated as needed.

Routine operation and maintenance of all reservoirs include daily inspection to ensure all hatches are locked and secure, there are no signs of vandalism on the site, overflows and vents are not blocked, and overflow and vent screens are clean and in place. All reservoir low-level alarms are located at the filter plant. In addition, the Kennicott Reservoir altitude valve needs calibration at least once per year. The Kennicott, Yates, and half of the Main Reservoir can be taken out of service for maintenance and inspection without interrupting service. However, half of the Main Reservoir must be online for the filter plant to continue to operate.

High-Level Reservoir Operational Setpoints Revision

The High-Level Reservoir on/off operational setpoints were recently revised from 4 feet of depth to 2.9 feet of depth. Because the new High-Level Reservoir increased in diameter in comparison to the old reservoir, the operational storage volume increased. These setpoint revisions reduced the operational storage to a volume comparable to the old High-Level Reservoir. The City will need to monitor the High-Level Pump Station to ensure the number of pump starts/stops per day is acceptable.

DISTRIBUTION SYSTEM

Most of the activities that take place in the distribution system would be classified as either construction or maintenance. However, meter reading would be classified as operations.

SCADA AND TELEMETRY SYSTEM

The South End Pump Station and the Centralia/Alpha Pump Station have a complete system that transmits station status and alarms to the filter plant during normal working hours and to the alarm center when the plant is not staffed. The Valley View Pump Station and High-Level Pump Station are controlled by their respective reservoirs but do not transmit information to the SCADA.

The three Hach 1720 turbidimeters are in good condition and receive regular maintenance and calibration. The City has a tabletop turbidimeter and keeps backup lab equipment at other City facilities.

PREVENTIVE MAINTENANCE PROGRAM

Good preventative maintenance is both cost-effective and a deterrent to emergency conditions. By following a set schedule of maintenance activities, the City can ensure efficient and reliable system operation, extend equipment life, and have early warning of mechanical breakdown. Routine system operations and control were previously discussed and includes many preventative maintenance tasks. Any tasks that were previously discussed in the Routine Systems and Operations section are not revisited in this section.

SOURCE OF SUPPLY

Source capacity can degrade over time due to several possible causes. These include loss of pump capacity, increased head losses in piping, leakage in pump riser pipes, and reduced intake screen capacity. Daily production and daily pump runtime can be used to determine pump capacity by dividing total gallons pumped by total minutes of run time. Changes in pump capacity can indicate pump problems. Changes in pump power demands may indicate changes in pump conditions or problems with the pump motor or motor control equipment.

STORAGE

Reservoirs can be vulnerable to contamination in public water systems. Contaminants can enter the reservoir through cracks or openings at the vent, overflow or drain screens. Deteriorating hatch covers and vandalism can also compromise reservoir water quality. Poorly designed and maintained reservoirs can hamper the emergency operation of a water system. If reservoir drains are not functioning properly, it may be difficult to purge a contaminant from the system. Written documentation of reservoir maintenance must be completed with each inspection and repair, and a copy of the report retained on file.

DISTRIBUTION

Dead-end water lines are susceptible to water quality problems and should be flushed to remove stagnant water and any sediments that may have been deposited. The City's distribution lines are predominantly along existing roadways; therefore, any visible leaks or exposures would be noticed by the public and reported to the responsible authority. The distribution water quality monitoring is completed consistent with the monitoring plan described in Chapter 3.

Mapping

An important aspect of distribution system maintenance is distribution system mapping. The City has up to date system maps that indicate pipe size and type, year of construction, valve location, hydrant location, and significant system facilities such as reservoirs and pump stations. These maps will aid the City in tapping new water services and guiding the water utility, as well as other utilities, regarding planned improvements. New facilities and any new information obtained from field observation should be added to the system map in a timely manner. Underground utilities that commonly exist in urban areas include water, sewer, stormwater, power, telephone, cable TV, and gas. Other underground facilities that may exist include underground fuel tanks, such as at gas stations.

Any time someone plans to dig in a location where there may be underground utilities, they are required to contact the local one-call locating service. The one-call service then notifies utilities that may have underground facilities in the area to mark their facilities. If the facilities are not marked, or are marked inaccurately, and the person doing the digging hits the underground facility, then the utility that failed to accurately mark the location is responsible for all damages.

Source and Service Meters

Accurate water metering is an essential financial and conservation-oriented component of water system infrastructure, as well as important for supporting water rights. A substantial amount of revenue may be lost through inaccurate metering of residential and

commercial accounts. Without accurate master or source meter readings, the water utility cannot determine lost and unaccounted for water volumes. This issue is also addressed in the Conservation Plan, Chapter 4.

TRANSMISSION

The Newaukum River transmission line is routinely monitored for potential leakage by comparing diversion data from the intake with metered inflows at the water treatment plant. Transmission line leaks are occasionally identified and promptly repaired.

EQUIPMENT, SUPPLIES, AND CHEMICAL LISTING

The City must be ready at all times to respond to routine and emergency maintenance needs. Chehalis maintains a computerized inventory of repair and replacement parts that permit immediate repair of most system failures. This inventory is updated monthly as invoices are paid and work orders are processed. The City must also maintain sufficient operating chemicals to allow continuous operation of source and treatment facilities. Depending on the availability of the chemicals, sufficient supplies are stored to allow reasonable order and shipping times. A complete list of suppliers is kept on file at the City. Manufacturers’ technical specifications on major system components, such as the traveling screen or filter media, are kept on file at the Public Works Office and at the filter plant.

MAINTENANCE SCHEDULE

The City currently follows a schedule of monitoring and maintaining the facilities throughout the distribution system. A complete list of operation and maintenance tasks is included in Table 6- 2.

TABLE 6-2 Current Maintenance Tasks

Operation and Maintenance Task	Frequency ¹	Annual Quantity (days)	Personnel Required	Average Hours	Total Annual Hours Required
<i>Intake Operations</i>					
Inspect/security facilities and equipment	Daily	365	1	0.75	273.75
Recordkeeping	Daily	365	1	0.75	273.75
Conduct Routine Maintenance	Daily	365	1	0.50	182.5
Maintain Grounds and Facilities	Daily	365	1	2.50	912.5
Inspect Watershed/Forest Practices	Weekly	52	1	1.50	78
Raw Water Coliform Monitoring	Monthly	12	1	2.00	24
Road Maintenance	5/yr.	5	3	8.00	120
Subtotal					1,864.5
<i>Water Treatment Operations</i>					

Water Quality Tests	Daily	365	1	1.50	547.5
Recordkeeping/Reporting	Daily	365	1	1.50	547.5
Adjust chemical feed, fill hoppers, backwash filters, calibrate turbidity monitoring equipment, housekeeping, routine maintenance	Daily	365	1	2.00	730
New/Replace/Maintain Equipment	80/yr.	80	1	8.00	640
Clean Settling Basins	Semi-annually	2	3	8.00	48
Reservoir Cleaning	5/yr.	5	1	8.00	40
Operate Chehalis River Pumps	Monthly	12	2	1.00	24
Coliform Sampling	8/mo.	96	1	2.00	192
Water Quality Monitoring	(2)	1	1	20.00	20
Subtotal					2,789
Customer Service					
Meter Reading	1,677/mo.	20,124	1	0.05	1,006.2
Delinquent Notification-Deliver Tags	100/mo.	1,200	1	0.25	300
New Customer-Turn on	60/mo.	720	1	1.00	720
Close Customer Account	60/mo.	720	1	1.00	720
Emergency Turn-off/on	4/mo.	48	1	0.50	24
NSF Checks Turn-off/on	6/yr.	6	1	0.50	3
Delinquent Shut-off	300/yr.	300	1	0.25	75
Delinquent Lock-off/Turn-on	60/yr.	60	1	0.40	24
Subtotal					2,872.2
Distribution					
Reservoir & Pump Station Checks	260/yr.	260	1	3.00	780
Meter Changes/Repairs	140/yr.	140	2	2.00	560
Miscellaneous Repair (lids, boxes etc.)	100/yr.	100	1	1.00	100
New/Replace Water Mains	30/yr.	30	7	8.00	1,680
Install New Services	50/yr.	50	3	8.00	1,200
Upgrade Services	33/yr.	33	2	4.00	264
Replace Services	16/yr.	16	3	12.00	576
Hydrant Replace/New	Bi-monthly	6	3	24.00	432
Hydrant Maintenance	Bi-monthly	6	2	2.50	30
Hydrant Flushing	Semi-annually	362	2	0.40	289.6
Hydrant Meters (Install-on/off)	14/yr.	14	1	1.00	14
Valve Exercising	300/yr.	300	2	0.35	210
Blow-off Dead End Lines	Bi-monthly	108	1	1.00	108
Maintain Equipment/Housekeeping	260/yr.	260	2	0.50	260
Fire Flow Testing	10/yr.	10	2	1.00	20
Subtotal					6,523.6
Cross-Connection Control					
Inspections	150/yr.	150	1	2.00	300
Administration	Weekly	52	1	1.00	52
Recordkeeping/Clerical	Weekly	52	1	1.00	52

Subtotal					404
Other					
Construction Inspections	3 projects	3	1	20.00	60
Review Construction Plans	3/yr.	3	7	1.00	21
Locates	660/yr.	660	1	1.00	660
Inventory Parts	Quarterly	4	2	8.00	64
Flagging/Traffic Control	36/yr.	36	2	8.00	576
Truck Driver	36/yr.	36	1	8.00	288
Safety Meetings	Monthly	12	7	1.00	84
Safety Training/CEU Classes	16/yr.	16	7	1.00	112
Vacation	20/yr.	20	7	8.00	1,120
Sick Leave	12/yr.	12	7	8.00	672
Holidays	10/yr.	10	7	8.00	560
Subtotal					4,217
Total Hrs.	18,670.3				

1. The prefix semi means “occurring two times per” and the prefix bi means “occurring every two” in this instance.
2. See Chapter 3 for water quality monitoring schedule.

Aside from the current routine and preventive maintenance performed by the City, there are additional practices which would aid the City in ensuring even more reliable water service. These practices include routine cleaning and inspection of all system reservoirs at least once every five years; system valves should be inspected and exercised at a minimum of once every three years; fire hydrants should be maintained at least once every two years; service meters should be monitored and tested on a regular basis and should be replaced as needed or every 10-15 years; and master meters should be monitored and tested on a regular basis.

EMERGENCY RESPONSE PROGRAM

The Washington State Department of Health (DOH) requires the inclusion of an Emergency Response Program (ERP) in the operations program under WAC 246-290. The purpose of an ERP is to guide personnel through potential system malfunctions, natural disasters, and other events that might alter routine system operation. The program is required to include a water system personnel emergency contact list, notification procedures for water quality emergencies, a vulnerability analysis for the water system, and contingency operational plans for the system when normal operating procedures are not available.

WATER SYSTEM EMERGENCY CONTACT LISTS

An Emergency Contact Roster is shown in Tables 6-3, 6-4 and 6-5. An updated copy of this list with phone numbers is kept at the Public Works Office and Central Dispatch. During non-working hours, calls from the public are received at Central Dispatch. Depending on the nature of the complaint, Central Dispatch contacts the appropriate on-

call personnel. After hours and on weekends, the City utilizes a self-dialing system that automatically calls individual staff members sequentially until a staff member responds.

TABLE 6-3 Emergency Contact Roster

City of Chehalis	
City Hall	360.345.1042
Community Services Dispatch (aka Central Dispatch)	360.748.0271
Water Treatment (Filter) Plant	360.748.4955
Fire Department	360.748.3394
Police Department	360.748.8605
Wastewater Treatment Plant	360.740.7536
City of Centralia	
Centralia Fire Department	360.736.9854
Centralia Police Department	360.330.7680
Centralia Public Works Department	360.330.7512
Centralia Water/Wastewater	360.330.7512
Centralia Street Department	360.330.7512
Lewis County	
Lewis County Dispatch	360.748.1105
Emergency Management	360.740.1151
Environmental Health	360.740.2745
Public Works	360.740.1123
Public Services	360.740.1122
Sheriff	360.748.9286
State	
DOH Southwest Regional Office Phone	360.236.3030
After Hours	800.833.6388
Fax	360.236.3029
Washington Emergency Management Division – Spill Report	800.258.5990
National Response Center – Spill Reporting	800.424.8802
Dept. of Fish & Wildlife	360.902.2589
Other	
BNSF Trouble Reports	800.832.5452 ext. 2
BNSF Longview/Kelso	360.578.2361
Centurylink Emergency Response	206.392.6412
Chehalis School District	360.807.7200
Comcast	800.266.2278
Lewis County Fire District No. 5 (raw water)	360.262.3320
Lewis County Fire District No. 6 (raw water)	360.748.6019
Safe Families Ministry (raw water)	360.740.1001
PUD of Lewis County	360.748.9261
Pacific Cataract and Laser Institute	360.748.8632
Puget Sound Energy (Gas Division)	360.736.3383
	800.999.4964

Area Supervisor, Dale Lykken - Cell	360.269.4292			
Pager	360.330.9662			
Home	360.740.9511			
Providence Hospital	360.736.2803			
Sprint	800.521.0579			
Tacoma Eastern Railroad	260.383.2626			
Utility Underground Locate Center	800.424.5555 or 811			
Chehalis Public Works Department Contact Phone/Cell/Pager Numbers				
	Phone	Cell	Pager	
During Business Hours:				
Public Works Office	360.748.0238			
Water Treatment (Filter) Plant	360.748.4955			
After Business Hours:				
Water Superintendent				
Public Works Director	360.459.0136	360.269.3372	360.330.6103	
Water On-Call Person			360.330.3330	
Filter Plant On-Call Person			360.330.3580	
Emergency 911				
Immediate Response Required (After Hours)	360.740.1105 (Central Dispatch)			
Non-Emergency (After Hours)	360.748.3921 (Voice Mail)			
City of Chehalis Public Works Department Employee's Contact Information				
	Radio	Phone	Cell	Pager
Administration				
Public Works Director	801			360.330.6103
Public Works Department	800			
Water Division				
Water Supt.	812			
Knapp, Kyle, Water Dist. Specialist	813		360.520.9968	360.330.6440
Thomas, Mike, Water Dist. Specialist			360.790.7316	
Gruginski, Lloyd, WTP Operator	826	360.748.6245	360.219.7186	
Lucht, Greg, WTP Operator	824		360.269.3705	
Hackett, Anthony, Equip./Maint. Tech.	825		360.506.2051	
WTP – Water Treatment (Filter) Plant	820	360.748.4955		
On-Call				
Water			360.269.3372	360.330.3330
Public Works				360.748.0238
WTP – Water Treatment (Filter) Plant				360.748.4955
Weyerhaeuser		360.226.0790		

To report a fire to Weyerhaeuser related to the Newaukum River intake the contact list in Table 6-5 2019 Weyerhaeuser Vail Fire Notification Procedures on the following page are to be followed:

TABLE 6-4 2019 Weyerhaeuser Vail Fire Notification Procedures

To Report a Fire: Call Vail Office – 360.442.2420, option 1 or follow directions for emergencies				
Also				
Call Vail Fire Response Team in the following order until someone is reached				
Fire Response Team	#	Office Phone	Cell	Home
Bertsch, Odie	013	360.226.0781	253.381.7343	360.446.0654
Romine, Gary	007	360.226.0796	360.703.4322	360.978.6651
Erdmann, Maria	115	360.226.0779	206.399.2117	360.705.8597
Yeckley, Chance	017	360.226.0783	360.355.0333	
Hillery, Kyle	085	360.226.0782	360.591.5219	
Hinderlie, Matt	111	360.226.0797	360.481.7640	
Vanderlaarschot, Duane	156		360.239.7294	360.278.3363
Krouse, Stacy	152	360.226.0790	360.520.1536	
Skay, Rachel	052	360.226.0794	319.400.8487	
Boire, Lisa		360.226.0778	253.576.5637	
Seward, Jestina		360.226.0780	360.878.1218	
Simmons, Katrina			360.870.0694	
Samuelson, Doug (Security)	120	360.226.0785	360.890.2168	
Wilson, Gary (Security)	818	360.226.0785	360.269.6327	
Lusk, Larry (Security)	806	360.226.0785	360.269.9118	

If no immediate answer, you must call DNR 1.800.562.6010 to report the fire, AND continue calling the Vail Fire Response Team until someone is reached.

Be prepared to collect and give the following information:

- Latitude/Longitude
- Road
- Setting number
- What is the fire size, type of fuel(s), wind direction, rate of speed?
- Is helicopter suppression needed?
- Who is designated to continue radio/phone contact and how?

SYSTEM VULNERABILITY

It is important to estimate the degree in which system facilities may be vulnerable to various types of emergencies to identify system weakness. The following sections provide information regarding which facilities would be vulnerable to various types of emergency events and recommended actions that City staff could take to help mitigate the situation. System vulnerability for the Regional Water System is due to several

conditions such as natural and man-made disasters, mechanical failure, power outages, and vandalism. Natural disasters include high water and flooding, severe earthquake, and winter storms. The vulnerability of the major components of the water system is presented.

Water Sources

The North Fork intake and the Chehalis River intake supply all the water to the system. As with all rivers, both sources are susceptible to natural and manmade events and conditions that could affect water quantity and quality. Natural events include drought, earthquakes, landslides, flooding, fires, and high rainfalls that could occur within the watersheds upstream of the intakes and thus affect the reliability of the supply. Both watersheds include a significant amount of forestry lands with timber management activities, logging and other forest practices taking place, which could affect both water quality and quantity. The Chehalis River intake is also susceptible to flooding. All pumps and electrical controls are above record flood stage, but the pump station would be surrounded by water and therefore difficult to reach.

The Chehalis River and its tributaries flow through extensive dairy, farm, and croplands as the rivers meander along valley floors toward the location of the Chehalis River intake. These local farm uses pose a risk to water quality due to the introduction of contaminated runoff and animal wastes into the rivers. The water quality of these river systems is potentially further jeopardized by possible failure of septic systems and drain fields in these rural areas. Source water vulnerabilities and protection is covered in further detail in Chapter 5.

Both intakes are also susceptible to debris in the river, especially in the fall. Leaves and branches can clog the intake screens thus decreasing flow. Leaves also increase the biological load to the water which may affect taste and odor, increase the risk of bacteria, and increase the concentration of organic compounds. If not removed during the pretreatment and filtration process, these compounds may react with chlorine increasing the formation of disinfection byproducts. Winter storms may also interrupt power and communication to the intake facility.

These facilities are susceptible to mechanical failure as well as power and telephone outages. Mechanical failure is not a big concern because there are two separate sources of water. Failure of the traveling screen during the fall, when deciduous trees are losing their leaves, could disrupt or reduce flow; however, during most of the year it would have minimal effect. Redundancy of the pumps at the Chehalis River intake lessens the impact of pump failure. Both pump stations are equipped with auxiliary power, which will operate all equipment at the North Fork intake and one pump at the Chehalis intake. Neither intake is dependent on telephone lines for successful operation.

If both intakes are out of service, the system could operate using water from the storage reservoirs for a relatively short period of time, see the Standby Storage Section in

Chapter 3. The intertie with the City of Centralia is also available assuming the event did not also disrupt Centralia's water source. If both sources were out of service, the City would need to take steps to limit water use throughout the system (see Water Shortage Response Plan in Appendix L) and to notify fire personnel of the situation.

Reservoirs

Vulnerability concerns for a reservoir center around the potential for damage to the structure and/or contamination of its contents. The storage reservoirs were constructed and upgraded to reduce the potential for vandalism. Each is completely sealed with locked hatches. The reservoirs are also susceptible to natural disasters such as earthquakes. The Yates Reservoir, constructed in 2002, was built to meet then current seismic codes. The seismic design of the other reservoirs is unknown and should be reviewed by a structural engineer.

Booster Pump Stations

The booster pump stations are vulnerable to mechanical failure, vandalism, power and telephone outages and earthquake. All the stations have redundant pumps and controls, standby power, and are fenced and locked.

Transmission and Distribution System

The transmission and distribution systems are susceptible to both man-made and natural disasters such as vandalism, pressure surges, contamination, corrosion, erosion, earthquake, and material failure. To reduce the number of breaks to the system, construction standards regarding pipeline material and construction have been established and are required to be met for new installations. In addition, standards are in place to require strategically placed valves and looping of lines to facilitate isolation of broken pipes which minimizes the area affected during repair of the pipe.

The transmission lines are vulnerable because they are single lines connecting the sources to the filter plant. The threat of transmission line failure is reduced because of redundant sources.

EMERGENCY PROCEDURES AND RELATED CONTINGENCY PLAN

The contingency plan presented herein is intended to serve as a guide to City personnel for developing response procedures. It establishes DOH notification procedures, prioritizes the duties of response personnel, and presents a skeleton field response procedure. An emergency roster is included in Tables 6-3 through 6-5.

The initial reaction by City personnel to an emergency should be to take prompt action to eliminate any immediate threat to public health or safety. Where appropriate, bystanders may be warned, traffic diverted, valves shut off, dangerous materials removed, or other

necessary actions taken, provided it can be done without further risk to the public or City staff. Next, the Water Superintendent, or their designee, should be contacted, and a crew dispatched to assess the damage and determine the materials and resources necessary for correction. It is essential that the City's repair supplies inventory status report and list of material supplies be kept up-to-date and readily accessible to avoid unnecessary delay in restoration of service. Throughout the emergency, contact should be maintained between work crews, the Water Superintendent, and other key participants to enhance coordination with the citywide response plan and to keep City administrators informed of the emergency for proper public notification.

Emergency Personnel Responsibilities

The following responsibilities are suggested for administrative and technical personnel in the event of an emergency.

Public Works Director

- Keep City Manager and public informed
- Act as liaison between the Water Superintendent and the City Manager
- Assess disaster/damage
- Prepare warning information for users

Water Superintendent

- Oversee operations
- Assess system damage
- Assess available equipment and resources
- Formulate plan for corrective action
- Determine or authorize emergency response actions
- Document incident and response action taken
- Maintain contact with and receive approval from the Public Works Director prior to acting

Field Staff

- Take immediate action to protect life and property
- Note damage and apparent cause
- Notify Public Works office
- Keep Water Superintendent informed
- Assist in taking correction action

Office Staff

- Contact County and other agencies as appropriate
- Answer incoming phone calls
- Maintain contact with crews

Police/Fire Chief

- Maintain crowd and traffic control
- Provide security
- Provide fire control
- Provide emergency aid

Notification Procedures

In general, the Water Superintendent or designee immediately notifies the DOH Regional Engineer if water is expected or required to be shut down for more than 24 hours, water quality is determined to be unacceptable, or whenever a public health risk associated with the water system is detected. The water system utility has 24 hours to notify its customers of a Tier 1 violation as set forth in the Public Notification Rule.

Public Notification Form Templates which can be modified or filled out by City Staff are in Appendix K. The goal is for these notifications to be prepared within minutes of implementing emergency procedures developed and contained within the database. Benefits of the city-managed database include customized reports specific to the City, its treatment methods, and water sources.

The City has developed a Priority Service List to protect individuals and/or organizations that are dependent upon an uninterrupted supply of water and/or strict water quality requirements. Public information/education concerning this service is important to enable those in need of continuous water service to contact the City for inclusion on this list. The list includes individuals on home care kidney dialysis equipment or other medical facilities, and organizations requiring uninterrupted water for specialized commercial or industrial processes.

Severe Earthquake Response

A major earthquake, with the magnitude of 5.0 or greater on the Richter scale and an intensity of 9 or greater on the Modified Mercalli scale, could disrupt the source, transmission, treatment, pumping, storage, and distribution components of the water system. In addition, power failures and interruption to conventional transportation and communication systems may occur.

Water personnel should anticipate critical water use needs for firefighting or medical facilities resulting from an earthquake. These should be given due priority in assessing the emergency, preparing damage reports, and organizing repair efforts. In the event of an earthquake, reservoirs may be leaking or be structurally damaged and should be checked for cracks, leaks, or structural damage. The reservoir should then be sealed if appropriate or drained if in danger of failure. If there is damage to the water treatment plant, it should be isolated with isolation valves until repairs are made. Booster pump stations should be checked for damage and pumps should be shut down as required. Since pipes are hidden from view and at least as susceptible to ground movement as above ground structures,

pipelines and other buried facilities require closer attention in the event of an earthquake. The system should be checked thoroughly for any unexplained drop in line pressure, reduction in flow rate, pump failure, leakage, or other signs of damage. Crews should be equipped to maintain constant contact with the public works office and other field personnel, barricade hazardous areas, shut off valves to isolate broken mains, turn off water services, and make repairs. They should also be prepared to help residents secure a safe supply of drinking water.

High Water and Flooding Response

The City's location in the Chehalis River valley makes it vulnerable to floods. The greatest potential flood impacts on the City are preventing accessibility to the Chehalis River intake, loss of power, high turbidity at the North Fork intake, and washed out mains. Other important impacts include overload of the wastewater plant, inundation of other structures, transportation disruption, and competing demands on City resources.

Water personnel should anticipate the facilities that will most likely be impaired by flooding. In the event of a flood or high water all major system components must be checked thoroughly to assess physical damage. Crews should be equipped to maintain constant contact with the public works office and other field personnel, barricade hazardous areas, shut off valves to isolate broken mains, turn off water services and make repairs. They should also be prepared to help residents secure a safe supply of drinking water.

Power Failure Response

Short-term and long-term interruptions in power can occur for a variety of reasons and may or may not be associated with emergencies which would otherwise affect the water system. In addition, power outages may be localized to one or more city blocks or may affect the entire region. Facilities most affected by this type of emergency include the Chehalis River intake, the Water Treatment Plant, booster pump stations, telemetry equipment, and communication systems.

In addition to a field response, water personnel should immediately contact the Lewis County Public Utility District to determine the nature, extent and expected duration of the power outage. All pumping and source facilities have either automatic or manual onsite auxiliary power. These auxiliary power sources should be brought online and maintained until power is restored.

Contamination of Water Supply Response

Contamination can occur in the surface supplies and may be the result of manmade practices or natural occurrences. The North Fork source can experience high turbidity due to heavy run off and/or landslides upriver from the intake. If the North Fork water is too high in turbidity for the water treatment plant to adequately treat, the Chehalis River

source may be utilized. If a chemical spill or other chemical contamination occurs in the North Fork, the Chehalis River source may not be available for a backup source because the Newaukum River is a tributary to the Chehalis River upstream of the Chehalis River intake. Distribution contamination could also occur, possibly through back siphoning, unauthorized entry into a reservoir, or entry of birds or bats into the reservoir through a damaged vent screen or improperly secured hatch or other opening. Additional sources of contamination include septic tank drain field effluent, urban storm runoff, pesticide leachate, landfill leachate, petroleum storage leakage, chemical or petroleum spills, animal wastes, vandalism, and volcanic fallout.

Initial response should be to isolate the contaminated facility from the rest of the system. Other appropriate measures will be determined according to the type, location, nature, and entry path of the contaminant. The area of contamination and specific cause should be determined as quickly as possible and removed if feasible. This may be a simple matter such as a minor spill or may be a more complicated problem requiring significant resources and specialized assistance. Prior to putting contaminated section back into service, the section should be flushed and receive passing water quality test results. For reservoir contamination, reservoirs may need to be drained, cleaned, and disinfected per AWWA Standards if water is deemed to be unsuitable for consumption.

In addition to their field response, City personnel should ensure that appropriate health authorities are contacted. At a minimum, this includes the DOH Regional Engineer and Lewis County Environmental Health Director. These personnel will then work together to determine, if possible, the extent of the contamination and prepare the appropriate public information program.

Water Transmission Line Failure Response

Rupture or leakage in the transmission line from either the North Fork or Chehalis River intake could be the result of earthquake, pressure surge, vandalism, bomb blast, construction, soil scour, corrosion, or material failure. A major break could result in interruption of the source and present a flood and erosion threat to adjacent landowners.

Such an event requires prompt action by City personnel to isolate the damaged section and minimize impacts to the rest of the system. The size and nature of the rupture must be evaluated promptly to ensure that adequate repair materials, excavation equipment, dewatering facilities, and proper personnel are deployed. Temporary loss of either the North Fork or the Chehalis River transmission line by itself would not present a water supply shortage because of the redundancy of the other source. If both transmission lines were out of use at the same time the storage capacity could supply the system for several days. In this event, the City of Centralia should be contacted for the potential activation of the intertie.

Distribution Line Break Response

Water distribution line breaks could be the result of earthquake, pressure surge, vandalism, bomb blast, construction, soil scour, corrosion, or material failure. Due to strategically located valves and looped piping, most line breaks can be isolated and minimize service outages.

Such an event requires prompt action by City personnel to isolate the damaged section and minimize the impacts to the rest of the system. The size and nature of the rupture must be evaluated promptly to ensure that adequate repair materials, excavation equipment, de-watering facilities, and proper personnel are deployed. In most cases, the initial response person will be capable of assessing the situation to determine the extent of the problem and course of action to make the repair. This person is also responsible for notifying emergency departments such as fire and police and the Water Superintendent if not already notified.

The repairs should be made in accordance with the standard procedure for water line repairs. The City typically has sufficient materials on hand to address line break emergencies, see the Inventory of Materials and Equipment section below.

Bacteriological Presence Detection

Public water systems will occasionally detect positive coliform samples, mainly because of contamination in distribution mains or sample taps, or improper bacteriological sampling procedures. However, the persistent detection of coliforms in the water supply, particularly E. coli or Fecal Coliform, may require the issuance of a public boil water advisory to protect public health and safety. Emergencies such as floods, earthquakes, and other disasters can affect water quality because of damage to water system facilities. This can also result in the issuance of a boil water advisory in advance of supply problems. WAC 246-290-320(2) details the specific procedures for water utilities to follow if coliform bacteria are detected in the water system. The City's Coliform Monitoring Plan is included in Appendix G.

VOC or SOC Detection Procedures

WAC 246-290-320(6) requires follow-up monitoring to be conducted in accordance with the following:

- (a) For VOCs, 40 CFR 141.24 (f)(11) through (15), and (22)
- (b) For SOCs, 40 CFR 141.24(b), (c) and (h)(7) through (11) and (20).

Liquid Chlorine Leak

Although the risk of chlorine leakage is low, there is a possibility that chlorine facilities could be ruptured and leak. The cause of the rupture could vary from a natural disaster to

operator error or vandalism. Because liquid chlorine is corrosive, personnel who respond to such an emergency must wear a self-contained breathing apparatus and protective clothing. Police should be notified immediately of the leak and potential danger. No water should enter the City’s water distribution system without receiving proper chlorination. Therefore, any failure of the chlorination facilities should be followed by a shutdown of the filter plant until repairs are complete.

Vandalism, Terrorism, or Bioterrorism

According to the U.S. Environmental Protection Agency (EPA), “the threat of public harm from an attack on the Nation’s water supply is small.” However, it is important to be prepared for it as a utility would prepare for any other potential emergency.

Many potential terrorist attacks would resemble other emergencies in effect. They may cause infrastructure damage like an earthquake or fire or may contaminate the water as would happen in an accidental spill or main break.

The City has many security measures in place. All the reservoirs are covered and have locked hatches. The treatment plant, wells, and booster stations are housed in locked structures. Operators or maintenance staff should report any suspicious persons or findings to the local police department. If an emergency occurs which may be an act of terrorism, the local police department should be notified immediately.

In addition, the City has performed a Risk & Resilience Assessment and is developing an Emergency Response Plan in compliance with EPA’s America’s Water Infrastructure Act of 2018.

WATER SHORTAGE RESPONSE PLAN

Emergency response planning is a key component of overall water system reliability. Part of emergency response is the development of a Water Shortage Response Plan (WSRP) that details actions taken during various levels of water shortages. During minor water shortages, only public information and voluntary conservation measures may be necessary to ensure adequate water supply. During extreme shortages, mandatory curtailment and rationing may be required.

Having a WSRP plan in place provides the City with an established plan on how to address shortages. It assists customers in understanding what they can do to reduce water usage and what to expect if the shortages become more severe.

The City’s WSRP is provided in Appendix L. The plan provides a four-stage approach to addressing a water supply shortfall event. Each stage provides an increasingly aggressive set of actions to be implemented as drought conditions become more severe. The four stages are:

- **Advisory Stage:** The public is informed that a water shortage may occur and is encouraged to use water wisely.
- **Voluntary Stage:** This stage relies on voluntary cooperation to meet demand-reduction goals. During this stage, the City will implement supply-side actions and recommend voluntary actions for their retail customers.
- **Mandatory Stage:** The City will implement more aggressive supply-side actions and will limit or prohibit certain retail water use activities by means of an emergency resolution passed by City Council tailored to the specific situation.
- **Emergency Stage:** If supply conditions worsen and the mandatory stage does not meet the required demand reduction, this stage will establish emergency restrictions, which may include rate surcharges by means of an emergency resolution passed by City Council tailored to the specific situation.

INVENTORY OF MATERIALS AND EQUIPMENT

The City maintains a computerized inventory of repair and replacement parts that permits an immediate determination of readiness to respond to an emergency. The inventory is updated monthly as purchase invoices are paid and work orders are processed. Materials include repair clamps for all types and sizes of pipe that are in the system, ductile iron pipe, various sizes of water main valves, chlorine for disinfection of repairs, copper tubing and service fittings.

CROSS-CONNECTION CONTROL

Utilities have the responsibility to protect customers from water contamination due to cross-connections. A cross-connection is defined as an arrangement where the potable water supply is connected, either directly or indirectly, to any substance of unknown or unsafe quality that may contaminate the public water supply through backflow. The regulation also requires utilities to develop and implement a comprehensive program to control cross-connections within the system.

The City follows the following procedures as they presently exist and as they may be amended in implementing its cross-connection control program:

- Washington State Standards for Cross-Connections (WAC 246-290-490)
- The City of Chehalis cross-connection control plan
- Manual of Cross-Connection Control published by the University of Southern California (USC Manual),
- Cross-Connection Control Manual published by the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA)

The Cross-Connection Control program is listed as 13.04.070 of the City's Municipal Code (see Appendix C). Measures enacted by the City in compliance with the program include the following:

NOTIFICATION OF EXISTING CONNECTIONS

In 1994 and 2005 a questionnaire was sent to every residential and commercial customer to determine locations that:

- Had backflow assemblies
- Needed to install backflow assemblies
- Required plumbing inspections
- Require additional investigation
- Needed no further action

These were reviewed by the City and the highest risk locations were inspected and required to install or test existing backflow devices. Follow up questionnaires were sent to all commercial customers in 2011 and to all residential customers in 2012. Questionnaires were also sent to all commercial customers in June 2019 and to all residential customers in July and August 2019. The City has implemented the following practices and procedures:

- Obtaining and managing data on reverse (back) flow prevention devices systemwide.
- Annual inspection and of privately-owned devices and directing maintenance when required.
- Annual testing and maintenance of City-owned devices.
- Cross connection control focused on the most common and potentially harmful activities. Inspections are to be prioritized from high hazard to low hazard businesses and facilities. The hazard ranking is based on Table 9 in the WAC or USC Foundation Manual. High hazard facilities may cause a cross contamination of sewage, industrial chemicals, or other wastes.

The City has a program to protect their customers and comply with the DOH Cross Connection regulations including:

- Submit backflow reports to DOH. This has been done annually since 2002 with the City being required to submit reports on each backflow inspection, incident, and inventory of all backflow devices used within the water system. This report may be obtained from DOH or submitted directly online at the DOH Cross Connection web page.
- Implement a City automated and up to date cross connection database.
- Continue inspection and maintenance oversight of privately-owned devices. A prioritized, risk-based approach of the risk-based businesses has been initiated.
- Work with the local administrative authority and City building inspectors, to ensure all new buildings, and remodeling, renovation, and changes of use for existing building are carefully reviewed to eliminate potential cross connections.

A Washington State Certified Backflow Assembly Tester (BAT) must complete backflow assembly testing within the Chehalis system. The City of Chehalis keeps an up-to-date list of approved testers.

Chehalis occasionally uses water bill inserts to provide cross-connection control information to the public. Further outreach could include information in the annual drinking water report (CCR), surveys, or additional mailings.

OPERATIONS AND MAINTENANCE DEFICIENCIES AND IMPROVEMENTS

The City will continue to evaluate the water systems operations and maintenance.

Chapter 7

DISTRIBUTION FACILITIES DESIGN & CONSTRUCTION STANDARDS

CHAPTER 7 - DISTRIBUTION FACILITIES DESIGN & CONSTRUCTION STANDARDS

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PROJECT REVIEW PROCEDURES

For new water system facilities, the City has specific project review procedures. These review procedures are described in detail in the Section 12.04, Engineering Development, of the City's Municipal Code, see Appendix C. The general steps that must be followed for project review are summarized below.

- Applicant submits a written request for water and/or sewer availability.
- After completing a review, the City will return a written response to the applicant summarizing the requirements and conditions for water service.
- Applicant submits an application for a developer extension agreement with payment of an administration fee.
- City's written response will either deny the application, approve the application, or approve the application subject to specific conditions.
- Upon approval of the application the applicant and the City enter into a formal agreement.
- Project designs are submitted to the City by the applicant's engineer for review. All designs must be stamped and signed by a professional engineer currently licensed in Washington State.
- Upon final approval of the construction drawings, and submittal of required permits and fees, a pre-construction conference will be held.
- Construction may begin following the pre-construction conference.

Individual water system project designs must be forwarded to the Washington State Department of Health (DOH) for additional review and approval, except those distribution-related projects that are eligible for the alternative review process. As defined in WAC 246-290-125(2), projects related to the construction of new or upsized distribution mains do not need to be submitted to DOH if the utility meets the following criteria:

1. An approved updated WSP is on file with DOH that includes standard construction specifications for distribution mains; and,
2. A completed Construction Completion Report Form for Distribution Main Projects (see Appendix A) for each project is maintained on file and available upon request.

The City meets these criteria and does not typically submit plans to DOH for new or replacement distribution mains.

SYSTEM STANDARDS, POLICIES AND PROCEDURES

The City's water distribution facility design and construction standards, including standard detail drawings, are contained in its Engineering Development Code (Section 12.04 of the City's Municipal Code). The most up-to-date version of the Code is available on the City's website. The current version of Section 12.04, as of the

preparation of this water system plan update, is provided in Appendix C. Items related to water design and construction have been extracted from this section of code. Table 7-1 provides a list of the construction standard documents published by the City for the construction of new water distribution mains.

TABLE 7-1 City of Chehalis Water Construction Standards

Drawing No.	Drawing Title	Revision Date
4-1	5/8" x 3/4" Single Water Service	3/14/2005
4-2	1' Dual Water Service	3/14/2005
4-3	1 1/2" – 2" Water Service with Bypass	3/30/2005
4-4	Compound Water Meter with Bypass for 3" – 8" Water Service	1/02/2003
4-5	Large Meter Vault	3/16/2005
4-6	Fire Department Connection w/ DCDA for Single Service	1/02/2003
4-7	Fire Department Connection w/ DCDA for Dual Service	1/02/2003
4-8	Fire Hydrant	3/14/2005
4-9	Air and Vacuum Relief Valve	3/14/2005
4-10	2" Blowoff Assembly	1/02/2003
4-11	Connection to Existing Main	3/16/2005
4-12	Valve Box	1/02/2003
4-13	Standard Blocking Detail	1/02/2003
4-14	Thrust Loads	1/02/2003
4-15	Standard Double Check Detector Assembly 3" or Larger	1/02/2003
4-16	Standard Reduced Pressure Backflow Assembly 3" or Larger	1/02/2003
4-17	1/2" – 2" PVBA/SVBA Backflow Preventer	1/02/2003
4-18	1/2" – 2" Double Check Backflow Preventer	1/02/2003

Chapter 8

IMPROVEMENT PROGRAM

CHAPTER 8 - IMPROVEMENT PROGRAM

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Appendix N Capital Improvement Project Cost Estimates

OBJECTIVE

The objective of this chapter is to present the City of Chehalis Water System Capital Improvement Program (CIP), which is composed of projects to address deficiencies or improve maintenance and operations identified in the previous chapters. These improvements are assessed and prioritized for implementation over 10- and 20-year planning periods. The Improvement Program has been developed in conjunction with the financial capabilities and recommendations presented in Chapter 9, Financial Program.

The chapter includes capital improvement projects for treatment, transmission, distribution, and other identified capital needs. For applicable projects, this chapter provides an assessment of alternatives, identifies the preferred alternative for each project, and identifies a schedule for the improvements.

DEVELOPMENT OF CIP

The CIP was prepared by first identifying projects that address water system needs or deficiencies, as documented in earlier chapters of the Water System Plan (WSP). In addition, recurring or annual capital projects related to system maintenance (e.g., water main replacement programs) have also been included in the list of improvements.

Table 1-2 lists the previous capital improvement projects, and identifies which projects were or were not completed. The projects not previously completed were re-evaluated to determine if they should be included in this Capital Improvement Program. The 2012 WSP noted continual tracking of the large industrial demand will inform the City's decisions regarding improvements. The large industrial demand has been re-evaluated to be significantly less than the 2012 WSP projected and many of the deficiencies noted in the 2012 WSP were not projected in this 2020 System Analysis. Also, the potential additional demand from Lewis County Water and Sewer District No. 5 is no longer considered because the agreement between the City of Chehalis and District No. 5 has been terminated. As discussed below, some of the 2012 capital improvement projects have been removed from this 2021 Capital Improvement Program.

A 20-year implementation schedule of the projects was then developed. Generally, projects of higher priority (i.e., those that address current system needs) were scheduled for implementation within the ten-year planning horizon (2020-2030). Projects that serve anticipated future needs associated with system growth, or are less critical to system operation, were scheduled for implementation between 2030 and 2040. Most distribution system projects are carried over from the 2012 WSP or were designed to address current fireflow deficiencies. The planning level cost estimates were used to evenly distribute these projects cost over the years 2024 (assumes this is the earliest year construction could begin) to 2040.

Planning level cost estimates have been developed for each capital project included in the 2020-2040 CIP. Generally, each project cost includes the following components:

- **Base construction cost:** Includes all labor and material costs needed to construct a project. For pipeline and valving projects, construction costs were estimated based upon unit construction costs derived from bid tabulations for recent and similar Southwest Washington water distribution projects. Where applicable, base construction costs from the 2012 WSP were projected using Engineering News Record (ENR) Seattle’s Construction Cost Index (CCI).
- **Sales tax:** Calculated as 8.2 percent (the 2021 local tax rate) of the base construction cost.
- **Construction contingency:** Considers the uncertainties associated with estimating project costs at this planning level. Calculated as 20 percent of the total of base construction plus sales tax.
- **Design engineering:** Includes City and consultant design costs, and other related cost items, such as permitting and construction administration. For most projects, this is calculated as 30 percent of the base construction cost plus sales tax and contingency.

These elements are summed to determine the total project-level cost estimate for a project, as expressed in 2021 dollars. Planning-level cost estimates are provided in Appendix N. Capital improvements are summarized in Table 8-1 and project locations are shown in Figure 8-1.

CAPITAL IMPROVEMENTS

SOURCE IMPROVEMENTS

S-1: Settling Basins Liner

This project consists of the design and installation of a liner to reduce leakage from the settling basins at the WTP. Project S-1 is anticipated to improve the WTP capacity and should be implemented before Capital Improvement Project S-2.

The planning level base construction cost estimate from the 2012 WSP was projected per ENR Seattle CCI to a year 2021 total cost estimate of \$609,000. S-1 and S-2 are selected to address the WTP capacity deficiency identified in the year 2036. As such, S-1 is placed in the planning year 2034.

S-2: Water Treatment Plant Re-Rating

This project consists of pilot testing and associated studies necessary to support re-rating the WTP to a higher flow rate of approximately 7.0 MGD, consistent with the original design flow rate for the plant. The WTP raw water influent and filter effluent lines were automated in 2012 and a redundant flocculation basin was installed between 2013 and 2014. These improvements were made to support a higher capacity re-rating. Project S-1 should be implemented before project S-2.

The planning level base construction cost estimate from the 2012 WSP was projected per ENR Seattle CCI to a year 2021 total cost estimate of \$56,000. Project S-2 is selected to address the WTP capacity deficiency identified in the year 2036 and is placed in the planning year 2034 to allow time for other future projects to be completed in the event that testing and analysis do not re-rate the WTP at a large enough capacity to meet system demands.

S-3: Chehalis River Intake and Transmission Line Replacement

The City of Chehalis is planning to replace the Chehalis River raw water intake and transmission line because these facilities are past their useful lifespan. These improvements would be beneficial to construct, pending a decision on the City's change application (Record Number CS2-SWC1185) for changing their water rights from the North Fork of the Newaukum River to the Chehalis River. This would allow the transmission main to be sized such that it won't be a limiting factor on withdrawal capacity for the City.

Assessment of Alternatives

Because the purpose of this project is maintenance related and not addressing a system deficiency, no alternatives have been developed. If the City's change application is approved, the City will pump all its primary water from the Chehalis River and an analysis should be performed to evaluate whether 20-inch or 24-inch HDPE pipe is required to support the City's full demand. 20-inch HDPE water main pipe has an inner diameter smaller than the existing 18-inch ductile iron pipe and 24-inch HDPE water main pipe has an inner diameter slightly larger than the existing 18-inch ductile iron pipe. Preliminarily, the year 2040 Peak Hour Demand of 6,453 gpm (see Table 2-9) results in a pipe velocity of 7.83 feet per second (ft/s) through 24-inch SDR 9 HDPE pipe which is within DOH's maximum pipe velocity of 10 ft/s in transmission mains.

If the City's change application is denied, the Chehalis River intake and transmission line should still be replaced due to the pipe age. If the change application is denied, project S-4 is designed to address projected source deficiencies.

Planning Level Cost Estimate

Installation of a transmission main to replace the existing Chehalis River raw water transmission main will require approximately 7,900 linear feet of pipe, of which approximately 600 linear feet will need to be horizontally directional drilled to cross under railroads and Dillenbaugh Creek. The total planning level cost is estimated to be \$7,150,000 in 2021 dollars using 24-inch HDPE, the highest cost option.

Improvement Schedule

This project should be implemented after Department of Ecology's (DOE's) decision on Chehalis's change application. However, the timeline for DOE's decision is unknown and this project may receive funding (see Chapter 9); therefore, construction of this project is placed as soon as possible in the CIP considering design and planning. Project S-3 is considered to be a two-year project and is placed in the planning years 2023-2024.

S-4: North Fork Newaukum Intake Upgrades

This project consists of potential future upgrades at the North Fork Newaukum intake, including the construction of an impoundment to aid in managing and maintaining flows during low flow periods. This project would be considered if the City's change application was denied.

The planning level base construction cost estimate from the 2012 WSP was projected per ENR Seattle CCI to a year 2021 total cost estimate of \$802,000. S-4 is selected to address the deficiency identified in the year 2040 due to the limiting factors of seasonal low flow of the North Fork of the Newaukum River and the annual water rights on the Chehalis River, and is placed in the planning year 2040, pending a rejected water right change application.

S-5: Chehalis River Raw Water Pump Station Upgrades

If the City's change application is approved, and all the City's raw water is taken from the Chehalis River intake, the analysis shows the Chehalis River Pump Station would be deficient in the year 2040. Because of the unknowns associated with this project, including the sizing of a new pump to meet future demands, this project is noted in the Capital Improvement Plan, but no cost estimate is developed. Project S-5 should be considered in the next WSP.

Previous Source Improvements from the 2012 Water System Plan

The 2012 WSP included two projects in Chehalis' 2012 CIP due to a source deficiency greater than a WTP with a capacity of 7.0 mgd (see S-1) could handle. The first project was for additional modifications and/or expansions at the WTP to increase capacity above a potential 7.0 mgd capacity. The second project was to construct an additional water treatment facility, located in the southern portion of the City's UGA to treat water from the North Fork Newaukum River without the need to convey water to the existing water treatment plant and back south to meet demands in the UGA.

The source deficiency occurred in the 2012 WSP's 20-year planning period (year 2029) and was due to the assumptions in calculating the large industrial demand. The large industrial demand assumptions and calculations were revised as a part of this WSP and a WTP with a capacity greater than 7.0 mgd is no longer required to meet 20-year projected

demands. Therefore, these two projects have been removed from the CIP. Additionally, the WTP project would no longer be applicable if the City's change application is approved.

STORAGE SYSTEM IMPROVEMENTS

Storage System Improvements from the 2012 Water System Plan

The 2012 WSP included a new Main Zone reservoir sized at 5 million gallons (MG) with the primary purpose of meeting needs associated with potential, future large industrial demands, and related storage requirements. As previously mentioned, the large industrial demand assumptions and calculations were revised as a part of this WSP and there is no longer a projected 20-year Main Zone storage deficiency. As such, the new Main Zone Reservoir has been removed from the CIP.

The 2012 WSP included installation of a new Valley View reservoir in addition to the two existing tanks, sized at 160,000 gallons to satisfy fire flow volume requirements. This project has been removed from the CIP because Project PS-1 has been selected as a cost-effective alternative -see the PS-1 Valley View Booster Pump Station Improvements: Analysis of Alternatives Section below.

DISTRIBUTION SYSTEM IMPROVEMENTS

The following improvements are planned to address water distribution system deficiencies identified in Chapter 3. Improvements are not planned for certain areas of dead end or small diameter piping because no significant development is anticipated in these locations. Examples include the dead-end main off NW Airport Road (deficiency ID's B and C, Table 3-19), Coal Creek Road (deficiency ID F), and NW Florida Avenue (deficiency ID J).

D-1 Annual Water Main Replacement

To routinely replace aging pipes in the system, an annual water main replacement program is established.

D-2 Louisiana Avenue Extension

Installation of 600 linear feet of 12-inch ductile iron (DI) pipe along NW Louisiana Avenue to extend a waterline to the city limits near NW Airport Road. This project would be the second phase of the initially planned 1,400 linear foot water main extension.

D-3 NW Chamber of Commerce Way Improvements

Installation of 620 linear feet of 12-inch DI pipe to replace existing 6-inch cast iron pipe along NW Chamber of Commerce Way from N National Avenue to NW State Avenue. This project would be the second phase of the initially planned 2,500 linear feet I-5

crossing. Combining this project with D-14 would likely reduce the total cost of both projects and projects D-3 and D-14 are planned to occur in the same year.

D-4 Bishop Road Loop

Installation of 2,000 linear feet of 12-inch DI pipe along Bishop Road from Sturdevant Road south to the dead end. This project would be the second phase of the initially planned 3,000 linear feet water main along Bishop Road and will partially address fireflow deficiency ID AD, Table 3-19.

D-5 Rush Road Loop

Installation of 1,400 linear feet of 12-inch DI pipe along Rush Road from Bishop Road to the existing 12-inch dead end north of Oeschili Road. Project D-5 will improve fireflow deficiency AG (Table 3-19) to meet the fireflow goal.

D-6 Median Street Loop

Installation of 550 ft of 8-inch DI pipe along Median Street from Kresky Avenue to National Avenue to improve fireflow to the hydrants along National Avenue (deficiency ID E, Table 3-19).

D-7 National Avenue Improvements

Replacement of the existing 6-inch pipe along National Avenue between NW West Street and NW Chamber of Commerce Way with 2,800 ft of 8-inch DI pipe to improve fire flow in the area (deficiency ID I, Table 3-19). The 2012 CIP planned for this improvement to be 10-inch diameter pipe; however, the updated model indicates an 8-inch diameter pipe provides the required fireflow for the planning years 2020 and 2030. Improvement D-9 will need to be installed in conjunction with D-7 to meet projected demands in the year 2040.

D-8 IL/CG/R1 Zone Improvements

Replacement of approximately 4,100 ft of aging 4-inch and 6-inch waterlines along State Avenue, Pennsylvania Avenue, and Geary Street with 6-inch and 8-inch DI pipe and installation of approximately 600 linear feet of 8-inch DI pipe within a private easement to loop an existing 6-inch dead-end cast-iron pipe back to NW State Avenue to improve fireflow in the area (deficiency ID H, Table 3-19).

D-9 SE 3rd Street Improvements

Replacement of the existing 14-inch cast iron main from the Main Reservoir to Market Blvd with 1,600 ft of 18-inch DI pipe. This project will improve fireflow throughout the system. Constructing improvement D-9 with improvement S-3 would save the cost of pavement restoration and is reflected in the opinion of probable cost in Appendix N.

D-10 Interstate Avenue Loop

Construction of 500 ft of 8-inch DI pipe to complete a loop along Interstate Avenue to improve fireflow in the area (deficiency ID W, Table 3-19).

D-11 High Level Zone Improvements

Replacement of aging 4-inch cast iron waterline with approximately 650 linear feet of 6-inch DI pipe in NE High St and NE Fair Oaks Terrace and replacement of aging 6-inch cast iron waterline with approximately 4,000 linear feet of 8-inch DI pipe starting from SE Parkhill Dr, continuing northwest around the WTP, through John Dobson Park, and ending at the closed valve located at the intersection of NE Jefferson Avenue and NE Cascade Avenue. This project will improve fireflow deficiencies in the zone due to small diameter piping (deficiency ID L, Table 3-19). This project would be the second phase of the initially planned 7,000 linear feet of 10-inch DI pipe titled Newgard Addition Phase 1 and additional piping.

D-12 High-Level Reservoir Fill Line Improvements

Replacement of the 8-inch High-Level Reservoir fill and supply line from SE Parkhill Dr to the High-Level Reservoir with approximately 1,100 linear feet of 10-inch DI pipe to improve fireflow in the area (deficiency ID S, Table 3-19).

D-13 Valley View Zone Improvements

Replacement of the 6-inch main from the Valley View Reservoirs along Prospect Avenue to Valley View Way with 1,100 ft of 8-inch DI pipe to improve fire flow in the Valley View Zone.

D-14 NE State Avenue Improvements

Replacement of 6-inch cast iron pipe in NE State Avenue north of NE Chamber of Commerce Way with approximately 1,000 linear feet of 8-inch DI pipe to improve fireflow in the area (deficiency ID D, Table 3-19). Combining this project with D-3 would likely reduce the total cost of both projects and both projects D-3 and D-14 are placed in the same planning year.

D-15 NE Washington Avenue and NE Adams Avenue Improvements

Improvement of fireflow in the high-density multifamily area of the Main Zone located northeast of NE Washington Avenue to address deficiency ID K, Table 3-19. Improvements include replacement of approximately 5,000 linear feet of 4-inch and 6-inch cast iron pipe in NE Washington Avenue, NE Adams Avenue, NE School St, NE Terrace Rd, NE Division St, and NE Franklin Avenue with 8-inch and 10-inch DI pipe.

D-16 SE Adams Avenue and SE Washington Avenue Improvements

Replacement of aging 4-inch and 6-inch cast iron water pipe in Adams Avenue from the intersection of N Washington Avenue and E Main St to SE 11th St, in SE 11th St to S Market Blvd, and in SW Washington Avenue from SE 6th St to S Market Blvd.

Improvements consist of approximately 7,500 linear feet of 8-inch DI pipe and reconnecting two fire hydrants on the northeast side of S Market Blvd from the 4-inch and 6-inch cast iron pipe to the parallel 14-inch cast iron main to improve fireflow in the area (deficiency ID O, Table 3-19).

D-17 NW Quincy Pl to NW Division St Improvements

Replacement of 6-inch cast iron pipe in NW Quincy Pl, NW Hawthorne Pl, and NW Division St with approximately 1,000 linear feet of 8-inch DI pipe to improve fireflow in the area to meet projected 2040 demands (deficiency ID M, Table 3-19). The hydraulic model shows installing improvement D-9 will provide at least 2,000 gpm at this hydrant in the year 2020 and 2030 modeling scenarios, but not in the year 2040 modeling scenario.

D-18 NW Center St and NW Railroad Avenue Improvements

Replacement of 4-inch cast iron pipe from the intersection of NW Center St and NW Chehalis Avenue west then south to the intersection of W Main St and NW Railroad Avenue with approximately 750 linear feet of 6-inch DI pipe to improve fireflow in the area (deficiency ID N, Table 3-19). The hydraulic model shows installing improvement D-9 will provide at least 2,000 gpm at this hydrant in the year 2020 and 2030 modeling scenarios, but not in the year 2040 modeling scenario.

D-19 SW Pacific Avenue and SW Alfred St Hydrant Replacement

A single fire hydrant at the intersection of SW Pacific Avenue and SW Alfred St is connected to a 4-inch cast iron dead end and is modeled as deficient (deficiency ID P, Table 3-19). Improving this deficiency involves replacement of the hydrant connection such that it is instead connected to a parallel 8-inch ductile iron loop in SW Pacific Avenue.

D-20 Chehalis Avenue Apartments Improvements

Replacement of an approximate 600 linear foot, 6-inch cast-iron dead-end pipe in the Chehalis Avenue Apartments drive aisle with 8-inch DI pipe to improve fireflow in the area addressing deficiency ID R, Table 3-19.

D-21 SW Williams Avenue Improvements

Replacement of approximately 1,000 linear feet of 4-inch cast iron pipe in SW Williams Avenue from SW 5th St to SW 8th St with 6-inch DI pipe to improve fireflow in the area addressing deficiency ID U, Table 3-19.

D-22 R2 and School Zone Improvements

Replacement of 4-inch and 6-inch cast iron pipe in the Medium-Density-Single-Family R2 and School Zones in and around W. F. West High School. Improvements consist of approximately 7,400 linear feet of 6-inch and 2,300 linear feet of 8-inch DI pipe to improve fireflow in the area (deficiency ID V, Table 3-19).

D-23 Wallace Rd Loop and Improvements

Replacement of approximately 1,200 linear feet of 4-inch and 8-inch DI pipe with 10-inch DI pipe and installation of approximately 1,000 linear feet of 8-inch DI pipe in Wallace Rd from Sundown Ct to the dead end to complete a loop. These improvements will increase fireflow in the area and address deficiency ID's Y and AA.

D-24 SW 22nd Street Improvements

Replacement of approximately 830 linear feet of existing 6-inch cast iron pipe in SW 22nd Street with 8-inch DI pipe to improve fireflow in the area (deficiency ID AB, Table 3-19).

D-25 Woodland Village Improvements

Replacement of approximately 1,800 linear feet of existing 8-inch cast iron pipe with 10-inch DI pipe in the Woodland Village to improve fireflow in the area (deficiency ID AC).

D-26 SE Prospect St Improvements

Replacement of approximately 900 linear feet of 8-inch DI pipe with 10-inch DI pipe in the High-Level Zone on SE Prospect St from SE 16th St to SE Greenwood Avenue. These improvements would address a modeled 100 gpm deficiency in this area in the planning year 2040.

D-27 S Market Blvd Improvements

Upsizing approximately 2,000 linear feet upstream and 2,000 linear feet downstream of the 18th St Pump Station of 8-inch and 10-inch CI pipe with 16-in DI pipe in S Market Blvd from SW 13th St to SW 21st St. This project will increase the capacity of the 18th Street Pump Station as discussed in Chapter 3. Future development should consider the full system buildout to be 16-in DI pipe along S Market Blvd from the 18th St Pump

Station to the Yates Reservoir, approximately 21,000 linear feet of pipe in total; however, only CIP D-27 is planned because CIP D-27 in conjunction with CIP PS-3 will support projected year 2040 MDD. Appendix N contains a cost estimate for Project D-27. A more detailed cost estimate has not been developed for the full build out. \$400 per linear foot was utilized to calculate a rough order of magnitude construction cost of \$8.4 million for 21,000 linear feet of 16-inch DI pipe in May 2022 dollars.

PUMP STATION IMPROVEMENTS

PS-1 Valley View Booster Pump Station Improvements

This project consists of installation of a booster pump station located at or near the reservoirs to boost water from the reservoirs into the distribution system to utilize the current dead storage of the existing two reservoirs in the Valley View Zone and to address current fire flow deficiencies. The pump should be sized with a capacity of 1,000 gpm at 100-ft of head and would only operate under situations when the reservoir water level drops to a certain point (e.g., primarily under fire flow conditions). Therefore, under normal operating conditions, this new booster pump station would not be utilized, since the upper-most portions of the reservoirs are sufficient to meet the operational and equalizing needs of the zone. However, the existing dead storage volumes would be put to beneficial use when needed for fire suppression or standby needs. A smaller domestic pump would also be included to provide for operational flexibility. The project costs also assume auxiliary power is provided.

Analysis of Alternatives

The 2012 WSP included an alternative to project PS-1 which is to construct new/additional storage capacity to provide at least 57,000 gallons of additional storage volume available via gravity to the pressure zone. This would require substantial dead storage volume if a traditional standpipe reservoir design is employed. The Booster Pump Station Improvements are selected over this alternative to reduce the required dead storage volume of water which a reservoir requires and because the BPS alternative is more cost-effective than construction of a new reservoir.

Planning Level Cost Estimate and Improvement Schedule

The planning level base construction cost estimate from the 2012 WSP was projected per ENR Seattle CCI to a year 2021 total cost estimate of \$1,187,000. Project PS-1 is selected to address the current storage deficiency identified in the Valley View Zone and is placed in the year 2025 to allow for the completion of project S-3.

PS-2 Centralia-Alpha Pump Station Upgrade

Upgrades to the pump station, including upsizing discharge piping and updating of mechanical and electrical systems. The City of Chehalis conservatively estimates this project cost to be \$120,000.

PS-3 18th Street Pump Station Capacity Upgrade

This project consists of upgrading the firm capacity of the 18th Street Pump Station to 2,400 gpm to meet projected year 2040 MDD southeast of the pump station associated with industrial growth and development. CIP PS-3 should be constructed after CIP D-27 such that reasonable system pressures upstream and downstream of the pump station are maintained. The pump station should be sized with a firm capacity of 2,400 gpm, a suction pressure of approximately 60 psi and a discharge pressure of approximately 92 psi. It is anticipated that the new pump skid will contain 3 pumps that will provide a total of 2,400-gpm capacity and a fourth pump for redundancy. The pumps would be controlled by variable frequency drives and would communicate with the Yates Reservoir.

The 2012 WSP recommended upgrading the 18th Street Pump Station capacity to 2,000 gpm to support 20-year demands; however, as noted above, a firm capacity of 2,400 gpm is needed to meet the current estimated 2040 MDD.

Analysis of Alternatives

The 2012 WSP included an alternative to Project PS-3 to construct an additional water treatment facility, located in the southern portion of the City's UGA to treat water from the North Fork Newaukum River without the need to convey water to the existing water treatment plant and back south to meet demands in the UGA. This alternative would need to be constructed in conjunction with an impoundment on the North Fork of the Newaukum River to alleviate seasonal low flows. With comparable costs, this alternative was not pursued for several reasons. First, the City is exploring options to receive water from the northeast end of the water system via the Chehalis River change application and from Centralia. Second, the City prefers not to deliver higher quality North Fork Newaukum River water to the industrial development, with residential areas then served primarily from the Chehalis River.

Planning Level Cost Estimate and Improvement Schedule

A cost estimate from a pump skid manufacturer was used to develop a planning level cost estimate of \$602,000 for Project PS-3, see Appendix N. With the construction of Project D-27 increasing the pump stations capacity to 1,700 gpm, the 18th Street Pump Station would be deficient in the 20-year planning period and CIP PS-3 is placed in planning year 2033.

PS-4 High-Level Pump Station Automatic Transfer Switch

Installation of a 180-amp capacity automatic transfer switch at the High-Level Pump Station for automatic switching to the auxiliary generator upon power failure.

PS-5 Valley View Pump Station Automatic Transfer Switch

Installation of a 180-amp capacity automatic transfer switch at the Valley View Pump Station for automatic switching to the auxiliary generator upon power failure.

Previous Pump Station Improvements from the 2012 Water System Plan

The 2012 WSP included an upgrade to the 18th Street Pump Station raw water pumping side to increase capacity in the raw water transmission system. As discussed in Chapter 3, the limiting factor on the annual quantity for both sources to supply average day demand (ADD) is the seasonal low flow of the North Fork of the Newaukum River and the annual water rights of the Chehalis River. Supposing S-4 was constructed, the next most limiting factor would be the North Fork of the Newaukum raw water transmission line and raw water pump. As shown in Chapter 3, the capacity would be 3.31 mgd from the North Fork of the Newaukum River raw water transmission line plus a 0.87 mgd annual water right from the Chehalis for a total of 4.18 mgd. Therefore, assuming S-4 was constructed, the system would have enough capacity to supply the projected 20-year ADD of 3.63 mgd and a capacity increase to the 18th Street Pump Station raw water pumps has been removed from the Capital Improvement Program.

MAINTENANCE AND OPERATIONS

M-1 and M-2 Water System Plan Update

These projects involve the update to the Water System Plan, required every ten years.

CAPITAL IMPROVEMENT SCHEDULE

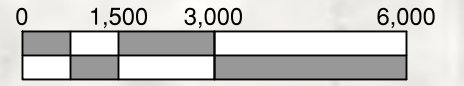
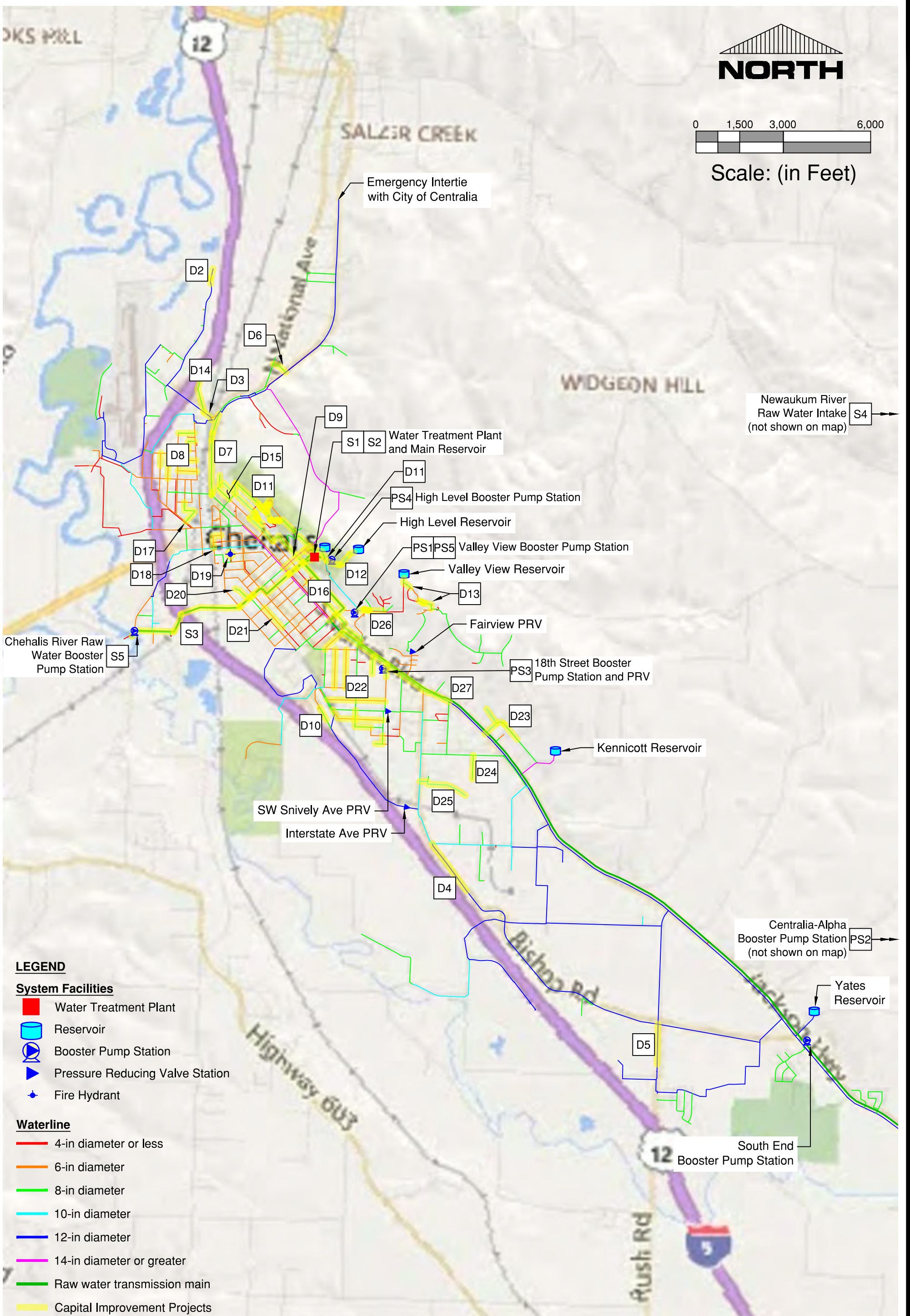
Capital improvements identified above are shown in Figure 8-1 Capital Improvement Map. An overall capital improvement schedule is summarized in Table 8-1. Cost estimates in 2021 dollars for capital improvements are included in Appendix N.

TABLE 8-1 Capital Improvements Projects Summary

Project Number	Project Title	Purpose of Project ⁽¹⁾	Cost Estimate	Financing Source ⁽²⁾	Year ⁽³⁾
Source Improvements					
S-1	Settling Basins Liner	20 yr. Deficiency	\$609,000	C	2034
S-2	Water Treatment Plant Re-Rating	20 yr. Deficiency	\$56,000	C & D	2034
S-3	Chehalis River Intake and Transmission Line Replacement	O&M	\$7,150,000	C	2024
S-4	North Fork Newaukum Intake Upgrades	20 yr. Deficiency	\$802,000	C	2040+
S-5	Chehalis River Raw Water Pump Station Upgrades	20 yr. Deficiency	- ⁽⁴⁾	- ⁽⁴⁾	2040+
Distribution System Improvements					
D-1	Annual Water Main Replacement	O&M	\$235,000 ⁽⁵⁾	C	Annual
D-2	Louisiana Ave Extension	Growth	\$302,000	D	-
D-3	NW Chamber of Commerce Way Improvements	Growth	\$664,000	C & D	2027
D-4	Bishop Rd Loop	Growth	\$1,008,000	D	-
D-5	Rush Rd Loop	Current Deficiency	\$723,000	C	2028
D-6	Median Street Loop	Current Deficiency	\$233,000	C	2027
D-7	National Avenue Improvements	Current Deficiency	\$950,000	C	2030
D-8	IL/CG/R1 Zone Improvements	Current Deficiency	\$2,339,000	C	2029
D-9	SE 3rd Street Improvements	Current Deficiency	\$790,000	C	2024
D-10	Interstate Avenue Loop	Current Deficiency	\$203,000	D	-
D-11	High Level Zone Improvements	Current Deficiency	\$1,491,000	C	2031
D-12	High Level Reservoir Fill Line Improvements	Current Deficiency	\$445,000	C	2031
D-13	Valley View Zone Improvements	Current Deficiency	\$462,000	C	2032
D-14	NE State Avenue Improvements	Current Deficiency	\$342,000	C	2032
D-15	NE Washington Avenue and NE Adams Avenue Improvements	Current Deficiency	\$5,119,000	C	2033
D-16	SE Adams Ave and SE Washington Ave Improvements	Current Deficiency	\$2,799,000	C	2035
D-17	NW Quincy Pl to NW Division St Improvements	20 yr. Deficiency ⁽⁶⁾	\$446,000	C	2040
D-18	NW Center St and NW Railroad Ave Improvements	20 yr. Deficiency ⁽⁶⁾	\$260,000	C	2040
D-19	SW Pacific Ave and SW Alfred St Hydrant Replacement	Current Deficiency	\$22,000	C	2036
D-20	Chehalis Avenue Apartments Improvements	Current Deficiency	\$228,000	C	2036

D-21	SW Williams Ave Improvements	Current Deficiency	\$424,000	C	2036
D-22	R2 and School Zone Improvements	Current Deficiency	\$3,684,000	C	2037
D-23	Wallace Rd Loop and Improvements	Current Deficiency	\$888,000	C & D	2038
D-24	SW 22 nd St Improvements	Current Deficiency	\$358,000	C	2039
D-25	Woodland Village Improvements	Current Deficiency	\$794,000	C	2039
D-26	SE Prospect St Improvements	20 yr. Deficiency	\$436,000	C	2040
D-27	S Market Blvd Improvements	10 yr. Deficiency	\$3,047,000	C	2026
Pump Station Improvements					
PS-1	Valley View Pump Station Improvements	Current Deficiency	\$1,187,000	C & D	2025
PS-2	Centralia Alpha Booster Pump Station Improvements	Improve	\$120,000	C	2025
PS-3	18 th Street Pump Station Capacity Upgrade	20 yr. Deficiency	\$602,000	C	2033
PS-4	High-Level Pump Station Automatic Transfer Switch	Improve	\$20,000	C	2025
PS-5	Valley View Pump Station Automatic Transfer Switch	Improve	\$20,000	C	2025
Maintenance and Operations					
M-1	Water System Plan Update	O&M	\$185,000	C	2030
M-2	Water System Plan Update	O&M	\$185,000	C	2040

- (1) Purpose of Project: Deficiency addresses deficiencies in the Water System Plan Analysis and indicates if the deficiency is current or occurs within the 10-year (2020-2030) or 20-year (2030 to 2040) planning period; Improve does not address a deficiency but improves the overall system; O&M is required for proper system maintenance; and growth indicates anticipated growth.
- (2) C is City operating income and connection fees; D is developer funded or contributed; and C & D is funded 50/50 from both sources.
- (3) The planning year for solely developer funded projects depends on new development and is unknown. A plus sign indicates the project would be obsolete depending on other factors and should be re-assessed in future planning.
- (4) See the project description above.
- (5) Cost is shown for the base year 2021 and is escalated annually, see Chapter 9.
- (6) Assumes CIP D-9 is completed.



Scale: (in Feet)

Chapter 9

FINANCIAL PROGRAM

CHAPTER 9 - FINANCIAL PROGRAM

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OBJECTIVE

The City has a sound financial program in place to fund water system operations, maintenance activities, and capital improvements. This chapter provides an overview of the financial position of the City’s water system and develops a financial plan to implement the programs and improvements identified throughout this plan. This chapter will first analyze the City’s historical revenues, expenses, and cash flow, then project those revenues, expenses and cash flow forward using projected growth rates, proposed projected rate increases, and estimated inflation factors. Next, a financial plan is presented with projected operating and capital costs of the system for the ten-year planning period (2020 – 2030 calendar years). The financial plan includes revenues needed to fund ongoing utility operations and complete the recommended capital improvements. The basis of the operating costs is the City’s water system budget for 2018, 2019, and 2020. Capital costs are based on the Capital Improvement Plan (CIP) presented in Chapter 8.

CURRENT WATER UTILITY RATES

The City’s current water rates are based upon a monthly meter charge plus a consumption rate for the volume of water used. This rate structure is consistent with a conservation-based rate because customers are charged for the amount of water consumed with no monthly allowance included in the monthly meter charge. The meter charge is assessed based upon the size of the meter, with larger meter sizes charged at a higher rate than smaller meter sizes. In addition, the City’s rate schedule includes two classes of service: residential and commercial. The consumption rate is the same for both customer classes and all meter sizes. The City also has a slightly higher water meter rate schedule and consumption rate for customers outside the city limits than customers inside the city limits. Current rates for residential and commercial customers are provided in Table 9-1.

TABLE 9-1 Overview of the City’s Current Water Rates

Category	Meter Size	Monthly Rate	
		Inside City	Outside City
Monthly Meter Charge			
Residential	5/8 x 3/4-inch	\$17.92	\$19.71
	1-inch	\$25.71	\$28.28
	1 1/2 & 2-inch	\$54.19	\$59.67
Commercial	5/8 x 3/4-inch	\$20.08	\$22.09
	1-inch	\$28.76	\$31.64
	1 1/2 & 2-inch	\$60.58	\$66.63
	3 & 4-inch	\$158.93	\$174.81
	6-inch	\$303.55	\$333.90
	8-inch	\$477.09	\$524.80
Usage Charge Per 100 CF		\$2.66	\$2.92

FINANCIAL STATUS

HISTORIC CITY WATER SYSTEM FINANCES

Table 9-2 provides a summary of the financial status of the Chehalis Water Fund between 2018 and 2020. Due to the Covid response, revenue declined in the year 2020 because some payments and late fees were overlooked. These accounts are currently overdue. The City funded some Capital Improvement Projects in 2020 resulting in a higher Capital Outlay. A higher-than-average turnover rate resulted in the fluctuations seen in the Salaries & Wages and Benefits line items. The City had positive cash flow over these three years.

TABLE 9-2 Summary of Financial History

Year	2018	2019	2020
Intergovernmental	\$0	\$0	\$5,480
Charges for Goods and Services	\$2,888,244	\$2,943,346	\$2,945,363
Hookup/Connection Charges	\$87,073	\$142,194	\$65,004
Late Fees & Penalties	\$38,690	\$29,835	\$7,629
Interest Earnings	\$115,126	\$145,959	\$56,963
Other Miscellaneous Revenues	\$11,220	\$8,877	\$4,161
Interfund Loan Payment	\$16,590	\$68,308	\$69,482
Refundable Deposits	(\$382)	\$90,420	\$135,596
Insurance Recovery	\$0	\$0	\$0
Custodial Receipts	\$952	\$83	\$0
Total Revenue	\$3,157,513	\$3,429,022	\$3,289,678
Salaries & Wages	\$794,848	\$851,480	\$823,153
Benefits	\$411,765	\$415,908	\$395,626
Supplies	\$296,047	\$360,064	\$291,424
Services	\$662,038	\$625,688	\$779,972
Capital Outlay	\$73,120	\$275,989	\$671,864
Debt Service	\$332,446	\$321,150	\$290,814
Interfund Service	(\$36,109)	(\$24,737)	(\$73,677)
Interfund Loan	\$279,427	\$0	\$0
Utility Deposit Refunds	\$0	\$72,655	\$88,294
Transfer Out	\$0	\$0	\$0
Total Expenditures	\$2,813,582	\$2,898,197	\$3,267,470
Balance/(Deficiency) of Revenue	\$343,931	\$530,825	\$22,208
Year Beginning Cash, January 1	\$7,093,160	\$7,437,091	\$7,967,916
Year Ending Cash, December 31	\$7,437,091	\$7,967,916	\$7,990,124

PROJECTED CITY WATER SYSTEM FINANCIAL STATUS

To evaluate the ability to operate the water system and finance recommended improvements, future water utility revenues and non-capital expenditures are estimated. These estimates are used to project future water utility cash flow, assuming no rate increases and no capital improvements. These estimates will be used together with the current reserve fund balance to project future funds available for system improvements. Financing of recommended capital improvements will then be added, and it will be determined if increases in revenue are needed to cover expenses.

Projected Revenues

The first component of the financial plan reviews the sources of funds of the water system. There are two primary types of revenue received for operations:

- Rate revenue – received from water sales to customers.
- Miscellaneous revenue – received from water hookup fees, investment interest, and other miscellaneous revenue.

Rate revenue is estimated based on past revenue and the projected annual system growth rate of 1.465%. No assumptions of rate increases are made in these estimates. From Table 9-2, metered sales (charges for goods and services) have had a steady upward trend. Therefore, it is most appropriate to begin forward projections from the 2020 values. Certain miscellaneous revenue, such as intergovernmental and interest earnings, is known or predictable. This revenue is projected individually as shown in Table 9-3. Remaining miscellaneous revenue is rather variable and shows neither a consistent upward nor downward trend. Therefore, this remaining miscellaneous revenue is lumped into one category and projected using the average value for the 2018 through 2020 data period with no growth rate. Table 9-3 shows resulting City Water Utility projected annual revenue through 2030 in thousands of dollars.

TABLE 9-3 Projected Revenues (\$1,000)

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Rate Revenue	\$2,989	\$3,032	\$3,077	\$3,122	\$3,168	\$3,214	\$3,261	\$3,309	\$3,357	\$3,406
Intergovernmental	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Interest Earnings	\$14	\$7	\$11	\$20	\$20	\$20	\$20	\$20	\$20	\$20
Interfund Loan Payment	\$71	\$54	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Refundable Deposits	\$98	\$90	\$90	\$90	\$90	\$90	\$90	\$90	\$90	\$90
Miscellaneous Revenue	\$132	\$132	\$132	\$132	\$132	\$132	\$132	\$132	\$132	\$132
Total Revenue	\$3,304	\$3,315	\$3,310	\$3,364	\$3,410	\$3,456	\$3,503	\$3,551	\$3,599	\$3,648

Projected Expenditures

The second part of the financial plan is a review of the applications of funds, or expenses, of the utility. In developing the financial forecast, the City's 2018 through 2020 historical data and water system budgets were used as a starting point. Projections for future years were obtained by applying annual escalation factors. Salaries, wages, and benefits increased in 2019 and decreased in 2020. Salaries and wages are projected at a 3% per year growth rate starting with the 2020 value and benefits are projected at a 5% per year growth rate starting with the 2020 value. Costs for operating supplies also increased in 2019 and decreased in 2020. Costs for operating supplies are projected at a 2% per year growth rate starting at the average value for the 2018 through 2020 data period. Costs for

operating services decreased in 2019 and significantly increased in 2020. Costs for operating services are projected at a 3% per year growth rate starting with the average value for the 2018 through 2020 data period.

The water system pays the state public utility tax on rate revenues and state B&O excise tax on various service fees. The City combines the tax obligations into a general operations category and therefore there is no category for taxes. The City transfers funds to and from its operating reserve annually to balance out any excess or deficiency of funds at the end of the year. Since the reserve fund is used to balance revenue requirements, the transfer amount fluctuates from year to year, sometimes representing a transfer to the reserve fund, and in other years representing a transfer from the reserve fund.

The City provided its amortization schedule for its current outstanding loans as shown in the debt service category in Table 9-4. Other expenditure categories are based on City provided projections. Table 9-4 shows resulting City Water Utility projected expenditures in thousands of dollars.

TABLE 9-4 Projected Expenditures (\$1,000)

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Salaries & Wages	\$848	\$873	\$899	\$926	\$954	\$983	\$1,012	\$1,043	\$1,074	\$1,106
Benefits	\$415	\$436	\$458	\$481	\$505	\$530	\$557	\$585	\$614	\$644
Supplies	\$322	\$329	\$335	\$342	\$349	\$356	\$363	\$370	\$377	\$385
Services	\$710	\$731	\$753	\$776	\$799	\$823	\$848	\$873	\$899	\$926
Debt Service	\$236	\$236	\$231	\$228	\$226	\$223	\$158	\$70	\$69	\$68
Interfund Service	(\$62)	(\$61)	(\$61)	(\$61)	(\$61)	(\$61)	(\$61)	(\$61)	(\$61)	(\$61)
Interfund Loan	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Deposit Refunds	\$43	\$80	\$90	\$90	\$90	\$90	\$90	\$90	\$90	\$90
Transfer Out	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Expenditures	\$2,512	\$2,624	\$2,705	\$2,782	\$2,862	\$2,945	\$2,967	\$2,970	\$3,062	\$3,158

Projected Cash Flow

Beginning with a balance of \$7,990,124 as shown in Table 9-2 and applying the projected revenues and expenditures from Tables 9-3 and 9-4, the projected cash flow in thousands of dollars and without rate increases or capital improvements is presented in Table 9-5. The City's net or excess revenue is projected to decrease from \$792,000 beginning in 2021 to \$490,000 by 2030; however, revenue is projected to exceed expenditures each year. Capital reserves increase from \$8,872,000 to \$13,863,000 over the 10-year period not considering capital improvements.

TABLE 9-5 Projected Cash Flow (\$1,000)

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Beginning Balance	\$7,990	\$8,782	\$9,473	\$10,078	\$10,660	\$11,208	\$11,719	\$12,255	\$12,836	\$13,373
Revenues	\$3,304	\$3,315	\$3,310	\$3,364	\$3,410	\$3,456	\$3,503	\$3,551	\$3,599	\$3,648
Expenditures	\$2,512	\$2,624	\$2,705	\$2,782	\$2,862	\$2,945	\$2,967	\$2,970	\$3,062	\$3,158
Net Revenue	\$792	\$691	\$605	\$582	\$548	\$511	\$536	\$581	\$537	\$490
Ending Balance	\$8,782	\$9,473	\$10,078	\$10,660	\$11,208	\$11,719	\$12,255	\$12,836	\$13,373	\$13,863

CITY CAPITAL IMPROVEMENTS

City 10-year capital improvements identified in Chapter 8 are summarized in this section by scheduled improvement year. To account for inflation and the increase of construction costs over time, the base project-level costs have been escalated to their anticipated year of construction. It is impossible to predict accurately the rate at which construction costs will increase over the 2022-2030 period; however, a conventional method to estimate such increases is to examine cost index trends of past years.

The Engineering News Record (ENR) Seattle Construction Cost Index (CCI) contains comprehensive construction cost data. These indexes report that construction costs increased at an average rate of approximately 4% per year from 2017 through 2020. This historic value is used to escalate construction project costs from base year (2021) dollars to costs in the anticipated year of construction.

Funding for the CIP will come from a mix of sources that include rate revenue, developer contributions, and external financing. Financing for this CIP was selected to be the Public Works Trust Fund (PWTF) because at this time the PWTF loan rate is more favorable than the Drinking Water State Revolving Fund (DRSRF) loan rate. The current PWTF loan interest rate is 0.75% with no local matching funds for distressed communities with a 5- to 20-year term. A summary, by type of improvement planned along with assumed funding sources, is presented in Table 9-6.

Project S-3 is fully funded in 2024 with a PWTF loan at 1% annual interest for 20 years. Project D-27 is fully funded in 2026 with a PWTF loan at 1% annual interest for 20 years. With an annual 5% increase in rates (it is assumed the earliest rates can be increased by 5% is in 2023), the City can finance the 10 year Capital Improvement Program and maintain a balance of approximately \$8.15 million in 2030 for emergencies and loan payments. The City’s ending balance fluctuates around an average of \$10 million until 2029 at which point two large projects are planned to be paid for and the ending balance drops to the \$8.15 million. Financing options will be re-evaluated during project implementation.

Capital contributions in the form of capital facility charges (CFCs) to developers provide the means of balancing the cost requirements for new utility infrastructure to meet customer growth between existing customers and new customers. This charge is assessed to new customers as they “buy-in” to the system. By implementing fair and equitable CFCs, existing customers are not burdened by the cost of growth as these fees are used to pay for growth-related capital or to offset the debt payments related to growth-related capital.

The City has been effective in the past at securing loan funds for capital improvement projects and should continue to closely monitor future funding opportunities to help finance the larger capital improvement projects. Applicable sources of potential funding for the City are listed and described in the Alternative Capital Improvement Funding Sources section below.

TABLE 9-6 Projected Capital Improvement Project Cost Allocations (\$1,000)

Project Number	Year	2021 Cost Estimate	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
S-3 ⁽¹⁾	2024	\$7,150				\$446	\$446	\$446	\$446	\$446	\$446	\$446
D-3 ⁽²⁾	2027	\$664							\$420			
D-5	2028	\$723								\$951		
D-6	2027	\$233							\$295			
D-7	2030	\$950										\$1,352
D-8	2029	\$2,339									\$3,201	
D-9	2024	\$790				\$889						
D-27 ⁽¹⁾	2026	\$3,047						\$205	\$205	\$205	\$205	\$205
PS-1 ⁽²⁾	2025	\$1,187					\$694					
PS-2	2025	\$120					\$140					
PS-3	2025	\$20					\$23					
PS-4	2025	\$20					\$23					
M-1	2030	\$185										\$263
Total		\$17,428				\$1,335	\$1,326	\$651	\$1,366	\$1,602	\$3,852	\$2,266
Beginning Balance			\$7,990	\$8,782	\$9,473	\$10,231	\$9,798	\$9,519	\$10,073	\$10,144	\$10,249	\$8,301
Net Revenue without Rate Increases			\$792	\$692	\$605	\$582	\$548	\$511	\$536	\$581	\$537	\$490
Projected Rate Increase ⁽³⁾			0%	0%	5%	5%	5%	5%	5%	5%	5%	5%
Projected Additional Revenue from Rate Increases ⁽⁴⁾			\$0	\$0	\$154	\$320	\$499	\$693	\$901	\$1,125	\$1,367	\$1,626
Ending Balance			\$8,782	\$9,473	\$10,231	\$9,798	\$9,519	\$10,073	\$10,144	\$10,249	\$8,301	\$8,150

- (1) Projects are funded with a PWTF at 1% for 20 years.
- (2) Projects are assumed to be 50% funded by developers.
- (3) Assumes the earliest rates can be increased by 4% is in 2023.
- (4) Cumulative percent rate increase multiplied by rate revenue in Table 9-3.

FINANCIAL VIABILITY

The financial health of a utility may be evaluated by the following financial viability tests:

- Revenues minus Expenses ≥ 0
- Rates $\leq 2\%$ of Median Household Income (MHI)

The City currently has a positive net revenue; however expense exceeds revenue during years with higher expense Capital Improvement Projects. The City's reserve balance fluctuates between \$8.0 to \$10.2 million. The projected trend shows the City increasing its reserve balance for a few years while accomplishing smaller Capital Improvement Projects, then spending part of the reserve balance to implement a larger project. Expense is projected to exceed revenue in the years 2024, 2025, 2029, and 2030.

The U.S. Census Bureau 2015 – 2019 American Community Survey 5-Year Estimates reports a MHI of \$62,843 for the City of Chehalis. 2% of this is \$105 per month. As shown in Table 9-1, the typical and lowest residential charge is for 5/8 x 3/4-inch water meters inside the City. The meter charge is \$17.92 per month plus \$2.66 per 100 cubic feet of water used. For an average day demand per equivalent residential unit of 150 gallons per day (610 cubic feet per month) as calculated in Chapter 2, this results in a typical bill of \$34.15 per month. The highest residential charge is for 1-1/2 and 2-inch water meters outside of city limits at \$59.67 per meter plus \$2.92 per 100 cubic feet of water which results in a bill of \$77.48 per month.

The lowest residential charge based on average water use is approximately 0.65% of the MHI and the highest residential charge is approximately 1.48% of the MHI. According to the financial viability test, Chehalis's water rates are financially healthy and are below the hardship MHI rate of 2%.

RATE IMPACTS

Table 9-7 shows the impacts of the projected rate increases (shown in Table 9-6).

TABLE 9-7 Rate Impacts for a Typical Residential Customer

	Average Rate (\$ per Month) ⁽¹⁾	Rate Increase (\$ per Month)
Present Rate (2022)	\$34.15	\$0.00
2023	\$35.86	\$1.71
2024	\$37.65	\$1.79
2025	\$39.53	\$1.88
2026	\$41.51	\$1.98
2027	\$43.59	\$2.08
2028	\$45.76	\$2.18
2029	\$48.05	\$2.29
2030	\$50.46	\$2.40

(1) Assumes a 5/8" x 3/4" meter @ 610 cubic feet of water.

CONCLUSIONS & RECOMMENDATIONS

Based on the review of the City’s water utility finances, an annual 5% water rate increase through 2030 will allow the City to fund planned Capital Improvement Projects, maintain its current reserve balance (approximately), and keep pace with anticipated inflation. The City should fund projects approximately \$3 million or lower with their existing reserve balance and finance more expensive projects with low interest loans available from P WTF or DWSRF. Availability of low interest loans through P WTF or DWSRF for distribution system improvements is not guaranteed. Projects that provide for public health protection always get the highest rating for these programs and there are often no funds remaining for distribution improvement projects. An attempt should be made to acquire low interest funding for the larger water distribution projects, but if low interest loans are not possible, then conventional financing is recommended for the larger water distribution improvement projects.

ALTERNATIVE CAPITAL IMPROVEMENT FUNDING SOURCES

This section describes alternative funding sources the City may pursue for implementing capital projects. The following are potential funding sources currently available for public water utility improvements. It is important to note that these sources rarely provide full project funding. As in the past, the City will need to supplement funds secured from these sources with other sources of revenue to ensure implementation of the recommended capital improvement projects occurs.

Availability and conditions on government grant and loan programs vary from program to program and from year to year. Current details on specific programs are best determined by either visiting the web site for each specific program or by meeting with a specific program’s regional representative.

While this list of possible grant, loan and other funding opportunities for the City is not exhaustive, it highlights the most probable outside funding sources available to the City for its capital improvements.

Grants: Community Development Block Grant (CDBG)
Community Investment Fund (CIF)
US Economic Development Administration (US EDA)
US EPA State and Tribal Assistance Grant (STAG)
USDA Forest Service, Rural Assistance Program (USFS)
USDA Rural Development (RD)
American Rescue Plan Act (ARPA)

Loans: Public Works Trust Fund (PWTF)
Drinking Water State Revolving Fund (DWSRF)
USDA Rural Development (RD)
Community Economic Revitalization Board (CERB)

Bonds: Revenue Bonds
General Obligation Bonds

Other: Utility Local Improvement Districts
Infrastructure Assistance Coordinating Council

AMERICAN RESCUE PLAN ACT (ARPA)

The US Department of Treasury has granted ARPA funding to Lewis County. The City of Chehalis has provided Lewis County with a Comprehensive Water and Sewer Infrastructure Needs Assessment listing all water Capital Improvement Projects and prioritizing its top three water projects. At this time Lewis County has not finalized how the ARPA funds will be allocated between the county and the cities within the county. To be conservative, this Financial Plan assumes Chehalis does not receive any ARPA funding; however, Chehalis may receive ARPA funds which could be applied towards water Capital Improvement Projects.

DRINKING WATER STATE REVOLVING FUND (DWSRF)

The Washington Department of Health (DOH) manages these funds. In August 1996 Congress reauthorized the Safe Drinking Water Act (SDWA) and appropriated funding for states to develop their Drinking Water State Revolving Fund (DWSRF) loan programs. Each state receives an annual federal allocation in the form of a Capitalization Grant. In Washington State, the DWSRF is jointly managed by the Department of Health (DOH) Division of Drinking Water and the Public Works Trust Fund Board (Board), along with its partner, the Department of Community, Trade and Economic Development.

DWSRF loans are available to all community public water systems, and non-profit, non-community water systems, except federally and state-owned systems. The loans may be used for drinking water treatment, pipe installation and replacement, source water protection, well construction and rehabilitation, storage, and other projects.

The average interest rate in 2020 was 1.3% and loan term can be for the life of the facility up to a 30-year maximum term (up to a 40-year maximum term for disadvantaged communities). In addition, eligible systems must demonstrate “adequate operational, technical, and financial capability to maintain compliance,” have an approved water system plan (WSP) to ensure the applicant project is included in the WSP Capital Improvement Program and meet other eligibility criteria.

PUBLIC WORKS TRUST FUND (PWTF)

The PWTF loan program is a Washington state loan program established by the Legislature to assist cities, towns, counties, and special districts with funding for different types of public works projects. The projects can include streets, roads, drainage systems, water systems, and sanitary sewer systems. The emphasis of allocating funds is based on replacement and/or repair of existing systems. No funds are allocated to install a new system or extend an existing system. Rather, funds are granted to rehabilitate or replace an existing system serving an existing population. Loans are issued at up to a two percent interest rate for a maximum term of 20 years.

REVENUE BONDS

The most common source of funds for construction of major utility improvements by municipalities is the sale of revenue bonds. These are tax-free bonds issued by a City. The major source of funds for debt service on revenue bonds is from monthly water or sewer service charges. To qualify to sell revenue bonds marketable to investors, the bonds typically have contractual provisions for the City to meet debt coverage requirements. The City must show that its annual net operating income (gross income less operation and maintenance expenses) is equal to or greater than a factor, typically between 1.2 – 1.4 times the annual debt service on all par debt. If a coverage factor has not been specified it will be determined at the time of any future bonds are issued.

GENERAL OBLIGATION BONDS

A City may by council action or special election issue general obligation bonds to finance almost any project(s) of general benefit to the City. The bonds are repaid by tax assessments levied against all privately-owned properties within the City. This includes vacant property that would not otherwise contribute to the cost of the specific improvements. This type of bond issue is usually reserved for municipal improvements that are of general benefit to the public, such as arterial streets, bridges, lighting, municipal buildings, firefighting equipment, parks, and water and wastewater facilities. General obligation bonds are the most attractive bonds to investors because they are

backed by the municipality's full taxing authority and have the lowest interest rate of any type of bond that a City may issue.

Disadvantages of general obligation bonds include the following:

- Voter approval is typically required. The City will incur the legal costs of drafting a ballot measure and will pay the cost of holding a special election if the election is not done as part of a general election. There is also the additional cost of investing staff time in public education of the project need, and the uncertainty of an election outcome.
- There are legal, as well as practical limits on the amount of general obligation debt a City can issue. Financing capital improvement projects through general obligation debt reduces the ability of the City to issue additional general obligation debt, which is often the only source of outside financing for many general government facilities.

UTILITY LOCAL IMPROVEMENT DISTRICTS

Another potential source of funds for improvements can be obtained through the formation of a Utility Local Improvement District (ULID) involving a special assessment made against properties benefiting by the improvements. ULID bonds are further backed by a legal claim to the revenues generated by the utility, similar to revenue bonds. Sewer system expansion is a frequent application of ULID financing. Typically, ULIDs are formed by the City at the written request, by petition, of the property owners within a specific section of the City's service area. Upon receipt of a sufficient number of signatures or petitions, and acceptance by the City Council, the local improvement area is formed. Therefore, a sewer system is designed for that particular area in accordance with the City's sewer comprehensive plan. Each separate property in the ULID is assessed in accordance with the special benefits the property receives from the water or wastewater system improvements. A citywide ULID could form part of a financing package for large-scale capital projects such as water distribution extensions or replacements that benefit all residents in the service area. The assessment places a lien on the property that must be paid in full upon sale of the property. ULID participants have the option of paying their assessment in full immediately upon receipt to save interest cost, which reduces the project costs to be financed by the ULID bonds.

The advantages of ULID financing, as opposed to rate financing, to the property owner include:

- The ability to avoid interest costs by upfront payment of the assessment.
- If the ULID assessment is paid in installments, it may be eligible to be deducted from federal income taxes.
- Low-income senior citizens may be able to defer assessment payments until the property is sold.

- Some Community Development Block Grant funds are available to property owners with incomes at or below the state and federal defined poverty level. These funds are available only to reduce assessments.

The major disadvantage to the ULID process is that it may be politically difficult to approve formation. The ULID process may be terminated if 40% of the property owners protest its formation. There are also significant legal and administrative costs associated with the ULID process, which can increase total project costs by up to 30% when compared to other financing options.

INFRASTRUCTURE ASSISTANCE COORDINATING COUNCIL

One key resource in identifying other funding programs is the Infrastructure Assistance Coordinating Council (Council). The Council is comprised of state and local organizations whose function is to provide funding for infrastructure repair and development. The purpose of the Council is to assist local governments in coordinating funding efforts for infrastructure improvements. This is an important resource as the Council will be aware of any new funding opportunities that may arise.

Appendix A – WFI Form

WFI FORM

CONSTRUCTION COMPLETION FORM

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
12250 P	CHEHALIS WATER DEPARTMENT	LEWIS	A	Comm

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED CONNECTIONS
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)		3145	Unspecified
A. Full Time Single Family Residences (Occupied 180 days or more per year)	2805		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	44		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	340		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	708	708	
28. TOTAL SERVICE CONNECTIONS		3853	

29. FULL-TIME RESIDENTIAL POPULATION
A. How many residents are served by this system 180 or more days per year? 7200

30. PART-TIME RESIDENTIAL POPULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many part-time residents are present each month?												
B. How many days per month are they present?												

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?	5000	5000	5000	10000	22000	23000	25000	24000	7000	4000	4000	4000
B. How many days per month is water accessible to the public?	30	30	30	30	30	30	30	30	30	30	30	30

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students, daycare children and/or employees are present each month that are NOT already included in the residential population?	3493	3493	3493	3493	3493	1800	980	980	3200	3493	3493	3493
B. How many days per month are they present?	30	30	30	30	30	30	30	30	30	30	30	30

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	10	10	10	10	10	10	10	10	10	10	10	10

34. NITRATE SCHEDULE	QUARTERLY	ANNUALLY	ONCE EVERY 3 YEARS
(One Sample per source by time period)			

35. Reason for Submitting WFI:

Update - Change
 Update - No Change
 Inactivate
 Re-Activate
 Name Change
 New System
 Other _____

36. I certify that the information stated on this WFI form is correct to the best of my knowledge.

SIGNATURE: _____ **DATE:** _____
PRINT NAME: _____ **TITLE:** _____

Total WFI Printed: 1



Water Facilities Inventory (WFI)

Report Create Date: 6/28/2021
Water System Id(s): 12250
Print Data on Distribution Page: ALL
Print Copies For: DOH Copy
Water System Name: ALL
County: -- Any --
Region: ALL
Group: ALL
Type: ALL
Permit Renewal Quarter: ALL
Water System Is New: ALL
Water System Status: ALL
Water Status Date From: ALL **To** ALL
Water System Update Date ALL **To** ALL
Owner Number: ALL
SMA Number: ALL
SMA Name: ALL
Active Connection Count From: ALL **To:** ALL
Approved Connection Count ALL **To:** ALL
Full-Time Population From: ALL **To:** ALL
Water System Expanding ALL
Source Type: ALL
Source Use: ALL
WFI Printed For: On-Demand

Appendix B - Agreements

AGREEMENT FOR WATER SYSTEM INTERTIE

CHEHALIS POWER

INTERLOCAL AGREEMENT LEWIS COUNTY
WATER SEWER DISTRICT #5

NEWAUKUM HILL WATER USE AGREEMENT

THOUSAND TRAILS WATER SERVICE AGREEMENT

WEYERHAEUSER AND CHEHALIS WATERSHED
PROTECTION AGREEMENT

AGREEMENT FOR WATER SYSTEM INTERTIE

THIS AGREEMENT, made and entered into this 25TH day of January, 1999, by and between the **CITY OF CHEHALIS, WASHINGTON AND THE CITY OF CENTRALIA, WASHINGTON**, hereby agree as follows:

For purposes of this Agreement, the City of Centralia and/or the Centralia water system shall be referred to as "Centralia;" the City of Chehalis and/or the Chehalis water system, shall be referred to as "Chehalis;" and the water system intertie between and connecting the Centralia and Chehalis water systems shall be referred to as "intertie."

SECTION 1. PURPOSE. The purpose of the intertie shall be to provide or supplement water supplies to either city's water distribution system in the event of a failure of source, transmission line, distribution system line(s) treatment facilities, or other major emergency or disaster. Such emergency water service provided by the intertie is intended for short-term emergency contingency supply purposes. The intertie is not capable of, or intended to provide base or peak supply quantities .

SECTION 2. OPERATION AND MAINTENANCE. The operation and maintenance responsibilities and procedures for the intertie shall be as follows:

A. Chehalis shall operate, maintain, control and own the 12-inch waterline valve located eleven (11) feet south of the south right-of-way line of Scott Johnson Road and fifteen (15) feet more or less east of the westerly line of the Kresky Avenue right-of-way, hereinafter referred to as the "Chehalis valve," and all piping, appurtenant fittings and assemblies southerly of said valve.

B. Centralia shall operate, maintain, control and own the 12-inch waterline valve located thirty-two (32) feet north of the south right-of-way line of Scott Johnson Road and eighteen (18) feet more or less east of the westerly line of the Kresky Avenue right-of-way, hereinafter referred to as the "Centralia valve," and all piping, appurtenant fittings and assemblies northerly of said valve.

C. Chehalis and Centralia shall jointly operate, maintain, control and own the section of waterline, all appurtenant fittings and assemblies located between the Chehalis valve and the Centralia valve.

D. Operation of the intertie will be under the sole control of Centralia and Chehalis. The intertie shall not be utilized by either party without the specific prior notification and approval of both cities. After such approval has been provided, the two cities shall cooperatively activate the intertie. It shall be the responsibility of each city to operate valves in their distribution system to accommodate the pressure difference of the host supplier.

E. If the system for which water supply is requested is or becomes unable to provide water, the intertie shall be shut off/disconnected and all water transfer ceased.

F. The two cities shall monitor water quality at the intertie and shall continue to be responsible for water quality monitoring within their respective systems.

SECTION 3. COSTS FOR SUPPLIED WATER. To the extent possible, each city shall monitor and track water quantities transferred and received, and, based upon this information, the city that supplies such water shall determine or estimate charges based on that city's current water rates calculated and/or estimated rate charges and other costs associated with the transfer of water shall be billed to the receiving city. Although the intertie does not currently have metering devices, they may be added in the future.

SECTION 4. ADMINISTRATION.

A. Revision of this Agreement may be periodically deemed appropriate. Any subsequent intertie agreement signed by both cities shall nullify this Agreement.

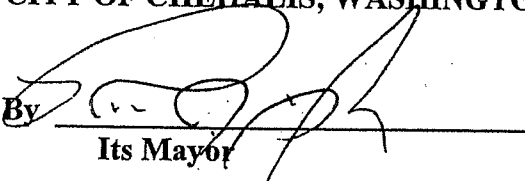
B. This Agreement is to be mutually beneficial and perpetual. In the event that this Agreement should cease to be of benefit, it may be dissolved by mutual consent or by either party after thirty (30) days of the date the other party received written notice of intent to terminate this Agreement.

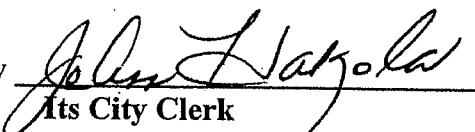
C. Emergency service is not intended to provide water for extended periods or at frequent intervals. Approval of repeated requests for water through the intertie within a short interval will be at the discretion of the providing city.

D. The City of Chehalis Public Works Director and the City of Centralia Utilities Director shall jointly administer this Agreement.

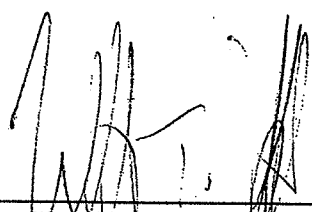
EXECUTED IN DUPLICATE on the date and year first above written.

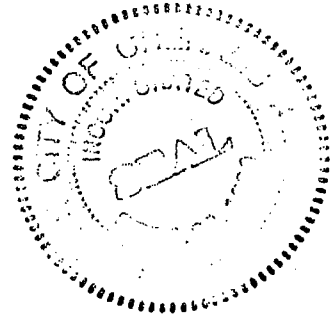
CITY OF CHEHALIS, WASHINGTON

By 
Its Mayor

Attested by 
Its City Clerk

Approved as to
form and content by


Its City Attorney




CITY OF CENTRALIA, WASHINGTON

By


Its Mayor

Attested by


Its City Clerk

Approved as to
form and content by


Its City Attorney

August 19, 2002

Jim Nichols
Public Works Director / City Engineer
2007 Kresky Rd.
Chehalis, WA 98532

RE: Chehalis Power Municipal Services Agreement – Data update and System Connections

Dear Jim,

The design for municipal water and sewer systems within our project is now complete and these systems are scheduled to be in service, at least in part, at this time. Accordingly, the system tie-ins and referenced connection fees need to be addressed. In doing this, it is appropriate to revisit the calculated water and sewer requirements as currently shown in Exhibit "B" (attached), in the Municipal Service Agreement, and update that document per the following:

Water System Data:

Our current water balance data calculations now show an average daily planned water use of 19,896 gpd (see attachment A) as opposed to 162,000 gpd previously estimated (Exhibit "B"). This further calculates to equal 66 ERU's rather than the 540 ERU's previously estimated. The principal reason for the dramatic reduction in water use is due to the following:

- 1) Increased recycling of HRSG blow down and sample water.
- 2) Removal of CTG inlet air fogging as originally anticipated.
- 3) Calculation of water use under actual ambient conditions.
- 4) Impact of planned operating schedules on water use, based on market projections as done with other operating commodities.

In terms of conserving water this is good news and in keeping with the SCA stipulations.

Sewer System Data:

Similarly, our sewer discharge quantity calculations show an average daily flow of 16,308 gpd (see attachment A) as opposed to 80,000 gpd previously estimated. This further calculates to equal 64 ERU's rather than the 320 ERU's previously estimated.

Connection Fees:

Regarding the system connection fees, the city ordinance referencing water connections indicate that the first 27 ERU's are directly applicable and that terms for the remainder are negotiable, but would in no case be less than 10%.

Similarly, the city ordinance referencing sewer connections refers to negotiated terms for users above 27 ERU's. However, it does not refer specifically to that part above 27 ERU's, nor to the 10% minimum. We are not certain what is intended, or how it has been applied in other similar circumstances.

Chehalis Power believes that an amount in excess of \$1,000,000 of the \$6,000,000+ investment, being made by the project in these infrastructures, directly benefits the community. As such, we believe it would be appropriate for the City to allow a portion of that to be applied as a credit to the connection fees.

In accordance with the above, the project requests that the City approve a credit of 90% of the water connection fees above 27 ERU's. In addition, the project requests that the sewer connection fees be paid over a period of 5 years, in five equal payments, with the initial payment being made immediately.

Your consideration of the above is very much appreciated.

Sincerely,



Thomas Schneider

Chehalis Power Project Resident Site Manager

cc: Walter Perez-Daple, TPI Project Manager
Dave Campbell, Chehalis City Manager
Kevin Finan, TPI Mgr. Business Dev.
Bill Hillier, Hillier & Schiebmier

**CITY OF CHEHALIS
APPLICATION FOR WATER-SEWER SERVICE**

APPLICANT: CHEHALIS POWER GENERATING LP TELEPHONE NO. 360-748-1300
 MAILING ADDRESS: PO BOX 1020, CHEHALIS, WA 99532
 STREET ADDRESS OF SERVICE: 1813 BISHOP RD, CHEHALIS, WA 99532

SERVICE REQUESTED: WATER SEWER
 PLEASE CHECK: Meter Size _____
 Single Family
 Duplex
 Multiple, No. of Units _____ Outside City
 Commercial/Industrial - Specify: POWER PLANT
 Temporary Construction
 Other - Specify: _____

 Allow at least six (6) weeks for water service installation from date charges are paid.
 A Right-of-way Permit shall be obtained by licenced contractor prior to the performance of any work within the City street Right-of-way.

Public Works Department must be notified at least two (2) working days before sewer connection is to be made to arrange for inspection. Applicant is responsible for installation of sanitary side sewer.

I UNDERSTAND AND AGREE TO PAY ALL COSTS, FEES, AND CHARGES ASSOCIATED WITH WATER AND/OR SEWER CONSTRUCTION AND CONNECTION BEFORE WATER AND/OR SEWER SERVICE SHALL BE PROVIDED; AND FURTHER AGREE TO ALLOW THE CITY TO TEMPORARILY DISCONTINUE THE SERVICE AT ANY TIME WITHOUT NOTICE TO THE CUSTOMER. I ALSO AGREE TO HOLD THE CITY HARMLESS FOR ANY DAMAGE CAUSED BY INTERRUPTION, CHANGE OR FAILURE OF THE WATER AND/OR SEWER SUPPLY, AND I FURTHER AGREE THAT SUCH FAILURES OR INTERRUPTIONS FOR ANY REASONABLE PERIOD OF TIME SHALL NOT BE HELD TO CONSTITUTE A BREACH OF AGREEMENT ON THE PART OF THE CITY OR ANY WAY RELIEVE THE CUSTOMER FROM PERFORMING THE OBLIGATIONS OF THIS OR SUBSEQUENT AGREEMENTS. I AGREE TO ABIDE BY THE CITY RULES AND REGULATIONS CONTAINED IN THE CITY WATER-SEWER ORDINANCES AND AGREE TO PAY FOR THE WATER-SEWER SERVICE AS DETERMINED BY THE CITY PUBLIC WORKS DEPARTMENT AS SPECIFIED IN THE CITY ORDINANCES.

NO CONTRACT IS ENTERED INTO BY THE APPLICANT AND BY THE CITY OF CHEHALIS PUBLIC WORKS DEPARTMENT UNTIL AFTER APPLICATION IS APPROVED AND SIGNED BY THE DIRECTOR OF PUBLIC WORKS AND ALL FEES, COSTS, AND CHARGES HAVE BEEN PAID.

APPROVAL SHALL AUTOMATICALLY BE RESCINDED IF WORK HAS NOT BEEN COMPLETED WITHIN 6 MONTHS OF THE DATE OF APPROVAL OF THIS APPLICATION.

DATE 9/17/02 SIGNED Kyra An Cantorwine

DEPARTMENTAL USE ONLY

CONNECTION FEE (water)	\$ <u>158836.40</u>
CONNECTION FEE (sewer)	\$ <u>222075.26</u>
INSTALLATION CHARGES *	\$ <u>0</u>
LATE-COMER FEE	\$ _____
WATER/SEWER DEPOSIT	\$ <u>150.00</u>
OTHER COSTS, CHARGES	\$ _____

Annexation Agreement TOTAL DUE \$ 381061.66 Date Paid 9/17/02

REMARKS: ANNEXATION AGREEMENT INCLUDED WITH OTHER CONTRACT DOCUMENTS

DATE APPROVED: 9/17/02 SIGNED James R. N. White
 DIRECTOR OF PUBLIC WORKS

* INSTALLATION CHARGES are for water service only. The applicant shall be responsible for the installation of the sanitary side sewer and all associated costs.

Year 2002

WATER & SEWER CHARGE CALCULATIONS

Applicant's Name **Chehalis Power 9-10-02**

CHEHALIS GENERATION FAC
DATE 9/11/02
ACCT. 1870
APPROV. BY [Signature]

INSIDE CITY? (Y or N)
 WALMART AREA? (Y or N)
 PORT OF CHEHALIS FEES REQUIRED? (Y or N)
 IF "YES," LENGTH OF FRONT FOOTAGE (FEET)

METER SIZE (Use Alphabetic Code)
(A) 5/8"x3/4" (B) 1" Residential
(C) 1" Commercial (D) 1-1/2"
(E) 2" (F) 3" & 4"
(G) 6" (H) 8"
(I) Sr. Citizen or Disabled

Gallons - Daily Water Consumption ERUs WATER capacity
 Gallons - Daily Sewer Usage ERUs WASTEWATER capacity

FIRE PROTECTION SERVICE SIZE (Use Alphabetic Code)
(A) None (B) 6" (C) 8"
(D) 10" (E) 12"

CATEGORY OF SEWER ACCOUNT (Use Alphabetic Code)
(A) Single Family Dwelling (B) Commercial (C) Multi-Family Dwelling
(D) Industrial (E) S.T.E.P. System (F) Senior Citizen or Disabled

IF MULTIPLE-UNIT COMPLEX (Number of units)

IF INDUSTRIAL (Pounds Per Day BOD)

IF INDUSTRIAL (Pounds Per Day Suspended Solids)

OTHER LATECOMERS FEE REQUIRED (Y or N)

Wallace Rd. - SEWER McGovern/Bishop Rd. - SEWER Bloom/Sunset Ridge - WATER
 McGee/20th St. - WATER - -

WATER CAPACITY CHARGES	<input type="text" value="158,836.40"/>	2002 WATER CAPACITY CHARGES	
WALMART AREA WATER SURCHARGES	<input type="text" value="0.00"/>	2395 PER ERU	
PORT OF CHEHALIS WATER CHARGE/FEES	<input type="text" value="0.00"/>	358 PER ERU	
WATER METER SERVICE CHARGE	<input type="text" value="0.00"/>	2000 Plus variable charge	
FIRE PROTECTION SERVICE CHARGE	<input type="text" value="0.00"/>	* Time and materials costs will be billed after installation.	
SEWER CAPACITY CHARGES	<input type="text" value="222,075.26"/>	2002 SEWER CAPACITY CHARGES	
WALMART AREA SEWER SURCHARGES	<input type="text" value="0.00"/>	3463 PER ERU	
PORT OF CHEHALIS SEWER CHARGE/FEES	<input type="text" value="0.00"/>	639 PER ERU	
OTHER LATECOMERS FEE	<input type="text" value="0.00"/>	2000 Plus variable charge	
ACCOUNT DEPOSIT	<input type="text" value="150.00"/>		
TOTAL WATER/SEWER CAPACITY CHARGES	<input type="text" value="381,061.66"/>		

PENDING RESOLUTION OF FP SERVICE

OK - RESOLVED THAT NO F.P. SERVICE CHARGE INVOLVED.

NOTE: CHARGES FOR LINE EXTENSION(S), APPURTENANCES AND METER SERVICE ARE NOT LISTED.

sent Orig. to Rogers in Houston 9/11/02

UTILITIES DEVELOPMENT & ANNEXATION AGREEMENT

Effective Date: April ____, 2000

Parties: Chehalis Power Generation Limited Partnership
1177 West Loop South, Suite 900
Houston, Texas 77027-9006
(hereinafter referred to as "CPGLP")

City of Chehalis, Washington
P. O. Box 871
Chehalis, Washington 98532
(hereinafter referred to as "Chehalis")
(individually, a "Party"; collectively, the "Parties")

WHEREAS, CPGLP has obtained ownership or options to acquire parcels of property (described on Exhibit "A" hereto attached, hereinafter, the "Site") which comprise approximately 49.67 acres located along Bishop Road south of Chehalis, Lewis County, Washington, all of which parcels of property are within the Chehalis urban growth area; and

WHEREAS, development of said property requires CPGLP to obtain both water and sewer service from Chehalis and to extend such utility lines to the battery limit of the Site; and

WHEREAS, CPGLP and Chehalis are desirous of entering into an agreement whereby CPGLP consents to petition for annexation at the request of Chehalis, and the Parties each agree to undertake certain acts in consideration thereof, including, without limitation, reaching agreement on the means, methods, and allocation of the costs of connection, service, design, development, and extension of utility lines reasonably necessary to meet CPGLP's needs (herein, the "Agreement");

NOW, THEREFORE in consideration of the above referenced recitals and other good and valuable consideration, the sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. **Development Agreement.** This Agreement is entered into in conformance with and pursuant to RCW 36.70B.170, *et seq.* Pursuant to RCW 36.70B.170, a city may enter into a development agreement for real property outside its boundaries as part of a proposed annexation or a service agreement.
2. **Submission of Petition for Annexation.** The Parties agree this Agreement is entered into as part of a proposed annexation of the Site to be reviewed by Chehalis. If Chehalis performs the obligations required of it pursuant to Paragraph 3 hereof, and the Municipal Services Agreement described in Paragraph 3(b) hereof is actually entered into by the Parties, CPGLP shall, upon five (5) days' prior written request by Chehalis, execute and deliver to Chehalis a notice of intent to commence annexation proceedings for annexation of the Site and subsequently a petition for annexation of the Site in a form acceptable to Chehalis. In the event CPGLP fails or neglects to submit the notice of intent and petition within the above referenced five (5)-day periods, Chehalis shall have the right to suspend any utilities services being provided pursuant to the Municipal Services Agreement to be entered into by the Parties pursuant to Paragraph 3(b) hereof.
3. **Obligations of Chehalis.** On or before the actual effective date of annexation of the Site by Chehalis, Chehalis agrees to do or cause to be done the following:

(a) To submit for the approval of the City Council ordinance amendments necessary to effect Resolution Number 4-93 of the city of Chehalis (a copy of which is attached hereto as Exhibit "C") and to implement such amendments.

(b) To commence and negotiate in good faith a mutually acceptable Municipal Services Agreement for the provision of certain municipal services to CPGLP for the Site, including, without limitation, the sale and delivery of water by Chehalis to CPGLP and the receipt by Chehalis of wastewater generated by CPGLP from the Site, each in the approximate quantities set forth in Exhibit "B" annexed hereto and for the design, procurement, construction, operations, and maintenance of the interconnect facilities for the provision of such municipal services and for the allocation of the costs thereof. Subject to the approval of the City Council of the city of Chehalis, each of the Parties acknowledges that the Municipal Services Agreement shall contain provisions which are consistent with those required for a power generation project of equivalent size and characteristics in the United States of America which is to be financed on a non-recourse basis.

4. **Approvals.** CPGLP understands that this Agreement, and all subsequent agreements or amendments thereto, and the actions required pursuant hereto will require the approval of the City Council of the city of Chehalis at a public meeting(s) where input from citizens is permitted, that such approval process is political in nature, and that approval of subsequent agreements or amendments by the City Council cannot be guaranteed. Absent reasonable justification, based on facts or circumstances not now known to Chehalis, its officials or staff, Chehalis agrees not to oppose issuance to CPGLP of any permits or approvals sought by

CPGLP from entities not party to this Agreement for the development, construction, or operation of the facility to be developed by CPGLP at the Site. If this Agreement, or any of the actions of Chehalis to be undertaken pursuant hereto are not approved by the City Council for any reason, Chehalis agrees that CPGLP is under no obligation to submit either a notice of intent to commence annexation proceedings for the Site or a petition for annexation of the Site.

5. **Additional Tax Relief.** In consideration of the full performance by Chehalis of the obligations set forth in Paragraph 3(a) hereof, CPGLP agrees not to seek legislatively enacted tax benefits from the legislature of the state of Washington any greater than that actually allowed to any competitor of CPGLP engaged in the independent power production business in the state of Washington.

6. **Term of Agreement.** This Agreement and the rights afforded to the Parties hereunder shall be in place for a period of three (3) years from the Effective Date. Should the obligations of the Parties pursuant to this Agreement not have been completed within three (3) years from the Effective Date, this Agreement shall automatically renew for an additional one (1) year period unless either Party gives written notice to the other not less than thirty (30) days prior to the then current date for the ending of the term of its intention not to continue this Agreement for an additional one (1)-year period. Notwithstanding the above, upon connection of the Site to utility services provided by Chehalis pursuant to the Municipal Services Agreement referenced above, the rights and obligations conferred upon both CPGLP and Chehalis pursuant to the provisions of this Agreement shall irrevocably vest to the benefit of both CPGLP and Chehalis.

7. **Modifications.** Pursuant to RCW 36.70B.170(4), Chehalis reserves the authority to impose new or different regulations to the extent required by a serious threat to public health

and safety, provided, however, that such action shall only be taken by legislative act of the City Council of the city of Chehalis after appropriate public process.

8. **Assignment.** Rights conferred to CPGLP under the terms of this Agreement shall not be assigned by CPGLP without the express written consent of Chehalis, which consent shall not be unreasonably withheld, conditioned, or delayed.

9. **Notices.** In the event any Party to this Agreement desires to give notice to the other, notice shall be given in writing by United States mail, postage paid, or by personal service on:

CPGLP: Chehalis Power Generation Limited Partnership
1177 West Loop South, Suite 900
Houston, Texas 77027-9006
Attention: General Counsel

Chehalis: City Manager
City of Chehalis
P. O. Box 871
Chehalis, Washington 98532.

10. **Binding Effect.** This Agreement shall run with the land and shall be binding on the Parties, their heirs, successors, and assigns, and shall be recorded with the Lewis County Auditor.

11. **Public Hearing.** The City Council of the city of Chehalis has approved execution of this Agreement by ordinance or resolution after appropriate public hearing per RCW 36.70B.200.

12. **Attorney's Fees and Costs.** In the event any controversy or claim arises under this Agreement, the prevailing Party shall be entitled to its reasonable costs, disbursements, and

reasonable attorney's fees, together with all expenses which it may reasonably incur in taking such action.

13. **Governing Law.** This Agreement shall be construed with and governed by the laws of the state of Washington. The Parties agree to venue in Lewis County, Washington.

14. **Severability.** If any portion of this Agreement shall be invalid or unenforceable to any extent, the validity of the remaining provisions shall not be affected thereby.

15. **Amendment and Modification.** This Agreement may only be amended by mutual agreement of the Parties executed in writing.

EXECUTED IN DUPLICATE on the date and year first above written.

CHEHALIS POWER GENERATION LIMITED PARTNERSHIP

By Paul Margaritis
Name: PAUL MARGARITIS
Title: VICE PRESIDENT

CPGLP

CITY OF CHEHALIS, WASHINGTON

By David M. Campbell
David M. Campbell, City Manager

Attest: Caryn Foley
Caryn Foley, City Clerk

Approved as to form:

By William T. Hillier
William T. Hillier, City Attorney



CHEHALIS

STATE OF TEXAS)
 :SS
COUNTY OF Harris)

On this 2nd day of June, 2000, before me, the undersigned, a Notary Public in and for the state of Texas, duly commissioned and sworn, personally appeared Paul E. Manassian, to me known to be the Vice President of **Chehalis Power Generation Limited Partnership**, the entity that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said entity, for the uses and purposes therein mentioned, and on oath stated that he/she is authorized to execute the said instrument for and on behalf of said entity.

WITNESS my hand and official seal hereto affixed the day and year first above written.

Anna L Denton Stone
Notary Public in and for the state of Texas,
residing at 3710 Ft. Clean Mo. Rd., TX 77159
My name is (printed): Anna Denton Stone
My appointment expires 2-19-03

STATE OF WASHINGTON)
 :SS
COUNTY OF L E W I S)

On this 22nd day of May, 2000, before me, the undersigned, a Notary Public in and for the state of Washington, duly commissioned and sworn, personally appeared **DAVID M. CAMPBELL and CARYN FOLEY**, to me known to be the City Manager and City Clerk, respectively, of the **city of Chehalis, Washington**, the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that he/she is authorized to execute the said instrument and that the seal affixed is the corporate seal of said corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

Margaret E Morant
Notary Public in and for the state of Washington,
residing at Centralia
My name is (printed): Margaret E Morant
My appointment expires 2-5-01

EXHIBIT "A"

That portion of the Southwest Quarter of the Southeast Quarter of Section 10, and the Northwest Quarter of the Northeast Quarter of Section 15, Township 13 North, Range 2 West, of the Willamette Meridian, Lewis County, Washington, described as follows:

Beginning at the Northwest corner of said Southwest Quarter of the Southeast Quarter; thence South $88^{\circ}34'21''$ East for 1318.18 feet along the North line thereof, to the Northeast corner of said subdivision; thence South $02^{\circ}06'29''$ West along the East line of said subdivision for 1214.67 feet, to a point 100 feet North as measured perpendicular from the South line of said Southwest Quarter of the Southeast Quarter; thence North $88^{\circ}46'38''$ West parallel with said line for 256.54 feet; thence South $01^{\circ}13'22''$ West for 100.00 feet, to the South line of said Southwest Quarter of the Southeast Quarter; thence South $88^{\circ}46'38''$ West for 540.44 along said South line; thence South $22^{\circ}30'20''$ West for 145.76 feet to the Northerly right of way line of Bishop Road and a point on a curve whose radius point bears North $26^{\circ}30'20''$ East 924.93 feet; thence Northwesterly along said curve for 100.82 feet, through a central angle of $6^{\circ}14'44''$; thence North $22^{\circ}30'20''$ East for 401.08 feet; thence North $02^{\circ}01'46''$ East for 326.50 feet; thence North $75^{\circ}11'51''$ West for 534.17 feet, to the West line of said Southwest Quarter of the Southeast Quarter; thence North $02^{\circ}01'46''$ East for 581.56 feet along said West line to the Point of Beginning. Containing 31.79 acres.

Easement A:

TOGETHER WITH an easement 60 feet in width for ingress, egress, and utilities over, under, and across a portion of the Southwest Quarter of the Southeast Quarter of Section 10, and the Northwest Quarter of the Northeast Quarter of Section 15, Township 13 North, Range 2 West of the Willamette Meridian, Lewis County, Washington, described as follows:

Commencing at the Southeast corner of said Southwest Quarter of the Southeast Quarter of Section 10; thence North $02^{\circ}06'29''$ East along the East line of thereof for 100.01 feet, to the Point of Beginning; thence North $88^{\circ}46'38''$ West parallel with and 100 feet North as measured perpendicular to the South line of said subdivision, for 256.54 feet; thence South $01^{\circ}13'22''$ West for 455.10 feet to the Northerly right of way line of Bishop Road; thence South $71^{\circ}36'50''$ East along said Northerly line for 62.80 feet; thence North $01^{\circ}13'22''$ East for 413.63 feet, to a point 40 feet North as measured perpendicular to the South line of said Southwest Quarter of the Southeast Quarter of Section 10; thence South $88^{\circ}46'38''$ East parallel with the South line of said subdivision for 196.54 feet to the East line thereof, thence North $02^{\circ}06'29''$ East along said East line for 60.00 feet to the Point of Beginning.

EXHIBIT "B"

Required Water/Waste Water Services

Water Supply:

Average daily use	162,000 gallons per day
Peak demand use	850,000 gallons per day
Water Capacity Allocated from Chehalis to CPGLP:	540 ERUs (Equivalent Residential Units)

Sewer Service:

Average demand	80,000 gallons per day
Peak demand	80,000 gallons per day
Sewer Capacity Allocated from Chehalis to CPGLP:	320 ERUs (Equivalent Residential Units)

EXHIBIT "C"

RESOLUTION NO. 4-93

A RESOLUTION OF THE CITY OF CHEHALIS, WASHINGTON, DECLARING THE INTENT OF THE CITY TO AMEND ALL UTILITY TAX ORDINANCE PROVISIONS TO PROVIDE FOR A MAXIMUM TAX PER UTILITY, PER CUSTOMER, PER YEAR, IN THE SUM OF SEVENTY-FIVE THOUSAND AND NO/100 DOLLARS (\$75,000.00); AND DIRECTING CITY STAFF TO PREPARE AND PRESENT ALL ORDINANCE AMENDMENTS TO ACCOMPLISH THE SAME.

WHEREAS, one of the primary goals of the City Council of the City of Chehalis, Washington, is to promote economic development within the sphere of influence of the City of Chehalis; and

WHEREAS, it is in the best interests of the City and its citizens that the City adopt provisions within the City's taxing ordinances to not only enhance economic development opportunities within the area but to provide consistent taxation to all utility users within the City; and

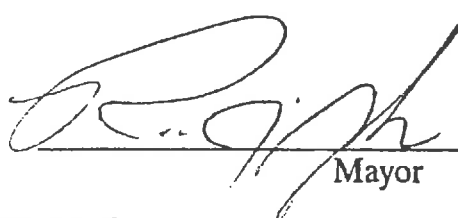
WHEREAS, the City is desirous of continuing to implement a utility tax but to be certain that the same is not burdensome on individuals or businesses within the sphere of influence of the City; now, therefore,

THE CITY COUNCIL OF THE CITY OF CHEHALIS, WASHINGTON, DO RESOLVE AS FOLLOWS:

Section 1. The City hereby declares its intent to amend all utility tax ordinance provisions currently in effect in the City of Chehalis to provide for a cap on utility taxes assessed with respect to each "customer" within the City of Chehalis, Washington. The amendments shall provide for a maximum tax assessment per customer, per utility, per year, in the sum of Seventy-five Thousand and no/100 Dollars (\$75,000.00).

Section 2. The City Council of the City of Chehalis, Washington, hereby directs staff to prepare all ordinance amendments necessary to effect the policy statements set forth hereinabove, and present the same to the Council for consideration.

ADOPTED by the City Council of the City of Chehalis, Washington, and **APPROVED** by its Mayor, at a specially scheduled open public meeting thereof this 21st day of April, 1993.



Mayor

Attest:

Caryn S. Foley, Deputy
City Clerk

Approved as to form:

Patricia A. Talbot
Asst. City Attorney

CITY OF CHEHALIS

350 N. Market Boulevard Room 101
Chehalis, Washington 98532
(360) 345-1042 / Fax (360) 748-0651
www.ci.chehalis.wa.us



June 2, 2015

PacifiCorp Energy
A Division of PacifiCorp
1813 Bishop Road
Chehalis, Washington 98532

Re: Chehalis Power Generating Limited Partnership/PacifiCorp Merger

Gentleman,

In March 2001, the City of Chehalis and Chehalis Power Generating Limited Partnership, entered into a Municipal Services Agreement whereby the City of Chehalis would provide utility service for the benefit of Chehalis Power Generating at its plant located in Lewis County, Washington. In July 2008, Chehalis Power chose to transfer its interest in the power plant located in Lewis County, Washington, together with transferring its interest in the Municipal Services Agreement entered into between Chehalis Power and the City of Chehalis. Shortly after the acquisition of the power plant by PacifiCorp, representatives from PacifiCorp met with representatives of the City of Chehalis to discuss utility service and the on-going relationship between Chehalis and the new entity, PacifiCorp.

The issues of concern between the City and PacifiCorp were that the Municipal Services Agreement provided for the benefactor of the Agreement to have reserved rights to access 540 equivalent residential units of water supply for the benefit of the plant. Additionally, the Agreement provided for the benefactor of the Agreement to reserve the ability to use up to 320 equivalent residential units of sewer capacity. As an aside, up to and including the year 2008 and going into 2009, the water usage and sewer usage by the plant remained right around 66 equivalent residential units of water service and 64 equivalent residential units of sewer service. Before PacifiCorp purchased the plant in Lewis County, Chehalis Power paid for (under the terms of the Municipal Services Agreement) the capacity charges due the City for 66 ERUs of water and 64 ERUs of sewer. The remaining ERUs of water and sewer that have been dedicated to the plant have never had their capacity charges paid for because up through and including the year 2009, the plant was not using any more than the 66 ERUs of water and 64 ERUs of sewer.

There have not been any discussions between PacifiCorp and the City since early 2009. However, since 2009 through 2014, the plant has significantly increased its usage of both water and sewer while, at the same time, not having paid for the capacity charges to use beyond 66 ERUs of water and 64 ERUs of sewer.

A recent review of the usage of water and sewer by the City of Chehalis shows that the benefactor (PacifiCorp) has been actually exceeding 540 ERUs of water and has also been exceeding 320 ERUs of sewer. It is unknown by the City of Chehalis whether this usage will continue in the future; however, it is the desire of the City to accomplish two things at this time.

1. PacifiCorp must pay the capacity charges for the pledged water and sewer services under the terms of the Municipal Services Agreement. That means that PacifiCorp owes the City of Chehalis capacity charges for 474 ERUs of water and 256 ERUs of sewer service.
2. The City would like to meet with PacifiCorp and discuss the availability and desire of PacifiCorp to exceed acquisition of ERUs for water service beyond the 540 committed as well as beyond the 320 ERUs of sewer service committed under the terms of the Municipal Services Agreement.

At this time, the City is requesting payment of the capacity charges for water. Capacity charges for water at the time that we entered into the Agreement was \$2,071 per ERU for water service. That equates to the sum of \$981,654 due the City for the usage of the additional 474 ERUs of water service. Additionally, sewer service was charged at the rate of \$3,030 per ERU. This would require payment from PacifiCorp to the City in the sum of \$775,680 for the 256 ERUs of sewer service that have not been paid for.

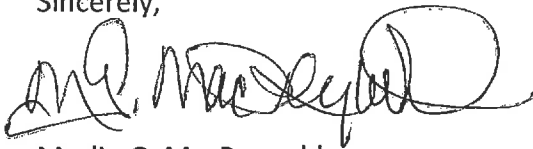
was 2395 - in 2002

3463 - in 2002

Payment should be made to the respective utilities within twenty (20) days of this letter. Additionally, we would like to have you schedule a meeting with the city administration to discuss your desires regarding acquisition of additional capacity as well as discussion of the City's ability to provide additional capacity. We look forward to meeting with you and having this conversation as this is a matter that needs to be resolved in the immediate future for the benefit of the City and PacifiCorp.

Thank you for your attention.

Sincerely,



Merlin G. MacReynold
City Manager

cc: City Council
Rick Sahlin, Public Works Director
Bill Hillier, City Attorney



Chehalis Generation Facility
1813 Bishop Road
Chehalis, Washington 98532

June 11, 2015

City of Chehalis, Washington
Attn: Merlin G. MacReynold, City Manager
P.O. Box 871
350 North Market Boulevard Room 101
Chehalis, Washington 98532

Re: June 2, 2015 Demand Letter; Notice of Dispute

Dear Mr. MacReynold:

On June 9, 2015, PacifiCorp received a mailed copy of your June 2, 2015 letter (the "Letter"). The Letter includes a demand for payment in the amount of \$1,757,334 within 20 days. This demand is based on water and sewer service consumption allegedly exceeding the equivalent residential units: (a) paid for as connection fees by PacifiCorp's predecessor in interest; and (b) allocated to the Chehalis power plant under the applicable development and annexation agreements.

Your Letter was a surprise to PacifiCorp, and we have a number of questions regarding the consumption data used in your analysis, the calculation of amounts demanded, and similar matters. There are also portions of the Letter which PacifiCorp disputes. As suggested in your Letter, PacifiCorp would like to meet with City officials to discuss the issues you raised. In accordance with Section 12.01 of our March 26, 2001 Municipal Services Agreement ("Agreement"), such meeting will constitute the commencement of the friendly consultation dispute resolution process. PacifiCorp is confident that this matter can be addressed informally within the consultation period specified in the Agreement. However, PacifiCorp considers the amount demanded in dispute.

I will be contacting you in next few days to schedule the time and other logistics for the meeting. Please do not hesitate to contact me at 360-827-6462 with any questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark A. Miller".

Mark A. Miller
Manager, Chehalis Gas Plant

cc: Cindy Crane
David Lucas
Bart Simmons
Jeff Richards

CITY OF CHEHALIS

Public Works Department
2007 N.E. Kresky
Chehalis, Washington 98532
(360) 748-0238 / Fax (360) 748-0694
www.cityofchehalis.com



MEMORANDUM

Date: November 17, 2015

To: Rick Sahlin

From: Russ Cox

RE: Chehalis Power MSA resolution documents

Rick,

I have attached documents related to our past discussions with Chehalis Power and recent discussions with PacifiCorp related to the City's efforts to receive payment for outstanding water and sewer capacity at the power generating facility.

Please note the ERU and dollar values in Mr. Miller's email differ slightly from the values in the spreadsheet due to the fact that the prior purchase of capacity of water and sewer was for 66.32 water ERU and 64.13 sewer ERU. This resulted in fractionally smaller amounts of remaining ERU's for each, thus the small discrepancy.

It is important to note that the amount per ERU is at the City's current rate, which is less than the rate at the time of original purchase.

It is also important to note that the total amount due does not include interest accrual.

CITY OF CHEHALIS WATER & SEWER CAPITAL FACILITIES CHARGE CALCULATIONS

Applicant:	Chehalis Power	Address: 1813 Bishop Road
Project Name:	ERU purchase	Date: 11/17/2015

Total Amount Due:	\$	1,756,409.70
--------------------------	-----------	---------------------

Estimated Water Consumption: 142,104 GPD	Water Consumption Method: MSA *
--	---------------------------------

Wastewater Service Capital Facilities Charges	Cost Per ERU	Quant. ERU	Total \$	Fire Protect. Service Cap. Facilities Charges		
Total	3,030.00	255.9	\$ 775,377.00	Service Size	Charges \$	Total \$

Water Service Capital Facilities Charges	Cost per ERU	Quant. EA	Total \$
Total	\$ 2,071.00	473.7	\$ 981,032.70

Other Charges	Size (inches)	Unit Cost	Total \$
Water Service Charge	0	0.00	\$ -
Additional water service	0	0.00	\$ -
Water Deposit Residential	0	200.00	\$ -
Water Deposit Residential Non-Owner Occupied	0	200.00	\$ -
Water Deposit Commercial	0	200.00	\$ -
Other Charges	0	0.00	\$ -
Total			\$ -

2"	\$ 1,610.00	\$ -
3"	\$ 3,210.00	\$ -
4"	\$ 5,020.00	\$ -
6"	\$ 10,040.00	\$ -
8"	\$ 16,060.00	\$ -
10"	\$ 23,090.00	\$ -
12"	\$ 45,170.00	\$ -
Total		\$ -

Storm Water Capital Facilities Charge			
1 ESU =	Cost Per ESU	Quant. ESU	Total \$
3000 sq. feet	\$ 489		
Sq. feet		0	\$ -

Late Comer Fees	\$/ERU	ERU	Total Late comer Fees	Max. Late Comer \$	\$ Collected to Date	\$ Late Comer Balance	Expiration Date
ERU	\$ 6,668.65		\$ -			-	
McGee Water Charge/ERU	\$ 2,500.00		\$ -	\$ 17,500.00		17,500	
McGovern Sewer Charge/ERU	\$ 1,000.00		\$ -	?		#VALUE!	
Bloom Water Charge	\$ 712.00		\$ -	?		#VALUE!	
Wal*Mart Water Charges/ERU	\$ 358.00		\$ -	\$ 77,000.00		77,000	
Wal*Mart Sewer Charges/ERU	\$ 639.00		\$ -	#####		138,000	
Total			\$ -				

Sewer ERU: 568.4 Calculated 250 Gallons/ERU

* Municipal Services Agreement



City of Chehalis
 Public Works Department
 Billing: 2007 NE Kresky Ave.
 Chehalis, WA 98532
 Phone: 360-748-0238
 Fax: 360-748-0694

STATEMENT

Name: Mark Miller
 Address: Chehalis Generation Facility
 PO Box 1020
 Chehalis, WA 98532

Date: 11/23/15

Explanation:	Amount:
Balance due after payment in 2002	
Water Service (\$2,071.00 per ERU, 473.7 ERUs)	\$ 981,032.70
Wastewater Service (\$3,030.00 per ERU, 255.9 ERUs)	\$ 775,377.00
Interest	\$ 0.00
Subtotal Prior to Administrative Fee	\$ 1,756,409.70
Administrative fee	Rate: 0.00% \$ 0.00
Subtotal	\$ 1,756,409.70
Sales and Use Taxes	Tax Rate: 0.00% \$ 0.00
TOTAL	\$ 1,756,409.70

DUE DATE: Nov 30, 2015

For Office Use Only:

Other fees and charges	
405.343.040.99	\$ 981,032.70
404.343.050.99	\$ 775,377.00

\$ 0.00 **Please remit to:**

\$ 0.00

\$ 0.00

Total

\$ 1,756,409.70

*City of Chehalis
 Attn: Accounts Payable
 1321 S. Market Blvd.
 Chehalis, WA 98532*

Russ Cox

From: Rick Sahlin
Sent: Friday, November 13, 2015 9:52 AM
To: Miller, Mark A.
Cc: Dave Vasilauskas; Don Schmitt; Russ Cox
Subject: RE: PacifiCorp & City of Chehalis meeting 11/12/2015 follow up

Mark,

I will talk with Merlin as soon as I can get a meeting with him when he returns from vacation late next week, I will get back with you after I meet with him. I am not sure we can get this all completed by the end of the month with the Thanksgiving Holiday but we will see what we can do.

Thanks,

Rick Sahlin
City of Chehalis
Public Works Director
(360) 748-0238
fax (360) 748-0694
rsahlin@ci.chehalis.wa.us

From: Miller, Mark A. [mailto:Mark_A.Miller@PacifiCorp.com]
Sent: Friday, November 13, 2015 8:19 AM
To: Rick Sahlin
Cc: Merlin MacReynold; Ahlmer, Chad
Subject: RE: PacifiCorp & City of Chehalis meeting 11/12/2015 follow up

Rick,

I appreciated the time you and your staff took yesterday morning to meet with me and review the status of the Chehalis plant's water/sewer connection fee true-up.

I reviewed our recent maintenance projects and near term operating experience with respect to water & sewer usage with the interest in reaching an agreement to close the issue raised in the City's letter to PacifiCorp dated June 2, 2015.

I noted that we have been able to reduce our condensate make-up rates attributable to this year's maintenance projects and defined our ongoing investigation of continued maintenance improvement opportunities with respect to boiler tube leaks (i.e. pressure testing, etc.). Having made those statements, I then discussed a potential downward range of ERU's from the current MSA value of 540 to something around 430 ERU's.

While recognizing that the annual average values were lower in the early years of the Municipal Services Agreement (MSA), consumption has increased overtime. In fact, surpassing the 540 ERU threshold in 2014. Noting that the year 2014 was an anomalous operating year leading into our first major maintenance overhaul of the entire plant and that we don't anticipate exceeding that the 540 ERU value in the future.

That being said, as I understand the MSA, if PacifiCorp did lower the ERU commitment the MSA would require amendment and ultimately could lead to a reallocation of those released ERU's to other City

development projects. I understood this as a reality since the City has continued to increase its Urban Growth boundaries and has been limited by availability of water supply.

If PacifiCorp were to release ERU's and subsequently have them re-allocated by the City and PacifiCorp needed additional ERU's in the future, the City would potentially have to make a request to the Washington Department of Ecology for additional water rights withdrawal from the Chehalis River.

In addition, we agreed that there would be no interest or penalties due on the payment and that would be made explicit on the billing document.

Therefore, if I have recapped everything correctly, we are in agreement to proceed with the payment for the balance of reserved rights per the MSA in the amount of \$981,654 for 474 ERU's (at a rate of \$2,071 per ERU water) of water totaling 540 ERU's of water and \$775,680 for 256 ERU's (at a rate of \$3,030 per ERU of sewer) of sewer service totaling 320 ERU's of sewer service. The total dollar amount is \$1,757,334.00.

The goal of PacifiCorp's Finance Department is to have this payment made no later than November 30, 2015.

Please let me know if we are in agreement and can move forward.

Also, I have attached PacifiCorp's Treasury Wires instructions to facilitate this payment.

- 1) We need to receive and confirm wiring instructions from the payee (Chehalis) independently. Please send them the attached form and have them return it directly to our TreasuryWires@PacifiCorp.com inbox. We will then confirm the instructions.**

Kind Regards,

Mark A. Miller
Chehalis Generation Facility
Manager, Chehalis Gas Plant
1813 Bishop Road
Chehalis, WA 98532
Office: 360-827-6462



From: Miller, Mark A.
Sent: Tuesday, September 08, 2015 9:44 AM
To: Merlin MacReynold
Subject: City of Chehalis meeting 9/3/2015

Mr. MacReynold,

The following are some of my notes and take away items from the meeting with your staff last week. I really appreciated their time to have a good discussion regarding the plants water and sewer usage rates.

Attending:
Don Schmitt, Acting Public Works Superintendent

PacifiCorp Energy
A Division of PacifiCorp
1813 Bishop Road
Chehalis, Washington 98532

Re: Chehalis Power Generating Limited Partnership/PacifiCorp Merger

Gentleman,

In March 2001, the City of Chehalis and Chehalis Power Generating Limited Partnership, entered into a Municipal Services Agreement whereby the City of Chehalis would provide utility service for the benefit of Chehalis Power Generating at its plant located in Lewis County, Washington. In July 2008, Chehalis Power chose to transfer its interest in the power plant located in Lewis County, Washington, together with transferring its interest in the Municipal Services Agreement entered into between Chehalis Power and the City of Chehalis. Shortly after the acquisition of the power plant by PacifiCorp, representatives from PacifiCorp met with representatives of the City of Chehalis to discuss utility service and the on-going relationship between Chehalis and the new entity, PacifiCorp.

The issues of concern between the City and PacifiCorp were that the Municipal Services Agreement provided for the benefactor of the Agreement to have reserved rights to access 540 equivalent residential units of water supply for the benefit of the plant. Additionally, the Agreement provided for the benefactor of the Agreement to reserve the ability to use up to 320 equivalent residential units of sewer capacity. As an aside, up to and including the year 2008 and going into 2009, the water usage and sewer usage by the plant remained right around 66 equivalent residential units of water service and 64 equivalent residential unit of sewer service. Before PacifiCorp purchased the plant in Lewis County, Chehalis Power paid for (under the terms of the Municipal Services Agreement) the capacity charges due the City for 66 ERU's of water and 64 ERU's of sewer. The remaining ERU's of water and sewer that have been dedicated to the plant have never had their capacity charges paid for because up through and including the year 2009, the plant was not using any more than the 66 ERU's of water and 64 ERU's of sewer.

Unfortunately, there have not been any discussions between PacifiCorp and the City since early 2009. However, since 2009 through 2014, the plant has significantly increased its usage of both water and sewer while, at the same time, not having paid for the capacity charges to use beyond 66 ERU's of water and 64 ERU's of sewer.

A recent review of the usage of water and sewer by the City of Chehalis shows that the benefactor (PacifiCorp) has been actually exceeding 540 ERU's of water and has also been exceeding 320 ERU's of sewer. It is unknown by the City of Chehalis whether this usage will continue in the future; however, it is the desire of the City to accomplish two things at this time. 1, PacifiCorp must pay the capacity charges for the pledged water and sewer services under the terms of the Municipal Services Agreement. That means that PacifiCorp owes the City of Chehalis capacity charges for 474 ERU's of water and 256 ERU's of sewer service. 2, the City would like to sit down with PacifiCorp and discuss the availability and desire of PacifiCorp to exceed acquisition of ERU's for water service beyond the 540 committed as well as beyond the 320 ERU's of sewer service committed under the terms of the Municipal Services Agreement.

At this time, the City is requesting payment of the capacity charges for water. Capacity charges for water at the time that we entered into this Agreement was \$2,750 per ERU for water service. That equates to the sum of \$1,303,500 due the City for the usage of the additional 474 ERU's of water service. Additionally, sewer service is charged at the rate of \$1,250 per ERU. This would require payment from PacifiCorp to the City in the sum of \$320,000 for the 246 ERU's of sewer service that have not been paid for.

Payment should be made to the respective utilities within twenty (20) days of this letter. Additionally, we would like to have you schedule a meeting with the city staff to discuss your desires regarding acquisition of additional capacity as well as discussion of the City's ability to provide additional capacity. We look forward to meeting with you and having this conversation as this is a matter that needs to be resolved in the immediate future for the benefit of the City.

Thank you for your attention.

Very truly yours,

Merlin MacReynold,
City Manager, City of Chehalis

CITY OF CHEHALIS

350 N. Market Boulevard Room 101
Chehalis, Washington 98532
(360) 345-1042 / Fax (360) 748-0651
www.ci.chehalis.wa.us



February 1, 2019

Mr. Virgil Fox
Commissioner Lewis County Water Sewer District #5
921-B Middle Fork Road
Onalaska, Washington 98570

Re: Interlocal Agreement for Provision of Wholesale Water Between Chehalis and Lewis County Water/Sewer District #5

Dear Commissioner Fox,

As you may be aware, I am the City Manager for the City of Chehalis, Washington. The City Council asked City staff to determine what water rights the City holds beyond the current amounts being used to estimate the ability to serve future development needs in the City and its Urban Growth Areas. It has become evident to the City that there are very few water rights currently held by the City which would meet the City's future water demands within the City and the City's dedicated Urban Growth Area.

I have been made aware of a 2004 Interlocal Agreement entered into between the City of Chehalis and Lewis County District #5. Contrary to some of the recitals in that 2004 Agreement, it is evident that in 2019, the City does not currently have sufficient water resources nor usable water rights available for use by Lewis County Water/Sewer District #5. I also see that a myriad of provisions in the 2004 Agreement that required actions to be taken expeditiously by Lewis County Water/Sewer District #5. The required actions have not taken place.

The most glaring provision of the Agreement is the one dealing with the effective date. Paragraph 4 of the Agreement provides that the Agreement shall not become effective until the Lewis County Commissioners amend the Comprehensive Plan to designate the District #5 as an Urban Growth Area. It is my understanding that the County has not made that certain designation, and have taken actions that will prevent the District from taking further steps regarding the proposed UGA. By its own terms, the Agreement is not effective because of the condition precedent of the County taking action creating a UGA, which has not been done.

Where Heart and History Shape Our Future

The City is in the beginning stages of developing a new water plan. A component of this plan will include declarations that the City no longer has an obligation to District #5 regarding the 2004 Agreement. To that end, a Tolling Agreement dated July 11, 2012 provides that the Tolling Agreement may be terminated by either party upon 30 days written notice. It is the City's desire to terminate the Tolling Agreement as well as the 2004 Interlocal Agreement.

To that end, please consider this letter your formal notice of the City's termination of the Tolling Agreement. Further, based upon the terms of the 2004 Interlocal Agreement, the District does not have any rights as proposed in the Interlocal Agreement because of the lack of effective date for the enforcement of such Agreement. The City intends to move forward with its long-range water planning with the understanding that there is no obligation due District #5 with regard to provision of water from the City.

In the event that you would like to discuss this letter or further clarify the situation, please contact me at 360-345-1042, janderson@ci.chehalis.wa.us, or direct correspondence to me at the City of Chehalis offices.

Sincerely,

A handwritten signature in blue ink that reads "Jill Anderson" followed by a horizontal line extending to the right.

Jill Anderson
City Manager

Water Use Agreement

City of Chehalis
and
Newaukum Hill Water Association

Final – March 23, 2017

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**WATER SUPPLY AGREEMENT BETWEEN THE CITY OF CHEHALIS
AND
THE NEWAUKUM HILL WATER ASSOCIATION**

This Agreement between the **City of Chehalis, a municipal corporation ("Chehalis")**, and the **Newaukum Hill Water Association**, a non-profit organization formed under authority of Ch. 24.03 Title 24 RCW ("Newaukum"), is dated this 26th day of April, 2017, to be effective April 26, 2017.

Whereas Chehalis is a municipal water supplier currently providing service to numerous water customers in Lewis County Washington; and,

Whereas the Newaukum Hill Water Association was formed for the purpose of providing water supply to its customers; and,

Whereas the Newaukum Hill Water Association desires to enter into an agreement for water supply with Chehalis on behalf of its customers.

Now therefore, Chehalis and Newaukum agree to the following terms and conditions for the provision and purchase of water supply.

Article I. Agreement

Chehalis agrees to sell to Newaukum and Newaukum agrees to purchase from Chehalis, according to the terms of this Agreement, a wholesale supply of water.

The term of this Agreement is ongoing, effective as of the date noted above and a provision to renegotiate terms and conditions after the date of December 31, 2025.

Apart from the contract right to purchase water from Chehalis under the terms of this Agreement, neither Newaukum nor any Newaukum customer has any right or claim to the Chehalis Water System, or to any other water right or claim held by Chehalis. Likewise, Chehalis shall have no right or claim to the Newaukum Water System or to any ground water right or claim held by any Newaukum customer, or to any future source of supply developed by Newaukum or by any of its customers.

Article II. Definitions

Annual Total Supply. The maximum amount of water to be supplied by the Chehalis Water System to Newaukum in a calendar year.

Daily Average Supply. The average daily amount of water to be supplied by the Chehalis Water System to Newaukum, calculated as the Annual Total Supply divided by 365 days.

Daily Maximum Supply. The maximum daily amount of water to be supplied by the Chehalis Water System to Newaukum, calculated as the Daily Average Supply multiplied by the Peaking Factor.

Chehalis Water System. The Chehalis Supply System and the Chehalis Transmission System as currently configured together comprise the Chehalis Water System.

Equivalent Residential Unit (ERU). The amount of water consumed by a single family residence.

Facilities. Any facilities owned and operated by Chehalis that are not identified as Existing Supply System, Existing Transmission System, or Newaukum System.

Management Agreement. A written agreement, pertaining to subjects authorized by this Agreement, between the City of Chehalis and the Board of Directors, Newaukum Hill Water Association.

Newaukum Customer. A water user that has entered into a customer Agreement with the Newaukum Hill Water Association.

Newaukum Water System. Tangible and intangible assets owned or operated by Newaukum, useable in connection with the provision of water supply.

Peaking Factor. A ratio applied to the Daily Average Supply to calculate the Daily Maximum Supply.

Points of Delivery. Specific metered delivery locations at which Chehalis provides a defined level of service.

Wheeling of Water. The practice of obtaining water from a supply, transporting it through system pipelines and selling it to a customer outside of the established service area.

Article III. Supply

Section 3.01 Quantity of Supply

Each calendar year from the effective date of this Agreement through December 31, 2025, Chehalis shall make available to Newaukum a volume of water up to the Annual Total Supply. For the purposes of this agreement, the Annual Total Supply is equal to 10,000,000 gallons. This equates to a Daily Average Supply of 27,397 gallons per day (gpd), based on dividing the Annual Total Supply by 365 days. A Daily Maximum Supply is calculated as 54,794 gpd (assuming a Peaking Factor of 2.0).

Section 3.02 Increase in Quantity of Supply

The Annual Total Supply may only be increased by a signed amended contract between Chehalis and Newaukum.

Section 3.03 Reduction in Quantity of Supply

In the event the capacity of the Chehalis Supply System is reduced, supply to Newaukum will be reduced in proportion to such Chehalis Supply System reductions, in accordance with the City of Chehalis Water Shortage Response Plan (which is an appendix to the City of Chehalis Water System Plan). Newaukum shall be notified of any potential change in Annual Total Supply as far in advance as possible.

Section 3.04 Purpose of Supply

All water supplied to Newaukum under this Agreement is for the purpose of re-sale to Newaukum customers; provided that all water supplied under this Agreement must be used within the service area as defined in Newaukum's Washington State Department of Health approved Water System Plan or Small Water System Management Plan.

Section 3.05 Closure of Chehalis Facilities

Normal operation of the water system includes the periodic shutdown of various facilities for routine maintenance, rehabilitation and replacement. Chehalis and Newaukum shall cooperate in the timing of such activities. Newaukum shall not use such activities as evidence of the unavailability of supply or transmission services provided by Chehalis under this Agreement so long as Chehalis proceeds in good faith to restore such facilities to service.

Article IV. Transmission

Section 4.01 Terms and Conditions

The following terms and conditions shall apply to the Chehalis Transmission System:

- A. Chehalis shall supply water at the inlet side of the Point of Delivery meter at a hydraulic gradient of no less than 20 psi. Chehalis may change the minimum hydraulic gradient at any Point of Delivery once during any 20-year period, provided that four years prior notice is given to Newaukum. Under emergency conditions or other unusual short-term operating situations Chehalis shall not be obligated to meet minimum hydraulic gradients.
- B. No provision of this Agreement shall be construed to require Chehalis to provide flows greater than those identified in Article III. Upon notice by Chehalis, Newaukum shall immediately reduce Newaukum deliveries at the Point of Delivery to no more than those identified in Article III. In the event that Newaukum is unwilling or unable to maintain deliveries as required under this provision, Chehalis may install and operate flow restricting devices at non-compliant points of delivery all at Newaukum expense.

Section 4.02 Responsibility for Operating Newaukum Transmission Facilities

Newaukum is served by transmission facilities referred to as the Newaukum System listed in Exhibit A, as provided by Newaukum. The costs of operating, maintaining, repairing and replacing these facilities shall be the responsibility of Newaukum.

Section 4.03 Newaukum Transmission System

Nothing herein shall restrict Newaukum's authority to construct an independent water transmission system for its own water supply.

Article V. Water Quality

Chehalis shall be responsible for water quality within the Chehalis Water System, and it shall supply water to Newaukum that meets or exceeds federal and state drinking water quality standards, as those standards may change from time to time.

Article VI. Conservation

Each Party is committed to the principles of water conservation and each intends to achieve its anticipated savings by implementing water conservation programs either unilaterally or in partnership with other agencies.

Article VII. Planning and Shortage Management

Section 7.01 Obligations

Each Party recognizes its obligation to plan for water supply and distribution in compliance with the Washington State Department of Health water system planning regulations. Each Party shall develop a water system plan for its service area and the Parties shall coordinate those elements of overlapping responsibilities.

Section 7.02 Coordination

Newaukum and Chehalis shall coordinate the development, adoption and implementation of their respective Water Shortage Response Plans. Before invoking its Water Shortage Response Plan, the Parties shall communicate with each other concerning current and projected water supply conditions.

Article VIII. Cost Recovery

Section 8.01 Administration

The provisions of this Article shall apply to the establishment of fees and charges for water supply and related services beginning the effective date of this agreement.

Section 8.02 Cost of Water

Chehalis shall bill Newaukum for water supplied by monthly invoice due and payable within thirty days of the date thereof. The unit cost of water supplied will be that established by City of Chehalis Municipal Code (CMC) Chapter 13.12. Water rates charged to commercial customers located outside of city limits shall apply to Newaukum, as set forth in CMC 13.12.120.

Section 8.03 Surcharge

In any calendar year that Newaukum exceeds the Annual Total Supply, Newaukum's water rates will be subject to a 100% surcharge, for that volume in exceedance of the Annual Total Supply.

Section 8.04 Water Rate Payment

Chehalis and Newaukum shall conduct business by the scheduled as follows:

- A. **Billing.** Chehalis shall submit the billing for the water use by the end of the month following the master meter reading.
- B. **Payment of Billing.** Newaukum shall submit payment to Chehalis by the 20th of the month following the billing. Overdue balances shall bear interest at the rate of 10% per month.

- C. Emergency Surcharge. In the event of a catastrophe or other extraordinary condition that requires emergency expenditures to maintain a sufficient water supply, Chehalis may impose an emergency surcharge proportionately on all of its retail and wholesale customers, including Newaukum in order to pay for such expenditures. Any such emergency surcharge shall be presented to Newaukum prior to adoption by Chehalis. Chehalis shall consider Newaukum's comments but shall nevertheless have the full authority to adopt the charge.

Section 8.05 Existing Authorized Connections

Chehalis recognizes 203 connections to the Newaukum water system, as stated by Newaukum. During the term of this agreement, Chehalis does not support or authorize additional connections to the system.

Article IX. Administration

Section 9.01 Metering

Chehalis shall own and maintain appropriate metering devices to measure the water flowing from the Chehalis Water System to the Point of Delivery. At Newaukum's request and sole expense, Chehalis will install and maintain equipment selected by Newaukum and approved by Chehalis to transmit signals to recording equipment of Newaukum or its customers (located elsewhere) of the amount of water delivered, as measured by Chehalis' meters.

Section 9.02 Accounting Procedures

Chehalis shall keep full and complete books of accounts for the Chehalis Water Supply System and Chehalis's retail distribution system in compliance with current standards required by the Washington State Auditor. Newaukum, at its own expense, may at any time audit Chehalis's book of accounts using the services of a public accounting firm and Chehalis shall make the books and records of the Chehalis Water System and Chehalis's retail distribution system available to such auditors during reasonable business hours upon reasonable notice at the place where such records are normally kept. Chehalis shall provide adequate facilities; i.e., room and workspace, so the audit can be performed. Chehalis shall have reciprocal rights to audit Newaukum books and accounts.

Section 9.03 Legal

This Agreement shall be interpreted according to the laws of the State of Washington and the venue for any litigation between the Parties concerning its terms shall be in the Superior Court of Lewis County at Chehalis. The Parties shall be entitled to specific performance of the terms of this Agreement.

Section 9.04 Successors and Assigns

This Agreement shall inure to the benefit of and be binding upon successors of interest and assigns of the Parties. Neither this Agreement nor obligations to perform hereunder may be voluntarily assigned by either Party without the other Party's written consent, which shall not be unreasonably withheld; provided however, that a change in Newaukum's corporate form; e.g., from inter-local organization to another form of organization authorized by Washington law, shall not be considered an assignment. Chehalis may not convey the Chehalis Water System or

its component parts without providing for an assumption of this Agreement and the obligations contained herein by the conveyee. The Parties do not intend to confer rights or benefits upon any third party. Only a writing executed by the Parties may modify this Agreement.

Section 9.05 Contact Information

All notices relating to this Agreement shall be sent to the following addresses, certified mail, return receipt requested, unless the other party is previously notified in writing of a change in recipient or address:

To Chehalis:
Chehalis Public Works Dept.
2007 NE Kresky Avenue
Chehalis, WA 98532

To Newaukum:
Board of Directors
Newaukum Hill Water Association
169 Devereese Road
Chehalis, WA 98532

Section 9.06 Validity of Agreement

If any provision of this Agreement or its application is determined by a court of law to be illegal, invalid, or void without rendering performance of this Agreement impossible or infeasible, then the Parties intend that the validity of the remaining provisions of this Agreement or their application shall not be affected and shall continue in full force and effect.

Section 9.07 Purpose of Agreement

This Agreement is a contract for the purchase and sale of water supply and no provision hereof shall be construed to make the Parties partners or joint ventures. Neither Party is the agent of the other, nor shall either Party be held liable for the acts of the other on a theory of agency or any other representative capacity.

This Agreement replaces the prior Water Purchase Contract between Chehalis and Newaukum, dated July 20th, 1973.

Section 9.08 Default Provisions

In the event of default of any provision of this Agreement, the non-defaulting Party shall issue written notice to the other Party setting forth the nature of the default. If the default is for a monetary payment due hereunder, the defaulting Party shall have thirty (30) days to cure the default. In the event of other defaults, the defaulting Party shall use its best efforts to cure the default within ninety (90) days. If such default cannot be reasonably cured within such ninety (90) day period, the defaulting party shall, upon written request prior to the expiration of the ninety (90) day period be granted an additional sixty (60) days to cure the default.

Article X. Technical Committee

A Technical Committee comprising Chehalis staff, Newaukum staff and other affected parties will address day to day operational issues related to the Chehalis and Newaukum Water Systems. Finance cost and rate issues will be addressed independently between the Chehalis Public Works Director and the General Manager of Newaukum Hill Water Association, or their respective designees as provided for in written notice to the other. It is recognized that daily operation of

the Chehalis and Newaukum Water Systems may require direct communication between Chehalis staff and the staff of the Newaukum system.

Article XI. Dispute Resolution

Section 11.01 Primary Procedures

Newaukum and Chehalis shall make good faith efforts to resolve by informal discussion any dispute arising under or in connection with this Agreement. If at any time, a Party to a dispute determines that such informal discussions will not result in a resolution; such party may initiate non-binding mediation of any dispute arising under or in connection with this Agreement. Within ten (10) days of receiving written notice of initiation of non-binding mediation by one or both Parties, each party shall designate in writing not more than five (5) candidates it proposes to act as a non-binding mediator. The Parties shall within an additional five (5) days select one of the mediators from either list to serve as mediator. Should the parties be unable to agree upon a mediator, a mediator shall be chosen from one of the two lists by the presiding judge of the Lewis County Superior Court at Chehalis. Upon selection of the mediator; the Parties shall use reasonable efforts to resolve the dispute within thirty (30) days with the assistance of the mediator. The cost of mediation shall be shared by Newaukum and Chehalis equally.

Section 11.02 Secondary Options

If mediation fails to resolve the dispute within thirty (30) days of selection of the mediator, the Parties may thereafter seek redress in court.

Section 11.03 Responsibilities

Pending the decision in any mediation or litigation process pursuant to this section, the Parties to such process shall continue to fulfill their respective duties under this Agreement.

Article XII. Emergency Events

Section 12.01 Rights and Responsibilities

The Parties recognize that unforeseen and unavoidable events may occur which would require Chehalis to act unilaterally for what it deems to be in the best interest of the general public served by the Chehalis Water System; including water shortages resulting from drought circumstances and temporary reduction in water supply associated with turbidity events. Upon the occurrence of an unforeseen or unavoidable event, Chehalis shall, to the extent practicable, treat its wholesale and retail customers equally and any curtailment of supply shall be imposed proportionately among those customers. This authority to act unilaterally carries with it a unilateral responsibility of Chehalis to restore, expeditiously, the Chehalis Water System to its pre-emergency capability to supply the region.

Section 12.02 Unavoidable Events

Upon occurrence of an unforeseen or unavoidable event that adversely impacts the Newaukum Water System, Newaukum may request Chehalis to temporarily modify or suspend operational

or supply provisions of this Agreement and Chehalis shall make reasonable efforts to grant such request. Newaukum will act expeditiously to restore the Newaukum Water System to its pre-emergency capability.

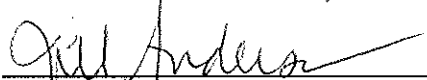
Section 12.03 Time Limitations

The time periods for Chehalis's performance under any provisions of this Agreement shall be extended for a reasonable period of time during which Chehalis's performance is prevented, in good faith, due to fire, flood, drought, turbidity events, earthquake, lockouts, strikes, embargoes, acts of God, war and civil disobedience. If this provision is invoked, Chehalis agrees to immediately take all reasonable steps to alleviate, cure, minimize or avoid the cause preventing such performance.

Article XIII. Complete Agreement

This Agreement represents the entire agreement between the parties concerning the subject matter hereof.

THE CITY OF CHEHALIS, a municipal corporation

BY: 
CITY MANAGER, CITY OF CHEHALIS

DATE: 4-26-17

BY: 
GENERAL MANAGER, NEWAUKUM HILL WATER ASSOCIATION

DATE: 4-27-17

WATER SERVICE AGREEMENT

THIS AGREEMENT, made and entered into this 22nd day of August, 1983, by and between CITY OF CHEHALIS, WASHINGTON, a Municipal corporation, herein called City, and THOUSAND TRAILS, INC., a Washington corporation, herein called User,

W I T N E S S E T H:

WHEREAS, City has heretofore been providing to User untreated water for domestic use from the City's raw water transmission line, and

WHEREAS, the parties are desirous of contracting the fees and charges User is to pay for said raw water, Now, Therefore,

For and in consideration of the mutual covenants and promises herein contained, and other valuable consideration, the parties agree:

1. City agrees to provide and sell to User, pursuant to the terms and provisions of this Agreement, untreated water for domestic purposes from the City's raw water transmission line.
2. All water sold hereunder shall be metered by a one inch meter which has previously been installed at User's place of business. User shall pay to City for the purchase of water a monthly fee and charge to be computed as follows:

First 1,350 cu.ft.	-	\$12.04
Next 2,400 cu.ft.	-	.60 per 100 cu.ft.
Next 18,000 cu.ft.	-	.57 per 100 cu.ft.
Next 55,000 cu.ft.	-	.54 per 100 cu.ft.
All Additional Consumption	-	.52 per 100 cu.ft.

Said fees and charges shall be paid on or before the 20th day after date of billing.

3. User shall install, own and operate its own water filtration facility pursuant to applicable government statutes, rules and regulations.

4. City makes no representations as to the amount of water available from the raw water transmission line, the

amount of water pressure or the quality of the water therein. User agrees to hold City harmless from any and all liability of every kind and nature for personal injury, sickness, death or property damage that may result by reason of User's use of water purchased from City.

6. User shall pay the full cost of all maintenance, repair and replacement of pipes and laterals used for water transmission from the point the same connects with the City's raw water transmission to User's premises.

7. The provision of water pursuant to this Agreement may from time to time be interrupted either by the City or by reasons beyond the control of City. In the event of such interruption by the City for repairs or maintenance to the raw water transmission line, City shall notify User of such interruption not less than twenty-four (24) hours prior to such interruption. In the event interruption of water service shall be for a reason beyond the control of City, City shall have no responsibility or liability for lack of notification of such interruption.

8. This Agreement may be terminated by either party hereto. If terminated by City for any reason other than non-payment of water service charges, such termination shall be effective on the ninetieth (90th) day after written notice of such termination is served upon User by City. In the event termination is for non-payment of fees and charges provided herein, termination shall be effective on the fifteenth (15th) day after written notification thereof is served on User by City. In the event termination is by User, such termination shall be effective on the thirtieth (30th) day after service of written notification thereof to City.

9. All notice required hereunder shall be in writing and be served on either party by personal service or by certified mail, postage prepaid, return receipt requested. The effective day of such service shall be the date of personal service thereof or the date of posting of said certified mail. Personal service may be effected upon any officer or resident manager of User or upon the City Manager or Water-Sewer Superintendant of City.

10. The terms and provisions of this Agreement may be amended from time to time by the parties. It is contemplated that the fees and charges provided herein shall be changed periodically by City. Any such change shall be predicated upon a change in the cost of providing water to User.

This Agreement is made in contemplation of Ordinance No. 203-B of the City of Chehalis, Washington, providing for the operation and regulation of the public water system of the City. In the event any of the terms and provisions of this Agreement shall be in conflict with said ordinance, the terms and provisions of said ordinance shall control.

Executed in duplicate in the date and year first above written.

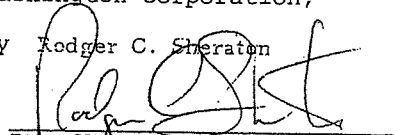
CITY OF CHEHALIS, WASHINGTON,
a Municipal corporation,

By


Its City Manager

THOUSAND TRAILS, INC., a
Washington corporation,

By Rodger C. Sheraton


Its Vice President,
Construction & Engineering

RECEIVED
NOV 6 1978
CHEHALIS CITY CLERK

PERSONAL SERVICES AGREEMENT

THIS AGREEMENT made and entered into this 30th day of October, 1978, by and between THOUSAND TRAILS, INC., a Washington corporation, a division of Pacific Rim Group, Inc., a Washington corporation, herein called Owner, and CITY OF CHEHALIS, WASHINGTON, a Washington corporation, herein called City,

WITNESSETH:

WHEREAS, Owner has constructed a water purification plant for the filtering and distribution of water for domestic purposes upon Owner's development in Lewis County, Washington, and

WHEREAS, City has heretofore agreed to sell to Owner raw water for domestic purposes from City's north fork waterline, and

WHEREAS, Owner is desirous of training its employees as water filter plant operators in order that it may meet regulations of the Washington State Department of Social and Health Services for water filter plant operation, and

WHEREAS, City has agreed to oversee the operation of Owner's water filter plant and the training of Owner's employees as water filter plant operators until said employees can qualify pursuant to state regulations, now, therefore,

For and in consideration of the mutual covenants and promises herein contained, and other valuable consideration,

THE PARTIES HERETO DO HEREBY AGREE as follows:

1. City does hereby agree to oversee the operation and maintenance of Owner's water filtration plant situate upon Owner's development in Lewis County, Washington. Said services shall include sampling and testing of water and training of employees during their qualification as water filter plant operators pursuant to standards established by the Washington State Department of Social and Health Services.
2. Owner does hereby agree to pay to City for the services

rendered hereunder by employees of the City the actual cost of labor and benefits paid to, or on behalf of, employees of the City, including transportation for use of city or employee vehicles from the City public works complex to Owner's development, and return, plus an overhead charge of 20% of said cost of labor, benefits and transportation. In addition to payment for said labor and transportation costs, Owner agrees to reimburse the City for all parts, materials and supplies at the cost thereof to the City plus an overhead charge of 20%. City shall send statements of all charges for services rendered hereunder and materials furnished hereunder to Owner on or before the 30th day of each month. Owner agrees to pay said statement of charges to City on or before the 10th day of the month next succeeding the month said services were rendered or materials furnished.

3. Owner does hereby agree to hold City harmless from any and all liability of every kind and nature which may occur by reason of the operation of Owner's water filter plant or by reason of the furnishing of personal services hereunder by City.

4. This agreement may be terminated at any time by either of the parties hereto, provided however, written notice of such termination shall be furnished to the nonterminating party not less than fifteen (15) days prior to the effective date of such termination.

EXECUTED IN DUPLICATE on the date and year first above written.

THOUSAND TRAILS, INC., a Washington corporation, a division of Pacific Rim Group, Inc., a Washington corporation,

By [Signature]
Its President

Attest [Signature]
Owner [Signature]
Its City Manager

CITY OF CHEHALIS, WASHINGTON, a Washington corporation

By [Signature]
Its City Manager

Keough, Julie

From: Keough, Julie
Sent: Monday, November 22, 2010 6:43 PM
To: 'Dave Vasilauskas'
Subject: RE: Water Shed

Dave,

WY and the City no longer have a formal written agreement. I believe the agreement expired about 10 years ago. That said, we still operate under the terms of the original agreement.

Here's what we do to protect the watershed:

- The Vail tree farm is gated and locked. Public, motorized access is limited to 4 or 5 weekends per year. Non-motorized access is allowed most other times.
- Vail publishes a recreation map for purchase by the general public. The watershed is identified on that map and is labeled "no entry".
- Before conducting any forest practices activities, we use a "Municipal Watershed Risk Analysis Chart" to identify risk level. The analysis is a required part of our environmental management system. The analysis asks the question "How likely is it that planned activity will result in an undesirable environmental impact?" It examines frequency of the activity as well as possible outcomes. Based on the risk score, certain actions are required. This is not a public document, so I can't provide a copy. However, it is a required process every time we submit a forest practices application within the watershed.

I hope this is helpful. Please let me know if you have any questions.

Julie Keough
Forest Land Use Manager
Central WA Operations
Phone: 360-446-3870
Fax: 360-446-2094

From: Dave Vasilauskas [<mailto:dvasilauskas@ci.chehalis.wa.us>]
Sent: Tuesday, November 16, 2010 9:24 AM
To: Keough, Julie
Subject: Water Shed

Julie,

We are in the process of completing our 6 Year Water System Plan (WSP) for the Department of Health. Some information needed in the plan is Watershed Management and Control Measures, on the N. Fork of the Newaukum River. Can you please send me any information you have with Weyerhaeuser and the City of Chehalis agreements, Source Water Protection Area, Land Use and anything else we may need that would be good information for the plan.

Thank you for your help with any information.

Dave

Dave Vasilauskas, Water Superintendent
2007 NE Kresky
Chehalis WA 98532
360.748.0238, Fax: 748.0694
email: dvasilauskas@ci.chehalis.wa.us

North Fork Newaukum / Centralia-Chehalis Watershed Plan

Weyerhaeuser Company has provided Washington State Department of Natural Resources with projected harvest and roading plans for the North Fork Newaukum drainage above the city water intakes (see maps titled "Harvest Plan North Fork Newaukum" and "Roading Plan North Fork Newaukum" both dated 2/2/90). These plans project harvest from 1990 through 1995. Weyerhaeuser has also made a projection of harvest sequence based on a maximum clearcut size of 120 acres, four years of green up between clearcuts and attempted to minimize stream side logging within any one year. This exercise indicated Weyerhaeuser will need approximately 30 years to cut the second growth stands currently in the basin. DNR recognizes that these plans are only projections, which will need to be modified to reflect on-the-ground conditions. As a result, DNR will schedule an annual plan review of progress and changes to the plan.

Weyerhaeuser agrees to apply practices as outlined by the Washington Forest Practices Rules and Regulations and the TFW agreement. Weyerhaeuser agrees to:

1. Minimize midslope roading.
2. No side cast on steep slopes or unstable soils.
3. Suspend road construction when conditions are too wet.
4. Size all culverts to 100 year flood capacity.
5. Install energy dissipaters on culvert outlets where needed.
6. Abandon short spur roads where it makes sense to protect water quality.
7. Survey the road systems ASAP following major storms or at least annually for road maintenance needs.
8. Maintain all ditches and drainage structures on an annual basis and have them functional prior to October 1st.
9. In areas or on roads that have potential to affect water quality, restrict yarding and hauling to the drier seasons.
10. Promptly regenerate all clearcuts within 2 years of harvest with 1 year the norm.
11. Leave UMA's at a minimum of 1 acre per 80 acres of clearcut.
12. Meet or exceed Forest Practices Act RMZ requirements.
13. Seek ways to provide snags and/or wildlife trees.
14. Avoid disturbance of identified unstable areas.
15. All puncheon culverts will be replaced on roads associated with active forest practices applications prior to hauling.
16. Perched landings will be stabilized during the current operating season.

This plan specifically does not address herbicide or fertilizer application and Weyerhaeuser, DNR, and cities of Centralia and Chehalis recognize that any plans for these types of applications would require a separate review as provided for by the Forest Practices Act and TFW. Burning permits shall also be subject to forest practices review. The DNR may deny proposed burns if necessary to protect water quality.

DNR agrees to keep the cities of Centralia and Chehalis informed of all proposed forest practices in the Watershed and to include them in annual plan reviews. Weyerhaeuser intends to keep the cities informed of our plans and activities and to cooperate with them to maintain water quality.

AGREED TO BY:

360-262-3113 For Spills

John C. Helm 7/27/90
Weyerhaeuser Company / Date

Bi. M. 8-14-90
City of Centralia / Date

Eugene Nielsen 7-27-90
Dept of Natural Resources / Date

Daniel M. Campbell 8-16-90
City of Chehalis / Date

Appendix C – Chehalis Municipal Code

WATER STANDARD DETAILS

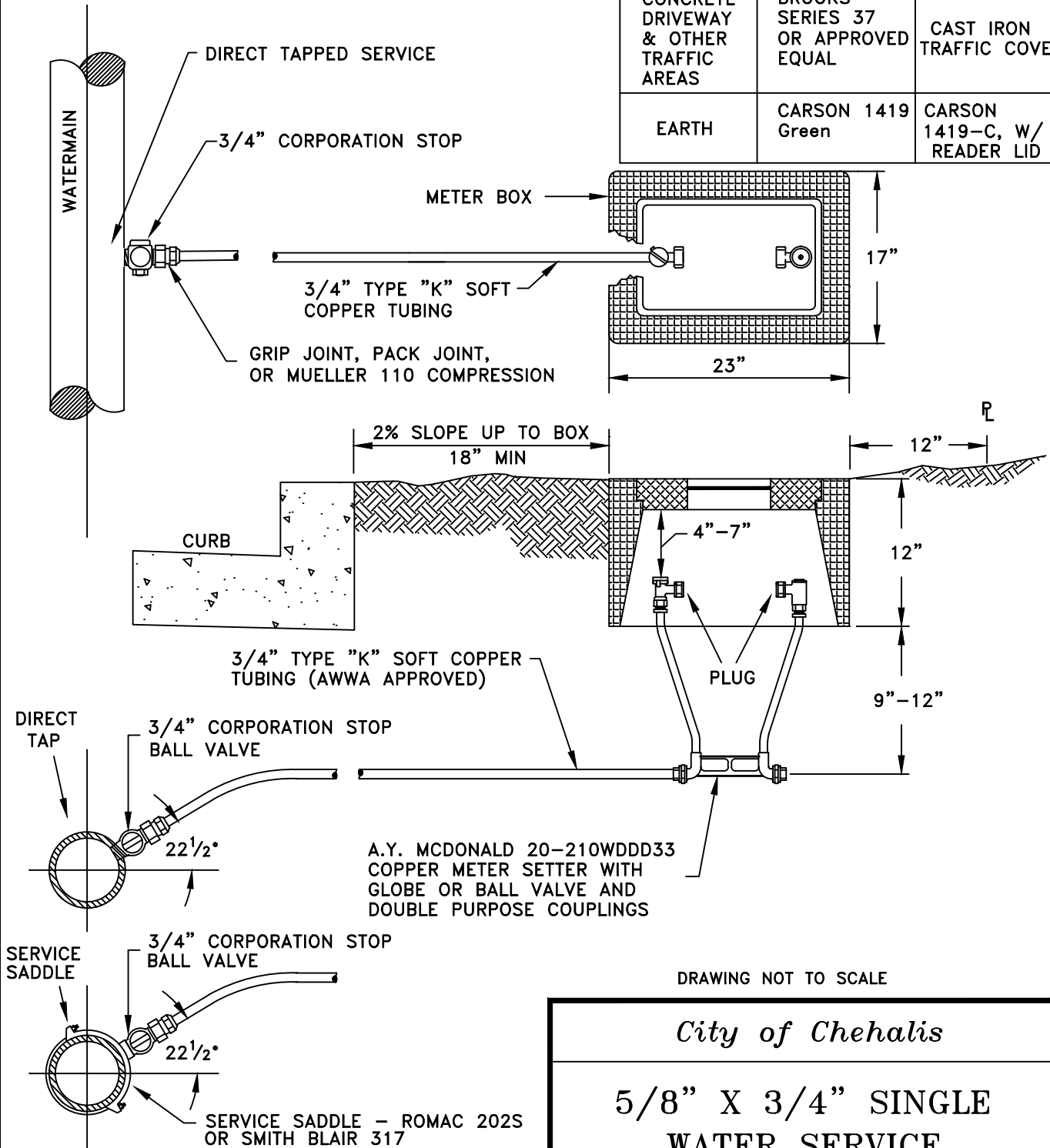
MUNICIPAL CODE TITLE 13.04 WATER SYSTEM

MUNICIPAL CODE TITLE 13.12 CHARGES, RATES
AND FEES FOR WATER SYSTEM

DEVELOPMENT GUIDELINES AND PUBLIC WORKS
STANDARDS

* IF THE CITY UTILIZES A TOUCH READ METER SYSTEM, SPECIAL LIDS MAY BE REQUIRED ON NEW METER BOX INSTALLATIONS.

ENVIRONMENT	METER BOX	LID TYPE*
CONCRETE SIDEWALK	BROOKS SERIES 37 OR APPROVED EQUAL	CONCRETE
CONCRETE DRIVEWAY & OTHER TRAFFIC AREAS	BROOKS SERIES 37 OR APPROVED EQUAL	CAST IRON TRAFFIC COVER
EARTH	CARSON 1419 Green	CARSON 1419-C, W/ READER LID

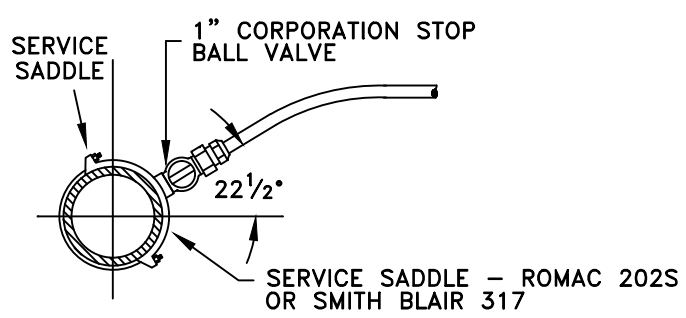
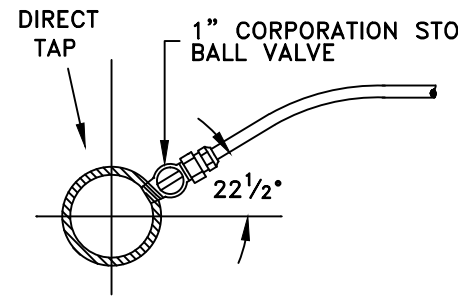
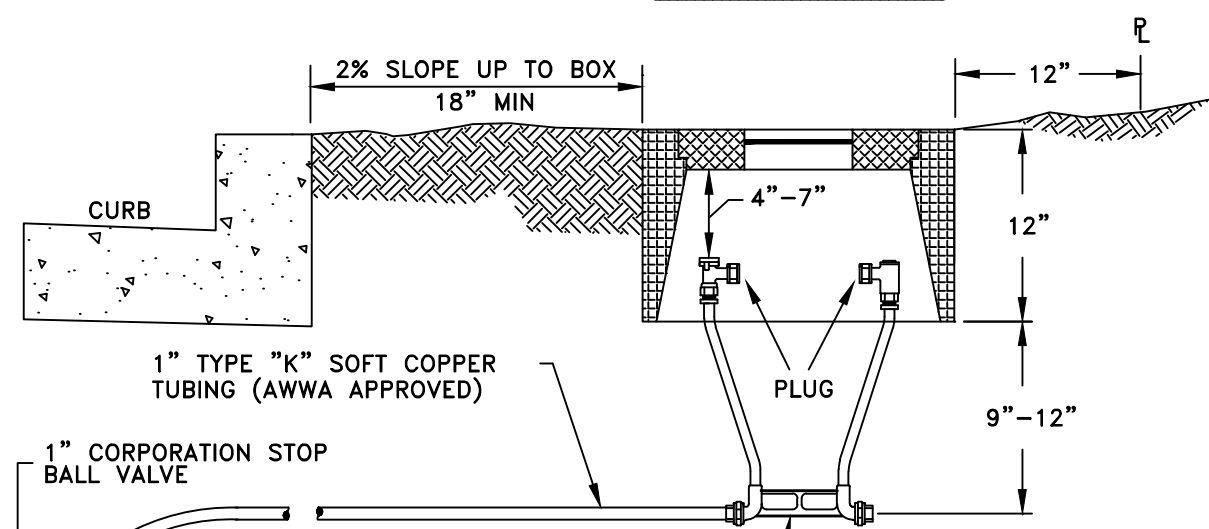
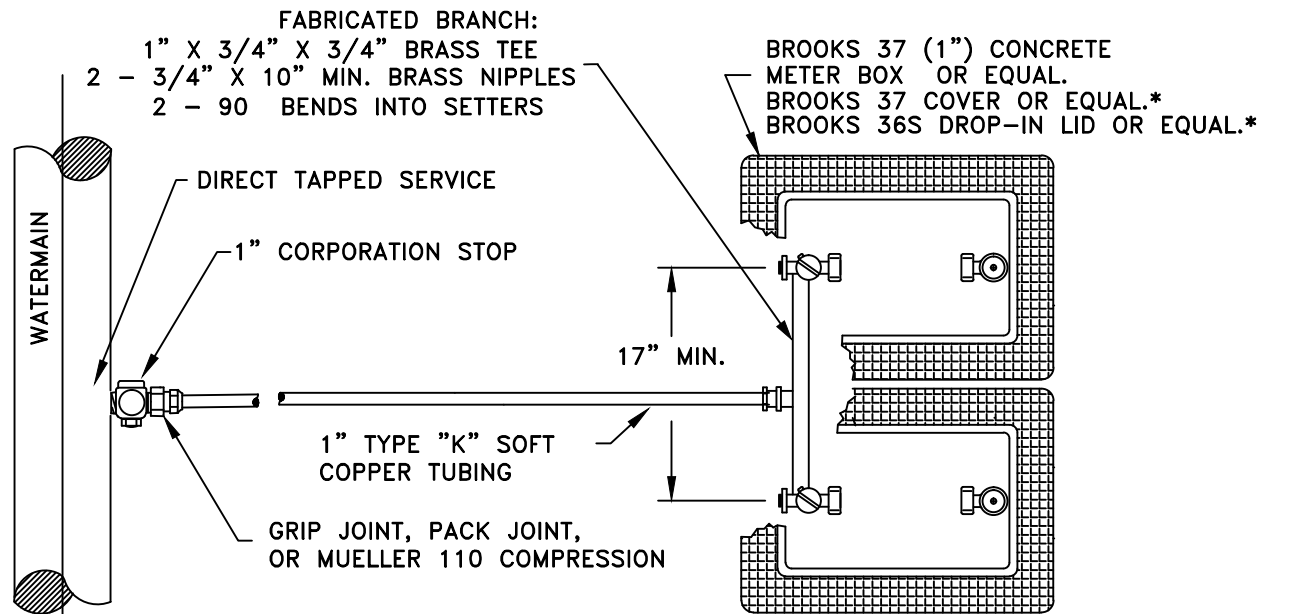


DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
5/8" X 3/4" SINGLE WATER SERVICE	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-1
CITY ENGINEER	REVISED DATE
	1/02/2003

NOTES:

- CORPORATION STOPS SHALL BE ALL U.S. BRASS, & SHALL BE FORD, MUELLER, OR A.Y. MCDONALD W/ THREADS CONFORMING TO AWWA C-800.
- ALL SERVICE SADDLES SHALL HAVE RUBBER GASKET, I.P. THREADS, & STAINLESS STEEL DOUBLE STRAPS.



A.Y. MCDONALD 20-210WDDD33
COPPER METER SETTER WITH
GLOBE OR BALL VALVE AND
DOUBLE PURPOSE COUPLINGS

* IF THE CITY UTILIZES A
TOUCH READ METER SYSTEM,
SPECIAL LIDS MAY BE REQUIRED
ON NEW METER BOX INSTALLATIONS.

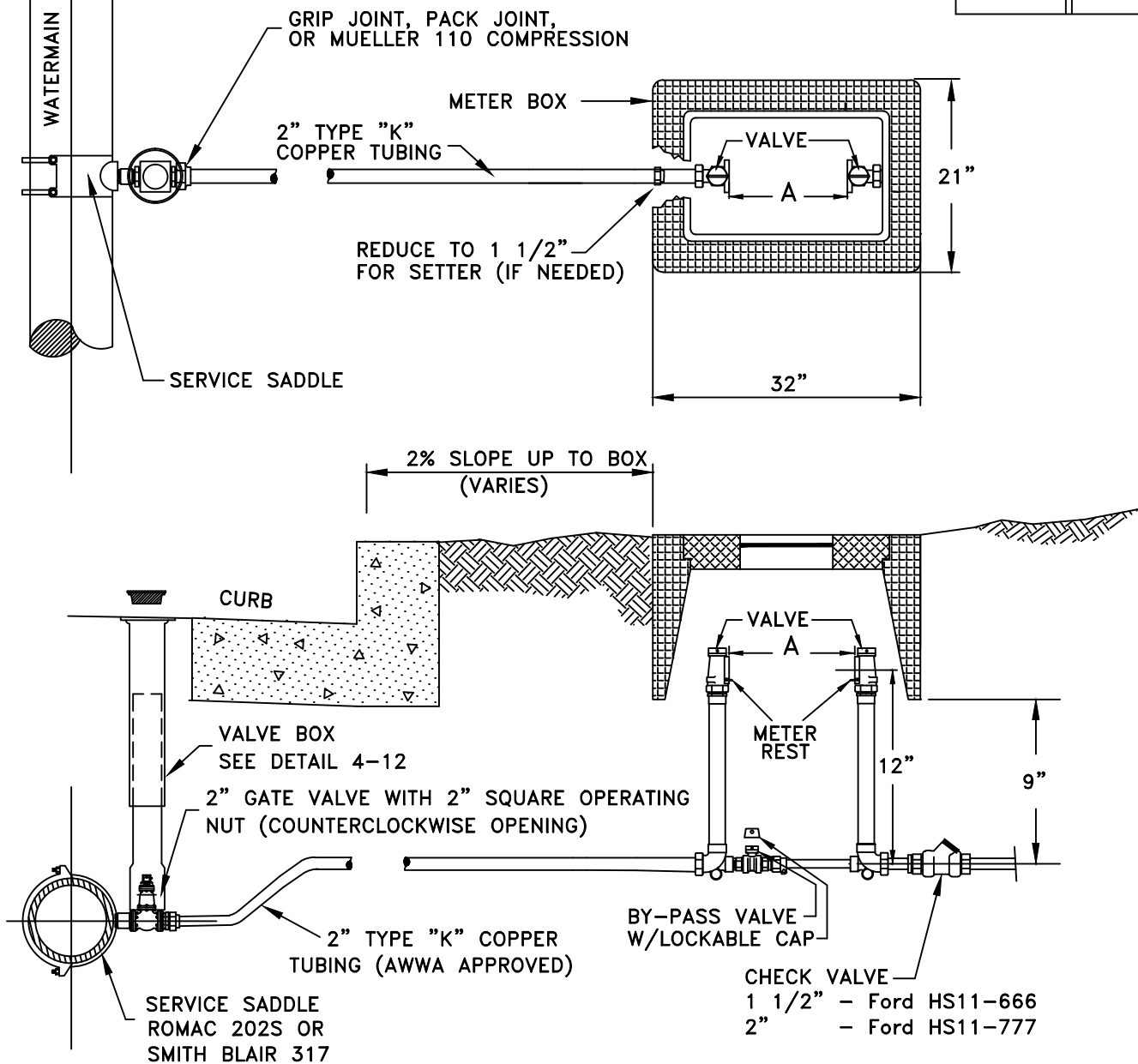
NOTES:

1. CORPORATION STOPS SHALL BE ALL U.S. BRASS, & SHALL BE FORD, MUELLER, OR A.Y. MCDONALD W/ THREADS CONFORMING TO AWWA C-800.
2. ALL SERVICE SADDLES SHALL HAVE RUBBER GASKET, I.P. THREADS, & STAINLESS STEEL DOUBLE STRAPS.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
1" DUAL WATER SERVICE	
APPROVED BY	DWG. NO. 4-2
<i>James R Nichols</i>	REVISED DATE
CITY ENGINEER	1/02/2003

SIZE	A
1 1/2"	13 1/4"
2"	17 1/4"

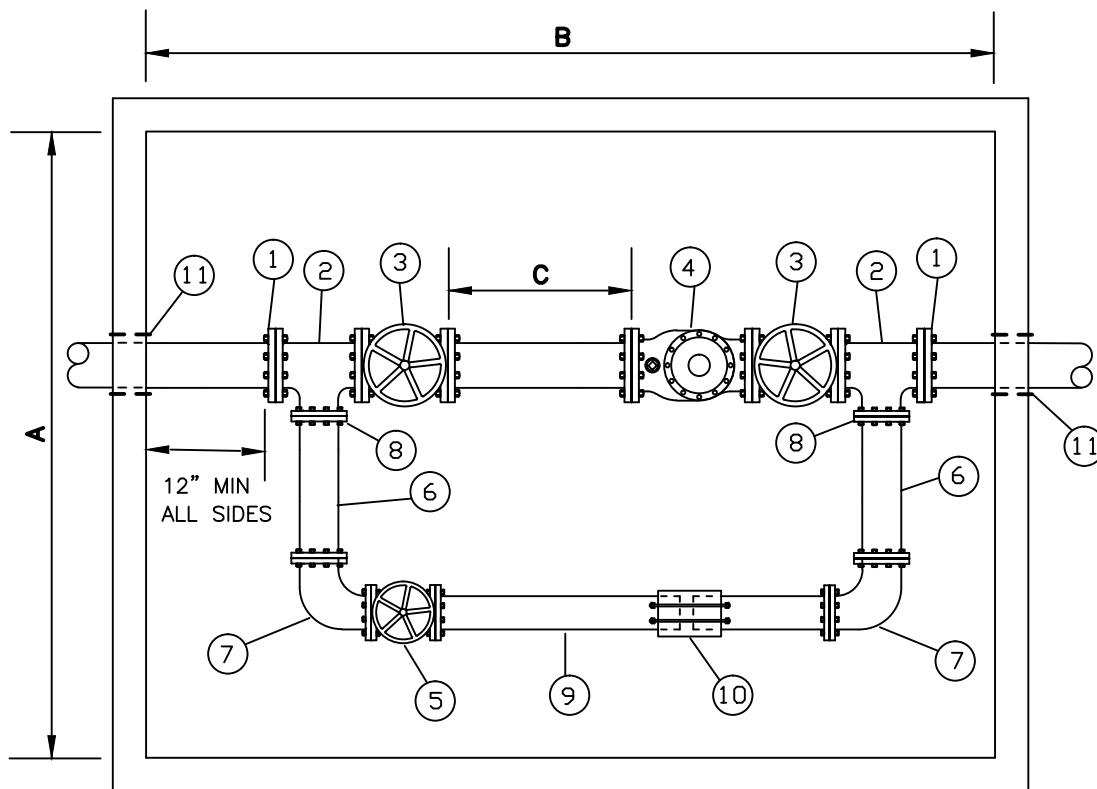


NOTES:

1. ALL SERVICE SADDLES SHALL HAVE RUBBER GASKET, I.P. THREADS, & STAINLESS STEEL DOUBLE STRAPS.
2. CITY STANDARD FOR COPPER SETTERS ARE:
 1 1/2" - FORD VVF76-12B-13-11-66
 2" - FORD VVF77-12B-17-11-77

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
1 1/2"-2" WATER SERVICE WITH BYPASS	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-3
CITY ENGINEER	REVISED DATE
	1/02/2003



METER	Minimum Dimensions			DOOR SIZE	VAULT DEPTH	TEE
	"A"	"B"	"C"			
3" Compound	3' 6"	5' 6"	15"	3' X 3'	5' 0"	3" X 1 1/2"
4" Compound	3' 6"	8' 0"	20"	3' X 3'	5' 0"	4" X 2"
6" Compound	3' 6"	8' 0"	30"	3' X 3'	5' 0"	6" X 4"
8" Compound	4' 6"	10' 0"	40"	4' X 4'	5' 0"	8" X 6"

- | | |
|--|------------------------------|
| ① FLEX X FLG COUPLING | ⑧ COMPANION FLG |
| ② ALL-FLG TEE | ⑨ BRASS OR DUCTILE IRON PIPE |
| ③ FLG RES. SEATED GATE VALVE W/HAND WHEEL | ⑩ MECHANICAL COUPLING |
| ④ COMPOUND METER | ⑪ PIPE SLEEVE |
| ⑤ GATE VALVE W/HAND WHEEL | |
| ⑥ BRASS OR DUCTILE IRON NIPPLES | |
| ⑦ 90° ELBOWS (MATERIAL TO BE SAME AS PIPE) | |

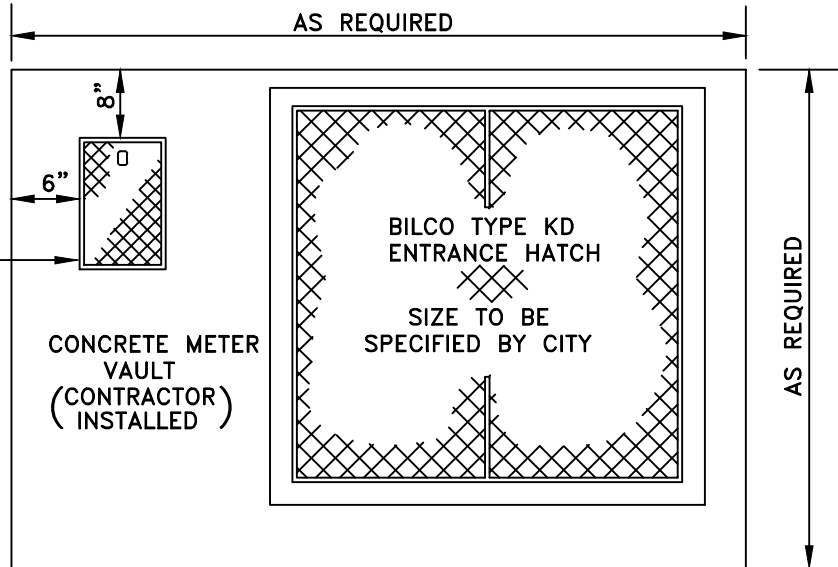
NOTES:

1. VAULT DIMENSIONS SHOWN ARE INSIDE. (MIN)
2. BACKFLOW PREVENTION IS NOT INCLUDED AS PART OF THIS DETAIL.
3. METER AND SERVICE LINE SIZES WILL VARY ACCORDING TO NEED.
4. ALL VAULTS WILL BE SUPPORTED BY ADEQUATE FOOTING OR FLOOR.
5. PIPE AND FIXTURES TO BE SET ON VALVE STANDS INSTALLED ACCORDING TO MANUFACTURERS SPECS.
6. REMOTE READER UNIT SHALL BE LOCATED IN A READILY ACCESSIBLE AREA OUTSIDE THE VAULT, AS APPROVED BY THE CITY.
7. DRAINAGE MUST BE PROVIDED FOR THE VAULT.

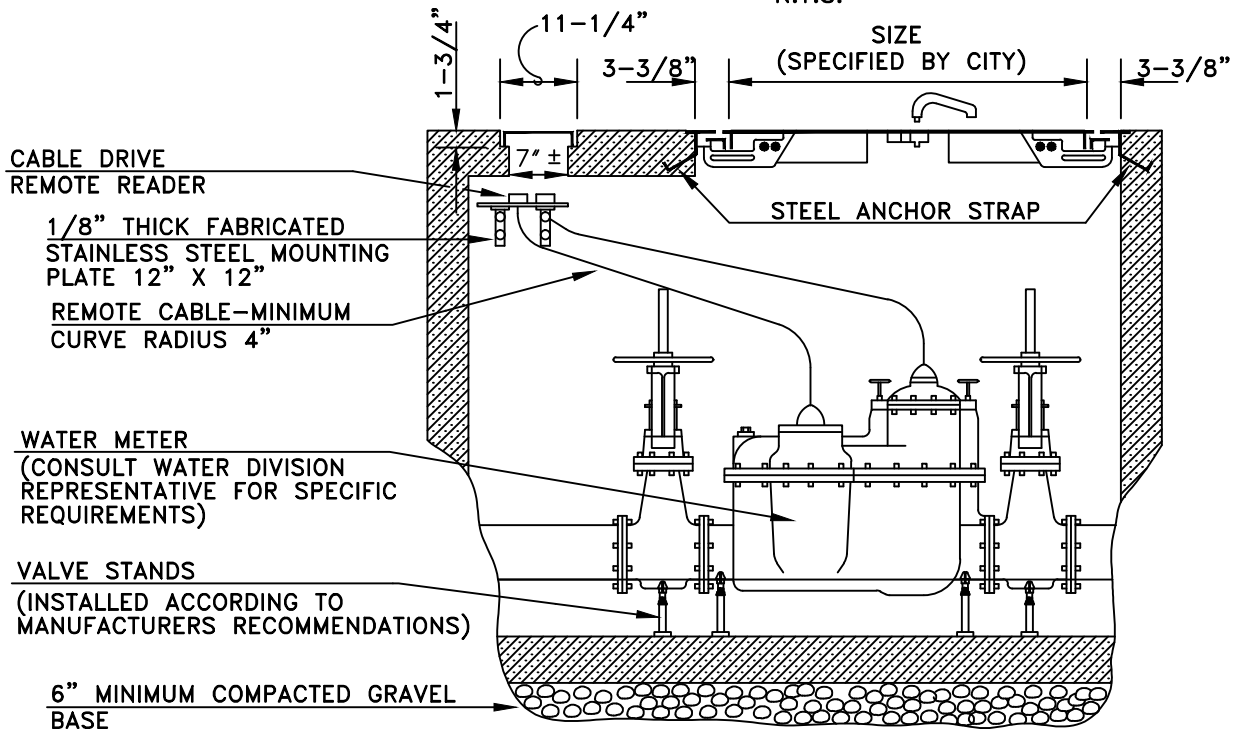
DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
COMPOUND WATER METER WITH BYPASS FOR 3"-8" WATER SERVICE	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-4
CITY ENGINEER	REVISED DATE
	1/02/2003

TRAFFIC COVER
 BROOKS #37-T
 (OR APPROVED EQUAL)



PLAN VIEW
 N.T.S.



ELEVATION VIEW
 N.T.S.

NOTES:

- 1—VAULT SHALL BE DESIGNED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF WASHINGTON
- 2—MOUNTING PLATE TO BE INSTALLED BY CONTRACTOR SO THAT ALL READING REGISTERS ARE VISIBLE THROUGH TRAFFIC COVER, AND CABLE(S) DO NOT INTERFERE WITH ACCESS TO METER.

DRAWING NOT TO SCALE

City of Chehalis

LARGE
 METER VAULT

APPROVED BY

James R Nichols

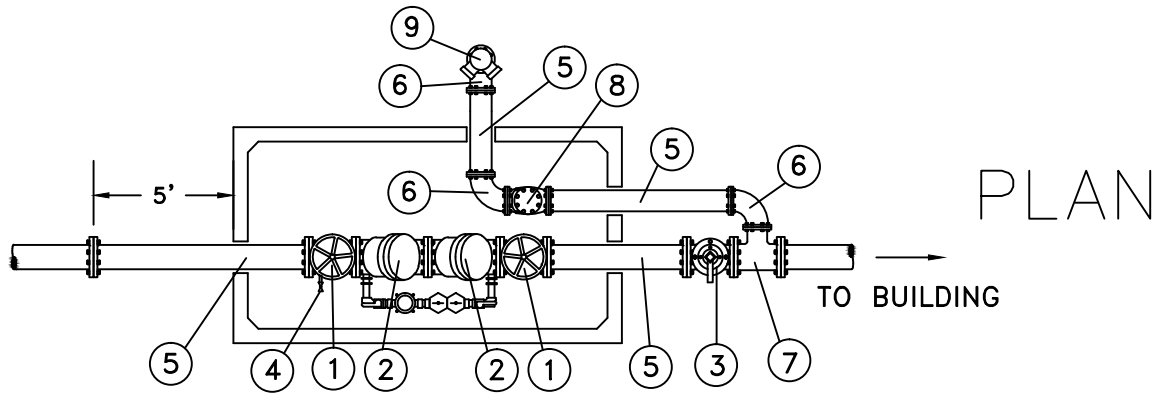
CITY ENGINEER

DWG. NO.

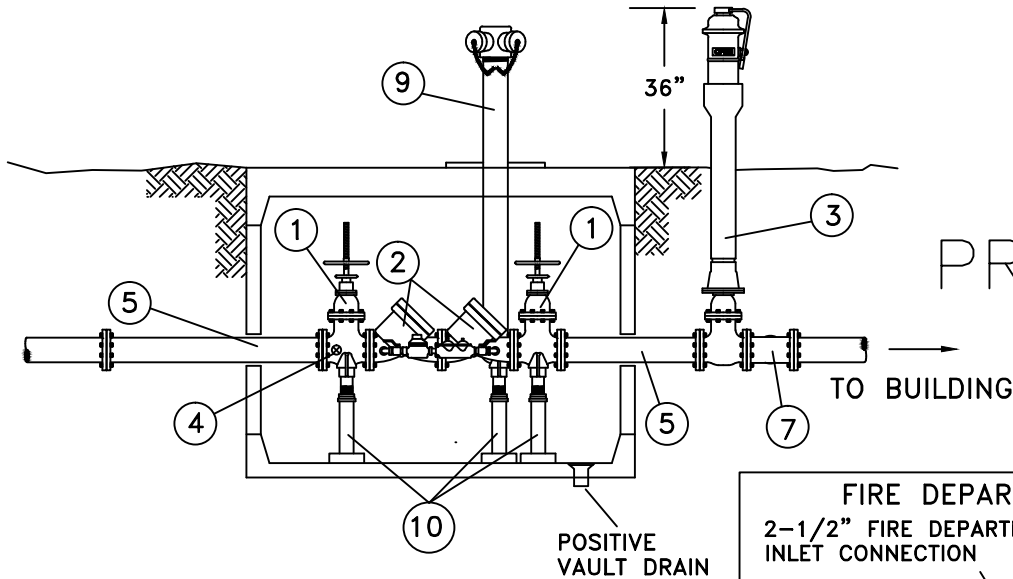
4-5

REVISED DATE

1/02/2003



PLAN



PROFILE

MATERIAL LIST:

1. OS&Y RESILIENT SEATED GATE VALVE W/HANDWHEEL FL X FL
2. DOUBLE CHECK DETECTOR (DOH APPROVED) CHECK VALVE FL X FL
3. POST INDICATOR VALVE
4. 3/4" BALL VALVE (TEST COCK)
5. CLASS 52 DI WALL PIPE FL X FL
6. CLASS 52 DI 90° BEND FL X FL
7. CLASS 52 DI TEE FL X FL
8. SWING CHECK VALVE W/BALL DRIP ASSEMBLY
9. FIRE DEPARTMENT CONNECTION
10. VALVE STANDS
11. WHERE PIPING PASSES THROUGH CONCRETE WALL PROVIDE 2" CLEARANCE W/ WATERPROOF MASTIC OR FLEXIBLE SEALANT

GENERAL NOTES:

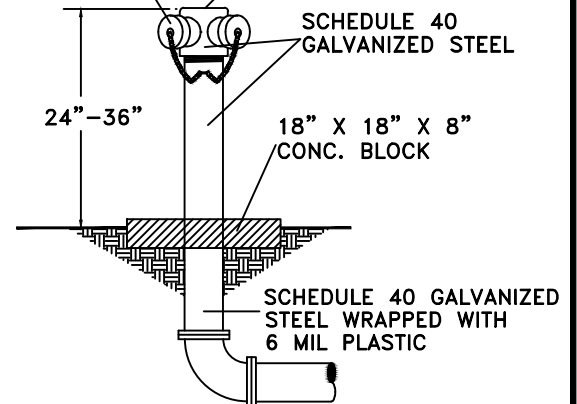
- A. PIPE FROM VAULT TO BUILDING SHALL BE CLASS 52 DI.
- B. TAMPER SWITCHES SHALL BE INSTALLED ON 1 AND 3 CONNECTED TO BUILDING FIRE ALARM SYSTEM.
- C. INSTALL PLUGS ON ALL TEST COCKS. FINGER TIGHTEN.
- D. ALL PIPING SHALL BE A MINIMUM OF 4" DIA. AS PER NFPA13.

Drawing Not to Scale

FIRE DEPARTMENT CONNECTION

2-1/2" FIRE DEPARTMENT INLET CONNECTION

RAISED LETTERS "AUTO SPRINKLER"



City of Chehalis

FIRE DEPARTMENT CONNECTION W/ DCDA FOR SINGLE SERVICE

APPROVED BY

James R Nichols

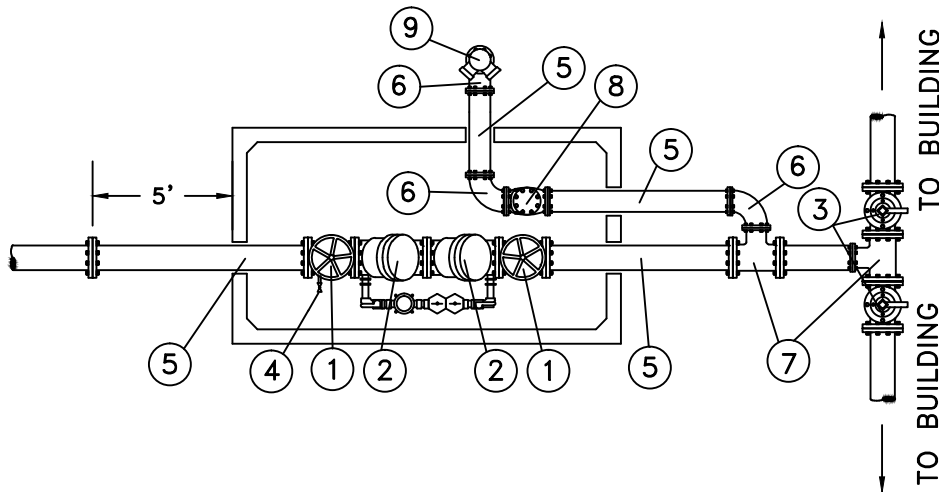
CITY ENGINEER

DWG. NO.

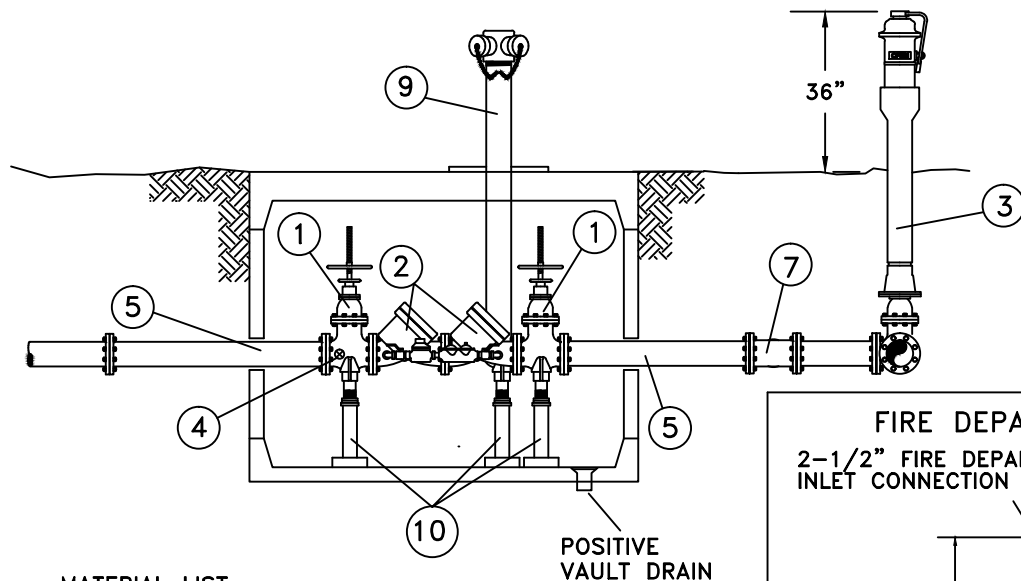
4-6

REVISED DATE

1/02/2003



PLAN



PROFILE

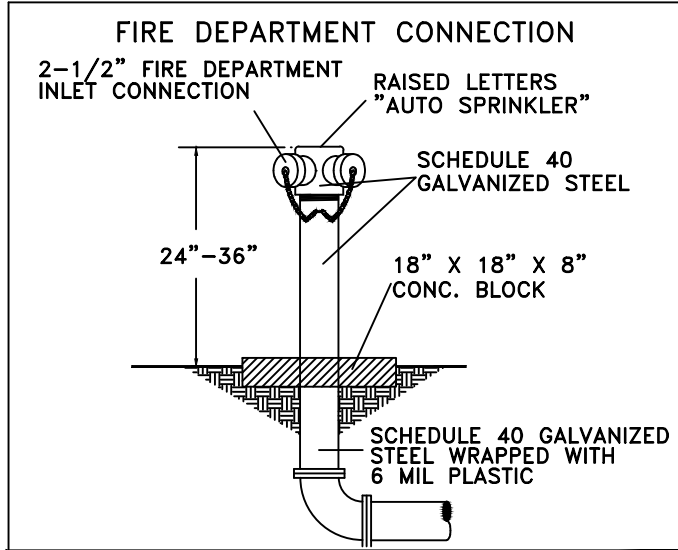
MATERIAL LIST:

1. OS&Y RESILIENT SEATED GATE VALVE W/HANDWHEEL FL X FL
2. DOUBLE CHECK DETECTOR (DOH APPROVED) CHECK VALVE FL X FL
3. POST INDICATOR VALVE
4. 3/4" BALL VALVE (TEST COCK)
5. CLASS 52 DI WALL PIPE FL X FL
6. CLASS 52 DI 90° BEND FL X FL
7. CLASS 52 DI TEE FL X FL
8. SWING CHECK VALVE W/BALL DRIP ASSEMBLY
9. FIRE DEPARTMENT CONNECTION
10. VALVE STANDS
11. WHERE PIPING PASSES THROUGH CONCRETE WALL PROVIDE 2" CLEARANCE W/ WATERPROOF MASTIC OR FLEXIBLE SEALANT

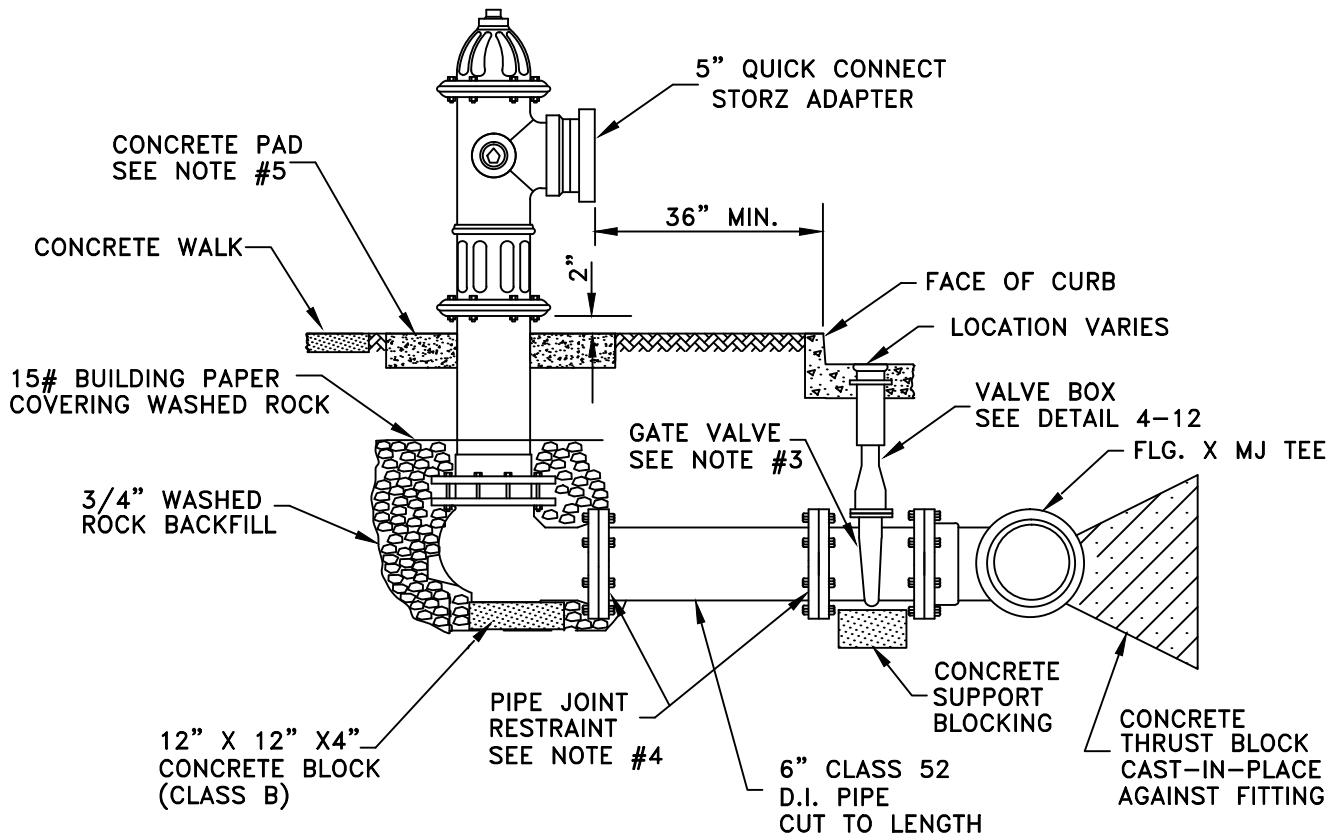
GENERAL NOTES:

- A. PIPE FROM VAULT TO BUILDING SHALL BE CLASS 52 DI.
- B. TAMPER SWITCHES SHALL BE INSTALLED ON 1 AND 3 CONNECTED TO BUILDING FIRE ALARM SYSTEM.
- C. INSTALL PLUGS ON ALL TEST COCKS. FINGER TIGHTEN.
- D. ALL PIPING SHALL BE A MINIMUM OF 4" DIA. AS PER NFPA13.

Drawing Not to Scale



<i>City of Chehalis</i>	
FIRE DEPARTMENT CONNECTION W/ DCDA FOR DUAL SERVICE	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-7
CITY ENGINEER	REVISED DATE
	1/02/2003

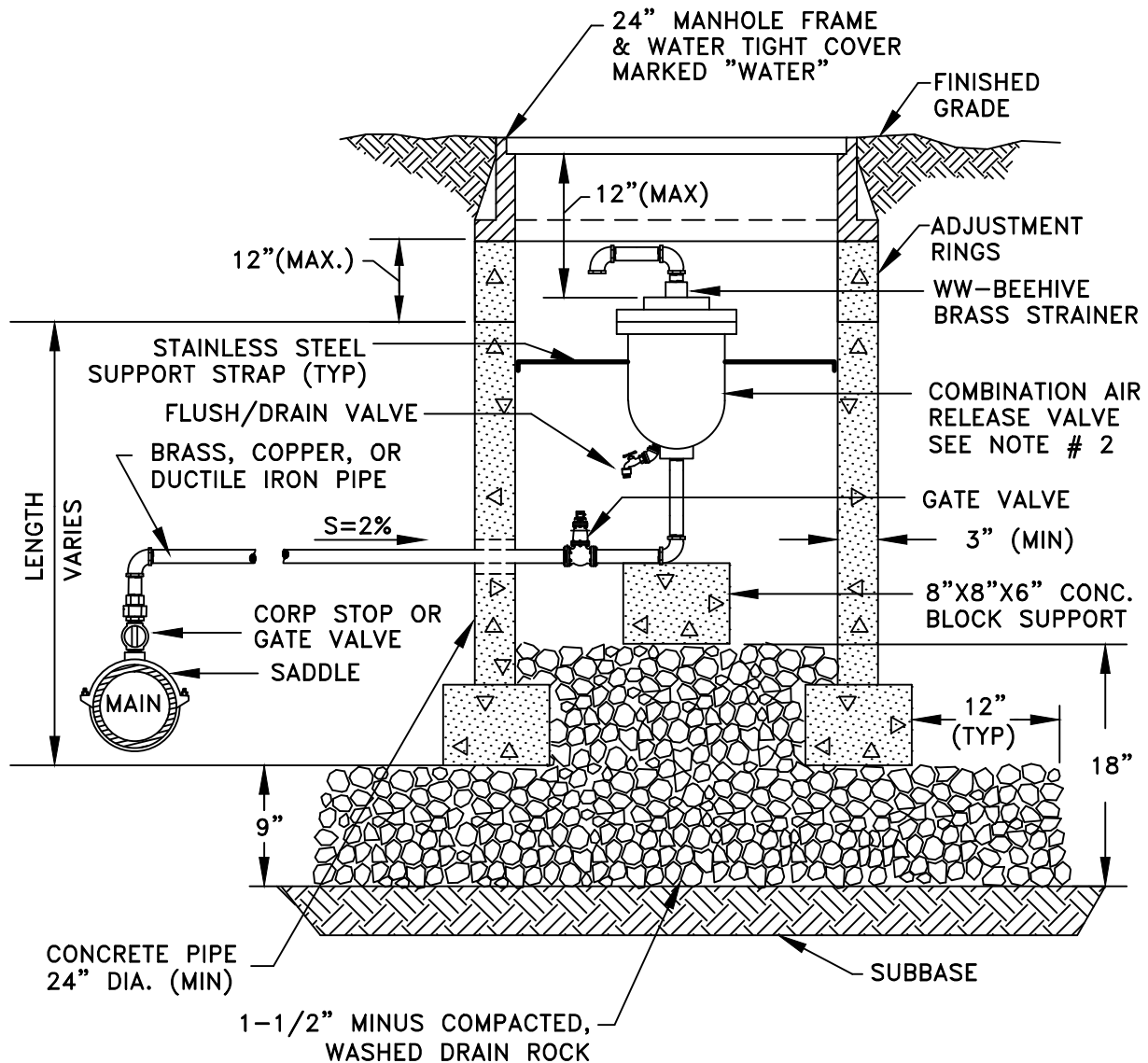


NOTES

1. HYDRANTS SHALL BE LOCATED WITHIN THE STREET RIGHT-OF-WAY, WITH A MINIMUM THREE-FOOT RADIUS UNOBSTRUCTED WORKING AREA.
2. HYDRANT SHALL BE MUELLER CENTURION A423, M & H RELIANT STYLE 929, CLOW MEDALLION, OR KENNEDY GUARDIAN K81D.
3. GATE VALVES SHALL BE RESILIENT WEDGE NRS WITH O-RING SEALS. VALVE ENDS SHALL BE MECHANICAL JOINT BY ANSI FLANGES. VALVES SHALL CONFORM TO AWWA 509-80. VALVES SHALL BE MUELLER, M&H, KENNEDY, CLOW R/W, OR WATEROUS SERIES 500.
4. EACH MECHANICAL PIPE JOINT SHALL BE RESTRAINED USING ROMAC GRIP RINGS, MEGALUG SERIES 1106 JOINT RESTRAINT, OR 3/4" DIA. GALVANIZED OR COATED STEEL RESTRAINING RODS.
5. A 4' X 4' X 8" DEEP CONCRETE PAD WILL BE Poured AROUND THE HYDRANT.
6. HYDRANT SHALL BE PAINTED SUNBURST YELLOW HIGH-GRADE ENAMEL AFTER INSTALLATION.
7. MINIMUM HYDRANT BURY SHALL BE 30".

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
FIRE HYDRANT	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-8
CITY ENGINEER	REVISED DATE
	1/02/2003



NOTES:

1. VALVE ASSEMBLY SHALL BE SET AT THE HIGH POINT OF THE LINE.
2. COMBINATION A.V./A.R. VALVE SHALL BE APCO 140 SERIES, AS DICTATED BY THE SIZE OF THE WATER MAIN.
3. A MINIMUM OF ONE 4" ADJUSTMENT RING MUST BE PROVIDED IN TRAFFIC AREA SETTINGS.
4. ADJUSTMENT RINGS AND MANHOLE RING TO BE GROUTED, WATER TIGHT.
5. ALL FITTINGS WILL BE BRASS, COPPER, OR DUCTILE IRON, DEPENDING ON THE TYPE OF PIPE USED.
6. ENCLOSURE WILL BE DESIGNED TO WITHSTAND TRAFFIC LOADS WHEN SET IN TRAFFIC AREAS.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
AIR AND VACUUM RELIEF VALVE	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-9
CITY ENGINEER	REVISED DATE
	1/02/2003

#4 REBAR TO MEET
ASTM A615 GRADE
60 FY=6000PSI

COMMERCIAL CONCRETE
PAD - 8' x 3' x 4"
(IF OUTSIDE PAVED
ROADWAY)

PAVEMENT

30" MIN. COVER

2" DIA. BRASS
PIPE

CAP WITH 2" I.P.
THREADED TAP

2" THREADED HUB
CAP FINGERTIGHT,
STD. PIPE THREAD

VALVE BOX
WITH COVER
SEE NOTE 1.

1/2" DRAIN HOLE

2" THREADED
ENDS (FIPT)

2" DIA. GALV.
STEEL PIPE

PIPE BEDDING

UNDISTURBED
EARTH

LOCKING RETAINER GLAND COVERED
WITH PLASTIC SHEET AND
POURED CONCRETE STRADDLE
BLOCK

PLASTIC BARRIER
BETWEEN THRUST
BLOCK & ELBOW

COMMERCIAL CONCRETE
THRUST BLOCK

2" GATE VALVE SHALL BE
M & H STYLE 67-02 OR
EQUAL WITH 2" SQUARE
OPERATING NUT
(COUNTERCLOCKWISE
OPENING) SEE NOTE 2.

NOTES:

1. VALVE BOX AND COVER SHALL BE PER DETAIL 4-12.
2. ON WATERMAINS WHICH MAY BE EXTENDED IN THE FUTURE, THE VALVE WHICH OPERATES THE BLOWOFF ASSEMBLY SHALL BE THE SAME SIZE AS THE MAIN AND PROVIDED WITH A CONCRETE THRUST BLOCK AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

DRAWING NOT TO SCALE

City of Chehalis

2" BLOWOFF ASSEMBLY

APPROVED BY

James R Nichols

CITY ENGINEER

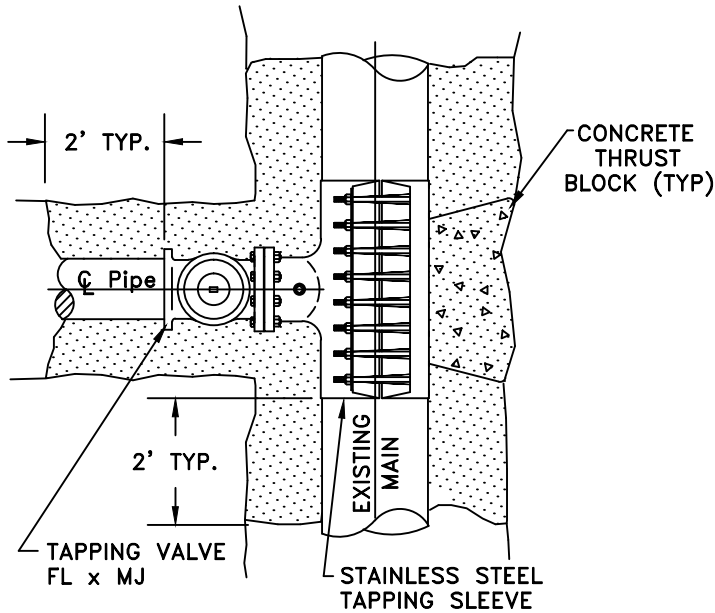
DWG. NO.

4-10

REVISED DATE

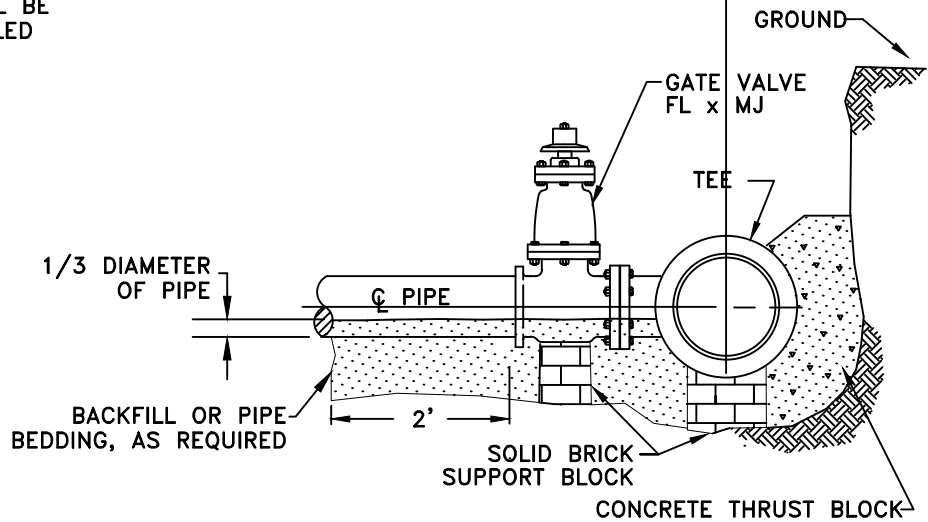
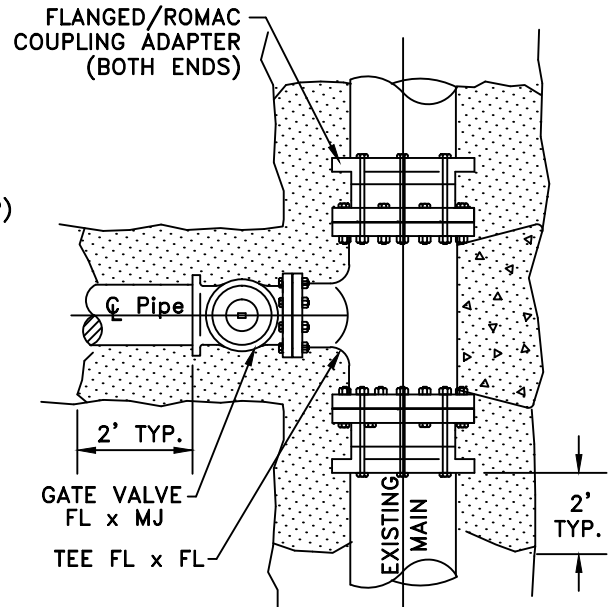
1/02/2003

LIVE TAP



VALVE AND SLEEVE SHALL BE SUPPORTED AND BACKFILLED AS SHOWN BELOW.

CUT-IN-TEE



NOTES:

1. 11 MIL PLASTIC OR CONSTRUCTION FABRIC SHALL BE WRAPPED AROUND PIPE AND FITTINGS BEFORE THRUST BLOCK AND BACKFILL ARE POURED.
2. SUPPORT VALVE AND SLEEVE CONTINUOUSLY THROUGH INSTALLATION.

DRAWING NOT TO SCALE

City of Chehalis

CONNECTION TO EXISTING MAIN

APPROVED BY

James R Nichols

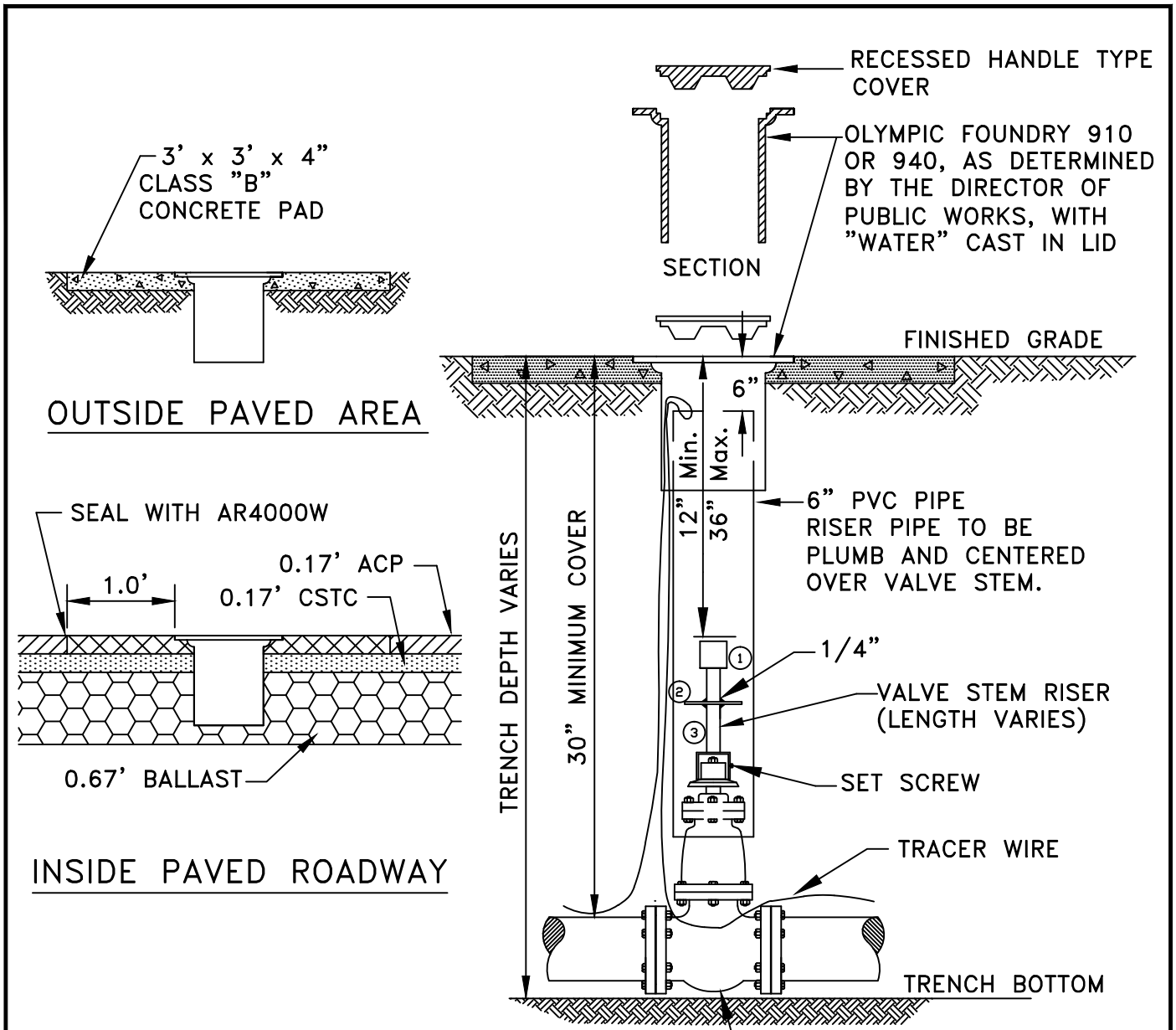
CITY ENGINEER

DWG. NO.

4-11

REVISED DATE

1/02/2003



VALVE STEM EXTENSION LEGEND

- ① VALVE OPERATING NUT OR 1-7/8" X 1-7/8" X 2" HIGH GRADE STEEL WELDED TO GUIDE PLATE.
- ② 3/16" THICK X 5-1/5" DIA STEEL GUIDE PLATE WELDED TO RISER SHAFT.
- ③ 2" X 2" X 3/16" SQUARE STRUCTURAL STEEL TUBING TO FIT OPERATING NUT. LENGTH AS REQUIRED.

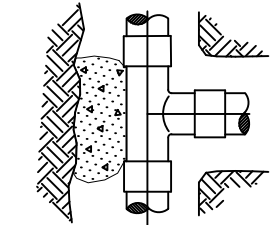
NOTES:

- 1. WELD ALL AROUND, AS SPECIFIED ABOVE.
- 2. IN TRAFFIC LANES, OLYMPIC FOUNDRY 940 VALVE BOX SHALL BE REQUIRED.
- 3. ALL VALVES MUST HAVE 14 GAUGE COATED COPPER TRACER WIRE TIED OFF @ VALVE BODY, EXTENDED WITHIN ONE FOOT OF THE SURFACE, AS SHOWN.

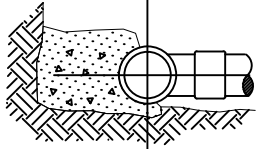
GATE VALVE SHOWN—SIMILAR INSTALLATION REQUIRED FOR BUTTERFLY VALVES.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
VALVE BOX	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-12
CITY ENGINEER	REVISED DATE
	1/02/2003

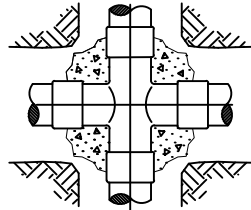


TOP VIEW

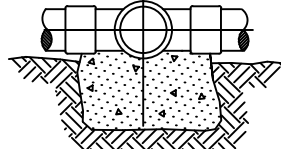


SIDE VIEW

TEE

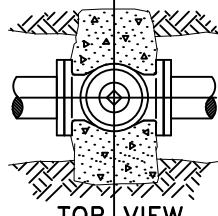


TOP VIEW

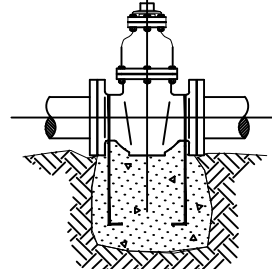


SIDE VIEW

CROSS

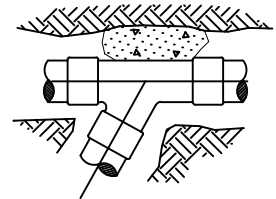


TOP VIEW



SIDE VIEW

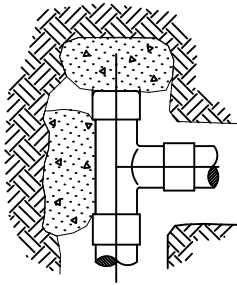
GATE VALVE



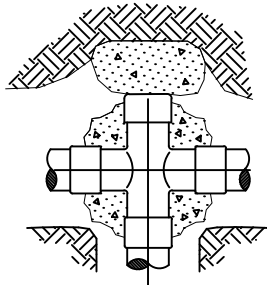
WYE



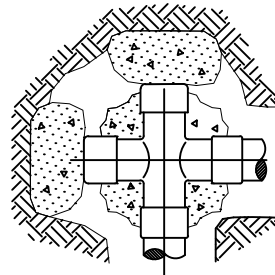
HORIZ. BEND



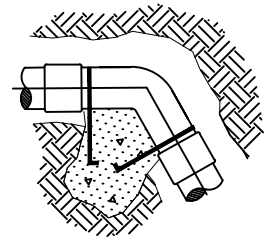
TEE WITH PLUG



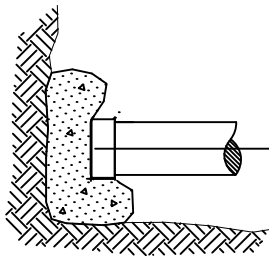
CROSS WITH PLUG



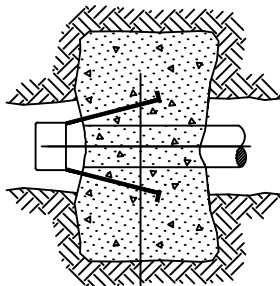
CROSS WITH PLUGS



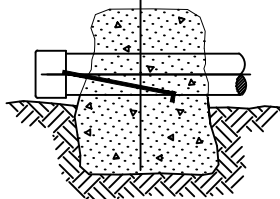
45° - 90° VERTICAL BEND



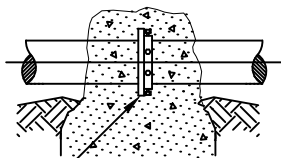
PLUG OR CAP



TOP VIEW



SIDE VIEW



LOCKING RETAINER GLAND

ALTERNATIVE STRADDLE BLOCK

DEAD-MAN THRUST BLOCKING

NOTES:

1. CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
2. PLASTIC BARRIER SHALL BE PLACED BETWEEN ALL THRUST BLOCKS AND PIPE AND/OR FITTINGS.
3. ANCHOR REBAR SHALL BE #5 MINIMUM. DEPTH OF IMBEDMENT SHALL BE 30" MIN FOR PIPE UP TO 12" DIAMETER, AND 36" FOR PIPE GREATER THAN 12" DIAMETER.
4. ALL STANDARD BLOCKING AND THRUST CRITERIA, AS LISTED ON DETAIL 4-14, SHALL APPLY.
5. PLUGS TO BE LOCATED A MINIMUM OF 5' FROM TEE, WYE, OR CROSS ON VALVE.

City of Chehalis

STANDARD BLOCKING DETAIL

APPROVED BY

James R Nichols

CITY ENGINEER

DWG. NO.

4-13

REVISED DATE

1/02/2003

DRAWING NOT TO SCALE

THRUST LOADS

THRUST AT FITTINGS IN POUNDS AT 200 POUNDS PER SQUARE INCH OF WATER PRESSURE

PIPE DIAMETER	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND	DEAD END OR TEE
4"	3,600	2,000	1,000	500	2,600
6"	8,000	4,400	2,300	1,200	5,700
8"	14,300	7,700	4,000	2,000	10,100
10"	22,300	12,100	6,200	3,100	15,800
12"	32,000	17,400	8,900	4,500	22,700
14"	43,600	23,600	12,100	6,100	30,800
16"	57,000	30,800	15,700	7,900	40,300

NOTES:

1. BLOCKING SHALL BE CEMENT CONCRETE CLASS "B" POURED IN PLACE AGAINST UNDISTURBED EARTH. FITTINGS & PIPE SHALL BE ISOLATED FROM CONCRETE THRUST BLOCK WITH PLASTIC OR SIMILAR MATERIAL.

2. TO DETERMINE THE BEARING AREA OF THE THRUST BLOCK IN SQUARE FEET (S.F.):
 EXAMPLE : 12" - 90° BEND IN SAND AND GRAVEL
 $32,000 \text{ LBS} \div 3000 \text{ LB/S.F.} = 10.7 \text{ S.F. OF AREA}$

3. AREAS MUST BE ADJUSTED FOR OTHER PIPE SIZE, PRESSURES AND SOIL CONDITIONS.

4. BLOCKING SHALL BE ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.

SAFE SOIL BEARING LOADS

FOR HORIZONTAL THRUSTS WHEN THE DEPTH OF COVER OVER THE PIPE EXCEEDS 2 FEET

SOIL	POUNDS PER SQUARE FOOT
MUCK, PEAT	0
SOFT CLAY	1,000
SAND	2,000
SAND & GRAVEL	3,000
SAND & GRAVEL CEMENTED WITH CLAY	4,000
HARD SHALE	10,000

City of Chehalis

THRUST LOADS

APPROVED BY

James R Nichols

CITY ENGINEER

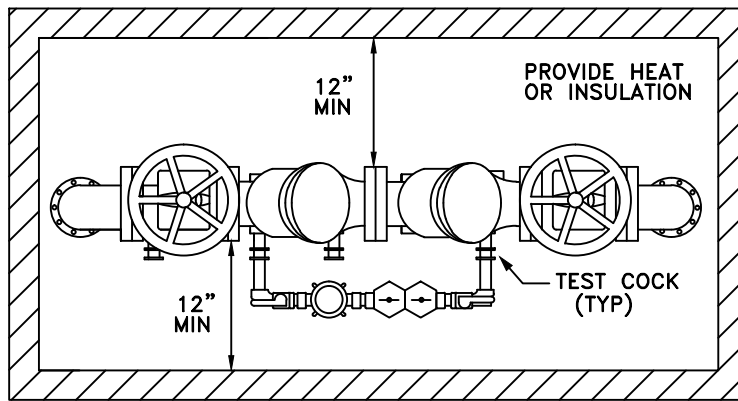
DWG. NO.

4-14

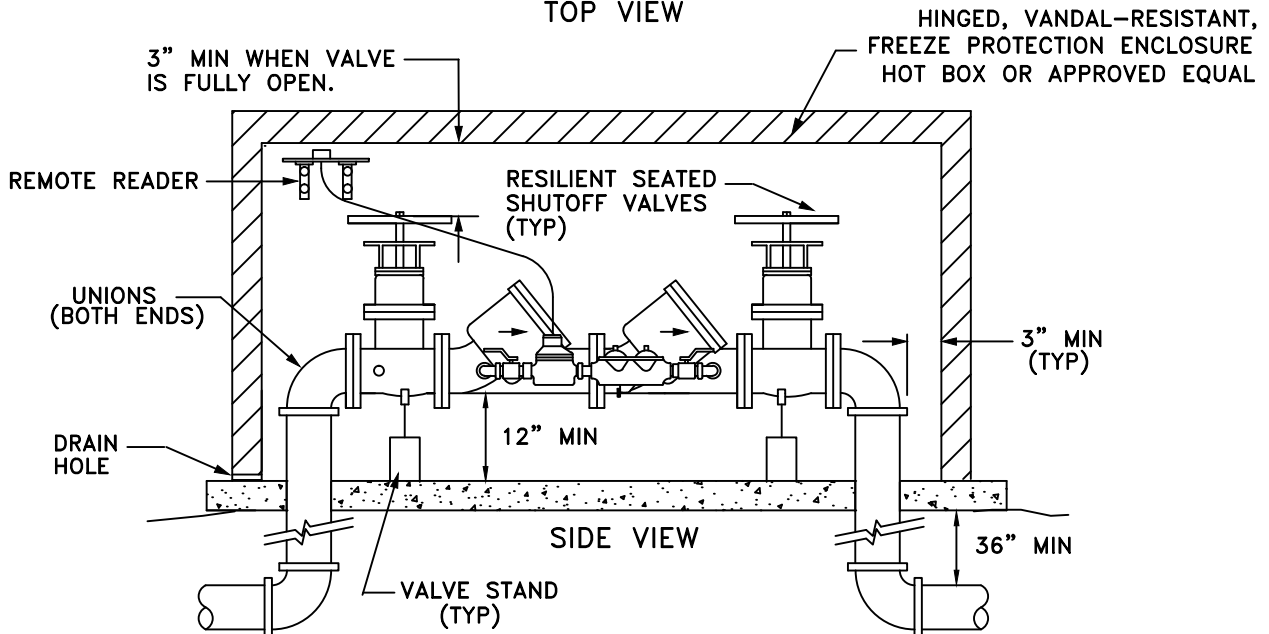
REVISED DATE

1/02/2003

A CITY APPROVED VALVE IS REQ'D BETWEEN THE SUPPLY MAIN AND THE ENCLOSURE



TOP VIEW



SIDE VIEW

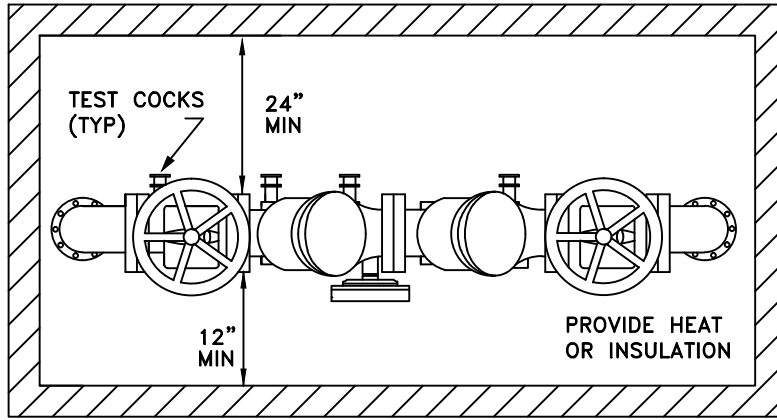
ABOVE GROUND INSTALLATION

NOTES:

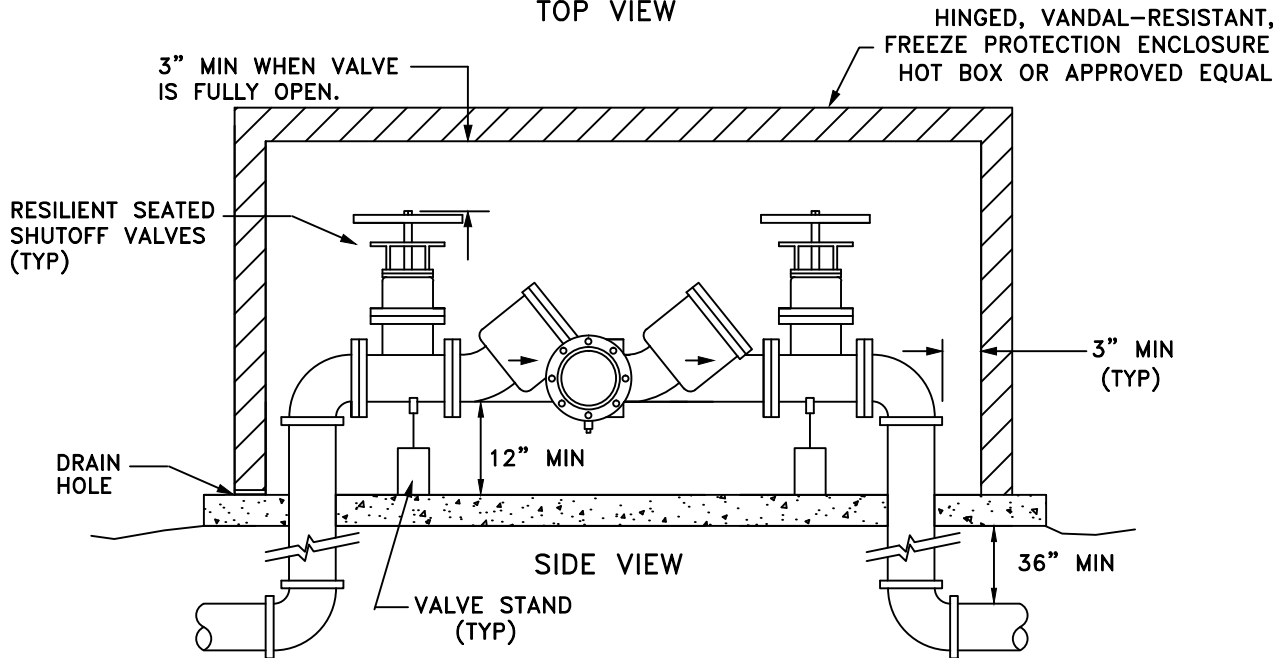
1. DOUBLE CHECK DETECTOR CHECK VALVE ASSEMBLY SHALL BE WASHINGTON STATE DEPT. OF HEALTH APPROVED MODEL.
2. BACKFLOW ASSEMBLY SHALL BE AN APPROVED MODEL W/4 TEST COCKS AND A RESILIENT SEATED SHUT OFF VALVE MOUNTED AT EACH END.
3. THE BACKFLOW ASSEMBLY SHALL BE TESTED AFTER INSTALLATION AND PRIOR TO ACCEPTANCE BY A CERTIFIED BACKFLOW ASSEMBLY TESTER. ANNUAL TESTING IS REQUIRED THEREAFTER. TEST RESULTS SHALL BE SENT TO THE CHEHALIS WATER DIVISION.
4. ALL PIPE, VALVE, AND FITTING JOINTS FROM THE SUPPLY MAIN, SHALL BE FLANGED AND RESTRAINED.
5. THE WATER LINE SHALL BE DISINFECTED, FLUSHED, AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY.
6. THE BACKFLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
7. SEAL PIPE ENTRANCE AND EXIT, THROUGH ENCLOSURE, SO AS TO BE WATER TIGHT.
8. ALL ENCLOSURES SHALL BE PRE-APPROVED BY THE CITY, PRIOR TO INSTALLATION.
9. ENCLOSURES SHALL BE INSTALLED AT PROPERTY LINE ON OWNERS PROPERTY.
10. ENCLOSURES SHALL HAVE A MINIMUM OF 3' CLEARANCE FROM ALL STRUCTURES.
11. VALVE STANDS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDATIONS.

<i>City of Chehalis</i>	
STANDARD DOUBLE CHECK DETECTOR ASSEMBLY 3" OR LARGER	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-15
CITY ENGINEER	REVISED DATE
	1/02/2003

A CITY APPROVED VALVE IS REQ'D. BETWEEN THE SUPPLY MAIN AND THE ENCLOSURE.



TOP VIEW



SIDE VIEW

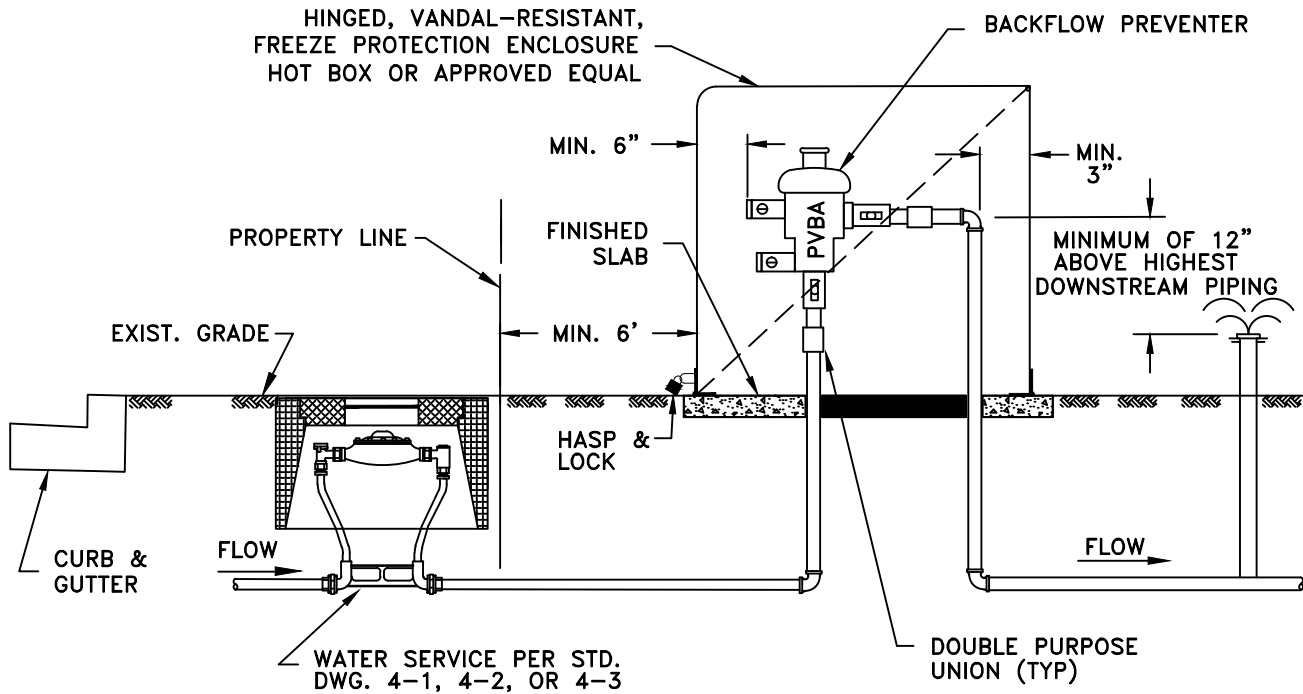
ABOVE GROUND INSTALLATION

NOTES:

1. BACKFLOW ASSEMBLY SHALL BE A WASHINGTON STATE DEPT. OF HEALTH APPROVED MODEL.
2. APPROVED BACKFLOW ASSEMBLY TO LAY HORIZONTAL ONLY.
3. THE BACKFLOW ASSEMBLY SHALL BE TESTED AFTER INSTALLATION AND PRIOR TO ACCEPTANCE BY A CERTIFIED BACKFLOW ASSEMBLY TESTER. ANNUAL TESTING IS REQUIRED THEREAFTER. TEST RESULTS SHALL BE SENT TO THE CHEHALIS WATER SUPT.
4. ALL PIPE, VALVE, AND FITTING JOINTS FROM THE SUPPLY MAIN, SHALL BE FLANGED AND RESTRAINED.
5. THE WATER LINE SHALL BE DISINFECTED, FLUSHED, AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY.
6. THE BACKFLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
7. SEAL PIPE ENTRANCE AND EXIT, THROUGH ENCLOSURE, SO AS TO BE WATER TIGHT.
8. ALL ENCLOSURES SHALL BE PRE-APPROVED BY THE CITY, PRIOR TO INSTALLATION.
9. ENCLOSURES SHALL BE INSTALLED AT PROPERTY LINE ON OWNERS SIDE.
10. ENCLOSURES SHALL HAVE A MINIMUM OF 3' CLEARANCE FROM ALL STRUCTURES.
11. VALVE STANDS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDATIONS.
12. TEST COCKS SHALL BE LOCATED SO AS TO FACILITATE ACCESS.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
STANDARD REDUCED PRESSURE BACKFLOW ASSEMBLY 3" OR LARGER	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-16
CITY ENGINEER	REVISED DATE
	1/02/2003

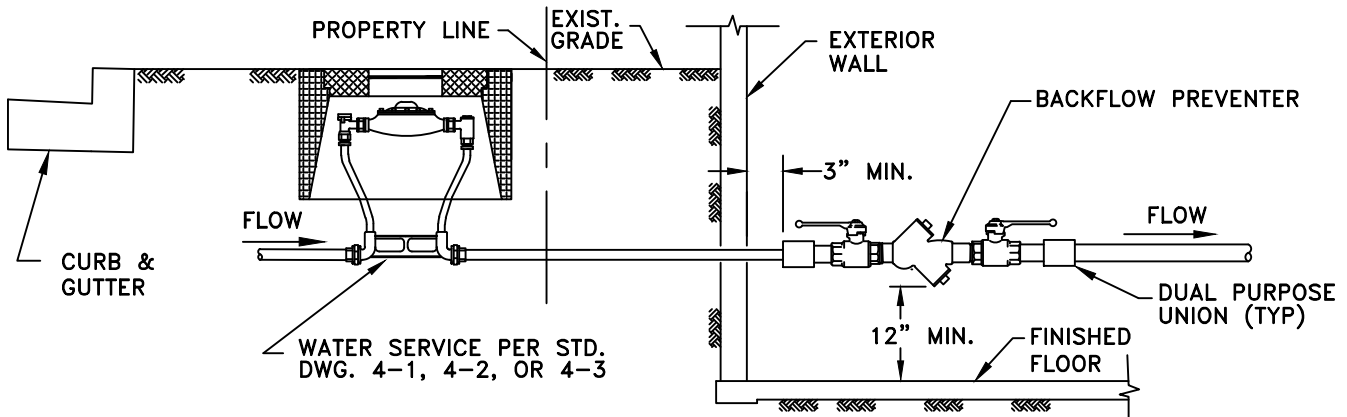


NOTES:

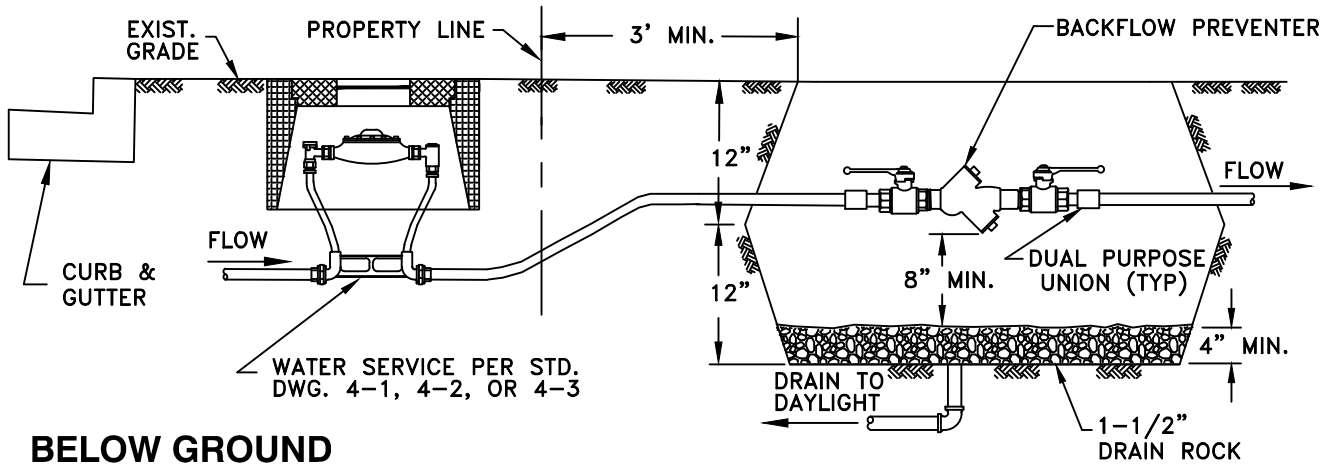
1. BACKFLOW ASSEMBLY SHALL BE WASHINGTON STATE DEPT. OF HEALTH APPROVED MODEL.
2. THE BACKFLOW ASSEMBLY SHALL BE TESTED AFTER INSTALLATION AND PRIOR TO ACCEPTANCE BY A CERTIFIED BACKFLOW ASSEMBLY TESTER. ANNUAL TESTING IS REQUIRED THEREAFTER. TEST RESULTS SHALL BE SENT TO THE CHEHALIS WATER SUPT.
3. ALL MATERIALS TO BE BRASS OR COPPER AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
4. THE BACKFLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
5. FINISHED SLAB SHALL BE SLOPED TO DRAIN.
6. ALL VAULTS SHALL BE PRE-APPROVED PRIOR TO INSTALLATION.

DRAWING NOT TO SCALE

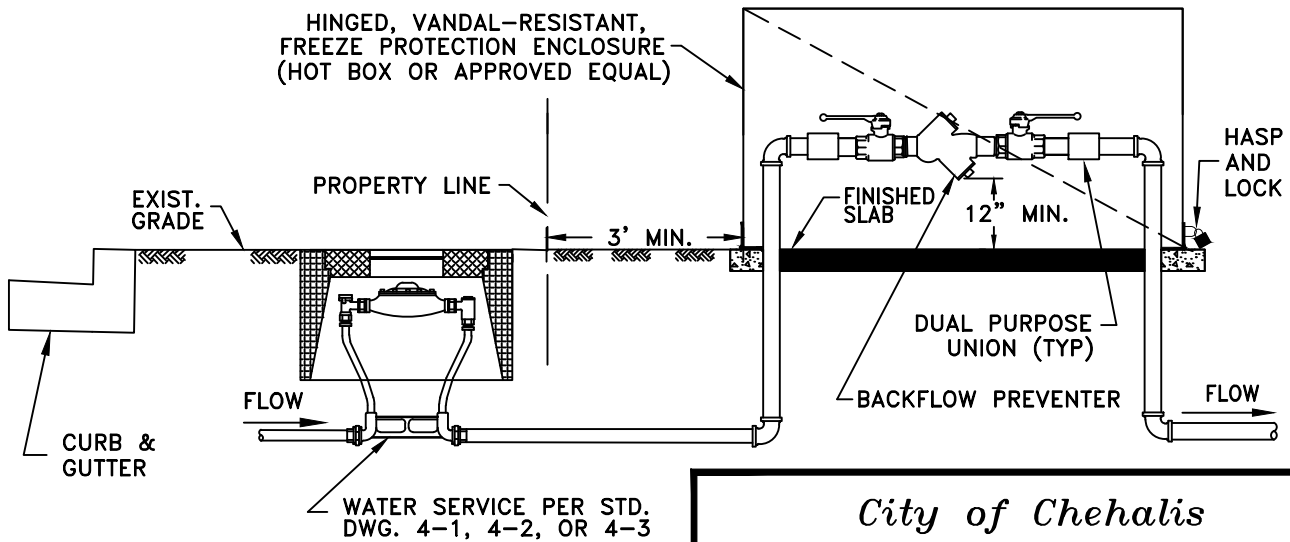
<i>City of Chehalis</i>	
1/2"-2" PVBA/SVBA BACKFLOW PREVENTER	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-17
CITY ENGINEER	REVISED DATE
	1/02/2003



IN BASEMENT



BELOW GROUND



ABOVE GROUND

NOTES:

1. BACKFLOW ASSEMBLY SHALL BE A WA. STATE D.O.H. APPROVED MODEL.
2. ALL MATERIALS TO BE BRASS OR COPPER AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
1/2" - 2" DOUBLE CHECK BACKFLOW PREVENTER	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-18
CITY ENGINEER	REVISED DATE
	1/02/2003

Chapter 13.04 WATER SYSTEM

Sections:

- 13.04.010** Definitions.
- 13.04.020** Application for connection.
- 13.04.030** Developer connection fee/capacity charge payment.
- 13.04.040** Connection to the city's main.
- 13.04.050** Maintenance or continuance of water capacity.
- 13.04.060** Water services for premises.
- 13.04.070** Cross-connections.
- 13.04.080** Private pipe standards.
- 13.04.090** Water services meter location.
- 13.04.100** Service connection – Special conditions.
- 13.04.110** Water service connection fees and charges.
- 13.04.120** Service connection – Location of service pipe.
- 13.04.130** Customer shutoff valve.
- 13.04.140** Plumbing requirements.
- 13.04.150** Inspection and access for inspection.
- 13.04.160** Turn-on – New installation.
- 13.04.170** Turn-on – Request.
- 13.04.180** Turn-on unauthorized.
- 13.04.190** Turn-off, turn-on liability disclaimer.
- 13.04.200** Service calls.
- 13.04.210** Responsibility for water service rate charge.
- 13.04.220** Customer service water leak adjustment.
- 13.04.230** Inactive water service – Inactive water service utility account.
- 13.04.240** Reactivation of inactive water service.
- 13.04.250** Construction or repairs – Report.
- 13.04.260** Disconnection of service – Condemned building.
- 13.04.270** Disconnection of service – Demolished or removed building.
- 13.04.280** Meter ownership.
- 13.04.290** Meters – Commercial and industrial – Change in meter service size.
- 13.04.300** Meter maintenance and repair.
- 13.04.310** Meter tests.
- 13.04.320** Water service outside corporate limits.
- 13.04.330** Private water systems.
- 13.04.340** Fire protection.
- 13.04.350** Fire protection meters.

- 13.04.360 Misuse of fire protection water.**
- 13.04.370 Hydrants – Authorized use.**
- 13.04.380 Hydrants – Temporary use.**
- 13.04.390 Damaging water system.**
- 13.04.400 Crime to damage or interfere with access to the water system.**
- 13.04.410 Emergency interruption of service.**
- 13.04.420 Construction standards.**
- 13.04.430 Miscellaneous control devices.**
- 13.04.440 Protection of the public health.**
- 13.04.450 Method of billing and payment.**
- 13.04.460 Alternative method of payment.**
- 13.04.470 Method of billing private water systems.**
- 13.04.480 Charge for special improvements.**
- 13.04.490 Order for crediting incomplete utility bill payments.**
- 13.04.500 Delinquency/lien.**
- 13.04.510 Driveway or crossing construction connection removal.**
- 13.04.520 Water main extension request.**
- 13.04.530 Water main extension design.**
- 13.04.540 Water main extension installation.**
- 13.04.550 Appeal.**
- 13.04.560 Rules and regulations adopted.**
- 13.04.570 Violations and penalties.**
- 13.04.580 Enforcement.**
- 13.04.590 Severability clause.**
- 13.04.600 Repeal.**
- 13.04.610 Effective date.**

13.04.010 Definitions.

The following words or phrases shall have the meanings set forth for the purposes of this chapter:

“Agreement” means all agreements for service, installations, meters, and special service made with any person, firm, or corporation, or the authorized agents thereof.

“Applicant” means any person, firm, or corporation applying for water service or any other connection to the city water system.

“CCF” means 100 cubic feet (approximately 748 gallons).

“Connection” means any physical connection to the city water system by any water service or any private water system or any pipeline extension.

“Cost” means the cost of labor, material, transportation, supervision, engineering, and all other necessary expenses as determined by the city.

“County” means Lewis County, Washington.

“Cross-connection” means any connection between any part of the water system used or intended to supply water for drinking purposes and any source or system containing water or substance that is not or cannot be approved as safe, wholesome, and potable for human consumption, or any

interconnection to another source or system that has not been approved by the public works director on or after the date of adoption of the ordinance codified in this chapter.

“Customer” means any person, firm, or corporation obtaining or using water service from the water system of the city.

“Equivalent residential unit (ERU)” means or refers to a unit of water capacity determined by the city to be equivalent to the capacity (or average capacity) typically used by, or allocated to, a single-family residential dwelling unit. For the purposes of this chapter, an ERU of water capacity shall be equal to 300 gallons per day of water use as determined through the standard water billing process.

“Fire protection service, private” means water service and facilities for building sprinkler systems, hydrants, hose reels, and other facilities installed on private property for fire protection and the water available therefor.

“Fire protection service, public” means the service and facilities of the entire water supply storage and distribution system of the city, including the fire hydrants affixed thereto, and the water available for fire protection, excepting house service connections and appurtenances thereto.

“Main” means a water line designed or used to serve more than one premises. Mains and connections to mains are controlled by the city.

“Multiple-dwelling units” means duplexes, apartment buildings, condominiums, mobile home parks, trailer courts, multiple-unit commercial structures, and other multiple-unit structures or buildings.

“Person” means a natural person of either sex, associations, partnerships, and corporations, whether acting by themselves or by a servant, agent, or employee, the singular number to be construed to include the plural and the masculine pronoun to include the feminine.

“Premises” means a private home, building, apartment house, condominium, trailer court, mobile home park, a group of adjacent buildings, or property utilized under one ownership and under a single control with respect to the use of water and responsibility for payment thereof.

“Public works director” shall mean public works director or designee.

“Service charges” means fees, costs, rates, and charges for water services established and set by ordinance.

“Service, commercial” means water services to businesses engaged in the manufacture and/or sale of a commodity or commodities or the rendering of a service, hotels, motels, schools, hospitals, multiple-dwelling units and public office buildings.

“Service, industrial” means a water service to a business enterprise engaged in the manufacture of products, materials, equipment, machinery, and supplies or commodities on a substantial or major scale.

“Service installation” means all piping and fittings from the main to and including the water meter assembly. All piping and fittings from the meter to the premises served shall be the customer’s responsibility.

“Service, residential” means a water service to a single-family dwelling unit or a water service for residential lawn sprinkling.

“Service, temporary” means a water service and facilities rendered for construction work and other uses of limited duration and the water available therefor.

“System” means all water source and supply facilities, transmission lines, storage facilities, pumping plants, distribution mains, and appurtenances.

“System, private” means a water system, or pipelines and appurtenances, pumping facilities, reservoirs, treatment facilities, or any combination thereof that are owned by other than the city. [Ord. 866B, 2011.]

13.04.020 Application for connection.

A. Each premises shall have separate water service or services as set forth in CMC [13.04.060](#), Water services for premises. Any person desiring water service for any premises shall make application therefor on a printed form furnished by the city for that purpose. The application form shall contain the following information:

1. Name and address of applicant;
2. Location and legal description of premises where water service is requested;
3. Purpose for which the water is to be used;
4. Number of living units within the premises to be supplied;
5. Statement that the applicant agrees to abide by the rules and regulations contained herein and agreements contained in the application;
6. Signature of owner of premises or his duly authorized representative or agent;
7. Date signed; and
8. Such additional information as the public works director shall require.

B. Applicants for service within the corporate limits of the city may be required to obtain a building or plumbing permit for the premises where water service is being requested.

C. Applicants for service outside the corporate limits of the city shall provide required information, comply with city annexation agreement requirements, and sign an agreement stating that they will not oppose annexation of the area including the premises for which service is being applied.

D. If no public sewer service is available to any premises for which application for water service is made, approval of the application shall be conditioned upon the applicant obtaining a septic tank permit from the Lewis County health district, and no connection shall be made if such septic tank permit is not issued.

E. When all applicable fees and charges have been paid, the approved application shall constitute an agreement whereby the applicant agrees, as a condition for the continued use of water, to

conform to rules and regulations of the city as contained in or attached to the application provided for in this chapter, or any amendment hereto.

F. The application for water service shall contain an agreement requiring the person making the same to pay for the water applied for at the rates and in the manner specified by city ordinance; reserving unto the city the right to charge and collect the rates and to enforce the penalties provided in city ordinance and to change the rates by ordinance at any time; allowing the city to temporarily discontinue the service at any time without notice to the customer; and specifying that said agreement is subject to all the provisions of this chapter and of any ordinance of the city relating to the public water system of the city. The agreement shall provide that the city shall not be held responsible for any damage by water or other cause resulting from defective plumbing or appliances on the premises supplied with water installed by the owner or occupant of such premises, and shall provide that in the event the supply of water shall be interrupted or fail by reason of accident or any other cause whatsoever, the city shall not be liable for damages for such interruptions or failures, nor shall such failures or interruptions for any reasonable period of time be held to constitute a breach of agreement on the part of the city or in any way relieve the customer from performing the obligations of his agreement. The city shall not be held liable for damage to personal property stored in the portion of the street between the curb and the property line, nor to real property in said area, resulting from leakage or the breaking of pipes or appliances maintained by the city within that portion of the street herein described. All agreements contained in the application shall take effect from the date the application is approved by the public works director. If for any reason the public works director does not approve an application requiring his approval, the public works director shall explain the reason for disapproval in writing at the request of the applicant, and no conditions or agreements shall be in effect. [Ord. 866B, 2011.]

13.04.030 Developer connection fee/capacity charge payment.

A. Owners and/or developers of all commercial property shall be required to pay all connection fees and capacity charges in accordance with the current ordinance within six months of the date the application has been approved. If all capacity charges, connection fees, and any other fees identified on the application are not paid within six months of the date of approval of the application, the application and any approval shall be considered void. All such fees and charges shall be paid prior to any physical connection or installation of facilities and no service shall be delivered or provided until such fees are paid. Such charge and/or fees shall be nonrefundable.

B. Owners and/or developers of residential property that have applied for water connections for up to, but not exceeding, 10 single-family residences or 10 ERUs shall be required to pay all connection fees and capacity charges in accordance with current ordinance within six months of the date the application has been approved. If all capacity charges, connection fees, and any other fees identified on the application are not paid within six months of the date of approval of the application, the application and any approval shall be considered void. All such fees and charges shall be paid prior to any physical connection or installation of facilities and no service shall be delivered or provided until all such fees are paid. Such charges and/or fees shall be nonrefundable.

C. Owners and/or developers of residential property that have applied for water connections for a capacity greater than 10 single-family residential units or greater than 10 ERUs, where such projects are to be constructed in phases over a period of time, must specifically request and receive approval for a time period or duration in excess of six months.

D. If approval is given for a duration in excess of six months, then the owner or developer of such residential property shall be required to pay one-quarter of the total connection fees and capacity charges for the entire development project. This 25 percent shall be nonrefundable in the event that any such development or project is canceled, and this 25 percent shall also be considered as the connection fees and capacity charges for the last 25 percent of such costs for the development. Prior to actually connecting any single-family residential unit or other units for which the equivalent residential capacity has been requested, approved, and allocated, the connection fees and capacity charges must be paid in full. [Ord. 866B, 2011.]

13.04.040 Connection to the city's main.

A. After payment of all connection fees, capacity charges, service charges, and any other applicable fees and charges, and the execution of the agreement herein described, the public works director shall cause the premises described in the application, if the same abut upon a street in which there is a city water main, to be connected to the city's water main by a service pipe extending at right angles from the main to the property line except as herein provided. The city connection, which shall include a stopcock placed within the curb line and the meter set assembly in conformance to city specifications, shall be maintained by and kept within the exclusive control of the city.

B. Wherever it has been ascertained that a retaining wall, ornamental wall, or landscaped rockery, or any other form of permanent structure is to be or has been erected upon any portion of a city street or public place in which a water service connection has been installed, the public works director shall cause the relocation or readjustment of such water service connection or any portion thereof. The cost of such relocation or readjustment shall be charged against the property on which the erection of the permanent structure, as above referred to, is to be done or has been done and to the owner thereof. In no case shall the city be required to maintain or repair any portion of the service connection beyond the meter set assembly.

C. Where there is a water main in front of any premises, the owner of such premises supplied by city water shall have his own separate service connection with the city main and the premises so supplied shall not supply water to any other premises. If two or more premises are supplied by one metered service, service charges for each premises supplied with water shall be assessed for each separate building or premises so supplied. Services existing as of the effective date of the ordinance codified in this chapter shall be separated at such time as the owner or occupant thereof shall obtain a building permit for the remodeling or structural alteration of such premises. [Ord. 866B, 2011.]

13.04.050 Maintenance or continuance of water capacity.

A. In order for any commercial and/or industrial customer served by the city water system to maintain capacity that has been previously allocated to said commercial and/or industrial customer, such customer must demonstrate use of water capacity that has been previously allocated in accordance with the provisions of this chapter.

B. If a commercial and/or industrial water customer has reduced its water usage as defined in this chapter, the city shall notify said commercial and/or industrial water customer in accordance with this section and reduce the amount of water capacity allocated to such commercial and/or industrial customer in accordance with this section.

C. In order for a commercial and/or industrial customer receiving service from the city water utility to maintain or hold water capacity as may have been previously allocated, such commercial and/or industrial customer must use a minimum of 80 percent of the total water capacity for at least four consecutive months in any 12-month period.

D. If any commercial and/or industrial customer fails to use 80 percent of the previously allocated capacity for four consecutive months in any 12-month period, the water capacity allocated to that commercial and/or industrial customer shall be determined as follows:

1. The lowest usage in the highest consecutive four-month period shall be 80 percent of the new allocated water capacity for any such commercial and/or industrial customer.

2. If the city reduces the allocation of water capacity from the quantity that was originally purchased from the city, the city shall refund that portion of the amount of actual capacity charges paid by the commercial and/or industrial customer that relates to the amount of capacity reduced.

E. In order for a commercial and/or industrial customer to maintain their allocation of water capacity, after it has been determined by the city that a reduction in their allocation of such capacity is warranted, said commercial and/or industrial customer shall pay a capacity maintenance charge per month in addition to their regular water use rate fees and charges. Such capacity maintenance charges shall be calculated by multiplying the number of ERUs of water capacity that the city has determined warrants reduction by the current minimum monthly service capital improvement charges for water.

F. During any three months in a 12-month period, if any commercial and/or industrial customer has been identified as using one ERU or greater of water capacity above the amount of capacity that has been allocated and if there is unallocated water capacity available, the city shall charge such commercial and/or industrial customer the current capacity costs or charges for such increased capacity. If there is no unallocated capacity available, the city shall instruct the commercial and/or industrial customer to reduce usage to the level of capacity that has been allocated. If said instructed commercial and/or industrial customer does not reduce water usage to the level of allocated capacity, the city shall take action(s) necessary to cause the capacity used to be reduced to the allocated level. Such action(s) may include imposing restrictions or limitations to such water service or disconnection of water service.

G. If capacity is available, the highest usage above the previously allocated capacity shall be the new allocated water capacity for any such commercial and/or industrial customer upon approval of the city council (if required) and upon payment of the associated water capacity charges.

H. The public works director shall conduct an initial evaluation of water use to determine allocated capacity of water for all existing commercial and/or industrial customers. On an annual basis the public works director shall review the water use for such commercial and/or industrial customers to identify such customers that have used less than or more than their allocated capacity.

I. If it is determined that the capacity allocated to any commercial and/or industrial customer warrants reduction in accordance with this section, the city shall provide written notice to said commercial and/or industrial customer indicating the city's intention to adjust or reduce the water capacity allocation.

J. If it is determined that the capacity allocated to any commercial and/or industrial customer warrants an increase in accordance with the provisions of this section, or if it is determined that any commercial and/or industrial customer has used greater than the allocated capacity of water service, and such additional water service is unavailable, the city shall provide written notice to said commercial and/or industrial customer indicating the city's intention to adjust or increase or restrict to the allocated capacity the water capacity allocation.

K. The notice shall provide a 30-day comment period prior to the implementation of any such adjustment or reduction of their capacity allocation. The public works director shall review and consider any comments received during this 30-day comment period prior to making a final determination on any such adjustment or reduction of their capacity allocation.

L. Should the public works director determine that the water capacity warrants being increased and should the city approve such increase, payment of the related capacity charges shall be due within 10 days of the date of the final determination notice. If such capacity charges are not paid within this 10-day period, the city shall take such action(s) necessary to cause the capacity used to be reduced to the previously allocated level. Such action(s) may include imposing restrictions or limitations to such water service or disconnection of water service. [Ord. 866B, 2011.]

13.04.060 Water services for premises.

Each premises shall have a separate water service unless the unit meets the definition of an ADU for in-law apartment. All water services shall be metered. Premises containing multiple dwelling units and/or containing more than one commercial or industrial business shall have separate metered water service for each individual dwelling unit and/or commercial or industrial unit, except where situations and/or special conditions exist that make an individual service for each unit impossible or unfeasible at the discretion of the public works director, who shall determine when such situations or conditions prohibit individual services. [Ord. 917B § 2, 2013; Ord. 866B, 2011.]

13.04.070 Cross-connections.

The city follows the procedures to enforce the cross-connection code using: Washington State Standards for Cross-Connections (WAC [246-290-490](#)), the city of Chehalis cross-connection control plan, Manual of Cross-Connection Control published by the University of Southern California (USC Manual), and Cross-Connection Control Manual published by the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA) as they presently exist and as they may, from time to time, be amended.

A. The city requires that all water service connections, domestic potable water, fire sprinkler systems, or irrigation systems, existing and future, follow the guidelines of the city's cross-connection control plan. Any such cross-connection existing hereinafter is hereby declared unlawful and shall be disconnected and removed immediately. The cross-connection control specialist (CCS) or any designated representative of the city may limit the kind and number of service connections for any separate premises. No water service connection shall be allowed from the city water mains to any premises supplied by water from any other source unless the public works director gives special permission and that the connection is protected with an appropriate backflow assembly approved by the CCS.

B. When a cross-connection is found, an approved backflow prevention assembly(s) will be installed at the expense of the user, and the user will be required to follow the city's cross-

connection control plan where a premises isolation backflow assembly will be installed. In-premises installation of a backflow assembly can be installed only with written permission by the CCS or mandated along with premises isolation when the CCS or any designated representative of the city and any other regulatory agencies determine a high health hazard exists, in accordance to WAC [246-290-490](#) and the city's cross-connection control plan. The backflow prevention assembly(s) once installed will be inspected and approved by the city and tested by a state-certified backflow assembly tester (BAT). The public works department requires a certified test indicating the assembly(s) has passed before releasing the certificate of occupancy on any building.

C. Backflow prevention assembly(s) installed will be of a type and model preapproved by the Department of Health (DOH) or the city and will be installed, inspected, and tested in accordance to the city's cross-connection control plan. The city will have the authority to perform regular inspections on all backflow assembly(s) (premises and in-premises) connected to the city's water system and will be provided access to the premises to inspect.

D. New water service customers will be required to install a residential dual check device immediately downstream of the water meter. Installation of this residential dual check device on a retrofit basis on existing service lines will be instituted at a time and at a potential cost to the homeowner as deemed necessary by the city.

E. The city will notify the service customer that an annual test of the backflow prevention assembly(s) is required not less than 30 days before such annual test is required.

F. Backflow assembly testers (BAT) shall supply the city with documentation indicating that their testing equipment has a current certificate of accuracy and that they have a current Department of Health BAT certification card. This information must be submitted on an annual basis as indicated in the city's cross-connection control plan.

G. Violations.

1. Violations by Customer.

a. It is a violation of the cross-connection control plan for a customer to:

i. Fail to correct a faulty cross-connection within seven days of discovery of the problem;

ii. Fail to install, test, or maintain a backflow prevention assembly or premises isolation, as required by the cross-connection control plan;

iii. Remove or bypass a backflow prevention assembly(s);

iv. Refuse to allow a designated city representative access to any structure serviced by the public water supply for inspection.

b. Violations by a customer subject the customer to termination of service by the city. Service shall not resume until the customer:

i. Repairs the violation so that the cross-connection is in compliance with the city's cross-connection control plan as determined by the city; and

ii. Makes payment to the city for:

(A) Its expenses incurred for inspection and enforcement of the plan, including attorney's fees; and

(B) Any penalties, as specified in this section.

2. Violations by Certified Backflow Assembly Testers.

a. It is a violation of the cross-connection control plan for a backflow assembly tester (BAT) to:

i. Intentionally or negligently file forms containing false data, including but not limited to data not derived from actual testing.

b. A violation by a backflow assembly tester may subject the BAT to:

i. Penalties as specified in this section; and/or

ii. Reporting by the city to the Washington Certification Board with a recommendation of license revocation.

H. Penalties.

1. Penalties for violations by customer, per subsection (G)(1) of this section:

a. First violation – \$200.00;

b. Second violation – \$500.00;

c. Third violation – \$1,000;

d. Fee to restore water service – \$50.00.

2. Penalties for violations by backflow assembly tester, per subsection (G)(2) of this section:

a. First violation – \$1,000;

b. Second violation – \$2,000;

c. Third violation – \$5,000. [Ord. 866B, 2011.]

13.04.080 Private pipe standards.

All persons connecting to city service or laying their own private pipe shall be required to use pipe of sufficient strength and quality, and the installation shall be done in such a manner so that breaks, leaks, and freezing are avoided, and contacts with contaminants are not possible. In all permanent sprinkler systems or other systems where contamination or cross-connections are possible, an approved backflow prevention device shall be installed. The public works director shall maintain private services from city mains in streets that are being graded and shall have access on private property as shall be necessary to maintain such pipes during the work, and shall, as soon as practicable upon the completion of such work, relay such pipes in the street. Except for the above cause, owners shall maintain their private pipes from the end of the city's service to and into their

property, or, in the event the public works director finds it necessary to maintain the same, the owner shall relinquish all right in said pipes. When necessary, the public works director may slope service on property to conform to the slope occasioned by the grading of the street and charge the expense thereof to the owner of the service. [Ord. 866B, 2011.]

13.04.090 Water services meter location.

All water service connections shall be made by, or under the control of, the city. Meters shall be placed as follows:

A. Within the corporation limits of the city, meters shall be placed within two feet of the edge of the sidewalk or proposed sidewalk on the curb side in existing plats and within two feet of the sidewalk on the property side in new plats.

B. Within the county, meters shall be placed within the county right-of-way and within two feet of the property line nearest the customer's premises.

C. In instances other than contained herein, or where the public works director determines that unusual or conflicting conditions exist, the location of meters shall be determined by the public works director. [Ord. 866B, 2011.]

13.04.100 Service connection – Special conditions.

When two or more premises are being serviced by one water service connection, the city shall have the right to require the installation of additional water service connections from the water main to the premises except for an ADU as defined by the Chehalis Municipal Code. When additional water service connections are provided for any premises, all water service shall be metered and installed in an approved manner. No premises shall be permitted to furnish water to any other premises, except during an emergency, which shall not exceed a period of 30 days. An application to cover the emergency connection shall be filed with the city within 48 hours of the occurrence causing the emergency. When the intended use of the water service is changed or the structure served is altered, a new service shall be installed at the customer's expense unless the existing service complies with the provisions hereof. [Ord. 917B § 3, 2013; Ord. 866B, 2011.]

13.04.110 Water service connection fees and charges.

Water connection shall be made by and under the control of the city after an application for same has been approved by the city and payment of all water service connection/capacity fees, installation charges, and any other applicable fees and charges as required by city ordinance and/or city council approved and established latecomer fee agreement(s) have been made. All water capacity charges received shall be considered capital revenue of the city. [Ord. 866B, 2011.]

13.04.120 Service connection – Location of service pipe.

Water service pipe shall not be laid or maintained parallel with and within five feet horizontally of any sanitary sewer, electrical conduit, gas pipe, communications cable, septic tank, or drain field. When additional water pipe extensions or replacements are to be made beneath the surface of the ground within the premises and connected with existing water service pipes between the meter and the premises, an application therefor shall be made to the city for inspection and approval prior to backfilling the trenches. [Ord. 866B, 2011.]

13.04.130 Customer shutoff valve.

Shutoff valves of approved full flow pattern with key or hand wheel shall be installed in the water service pipe leading from the city meter to the building within the premises served in accordance with the applicable plumbing code. Shutoff valves, where buried, shall be properly enclosed in a minimum six-inch-diameter pipe, or box of concrete, plastic, or iron with an approved cover, protected from freezing and readily accessible. Valves or customer-owned equipment are not permitted to be installed within the city's meter box. No outlet shall be connected to the service extension pipe between the city meter and the customer shutoff valve. [Ord. 866B, 2011.]

13.04.140 Plumbing requirements.

All persons installing fixtures or appliances to be supplied with water from the city main shall be subject to the requirements of the Uniform Plumbing Code. Persons installing plumbing in new structures shall leave the valve at the meter in the "off" position upon completion of their work. Persons making additions or repairs to existing plumbing systems shall leave the valve at the meter in the position in which it was found in beginning their work. The public works director shall have the right to refuse service or discontinue service in any situation where it is discovered that applicable city standards have not been complied with in making the installation. [Ord. 866B, 2011.]

13.04.150 Inspection and access for inspection.

Authorized employees of the city, properly identified, shall have access at reasonable times of the day to all parts of the premises or within buildings thereon to which water is supplied from city mains, for the purpose of checking conformity to these regulations; provided, such employees shall have access to single-family residential premises only upon a showing of probable cause to believe that the water service or plumbing therein is not in conformity with these regulations. Whenever the owner or occupant of any premises supplied by city water restrains authorized city employees from making such necessary inspections, water service may be refused or discontinued. [Ord. 866B, 2011.]

13.04.160 Turn-on – New installation.

When new water service connections are installed by the city for any premises, the valve at the meter shall be turned to the "off" position and remain off until a turn-on order shall be issued by the public works director upon written application therefor by the owner of the premises to be supplied after inspection and approval by the city and after the proper plumbing inspection has been performed and a certificate issued that all provisions of the Uniform Plumbing Code have been complied with. [Ord. 866B, 2011.]

13.04.170 Turn-on – Request.

When it is desired to have the water turned on after it has been turned off for any reason, the turn-on shall be made upon receipt of a written application or verbal request by the city, provided all service charges including any penalties owed at the time of the request or receipt of the written application have been paid; the city may require that conditions set forth in CMC [13.04.160](#), Turn-on – New installation, apply. The customer shall also be charged for a service call as required by CMC [13.04.200](#), Service calls. [Ord. 866B, 2011.]

13.04.180 Turn-on unauthorized.

It shall be unlawful for any person, except duly authorized employees of the city, to turn on the water supply to any premises after a turn-off is made at the meter by the city. The water service pipe to any premises turned on by an unauthorized person after said water supply has been turned

off by the city for cause may, upon discovery, be disconnected by the city from the water main in the street and shall not be connected again until violations of these rules and regulations have been corrected and all expenses incurred by the city relating to disconnecting and reconnecting the service pipe are paid. [Ord. 866B, 2011.]

13.04.190 Turn-off, turn-on liability disclaimer.

The city shall not be liable for any damage to person or property that may result from the turn-off or turn-on of the water service or from the service being left on when the premises may be unoccupied. [Ord. 866B, 2011.]

13.04.200 Service calls.

A. Service calls, for any reason, including, but not limited to, convenience or emergency turn-off or turn-on, paid delinquent account turn-on, or complaint leaks, or other problems due to trouble in lines not owned by the city, or problems in lines, valves, or meters owned by the city, caused by problems or conditions other than by the city, shall be charged to the customer requesting the service call at the appropriate rate as provided in city ordinance. The amount charged for the service call shall be billed to the customer as a separate charge and shall be due and payable within seven days after the date of the bill. CMC [13.04.500](#), Delinquency/lien, shall apply when any service call charges become delinquent and unpaid.

B. Service calls, when it is determined by the city that the problem or trouble is in lines, valves, meters, or facilities owned by the city, will result in no charge to the customer. [Ord. 866B, 2011.]

13.04.210 Responsibility for water service rate charge.

All accounts for water shall be kept in the name of the owner of the premises for which service is installed unless the property owner requests to have statements for service rate charges mailed to a tenant, lessee, or agent, but such mailing shall not relieve the property owner from liability for payment of water service rate charges incurred. [Ord. 866B, 2011.]

13.04.220 Customer service water leak adjustment.

A. Any water customer of the city may receive a maximum of one utility bill adjustment per year based upon unexpected leaks or breakdowns of customer plumbing, subject to acceptable review and acceptance of their adjustment request by the city. The maximum adjustment period for residential customers shall be one residential billing cycle (two months). The maximum adjustment period for commercial customers of the city shall be two one-month billing cycles.

B. All requests for utility bill leak adjustments shall be made in writing to the public works director. The request for adjustment must contain the name and address of the utility customer, justification for the leak adjustment, information regarding what repairs have been made to correct the customer problem giving rise to the need for adjustment, and must be signed by the party making request for adjustment.

C. The public works director shall review the application for adjustment, seek additional information if it is deemed necessary to make a decision regarding the adjustment, and provide to the customer an acceptance or rejection of the adjustment request within 10 days of actual receipt of the written request for adjustment. Should the utility bill leak adjustment be authorized by the public works director, the adjustment shall reflect the previous year's usage during the billing cycle wherein the

adjustment is sought, or if there is no previous year's usage record, the bill will be adjusted to equal the billing amount of the customer's previous billing cycle.

D. Any appeals from decisions of the public works director regarding the rejection or amount of adjustment granted under the terms of this chapter shall be made directly to the city manager. Said appeal must be in writing and filed with the city manager within 10 days of receipt of the decision of the public works director. Failure to abide by these procedural requirements will render the public works director's decision final.

E. Utility bill adjustments shall not be granted if the property owner, after notification by the city, refuses to make repairs in a timely manner or isolate the leak to prevent continued water loss from the city's water system. [Ord. 866B, 2011; Ord. 831B, 2007.]

13.04.230 Inactive water service – Inactive water service utility account.

In order for a water service and its associated water service utility account to remain active and continue to be authorized to receive water service, water utility bills must be paid. Even if the water service is inactive and no water consumption occurs during a billing period, water service capital improvement rate charges as established by ordinance must be paid. When any service is turned off for nonpayment of water utility bills for a period of four months, the water service utility account shall become inactive and it shall be subject to termination and the water service shall be subject to disconnection and removal of the water meter at the discretion of the public works director. [Ord. 866B, 2011.]

13.04.240 Reactivation of inactive water service.

A. If any single-family residential unit water service has been inactive and the associated water service account has been terminated, the owner of said single-family residential unit may request reinstatement of the water service and water service account if:

1. There is sufficient capacity of water service available;
2. There is no moratorium or prohibition to such reactivation of single-family residential unit;
3. The owner pays the lesser of either the current connection/capacity charges for such water service, or back (or unpaid) water service capital improvement rate charges for water service. Back charges shall be equal to the total current water service capital improvement rate charges for the minimum residential water service multiplied by the total number of months that the water service has been in an inactive status and/or for the period of months that such capital improvement rate charges have not been paid;
4. The owner pays all costs associated with the installation or reinstallation of water services and any other improvements or modifications necessary to provide such water service. The amount of such installation charges shall not exceed water service installation charges in effect at the time of the request to reactivate the services made; and
5. All applicable fees and charges have been paid as established by the storm and surface water and the sewer system ordinances.

B. In order for any commercial water service or multiple ERU water service or account which has been inactive and/or terminated to be reactivated, it must meet the following conditions:

1. There is sufficient capacity of water service available;
2. There is no moratorium or prohibition to such reactivation of water service;
3. The owner or persons requesting activation of such water service pays the lesser of either the current connection/capacity charges per ERU or back (or unpaid) water service capital improvement rate charges for the minimum commercial water service multiplied by the total number of months that the water service has been in an inactive status and/or for the period of months that such capital improvement rate charges have not been paid;
4. The property owner or person requesting reactivation of such commercial or multiple ERU water service shall pay the water meter service installation charges or any or all charges or costs necessary to provide a water meter service installation then in effect; and
5. All applicable fees and charges have been paid as established by the storm and surface water and the sewer system ordinances. [Ord. 866B, 2011.]

13.04.250 Construction or repairs – Report.

It shall be the responsibility of the building official to report to the public works director the beginning of construction or repairs to all buildings in the city, which report shall contain a general description of the building to be constructed or repaired, the name of the owner and contractor thereof, and the address thereof. Water for construction purposes shall only be furnished upon application of the owner of the premises, or his authorized agent. Water for construction purposes shall be furnished by meter and charged to the owner of the premises supplied. [Ord. 866B, 2011.]

13.04.260 Disconnection of service – Condemned building.

Whenever a building or premises supplied with water has been found by the proper authorities to be dangerous to human life and unfit for human habitation, and notice of such findings has been provided to the public works director by said authorities, the public works director shall cause the water service to such premises to be turned off. Water service to such premises shall not be turned on until the owner and/or agent has secured a release or clearance from the proper authorities. [Ord. 866B, 2011.]

13.04.270 Disconnection of service – Demolished or removed building.

Whenever a building or structure supplied with water has been proposed by the owner to be demolished or removed, the owner and/or agent of the property shall notify the city of such proposed actions a minimum of 72 hours prior to the anticipated date when the building will be demolished or removed. The public works director shall then cause the water service to such premises to be turned off prior to the demolition or building removal. Water service to such premises shall not be turned on until the owner and/or agent has demonstrated that there are no plumbing problems associated with the premises and waterlines connected to the water service, and until the owner and/or agent has requested that the water service be turned on. [Ord. 866B, 2011.]

13.04.280 Meter ownership.

All meters provided and installed on water service connections by the city shall be and remain the property of the city. [Ord. 866B, 2011.]

13.04.290 Meters – Commercial and industrial – Change in meter service size.

Whenever the owner of any premises with an existing water meter service desires to change a meter service size, an application shall be made to the city and, upon approval by the public works director, the new meter service shall be installed at the expense of the owner. No credit shall be given for the existing meter service. Unless the application specifically requests a greater or lesser allocation of water capacity and, in the case of requests for more capacity, such application is approved by the public works director, no change in the water capacity allocation to the premises shall result from the change in meter service size. [Ord. 866B, 2011.]

13.04.300 Meter maintenance and repair.

A. The city shall maintain and repair all service meters and replace meters periodically when necessary if rendered unserviceable by ordinary use. Where replacement or repair to any meter is necessary by reason of the neglect, carelessness, or willful act of the owner or occupant of the premises served, all expenses of such replacement or repair incurred by the city shall be borne by the owner of the premises.

B. Whenever demand periodically exceeds the rated capacity of a meter to the extent that the meter may be damaged, the city shall notify the owner. After evaluating the owner's requirements, the public works director shall advise the owner what meter service size is necessary to give proper service without risking potential damage to the meter and the estimate of the cost to install the larger meter service. The city shall then install the proper size meter service and charge the full cost thereof to the owner. If the owner does not pay the cost to install the larger meter service within 30 days after being billed for said cost, then the city shall terminate the water service. If the owner fails to pay the cost to install the larger meter service within 30 days after being billed, the city shall proceed to file a lien against the premises pursuant to CMC [13.04.500](#), Delinquency/lien. [Ord. 866B, 2011.]

13.04.310 Meter tests.

A. When any customer makes a complaint that the water service charges for any period are excessive, the city shall, upon the customer's request, have the meter reread and the water service pipes and plumbing fixtures on the premises inspected for leaks in the event that said actions are practicable and/or possible. The city may charge the customer for a service call in accordance with CMC [13.04.200](#), Service calls, for rereading the meter and inspecting the premises.

B. Should the customer then request that the meter be tested for accuracy, they shall make a deposit, in the amount established by city ordinance. [Ord. 866B, 2011.]

13.04.320 Water service outside corporate limits.

All rules and regulations referring to the management of the city water system effective inside the corporate limits of the city shall apply equally outside the corporate limits except as otherwise specifically set forth herein. [Ord. 866B, 2011.]

13.04.330 Private water systems.

The city shall not operate and maintain private water distribution mains inside or outside the corporate limits of the city in conjunction with its own facilities. All private water systems existing in conjunction with city facilities shall be equipped with an approved check meter at the expense of the private water system, and the readings of such check meter shall be compared to readings of individual meters served by the private system to detect any discrepancies in water usage. All costs

over and above those resulting from the water usage of customers on the private water system shall be borne by the owner and operator of the private water system. [Ord. 866B, 2011.]

13.04.340 Fire protection.

A. Any customer using city water for all purposes shall be entitled to a separate standby fire protection service. Such standby fire protection service shall be provided through a separate water connection. The water connection fee for such standby fire protection service shall be as provided in city ordinance. Standby fire protection lines shall be used for no other purpose than for standby fire protection service and all other uses thereof shall be prohibited. The monthly charge for such standby fire protection service shall be as provided in city ordinance. Such standby fire protection connection fees and standby fire protection service charges shall be based upon the size of the customer's line at its connection to the main, and shall not be based on any specific pressure or volume of water furnished to the customer. The city does not, by the connection of a standby fire protection service, and shall not, by agreement or otherwise, warrant or guarantee a minimum water pressure or water volume for such service.

B. Where standby fire protection service is provided, no charge shall be made for water used in extinguishing fires of incendiary or accidental origin if the customer at the location where the fire occurs gives written notice to the city within 10 days from the time of such fire that a fire has occurred. Otherwise, a charge for all water used shall be made at the rate for use of fire protection facilities provided in city ordinance. [Ord. 866B, 2011.]

13.04.350 Fire protection meters.

A. Service of more than one premises by a fire service shall not be permitted. All water service connections used for fire protection shall be installed in a manner as approved by the public works director, and a metering device approved by the public works director shall be installed at the expense of the owner of the premises as follows:

1. Detector check meters of size and type approved by the public works director shall be permitted on straight automatic fire sprinkler services, which may include hose racks inside the building for fire fighting purposes only. All water registered by the bypass meter shall be billed at the rate established by city ordinance, unless caused by fire reported within 10 days. Persistent indication of unauthorized use of water through a detector check meter shall be cause for installation of a fire line meter at the expense of the owner or agent, or termination and disconnection of such fire protection service, at the discretion of the city.

2. Fire line meters of a size and type approved by the public works director shall be installed on all fire services where hydrants, outside hose outlets, or connections allowing the use of water for other purposes than the extinguishing of fires exist.

B. Delinquency in payment of expense for fire protection service or failure of the owner or occupant to make changes in meter installations as herein provided after reasonable notice from the department shall be sufficient cause of discontinuance of fire service to the premises. Fire protection systems shall be installed and maintained by the owner in a manner approved by the public works director as to prevent backflow into the city's system. [Ord. 866B, 2011.]

13.04.360 Misuse of fire protection water.

Use of water from a fire protection service line or facilities for purposes other than extinguishing fires of incendiary or accidental origin, exclusive of that amount used for testing purposes, shall constitute misuse of fire protection water, and shall be grounds for the city to terminate fire protection service and disconnect the fire protection service line until such time as it is demonstrated to the satisfaction of the public works director that the misuse of fire protection water will not reoccur. [Ord. 866B, 2011.]

13.04.370 Hydrants – Authorized use.

No person other than authorized employees of the city shall operate fire hydrants and hose outlets unless proper arrangements have been made for payment therefor and permission has been granted by the public works director. [Ord. 866B, 2011.]

13.04.380 Hydrants – Temporary use.

Persons desiring water service from a fire hydrant or hose connection shall make application therefor to the city at the public works department on an application form provided by the city. The applicant shall be required to submit a hydrant meter deposit of \$100.00 plus a nonrefundable on/off fee of \$60.00. The applicant shall also sign the application form and agree to the provisions and requirements listed on the application form, and agree to pay the water use rate charges as established by city ordinance for water used through the hydrant meter assembly. If the hydrant meter assembly is damaged, the city shall retain the deposit or portion thereof necessary to replace or repair said hydrant meter assembly. [Ord. 866B, 2011.]

13.04.390 Damaging water system.

Any person causing damage to any property belonging to the city shall be liable to the city for any and all damages resulting either directly or indirectly therefrom. [Ord. 866B, 2011.]

13.04.400 Crime to damage or interfere with access to the water system.

No person shall disturb, break, deface, damage, or trespass upon any property belonging to or connected with the water system of the city in any manner whatsoever. No person shall store, maintain, or keep any goods, merchandise, materials, or rubbish within a distance of five feet or to interfere with the access or operation of any water meter, gate valve, fire hydrant, or any other appurtenances in use on any water service, connection, or water main. [Ord. 866B, 2011.]

13.04.410 Emergency interruption of service.

In the event of emergency or whenever the public health, safety, or the equitable distribution of water so demands, the public works director may authorize the city to change, reduce, or limit the time for or temporarily discontinue the use of water. Water service may be temporarily interrupted for purposes of making repairs, extensions, or doing other necessary work. Before so changing, reducing, limiting, or interrupting the use of water, the city shall notify, insofar as practicable, all water consumers affected. The city shall not be responsible for any damage resulting from interruption, change, or failure of the water supply. In addition, the city makes no commitment as to the volume of water available, pressure, or continuity of service; and will not be liable for injuries or damage due to insufficient volumes, inadequate pressure, or interruption of service. [Ord. 866B, 2011.]

13.04.420 Construction standards.

All persons, firms, corporations, and governmental agencies, and/or their contractors, repairing, replacing, installing, extending, or performing other work on water system lines, facilities, service lines, connections, and/or appurtenances thereto, or performing other work that may interfere, conflict, affect, or endanger the water system of the city, shall follow and comply with the provisions of the engineering development code of the city as adopted by the city. Where the engineering development code of the city is silent on any construction standards issue, the current version of the Washington State Department of Transportation/Washington State Chapter of the American Public Works Association Standard Specifications for Road, Bridge, and Municipal Construction shall apply. [Ord. 866B, 2011; Ord. 819B § 13, 2007.]

13.04.430 Miscellaneous control devices.

The city reserves the right to require any customer to install, as a condition of water service, a pressure-reducing valve, backflow prevention device, pressure relief valve, and/or similar devices, at any location where the public works director determines a need to protect the city's water system and/or facilities. [Ord. 866B, 2011.]

13.04.440 Protection of the public health.

The public works director shall conduct periodic inspections of the water system in coordination with the appropriate health department. The public works director shall, from time to time, suggest rules and regulations deemed necessary by him to the city council to protect the municipal fresh water supply from pollution. [Ord. 866B, 2011.]

13.04.450 Method of billing and payment.

Payment for water service, in accordance with the applicable provision(s) of city ordinance related to water rates, shall be due on the twentieth day of the month. Water statements for residential services will be mailed to the customers on a bimonthly basis. Water statements for commercial services will be mailed to those customers on a monthly basis. All water statements are to be paid either by mail or in person to the city at the billing office. Unpaid statements become delinquent on the twenty-first day of the month, or at 5:00 p.m. on the next full business day, and a delinquency charge as established by city ordinance shall be added to each unpaid account. A delinquent notice shall be mailed and payment of the delinquent balance must be received within seven days of the date of the notice to avoid service interruption. On the next business day, a list of remaining delinquent accounts shall be compiled and the list given to the water superintendent; it shall be his duty to immediately thereafter shut off the water service to such delinquent premises. [Ord. 866B, 2011; Ord. 831B, 2007.]

13.04.460 Alternative method of payment.

A. Users of utility services provided by the city may, at their option, pay to the city at any time prior to the billing date, as an advance payment, toward the actual or estimated utility service charges for water, sewer, and storm service to be billed for the month or next succeeding month during which such charges are incurred.

B. In the event the amount paid exceeds or is less than the actual service charges incurred, any excess amount paid in advance shall be credited to the next succeeding billing for utility service charges, and any amount not paid in advance shall be paid in full by the due date. All unpaid balances shall be considered delinquent and subject to delinquent fees and penalties as established by city ordinance. [Ord. 866B, 2011; Ord. 831B, 2007.]

13.04.470 Method of billing private water systems.

The total amount of water usage registered on the check meter shall be billed to the owner, operator, or owner's agent of the private water system, or at the discretion of the city. Where the private line or system contains individual meters, the total amount of water usage registered on the check meter shall be billed to the individual customers of the private line or system by dividing the usage among the customers as the individual meters indicate to accommodate an equitable distribution of the total usage, unless where special conditions exist and/or specific arrangements have been made and a written contract that is mutually agreeable to both the city and the owner or operator of the private system. Such contract shall state any pertinent conditions and delineate responsibilities. The rates for billing such private water system's usage shall be in accordance with the provisions of city ordinance as applicable. [Ord. 866B, 2011.]

13.04.480 Charge for special improvements.

Where special improvements or upgrading projects have been installed and the costs or portion of the costs of such improvements are determined to be financed by user charges from the customers served, or benefiting from such improvements, such customers shall be responsible for an additional charge to be added to their water use charges and included in their water bill statement. The amount of this additional charge shall be as determined and established by the city council for the specific improvements or upgrading project. Such additional charge shall be to satisfy all debt service requirements and other related costs only. [Ord. 866B, 2011.]

13.04.490 Order for crediting incomplete utility bill payments.

When payment has been made for only part of the total amount owed on a combined utility bill, or for any reason payment of the total amount(s) owed on a combined utility bill has not been made, the city shall satisfy or credit such partial or incomplete payments to or toward amounts owed for storm water, sanitary sewer services, any delinquency charges, fines or penalties, and/or service charges that may be owing, prior to applying or crediting any portion on the amount paid toward charges owed for water service. [Ord. 866B, 2011.]

13.04.500 Delinquency/lien.

A. All water rates shall be charged against the premises for which the service was installed. Any and all charges provided for, when the same become delinquent and unpaid, shall constitute a lien against the premises to which the same has been furnished. Enforcement of a lien and collection of a lien shall include, but not be limited to, the right to stop service and deny service thereafter to any and all owners and/or occupants of the premises until the charges for service and/or other charges have been paid in full.

B. In cases where the occupant of the premises moves to another location within the system and applies for water at the new location, services shall be denied at such location until and unless any statement for service against the first location is fully paid.

C. If any such charges are not paid, the city may record a lien at the office of the county auditor against the property for which the service was installed. Such lien shall include the delinquent charges and such customer shall be responsible for all costs incurred by the city, including reasonable attorney's fees for preparing the lien and the fee for recording the lien.

D. Failure to receive mail will not be recognized as a valid excuse for failure to pay charges due. Notice of change in ownership of property and change in mailing address must be given in writing by the property owner or his agent to the city. [Ord. 866B, 2011.]

13.04.510 Driveway or crossing construction connection removal.

Whenever a driveway or crossing to be used for vehicular traffic is constructed within that portion of a city street lying between the curb line and the property line, the public works director shall cause the removal and relocation of any water service connection or any part thereof which may be within the lines of such driveway or crossing; provided, however, that instead of such removal of water service connection the public works director may, if he deems it advisable, cause the construction of an iron or masonry box or chamber of sufficient strength to withstand the stress of vehicular traffic. The cost of removal, relocation, or maintenance of water service connections as provided by city ordinance shall be charged against the property for which driveway or crossing was constructed and to the owner thereof. [Ord. 866B, 2011.]

13.04.520 Water main extension request.

When a person desires to extend a city water main, that person must make a written request to the city and state on that request the location where the extension is desired, the purpose for extension, and give details and extent of any development he is considering, as well as any other factors as may be pertinent. The public works director shall evaluate all requests for main extensions, taking into consideration the availability of water in the existing mains, reservoir capacity, pressures in the area, and other local conditions. If the proposal is acceptable, specific conditions and requirements will be determined by the public works director. [Ord. 866B, 2011.]

13.04.530 Water main extension design.

The proposed main extension shall be designed by a licensed engineer and be approved by the public works director and appropriate governmental authorities. The design shall be in conformance with city standards as contained in the engineering development code of the city, and shall be designed by the use of a hydraulic analysis, considering pipe size, restrictions, peak demand, length of run, elevation differences, and other factors that may be pertinent. [Ord. 866B, 2011; Ord. 819B § 13, 2007.]

13.04.540 Water main extension installation.

The person requesting a main extension shall be responsible for all costs of installation, including the connection fee as provided in city ordinance. The person requesting the main extension shall also be charged a fee to pay the costs of the inspection performed by public works department personnel and/or city-contracted engineering firm's inspector. The amount of the fee for inspections shall be determined after assessing the entire project. The extension shall be installed in accordance with city standards included in the engineering development code of the city, and shall be inspected by the public works department to ensure the installation meets city standards. [Ord. 866B, 2011; Ord. 819B § 13, 2007.]

13.04.550 Appeal.

Except for provisions required by local, state, or federal regulations, or by law, any water customer or person applying for water who questions, disputes, or feels aggrieved by the determination or decision of the public works director may submit an appeal in writing to the development review committee as provided in CMC [17.09.150](#), Appeals, stating the reasons for the appeal and providing information supporting the basis of the appeal. [Ord. 866B, 2011.]

13.04.560 Rules and regulations adopted.

Unless otherwise restricted or provided for herein or in the engineering development code of the city, the rules and regulations of the Washington State Board of Health and the Standard Specifications for Municipal Public Works Construction, as published by the Washington State Department of Transportation and the Washington State Chapter of the American Public Works Association, shall be, and the same hereby are, adopted by reference. [Ord. 866B, 2011; Ord. 819B § 13, 2007.]

13.04.570 Violations and penalties.

Any person willfully violating any of the provisions of this chapter shall be guilty of a misdemeanor. Any person found guilty of such violation shall be fined a sum not to exceed \$500.00. [Ord. 866B, 2011.]

13.04.580 Enforcement.

It shall be the duty of the employees of the public works department, police department, fire department, and community development department to give vigil and aid to the public works director in the enforcement of the provisions of this chapter and to this end they shall report all violations thereof which come to their knowledge to the office of the public works director. [Ord. 866B, 2011; Ord. 810B § 6, 2006; Ord. 767B, 2004; Ord. 766B, 2004.]

13.04.590 Severability clause.

If any section, subsection, subdivision, sentence, clause, or phrase of this chapter is for any reason held to be unconstitutional or void, such invalidity shall not thereby affect the validity of the remaining portions of this chapter. [Ord. 866B, 2011.]

13.04.600 Repeal.

Ordinance No. 695-B, passed the thirteenth day of August, 2001, and Ordinance No. 741-B, passed the fourteenth day of April, 2003, codified in the Chehalis Municipal Code as Chapter [13.04](#), shall be, and the same hereby are, repealed. [Ord. 866B, 2011.]

13.04.610 Effective date.

The effective date of the ordinance codified in this chapter shall be February 22, 2011. [Ord. 866B, 2011.]

Chapter 13.12
CHARGES, RATES AND FEES FOR WATER SYSTEM

Sections:

- 13.12.010 Definitions.**
- 13.12.020 Costs of installation.**
- 13.12.030 Customer deposit.**
- 13.12.040 Water service connection fees.**
- 13.12.050 Standby fire protection service capital facilities charges.**
- 13.12.060 Service call charges.**
- 13.12.070 Cost for testing meters.**
- 13.12.080 Rate of use of fire protection facilities for other purposes.**
- 13.12.090 Charge for fire protection.**
- 13.12.100 Delinquency charge.**
- 13.12.110 Water rates inside of the city limits.**
- 13.12.120 Water rates outside of the city limits.**
- 13.12.130 Rates for low-income senior citizen customers and low-income totally disabled customers.**
- 13.12.140 Overhead charge.**
- 13.12.150 Water surcharge fees (latecomer fees).**
- 13.12.160 Temporary water connection fee.**
- 13.12.170 Annual review.**
- 13.12.180 Repeal.**
- 13.12.190 Effective date.**

13.12.010 Definitions.

The following words or phrases shall have the meanings set forth for the purposes of this chapter:

“Connection” means any physical connection to the city water system by any water service or any private water system, or any pipeline extension.

“Cost” means the cost of labor, material, transportation, supervision, engineering, and all other necessary overhead expenses.

“Customer” means any person, firm, or corporation obtaining or using water service from the water system of the city.

“Equivalent residential unit (ERU)” means or refers to a unit of water capacity determined by the city to be equivalent to the capacity (or average capacity) typically used by, or allocated to, a single-family residential dwelling unit. For the purposes of this chapter an ERU of water capacity shall be equal to 300 gallons per day of water use as determined through the standard water billing process.

“Income” means gross income as defined in Section 61(a) of the Internal Revenue Code of 1954, as now in effect or hereafter amended, plus any and all Social Security retirement and/or disability payments, Veterans Administration retirement and/or disability payments, Railroad Retirement Board pension and/or disability payments, and payment received from any other public or private pension, retirement, profit sharing and disability plans, unemployment compensation, and income from any other source.

“Low-income senior citizen customer” means a person who is 62 years of age or older and whose total income, including that of his or her spouse or co-tenant, does not exceed the sum of the existing State of Washington Department of Community, Trade and Economic Development low household income figure for community development block grant (CDBG) projects.

“Totally disabled customer” means any person who has been classified as totally disabled by the Social Security Administration and whose total income does not exceed the amount provided for low-income senior citizen customers. [Ord. 1007B, 2020.]

13.12.020 Costs of installation.

A. The costs of installation to the city water system shall be as follows:

Service Size	Meter Size	Cost
3/4"	5/8" x 3/4"	\$ 700.00
1"	1"	1,000.00
1-1/2"	1-1/2"	1,500.00
2"	2"	2,000.00

B. These costs shall include meters where open cutting or conventional boring methods and direct burial of the service lines are not permitted. Where special conditions exist or special approvals and permit fees are required, all costs and fees associated with such restrictions, and any special conditions, shall be added to the above installation costs.

C. Where it is necessary to open cut paved roadway or to cross under a sidewalk and/or improved area between the curb and the property line to install the service, the customer shall also be charged the costs necessary to restore the disturbed roadway, sidewalk, or improved area to its original condition or better condition. Such costs for restoration shall include time and materials plus overhead charges.

D. For water service larger than two inches, the costs of the installation will be based on the actual cost for materials, labor, and equipment, plus overhead charges. The customer requesting a service larger than two inches shall pay a deposit in an amount of the public works director’s estimate of the cost for construction work and the work shall thereafter be billed on the basis of actual cost difference from the estimated cost, including overhead. [Ord. 1007B, 2020.]

13.12.030 Customer deposit.

A. A deposit in the sum of \$200.00 shall be paid by each residential water customer for accounts to serve premises that are occupied or used by the property owner and billed to the property owner. A deposit of \$200.00 shall be paid by each commercial water customer and each residential water customer for accounts to serve premises that are to be occupied by residential customers other

than the owner of said premises at the time of application for a service connection or a service account. The deposit shall be retained by the finance director in a separate account designated "customer deposit account." The deposit paid by each customer shall be refunded to the person paying the deposit at the time their account is closed out, provided there shall be deducted from the deposit any amount due the city for water, sewer or storm drain service rates and charges, including delinquency charges.

B. Any deposit not refunded to the customer or applied on the water, sewer or storm drain account of such customer when the account is closed out shall be held by the finance director for a period of one year after the account is closed out. If demand is not made upon the finance manager for refund of the deposit by the customer paying the same within the period of one year after the account is closed out, the amount of the deposit remaining shall be deemed to be unclaimed property and shall pass to the State of Washington Department of Revenue, in accordance with the mandates of the Uniform Unclaimed Property Act of 1983, as it now exists or is hereafter amended. [Ord. 1007B, 2020; Ord. 831B, 2007.]

13.12.040 Water service connection fees.

A. A water connection fee shall be imposed for connections to the water system of the city, which water connection fee shall be paid for each ERU at the current rate of \$2,071 per ERU. Rates are subject to change upon approval of city council.

B. The number of ERUs used to determine the charges for water connection fees shall be based on actual water usage, if such usage history is available. If no water usage history or information is available, the number of ERUs used to determine the charges for water connection fees shall be based on the estimated usage, as determined by the public works director.

C. In the cases where estimates of water usage are used to determine the number of ERUs and charges for water connection fees, water usage may be reviewed after the connection is in use for the period of one year. If, after an evaluation has been made, the actual determined number of ERUs is greater than the estimated number of ERUs, an additional charge for water connection shall be required and levied against the owner or person responsible for the connection. If any such additional charges are not paid, the water service shall be subject to disconnection. If, after an evaluation has been made, the actual determined number of ERUs is less than the estimated number of ERUs, a reimbursement equal to the difference in charges for the estimated number of ERUs and charges for the actual number of ERUs shall be made to the owner or person responsible for the connection. [Ord. 1007B, 2020.]

13.12.050 Standby fire protection service capital facilities charges.

Capital facilities charges for connections to the city water system for the purpose of providing standby fire protection service shall be as follows:

Service Size	Connection Fee
2"	\$ 1,610
3"	3,210
4"	5,020
6"	10,040

Service Size	Connection Fee
8"	16,060
10"	23,090
12"	45,170

[Ord. 1007B, 2020.]

13.12.060 Service call charges.

A. Service calls, as defined by city ordinance, involving extraordinary and unusual time demands shall be charged to the customer requesting the service call at the cost of labor of each employee involved, including travel time, for service calls made during the hours of 8:00 a.m. to 4:00 p.m., Monday through Friday, except holidays. The minimum charge for such service call shall be \$25.00.

B. Service calls made on Saturdays, Sundays, holidays, or during the hours of 4:00 p.m. to 8:00 a.m., Monday through Friday, shall be charged to the customer requesting the service call at the cost of labor of each employee involved, including travel time. The minimum charge for such service call shall be \$75.00. [Ord. 1007B, 2020.]

13.12.070 Cost for testing meters.

A. Any person requesting a test of any water meter as provided by city ordinance shall, at the time of request, deposit with the public works director the amount to be charged for such test as follows:

Meter Size	Deposit
5/8" x 3/4"	\$ 40.00
1"	50.00
1 – 1-1/2"	80.00
2"	100.00
3"	150.00
4"	200.00
6"	300.00
8"	400.00

B. Meters two inches and smaller in size shall be tested at the public works department. Meters larger than two inches shall be tested in the field. After the deposit has been made and the test has been scheduled, the customer shall be notified of the date and time that the meter test is scheduled to take place. The customer shall have the option of being present when such test is made. In the event the test discloses an error of more than three percent of water consumed in favor of the city, the deposit and any service charges shall be refunded to the customer, the meter shall be corrected or an accurate meter shall be installed, and the customer's account shall be credited with the amount charged for the excess consumption on the three previous readings. When the test discloses an error of three percent or less, the amount deposited shall be retained by the city to cover the costs of such test. [Ord. 1007B, 2020; Ord. 831B, 2007.]

13.12.080 Rate of use of fire protection facilities for other purposes.

A. Whenever water is used from fire protection facilities or equipment for other purposes or fire protection water is misused, such usage shall be charged to the user at the rate of \$2.50 per 100 cubic feet.

B. Prior approval must be obtained before any person shall use water from fire protection facilities for other than their intended purpose. Any such person not obtaining prior approval shall be fined a penalty of \$100.00, in addition to the usage charge listed above. [Ord. 1007B, 2020.]

13.12.090 Charge for fire protection.

The monthly charge for fire protection service shall be as follows:

Water Meter Service Size	Inside City Limits	Outside City Limits
2"	\$ 6.58	\$ 7.23
3"	12.72	14.00
4"	35.29	38.83
6"	105.03	115.54
8"	207.59	228.36
10"	330.67	363.74
12"	474.26	521.69

[Ord. 1007B, 2020.]

13.12.100 Delinquency charge.

A delinquency charge equal to 10 percent of the total water service charge shall be added to each unpaid bill. [Ord. 1007B, 2020.]

13.12.110 Water rates inside of the city limits.

The water rates to be charged for water usage for customers inside the city limits shall be as follows:

A. Residential Fixed Rate.

Size of Water Meter Service	Rate
5/8" x 3/4"	\$ 17.92
1"	25.71
1-1/2" and 2"	54.19

B. Commercial Fixed Rate.

Size of Water Meter Service	Rate
5/8" x 3/4"	\$ 20.08
1"	28.76

Size of Water Meter Service	Rate
1-1/2" and 2"	60.58
3" and 4"	158.93
6"	303.55
8"	477.09

C. Consumption.

Amount Per Unit of 100 Cubic Feet
\$2.66

[Ord. 1007B, 2020; Ord. 826B §§ 2, 3, 2007.]

13.12.120 Water rates outside of the city limits.

The water rates to be charged for water usage for customers outside the city limits shall be as follows:

A. Residential Fixed Rate.

Size of Water Meter Service	Rate
5/8" x 3/4"	\$ 19.71
1"	28.28
1-1/2" and 2"	59.67

B. Commercial Fixed Rate.

Size of Water Meter Service	Rate
5/8" x 3/4"	\$ 22.09
1"	31.64
1-1/2" and 2"	66.63
3" and 4"	174.81
6"	333.90
8"	524.80

C. Consumption.

Amount Per Unit of 100 Cubic Feet
\$2.92

[Ord. 1007B, 2020; Ord. 826B §§ 2, 3, 2007.]

13.12.130 Rates for low-income senior citizen customers and low-income totally disabled customers.

A. The fixed rates for low-income senior citizen residential customers and low-income totally disabled customers shall be one-half (50 percent) of the residential fixed rates that would otherwise apply. All consumption shall be charged as provided in the rate schedule for residential customers inside and outside the city limits, whichever is applicable, as set forth in this chapter.

B. All low-income senior citizen residential customers and low-income totally disabled residential customers applying for low-income senior citizen customer or totally disabled residential customer rates herein provided shall furnish a claim for exemption in such affidavit form as shall be prescribed by the city manager. Such form shall be furnished on or before the thirtieth day of June of each year or within 30 days from the date of account opening or unexpected sudden change of income status. The city will consider applications furnished outside of this period.

C. Those customers applying for the totally disabled customer rate must furnish proof of such disability from the Social Security Administration. [Ord. 1007B, 2020.]

13.12.140 Overhead charge.

An overhead charge of 25 percent of the total costs for labor, materials, and equipment for work and services performed or installation of service water lines or other facilities by the city shall be added to the costs charged to the customer. Such overhead charge shall be to accommodate administration, supervision, and accounting costs. [Ord. 1007B, 2020.]

13.12.150 Water surcharge fees (latecomer fees).

A. The public works director may, at his discretion, establish and adopt water surcharge fees that, after their establishment, shall be imposed upon water customers connecting to specifically designated water utility extension(s) and/or water system improvements in defined areas.

B. Such surcharge fees shall be based on criteria established within the standard latecomer agreement form created by the development review committee.

C. In order for a water surcharge fee to be established, in addition to or separately from a request to the city council approving and authorizing the installation and/or construction of a water utility extension(s) or water system improvements, the developer, property owner, or other entity that installed and/or constructed such water utility extension(s) or water system improvements, or proposes to install and/or construct water utility extension(s) or water system improvements, shall submit to the public works director a specific request (a latecomer agreement form created by the development review committee) to establish a water surcharge fee.

D. The public works director may require additional information from the developer, property owner, or other entity requesting the establishment of such water surcharge fee. The director may also deny the request to establish the water surcharge fee, or establish a different amount of water surcharge fee, other than the fee calculated in the standard latecomer agreement form. If a water surcharge fee is approved, the director may impose other conditions, limitations, and/or duration for said water surcharge fee.

E. The purpose of establishing such water surcharge fees is to reimburse developers, property owners, or other entities, that installed and/or constructed water utility extension(s) or water system improvements, for a portion of their costs for the installation and/or construction of water utility

extension(s) or water system improvements, for which subsequent, nonparticipating future customers benefit. The city shall collect established surcharges, from such nonparticipating future customers, at the time water capacity charges are paid, and then reimburse the surcharge(s) to the developer, property owner or other entity that installed and/or constructed such water utility extension(s) or water system improvements, for which such surcharge(s) was established.

F. Such water surcharge fees shall be in addition to any other charges that may be applicable. [Ord. 1007B, 2020.]

13.12.160 Temporary water connection fee.

Temporary connections to the city's water system may be allowed under certain circumstances (such as ground water remediation sites) and must be approved by the public works director. They may be permitted for a period of up to five years. Water service capacity fees will be charged at the rate of 0.025 of the standard ERU connection fee in place at the time of payment, per year of water usage, payable prior to each year of use. This fee will not be prorated in increments of less than one year and is nonrefundable. Monthly water charges will be assessed as already established. [Ord. 1007B, 2020.]

13.12.170 Annual review.

The revenue generated as a result of this chapter shall be reviewed annually and compared to expectations and sufficiency, with a report to the city council. [Ord. 1007B, 2020.]

13.12.180 Repeal.

Ordinance No. 865-B, passed on the fourteenth day of February 2011, and Ordinance No. 900-B, passed on the twenty-second day of October 2012, codified as this chapter, shall be, and the same hereby are, repealed. [Ord. 1007B, 2020.]

13.12.190 Effective date.

The effective date of the ordinance codified in this chapter shall be the seventeenth day of June, 2020. [Ord. 1007B, 2020.]

inspected and repaired in accordance with the details and requirements included in these standards.

4. **Stabilized Construction Entrance.** A stabilized construction entrance is a rocked access point to a construction site. The entrance reduces material carried from the site onto the public right-of-way.

Construction entrances must be cleared of mud and debris regularly to ensure that materials are not being tracked from the construction site onto the right-of-way and beyond. The contractor is responsible for all required maintenance of entrances.

5. **Detention/Retention Facilities.** No retention/detention facility will be located in an area that is used to satisfy an open space requirement unless it enhances a recreational amenity. Use of designated open space areas for storm water detention/retention and infiltration must satisfy all conditions of the city of Chehalis for usability, landscape conformity and ease of access. The city will make the final determination whether or not the proposed storm water facilities are compatible with and satisfy the intent of an open space.

The primary purpose of a consolidated open space is to provide usable area for recreation activities, buffer zones, and green belt areas, and must be designed for this intent. Any use of this area for storm water detention/retention must clearly be subordinate to and not detract from open space uses. The usable open space will be predominantly flat and in no case exceed 4:1 where drainage facilities are present. A minimum of 50 percent of the linear slope length will not exceed 7:1.

The public works department or designated consultant will review the use of commercial parking lots for storm water detention on a case-by-case basis. The detention area will be situated away from areas of pedestrian movement. The maximum depth of water in parking lot storage will be limited to 12 inches. [Ord. 819B § 13, 2007; Ord. 785B § 14 (3B), 2005.]

Article V. Water

12.04.360 General.

Any extension of the Chehalis water system must be approved by the department of public works and conform to the department of health, the city of Chehalis water system plan, and Chehalis police department and fire department requirements.

In designing and planning for any development, it is the developer's responsibility to determine that adequate water for both domestic use and fire protection is attainable. Proposed plans must show how water will be supplied and whether adequate water pressure and volume will be maintained in case of fire. An analysis of the system may be required if it appears that the system might be inadequate.

Anyone desiring to extend or connect to the city water system must contact the engineering division for a water/sewer/storm water application form. After the completed application is returned to the public works department, along with any other information that may be required or requested, staff will determine the costs to connect to city utilities. Extension of or connection to city water lines outside of the Chehalis urban growth area (UGA) is permitted only when a demonstrated public health risk exists and has been identified in writing by an appropriate health agency.

Prior to the issuance of a water meter for development projects, all public works improvements must be completed and approved, including granting of right-of-way or easements, submission and acceptance of as-built drawings, and all applicable fees must be paid.

Building permits for new construction of single-family subdivisions will not be issued without final approval of the public works director. For commercial projects, building permits may be issued upon completion and acceptance of the required fire protection facilities. A construction bond, in accordance with CMC [12.04.190](#), will be required for the remaining improvements. A certificate of occupancy will not be issued until final public works approval is given for all improvements. [Ord. 785B § 14 (4.01), 2005; Ord. 767B, 2004; Ord. 766B, 2004.]

12.04.370 Design standards.

A. The design of any water extension/connection shall conform to these standards and all other applicable standards. The layout of extensions shall be extended to and through the property frontage to be developed to provide for continuation and/or looping of the existing system. The public works department and/or the engineering division has the authority to apply or necessitate items not covered or mentioned in this article.

B. The general notes that follow must be included on all plans dealing with the city of Chehalis water system.

General Notes (Water Main Installation)

1. All workmanship and material will be in accordance with city of Chehalis standards and the most recent copy of the WSDOT/APWA Standard Specifications for Road, Bridge and Municipal Construction, American Water Works Association (AWWA) Standards and ANSI/NSF Standard 60 or 61.
2. A preconstruction meeting will be held with the public works department and the engineering division prior to the start of construction.
3. All water mains will be ductile iron cement mortar lined thickness Class 52.
4. Gate valves will be resilient wedge, NRS (nonrising stem) with O-ring seals. Valve ends will be mechanical joint or ANSI flanges. Valves will conform to AWWA 509-80. Valves will be Mueller, M&H, Kennedy, Clow R/W or American Flow Control Series 2500. Existing valves and all valves installed directly to and connected to a portion of the active water system are to be operated by city employees only.
5. Fire hydrants will be Mueller Centurion A-423, M&H Reliant Style 129, Clow Medallion, or Kennedy Guardian K81D, Waterous Pacer Model WB-67-250 or AVK 2780. Hydrants will be installed in accordance with the most recent version of the International Fire Code. Hydrants will be bagged and the connecting gate valves left closed until the system has been approved. Hydrants must be painted with sunburst yellow high-grade enamel after installation.
6. All lines will be chlorinated and tested in conformance with the above-referenced specifications (see Note 1).
7. All pipes and services will be installed with continuous tracer tape placed 12 to 18 inches under the proposed finished subgrade. The marker will be of plastic, nonbiodegradable, metal core, or backing marked "WATER" that can be detected by a standard metal detector. Tape will be Terra Tape "D" or approved equal. In addition to tracer tape, toning wire will be installed over all pipe and services. Toning wire will be UL listed, type UF, 14-gauge solid coated copper wire, taped to the top of the pipe to prevent movement during backfilling and laid loose enough to prevent stretching and damage before being brought up and tied off at the valve operating nut or valve box. If the operating nut is not easily accessible from the ground surface, the copper wire will be tied off at the valve box in such a way that

the wire is easily accessible from the ground surface. Two feet of slack will be provided to allow for connection to the locator.

A one-pound magnesium anode will be buried with the pipe every 1,000 linear feet maximum for cathodic protection of the toning wire. Toning wire splices and connections to anodes will join wires both mechanically and electrically and will employ epoxy resin or heat-shrink tape insulation. Toning wire will be tested prior to acceptance of the pipe system. A written notice from the contractor to the city must be received two business days prior to when testing is required.

8. The contractor will provide traffic control plan(s) as required in accordance with MUTCD.
9. All water mains will be staked for grades and alignment by an engineering or surveying firm capable of performing such work. Staking will be maintained throughout construction.
10. All service line and water valve locations will be marked on the face of the adjacent curb with a "W" or "WV" embossed one-fourth inch into the concrete.
11. All water system connections serving buildings or properties with domestic potable water, fire sprinkler or irrigation systems will comply with the minimum backflow prevention requirements established by the Department of Health (DOH) and the city of Chehalis cross-connection control program.
12. Call Utilities Underground Location Center at 1-800-424-5555 a minimum of two business days prior to any excavations.
13. The city will be notified five business days prior to scheduling a water system shutdown. The city's water division will perform all water system shutdowns. When connections require "field verification," connection points will be exposed by the contractor and fittings verified by the city two business days prior to the distribution of shutdown notices. Customers involved with or affected by water service interruptions will be notified at least 48 hours in advance. Shutdowns will not be permitted on Fridays, weekends, or holidays without written authorization from the director of public works.
14. When connecting to an existing water line where a new valve is not to be installed, the existing valve must be pressure tested to these standards by the contractor prior to connection. If an existing valve fails to pass the test, the contractor will make the necessary additional provisions to test the new line prior to connecting to the existing system or will install a new valve. New lines will not be connected to the existing system until all required tests have been passed.

[Ord. 858B § 2, 2010; Ord. 785B § 14 (4.02), 2005.]

12.04.380 Water main.

A. General. Water mains will be sized to provide adequate domestic water plus fire flows at the required residual pressure. Fire flow requirements will be determined by the Chehalis fire department. However, the quantity of water required will in no case be less than 1,000 gpm at 20 psi residual pressure in single-family and/or duplex residential areas, or less than 1,500 gpm at 20 psi residual pressure in multifamily residential areas, commercial areas and/or industrial areas.

The minimum water main size will be six inches in diameter where looped. Dead-end mains will be a minimum of eight inches in diameter. All mains that may be extended or looped must end with an approved flanged gate valve and blind flange. A straddle block will be installed at a point along the last length of pipe preceding the valve, in lieu of a thrust block at the end.

Larger-sized mains may be required in specific areas identified in the Chehalis water system plan. The city may also require the installation of larger mains if determined necessary to meet fire protection needs, domestic requirements and/or for future service needs (see CMC [12.04.130](#), Latecomers agreements).

B. Piping. All pipe for water mains will have flexible gasketed joints and will comply with the following specifications:

Ductile iron pipe will conform to AWWA C151 Class 52 and will have a cement mortar lining conforming to AWWA C104. All pipes will be joined using nonrestrained joints that will be rubber gaskets, push-on type or mechanical joint, conforming to AWWA C111.

C. Fittings. All fittings will be ductile iron compact fittings conforming to AWWA C153 or AWWA C110 or C111. All fittings will be cement mortar lined conforming to AWWA C104. Plain-end fittings will be ductile iron if mechanical joint retainer glands are installed on the plain ends. All fittings will be connected by flanges or mechanical joints. The city shall require the use of MEGALUG retainers for a water line installation, as necessary.

D. Pipe Installation. All pipe and services will be installed as directed in note 7 of the general notes in CMC [12.04.370](#).

E. Cover Required. The minimum cover for all water mains from top of pipe to finished grade will be 30 inches for ductile iron pipe unless otherwise approved.

F. Connection to Existing Water Mains. The developer's engineer will be responsible for determining the scope of work for connection to existing water mains. A minimum of five business days' advance notice to the water division is needed to schedule shutdowns. However, shutdowns cannot be scheduled until a water/sewer/storm water application has been approved and all applicable fees have been paid in full. The city of Chehalis water division will be consulted regarding fittings or couplings required. It will be the contractor's responsibility to verify the location and depth of the existing main and the fittings required to make the connections to the existing main. All excavation, connections, piping, tapping valve fittings, services, anchors, blocking, bedding, backfill, compaction, restoration and other labor and materials required will be furnished and placed by the contractor. The tapping of an existing water main will be done in the presence of a water division representative. The water division will be given two business days' advance notice of a water main tap and they will perform all shutdowns on existing mains. [Ord. 785B § 14 (4.03), 2005; Ord. 767B, 2004.]

12.04.390 Service interruption.

The contractor will give the public works department a minimum of five business days' advance notice of any planned connection to an existing pipeline. This includes all cut-ins and live taps. Notice is required so disruptions to existing services can be scheduled and affected customers notified. The contractor will make every effort to schedule water main construction with minimum disruption of water service. The contractor is responsible for ensuring that the excavation and shoring procedures comply with L&I standards for worker safety. If these procedures are not followed, the connection will not be performed. [Ord. 785B § 14 (4.04), 2005.]

12.04.400 Hydrants.

A. The lead from the service main to the fire hydrant will be ductile iron cement mortar lined Class 52, no less than six inches in diameter. A gate valve will be installed a minimum of three feet from the hydrant, unless otherwise approved.

B. Fire hydrants will have two two-and-one-half-inch outlets with National Standard threads and one four-inch pumper port outlet with Pacific Coast threads (male threaded 4.72-inch diameter). The pumper port will be fitted with a five-inch quick connect Storz adapter with a Pacific Coast thread hydrant connection (female threaded four-and-three-fourths-inch diameter). The Storz adapter will include a cap. The hydrant valve opening will be five-and-one-fourth-inch diameter. The hydrant will have a positive and automatic barrel drain and will be of the "safety" or breakaway style.

Hydrants will be Mueller Centurion A-423, M&H Reliant Style 129, Clow Medallion or Kennedy Guardian K81D, Waterous Pacer Model WB-67-250 or AVK 2780. Alternate hydrant styles and manufacturers will be considered on a case-by-case basis and must be approved by the director of public works. All hydrants will be bagged and the connecting gate valves will remain closed until the system is tested and approved. Developments being served by existing hydrants will be required to upgrade to these standards and use the same type of hydrant throughout the development. Hydrants will be painted with sunburst yellow high-grade enamel after installation.

C. The department of public works and Chehalis fire department will work together to determine the required hydrant spacing for installation. All hydrants will be installed and placed in a manner that provides accessibility to the fire department and their equipment as determined by both departments.

Unless otherwise required by the public works department, the following guidelines will apply for hydrant number and location:

1. At least one hydrant will be installed at all intersections.
2. Hydrant spacing of 300 feet will be required in all areas except single-family and duplex residential areas.
3. Hydrant spacing of 500 feet will be required for single-family and duplex residential areas.
4. The spacing distance for hydrants will be measured along the frontage street(s) and/or accessible side street(s) only. When determining the sufficiency of existing hydrants related to hydrant placement and spacing, hydrants located behind or on parallel streets or alleys, or hydrants with flows less than the minimum fire flows listed in CMC [12.04.380\(A\)](#), will not be considered.
5. When any portion of a proposed building is in excess of 150 feet from a water supply on a public street or right-of-way, privately owned on-site hydrants will be required. Such hydrants will be located per the Chehalis fire department and the International Fire Code. The hydrants will be privately maintained and will include the appropriate metering and backflow prevention, as noted in these standards. A proposed maintenance schedule will be submitted to the city for review prior to final approval of the engineering plans.

D. Fire hydrants will be installed as detailed in Standard Drawing 4-8.

E. For requirements regarding use, size and location of a fire department connection (FDC) and/or post indicator valve, contact the fire department. Location of the FDC will be shown on all water plans.

F. When necessary, the public works department may require hydrants to be protected by two or more posts, four-inch diameter by five feet high, made of either reinforced concrete or steel.

G. Fire hydrants must be installed, tested, and accepted prior to the issuance of a certificate of occupancy. [Ord. 785B § 14 (4.05), 2005; Ord. 767B, 2004.]

12.04.410 Valves.

All valves and fittings will be ductile iron with ANSI flanges or mechanical joint ends. All existing valves are to be operated by city employees only.

Valves will be installed in the distribution system at sufficient intervals to facilitate system repair and maintenance, but in no case will there be less than one valve every 1,000 feet. Generally, there will be two valves on each tee and three valves on each cross. Specific requirements for valve spacing will be made at the plan review stage.

A. Gate valves will be used on all two- to 12-inch lines. The design, materials and workmanship of all gate valves will conform to the most recent revision of AWWA C509-87. Gate valves will be resilient wedge nonrising stem (NRS) with two internal O-ring stem seals. Gate valves will be Mueller, M&H, Kennedy, Clow R/W or Waterous Series 500.

B. Butterfly valves will be used on all lines 14 inches and larger. Butterfly valves will conform to AWWA C504-87, Class 150B, with cast iron short body and O-ring stem seals. Butterfly valves will be Mueller, Linseal III, Kennedy, Pratt Groundhog, or Allis Chalmers.

C. Valve Box. All valves will have a standard Olympic Foundry 910 or 940 water valve box as determined by the water division. If the city approves or requires the use of an Olympic 910 valve box, it will be set to grade with a six-inch ASTM 3034 SDR 35 PVC riser from valve to approximately six inches from the valve box top. If valves are not set in a paved area, a three-by-three-foot concrete pad four inches thick will be set around each valve box at finished grade. An Olympic Foundry 940 valve box will be required for all locations of heavy traffic. In areas where the valve box is on the shoulder of the road, the ditch and shoulder will be graded before placing an asphalt or concrete pad. Valve box lids will be ductile iron, anti-kickout, and marked "WATER" (see Standard Drawing 4-12). All valve locations will be marked on the face of the adjacent curb with a "WV" embossed one-fourth inch into the concrete. [Ord. 785B § 14 (4.06), 2005.]

12.04.420 Casing.

Steel casing pipe will be schedule 20 steel or equal. Pipe spacers will have eight-inch runners. Casting pipe and spacers will be sized for pipe being installed with a minimum of three spacers per section of pipe. The casing pipe will then be sand-packed and sealed in accordance with the spacer manufacturer's recommendations. [Ord. 785B § 14 (4.07), 2005.]

12.04.430 Air and vacuum release valve.

Air and vacuum release valves (ARV) will be APCO combination air release valves. Installation will be as shown on Standard Drawing 4-9.

The installation will be set at the high point of the line when required. Where possible, pipes are to be graded to prevent the need for an air release valve. Air release valves may not be required when services are in the vicinity; however, the final determination will be made by the public works department. [Ord. 785B § 14 (4.08), 2005.]

12.04.440 Blowoff assembly.

If a fire hydrant is not located at the end of a dead-end main, a blowoff assembly will be required. On water mains that may be extended in the future, the valve that operates the blowoff assembly will be the same size as the main and provided with a saddle block along the last length of the pipe preceding the valve, in lieu of a thrust block at the end. The working pressure rating for blowoff assemblies will be a minimum of 200 psi. Installation will be as shown on Standard Drawing 4-10. [Ord. 785B § 14 (4.09), 2005.]

12.04.450 Backflow prevention.

All water system connections providing buildings or properties with domestic potable water, fire suppression or irrigation systems will comply with the backflow prevention requirements as established by the Department of Health (DOH), WAC and the city of Chehalis cross-connection control program.

Having an approved backflow assembly(s) installed is necessary to protect the city water system and all users from any possible contamination. All backflow assemblies installed will be of a type and model preapproved by the DOH or the city. No cross-connections will be created, installed, used, or maintained within the city of Chehalis water system. A list of approved testers may be obtained from the Washington Environmental Training Resource Center (WETRC) located in Auburn, Washington.

In-premises cross-connections must have an approved backflow assembly(s) in place in accordance with the Uniform Plumbing Code (UPC). The city may require additional in-premises and/or premises protection in accordance with the DOH and the city of Chehalis cross-connection control plan when health hazards are determined to exist.

All assemblies must be installed in accordance with the most recent versions of the city of Chehalis cross-connection control program, the DOH, UPC, and the PNWS/AWWA Cross-Connection Control Manual. In addition, all assemblies must be inspected and approved by the city's cross-connection specialist (CCS). The CCS may also conduct an on-site inspection of new and/or existing backflow assemblies during testing. The city will release or issue a certificate of occupancy only after all backflow assemblies have passed a certified test.

Any person violating any provision of the city of Chehalis cross-connection control plan will be subject to penalties as stated under CMC [13.04.070](#)(G) and (H).

A. Backflow Assemblies. The definitions, abbreviations and acronyms relating to cross-connections frequently used in cross-connection control are found in the Washington State Department of Health Water System Design Manual as applies to "Group A" public water systems. Accepted backflow prevention assemblies are RPBA, RPDA, DCVA, DCDA, PVBA or SVBA of a make, model, and size that has been approved by the DOH. Assemblies on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research are also approved.

B. Installation Requirements. Backflow prevention assemblies used for premises isolation will be installed at the expense of the user, downstream from the city's water metering device, but within six feet of the meter box or before any other use connection, to protect the water distribution system from any potential hazard, as determined by the city. All assemblies must be installed in accordance with the most current versions of the city of Chehalis cross-connection control plan, DOH requirements, UPC, and the PNWS/AWWA Cross-Connection Control Manual.

In-premises installation of backflow assemblies can be installed only with written permission by the city's CCS or may be mandated along with premises isolation when high health hazards are determined to exist by the CCS. All backflow assemblies (premises or in-premises) must be readily accessible to city personnel during regular working hours of 8:00 a.m. to 4:30 p.m. If there is a change of ownership of an in-premises backflow assembly and/or at any time all requirements are not met, the city of Chehalis has the right to enforce premises isolation and will follow the procedures established in the city of Chehalis cross-connection control plan, Section 6 (a – f). The city of Chehalis must be notified within two business days of the completion of a backflow assembly installation. Upon notification, the city's CCS will then inspect the installation to determine compliance with all applicable requirements.

All backflow assembly installations are also required to be tested by a Washington State DOH-certified backflow assembly tester (BAT) with an annual certificate of accuracy for their testing equipment on file with the city. The test results must be sent to the city showing the backflow assembly having successfully passed the certified test. The property owner must schedule a backflow test annually.

C. Costs of Compliance. All costs associated with purchase, installation, inspections, testing, replacement, maintenance, parts and repairs of a backflow assembly are the responsibility of the property owner/user.

D. Termination of Services. Failure on the part of any customer to correct all cross-connections in accordance with these standards is sufficient cause for the immediate discontinuance of public water service to the premises. [Ord. 785B § 14 (4.10), 2005.]

12.04.460 Service connection.

A. All service connection sizes used for new development will be determined by industry standards and approved by the public works department or designated consultant and installed by the developer at the time of mainline construction. After the lines have been constructed, tested and approved, the owner may request a water meter. The city will install a water meter only after a water/sewer/storm application has been completed, all applicable fees paid and the system inspected and approved. With the placement of one-and-one-half-inch or two-inch meter setters (Standard Drawing No. 4-3), the contractor shall install the meter at the time the setter is put in place. The contractor shall contact the city two business days prior to the installation of the setter and coordinate the delivery of the meter with the installation of the setter. Meter and gasket will be supplied by the city. The city will lock off the setter after the contractor has installed the meter.

B. When water is desired for a parcel fronting an existing main but not served by an existing setter, a water/sewer/storm application must be completed and returned to the city. Upon approval of the application and payment of all applicable fees, the city will tap the main and install the meter, box, and setter.

C. Service lines will be Type K soft copper. All connections will be of Ford, McDonald or Mueller 110 compression connection fittings. Service lines will be installed a minimum of 22.5 degrees off the main. Tracer tape will be installed over all service lines.

Service saddles will be ductile iron with double stainless steel traps. All clamps will have rubber gasket and iron pipe threaded inlet, and iron pipe threaded or approved compression outlet connections.

Corporation stops will be all U.S. brass and will be Ford, Mueller, or A.Y. McDonald with iron pipe (IP) threads with tapping saddles and CC threads on direct taps conforming to AWWA C800.

D. Master meters will not be allowed for service to more than one building. An approved backflow prevention system must be installed in conjunction with any master meter, in accordance with the requirements outlined in this article. [Ord. 819B § 13, 2007; Ord. 785B § 14 (4.11), 2005.]

12.04.470 Marking service lines.

The location of all service lines will be marked on the face or top of the cement concrete curb with a "W" embossed one-fourth inch into the concrete. [Ord. 785B § 14 (4.12), 2005.]

12.04.480 Water main/sanitary sewer crossings.

The contractor will maintain a minimum of 18 inches of vertical separation between sanitary sewers and water mains – with the water mains being at the higher elevation. If the minimum vertical separation

cannot be met, the standards for water/sewer separation from the DOE Guidelines as shown in this section will apply.

The longest standard length of water pipe will be installed so that the joints will fall equidistant from any sewer crossing. In cases where minimum separation cannot be maintained, it may be necessary to utilize water main-rated pipe for the sewer line, or to encase the water pipe and/or sewer line in pipe or concrete. No concrete will be installed unless specifically directed by the public works department or designated consultant.

Water/Sewer Separation Detail Department of Ecology Guidelines

Figure 1

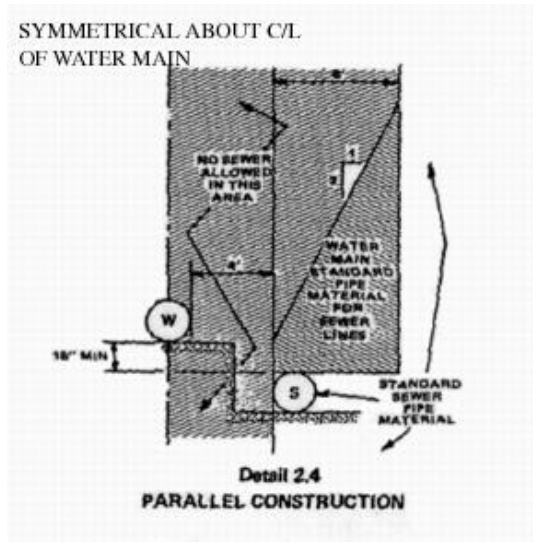


Table 1. Water Main Standard Pipe Material

Type of Pipe	AWWA (ASTM) Standard		
	Pipe	Joint	Fittings
Ductile Iron	C151 and C104	C111	C110
Asbestos-Cement	C400 (Type II) Class 200	(D1869)	C110
Polyvinyl-Chloride	C900	(D3139 and F477)	C110
Concrete Cylinder			C303

[Ord. 819B § 13, 2007; Ord. 785B § 14 (4.13), 2005.]

12.04.490 Irrigation.

All irrigation systems will be installed with a backflow prevention assembly approved by the Department of Health or the city of Chehalis. Irrigation sprinklers will be situated so as to not wet any public street or sidewalk. [Ord. 785B § 14 (4.14), 2005.]

12.04.500 Staking.

All surveying and staking will be performed by an engineering or surveying firm licensed by the state of Washington and capable of performing such work. A preconstruction meeting will be held with the city prior to commencing staking and all staking will be inspected by the city prior to construction and maintained throughout construction.

The minimum staking of water lines will be as follows:

A. Stake centerline alignment every 25 feet (50 feet in tangent sections), with cuts and/or fills to bottom of trench maintaining the minimum required depth of cover over pipe. Centerline cuts are not required when road grade is to finished subgrade elevation.

B. Stake location of all fire hydrants, hydrant flange elevations, tees, water meters, setters and other fixtures with cut or fill to finished grade. [Ord. 785B § 14 (4.15), 2005.]

12.04.510 Trench excavation.

A. Clearing and grubbing, when required, will be performed within the easement or public right-of-way as permitted by the city and/or governing agencies. All debris resulting from clearing and grubbing must be disposed of by the owner or contractor in accordance with the terms of the applicable permits.

B. Trenches will be excavated to the line and depth designated by the city to provide a minimum of 30 inches of cover over the pipe and, to the extent practical, a maximum of 42 inches of cover over the pipe. Except for unusual circumstances where approved by the city, the trench sides will be excavated vertically and the trench width will be excavated only to such widths as are necessary for adequate working space as allowed by the governing agency. The trench will be kept free from water until pipe assembly is complete. Surface water will be diverted so as not to enter the trench. The owner will maintain sufficient pumping equipment on the job to ensure that these provisions are carried out.

C. The contractor will perform excavation of every description and of whatever substance encountered including boulders, rocks, roots and other obstructions. All material will be entirely removed or cut out to the width of the trench and to a depth six inches below water main grade. Where materials are removed from below water main grade, the trench will be backfilled to grade with thoroughly compacted material that is satisfactory to the city.

Pipe placed in the trench will be sealed with a watertight plug at the end of each day. More frequent use of a watertight plug may be required at the discretion of the city.

D. Trenching and shoring operations will not proceed more than 100 feet in advance of pipe laying without approval of the city, and will be in conformance with the Washington Industrial Safety and Health Administration (WISHA) and Office of Safety and Health Administration (OSHA) Safety Standards. The contractor will also maintain the presence of a "competent person" as defined by the Washington State Department of Labor and Industries when any trench excavation and backfill work is being done at the project site.

E. The bottom of the trench will be finished to grade with hand tools in such a manner that the pipe will have bearing along the entire length of the barrel. The bell holes will be excavated with hand tools to sufficient size to make up the joint. [Ord. 785B § 14 (4.16), 2005.]

12.04.520 Thrust blocking.

Location of thrust blocking will be shown on plans. Thrust block concrete will be Class B poured against undisturbed earth. A plastic barrier will be placed between all thrust blocks and fittings. The city shall require the use of MEGALUG restrainers, Romac retainers or restraining rods in lieu of and/or in conjunction with thrust blocking. See Standard Drawings 4-13 and 4-14 for thrust block locations and calculations. [Ord. 785B § 14 (4.17), 2005.]

12.04.530 Backfilling.

Backfilling will not commence until the pipe installation has been inspected and approved by a city inspector. Backfilling and surface restoration will closely follow installation of pipe so that not more than 100 feet is left exposed during construction hours without approval of the city.

Selected bedding material conforming to WSDOT/APWA Standard Specifications will be placed and compacted around and under the water mains by hand tools to a height of six inches above the top of the water main. The remaining backfill will be compacted to 95 percent of the maximum density in traveled areas, 90 percent outside traveled areas. The city will have the discretion of requiring the use of control density fill (CDF) for backfill material for road crossings.

Where governmental agencies other than the city have jurisdictions over roadways, the backfill and compaction will be done to the satisfaction of the agency having jurisdiction, but in no case will the backfilling or compaction be to a lower standard than that of the city. If suitable backfill material, as determined by the city, is not available from trenching operations, the city may require the placement of bedding and/or a gravel base conforming to the current WSDOT/APWA Standard Specifications. [Ord. 785B § 14 (4.18), 2005.]

12.04.540 Street patching and restoration.

See CMC [12.04.280](#)(O) and (P) for requirements regarding street patching and trench restoration. [Ord. 785B § 14 (4.19), 2005.]

12.04.550 Hydrostatic tests.

Prior to the acceptance of work, installation will be subject to a hydrostatic pressure test by the contractor. All pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the test will be furnished and operated by the contractor. Tests will be conducted only after all connections along the section to be tested have been made and the roadway section is constructed to subgrade.

The section of water main being tested will be filled with water and allowed to stand under pressure for a sufficient length of time to allow air to escape and the pipe lining to absorb water. The contractor will be responsible for all costs, labor and materials associated with the testing of the line. The contractor will pay for all water needed for testing at the current rate charged by the city.

The test will be accomplished by pumping the main up to a pressure 150 psi above normal operating pressures but in no case will the test pressure be less than 200 psi. After reaching the test pressure, the pump will be stopped for 15 minutes and then the pressure brought back up to the test pressure again. The quantity of water used to restore the pressure will be accurately determined by pumping through a positive displacement water meter. The meter will be approved by the public works department prior to testing.

Acceptability of the test will be determined by using the following formula:

$$L = \frac{N \times D \times (P^{1/2})}{7400}$$

L = allowable leakage, gallons per hour (gph)

N = number of joints in the length of pipeline tested

D = nominal diameter of pipe, inches

P = average test pressure during the leakage test,
psi

If the water used to restore the pressure in the system is greater than the allowable leakage determined by the formula, the main will be considered to have failed. There will not be any appreciable or abrupt loss in pressure during the 15-minute test period. Any significant loss will also be grounds for a nonpassing test. Should the tested section fail to pass the pressure test as specified, the contractor will, at no expense to the city, locate and repair the defects and then retest the pipeline. All tests will be made with the hydrant auxiliary gate valves open and pressure against the hydrant valve. After the test has been completed, each gate valve will be tested individually by closing each in turn and relieving the pressure beyond. This test will be acceptable if there is no immediate loss of pressure on the gauge when the pressure comes against the valve being checked. The contractor will verify that the pressure across the valve does not exceed the rated working pressure of the valve.

Sections to be tested will normally be limited to 1,500 feet. The public works department or designated consultant may require that the first section of the pipe installed by the contractor, not less than 1,000 feet in length, be tested in order to qualify the crew and the material. Pipe installation will not be continued for more than an additional 1,000 feet until the first section has been successfully tested.

Prior to calling a city inspector to witness the pressure test, the contractor will have all equipment ready for operation and have successfully performed the test to ensure that the pipe is in satisfactory condition.

Defective material or workmanship discovered during a hydrostatic field test will be replaced by the contractor at no expense to the city. Whenever it is necessary to replace defective material or correct workmanship, the hydrostatic test will be rerun at the contractor's expense until a satisfactory test is obtained. Test pressure will be maintained while the installation is inspected by the city. See CMC [12.04.450](#) for testing responsibilities related to backflow prevention devices. [Ord. 819B § 13, 2007; Ord. 785B § 14 (4.20), 2005.]

12.04.560 Sterilization and flushing.

Sterilization of water mains will be accomplished by the contractor in accordance with the requirements of the Washington State Department of Health, AWWA Standards and in a manner approved by the city. At no time will chlorinated water from a new main be flushed into a body of water, including lakes, rivers, streams, drainage ways, and all waters where fish or other natural water life can be expected. Any discharge into a city sewer system must be approved in advance and in writing by the wastewater superintendent.

When the proper chlorine concentration has been established throughout the line, the valves will be closed and the line left undisturbed for 24 hours. The line will then be thoroughly flushed and water samples taken by the city at least 24 hours after flushing and disinfecting. Sampling collection should be scheduled with the engineering division at least two business days in advance. Should the initial chlorine

treatment result in an unsatisfactory bacteriological test, the procedure must be repeated until satisfactory results are obtained. The contractor will be responsible for all costs if retesting becomes necessary. Samples can only be taken on Mondays and Tuesdays. Testing and sampling will take place after all underground utilities are installed and compaction of the backfill within the roadway section is complete. [Ord. 785B § 14 (4.21), 2005.]

Article VI. Sanitary Sewer

12.04.570 General considerations.

A. General. "Sanitary sewerage" refers to wastewater derived from domestic, commercial and industrial pretreated waste to which storm, surface, and ground water are not intentionally admitted. Pretreatment will follow all the requirements as set forth by city ordinances and public works departmental policies.

Any extension of the city of Chehalis sanitary sewer system must be approved by the public works department and must be consistent with the city of Chehalis comprehensive sewer plan, city of Chehalis general sewer plan, Department of Ecology, and Department of Health requirements.

Within the corporate city limits, where public sewer is available it must be used. Connection is not required; provided, that the sewage from the structure originates more than 200 feet from the public sewer, except in the case of private residential or commercial developments where the developed property abuts a right-of-way in which a public sewer is located or where a service connection is otherwise provided. In this case, connection of all structures generating sewage will be required to connect to the public sewer regardless of distance.

Anyone who wishes to extend or connect to the city sewer system will contact the public works department for a water/sewer/storm application. If a sewer line extension is being requested, a written request that specifically lists and details the line extension must be submitted to the public works department. The extension will be extended to and through the extremes of the property frontage being developed for future development; provided, that further utility extension is possible, as determined by the public works director. After the water/sewer/storm application is approved, along with any other information as may be required or requested, city staff will determine estimated fees.

See CMC [12.04.060](#) for definitions of specific sewers. Maintenance of the building sewer will be the responsibility of the property owner, while the remaining sewer lateral will be the city's responsibility.

B. Marking Side Sewers. The location of all side sewers will be marked on the face or top of the cement concrete curb with an "S" embossed one-fourth inch into concrete.

C. Sanitary Sewer/Water Main Crossings. See CMC [12.04.480](#) for requirements regarding sewer and water separation.

D. Staking.

1. All surveying and staking will be performed by an engineering or surveying firm licensed by the state of Washington and possessing the appropriate business license(s) to perform such work.

2. A preconstruction meeting will be held with the public works department and the engineering division prior to commencing staking. All construction staking will be inspected by the city prior to construction. Staking will be maintained throughout construction.

3. The minimum staking of sewer lines will be as follows:

Appendix D – Service Applications

COVER SHEET FOR ALL APPLICATIONS

UTILITY SERVICE ATTACHMENT

AUTHORIZATION AGREEMENT FOR DIRECT
PAYMENTS

SENIOR DISCOUNT FORM

UTILITY BILL EXTENSION FORM

UTILITY ANNEXATION AGREEMENT

UTILITY BILLING ACCOUNTS FLYER

Permit Application

Submit this form and any required attachments to:

City of Chehalis
Community Development Department
1321 S. MARKET BLVD.
CHEHALIS WA 98532
(360) 345-2229

APPLICANT FILL OUT AND SIGN UPPER SECTION:

JOB ADDRESS: _____

APPLICANT:

NAME: _____
ADDRESS: _____
CITY/ST/ZIP: _____
PHONE#: _____
EMAIL: _____

PROPERTY OWNER (Same as Applicant? Yes No)

NAME: _____
ADDRESS: _____
CITY/ST/ZIP: _____
PHONE#: _____
EMAIL: _____

CONTACT PERSON (Same as Applicant? Yes No)

COMPANY NAME: _____
NAME _____
ADDRESS: _____
CITY/STATE/ZIP _____
PHONE # _____
EMAIL: _____

CONTRACTOR (Same as Property Owner? Yes No)

COMPANY: _____
CONTRACTOR REGISTRATION # _____
ADDRESS: _____
CITY/STATE/ZIP _____
PHONE # _____
EMAIL: _____

DETAILED PROJECT DESCRIPTION:

PROJECT VALUE: _____

Verbal comments made during discovery are not binding. Only the plan(s) submitted will be reviewed for compliance with applicable codes. By signing below, I grant permission for City of Chehalis employees to enter and remain on the property for the purpose of review and approval of this proposal and to conduct inspections related to this proposal.

Signature: _____	Date: _____
Name (print): _____	Telephone #: _____

OFFICE USE ONLY:

Date Received: _____ By: _____ Date Reviewed: _____ By: _____
Parcel #: _____ Zoning: _____ Flood Zone: _____
Permit #: _____

Utility Service Attachment

City of Chehalis

Public Works Department

2007 NE KRESKY AVE; CHEHALIS, WA 98532

Site Address: _____

(360) 748-0238

Permit # _____

SERVICE REQUESTED

- | | | | |
|---|---|--|---|
| <input type="checkbox"/> INSIDE CITY | <input type="checkbox"/> OUTSIDE CITY | <input type="checkbox"/> SINGLE UNIT RESIDENTIAL | <input type="checkbox"/> DUPLEX |
| <input type="checkbox"/> SEWER | <input type="checkbox"/> REPAIR OR REPLACE EXISTING | <input type="checkbox"/> MULTIPLE - # OF UNITS: _____ | <input type="checkbox"/> COMMERCIAL/INDUSTRIAL |
| <input type="checkbox"/> WATER (METER SIZE: _____) | | <input type="checkbox"/> LATECOMER AGREEMENT: [] YES [] NO | <input type="checkbox"/> TEMPORARY CONSTRUCTION |
| <input type="checkbox"/> STORM (IMPERVIOUS AREA: _____ SQ FT) | | <input type="checkbox"/> METER DOWNSIZE FROM _____ TO _____ | <input type="checkbox"/> OTHER _____ |

CONSUMPTION & DISCHARGE SURVEY

Primary type of business (list type of operations, identify all activities producing wastewater and all activities using water):

This Facility will use _____ gallons per day of water from [] **Public Water Supply** [] **Private Well** [] **Reclaimed Water**
[] **Other:** _____

Estimated Number of gallons per day used for the following purposes (attach documentation demonstrating estimated usage):
[] **Non-Commercial Domestic Uses** _____ GPD [] **Boilers, Cooling or Other Unpolluted Wastewater** _____ GPD
[] **Non Domestic Activities** (not from domestic uses of restrooms, showers, kitchens or laundry rooms) describe:

Is or will the water be used for any of the following:

- | | | |
|---|--|---|
| <input type="checkbox"/> FILLING TANK TRUCKS OR TRAILERS | <input type="checkbox"/> FARM | <input type="checkbox"/> WATER TREATMENT SOFTENER |
| <input type="checkbox"/> NEW WATER MAIN CONSTRUCTION | <input type="checkbox"/> HEAT EXCHANGERS | <input type="checkbox"/> IRRIGATION (Landscape or Agricultural) |
| <input type="checkbox"/> FIRE SERVICES (Sprinkler System, etc.) | <input type="checkbox"/> SOLAR HEATING | <input type="checkbox"/> OTHER: _____ |
| <input type="checkbox"/> LABORATORIES (Biological, Chemical, or Environmental, including Schools or Colleges) | | |
| <input type="checkbox"/> HOSPITAL, MEDICAL, DENTAL, VETERINARY, NURSING HOME OR MORTUARY | | |

Wastewater from this facility goes to the (check all that apply) [] **Sanitary Sewer** [] **Storm Sewer** [] **Ground (drain field, etc)**
[] **Waste Haulers** [] **Open water, rivers, ocean** [] **Evaporation** [] **Other:** _____

Stormwater from this facility goes to (list): _____

The Stormwater System for this facility [] **does** [] **does not** contain a detention structure.

Chemicals used/stored on premises: [] **in drums** [] **small containers** [] **no chemicals stored**

Materials, chemicals, products, equipment, or wastes [] **are** [] **are not** stored in outside areas.

This Facility: [] **does** [] **does not** generate dangerous waste. Generator WAD# _____ (if assigned)
[] **does** [] **does not** have an oil-water separator.
[] **does** [] **does not** wash vehicles or equipment on the premises (if so water goes to _____).
[] **does** [] **does not** exceed 3 stories or 33 feet in height above the water main.

I understand and agree to pay all costs fees and charges associated with water, sewer and/or storm sewer construction and connection before water and/or sewer service shall be provided.

I agree to allow the city to temporarily discontinue the service at any time without notice to the customer and will hold the city harmless for any damage caused by interruption, change or failure of the water, sewer and/or storm sewer supply, and for any damage by water or other cause resulting from defective plumbing or appliances on the premises supplied with water installed by the owner or occupant of the premises. I further agree that such failures or interruptions for any reasonable period of time shall not be held to constitute a breach of agreement on the part of the city or in any way relieve the customer from performing the obligations of this or subsequent agreements.

I agree to abide by the city rules and regulations as contained in the city water, sewer and storm water ordinances, and agree to pay for the utility service as determined by the Public Works Department as specified in the city ordinances.

A contract is not entered into between the applicant and the Public Works Department until after a city representative issues the approval and all monies are paid. Approval shall be rescinded if the work has not been completed within six (6) months of the date of approval of this application.

I have personally examined and am familiar with the information submitted in this document and any attachments. I believe the submitted information is true, accurate and complete. I understand the penalty for submitting false information includes the possibility of fines and/or imprisonment.

<i>Signature of Authorized Representative:</i>	<i>Name (print):</i>	<i>Date:</i>	<i>Telephone #:</i>
_____	_____	_____	_____

Applications must be signed as follows: Corporations, by a principle executive officer of at least the level of Vice President; partnership by a General Partner; sole proprietorship by the Proprietor, (ref: 40 CFR Part 403.12 (1))

DISCLOSURE: Title 40 of the Code of Federal Regulations Part 403.14 requires information provided in this questionnaire identifying the nature and frequency of discharge to be available to the public without restriction. Requests for confidential treatment of other information shall be governed by procedures specified in 40 CFR Part 2 and applicable State Law. Should a discharge permit be required for your facility, this information may be used to issue the permit. Washington State DOH Cross Connection Control (CCC) Regulations, WAC 246-290-490 and Chapter 10 of the Uniform Plumbing Code identify requirements related to the City's CCC program.

Allow up to six (6) weeks for service installation from the date all charges are paid. The Public Works Department ***MUST*** be notified at least two (2) business days prior to sewer connection to arrange for inspection. The applicant is responsible for installation of sanitary side sewer and all associated costs.

SIDE SEWER REPLACEMENT/INSTALLATION INFORMATION

1. **PERMITS REQUIRED:** *Prior to performing any work permit approval **MUST** be issued.* A RIGHT-OF-WAY PERMIT is required for all work within the city right-of-way. The applicant is responsible for any additional permits that may be required. The applicant must call **Underground Utilities Locate, 1-800-424-5555** 48 hours prior to the start of any work, as required by State law.
2. **INSPECTIONS:** The following inspections are required: **Preliminary Inspection**, when connection is made to the sewer main or manhole, for testing **prior** to covering any work, or where special conditions exist as determined by the Director of Public Works. The Public Works Department must be notified 48 hours **prior** to inspection. If additional inspections are necessary due to failure to comply with any specifications or provisions, or due to failure of a test of the side sewer; a \$10.00 fee will be charged for each additional inspection.
3. **SPECIFICATIONS:** All work must conform to all City of Chehalis, Lewis County and State of Washington regulations as applicable. The permit holder must also comply with all construction specifications delineated in the Chehalis Municipal Code as well as provisions that may be required as indicated on this permit.
4. **PIPE MATERIALS:** Polyvinyl Chloride (PVC) – ASTM D3034 SDR 35 with flexible gasket joints. All joints and connections will be gas tight and watertight and conform to ASTM D3212.
5. **CONNECTIONS TO PUBLIC SEWER:** The connection of a side sewer to the public sewer will be made at a wye or tee branch. All other connections must be made by a qualified plumbing contractor, licensed and bonded by the State of Washington and approved by the Director of Public Works. An approved transition adaptor must be used to connect the side sewer to the wye or tee. Connection to the building drainpipe will be made by means of a flexible clamp-type coupling or other approved methods. Connections to manholes or other facilities will be allowed only if approved by the Director of Public Works.
6. **SIZE OF SIDE SEWER PIPE:** Side sewers for single-family residences will be no less than four (4) inches in diameter. Side sewers for all other buildings will be no less than six (6) inches in diameter.
7. **SLOPE OF SIDE SEWER:** Four (4) inch diameter side sewers will be laid on a uniform slope of not less than 1/4" per foot. Six (6) inch diameter side sewers will be laid on a uniform slope of not less than 3/16" per foot.
8. **SIDE SEWER FITTINGS AND CLEANOUTS:** Side sewers will be laid at uniform grade and in straight horizontal alignment insofar as possible. No ninety degree bends will be allowed. Two bends may be allowed between cleanouts provided the distance between cleanouts does not exceed twenty (20) feet. A cleanout will be installed between thirty (30) and thirty-six (36) inches of all buildings. In no case will the distance between cleanouts exceed 100 feet. All cleanouts will be properly plugged. A test tee must be provided at the connection to the public sewer.
9. **MECHANICAL LIFTING DEVICES REQUIRED:** If mechanical lifting devices are required, the applicant must submit plans, diagrams and details to the Director of Public Works for review and approval.
10. **LAYING OF PIPE:** The bottom of the trench will be smooth and free from large rocks or other rough material. A minimum of four (4) inches of bedding sand or fine smooth gravel is required. All pipe will be laid true to grade with bell upgrade.
11. **TESTING:** The entire length of side sewer must be tested for visible leakage before backfilling, by inserting a removable plumber's plug at the test tee and filling the line with water to a level of at least one (1) foot above the top of the side sewer at its connection with the building drain. The side sewer pipe must be filled with water at least one (1) hour before actual inspection.
12. **SIDE SEWER INSPECTION RESPONSIBILITY:** It is the duty of the permit holder to make sure that the work will pass all inspection.
13. **BACKFILLING:** Backfilling will not commence until a representative from the Public Works Department has performed an inspection. Any portion of the side sewer covered prior to inspection will be uncovered at the permit holder's expense within two (2) days after notice to do so. Trenches will be carefully backfilled by tamping sand or other approved material to a depth of six (6) inches above the pipe to avoid damaging the pipe. All backfill material between the public sewer and the property line must be approved by the Director of Public Works, water-settled or mechanically tamped in six-inch layers to minimize settlement. Any settlement occurring within twelve months of backfilling will be corrected at the expense of the permit holder.
14. **WATER NOT TO BE DISCHARGED INTO SEWER:** Stormwater, surface water, ground water, roof runoff, subsurface drainage, cooling water or unpolluted industrial process waters will not be discharged to any sanitary sewer.
15. **WATER METER INSTALLATION ON DOMESTIC LINE:** If sewer service is installed without water service a water meter must be installed on the domestic water line. Sewer billing is based on water usage; sewer billing cannot be properly calculated without the meter installation.

NOTE:

This permit will be null and void ninety, (90)-days from the date of this application. If there are conflicts between specifications and requirements contained herein or in any other City, County or State laws or regulations or permits, the more stringent ruling will apply.

All questions regarding these or other applicable requirements should be directed to the City of Chehalis Public Works Department – 2007 NE Kresky Avenue, Chehalis WA 98532; Phone: 360.748.0238, Fax: 360.748.0694.

Water and Sewer Connection Fees
(Effective February 22, 2011)

Water Capital Facilities Charge per ERU:

1 ERU = 300 gallons/day **\$2,071**

Sewer Capital Facilities Charge per ERU:

1 ERU = 250 gallons/day **\$ 3,030**

Storm water Capital Facilities Charge per ESU:

1 ESU = 3000sq ft impervious **\$ 489**

Installation Fees (Water):

<u>Service Size</u>	<u>Meter Size</u>	<u>Cost</u>
¾"	5/8" x ¾"	\$ 700
1"	1"	\$ 1,000
1 ½"	1 ½"	\$ 1,500
2"	2"	\$ 2,000

Note: These fees must be paid prior to the meter being installed. The actual cost of the installation may vary. Excess costs will be billed separately.

Fire Service Connection Fees:

<u>Service Size</u>	<u>Cost</u>	<u>Service Size</u>	<u>Cost</u>
2"	\$ 1,610	8"	\$ 16,060
3"	\$ 3,210	10"	\$ 23,090
4"	\$ 5,020	12"	\$ 45,170
6"	\$ 10,040		

Note: These costs are for most common connections and **do not** include any other **additional fees** that may be associated with connecting to the public system. Some service areas are restricted in water and/or sewer capacity making utility service limited or non-existent. Consult the Public Works Department staff for more information on other potential fees and utility availability.

Utility Service Charge Policy

POLICY: It is the intent of this policy to define the procedure for initiating charges for water and/or sanitary sewer service(s) for new utility accounts.

RESPONSIBILITY: The Public Works Director, in conjunction with the Administrative Services Director, shall be responsible for ensuring that this policy is followed.

PROCEDURES: After an applicant for either water and/or sewer service(s) has paid all costs and charges associated with the service(s) requested, the City will begin billing for such water and/or sewer services when either of the following conditions occur:

1. When water service becomes available through the installation of a water meter, or;
2. When sewer service becomes available through the installation of a sewer lateral, or;
3. Six months has passed from the date of payment of connection fees.

Such billings shall include appropriate base charges (dependent upon the size of service) in addition to any usage charges that may be applicable.

In cases where the six-month timeline has expired but provision of utility services has not yet occurred, the applicant can request a single, one-time six-month extension. This extension request must be made in writing to the Director of Public Works. Upon lapsing of the six-month deadline (or the six-month extension), the start of utility billing can be delayed by requesting a refund of previously paid connection fees. If this option is chosen, the applicant will forfeit all entitlements to utility capacity and service will need to be reapplied for and purchased at such a time, as it is desired.

If water and sewer service for a property are pursued individually, the city will not reserve capacity in either utility until such time as it has been approved and paid for. In other words, having water service allocated to a property does not guarantee the applicant adequate sewer capacity if sewer service has not yet been paid for and vice versa. It is the applicant's responsibility to ensure that the necessary utility capacity is available to serve their proposed usage.

CITY OF CHEHALIS

Public Works Department
2007 N.E. Kresky
Chehalis, Washington 98532
(360) 748-6664 / Fax (360) 748-0694
www.ci.chehalis.wa.us



AUTHORIZATION AGREEMENT FOR DIRECT PAYMENTS (ACH DEBITS)

I authorize the City of Chehalis to transfer funds from my (our) bank account for my monthly/bimonthly utility billing. I (we) acknowledge that the origination of ACH transactions to my (our) account must comply with the provisions of U.S. law.

Financial Institution's Name: _____

Bank Routing Number: _____

Bank Account Number: _____

The above bank account is either: Checking ___ or Savings ___
Please check one.

This authorization is to remain in full force and effect until the City of Chehalis was received written notification from me (or either of us) of its termination and in such manner as to allow the City of Chehalis and Bank a reasonable opportunity to act on it.

Name(s): _____

Phone Number: _____

Utility Account Number(s): _____; _____; _____

The monies will be transferred from your account on the due date listed on your bill.

Date: _____

Signature: _____

Signature: _____

Please attach a voided check to this form.

Account No. _____

CITY OF CHEHALIS

**LOW INCOME SENIOR CITIZEN OR TOTALLY DISABLED CITIZEN*
UTILITY RATE DISCOUNT APPLICATION**

Applicant: _____

Street Address: _____

City and Zip Code: _____

Telephone Number: _____

Date of Birth: _____

I own / rent my place of residence. (Circle correct one)

Yes / No the said utility account at this residence is in my name. (Circle correct one)

Number of people in household _____

My gross income for 2019, including the gross income of my spouse/co-tenant, is:

1. Social Security Income	\$ _____
2. Federal Civil Service	\$ _____
3. Railroad Retirement	\$ _____
4. All Other Retirement Income	\$ _____
5. Wages/Salaries/Unemployment	\$ _____
6. Disability Income	\$ _____
7. Interest Income and Dividends	\$ _____
8. Net Income from Rental Property	\$ _____
9. Gift, Trust or Estate Income	\$ _____
10. Income from Any Other Source	\$ _____
TOTAL	\$ _____

SEE REVERSE SIDE

The term "income" as used herein shall mean gross income as defined in Section 61(a) of the Internal Revenue Code of 1954, plus any and all Social Security Retirement and/or Disability payments, Railroad Retirement Board Pension and/or Disability payments, and payments received from any other pension, retirement, profit sharing and disability plans, and unemployment compensation. The term "low income senior citizen customer" shall mean a person who is 62 years of age or older and whose total income, including that of his or her spouse or co-tenant(s), does not exceed the amount established by the HUD Income limits (for 2020 this is \$37,700 for a single person household, \$43,100 for a two-person household, \$48,500 for a three-person household and \$53,850 for a four-person household).

***Proof of income required, attach copy of previous year's Federal Income Tax return**

STATE OF WASHINGTON; COUNTY OF LEWIS)

The undersigned applicant, being first duly sworn, on oath deposes and says: That all of the above statements are true and correct to the best of my knowledge and belief.

Signature

SUBSCRIBED AND SWORN to before me this _____ day of _____, 2020.

Notary Public in and for the State of

Washington residing at _____

My name is (printed): _____

My appointment expires _____

*Totally disabled as classified by the Social Security Administration.

Approved _____, 2020

Denied _____, 2020

City Official

UTILITY BILL EXTENSION FORM

Date: _____ Account# _____

Name: _____

Service Location: _____

Reason for Extension: _____

Date Utility Bill Extension Will Be Paid: _____

Signature: _____ Phone#: _____

If Rental, Landlord/Owner Signature _____

Landlord/Owner Phone Number _____

****The Landlord/Owner will be contacted to verify the signature and approval of extension****

1st Extension []

2nd Extension []

*****Maximum of two Utility Bill Extensions will be granted a year. (January to December)*****

Utility Billing Verification _____ Extension Amount _____ Date _____

+++++

Approved Authorized Signature _____

Disapproved Reason for Denial _____

STANDARD OPERATING PROCEDURES FOR UTILITY EXTENSIONS

- 1) Extension forms must be returned to Utility Billing Department located at 2007 NE Kresky Ave and approved prior to 4:30 p.m. of due date on shut off notice.
- 2) Extension forms must be signed by the renter with a current contact number.
- 3) Extension forms must be signed by owner of residence, including a current phone number to verify signature of approval.
- 4) Total amount of Extension granted must be paid in full by the above agreed due date.
- 5) If payment is not made by the extension date water will be shut off and the bill will need to be paid in full, including a \$25.00 service fee in order to have water turned on.
- 6) The water division employee who is shutting the water off is not authorized to accept payment from anyone; the customer must come to Utility Billing Department located at 2007 NE Kresky to pay the bill.
- 7) If the payment is not made before 4:00 pm there will be a after hours service fee of \$75.00.

City of Chehalis City Clerk
350 N Market Blvd.
Chehalis, WA 98532
(360) 748-6664

UTILITY SERVICE ANNEXATION AGREEMENT

_____ hereinafter referred to as "Owner"/Grantee", hereby requests water and/or sewer utility service from the City of Chehalis, Washington, a municipal corporation, hereinafter referred to as "the City"/Grantor, for the following described real property situate in Lewis County, Washington, outside the present corporate limits of the City of Chehalis, Washington.

Street address of property: _____

Assessor's property tax parcel number: _____

Abbreviated legal description (section, township, range) of property to be serviced:

In the event the City shall allow extension of utility service to the above described real property, in consideration thereof, the undersigned hereby acknowledges and agrees to each of the following:

1. The City Comprehensive Plan and City Resolution 7-76, receipt of which is hereby acknowledged, and Resolution 8-81 require any development for which utility service is provided to comply with the Chehalis Comprehensive Plan and any other development or subdivision regulations enacted or adopted by the City; and
2. If the undersigned is proposing any commercial or industrial development or development other than a single family residence, a detailed site development plan shall be submitted to the City's Community Development Manager. If a development plan is not provided, utility services will not be approved; and

Do not write in margin

3. Any development which has occurred on the above described real property prior to the date of this annexation agreement and under a Lewis County approval or permit may continue to exist, but any development which may occur subsequent to the date of application, and any modification of any existing development subsequent to the date of this annexation agreement, must comply with the Comprehensive Plan and other development or subdivision regulations of the City; and
4. The undersigned, and any successor, assign or heir of the undersigned, shall agree to the annexation of the above described real property by the City at such time as the City may require or accept such annexation, pursuant to City Resolution 7-76 by signing petitions for annexation. The undersigned further agrees to comply with the Chehalis Comprehensive Plan and any other development or subdivision regulations enacted or adopted by the City for any development to the property for which utility service is provided, and which occurs on or after the date of this agreement. Should the undersigned, their heirs, successors or assigns refuse to sign petitions for annexation at the request of City, the City shall have the right to terminate City utility services forthwith.

FOR OFFICE USE ONLY

TYPE OF SERVICE

Single family residence (site development plan **not** required)

Legal description shown on page 1

City utility approval

Other than one single family residence (site plan **required**)

Site development plan submitted to Community Development Department

Initials

Date

Reviewed by the Development Review Committee and approved for recording on:

Signed: _____

Date: _____

Do not write in margin

**Return completed form to City Clerk's Office for recording
THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC**

This is to certify that the undersigned is/are the legal owner(s) of the above described real property and is/are legally authorized to encumber the said property pursuant to the terms thereof.

PRINTED NAME

SIGNATURE

For an Individual

State of Washington
County of _____

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that (he/she) signed this instrument and acknowledged it to be (his/her) free and voluntary act for the uses and purposes mentioned in the instrument.

Date: _____

Notary Public in and for the State of
Washington residing at _____
My name is (printed) _____
My commission expires _____

For a Corporation

State of Washington
County of _____

I certify that I know or have satisfactory evidence that _____ and _____ are the persons who appeared before me, and said persons acknowledged that they signed this instrument and that they were authorized to execute said instrument as the President and Secretary of _____ to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Date: _____

Notary Public in and for the State of
Washington residing at _____
My name is (printed) _____
My commission expires _____

Do not write in margin

City of Chehalis Utility Accounts



2007 NE Kresky Ave.
Chehalis, Washington
(360) 748-6664

Mission Statement

While honoring the past and preparing for the future, the City of Chehalis provides municipal services and programs for the benefit of residents, businesses and visitors in our community.

CITY OF CHEHALIS
UTILITY SERVICE CUSTOMERS



There are several requirements that customers should know.

To establish an account requires the following:

- Proof of ownership
- A \$200 deposit
- Current Drivers license/Photo ID
- Residential customers billed on a bi-monthly basis and commercial customers are billed monthly
- Bills are due on the 20th -delinquent fees of 10% are applied after 8 a.m. the following business day
- Delinquent bills must be paid within 7 days from the delinquent date to prevent service interruption
- Customers have several payment options:
 - a) Cash, Check or Money Order
 - b) Bill payer or ACH
 - c) Over phone or On-line with a third-party company using a debit or credit card. **(Please call the billing department for additional information)**
- Payments can be made in any amount anytime during the billing cycle (bill must be paid in full by the due date)
- Payments may be put in the drop box located at 1321 S Market Blvd. or in the payment slot located on the front of the City of Chehalis Public Works building at 2007 NE Kresky Ave

GENERAL INFORMATION

- Account holders may be granted an extension up to two times per year, tenants with landlord's approval.
- City of Chehalis offers a maximum of one two-month billing adjustment per calendar year based upon unexpected leaks and breakdowns of customers plumbing. Subject to acceptable repairs being completed and inspected.

Residents within the city are required to have garbage service please contact LeMay Enterprises at 360.736.4769

IF YOU ARE A PROPERTY OWNER WITH A RENTAL – WHAT DO YOU DO NOW?

To have an account placed in the name of a tenant requires that the tenant provide a copy of the rental and pay the \$200 deposit.

Landlords or Property Managers that wish to keep the water on in-between tenants have two options:

- a. Have a \$200 “hold” deposit on the account; or
- b. Place a \$200 deposit on the account each time a tenant moves out. The deposit will be applied to the final bill and any remaining credit will be refunded when the new account is opened by the tenant.

It is crucial that all property owners keep their contact information current.

Please note: Landlords are responsible for all unpaid tenant bills and fees.

City of Chehalis Utility Billing

Location: 2007 NE Kresky Ave
360.748.6664

Office Hours: 8 a.m. to 4:30 p.m.
Monday – Friday

Emergency After Hours:

360.740-1105

Chehalis City Hall 360.345.1042

Chehalis Police Department 360.748.8605

(Non-emergency) It is mandatory that all dogs over (3) months of age are required to be licensed. Please call for details.

Chehalis Public Works Department

360.748.0238

Chehalis Community Development & Permitting

360.748.0271

Chehalis Parks & Recreation

360.748-0271

Lewis County Court House

360.748.9121 (information)

Comcast 877.824.2288 (Cable Service)

Dish Network 888.825.2557

Direct TV 800.201.2979

Lewis County PUD 360.748.9261

LeMay, Inc. 360.736.4769 (Electric Service)

(Mandatory Garbage Service inside city limits)

LC Water & Sewer Dist #4

360.748-6927 (Outside City Limits)

Puget Sound Energy 888.225.5773

(Gas Service)

Century Link 800.244.1111

CALL BEFORE YOU DIG;

1.800.424.5555 or 811

City of Chehalis Municipal Codes can be found on our website: ci.chehalis.wa.us

CMC: 13.04 WATER SYSTEM

CMC: 13.12 WATER RATES/FEES

CMC: 13.08 SEWER SYSTEM

CMC: 13.16 SEWER RATE/FEES

CMC: 13:24STORM/SURFACEWATER SYSTEM

CMC: 13:28 STORM/SURFACE WATER RATES

Appendix E – Water Rights Records

WATER RIGHTS SELF ASSESSMENT FORM FOR
WATER SYSTEM PLANS

CHEHALIS RIVER CERTIFICATE

CHEHALIS RIVER CHANGE APPLICATION

NEWAUKIM CERTIFICATE MAPS

NEWAUKUM CERTIFICATE

NEWAUKUM CLAIM



Water Right Self-Assessment Form for Water System Plans

331-372 • 1/13/2017

All water right permits, claims, and certificates must be evaluated in a water right self-assessment for all sources used to supply the water system. The self-assessment compares the parameters and other limitations of existing water rights against current and forecasted water production, as described in your water system plan, to determine whether the rights are adequate to serve your system's current and future water needs.

You must account for all sources of supply and total quantities of water withdrawn from the source. If you purchase water from another purveyor through a non-emergency intertie, you must complete the INTERTIES section of the self-assessment.

A Note on Exempt Wells

If you're seeking DOH approval of a new Group A or Group B water system using an exempt well, you must complete the self-assessment, although certain fields will not apply. Talk to your DOH regional planner about using the Water Right Self-Assessment form for a Small Water System Management Program instead of this version.

Local governments must ensure that an adequate potable water supply is available from the exempt well before issuing a building permit. Before developing a permit exempt well, check with your local authorities on their criteria for establishing an adequate potable water supply for your planned public water system.

Water Right Parameters

Below is a brief description of the parameters associated with a typical water right. For the self-assessment, you only need to describe the last two bulleted items if they apply to your water rights.

Source Type – this refers to whether the source is surface water, groundwater or a spring.

Source Location – this refers to the location of points of groundwater withdrawal or surface water diversion for each right.

Purpose of Use – this refers to the type of use, such as municipal water supply, community domestic, industrial or agricultural purposes.

Place of Use – this describes where water can be put to beneficial use under the right. Under the 2003 Municipal Water Law, RCW 90.03.386, the place of use for a water right held for municipal water supply purposes may be the system's service area as identified in an approved water system plan or small water system management program.

See [Ecology Policy 2030](#) for information on how Ecology administers the Municipal Water Law.



If you need this publication in an alternative format, call 800.525.0127 (TDD/TTY call 711). This and other publications are available at www.doh.wa.gov/drinkingwater.

Period of Use – this refers to time-of-year limitations in which the water right may be put to use. If any water right has a time-of-year limitation, please include this information in the INTERRUPTIBLE WATER RIGHTS section.

Provisions or Limiting Conditions – this refers to any provisions or conditions placed on the water right. If a water right has a limiting condition or other provision, such as a collection and reporting requirement, other than a time-of year limitation, include this information in the ADDITIONAL COMMENTS section at the bottom of the self-assessment and in the water system plan narrative.

See [Ecology Policy 1040](#) for more information on water right terminology. If you have questions about your water rights, please contact the Ecology regional office in your area.

Completing the Water Right Self-Assessment Form

The self-assessment is a Word document to allow users to make changes or to expand the document. You may use another format, if preferred, as long as all required information is included. Below is a description of all fields and how to complete them. This form is divided into four different sections. Each section is described in the headings below.

See the column identifiers (A, B, C, etc) at the bottom of each column for guidance in completing the necessary calculations.

Water Right Permit, Certificate, or Claim Number: This number is assigned by Ecology when a permit application is filed. It's listed at the top of the permit or certificate. For water right claims, this is the registration number stamped in the lower left hand corner of the claim form.

WFI Source #: Identify the individual sources (e.g. well #1, well #2) as defined on the DOH Water Facilities Inventory form. If a water right is associated with multiple sources, list all sources in the same row in this column. If a source is associated with multiple water rights, identify each water right on a separate row.

If you have any source(s) that is not currently being used (categorized as standby, back-up, or emergency), and the source has an associated water right that is not listed in column #1, please include the source and water right information in the ADDITIONAL COMMENTS section. This will identify that the source is still intended for a beneficial use under RCW 90.03.015(4). See [Ecology Policy 1040](#).

EXISTING WATER RIGHTS SECTION *(olive green color, top section)*

This section refers to existing water rights. It does not include any water right applications that have been submitted to Ecology.

Primary Qi (Instantaneous Quantity): This is also known as instantaneous flow rate. It's the amount of water allowed to be taken under the right from the source during a period of peak operation. For surface water, this is generally expressed in terms of cubic feet per

second (cfs). For groundwater, this is generally expressed in terms of gallons per minute (gpm). One cfs equals 448.8 gpm. Please indicate the units of measurement you are using for each source. If there are situations where the flow rate will be limited (e.g. limitations established on the source when other sources are utilized), please note them in the ADDITIONAL COMMENTS section in the form and in the WSP narrative.

Non-Additive Qi: This term was formally known as “supplemental.” Your water rights may use the old terminology. See [Ecology Policy 1040](#) for more information. Not all water rights have non-additive quantities. If a water right has non-additive Qi quantities, include the non-additive quantity in this field. This is generally listed in the “quantity, type of use, period of use” section on both permits and certificates. *Non-additive quantities should not be included in the primary Qi totals.*

Primary Qa (Annual Quantity): This is the amount of water that can be taken from the source under the right on an annual basis. It’s usually expressed in terms of acre-feet. An acre-foot is the amount of water necessary to submerge an acre of land to a depth of one foot. One acre-foot equals 43,560 cubic feet or 325,851 gallons of water.

Non-Additive Qa: This term was formerly known as “supplemental.” Your water rights may use the old terminology. See [Ecology Policy 1040](#) for more information. Not all water rights have non-additive quantities. If a water right has non-additive Qa quantities, include the non-additive quantity in this field. This is generally listed in the “quantity, type of use, period of use” section on both permits and certificates. *Non-additive quantities should not be included in the primary Qa totals.*

CURRENT SOURCE PRODUCTION SECTION *(light green color, top section)*

This section refers to how much water is withdrawn from the source under each water right for the most recent full calendar year. You will need to determine any excess or deficiency for each water right after calculating how much water was withdrawn compared to how much water is allowed under each water right. If demand has decreased over past years, you may wish to include historic maximum production information in the ADDITIONAL COMMENTS section. This will provide a more complete picture of the use of your water rights.

Use the water use data and demand projections from your water system plan to define current and projected water needs. You can determine if you’ll need additional water rights based on the comparison of existing water rights, current water production, and projected 10- and 20-year needs.

Total Qi (Instantaneous Quantity): This refers to the total maximum instantaneous flow rate withdrawn from the source under each water right during the most recent calendar year. For surface water, this is expressed in terms of cubic feet per second (cfs). For groundwater, this is expressed in terms of gallons per minute (gpm). One cfs equals 448.8 gpm.

Current Excess or Deficiency (Qi): Please calculate the excess or deficiency for each water right after comparing the total amount withdrawn against each water right. Please use parentheses for deficient amounts.

Total Qa (Annual Quantity): This refers to the total volume of water withdrawn from each source under each water right during the most recent calendar year. It's usually expressed in acre-feet.

Current Excess or Deficiency (Qa): Please calculate the excess or deficiency for each water right after comparing the total amount withdrawn against each water right. Please use parentheses for deficient amounts.

10-YEAR FORECASTED SOURCE PRODUCTION SECTION *(light blue color, top section)*

This section refers to how much water you project to withdraw from each source in ten years as determined in your water system plan. Please complete this section in the same manner (using the same units of measurement) as the current source production section using your 10-year forecasted amounts.

20-YEAR FORECASTED SOURCE PRODUCTION SECTION *(darker blue color, top section)*

This section refers to how much water you project to withdraw from each source in twenty years as determined in your water system plan. Please complete this section in the same manner (using the same units of measurement) as the current source production section using your 20-year forecasted amounts. If you are unable to provide 20-year forecasts for each source, you may choose to include the combined 20-year total at the bottom.

PENDING WATER RIGHTS SECTION *(second section of form)*

Please complete this section for any water right applications that have been submitted to Ecology. Please include the application number, whether it's a new or a change application, the date submitted, and the total quantities requested.

INTERTIES SECTION *(third section of form)*

This section must be completed by purveyors who purchase any amount of wholesale water. If your system sells water to another public water system, include the quantity sold in the CURRENT SOURCE PRODUCTION section.

Purchasers of wholesale water must account for all water obtained through the intertie for non-emergency supply purposes. This is to ensure that all sources of supply are considered when evaluating whether new water rights are needed within 20 years.

Please identify the maximum quantity of water, expressed in the same manner as the above sections, allowed under each intertie contract. If there are limiting conditions or temporary

agreements that effect the long-term use of the intertie, you must account for such limiting conditions when evaluating the current and forecasted water supply needs in your water system plan.

Finally, purchasers of wholesale water are responsible for ensuring that the underlying water right (held by the purveyor selling water) are adequate for such use. You should confirm that the selling system has accounted for the wholesale area in their water system plan to ensure that the water right authorizes the distribution of water through the intertie.

INTERRUPTIBLE WATER RIGHTS SECTION *(bottom section of form)*

This section refers to water rights that have an annual time-of-year interruption. Please complete this section for any water right listed in the above fields that has a time-of-year interruption. Please include the water right number, describe the limitation, and the time period of interruption. Purveyors with interruptible rights should develop a water shortage response plan as part of their water system plan to describe how demand will be met during periods of interruption through aggressive demand-side conservation, fixing leaks or other means.

ADDITIONAL COMMENTS SECTION *(bottom section of form)*

If the system has any source that is not currently being used on a regular basis (such a source may be categorized as stand-by, back-up, emergency), you should identify the source in this section if the source has an associated water right that is not listed in the above sections. The purpose is to identify that such water rights are still intended for a future beneficial use as required under RCW 90.03.015(4). See Page 2, Item 9 (b) in [ECY Policy 2030](#). For these water rights, please briefly describe the future intended use of the source and when you expect to utilize the water right. This does not refer to sources categorized as seasonal sources.

You should also include any other comments in this section that will explain aspects of your water right portfolio that are not identified above.

Water Right Self-Assessment Form for Water System Plan

Mouse-over any link for more information. Click on any link for more detailed instructions.

<u>Water Right Permit, Certificate, or Claim #</u> <small>*If water right is interruptible, identify limitation in yellow section below</small>	<u>WFI Source #</u> <small>If a source has multiple water rights, list each water right on separate line</small>	<u>Existing Water Rights</u> <small>Qi= Instantaneous Flow Rate Allowed (GPM or CFS) Qa= Annual Volume Allowed (Acre-Feet/Year) This includes wholesale water sold</small>				<u>Current Source Production – Most Recent Calendar Year</u> <small>Qi = Max Instantaneous Flow Rate Withdrawn (GPM or CFS) Qa = Annual Volume Withdrawn (Acre-Feet/Year) This includes wholesale water sold</small>				<u>10-Year Forecasted Source Production (determined from WSP)</u> <small>This includes wholesale water sold</small>				<u>20-Year Forecasted Source Production (determined from WSP)</u> <small>This includes wholesale water sold</small>			
		<u>Primary Qi</u> <small>Maximum Rate Allowed</small>	<u>Non-Additive Qi</u> <small>Maximum Rate Allowed</small>	<u>Primary Qa</u> <small>Maximum Volume Allowed</small>	<u>Non-Additive Qa</u> <small>Maximum Volume Allowed</small>	<u>Total Qi</u> <small>Maximum Instantaneous Flow Rate Withdrawn</small>	<u>Current Excess or (Deficiency) Qi</u>	<u>Total Qa</u> <small>Maximum Annual Volume Withdrawn</small>	<u>Current Excess or (Deficiency) Qa</u>	<u>Total Qi</u> <small>Maximum Instantaneous Flow Rate in 10 Years</small>	<u>10-Year Forecasted Excess or (Deficiency) Qi</u>	<u>Total Qa</u> <small>Maximum Annual Volume in 10 Years</small>	<u>10-Year Forecasted Excess or (Deficiency) Qa</u>	<u>Total Qi</u> <small>Maximum Instantaneous Flow Rate in 20 Years</small>	<u>20-Year Forecasted Excess or (Deficiency) Qi</u>	<u>Total Qa</u> <small>Maximum Annual Volume in 20 Years</small>	<u>20-Year Forecasted Excess or (Deficiency) Qa</u>
1. 98-002535	N.FORK-NEWAUKUM RIV.	4.34 CFS		3,136 Acre-Feet/Year		0.00 CFS	4.34 CFS	1,955 Acre-Feet/Year	1,181 Acre-Feet/Year	0.00 CFS	4.34 CFS	2,256 Acre-Feet/Year	880 Acre-Feet/Year	0.00 CFS	4.34 CFS	3,136 Acre-Feet/Year	0 Acre-Feet/Year
2. 01185 S2*00889 C	N.FORK-NEWAUKUM RIV.	10.00 CFS		no annual limit		5.12 CFS	4.88 CFS	0 Acre-Feet/Year	No annual limit	5.12 CFS	4.88 CFS	0 Acre-Feet/Year	No annual limit	5.12 CFS	4.88 CFS	605 Acre-Feet/Year	No annual limit
3. 11303	CHEHALIS RIVER	11.60 CFS		980 Acre-Feet/Year		9.37 CFS	2.23 CFS	171 Acre-Feet/Year	809 Acre-Feet/Year	9.37 CFS	2.23 CFS	197 Acre-Feet/Year	783 Acre-Feet/Year	9.37 CFS	2.23 CFS	325 Acre-Feet/Year	655 Acre-Feet/Year
TOTALS =		25.94 CFS		4,116 Acre-Feet/Year		14.49 CFS	11.45 CFS	2,126 Acre-Feet/Year	No annual limit on N.FORK-NEWAUKUM RIV.	14.49 CFS	11.45 CFS	2,453 Acre-Feet/Year	No annual limit on N.FORK-NEWAUKUM RIV.	14.49 CFS	11.45 CFS	4,066 Acre-Feet/Year	No annual limit on N.FORK-NEWAUKUM RIV.

Column Identifiers for Calculations: A B C =A-C D =B-D E = A-E F =B-F G =A-G H =B-H

<u>PENDING WATER RIGHT APPLICATIONS:</u> Identify any water right applications that have been submitted to Ecology.						
Application Number	New or Change Application?	Date Submitted	Quantities Requested			
			Primary Qi	Non-Additive Qi	Primary Qa	Non-Additive Qa
00889	Change Application	October 17, 2019	10.00 CFS		no annual limit	

<u>INTERTIES:</u> Systems receiving wholesale water complete this section. Wholesaling systems must include water sold through intertie in the current and forecasted source production columns above.															
Name of Wholesaling System Providing Water	Quantities Allowed In Contract		Expiration Date of Contract	Currently Purchased				10-Year Forecasted Purchase				20-Year Forecasted Purchase			
	Current quantity purchased through intertie			Forecasted quantity purchased through intertie				Forecasted quantity purchased through intertie							
	<u>Maximum Qi</u> <small>Instantaneous Flow Rate</small>	<u>Maximum Qa</u> <small>Annual Volume</small>		<u>Maximum Qi</u> <small>Instantaneous Flow Rate</small>	<u>Current Excess or (Deficiency) Qi</u>	<u>Maximum Qa</u> <small>Annual Volume</small>	<u>Current Excess or (Deficiency) Qa</u>	<u>Maximum Qi</u> <small>10-Year Forecast</small>	<u>Future Excess or (Deficiency) Qi</u>	<u>Maximum Qa</u> <small>10-Year Forecast</small>	<u>Future Excess or (Deficiency) Qa</u>	<u>Maximum Qi</u> <small>20-Year Forecast</small>	<u>Future Excess or (Deficiency) Qi</u>	<u>Maximum Qa</u> <small>20-Year Forecast</small>	<u>Future Excess or (Deficiency) Qa</u>
1.															
2.															
3.															
TOTALS =															

Column Identifiers for Calculations: A B C =A-C D =B-D E =A-E F =B-F G =A-G H =B-H

INTERRUPTIBLE WATER RIGHTS: Identify limitations on any water rights listed above that are interruptible.

Water Right #	Conditions of Interruption	Time Period of Interruption
1		
2		
3		

ADDITIONAL COMMENTS:

The City of Chehalis has an intertie with the City of Centralia for emergency purposes.

City of Chehalis
 2007 NE Kresky
 Chehalis WA 98532



**STATE OF WASHINGTON
 CERTIFICATE OF WATER RIGHT**

Document Title: Certificate of Water Right

Agency: Department of Ecology
 Southwest Regional Office
 P.O. Box 47775
 Olympia, WA 98504-7775

Applicant: City of Chehalis
 2007 NE Kresky
 Chehalis WA 98532

Reference Number:

PRIORITY DATE November 26, 1957	APPLICATION NUMBER 14589	PERMIT NUMBER 11303	CERTIFICATE NUMBER 11303
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This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE Chehalis River		TRIBUTARY OF (IF SURFACE WATERS)	
MAX. CUBIC FEET PER SECOND 11.6	MAX. GALLONS PER MINUTE	MAX. ACRE-FEET PER YEAR 980	

QUANTITY/TYPE OF USE/PERIOD OF USE

980 Acre-feet per year Municipal supply Year-round, as needed

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

1/4 ¼	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
NE1/4 SW1/4	31	14	2W	23	Lewis

PARCEL # 035631001000

ADDITIONAL LEGAL IS ON PAGE 2

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

1/4 1/4 N/A	SECTION N/A	TOWNSHIP N. N/A	RANGE (E. OR W.) W.M. N/A	W.R.I.A. 23	COUNTY Lewis
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PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

CONTINUED LEGAL DESCRIPTION FOR LOCATION OF DIVERSION/WITHDRAWAL

North 8 degrees West 200 feet from the Southeast corner of the NE1/4 of the SW1/4 of Section 31, T. 14 N., R. 2 W.W.M.

CONTINUED LEGAL DESCRIPTION FOR PROPERTY ON WHICH WATER IS TO BE USED

The place of use (POU) of this water right is the service area described in the most recent Water System Plan/Small Water System Management Program approved by the Washington State Department of Health, so long as the City of Chehalis is and remains in compliance with the criteria in RCW 90.03.386(2). RCW 90.03.386 may have the effect of revising the place of use of this water right.

PROVISIONS

All conditions and requirements contained in reports of examination or permits previously issued apply to this certificate unless specifically noted below.

An approved measuring device shall be installed and maintained for each of the sources authorized by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173. <http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html>

Water use data shall be recorded daily. The maximum monthly rate of diversion/withdrawal and the monthly total volume shall be submitted to the Department of Ecology by January 31st of each calendar year. The Department of Ecology is requiring submittal of daily meter readings to collect seasonal information for water resource planning, management and compliance.

Reported water use data shall be submitted via the Internet or by using the enclosed forms. To set up an Internet reporting account, access <https://fortress.wa.gov/ecy/wrx/wrx/Meteringx/>. If you have questions or need additional forms, contact the Southwest Regional office.

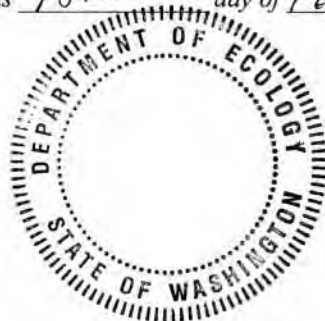
WAC 173-173 describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for modifications to some of the requirements. Installation, operation and maintenance requirements are enclosed as a document titled "Water Measurement Device Installation and Operation Requirements". <http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html>

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the project location, and to inspect at reasonable times, records of water use, wells, diversions, measuring devices and associated distribution systems for compliance with water law.

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.100.

This certificate of water right is specifically subject to relinquishment for non-use of water as provided in Chapter 90.14 RCW.

Given under my hand and the seal of this office at Olympia, Washington, this 18th day of February, 2009.



Jay Manning, Director
Department of Ecology

By Thomas Loranger
Thomas Loranger, Section Manager

OK cc



WATER RESOURCES
Application for Change/Transfer of a Water Right

19 OCT 17 P9:59

You must include a \$50.00 minimum filing fee with this application for:

(Check all that apply.)

- Change purpose(s) of use
- Add purpose(s) of use
- Change/transfer place of use
- Change point(s) of diversion/withdrawal
- Add point(s) of diversion/withdrawal
- Other (i.e. consolidation, intertie, trust water)

Explain: _____

No filing fee is required for applications for:

- Drought
- Cost Reimbursement
- Water Conservancy Board

I have completed a pre-application consultation with Ecology.

1. Applicant Information

APPLICANT/BUSINESS NAME City of Chehalis	PHONE NO. 360-748-0238	FAX NO. 360-345-1226
ADDRESS 2007 NE. Kresky Ave.		
CITY Chehalis	STATE WA	ZIP CODE 98532
EMAIL ADDRESS (IF AVAILABLE) tlougheed@ci.chehalis.wa.us		

CONTACT (IF DIFFERENT FROM ABOVE) Dave Vasilauskas	PHONE NO. 360-748-0238	FAX NO. 360-345-1226
ADDRESS 2007 NE. Kresky Ave.		
CITY Chehalis	STATE WA	ZIP CODE 98532
EMAIL ADDRESS (IF AVAILABLE) dvasilauskas@ci.chehalis.wa.us		

LEGAL LAND OWNER or PART OWNER OF PROPOSED PLACE OF USE City of Chehalis	PHONE NO. 360-748-0238	FAX NO. 360-345-1226
ADDRESS 2007 NE. Kresky Ave.		
CITY Chehalis	STATE WA.	ZIP CODE 98532
EMAIL ADDRESS (IF AVAILABLE)		

DEPT. OF ECOLOGY
FISCAL & BUDGET

FOR OFFICIAL USE ONLY

DATE APPLICATION RECEIVED 10-17-19

CHECK NO. _____ FEE \$ _____

DATE ACCEPTED 10-17-19 BY SC

CHANGE NO. CS2-BWCL1185

COUNTY LEWIS WRIA 23

SPECIAL AREA _____

SEPA: EXEMPT NOT EXEMPT

ECY CODING: 001-002-WR10285-000011

APP NO. _____ PERMIT NO. _____

CERT NO. _____ CERT OF CHG NO. _____

Department of Ecology

OCT 17 2019

2. Water Right Information

WATER RIGHT OR CLAIM NUMBER SWC 1185 North Fork Newaukum River	RECORDED NAME(S) City of Chehalis
DO YOU OWN THE RIGHT TO BE CHANGED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
IF NO, PROVIDE OWNER(S) NAME and ADDRESS:	
HAS THE WATER BEEN USED AS AUTHORIZED IN THE LAST FIVE (5) YEARS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	

- Attach copies of any documentation that shows the historical use of water that has occurred since the right was established.
- If you have a water system plan or conservation plan, please include a copy with your application.

A WSP was provided to the Dept. of Ecology in 2012.

3. Point(s) of Diversion/Withdrawal:

A. Existing

SOURCE	NO.	¼	¼	SEC.	TWP.	RGE.	PARCEL #	WELL TAG #
North Fork Newaukum River	1	SW	SE	20	14 N	1 E	035631001000	N/A
302347								

B. Proposed (if different from 3.A.)

SOURCE	NO.	¼	¼	SEC.	TWP.	RGE.	PARCEL #	WELL TAG #
Chehalis River SWC 11303	2	NW	SE	31	14	2W	005818001000	N/A
		SW						

C. DO YOU OWN THE EXISTING AND PROPOSED POINT(S) OF DIVERSION/WITHDRAWAL?

EXISTING: YES NO PROPOSED: YES NO – IF NO, PROVIDE OWNER NAME(S):

- Include copies of all associated water well reports.
- If you know the distances from the nearest section corner to the above point(s) of diversion/withdrawal, please include that information in Item No. 6 (remarks) or as an attachment.

4. Purpose of Use:

A. Existing

PURPOSE OF USE	GPM or CFS	ACRE-FT/YR	PERIOD OF USE
Municipal water services within City Service Area	10 cfs		Throughout the Year

B. Proposed (if different from 4.A.)

PURPOSE OF USE	GPM or CFS	ACRE-FT/YR	PERIOD OF USE
/same			

Department of Ecology

OCT 17 2019

5. Place of Use:

A. Existing

LEGAL DESCRIPTION OF LANDS WHERE WATER IS PRESENTLY USED:							
City of Chehalis, state approved water service area boundary.							
¼	¼	SEC.	TWP.	RGE.	COUNTY	PARCEL #	# OF ACRES
DO YOU OWN ALL THE LANDS IN THE EXISTING PLACE OF USE? <input type="checkbox"/> YES <input type="checkbox"/> NO							
IF NO, PROVIDE OWNER NAME(S):							

B. Proposed (if different than 5.A.)

LEGAL DESCRIPTION OF LANDS WHERE NEW USE IS PROPOSED:							
/same							
¼	¼	SEC.	TWP.	RGE.	COUNTY	PARCEL #	# OF ACRES
DO YOU OWN ALL THE LANDS IN THE PROPOSED PLACE OF USE? <input type="checkbox"/> YES <input type="checkbox"/> NO							
IF NO, PROVIDE OWNER NAME(S):							

- Attach a detailed map of your proposed change/transfer. The map should show existing and proposed point(s) of diversion/withdrawal, place of use and any other features involved with this application.
- If platted property, please include a certified copy of the plat map.

C. Are there any additional water rights or claims related to the same property as the one proposed for change/transfer?

YES NO – IF YES, PROVIDE THE WATER RIGHT/CLAIM NUMBER(S): S2-30234CL

6. Remarks and Other Relevant Information:

<p>The water system's highest demands are typically during the seasonal low flows of the river. The City is requesting to add a point of withdrawal (POW) downstream from the confluence with the Chehalis River. The proposed POW is the same point as the City's current intake used for the water rights held on the Chehalis River. This additional POW will allow the City to fully utilize the City's right while maintaining higher instream flows of the North Fork of the Newaukum River for aquatic species.</p>
<p>IF FOR SEASONAL OR TEMPORARY, START DATE ___/___/___ END DATE ___/___/___</p>

Certain applications may incur a Real Estate Excise Tax liability for the seller of the water rights. The Department of Revenue has requested notification of potential taxable water right related actions and therefore may be provided with a copy of this request. For further information, contact:

Department of Revenue
 Real Estate Excise Tax
 PO Box 47477
 Olympia, WA 98504-7477

Phone (360) 570-3265

Department of Ecology
 OCT 17 2019
 Water Resources Program

7. Signatures:

I certify that the information above is true and accurate to the best of my knowledge. I understand that in order to process my application, I hereby grant staff from the Department of Ecology or the County Conservancy Board access to the above site(s) for inspection and monitoring purposes. If assisted in preparing this above application, I understand that all responsibility for the accuracy of the information rests with me.

Trent J. Lougheed, P.E. - Dir./City Eng.

Applicant Printed Name – Title


Applicant Signature

05/21/2019
(Date: MM/DD/YYYY)

City of Chehalis

Water Right Holder Printed Name

Water Right Holder Signature

(Date: MM/DD/YYYY)

Municipal Water System

Land Owner of Existing Place of Use Printed Name

Land Owner of Existing Place of Use Signature

(Date: MM/DD/YYYY)

Municipal Water System

Land Owner of Proposed Place of Use Printed Name

Land Owner of Proposed Place of Use Signature

(Date: MM/DD/YYYY)

<p>*Submit your application to:</p> <p>DEPARTMENT OF ECOLOGY CASHIERING SECTION PO BOX 47611 OLYMPIA, WA 98504-7611</p>	<input type="checkbox"/> Central Regional Office 1250 W. Alder Street Union Gap, WA 98903-0009 (509) 575-2490	<input type="checkbox"/> Eastern Regional Office 4601 N. Monroe Street Spokane, WA 99205-1265 (509) 329-3400
	<input type="checkbox"/> Northwest Regional Office 3190 – 160 th Avenue SE Bellevue, WA 98008-5452 (425) 649-7000	<input checked="" type="checkbox"/> Southwest Regional Office PO Box 47775 Olympia, WA 98504-7775 (360) 407-6300

Department of Ecology
OCT 17 2019
Water Resources Program



Watershed Bdy.

R.B. Marshall, Chief Geographer.
 T.G. Gardine, Geographer in charge.
 Topography by Wm. O. Tufts, C.L. Sadler, Chas. Hartmann,
 N.E. Ballmer, L.V. Fees, and R.B. Kilgore.
 Control by U.S. Coast and Geodetic Survey, J.R. Ellis, L.F. Biggs,
 and E.M. Bandli.
 Surveyed in 1913-1914.

SURVEYED IN COOPERATION WITH THE STATE OF WASHINGTON.

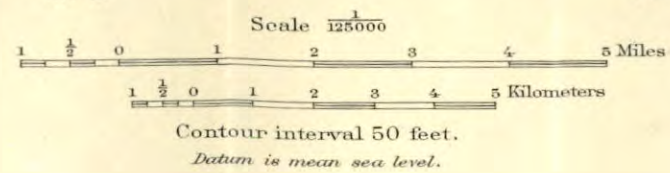


DIAGRAM OF TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Edition of 1916

FOR SALE BY
Lowman & Hanford
 FIRST AVENUE AND CHERRY ST
 SEATTLE

CHEHALIS

each representing 2° of latitude by 4° of longitude. A few areas that are of economic importance, aggregating about 3,000 square miles, have been surveyed in greater detail and mapped on a scale of 1:62,500, or about a mile to an inch.

A survey of the Hawaiian Islands was begun in 1910 and the resulting maps are being published on a scale of 1:62,500.

The features shown on these atlas sheets or maps may be classed in three groups—(1) *water*, including seas, lakes, rivers, canals, swamps, and other bodies of water; (2) *relief*, including mountains, hills, valleys, and other elevations and depressions; (3) *culture* (works of man), such as towns, cities, roads, railroads, and boundaries. The conventional signs used for these features are shown below, with explanations. Variations appear on some earlier maps.



The sketch represents a river valley between two hills. In the foreground is the sea, with a bay that is partly inclosed by a hooked sand bar. On each side of the valley is a terrace into which small streams have cut narrow gullies. The hill on the right has a rounded summit and gently sloping spurs separated by ravines. The spurs are truncated at their lower ends

the mineral resources of a quadrangle are represented, the map showing these features bound together, with a description of the quadrangle, to form a folio of the Geologic Atlas of the United States. Circulars showing by index maps the published topographic atlas sheets and geologic folios covering any State or region will be sent free on application.

Applications for maps or folios should be accompanied by cash—the exact amount—or by post-office money order (no postage stamps), and should be addressed to—

THE DIRECTOR,

United States Geological Survey,
Washington, D. C.

January, 1915.

CONVENTIONAL SIGNS

CULTURE
(printed in black)

City or village	Roads and buildings	Metaled road <i>(distinguished on recent maps only)</i>	Private or secondary road	Trail or path	Railroads	Electric railroad	Tunnel	Wharves	Breakwater and jetties	Bridges	Drawbridges	Ferry <i>(point up stream)</i>	Ford
Dam	Canal lock <i>(point up stream)</i>	U.S. township and section lines and located corners	State line	County line	Civil Township or district line	Reservation line	Land grant line	City, village or borough line	Small park or cemetery line	Triangulation or primary traverse monument	U.S. mineral monument	Boundary monument	
Bench mark <i>(Temporary bench mark shown by brown cross and black figures without lettering)</i>	Cemeteries	Church, School <i>(distinguished on recent maps)</i>	Coke ovens	Oil wells	Mine or quarry	Prospect	Shaft	Mine tunnel <i>(showing direction // direction unknown)</i>	Mine tunnel <i>(showing direction // direction unknown)</i>	Light-ship	Lighthouse or beacon	Life-saving station	

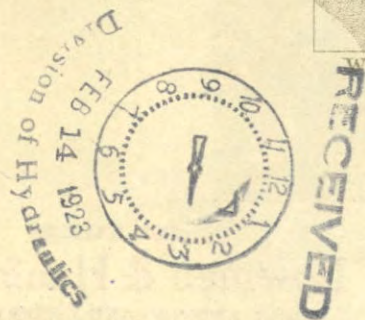
RELIEF
(printed in brown)

Figures <i>(showing heights above mean sea level instrumentally determined)</i>	Contours <i>(showing height above sea horizontal form, and steepness of slope of the surface)</i>	Depression contours	Levee
Wash	Cliffs	Mine dumps	Sand and sand dunes

WATER
(printed in blue)

Streams	Falls and rapids	Intermittent streams and ditches	Canals or ditches	Aqueducts or waterpipes	Aqueduct tunnel	Lake or pond	Unsurveyed streams and abandoned canals
Intermittent lake	Glacier <i>(Or shown by contours printed in blue)</i>	Spring	Salt marsh	Fresh marsh	Grassy pond	Tidal flat	

WOODS
(when shown, printed in green)



Division of Hydraulics
FEB 14 1928



RECEIVED

CERTIFICATE OF WATER RIGHT

(For rights perfected under original, enlargement or secondary permits.)

(In accordance with the provisions of Chapter 117, Laws of Washington for 1917, and the regulations of the State Supervisor of Hydraulics thereunder.)

This is to certify, that City of Chehalis of Chehalis, State of Washington, has made proof to the satisfaction of the State Supervisor of Hydraulics of Washington, of a right to the use of the waters of North Fork of Newaukum, a tributary of Newaukum River, for the purposes of Domestic supply and manufacturing under Appropriation Permit No. 307 issued by the State Supervisor of Hydraulics, and that said right to the use of said waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Hydraulics of Washington and entered of record in Volume 3, at Page 1185, on the 12th day of May, 1939; that the right hereby confirmed dates from February 6, 1923; that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed Ten (10) cubic feet per second.

A description of the lands under such right to which the water hereby confirmed is appurtenant, and the place where such water is put to beneficial use, is as follows:

PLACE OF USE			LEGAL SUBDIVISION	FOR IRRIGATION	
Section	Township	Range		No. Acres Described in Permit	No. Acres Actually Irrigated

LOCATION OF POWER PLANT			LEGAL SUBDIVISION	FOR POWER	
Section	Township	Range		H. P. Described in Permit	H. P. Actually Developed

Section	Township	Range	LEGAL SUBDIVISION	FOR OTHER USES
	<u>14 N.</u>	<u>2 W.W.M.</u>	<u>City of Chehalis</u>	<u>Domestic supply and manufacturing.</u>

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Section 39, Chapter 117, Session Laws 1917.

WITNESS the seal and signature of the State Supervisor of Hydraulics affixed this 12th day of May, 1939.

ENGINEERING DATA

D. Green

Chas. Barboeur
State Supervisor of Hydraulics.

Permit No. 307

Certificate of Water Right

Recorded in the office of State Supervisor
of Hydraulics, Olympia, Washington, in
Book No. 3 of Water Right
Certificates, on Page 1185, on
the 12th day of May,
1939

STATE OF WASHINGTON, }
County of Lewis } ss.

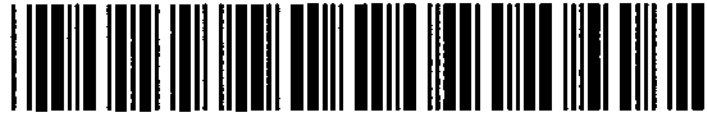
I certify that the within was received
and duly recorded by me in Volume.....
of Book of Water Right Certificates, Page
..... on the day of
....., 19.....

Department of Ecology

Claim Separator Sheet

Claim Number

98-002535





STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

STATEMENT OF WATER RIGHT CLAIM

FOR OFFICE USE ONLY
23/41
98002535
98 JUN 30 P5:02
WRIA

1. City of Chehalis
Name Director of Public Works
P.O. Box 871
Mailing Address
Chehalis WA 98532-0871
City State Zip

DEPT. OF ECOLOGY
CASHIERING SECTION
Phone No. (360-5) 748-0238

2. Date water was first put to use on your property (see instructions) Month ? and Year 1914

3. COMPLETE ONLY ONE BOX BELOW (please read the instructions)

<p>3a. GROUND WATER</p> <p><input type="checkbox"/> Well</p> <p><input type="checkbox"/> Infiltration Trench</p> <p><input type="checkbox"/> Other _____ Give Name</p> <p>4a. INSTANTANEOUS QUANTITY _____ gpm (See instructions 10 gpm=0.02 cfs ; 1 cfs=450 gpm)</p> <p>5a. ANNUAL QUANTITY OF WATER _____ af/y (One acre foot = 325,581 gallons)</p>	<p>3b. SURFACE WATER (Give name if known)</p> <p><u>North Fork</u></p> <p><input checked="" type="checkbox"/> <u>Newaukum</u> River <input type="checkbox"/> _____ Lake</p> <p><input type="checkbox"/> _____ Creek <input type="checkbox"/> _____ Spring</p> <p><input type="checkbox"/> _____ Ditch <input type="checkbox"/> _____ Pond</p> <p><input type="checkbox"/> Other _____</p> <p>4b. INSTANTANEOUS QUANTITY <u>4.34</u> cfs (See instructions 10 gpm=0.02 cfs ; 1 cfs=450 gpm)</p> <p>5b. ANNUAL QUANTITY OF WATER <u>3,136</u> af/y (One acre foot = 325,581 gallons)</p>
--	--

6. PURPOSE OF USE:
 Irrigation (Number of acres irrigated) _____
 Domestic Use (Number of units) _____
 Commercial (Description) _____
 Stockwater
 Municipal
 Other (List all) _____

7. PERIOD OF USE: Continuous or Seasonal From _____ To _____

8. LOCATION OF THE POINT OF DIVERSION/WITHDRAWAL:
Approximately ? Feet (north, south) and ? Feet (east, west) From The ? Corner of Section ?
Being Within The SW 1/4 SE 1/4 of Section 20 T. 14 N., R. 1 (E. or W.) W.M.
(See attached map of diversion point from file on Certificate No. 1185.)

9. IF THE POINT OF DIVERSION/WITHDRAWAL IS LOCATED ON PLATTED PROPERTY:
Lot _____ Block _____ of _____ (Plat or Addition)
Section _____ T. _____ N., R. _____ (E. or W.) W.M.

10. LEGAL DESCRIPTION OF PROPERTY WHERE WATER IS USED:
Area served by the City of Chehalis
Within Section --- T. --- N., R. --- (E. or W.) W.M., County Lewis

11. TAX PARCEL NUMBER: N/A

12. LEGAL DOCTRINE: Appropriation Riparian Other _____

REGISTRATION NUMBER
302347

THIS IS NOT A WATER RIGHT
If this form is not fully completed, it will be returned.
I hereby swear that the above information is true and accurate to the best of my knowledge.
Signature: Barry T. Heid
Date: 6-29-98
Barry T. Heid, Director of Public Works
Ecology is an equal opportunity and affirmative action employer.



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

October 2, 1998

City of Chehalis
Director of Public Works
PO Box 871
Chehalis WA 98532-0871

Dear City of Chehalis:

Your claim to the use of historic water has been accepted in the 1997 claims registration. The registration number is on the bottom left hand side of the form. The law requires that we include the following language after registration of your claim:

“The filing of a statement of claim does not constitute an adjudication of any claim to the right to use of waters as between the water use claimant and the state, or as between one or more water use claimants and another or others.”

The acceptance of this statement of claim by the Department does not give you the right to use the water if you can't prove, in a superior court the historic use of the water.

Please be aware under Chapter 90.14.068 RCW

....This reopening of the period for filing statements of claim shall not affect or impair in any respect whatsoever any water right existing prior to July 27, 1997. A water right embodied in a statement of claim filed under this section is subordinate to any water right embodied in a permit or certificate issued under Chapter 90.03 or 90.44 RCW prior to the date the statement of claim is filed with the Department and is subordinate to any water right embodied in a statement of claim filed in the water rights claims registry before July 27, 1997.

Sincerely,

Lynda Pittman
for Candy Pittman
Water Resources Program

Enclosure
Claim No. 302,347



Is your RETURN ADDRESS completed on the reverse side?

SENDER: 302347
 ■ Complete items 1 and 2 for additional services.
 ■ Complete items 3, 4a, and 4b.
 ■ Print your name and address on the reverse of this form so that we can return this card to you.
 ■ Attach this form to the front of the mailpiece, or on the back if space does not permit.
 ■ Write "Return Receipt Requested" on the mailpiece below the article number.
 ■ The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
 1. Addressee's Address
 2. Restricted Delivery
 Consult postmaster for fee.

3. Article Addressed to:

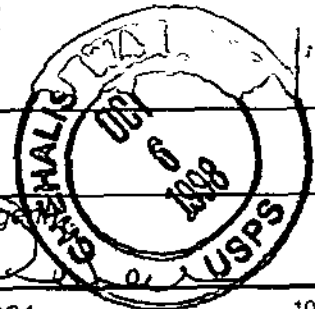
 City of Chehalis
 Director of Public Works
 PO Box 871
 Chehalis WA 98532-0871

4a. Article Number
 P583902644
 4b. Service Type
 Registered Certified
 Express Mail Insured
 Return Receipt for Merchandise COD
 7. Date of Delivery

5. Received By: (Print Name)

 6. Signature: (Addressee or Agent)
 X *[Signature]*

8. Addressee's Address (Only if requested and fee is paid)



Thank you for using Return Receipt Service.

P 583 902 644

US Postal Service
Receipt for Certified Mail
 No Insurance Coverage Provided.
 Do not use for International Mail (See reverse)

Sent to	
Street & Number	
Post Office, State, & ZIP Code	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

PS Form 3800, April 1995

Appendix F – Correspondence

LOCAL GOVERNMENT CONSISTENCY
DETERMINATION FORM

FIRE FLOW AND NESTING CONFIRMATION

SEPA CHECKLIST

WUE MEETING MINUTES



Local Government Consistency Determination Form

Water System Name: _____ PWS ID: _____

Planning/Engineering Document Title: _____ Plan Date: _____

Local Government with Jurisdiction Conducting Review: _____

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, he or she should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on reverse.

Local Government Consistency Statement	For use by water system	For use by local government
	Identify the page(s) in submittal	Yes or Not Applicable
a) The water system service area is consistent with the adopted <u>land use and zoning</u> within the service area.		
b) The <u>growth projection</u> used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.		
c) For <u>cities and towns that provide water service</u> ; All water service area policies of the city or town described in the plan conform to all relevant <u>utility service extension ordinances</u> .		
d) <u>Service area policies</u> for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.		
e) <u>Other relevant elements</u> related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.		

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Signature

Date

Printed Name, Title, & Jurisdiction

Consistency Review Guidance

For Use by Local Governments and Municipal Water Suppliers

This checklist may be used to meet the requirements of WAC 246-290-108. When using an alternative format, it must describe all of the elements; 1a), b), c), d), and e), when they apply.

For **water system plans (WSP)**, a consistency review is required for the service area and any additional areas where a municipal water supplier wants to expand its water right's place of use.

For **small water system management programs**, a consistency review is only required for areas where a municipal water supplier wants to expand its water right's place-of-use. If no water right place-of-use expansion is requested, a consistency review is not required.

For **engineering documents**, a consistency review is required for areas where a municipal water supplier wants to expand its water right's place-of-use (water system plan amendment is required). For noncommunity water systems, a consistency review is required when requesting a place-of-use expansion. All engineering documents must be submitted with a service area map (WAC 246-290-110(4)(b)(ii)).

A) Documenting Consistency: The planning or engineering document must include the following when applicable.

- a) A copy of the adopted **land use/zoning** map corresponding to the service area. The uses provided in the WSP should be consistent with the adopted land use/zoning map. Include any other portions of comprehensive plans or development regulations that relate to water supply planning.
- b) A copy of the **growth projections** that correspond to the service area. If the local population growth projections are not used, explain in detail why the chosen projections more accurately describe the expected growth rate. Explain how it is consistent with the adopted land use.
- c) Include water service area policies and show that they are consistent with the **utility service extension ordinances** within the city or town boundaries. *This applies to cities and towns only.*
- d) All **service area policies** for how new water service will be provided to new customers.
- e) **Other relevant elements** the Department of Health determines are related to water supply planning. See Local Government Consistency – Other Relevant Elements, Policy B.07, September 2009.

B) Documenting an Inconsistency: Please document the inconsistency, include the citation from the comprehensive plan or development regulation, and explain how to resolve the inconsistency.

C) Documenting a Lack of Local Review for Consistency: Where the local government with jurisdiction did not provide a consistency review, document efforts made and the amount of time provided to the local government for review. Please include: name of contact, date, and efforts made (letters, phone calls, and emails). To self-certify, please contact the DOH Planner.

The Department of Health is an equal opportunity agency. For persons with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).

Gerald Mickelsen

From: Dave Vasilauskas <dvasilauskas@ci.chehalis.wa.us>
Sent: Tuesday, October 26, 2021 7:47 AM
To: Gerald Mickelsen
Subject: FW: Water System Plan

[EXTERNAL]
Gerald,

The Fire Chief is ok with the fire flows in the updated WSP.

Dave



Dave Vasilauskas

Water Superintendent
City of Chehalis
(360) 748-0238 Opt. 3
(360) 345-1226 Fax

From: Rick Mack <rmack@ci.chehalis.wa.us>
Sent: Tuesday, October 26, 2021 6:56 AM
To: Tedd Hendershot <thendershot@ci.chehalis.wa.us>
Cc: Dave Vasilauskas <dvasilauskas@ci.chehalis.wa.us>
Subject: RE: Water System Plan

Thanks Chief.

Rick

From: Tedd Hendershot <thendershot@ci.chehalis.wa.us>
Sent: Monday, October 25, 2021 2:00 PM
To: Rick Mack <rmack@ci.chehalis.wa.us>
Subject: RE: Water System Plan

Rick, and Dave,
Those numbers are within the operating parameters that we would use during fire operations.
Tedd

From: Rick Mack <rmack@ci.chehalis.wa.us>
Sent: Thursday, October 21, 2021 3:17 PM
To: Tedd Hendershot <thendershot@ci.chehalis.wa.us>
Subject: Fwd: Water System Plan

Chief,

Please examine the attached document and provide any comment. I am okay with the proposed plan, because it is in keeping with the code requirements within reason, but here again, you and your staff are the end user.

Rick

Get [Outlook for iOS](#)

From: Rick Mack <rmack@ci.chehalis.wa.us>
Sent: Thursday, October 21, 2021 3:12:16 PM
To: Dave Vasilaukas <dvasilaukas@ci.chehalis.wa.us>
Cc: Gerald Mickelsen <gmickelsen@gibbs-olson.com>
Subject: Re: Water System Plan

Yes, will do.

Get [Outlook for iOS](#)

From: Dave Vasilaukas <dvasilaukas@ci.chehalis.wa.us>
Sent: Thursday, October 21, 2021 2:36:11 PM
To: Rick Mack <rmack@ci.chehalis.wa.us>
Cc: Gerald Mickelsen <gmickelsen@gibbs-olson.com>
Subject: RE: Water System Plan

I think Trent was going to talk to him on this. Yes, please send to him for his thoughts.

Thanks.



Dave Vasilaukas

Water Superintendent
City of Chehalis
(360) 748-0238 Opt. 3
(360) 345-1226 Fax

From: Rick Mack <rmack@ci.chehalis.wa.us>
Sent: Thursday, October 21, 2021 2:05 PM
To: Dave Vasilaukas <dvasilaukas@ci.chehalis.wa.us>
Cc: Gerald Mickelsen <gmickelsen@gibbs-olson.com>
Subject: Re: Water System Plan

Dave,

Has Ted Hendershot taken a look at this? The numbers reflect what we discussed, but I want Ted to weigh in. I can either forward this to him or you can send it direct. Thanks,

Rick

Get [Outlook for iOS](#)

From: Dave Vasilaukas <dvasilaukas@ci.chehalis.wa.us>
Sent: Thursday, October 21, 2021 1:58:18 PM
To: Rick Mack <rmack@ci.chehalis.wa.us>

Cc: Gerald Mickelsen <gmickelsen@gibbs-olson.com>

Subject: Water System Plan

Rick,

In or updated Water System Plan, Fire Suppression Storage, can you confirm the numbers in this paragraph that you are ok with these flow numbers.

A email or letter will work.

Thanks,

Dave



Dave Vasilauskas

Water Superintendent

City of Chehalis

(360) 748-0238 Opt. 3

(360) 345-1226 Fax

From: Admin <admin@chehaliswa.onmicrosoft.com>

Sent: Thursday, October 21, 2021 2:54 PM

To: Dave Vasilauskas <dvasilauskas@ci.chehalis.wa.us>

Subject: Message from KM_C554e

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the [SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS \(part D\)](#). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [\[HELP\]](#)

1. Name of proposed project, if applicable:

City of Chehalis Regional Water System, Comprehensive Water System Plan

2. Name of applicant:

City of Chehalis

3. Address and phone number of applicant and contact person:

Applicant: City of Chehalis – Public Works Department

2007 NE Kresky Ave

Chehalis, WA 98532

(360) 740-7536

Contact Person: Gerald Mickelsen, EIT

Gibbs & Olson

1157 3rd Ave #219

Longview, WA 98632

(360) 425-0991

gmickelsen@gibbs-olson.com

4. Date checklist prepared:

1/28/2022

5. Agency requesting checklist:

City of Chehalis

6. Proposed timing or schedule (including phasing, if applicable):

The draft Water System Plan is proposed to be submitted in the first half of the year 2022 and finalized in 2022. Capital improvement projects are preliminarily scheduled through the year 2040.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

Not at this time.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Chapter 5 discusses Source Water Protection for withdrawal points in the North Fork of the Newaukum River and the Chehalis River.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

Yes, the City of Chehalis has a Water Rights Change Application pending review and approval from the Department of Ecology.

The City of Centralia applied to the Department of Ecology for up to 8 million gallons per day of additional groundwater rights sourced in the Centralia Outwash Gravel Aquifer.

10. List any government approvals or permits that will be needed for your proposal, if known.

Department of Health Water System Plan approval including Department of Ecology water rights review; Local Government Consistency Determination Forms from Lewis County, the City of Centralia, and the City of Chehalis Community Development department; Chehalis City Council approval.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The City of Chehalis is seeking review and approval of the Chehalis Comprehensive Water System Plan for future use. Due to the planning nature of this proposal, there is no specific project size or site.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

City of Chehalis and surrounding Urban Growth Area. Figure 1-1 shows a Vicinity Map.

B. Environmental Elements [\[HELP\]](#)

1. Earth [\[help\]](#)

a. General description of the site: **Not applicable**

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)?

Not applicable

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

Not applicable

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Not applicable

- e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Not applicable

- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Not applicable

- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Not applicable

- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Not applicable

2. Air [\[help\]](#)

- a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Not applicable

- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

Not applicable

- c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Not applicable

3. Water [\[help\]](#)

- a. Surface Water: [\[help\]](#)

- 1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Yes, the City of Chehalis currently draws water from both the Chehalis River and the North Fork of the Newaukum River.

- 2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

There is no work associated with this proposal; however, some Capital Improvement Projects are planned to occur adjacent to the described waters and these projects will gain the required approvals prior to construction.

- 3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

Not applicable

- 4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

The City of Chehalis currently withdraws water from the North Fork of the Newaukum River and the Chehalis River within their current Water Rights. See Chapter 2 or the Water Rights Self Assessment in Appendix E for quantities.

- 5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

Not applicable

- 6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No

b. Ground Water: [\[help\]](#)

- 1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No

- 2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

None

c. Water runoff (including stormwater):

- 1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Not applicable

- 2) Could waste materials enter ground or surface waters? If so, generally describe.

No

- 3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

None

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Not applicable

4. **Plants** [\[help\]](#)

a. Check the types of vegetation found on the site: **Not applicable**

___deciduous tree: alder, maple, aspen, other

___evergreen tree: fir, cedar, pine, other

___shrubs

___grass

___pasture

___crop or grain

___ Orchards, vineyards or other permanent crops.

___ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other

___water plants: water lily, eelgrass, milfoil, other

___other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

None

c. List threatened and endangered species known to be on or near the site.

Not applicable

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Not applicable

e. List all noxious weeds and invasive species known to be on or near the site.

Not applicable

5. **Animals** [\[help\]](#)

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Not Applicable

b. List any threatened and endangered species known to be on or near the site.

Not applicable

c. Is the site part of a migration route? If so, explain.

Not applicable

d. Proposed measures to preserve or enhance wildlife, if any:

None

e. List any invasive animal species known to be on or near the site.

Not applicable

6. **Energy and Natural Resources** [\[help\]](#)

- a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Not applicable

- b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No

- c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

None

7. **Environmental Health** [\[help\]](#)

- a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

- 1) Describe any known or possible contamination at the site from present or past uses.

See Chapter 5 and Figures 5-1 and 5-2 for an Inventory of Potential Contaminant Sources.

- 2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

None

- 3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

The City stores and uses liquid chlorine for water treatment.

- 4) Describe special emergency services that might be required.

None

- 5) Proposed measures to reduce or control environmental health hazards, if any:

The water treatment plant has a chlorine leak detector alarm system. The City keeps the proper protective equipment on site and plant staff are trained in the use of this equipment and chemical handling requirements.

b. *Noise*

- 1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Not applicable

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

None

3) Proposed measures to reduce or control noise impacts, if any:

None

8. Land and Shoreline Use [\[help\]](#)

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

Figure 1-5 contains the City of Chehalis Zoning Map.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

Not applicable

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

Agricultural land uses or logging activity may degrade water quality, see Chapter 5.

c. Describe any structures on the site.

Not applicable

d. Will any structures be demolished? If so, what?

No

e. What is the current zoning classification of the site?

Figure 1-5 contains the City of Chehalis Zoning Map.

f. What is the current comprehensive plan designation of the site?

Figure 1-5 contains the City of Chehalis Zoning Map.

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Not applicable

i. Approximately how many people would reside or work in the completed project?

Not applicable

j. Approximately how many people would the completed project displace?

None

k. Proposed measures to avoid or reduce displacement impacts, if any:

None

- L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

A draft version of the Water System Plan will be sent to Lewis County, the City of Centralia, and the City of Chehalis Community Development department to verify planning is consistent with these agencies.

- m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

None

9. Housing [\[help\]](#)

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None

- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None

- c. Proposed measures to reduce or control housing impacts, if any:

None

10. Aesthetics [\[help\]](#)

- a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

Not applicable

- b. What views in the immediate vicinity would be altered or obstructed?

None

- c. Proposed measures to reduce or control aesthetic impacts, if any:

None

11. Light and Glare [\[help\]](#)

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Not applicable

- b. Could light or glare from the finished project be a safety hazard or interfere with views?

No

- c. What existing off-site sources of light or glare may affect your proposal?

No

- d. Proposed measures to reduce or control light and glare impacts, if any:

None

12. Recreation [\[help\]](#)

- a. What designated and informal recreational opportunities are in the immediate vicinity?

Not applicable

- b. Would the proposed project displace any existing recreational uses? If so, describe.

No

- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

None

13. Historic and cultural preservation [\[help\]](#)

- a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

Not applicable

- b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

Not applicable

- c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Not applicable

- d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

None

14. Transportation [\[help\]](#)

- a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

Not applicable

- b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

Not applicable

- c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

Not applicable

- d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

No

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No t applicable

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

Not applicable

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

No

h. Proposed measures to reduce or control transportation impacts, if any:

None

15. Public Services [\[help\]](#)

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

Not applicable

b. Proposed measures to reduce or control direct impacts on public services, if any.

None

16. Utilities [\[help\]](#)

a. Circle utilities currently available at the site: **Not applicable**
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system,
other _____

d. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

None

C. Signature [\[HELP\]](#)

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee _____

Position and Agency/Organization _____

Date Submitted: _____

D. Supplemental sheet for nonproject actions [\[HELP\]](#)

(IT IS NOT NECESSARY to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

The City of Chehalis currently stores liquid chlorine onsite. The quantity required for water treatment may slightly increase with projected City growth.

Proposed measures to avoid or reduce such increases are:

None

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

The proposal will not affect plants, animals, fish, or marine life.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

None

3. How would the proposal be likely to deplete energy or natural resources?

The City of Chehalis withdraws surface water from the North Fork of the Newaukum River and the Chehalis River; however quantities are within the City's current water rights.

Proposed measures to protect or conserve energy and natural resources are:

Maintaining surface water withdrawals within current water rights.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Capital improvement projects recommended and planned for in the Water System Plan may occur in or near environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection.

Proposed measures to protect such resources or to avoid or reduce impacts are:

The required approvals will be gained prior to construction of individual projects.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

The proposal is compatible with existing land and shoreline use.

Proposed measures to avoid or reduce shoreline and land use impacts are:

None

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Water use is projected to increase as a result of City growth.

Proposed measures to reduce or respond to such demand(s) are:

The purpose of this Water System Plan is to plan for projected water use, see Capital Improvement Projects.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

The proposal does not conflict with local, state, or federal laws or requirements for the protection of the environment.

June 24, 2019

The Chehalis city council met in regular session on Monday, June 24, 2019, in the Chehalis city hall. Mayor Dennis Dawes called the meeting to order at 5:00 pm with the following council members present: Tony Ketchum, Daryl Lund, Dr. Isaac Pope, Bob Spahr, and Chad Taylor. Terry Harris arrived at 5:10 pm. Staff present included: Ken Cardinale, Fire Chief; Kiley Franz, Acting City Clerk; Brian Kelly, Assistant City Attorney; Trent Loughheed, Public Works Director/City Engineer (Acting City Manager); Brandon Rakes, Airport Operations Coordinator; Glenn Schaffer, Police Chief; and Dave Vasilauskas, Water Superintendent. Members of the news media included Will Rubin of *The Chronicle*.

1. **Public Hearing – City’s Water Use Efficiency Plan**. Mayor Dawes closed the regular meeting at 5:00 pm and opened the public hearing.

Dave Vasilauskas stated the city’s Water Use Efficiency (WUE) Plan needed to be updated. One of the steps includes getting input from citizens regarding water conservation measures. Mr. Vasilauskas stated that citizens are welcome to contact him if they have any thoughts on the matter.

Mayor Dawes asked if **the information was on the city’s website**. Mr. Vasilauskas stated the city’s water quality report is available online.

Mayor Dawes called for comment on the WUE Plan. There being no public comment, Mayor Dawes closed the public hearing and reopened the regular meeting at 5:03 pm.

2. **Proclamation – General Aviation Appreciation Month**. Mayor Dawes read and presented a proclamation to Brandon Rakes proclaiming June as General Aviation Appreciation Month.

3. **Chehalis Community Renaissance Team Update (CCRT)**. Annalee Tobey reported on recent activities:

- Business Academy offering various classes
- Façade grant – five in progress; microgrants also available
- Only four vacant spaces currently available downtown
- Totally Pawsome moving to new location across from current location to expand their business
- Coworks doing well with 18 monthly memberships; courtyard space coming soon
- Artists continue to work on building murals, trash can lids, and benches
- ChehalisFest is July 27

Ms. Tobey stated that 2019 marks 10 years since the Renaissance Plan was adopted. The group is beginning to look at developing a mission and vision statement, as well as reviewing the current logo and organization name. She thanked the city for its continued support of the program.

4. **Lewis EDC Update**. Matt Matayoshi reported on various partnerships with the city, including providing data for various grants; beautification sponsor; funding of study relating to water rights; and support of .09 grants. In addition to .09 grants for city projects, the EDC has supported various grants county-wide. Mr. Matayoshi stated the second annual Smart Tank event had 13 participants. The next event is set for July 12.

Councilor Lund asked who the “sharks” included. Mr. Matayoshi stated the EDC partners with an organization that provides some of the “sharks” and they also have a couple local people – Dr. Joe Dolezal and Amanda Hubbert-Smith.

5. **Consent Calendar**. Councilor Spahr moved to approve the consent calendar comprised of the following:

- a. Minutes of the regular meeting of June 10, 2019;
- b. June 14, 2019 Claim Vouchers No. 126038-126185 and Electronic Funds Transfer No. 520191 in the amount of \$341,446.21; and
- c. Acceptance of public infrastructure project at the Discover! Children’s Museum site – project and bid alternate closeout.

The motion was seconded by Councilor Lund and carried unanimously.

June 24, 2019

6. Ordinance No. 998-B, Second and Final Reading – Granting a Non-exclusive Franchise to Puget Sound Energy. Acting City Manager Lougheed indicated there were no changes since first reading of the ordinance.

Councilor Taylor moved to pass Ordinance No. 998-B on second and final reading. The motion was seconded by Councilor Lund and carried unanimously.

7. Financial Feasibility Study of Potential Annexation of the City of Chehalis into the Lewis County Fire District 6 Service Area. Chief Cardinale stated this item moves ahead a study on the possible annexation of the fire department into Lewis County Fire District 6, by having a financial consultant look at the numbers. He stated the scope of work was included in the agenda. The timeframe for completion of the study depends on how fast the city and district provide information to the consultant. Once all the information is presented, Chief Cardinale stated he would provide the council with an update and timeframe for completion.

Mayor Dawes understood it could be about six months as some information may need a little updating. Chief Cardinale stated a significant amount of information was already provided to the consultant back in January and that information has been updated. The consultant provided a list of further information that will be needed, which both the city and district are working on.

Chief Cardinale stated the consultant was Bill Cushman, who was the financial consultant for Snohomish County Fire District 1 and has done work with Riverside Fire Authority and Lewis County District 6. He is well respected in his field and thought the city and district would be happy with the end product.

Councilor Ketchum moved to authorize the City Manager to execute a contract with William Cushman, Financial Consultant for a Fire Service Annexation Feasibility Study and approve the expenditure of up to \$8,000 for the project. The motion was seconded by Councilor Pope and carried unanimously.

8. Administration Reports.

b. City Manager Update. Acting City Manager Lougheed stated bids were opened on Thursday for the Recreation Park project. Seven bids were received and are being reviewed.

9. Councilor Reports/Committee Updates.

a. Councilor Ketchum stated the Lewis County Historical Museum will be selling slices of pie at Borst Park on July 4.

b. Mayor Dawes stated he and Councilor Lund met with Fire District 6 commissioners regarding the annexation study taken care of previously on the agenda. He also attended a .09 committee meeting, the Business After Hours event, and the luncheon for former Public Works Director Rick Sahlin.

There being no further business to come before the council, the meeting was adjourned at 5:35 pm.

Dennis L. Dawes, Mayor

Caryn Foley, City Clerk

Approved: 7/8/2019

Initials: cf

Appendix G – 50-YR Water Projections

WITH INDUSTRIAL

WITHOUT INDUSTRIAL

Year:	Residential/Commercial Demand (MDD in MGD):	Projected Future Industrial Demand (MDD in MGD): **	Total Demand (MDD in MGD)	Growth Rate (%) City + UGA
2020	3.60	0.0	3.60	1.465% *
2021	4.04	0.0	4.04	1.465%
2022	4.09	0.0	4.09	1.465%
2023	4.14	0.0	4.14	1.465%
2024	4.19	0.0	4.19	1.465%
2025	4.23	0.0	4.23	1.465%
2026	4.28	0.0	4.28	1.465%
2027	4.33	0.0	4.33	1.465%
2028	4.39	0.0	4.39	1.465%
2029	4.44	0.0	4.44	1.465%
2030	4.49	0.0	4.49	1.465%
2031	4.54	0.0	4.54	1.465%
2032	4.60	0.0	4.60	1.465%
2033	4.65	0.0	4.65	1.465%
2034	4.71	0.0	4.71	1.465%
2035	4.76	0.0	4.76	1.465%
2036	4.82	0.0	4.82	1.465%
2037	4.88	0.0	4.88	1.465%
2038	4.94	0.0	4.94	1.465%
2039	5.00	0.0	5.00	1.465%
2040	5.06	1.1	6.16	1.465%
2041	5.12	1.5	6.62	1.465%
2042	5.18	1.7	6.88	1.465%
2043	5.25	1.8	7.05	1.465%
2044	5.31	1.8	7.11	1.465%
2045	5.38	2.0	7.38	1.465%
2046	5.44	2.1	7.54	1.465%
2047	5.51	2.1	7.61	1.465%
2048	5.58	2.3	7.88	1.465%
2049	5.65	2.4	8.05	1.465%
2050	5.72	2.4	8.12	1.465%
2051	5.79	2.6	8.39	1.465%
2052	5.86	2.7	8.56	1.465%
2053	5.94	2.7	8.64	1.465%
2054	6.01	2.9	8.91	1.465%
2055	6.09	3.0	9.09	1.465%
2056	6.16	3.0	9.16	1.465%
2057	6.24	3.2	9.44	1.465%
2058	6.32	3.3	9.62	1.465%
2059	6.40	3.3	9.70	1.465%
2060	6.48	3.5	9.98	1.465%
2061	6.56	3.6	10.16	1.465%
2062	6.65	3.6	10.25	1.465%
2063	6.73	3.8	10.53	1.465%
2064	6.82	3.9	10.72	1.465%
2065	6.91	3.9	10.81	1.465%
2066	6.99	4.1	11.09	1.465%
2067	7.08	4.2	11.28	1.465%
2068	7.18	4.2	11.38	1.465%
2069	7.27	4.2	11.47	1.465%
2070	7.36	4.2	11.56	1.465%
2071	7.46	4.2	11.66	1.465%

*Growth rate established in Chapter 2

**Cumulative Projected Industrial Use is based on past water availability requests for Port properties and available lands

Year:	Residential/Commercial Demand (MDD in MGD):	Total Demand (MDD in MGD)	Growth Rate (%) City + UGA
2020	3.60	3.60	1.465% *
2021	4.04	4.04	1.465%
2022	4.09	4.09	1.465%
2023	4.14	4.14	1.465%
2024	4.19	4.19	1.465%
2025	4.23	4.23	1.465%
2026	4.28	4.28	1.465%
2027	4.33	4.33	1.465%
2028	4.39	4.39	1.465%
2029	4.44	4.44	1.465%
2030	4.49	4.49	1.465%
2031	4.54	4.54	1.465%
2032	4.60	4.60	1.465%
2033	4.65	4.65	1.465%
2034	4.71	4.71	1.465%
2035	4.76	4.76	1.465%
2036	4.82	4.82	1.465%
2037	4.88	4.88	1.465%
2038	4.94	4.94	1.465%
2039	5.00	5.00	1.465%
2040	5.06	5.06	1.465%
2041	5.12	5.12	1.465%
2042	5.18	5.18	1.465%
2043	5.25	5.25	1.465%
2044	5.31	5.31	1.465%
2045	5.38	5.38	1.465%
2046	5.44	5.44	1.465%
2047	5.51	5.51	1.465%
2048	5.58	5.58	1.465%
2049	5.65	5.65	1.465%
2050	5.72	5.72	1.465%
2051	5.79	5.79	1.465%
2052	5.86	5.86	1.465%
2053	5.94	5.94	1.465%
2054	6.01	6.01	1.465%
2055	6.09	6.09	1.465%
2056	6.16	6.16	1.465%
2057	6.24	6.24	1.465%
2058	6.32	6.32	1.465%
2059	6.40	6.40	1.465%
2060	6.48	6.48	1.465%
2061	6.56	6.56	1.465%
2062	6.65	6.65	1.465%
2063	6.73	6.73	1.465%
2064	6.82	6.82	1.465%
2065	6.91	6.91	1.465%
2066	6.99	6.99	1.465%
2067	7.08	7.08	1.465%
2068	7.18	7.18	1.465%
2069	7.27	7.27	1.465%
2070	7.36	7.36	1.465%
2071	7.46	7.46	1.465%

*Growth rate established in Chapter 2

Appendix H – KYPIPE Modeling Results

2020 FIRE FLOW ANALYSIS REPORT

2020 PEAK HOUR DEMAND ANALYSIS REPORT

2030 FIRE FLOW ANALYSIS REPORT

2030 PEAK HOUR DEMAND ANALYSIS REPORT

2040 FIRE FLOW ANALYSIS REPORT

2040 PEAK HOUR DEMAND ANALYSIS REPORT

PIPE AGE INVENTORY

***** KYPIPE *****
 *
 * Pipe Network Modeling Software
 *
 * CopyRighted by KYPIPE LLC (www.kypipe.com)
 * Version: 10.001 05/13/2019
 * Company: GibbsOlson Serial #: 592186
 * Interface: KYnetic
 * Licensed for Pipe2018
 *

Date & Time: Thu Sep 30 11:02:53 2021

Master File : p:\0155_chehalis\1078_wsp_update\rpt-planning\mdlmg\01551078 city of chehalis water system model - calibrated.KYP\01551078 city of chehalis water system model

 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

REGULATING VALVE DATA

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
18th St PRV	PRV-1	389.66
18th St Pump	Const_FLOW_Pump	0.00
Centralia Al	Const_HEAD_Pump	541.19
Fairview PRV	PRV-1	466.50
High Level P	Const_FLOW_Pump	0.00
RV-1	PRV-1	389.55
RV-2	PRV-1	389.67
South End Pu	Const_HEAD_Pump	495.59
Valley View	Const_FLOW_Pump	0.00

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1	NODE NAMES #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
3	5	6	24.78	10.00	90.0000	0.00
5	9	10	824.44	6.00	90.0000	0.00
6	11	12	38.56	8.00	90.0000	0.00
7	13	872	38.38	6.00	75.0000	0.00
8	15	16	7.84	6.00	90.0000	0.00
10	18	19	437.00	2.00	140.0000	0.00
12	22	23	750.00	8.00	115.0000	0.00
13	24	1524	360.61	4.00	115.0000	0.00
14	26	J-55	539.97	8.00	115.0000	0.00
16	28	29	217.00	4.00	115.0000	0.00
17	31	32	723.00	2.00	113.0723	0.00
21	37	38	170.42	4.00	75.0000	0.00
22	2014	40	325.43	8.00	115.0000	0.00
23	41	1699	28.75	12.00	115.0000	0.00
24	43	213	42.27	12.00	115.0000	0.00
26	47	48	173.64	4.00	115.0000	0.00
27	49	50	310.00	10.00	115.0000	0.00
28	51	52	222.00	8.00	115.0000	0.00
32	59	60	108.37	6.00	75.0000	0.00
35	65	66	295.51	6.00	75.0000	0.00
37	68	69	412.00	8.00	115.0000	0.00
38	52	70	245.00	6.00	115.0000	0.00
39	Hillcrest	72	81.50	4.00	115.0000	0.00
41	75	76	3275.00	12.00	130.0000	0.00
45	83	2066	32.96	12.00	130.0000	0.00
46	85	86	33.07	12.00	130.0000	0.00
52	97	98	74.85	8.00	130.0000	0.00
55	102	103	68.31	8.00	130.0000	0.00
56	104	1810	34.98	12.00	130.0000	0.00
59	107	108	7.82	12.00	130.0000	0.00
60	109	J-53	785.00	16.00	115.0000	0.00
66	118	J-91	2359.00	14.00	90.0000	0.00
68	119	121	704.00	14.00	75.0000	0.00
70	121	860	23.71	14.00	75.0000	0.00
72	118	1799	900.00	8.00	130.0000	0.00
85	physical d	396	23.76	14.00	75.0000	0.00
107	J-91	2067	949.00	14.00	75.0000	0.00
109	325	34	484.84	12.00	115.0000	0.00
110	2122	166	948.74	12.00	115.0000	0.00
112	166	962	902.00	12.00	115.0000	0.00
114	569	962	308.00	12.00	115.0000	0.00
115	569	665	1519.00	12.00	115.0000	0.00
118	172	J-105	650.00	12.00	115.0000	0.00
120	175	178	251.61	12.00	115.0000	0.00
123	178	1826	444.69	12.00	115.0000	0.00
126	1826	1827	278.93	12.00	115.0000	0.00
129	1827	192	1658.25	12.00	115.0000	0.00

2020 Fireflow - Main Zone West

137	192	201	248.00	12.00	115.0000	0.00
139		201	409.00	12.00	115.0000	0.00
141	15	137	446.49	12.00	115.0000	0.00
142	15	J-95	1949.78	12.00	115.0000	0.00
145	201	J-93	562.05	12.00	90.0000	0.00
155	212	213	677.50	12.00	115.0000	0.00
156	214	26	1649.00	12.00	115.0000	0.00
163	2072	224	1245.00	12.00	115.0000	0.00
187	248	253	1835.17	12.00	130.0000	0.00
192	254	J-127	1507.19	12.00	130.0000	0.00
262	325	1575	908.76	12.00	115.0000	0.00
279	343	344	127.52	12.00	130.0000	0.00
280	344	342	115.85	12.00	130.0000	0.00
282	342	346	192.42	12.00	130.0000	0.00
283	86	J-130	1344.24	12.00	130.0000	0.00
292	356	361	2280.98	10.00	90.0000	0.00
298	32	J-7	60.00	10.00	90.0000	0.00
302	32	480	930.34	10.00	90.0000	0.00
318	384	385	126.00	10.00	115.0000	0.00
319	356	2074	983.94	10.00	90.0000	0.00
320	356	41	37.27	10.00	90.0000	0.00
329	396	398	31.65	10.00	75.0000	0.00
331	398	1409	306.52	10.00	75.0000	0.00
340	407	408	647.97	10.00	75.0000	0.00
353	661	2119	350.44	6.00	75.0000	0.00
355	424	1648	189.00	10.00	90.0000	0.00
363	295	468	3228.55	10.00	130.0000	0.00
398	172	473	539.00	12.00	115.0000	0.00
403	474	480	672.00	8.00	90.0000	0.00
411	J-45	2129	770.00	8.00	90.0000	0.00
414	1217	1121	284.43	6.00	90.0000	0.00
417	492	1235	414.07	8.00	75.0000	0.00
429	505	509	502.00	8.00	75.0000	0.00
433	510	512	462.00	8.00	115.0000	0.00
435	513	1057	1078.98	8.00	75.0000	0.00
440	518	J-94	278.47	8.00	75.0000	0.00
448	92	1184	943.86	8.00	115.0000	0.00
451	530	119	42.30	8.00	75.0000	0.00
452	119	536	464.52	8.00	75.0000	0.00
458	536	2079	637.02	8.00	75.0000	0.00
461	540	2079	30.24	8.00	75.0000	0.00
464	544	543	465.44	8.00	75.0000	0.00
472	552	J-100	98.00	8.00	75.0000	0.00
476	I-AV-1	J-114	1506.58	4.00	90.0000	0.00
486	569	573	476.00	8.00	115.0000	0.00
490	385	166	264.00	8.00	140.0000	0.00
495	579	J-138	330.16	8.00	115.0000	0.00
497	582	584	548.98	8.00	115.0000	0.00
503	590	J-73	801.25	8.00	75.0000	0.00
511	599	601	450.87	8.00	115.0000	0.00
526	599	619	720.36	8.00	115.0000	0.00
531	620	623	618.14	8.00	115.0000	0.00
538	628	631	136.23	8.00	90.0000	0.00
541	632	1049	299.05	8.00	90.0000	0.00
547	631	642	578.19	8.00	90.0000	0.00
552	High Level	2090	1103.00	8.00	90.0000	0.00
565	509	661	1328.00	8.00	75.0000	0.00
569	597	1284	174.94	8.00	90.0000	0.00
571	46	2086	497.00	8.00	90.0000	0.00
574	665	668	872.08	8.00	115.0000	0.00
577	668	675	492.96	8.00	115.0000	0.00
584	676	J-27	893.25	8.00	90.0000	0.00
590	54	682	182.20	8.00	90.0000	0.00
591	683	J-95	505.00	8.00	90.0000	0.00
593	686	J-78	241.00	8.00	90.0000	0.00
597	408	J-79	21.00	8.00	75.0000	0.00
601	361	1960	1287.07	8.00	90.0000	0.00
612	705	710	248.15	8.00	115.0000	0.00
617	717	1134	965.00	8.00	115.0000	0.00
623	718	247	34.04	8.00	75.0000	0.00
630	424	726	91.39	8.00	75.0000	0.00
632	726	J-80	386.08	8.00	75.0000	0.00
652	468	780	2846.84	8.00	130.0000	0.00
684	781	2092	25.00	8.00	115.0000	0.00
686	784	1698	594.45	8.00	115.0000	0.00
690	788	791	1019.18	8.00	115.0000	0.00
693	792	791	123.52	8.00	115.0000	0.00
697	797	784	720.40	8.00	115.0000	0.00
700	800	802	282.00	6.00	130.0000	0.00
702	803	1465	267.21	6.00	75.0000	0.00
706	808	2009	929.18	6.00	75.0000	0.00
710	813	815	302.18	6.00	75.0000	0.00
712	121	2093	46.99	6.00	75.0000	0.00
714	2094	40	934.76	4.00	75.0000	0.00
723	828	2096	426.19	6.00	75.0000	0.00
726	544	831	72.71	6.00	75.0000	0.00
727	831	530	335.47	6.00	75.0000	0.00
735	831	1989	226.92	6.00	75.0000	0.00
739	842	844	615.87	6.00	75.0000	0.00
741	844	817	669.95	6.00	75.0000	0.00
749	856	J-115	240.00	6.00	75.0000	0.00
751	2078	14	273.95	6.00	75.0000	0.00
753	860	2097	569.00	6.00	75.0000	0.00
757	865	868	222.76	6.00	75.0000	0.00
760	868	J-113	502.26	6.00	75.0000	0.00
762	868	872	205.21	6.00	75.0000	0.00
772	881	2098	449.61	6.00	75.0000	0.00
776	885	J-111	304.95	6.00	75.0000	0.00
784	893	J-106	418.44	6.00	75.0000	0.00
785	893	J-110	416.57	6.00	75.0000	0.00
789	66	899	48.00	6.00	75.0000	0.00
791	899	901	175.00	6.00	75.0000	0.00
793	901	1742	1127.00	6.00	75.0000	0.00
797	906	910	180.00	6.00	75.0000	0.00
801	910	38	116.53	6.00	75.0000	0.00

2020 Fireflow - Main Zone West

807	842	2084	314.93	6.00	75.0000	0.00
812	916	922	348.45	6.00	75.0000	0.00
814	923	J-20	569.59	6.00	75.0000	0.00
817	J-21	929	248.00	6.00	75.0000	0.00
823	J-2	937	870.00	6.00	75.0000	0.00
825	J-2	556	502.00	6.00	75.0000	0.00
831	945	2080	473.03	6.00	75.0000	0.00
839	954	2081	460.04	6.00	75.0000	0.00
846	962	964	82.58	6.00	115.0000	0.00
858	1387	1314	65.93	4.00	75.0000	0.00
861	108	104	599.00	6.00	90.0000	0.00
867	958	J-110	1002.00	6.00	75.0000	0.00
874	994	65	736.58	6.00	75.0000	0.00
876	65	1986	656.95	6.00	75.0000	0.00
883	1003	1023	424.00	6.00	90.0000	0.00
903	1024	J-125	363.09	6.00	90.0000	0.00
905	O-High Lev	649	101.61	6.00	75.0000	0.00
910	1024	628	642.00	6.00	90.0000	0.00
912	1032	1003	811.00	6.00	90.0000	0.00
930	1050	1053	1269.52	6.00	90.0000	0.00
933	384	2100	964.00	6.00	75.0000	0.00
936	1057	16	435.81	6.00	90.0000	0.00
938	1060	1063	225.00	6.00	115.0000	0.00
941	1064	J-129	956.67	6.00	90.0000	0.00
948	1071	526	308.78	6.00	90.0000	0.00
949	526	1084	2823.47	6.00	75.0000	0.00
962	1085	1337	588.12	6.00	75.0000	0.00
966	1099	J-78	1370.13	6.00	90.0000	0.00
975	1100	1101	228.75	6.00	90.0000	0.00
976	O-Fairview	1101	118.14	6.00	90.0000	0.00
982	2103	J-81	265.32	6.00	75.0000	0.00
993	1121	1122	255.49	6.00	90.0000	0.00
994	2076	2127	300.30	6.00	75.0000	0.00
1000	1130	1125	650.51	6.00	75.0000	0.00
1001	2104	J-73	623.72	6.00	75.0000	0.00
1003	1134	2104	238.99	6.00	75.0000	0.00
1004	509	1290	478.00	6.00	75.0000	0.00
1007	1137	2105	327.02	6.00	75.0000	0.00
1009	1388	2013	267.00	6.00	75.0000	0.00
1012	2106	2107	591.74	6.00	75.0000	0.00
1014	510	23	924.74	6.00	75.0000	0.00
1017	2137	2109	470.82	6.00	75.0000	0.00
1019	2084	2109	326.70	6.00	75.0000	0.00
1020	2094	23	140.75	6.00	75.0000	0.00
1023	1156	23	477.86	6.00	75.0000	0.00
1024	2096	2073	229.38	6.00	75.0000	0.00
1025	2110	2096	273.09	6.00	75.0000	0.00
1026	2110	1997	279.58	6.00	75.0000	0.00
1028	1997	2111	244.00	6.00	75.0000	0.00
1030	2111	2112	268.86	6.00	75.0000	0.00
1032	1961	2113	418.00	6.00	75.0000	0.00
1035	704	1961	270.90	6.00	75.0000	0.00
1036	2109	1961	297.09	6.00	75.0000	0.00
1037	2010	2014	642.00	6.00	75.0000	0.00
1040	2012	2013	328.33	6.00	75.0000	0.00
1041	2065	2012	308.00	6.00	75.0000	0.00
1042	2137	2065	296.00	6.00	75.0000	0.00
1043	2113	2137	300.18	6.00	75.0000	0.00
1044	2113	1180	266.89	6.00	75.0000	0.00
1046	1181	22	93.00	6.00	75.0000	0.00
1047	2095	22	173.00	6.00	75.0000	0.00
1048	726	1184	40.06	8.00	115.0000	0.00
1051	1186	1996	269.43	6.00	75.0000	0.00
1053	827	1232	1143.25	6.00	75.0000	0.00
1058	1232	1156	597.28	6.00	75.0000	0.00
1060	1156	512	927.21	6.00	75.0000	0.00
1062	512	2107	783.40	6.00	75.0000	0.00
1064	2115	2107	155.32	6.00	75.0000	0.00
1069	2117	2065	579.53	6.00	75.0000	0.00
1071	2137	1210	580.23	6.00	75.0000	0.00
1074	1211	1713	81.79	6.00	115.0000	0.00
1076	24	1713	223.00	6.00	115.0000	0.00
1077	1215	J-58	327.00	6.00	75.0000	0.00
1078	68	1217	692.94	6.00	115.0000	0.00
1080	1218	2112	1049.55	6.00	75.0000	0.00
1083	2112	1223	326.05	6.00	75.0000	0.00
1085	1224	2111	321.86	6.00	75.0000	0.00
1087	1085	1333	418.92	6.00	75.0000	0.00
1088	1085	808	427.58	6.00	75.0000	0.00
1090	808	1229	207.76	6.00	75.0000	0.00
1091	1232	1181	476.00	6.00	75.0000	0.00
1094	1235	1483	375.00	6.00	75.0000	0.00
1095	2120	1104	147.00	6.00	90.0000	0.00
1096	2120	1239	581.73	6.00	115.0000	0.00
1099	1240	1214	42.84	6.00	115.0000	0.00
1100	1214	1244	471.00	6.00	115.0000	0.00
1103	1244	1251	558.00	6.00	115.0000	0.00
1110	Yankis (Va	1251	413.91	6.00	115.0000	0.00
1116	1513	J-25	173.82	8.00	130.0000	0.00
1117	1277	J-159	108.25	6.00	90.0000	0.00
1118	1277	1262	90.18	6.00	90.0000	0.00
1120	657	J-25	1605.00	10.00	130.0000	0.00
1125	1181	1270	559.53	6.00	75.0000	0.00
1127	2103	1099	1495.62	6.00	75.0000	0.00
1132	1277	I-AV-4	889.11	6.00	90.0000	0.00
1138	693	579	860.83	6.00	75.0000	0.00
1140	1284	O-AV-3	362.05	6.00	90.0000	0.00
1146	1290	2119	1322.78	4.00	75.0000	0.00
1148	1293	1295	372.96	4.00	75.0000	0.00
1150	398	2016	65.54	6.00	75.0000	0.00
1152	1120	1298	198.66	6.00	75.0000	0.00
1154	432	1309	2165.00	6.00	90.0000	0.00
1165	1310	1314	1161.00	4.00	75.0000	0.00
1169	2127	J-61	967.64	4.00	75.0000	0.00
1171	1318	2105	578.38	4.00	75.0000	0.00

2020 Fireflow - Main Zone West

1173	2105	1322	469.84	4.00	75.0000	0.00
1178	2115	40	301.65	4.00	75.0000	0.00
1179	2115	1328	589.61	4.00	75.0000	0.00
1182	803	J-81	638.00	4.00	75.0000	0.00
1185	1333	1337	528.94	4.00	75.0000	0.00
1189	1338	807	1527.54	4.00	75.0000	0.00
1193	518	192	70.97	4.00	75.0000	0.00
1195	192	1060	583.00	4.00	75.0000	0.00
1198	1060	705	1317.00	4.00	75.0000	0.00
1205	492	J-80	987.90	4.00	75.0000	0.00
1208	1356	828	273.00	4.00	75.0000	0.00
1210	1359	828	233.00	4.00	75.0000	0.00
1211	1364	1984	203.81	4.00	75.0000	0.00
1212	1364	1991	514.02	4.00	75.0000	0.00
1214	1364	2121	287.23	4.00	75.0000	0.00
1215	1366	36	660.16	4.00	75.0000	0.00
1217	1244	1251	681.00	6.00	115.0000	0.00
1226	1375	17	2480.00	4.00	90.0000	0.00
1236	17	1387	400.00	4.00	90.0000	0.00
1239	1388	1392	578.80	4.00	75.0000	0.00
1244	1314	33	129.52	4.00	90.0000	0.00
1245	937	1456	272.00	4.00	75.0000	0.00
1247	384	1456	264.58	4.00	75.0000	0.00
1248	1396I-Valley V	4.38	4.00	140.0000	0.00	
1258	505	1409	1080.00	4.00	75.0000	0.00
1261	1410	657	558.39	4.00	90.0000	0.00
1269	1023	I-AV-2	712.27	4.00	90.0000	0.00
1309	1456	881	418.71	4.00	75.0000	0.00
1315	885	1056	245.12	4.00	90.0000	0.00
1319	1465	2103	636.67	4.00	75.0000	0.00
1322	509	407	820.07	4.00	75.0000	0.00
1330	693	492	1027.10	4.00	75.0000	0.00
1338	1295	1483	948.39	4.00	75.0000	0.00
1340	1484	899	1892.00	4.00	75.0000	0.00
1351	344	1497	767.00	4.00	130.0000	0.00
1354	1498	1502	449.05	8.00	130.0000	0.00
1358	1502	J-133	279.67	8.00	130.0000	0.00
1371	1517	1519	275.00	2.00	114.3142	0.00
1384	1544	J-95	2295.00	12.00	90.0000	0.00
1388	1547	1544	288.55	12.00	115.0000	0.00
1389	1547	J-96	1327.00	12.00	115.0000	0.00
1396	1544	1547	2300.00	8.00	115.0000	0.00
1401	668	1674	1132.70	12.00	130.0000	0.00
1404	1674	102	746.13	12.00	130.0000	0.00
1406	102	J-1	620.69	12.00	130.0000	0.00
1409	92	J-143	4125.62	12.00	115.0000	0.00
1423	421	107	867.00	12.00	130.0000	0.00
1426	1575	34	575.28	12.00	115.0000	0.00
1427	1576	248	446.87	12.00	130.0000	0.00
1429	248	1580	540.11	12.00	130.0000	0.00
1433	51	26	448.20	12.00	115.0000	0.00
1435	51	109	1427.59	12.00	115.0000	0.00
1440	6	109	475.62	12.00	115.0000	0.00
1441	6	1647	1469.07	12.00	115.0000	0.00
1443	1637	1647	5159.69	12.00	115.0000	0.00
1454	72	1637	1761.44	12.00	115.0000	0.00
1455	72	1626	3641.41	12.00	115.0000	0.00
1458	1627	1626	763.65	12.00	115.0000	0.00
1460	797	212	356.56	12.00	115.0000	0.00
1464	788	1630	3991.15	12.00	115.0000	0.00
1477	1630	1626	1130.08	12.00	115.0000	0.00
1479	1627Yates Rese		1075.00	12.00	130.0000	0.00
1481	1630	76	3539.00	12.00	130.0000	0.00
1483	76	1636	2341.00	12.00	130.0000	0.00
1487	1637	75	595.62	12.00	115.0000	0.00
1492	75	49	651.30	12.00	115.0000	0.00
1493	254	49	3310.10	12.00	115.0000	0.00
1494	254	J-35	1688.26	12.00	115.0000	0.00
1497	2072	1647	1022.00	12.00	115.0000	0.00
1499	1648	247	4693.50	12.00	115.0000	0.00
1500	343	1657	2072.02	8.00	130.0000	0.00
1509	1658	901	754.77	8.00	130.0000	0.00
1526	1674	800	496.84	8.00	130.0000	0.00
1531	800	174	473.00	8.00	130.0000	0.00
1534	1679	1689	748.17	6.00	90.0000	0.00
1544	1690	1689	126.93	8.00	90.0000	0.00
1548	2092	1698	669.39	8.00	115.0000	0.00
1552	1699	1700	801.40	10.00	130.0000	0.00
1553	2138	89	1389.60	8.00	115.0000	0.00
1560	1710	J-53	1056.65	8.00	115.0000	0.00
1562	1711	683	220.00	8.00	90.0000	0.00
1563	683	1712	500.00	8.00	115.0000	0.00
1564	1713	1716	178.58	6.00	115.0000	0.00
1567	1716	1719	185.05	6.00	115.0000	0.00
1584	1742	1737	1268.00	4.00	75.0000	0.00
1588	1737	1375	375.00	4.00	75.0000	0.00
1593	1742	1484	452.00	10.00	130.0000	0.00
1596	1484	975	1798.00	10.00	130.0000	0.00
1611	975	1310	71.00	10.00	130.0000	0.00
1612	1310	2122	454.00	10.00	130.0000	0.00
1615	2123	1089	511.48	8.00	115.0000	0.00
1617	1089	1186	243.51	6.00	75.0000	0.00
1618	1186	1767	570.00	8.00	115.0000	0.00
1621	J-135	1773	742.00	8.00	130.0000	0.00
1626	1773	1775	197.00	8.00	130.0000	0.00
1628	1775	1776	68.00	8.00	130.0000	0.00
1629	1776	1782	1030.00	8.00	130.0000	0.00
1635	1782	1788	996.00	8.00	130.0000	0.00
1641	1788	1775	237.00	8.00	130.0000	0.00
1644	1773	1791	251.00	8.00	130.0000	0.00
1645	1776	1793	338.00	8.00	130.0000	0.00
1647	1788	1782	591.00	8.00	130.0000	0.00
1654	1800	1801	235.53	10.00	130.0000	0.00
1657	18053-inch or		110.20	8.00	130.0000	0.00
1658	1806	1808	400.00	6.00	115.0000	0.00

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1660	1809	1806	19.02	8.00	130.0000	0.00
1661	1810	1821	671.00	10.00	130.0000	0.00
1663	1800	1821	258.00	10.00	130.0000	0.00
1664	1813	1809	50.87	10.00	130.0000	0.00
1665	1814	1818	535.81	2.00	140.0000	0.00
1669	1813	1814	675.00	8.00	130.0000	0.00
1672	1821	J-112	525.00	8.00	130.0000	0.00
1673	1823	1826	385.26	6.00	90.0000	0.00
1676	1827	1071	62.38	8.00	90.0000	0.00
1677	1636	J-128	438.35	8.00	130.0000	0.00
1792	910	844	262.20	4.00	75.0000	0.00
1793	178	1823	69.34	8.00	90.0000	0.00
1796	1063	1948	325.00	2.00	106.5232	0.00
1799	1032	J-114	642.00	4.00	90.0000	0.00
1810	1960	12	21.03	8.00	90.0000	0.00
1811	12	10	1053.00	8.00	90.0000	0.00
1813	1767	J-117	290.12	6.00	75.0000	0.00
1818	1737	1968	132.00	4.00	75.0000	0.00
1820	1823	J-21	491.61	6.00	75.0000	0.00
1821	175	384	2123.70	10.00	115.0000	0.00
1825	1973	566	454.00	4.00	75.0000	0.00
1826	1974	1975	651.00	4.00	75.0000	0.00
1828	J-3	1980	517.00	6.00	75.0000	0.00
1830	3-inch or	1981	48.33	4.00	75.0000	0.00
1831	1984	1767	235.15	6.00	75.0000	0.00
1834	1985	1986	56.59	4.00	75.0000	0.00
1835	894	2125	20.33	8.00	115.0000	0.00
1836	1987	568	717.00	4.00	75.0000	0.00
1837	1988	1989	52.11	4.00	75.0000	0.00
1839	2121	1991	219.88	6.00	75.0000	0.00
1840	2126	2123	286.00	10.00	115.0000	0.00
1841	1994	994	209.00	6.00	75.0000	0.00
1842	1996	1997	691.73	6.00	75.0000	0.00
1843	1184	2003	971.73	6.00	115.0000	0.00
1852	2007	2009	230.57	6.00	75.0000	0.00
1854	2010	2065	472.04	6.00	75.0000	0.00
1855	2012	J-39	579.11	8.00	75.0000	0.00
1856	2013	2014	469.09	6.00	115.0000	0.00
1858	2016	J-81	1482.47	4.00	75.0000	0.00
1860	2127	504	947.53	4.00	75.0000	0.00
1864	1121	2023	183.59	6.00	90.0000	0.00
1865	2127	1215	263.88	6.00	75.0000	0.00
1866	2025	2028	384.00	2.00	140.0000	0.00
1869	2029	2030	216.99	2.00	140.0000	0.00
1870	2031	2029	117.40	4.00	140.0000	0.00
1871	2029	2025	27.90	4.00	140.0000	0.00
1872	2025	2032	248.94	4.00	140.0000	0.00
1873	2033	2031	618.97	4.00	140.0000	0.00
1877	2031	J-124	145.24	8.00	115.0000	0.00
1883	2047	J-74	206.38	6.00	90.0000	0.00
1887	2053	582	671.02	4.00	90.0000	0.00
1892	2129	582	343.45	4.00	90.0000	0.00
1893	590	46	757.00	6.00	90.0000	0.00
1894	2061	J-45	335.58	6.00	90.0000	0.00
1895	2063	J-44	880.19	8.00	90.0000	0.00
1896	5	361	64.75	10.00	90.0000	0.00
1898	14	540	265.00	6.00	75.0000	0.00
1900	163-in or sm		34.44	6.00	90.0000	0.00
1901	17	18	236.00	6.00	90.0000	0.00
1904	24	2088	5.94	6.00	115.0000	0.00
1907	36	2130	291.60	6.00	75.0000	0.00
1908	38	2083	817.68	6.00	75.0000	0.00
1909	2014	J-87	300.00	6.00	75.0000	0.00
1917	69	J-61	263.00	8.00	115.0000	0.00
1920	295	J-30	1850.87	12.00	130.0000	0.00
1924	86	2066	285.00	12.00	130.0000	0.00
1927	104	J-112	808.02	6.00	75.0000	0.00
1930	118	710	2530.00	14.00	90.0000	0.00
1935	247	2106	22.48	8.00	75.0000	0.00
1936	325	2122	272.19	12.00	115.0000	0.00
1938	375	1218	736.59	14.00	75.0000	0.00
1940	396	1318	307.00	14.00	75.0000	0.00
1941	480	2138	730.48	10.00	90.0000	0.00
1947	530	2093	691.48	6.00	75.0000	0.00
1948	536	2078	287.42	8.00	75.0000	0.00
1949	565	1084	590.00	8.00	75.0000	0.00
1950	556	944	498.75	6.00	75.0000	0.00
1951	565	543	35.00	8.00	75.0000	0.00
1954	J-84	O-AV-5	54.14	8.00	90.0000	0.00
1956	584	717	786.89	10.00	90.0000	0.00
1958	590	584	267.70	10.00	90.0000	0.00
1960	620	2133	155.65	8.00	115.0000	0.00
1962	1410	649	52.91	8.00	90.0000	0.00
1964	661	424	118.60	10.00	75.0000	0.00
1965	665	172	143.00	12.00	115.0000	0.00
1967	710	137	1990.58	14.00	90.0000	0.00
1972	784	791	500.36	8.00	115.0000	0.00
1975	797	788	291.38	12.00	115.0000	0.00
1977	813	J-120	564.60	6.00	75.0000	0.00
1978	815	803	563.97	6.00	75.0000	0.00
1979	817	1338	454.00	6.00	75.0000	0.00
1982	856	2121	290.89	6.00	75.0000	0.00
1983	860	375	259.21	14.00	75.0000	0.00
1984	865	65	387.79	8.00	75.0000	0.00
1985	872	14	110.22	6.00	75.0000	0.00
1986	923	J-3	345.89	6.00	75.0000	0.00
1987	944	1987	383.07	6.00	75.0000	0.00
1989	954	945	225.61	6.00	75.0000	0.00
1990	958	J-106	266.00	6.00	75.0000	0.00
1992	994	1658	528.00	10.00	115.0000	0.00
1993	2101	60	140.36	6.00	75.0000	0.00
1995	1003	1049	529.64	6.00	90.0000	0.00
1996	1049	631	275.61	8.00	90.0000	0.00
1997	1050	975	402.00	6.00	90.0000	0.00
1998	1057	518	652.00	8.00	75.0000	0.00

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2000	1084	552	435.20	8.00	75.0000	0.00
2001	1099	1120	246.00	6.00	75.0000	0.00
2002	1107	J-79	210.02	8.00	75.0000	0.00
2003	1130	J-63	457.60	8.00	75.0000	0.00
2005	1137	398	600.00	8.00	75.0000	0.00
2010	1180	704	473.80	8.00	75.0000	0.00
2011	1183	704	38.34	6.00	75.0000	0.00
2014	1210	2067	566.74	14.00	75.0000	0.00
2020	1223	1224	265.83	6.00	75.0000	0.00
2021	1224	827	666.42	6.00	75.0000	0.00
2022	1229	815	301.07	6.00	75.0000	0.00
2024	1235	1517	896.98	8.00	75.0000	0.00
2025	1099	J-82	293.00	6.00	75.0000	0.00
2027	1284	46	713.52	8.00	90.0000	0.00
2031	1318	1392	306.00	14.00	75.0000	0.00
2032	1322	J-87	262.00	6.00	75.0000	0.00
2033	1328	2091	322.03	8.00	75.0000	0.00
2035	1337	2110	39.43	6.00	75.0000	0.00
2036	1338	813	634.51	6.00	75.0000	0.00
2037	1356	1089	17.89	6.00	75.0000	0.00
2039	1366	945	480.02	6.00	75.0000	0.00
2040	1387	979	479.26	6.00	115.0000	0.00
2042	1392	J-39	591.86	14.00	75.0000	0.00
2045	1409	407	306.00	10.00	75.0000	0.00
2048	1465	J-120	38.32	6.00	75.0000	0.00
2053	1107	1517	423.01	8.00	75.0000	0.00
2058	1570	J-8	1066.00	10.00	90.0000	0.00
2060	1575	342	808.04	12.00	130.0000	0.00
2063	1627	J-135	354.12	12.00	115.0000	0.00
2067	1648	432	2857.00	10.00	90.0000	0.00
2068	1658	421	772.00	10.00	115.0000	0.00
2070	1679	1101	25.75	6.00	90.0000	0.00
2071	1698	212	264.80	8.00	115.0000	0.00
2078	1800	1813	297.00	10.00	130.0000	0.00
2079	1809	1805	635.00	10.00	130.0000	0.00
2080	1810	107	583.38	12.00	130.0000	0.00
2087	1960	700	19.01	8.00	90.0000	0.00
2089	1973	J-2	345.00	6.00	75.0000	0.00
2090	1974	1366	377.42	6.00	75.0000	0.00
2091	1975	36	374.90	6.00	75.0000	0.00
2092	1981	J-4	275.32	6.00	75.0000	0.00
2093	994	1984	383.00	10.00	115.0000	0.00
2095	1986	552	515.83	6.00	75.0000	0.00
2096	1987	893	54.17	6.00	75.0000	0.00
2097	1989	842	189.64	6.00	75.0000	0.00
2102	1996	827	273.45	6.00	75.0000	0.00
2104	2007	375	649.59	10.00	115.0000	0.00
2105	2009	2096	41.52	6.00	75.0000	0.00
2111	2016	1120	22.21	6.00	75.0000	0.00
2114	1107	1293	379.00	6.00	75.0000	0.00
2118	2053	J-57	404.65	8.00	90.0000	0.00
2120	2063	717	379.81	10.00	90.0000	0.00
2127	2067	1218	331.70	14.00	75.0000	0.00
2128	2067	1180	580.16	8.00	75.0000	0.00
2139	2073	2007	37.55	10.00	115.0000	0.00
2141	2074	483	444.39	8.00	115.0000	0.00
2145	2076	492	344.58	8.00	75.0000	0.00
2146	2076	504	784.60	8.00	75.0000	0.00
2148	693	J-64	330.00	8.00	115.0000	0.00
2149	2078	865	288.23	8.00	75.0000	0.00
2150	2078	1991	297.24	6.00	75.0000	0.00
2152	2079	543	202.12	8.00	75.0000	0.00
2153	2080	2081	236.10	6.00	115.0000	0.00
2154	2080	958	585.00	6.00	75.0000	0.00
2155	2125	J-99	48.00	8.00	115.0000	0.00
2156	2081	958	325.04	6.00	75.0000	0.00
2159	2083	2084	265.54	8.00	75.0000	0.00
2160	2083	916	678.90	6.00	75.0000	0.00
2161	2084	565	310.77	8.00	75.0000	0.00
2162	2084	916	736.88	6.00	75.0000	0.00
2165	2086	578	560.00	8.00	115.0000	0.00
2166	2086	2132	593.29	8.00	90.0000	0.00
2169	2088	620	2465.45	8.00	115.0000	0.00
2170	2088	1214	158.00	6.00	115.0000	0.00
2173	2090	1410	14.60	8.00	90.0000	0.00
2174	2090	657	565.72	8.00	115.0000	0.00
2175	2091	1137	468.76	8.00	75.0000	0.00
2176	2091	505	311.20	8.00	75.0000	0.00
2179	2093	817	304.87	6.00	75.0000	0.00
2180	2093	1229	758.42	6.00	75.0000	0.00
2181	2094	2095	604.36	6.00	75.0000	0.00
2183	2095	1223	294.47	6.00	75.0000	0.00
2184	2095	1183	324.33	6.00	75.0000	0.00
2187	2097	856	426.07	6.00	75.0000	0.00
2188	2097	2073	206.00	6.00	75.0000	0.00
2189	2098	885	448.98	6.00	75.0000	0.00
2190	2098	2100	273.62	6.00	75.0000	0.00
2192	954	2130	268.01	6.00	75.0000	0.00
2193	2100	1050	360.00	6.00	90.0000	0.00
2194	2100	1056	405.41	6.00	75.0000	0.00
2195	2101	807	693.00	6.00	115.0000	0.00
2196	2101	J-82	1519.00	6.00	75.0000	0.00
2198	1290	1293	372.41	6.00	75.0000	0.00
2199	2103	60	154.27	6.00	75.0000	0.00
2202	2104	2021	244.00	4.00	75.0000	0.00
2203	2105	1388	298.00	6.00	75.0000	0.00
2206	2106	1328	152.76	8.00	75.0000	0.00
2207	2107	510	314.14	6.00	75.0000	0.00
2212	2109	2010	299.72	6.00	75.0000	0.00
2214	2110	1356	429.11	6.00	75.0000	0.00
2216	2111	1333	54.05	6.00	75.0000	0.00
2217	2112	1183	291.22	6.00	75.0000	0.00
2221	803	2113	632.05	6.00	75.0000	0.00
2223	2115	J-87	328.38	6.00	75.0000	0.00
2228	2117	1210	322.00	14.00	75.0000	0.00

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2231	2119	1483	385.00	6.00	75.0000	0.00
2234	2120	J-77	147.00	6.00	90.0000	0.00
2236	2121	2126	209.47	6.00	75.0000	0.00
2240	2123	2073	427.00	10.00	115.0000	0.00
2243	2125	961	36.45	8.00	115.0000	0.00
2244	2125	2081	266.99	8.00	115.0000	0.00
2246	2126	1984	286.12	10.00	115.0000	0.00
2249	2050	J-77	44.67	6.00	90.0000	0.00
2252	2129	2053	226.85	8.00	90.0000	0.00
2253	2130	961	455.00	6.00	75.0000	0.00
2254	2130	1973	40.73	6.00	75.0000	0.00
2257	2132	214	7.31	8.00	90.0000	0.00
2259	2133	599	622.41	8.00	115.0000	0.00
2260	2133	47	462.96	8.00	115.0000	0.00
2269	2138	481	66.26	10.00	90.0000	0.00
P-1	J-1	97	547.15	12.00	130.0000	0.00
P-100	J-112	1814	500.93	6.00	75.0000	0.00
P-101	J-113	2079	368.16	6.00	75.0000	0.00
P-102	J-114	1023	302.00	4.00	90.0000	0.00
P-103	J-125	649	346.91	6.00	90.0000	0.00
P-104	I-Fairview	1103	20.94	6.00	90.0000	0.00
P-105	J-115	J-116	419.54	6.00	75.0000	0.00
P-106	J-116	2097	250.67	6.00	75.0000	0.00
P-108	J-117	56	305.00	6.00	75.0000	0.00
P-11	J-3	1975	323.06	6.00	75.0000	0.00
P-111	J-120	807	266.76	6.00	75.0000	0.00
P-113	J-39	2117	288.00	14.00	75.0000	0.00
P-116	97	J-122	121.15	12.00	130.0000	0.00
P-117	J-140	J-145	46.63	12.00	130.0000	0.00
P-119	J-139	J-84	78.98	8.00	130.0000	0.00
P-121	J-140	J-138	42.92	12.00	130.0000	0.00
P-122	J-126Main Reser		111.73	14.00	90.0000	0.00
P-124	O-AV-1	2083	364.42	8.00	75.0000	0.00
P-125	O-AV-2	906	282.73	4.00	75.0000	0.00
P-127	J-127	295	2367.21	12.00	130.0000	0.00
P-128	J-127	J-128	4129.32	12.00	130.0000	0.00
P-130	J-128	1831	615.85	8.00	130.0000	0.00
P-131	J-129	1071	558.33	6.00	90.0000	0.00
P-132	668	J-129	1448.22	12.00	130.0000	0.00
P-133	J-133	1513	25.35	8.00	130.0000	0.00
P-134	J-122	J-132	800.00	12.00	130.0000	0.00
P-135	J-124	1502	393.57	8.00	130.0000	0.00
P-136	J-124	J-131	198.84	8.00	130.0000	0.00
P-138-CV	Kennicott	J-53	790.00	16.00	115.0000	0.00
P-140	O-AV-4	686	40.89	6.00	90.0000	0.00
P-143	I-AV-5	J-63	2.85	8.00	130.0000	0.00
P-144	O-AV-6	1134	545.75	4.00	75.0000	0.00
P-146	J-73	J-134	384.83	8.00	115.0000	0.00
P-147	J-64	J-141	135.51	8.00	115.0000	0.00
P-148	J-134	O-RV-2	6.27	8.00	130.0000	0.00
P-149	J-143	O-RV-1	5.82	12.00	130.0000	0.00
P-15	J-91	J-126	172.27	14.00	90.0000	0.00
P-150-CV	J-141	J-134	13.00	8.00	130.0000	0.00
P-151	J-142	J-139	80.78	8.00	130.0000	0.00
P-152	J-144	1570	631.51	12.00	115.0000	0.00
P-153-CV	J-143	J-144	24.87	12.00	130.0000	0.00
P-154	I-RV-1	J-144	5.63	12.00	130.0000	0.00
P-157	I-RV-2	J-141	7.13	8.00	130.0000	0.00
P-1570	1716	1103	1729.25	8.00	115.0000	0.00
P-158	J-145I-18th St		2.66	12.00	115.0000	0.00
P-159	J-145	J-146	2.68	12.00	115.0000	0.00
P-160-CV	J-146	J-147	9.25	12.00	115.0000	0.00
P-161	J-146O-18th St		3.23	12.00	130.0000	0.00
P-162	J-147	J-142	2.67	12.00	115.0000	0.00
P-164	I-18th St	J-147	3.12	12.00	130.0000	0.00
P-165	J-155	J-156	739.67	6.00	140.0000	0.00
P-166	66	J-110	322.75	6.00	75.0000	0.00
P-167	J-153	J-156	4747.12	12.00	115.0000	0.00
P-168	J-152	J-150	15.74	8.00	115.0000	0.00
P-169	J-154	J-88	471.34	12.00	115.0000	0.00
P-170	J-155	J-151	4833.50	6.00	140.0000	0.00
P-171	J-155	J-157	658.63	2.00	140.0000	0.00
P-172	J-156	J-154	1552.65	12.00	115.0000	0.00
P-173	J-148	J-6	2664.56	2.00	130.0000	0.00
P-174	J-149	J-153	1314.60	8.00	130.0000	0.00
P-175	J-150	J-152	2094.17	8.00	115.0000	0.00
P-176	J-64	2076	1014.00	8.00	75.0000	0.00
P-178	J-159	1513	18.67	6.00	90.0000	0.00
P-18	J-135I-South En		77.91	12.00	130.0000	0.00
P-19	33	34	11.57	4.00	90.0000	0.00
P-2	101	J-1	84.14	8.00	130.0000	0.00
P-20	1576	213	32.42	12.00	130.0000	0.00
P-25	J-30	2066	908.00	12.00	130.0000	0.00
P-29	J-8	2063	977.55	10.00	90.0000	0.00
P-3	J-60-Central11		24935.52	6.00	115.0000	0.00
P-30	J-35	J-42	1262.05	12.00	115.0000	0.00
P-31	54	J-8	271.99	8.00	90.0000	0.00
P-33	J-42	2072	33.95	12.00	115.0000	0.00
P-34	1699	J-42	861.64	12.00	115.0000	0.00
P-36	2091	1322	322.00	6.00	75.0000	0.00
P-4	J-7	1570	1181.00	10.00	90.0000	0.00
P-40	J-44	10	918.28	8.00	90.0000	0.00
P-42	J-45	J-44	388.00	8.00	90.0000	0.00
P-43	J-880-South En		3066.47	12.00	115.0000	0.00
P-44	J-55	28	392.03	8.00	115.0000	0.00
P-47	J-57	2132	26.83	8.00	90.0000	0.00
P-48	41	J-90	18.53	10.00	90.0000	0.00
P-49	2051	J-57	16.66	8.00	90.0000	0.00
P-50	2052	J-57	17.24	8.00	90.0000	0.00
P-51	O-18th St	J-142	1.13	8.00	115.0000	0.00
P-53	J-4	1974	369.00	6.00	75.0000	0.00
P-54	923	J-4	253.57	6.00	75.0000	0.00
P-57	1217	I-AV-6	27.22	4.00	75.0000	0.00
P-58	1217	69	273.00	8.00	115.0000	0.00
P-6	J-11	J-88	987.96	8.00	115.0000	0.00

2020 Fireflow - Main Zone West

P-61	J-58	68	222.00	6.00	115.0000	0.00
P-62	J-61	J-136	302.00	8.00	115.0000	0.00
P-64	54	J-27	596.19	8.00	90.0000	0.00
P-65	J-67	597	417.00	8.00	90.0000	0.00
P-67	J-71	J-67	339.00	8.00	115.0000	0.00
P-69	J-73	J-71	449.75	8.00	75.0000	0.00
P-7	J-152	J-154	148.62	8.00	115.0000	0.00
P-71	J-63	J-123	21.02	8.00	130.0000	0.00
P-73	J-74	1679	128.71	6.00	90.0000	0.00
P-74	J-77	J-74	27.47	6.00	90.0000	0.00
P-75	I-AV-3	2120	128.95	6.00	90.0000	0.00
P-76	J-78	408	254.81	8.00	90.0000	0.00
P-77	J-79	1130	739.00	8.00	75.0000	0.00
P-78	J-80	504	390.06	8.00	75.0000	0.00
P-79	1396	J-82	521.89	6.00	90.0000	0.00
P-80	1388	J-87	625.00	6.00	115.0000	0.00
P-81	92	J-62	399.00	8.00	115.0000	0.00
P-82	J-84	597	632.70	8.00	90.0000	0.00
P-83	J-123	J-140	102.57	12.00	130.0000	0.00
P-84	J-93	1971	33.88	6.00	90.0000	0.00
P-86	I-High Lev	J-126	388.44	6.00	75.0000	0.00
P-87	J-94	526	1018.53	8.00	75.0000	0.00
P-88	J-93	J-94	3.82	6.00	90.0000	0.00
P-89	J-96inter-tie		1009.00	12.00	115.0000	0.00
P-9	J-2	2098	329.00	6.00	75.0000	0.00
P-90	J-105	174	266.00	12.00	130.0000	0.00
P-91	J-20	1981	59.00	6.00	75.0000	0.00
P-92	J-21	J-20	140.66	6.00	75.0000	0.00
P-93	568	J-99	19.30	8.00	115.0000	0.00
P-94	J-99	556	294.00	8.00	115.0000	0.00
P-95	566	J-99	49.52	8.00	115.0000	0.00
P-96	J-100	2080	161.00	8.00	115.0000	0.00
P-97	J-106	894	329.00	6.00	75.0000	0.00
P-98	I-Centrali	J-153	21368.49	8.00	115.0000	0.00
P-99	J-111	944	378.41	6.00	75.0000	0.00
Valley Vie	O-Valley VYankis (Va		2731.89	4.00	140.0000	0.00

N O D E D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
5		0.30	243.40	
6		5.50	244.40	
9		2.30	205.80	
10		7.90	213.70	
11		0.10	236.90	
12		3.20	236.50	
13		0.10	198.90	
14		1.80	201.40	
15		6.80	186.10	
16		1.30	186.10	
17		8.80	175.70	
18		1.90	171.90	
19		1.20	165.30	
22		2.90	186.50	
23		6.40	187.70	
24		1.60	604.50	
26		7.40	240.30	
28		1.70	322.60	
29		0.60	319.00	
31		2.00	216.80	
32		4.80	214.70	
33		0.40	183.00	
34		3.00	183.50	
36		3.80	194.40	
37		0.50	319.00	
38		3.10	290.50	
40		4.30	190.80	
41		0.30	219.10	
43		0.10	253.50	
46		5.50	229.90	
47		1.80	544.40	
48		0.50	543.60	
49		12.00	243.00	
50		0.90	244.20	
51		5.90	240.00	
52		1.30	261.50	
54		3.00	209.30	
56		0.90	193.00	
59		0.30	252.50	
60		1.10	252.90	
65		5.80	192.40	
66		1.80	191.30	
68		3.70	205.20	
69		2.70	208.70	
70		0.70	285.20	
72		15.30	255.00	
75		12.70	247.70	
76		25.70	256.00	
83		0.10	221.90	
85		0.10	222.10	
86		4.70	222.40	
89		3.90	225.60	
92		15.30	192.40	
97		2.00	173.90	
98		0.20	174.00	
101		0.20	174.30	
102		4.00	176.00	
103		0.20	175.70	
104		4.10	179.70	

2020 Fireflow - Main Zone West

107	4.00	183.60
108	1.70	183.60
109	7.50	236.20
118	16.20	192.50
119	3.40	217.70
121	2.20	230.70
137	8.00	180.00
166	5.90	182.90
172	3.70	174.10
174	2.00	175.70
175	6.70	183.60
178	2.10	183.60
192	7.20	183.60
201	3.40	178.30
212	3.60	256.30
213	2.10	253.50
214	4.60	230.10
224	3.50	224.20
247	13.40	192.10
248	8.00	248.60
253	5.20	240.90
254	18.20	230.80
295	20.90	210.10
325	4.80	183.90
342	3.10	165.40
343	6.20	163.20
344	2.90	164.20
346	0.50	165.60
356	9.30	219.10
361	10.20	243.10
375	4.60	230.50
384	9.80	183.20
385	1.10	183.60
396	1.10	221.20
398	2.90	220.50
407	5.00	226.99
408	2.60	223.30
421	4.60	184.20
424	1.10	189.90
432	14.10	184.10
468	17.10	204.20
473	1.50	178.30
474	1.90	210.70
480	6.60	219.70
481	0.20	220.90
483	1.20	214.00
492	7.90	195.50
504	6.00	192.80
505	5.30	197.20
509	8.70	200.00
510	4.80	189.60
512	6.10	184.80
513	3.00	178.80
518	2.80	182.20
526	11.70	201.80
530	2.90	220.30
536	3.90	201.90
540	0.80	202.30
543	2.00	210.90
544	1.50	216.10
552	2.90	191.50
556	3.60	206.10
565	2.70	210.80
566	1.40	204.60
568	2.10	206.30
569	6.50	178.30
573	1.30	178.00
578	1.60	280.80
579	3.30	205.50
582	4.40	212.80
584	4.50	207.60
590	5.10	208.60
597	3.50	222.20
599	5.00	592.40
601	1.30	577.30
619	2.00	559.00
620	9.00	583.00
623	1.70	588.00
628	2.20	420.40
631	2.80	382.80
632	0.80	455.20
642	1.60	304.60
649	1.70	392.70
657	7.70	331.20
661	5.00	190.90
665	7.10	174.40
668	11.10	182.30
675	1.40	180.60
676	2.50	206.70
682	0.50	209.20
683	3.40	200.30
686	0.90	278.90
693	6.20	197.40
700	0.10	237.50
704	2.20	190.10
705	4.40	185.50
710	13.40	197.50
717	6.00	204.90
718	0.10	191.20
726	1.50	180.00
780	8.00	195.00
781	0.10	252.20
784	5.10	259.80
788	14.90	258.50
791	4.60	256.00

2020 Fireflow - Main Zone West

792	0.30	254.90
797	3.80	255.30
800	3.50	177.30
802	0.80	178.00
803	6.00	217.90
807	6.90	272.60
808	4.40	215.50
813	4.20	244.90
815	3.20	219.20
817	4.10	275.20
827	5.90	186.80
828	2.70	192.50
831	1.70	216.50
842	3.10	234.00
844	4.30	260.00
856	2.70	194.40
860	2.40	230.20
865	2.50	195.90
868	2.60	197.00
872	1.00	199.50
881	2.50	199.80
885	2.90	204.20
893	2.60	198.10
894	1.00	206.30
899	5.90	192.10
901	5.80	189.00
906	2.10	292.50
910	1.50	294.90
916	5.00	222.40
922	1.00	238.30
923	3.30	182.20
929	0.70	181.60
937	3.20	183.80
944	3.60	196.50
945	3.20	192.00
954	2.70	193.70
958	6.00	201.60
961	1.40	205.40
962	3.60	179.30
964	0.20	179.40
975	6.30	184.50
979	1.30	173.70
994	5.30	192.30
1003	5.00	435.80
1023	6.00	389.60
1024	2.80	408.40
1032	4.10	455.00
1049	3.10	421.50
1050	5.70	188.20
1053	3.60	183.20
1056	1.80	192.00
1057	6.00	179.20
1060	5.90	196.50
1063	1.50	238.10
1064	2.70	181.30
1071	2.70	190.50
1084	10.80	198.50
1085	4.10	197.60
1089	2.20	190.70
1099	9.50	233.90
1100	0.60	339.70
1101	1.40	323.20
1103	5.00	346.40
1104	0.40	285.50
1107	2.90	211.40
1120	1.40	222.90
1121	2.00	205.30
1122	0.70	204.40
1125	1.80	205.00
1130	5.20	225.00
1134	6.50	202.90
1137	3.90	202.10
1156	5.60	184.90
1180	3.60	195.40
1181	3.20	186.00
1183	1.80	190.20
1184	5.40	189.70
1186	3.10	191.30
1210	4.10	215.60
1211	0.20	564.40
1214	1.80	607.60
1215	1.60	200.80
1217	3.70	207.80
1218	5.90	217.60
1223	2.40	187.20
1224	3.50	187.60
1229	3.50	224.40
1232	6.20	183.90
1235	4.80	197.20
1239	1.60	265.90
1240	0.10	608.90
1244	4.80	591.00
1251	5.80	622.30
1262	0.30	349.90
1270	1.60	184.30
1277	6.30	340.00
1284	4.50	224.00
1290	6.00	207.20
1293	3.10	206.60
1295	3.70	200.40
1298	0.60	224.20
1309	6.10	185.00
1310	4.80	184.40
1314	3.90	183.00
1318	3.40	221.20

6" and 2"

2020 Fireflow - Main Zone West

1322	2.90	194.60
1328	3.00	192.30
1333	2.90	191.30
1337	3.30	192.80
1338	7.40	257.70
1356	2.10	190.80
1359	0.70	193.30
1364	2.80	193.90
1366	4.30	190.60
1375	8.10	168.30
1387	2.60	182.40
1388	4.90	200.40
1392	4.20	220.30
1396	2.50	308.10
1409	4.80	222.20
1410	1.70	392.50
1456	2.70	183.20
1465	2.70	235.70
1483	4.90	193.40
1484	11.60	183.60
1497	2.20	167.20
1498	1.30	396.40
1502	3.20	385.30
1513	0.60	339.40
1517	4.50	205.40
1519	0.80	211.30
1524	1.00	615.60
1544	13.70	194.80
1547	11.00	208.00
1570	8.10	200.80
1575	6.50	171.60
1576	1.40	253.70
1580	1.50	245.80
1626	15.50	272.90
1627	9.10	289.00
1630	24.30	266.70
1636	155.80	245.70
1637	21.10	249.10
1647	21.50	236.20
1648	21.70	187.30
1657	5.80	163.30
1658	5.80	185.90
1674	6.70	178.00
1679	2.60	317.70
1689	2.50	323.60
1690	0.40	319.70
1698	4.30	256.80
1699	4.70	218.90
1700	2.20	216.20
1710	3.00	303.90
1711	0.60	209.80
1712	1.40	268.50
1713	1.30	571.10
1716	5.90	533.50
1719	0.50	516.50
1737	5.10	166.60
1742	8.10	183.60
1767	3.10	193.40
1773	3.40	272.20
1775	1.50	270.10
1776	4.00	269.20
1782	7.40	269.10
1788	5.20	269.00
1791	0.70	273.40
1793	0.90	270.60
1799	2.50	201.40
1800	2.20	166.10
1801	0.70	173.70
1805	2.10	179.70
1806	1.20	173.10
1808	1.10	179.80
1809	2.00	172.30
1810	3.60	179.50
1813	2.80	171.10
1814	4.80	167.10
1818	1.50	160.70
1821	4.10	169.80
1823	2.70	182.50
1826	3.10	183.30
1827	5.70	192.90
1831	1.70	234.10
1948	0.90	234.90
1960	3.80	237.60
1961	2.80	190.10
1968	0.40	164.90
1971	0.10	185.30
1973	2.40	198.40
1974	3.90	187.50
1975	3.80	186.60
1980	1.50	180.20
1981	1.10	183.10
1984	3.20	194.10
1985	0.20	195.20
1986	3.40	194.50
1987	3.30	198.50
1988	0.10	219.50
1989	1.20	222.30
1991	2.80	194.20
1994	0.60	190.70
1996	3.50	189.80
1997	3.40	191.50
2003	2.70	185.20
2007	2.50	200.60
2009	3.30	196.90
2010	3.90	191.70

2020 Fireflow - Main Zone West

2012	3.40	199.00	
2013	2.90	200.10	
2014	4.80	193.20	
2016	4.50	222.30	
2021	0.70	204.20	
2023	0.50	206.90	
2025	1.90	455.60	
2028	1.10	520.90	
2029	1.00	449.00	
2030	0.60	460.10	
2031	2.40	430.90	
2032	0.70	484.00	
2033	1.70	474.20	
2047	0.60	309.00	
2050	0.10	301.10	
2051	0.00	229.60	
2052	0.00	229.90	
2053	3.60	220.60	
2061	0.90	208.20	
2063	6.30	205.00	
2065	4.60	198.90	
2066	3.40	222.20	
2067	6.80	216.20	
2072	6.50	221.90	
2073	2.50	199.80	
2074	4.00	220.90	
2076	6.80	204.40	
2078	3.20	199.20	
2079	3.50	203.10	
2080	4.10	191.60	
2081	3.60	198.70	
2083	6.90	255.40	
2084	4.60	224.10	
2086	4.70	230.30	
2088	7.30	604.50	
2090	7.80	391.30	
2091	4.00	195.30	
2092	2.00	251.60	
2093	5.00	236.00	
2094	5.60	188.50	
2095	3.90	187.60	
2096	2.70	196.50	
2097	4.10	202.50	
2098	4.30	202.10	
2100	5.60	197.30	
2101	6.60	270.60	
2103	7.10	236.90	
2104	3.20	200.50	
2105	4.60	201.90	
2106	2.20	192.10	
2107	5.20	190.50	
2109	3.80	190.80	
2110	2.90	192.70	
2111	2.60	191.00	
2112	5.40	190.20	
2113	4.50	195.50	
2115	3.80	191.90	
2117	3.30	217.50	
2119	5.80	193.60	
2120	3.10	268.60	
2121	2.80	193.00	
2122	4.80	183.70	
2123	3.40	193.20	
2125	1.00	206.20	
2126	2.20	192.50	
2127	6.90	203.70	
2129	3.80	218.10	
2130	3.00	198.00	
2132	1.80	230.10	
2133	3.40	578.00	
2137	4.50	198.20	
2138	6.20	221.50	
I-18th St	0.00	218.20	
O-18th St	0.00	218.20	
3-in or sm	0.10	185.50	
3-inch or	0.30	183.00	
3-inch or	0.10	183.10	
O-AV-1	0.00	283.80	
I-AV-2	0.00	306.00	
I-AV-3	0.00	253.40	
O-AV-4	0.00	289.30	
O-AV-5	0.00	225.30	
O-AV-6	0.00	208.10	
O-Centrali	----	333.50	541.19
O-Fairview	Fairview PRV	346.50	466.50
O-High Lev	High Level P	0.00	401.60
High Level	High Level R	----	605.00
Hillcrest		0.20	256.20
inter-tie		2.80	174.40
J-1		3.40	174.00
J-100		0.80	190.60
J-105		2.50	175.60
J-106		2.80	206.20
J-11		2.80	280.00
J-110		4.90	198.00
J-111		2.00	192.50
J-112		5.20	167.90
J-113		2.40	200.50
J-114		11.10	405.70
J-115		1.90	197.30
J-116		1.90	207.10
J-117		1.70	192.10
J-120		2.40	237.50
J-122		2.50	174.00
J-123		0.40	224.70

2020 Fireflow - Main Zone West

J-124		2.10	403.80	
J-125		2.00	383.00	
J-126		3.30	367.95	
J-127		22.40	225.20	
J-128		14.50	235.20	
J-129		8.40	184.80	
J-130		3.80	222.00	
J-131		0.60	418.00	
J-132		2.20	176.00	
J-133		0.90	339.60	
J-134		1.10	200.90	
J-135		3.50	288.30	
J-136		0.80	204.10	
J-138		1.00	219.60	
J-139		0.40	222.60	
J-140		0.50	218.20	
J-141		0.40	200.90	
J-142		0.20	218.20	
J-143		11.70	193.40	
J-144		1.90	193.40	
J-145		0.10	218.20	
J-146		0.00	218.20	
J-147		0.00	218.20	
J-148		3.50	498.90	
J-149		3.70	306.10	
J-150		5.90	272.40	
J-151		13.60	326.80	
J-152		6.30	272.40	
J-153		137.00	302.40	
J-154		6.10	267.60	
J-155		17.50	263.80	
J-156		19.80	261.30	
J-157		1.80	265.80	
J-159		0.00	343.00	
J-2		5.70	201.80	
J-20		2.20	182.90	
J-21		2.50	182.80	
J-25		5.00	311.10	
J-27		4.20	207.10	
J-3		3.40	182.20	
J-30		7.70	219.90	
J-35		8.20	222.10	
J-39		4.10	218.10	
J-4		2.50	184.40	
J-42		6.00	222.00	
J-44		6.20	208.40	
J-45		4.20	209.00	
J-53		9.60	294.30	
J-55		2.60	297.10	
J-57		1.20	229.20	
J-58		1.50	204.60	
J-6		3.50	473.40	
J-61		4.20	207.00	
J-62		1.10	191.50	
J-63		1.40	225.20	
J-64		4.10	202.30	
J-67		2.20	210.80	
J-7		3.50	214.70	
J-71		2.30	204.60	
J-73		6.40	199.60	
J-74		1.10	301.00	
J-77		0.60	296.10	
J-78		5.20	230.70	
J-79		2.80	223.40	
J-8		6.50	208.80	
J-80		5.00	190.70	
J-81		6.70	218.90	
J-82		6.60	257.90	
J-84		2.30	226.30	
J-87		4.20	194.40	
J-88		21.30	275.70	
J-90		0.10	219.10	
J-91		9.80	352.90	
J-93		1.70	187.50	
J-94		3.70	187.50	
J-95		13.30	189.50	
J-96		6.50	176.90	
J-99		1.10	205.50	
Kennicott	Kennicott Re	----	374.00	397.90
Main Reser	Main Reservo	----	383.30	401.50
physical d		0.10	222.00	
I-RV-1		0.00	193.40	
I-RV-2		0.00	200.90	
O-South En		----	287.90	495.59
O-Valley V	Valley View	0.00	308.10	
Yankis (Va	Yankis (Vall	----	631.50	635.90
Yates Rese	500,000 gal	----	376.00	401.50
O-18th St		----	218.20	389.66
I-18th St		0.00	218.20	
I-AV-1		0.00	283.80	
O-AV-2		0.00	306.00	
O-AV-3		0.00	253.40	
I-AV-4		0.00	289.30	
I-AV-5		0.00	225.30	
I-AV-6		0.00	208.10	
I-Centrali		0.00	333.50	
I-Fairview	Fairview PRV	0.00	346.50	
I-High Lev	High Level P	0.00	401.60	
O-RV-1		----	193.40	389.55
O-RV-2		----	200.90	389.67
I-South En		0.00	287.90	
I-Valley V	Valley View	0.00	308.10	

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 5
 MAXIMUM AND MINIMUM VELOCITIES = 5
 MAXIMUM AND MINIMUM HEAD LOSS/1000 = 5

SUPPLY ZONE DATA

THIS SYSTEM HAS MULTIPLE SUPPLY ZONES

ZONE NO. 1 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@18th St FRV ~@RV-2 ~@RV-1~@Yankis (Valley V
 ~@Fairview FRV~@Kennicott Reserv~@High Level Reser ~@Main Reservoir
 ~@Yates Reservoir
 ZONE NO. 2 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@Centralia Alpha
 ZONE NO. 3 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@South End Pump S

SYSTEM CONFIGURATION

NUMBER OF PIPES(P) = 713
 NUMBER OF END NODES(J) = 561
 NUMBER OF PRIMARY LOOPS(L) = 148
 NUMBER OF SUPPLY NODES(F) = 7
 NUMBER OF SUPPLY ZONES(Z) = 3

Case: 0

RESULTS OBTAINED AFTER 27 TRIALS: ACCURACY = 0.23838E-03

SIMULATION DESCRIPTION (LABEL)

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS		FLOWRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/ 1000 ft/f	HL/ 1000 ft/f
	#1	#2						
3	6	5	72.12	0.00	0.00	0.29	0.09	0.09
5	10	9	2.30	0.00	0.00	0.03	0.00	0.00
6	12	11	0.10	0.00	0.00	0.00	0.00	0.00
7	872	13	0.10	0.00	0.00	0.00	0.00	0.00
8	15	16	29.18	0.00	0.00	0.33	0.21	0.21
10	18	19	1.20	0.02	0.00	0.12	0.05	0.05
12	22	23	10.52	0.00	0.00	0.07	0.00	0.00
13	24	1524	1.00	0.00	0.00	0.03	0.00	0.00
14	26	J-55	4.90	0.00	0.00	0.03	0.00	0.00
16	28	29	0.60	0.00	0.00	0.02	0.00	0.00
17	32	31	2.00	0.15	0.00	0.20	0.20	0.20
21	38	37	0.50	0.00	0.00	0.01	0.00	0.00
22	2014	40	11.06	0.00	0.00	0.07	0.01	0.01
23	1699	41	4.72	0.00	0.00	0.01	0.00	0.00
24	213	43	0.10	0.00	0.00	0.00	0.00	0.00
26	47	48	0.50	0.00	0.00	0.01	0.00	0.00
27	49	50	0.90	0.00	0.00	0.00	0.00	0.00
28	51	52	2.00	0.00	0.00	0.01	0.00	0.00
32	60	59	0.30	0.00	0.00	0.00	0.00	0.00
35	65	66	26.26	0.07	0.00	0.30	0.24	0.24
37	68	69	7.21	0.00	0.00	0.05	0.00	0.00
38	52	70	0.70	0.00	0.00	0.01	0.00	0.00
39	72	Hillcrest	0.20	0.00	0.00	0.01	0.00	0.00
41	76	75	27.43	0.01	0.00	0.08	0.00	0.00
45	2066	83	0.10	0.00	0.00	0.00	0.00	0.00
46	86	85	0.10	0.00	0.00	0.00	0.00	0.00
52	97	98	0.20	0.00	0.00	0.00	0.00	0.00
55	102	103	0.20	0.00	0.00	0.00	0.00	0.00
56	1810	104	4.04	0.00	0.00	0.01	0.00	0.00
59	107	108	5.25	0.00	0.00	0.01	0.00	0.00
60	J-53	109	215.12	0.04	0.00	0.34	0.05	0.05
66	J-91	118	406.52	1.05	0.00	0.85	0.45	0.45
68	121	119	116.44	0.04	0.00	0.24	0.06	0.06
70	860	121	176.71	0.00	0.00	0.37	0.13	0.13
72	118	1799	2.50	0.00	0.00	0.02	0.00	0.00
85	396	physical d	0.10	0.00	0.00	0.00	0.00	0.00
107	J-91	2067	878.48	2.47	0.00	1.83	2.61	2.61
109	325	34	27.95	0.00	0.00	0.08	0.00	0.00
110	166	2122	67.22	0.02	0.00	0.19	0.02	0.02
112	166	962	17.82	0.00	0.00	0.05	0.00	0.00
114	962	569	14.02	0.00	0.00	0.04	0.00	0.00
115	569	665	6.22	0.00	0.00	0.02	0.00	0.00
118	172	J-105	3.74	0.00	0.00	0.01	0.00	0.00
120	178	175	124.75	0.02	0.00	0.35	0.07	0.07
123	1826	178	144.82	0.04	0.00	0.41	0.09	0.09
126	1827	1826	168.11	0.03	0.00	0.49	0.12	0.12
129	192	1827	208.11	0.29	0.00	0.59	0.17	0.17
137	201	192	198.39	0.04	0.00	0.56	0.16	0.16
139	137	201	258.85	0.11	0.00	0.73	0.26	0.26

2020 Fireflow - Main Zone West

141	137	15	88.68	0.02	0.00	0.25	0.04	0.04
142	15	J-95	52.70	0.03	0.00	0.15	0.01	0.01
145	201	J-93	57.06	0.01	0.00	0.16	0.02	0.02
155	212	213	18.30	0.00	0.00	0.05	0.00	0.00
156	26	214	119.47	0.10	0.00	0.34	0.06	0.06
163	2072	224	3.50	0.00	0.00	0.01	0.00	0.00
187	248	253	5.20	0.00	0.00	0.01	0.00	0.00
192	254	J-127	92.02	0.05	0.00	0.26	0.03	0.03
262	325	1575	20.74	0.00	0.00	0.06	0.00	0.00
279	344	343	12.00	0.00	0.00	0.03	0.00	0.00
280	342	344	17.10	0.00	0.00	0.05	0.00	0.00
282	342	346	0.50	0.00	0.00	0.00	0.00	0.00
283	86	J-130	3.80	0.00	0.00	0.01	0.00	0.00
292	361	356	10.18	0.01	0.00	0.04	0.00	0.00
298	J-7	32	25.60	0.00	0.00	0.10	0.01	0.01
302	32	480	18.80	0.01	0.00	0.08	0.01	0.01
318	384	385	92.03	0.01	0.00	0.38	0.09	0.09
319	356	2074	5.20	0.00	0.00	0.02	0.00	0.00
320	41	356	4.32	0.00	0.00	0.02	0.00	0.00
329	396	398	204.86	0.03	0.00	0.84	0.91	0.91
331	398	1409	109.39	0.09	0.00	0.45	0.28	0.28
340	407	408	82.58	0.11	0.00	0.34	0.17	0.17
353	661	2119	0.61	0.00	0.00	0.01	0.00	0.00
355	1648	424	28.34	0.00	0.00	0.12	0.02	0.02
363	295	468	25.10	0.02	0.00	0.10	0.01	0.01
398	172	473	1.50	0.00	0.00	0.00	0.00	0.00
403	480	474	1.90	0.00	0.00	0.01	0.00	0.00
411	2129	J-45	24.21	0.03	0.00	0.15	0.04	0.04
414	1217	1121	3.20	0.00	0.00	0.04	0.00	0.00
417	1235	492	28.49	0.03	0.00	0.18	0.07	0.07
429	505	509	39.27	0.06	0.00	0.25	0.13	0.13
433	512	510	0.50	0.00	0.00	0.00	0.00	0.00
435	1057	513	3.00	0.00	0.00	0.02	0.00	0.00
440	518	J-94	5.24	0.00	0.00	0.03	0.00	0.00
448	1184	92	28.10	0.03	0.00	0.18	0.03	0.03
451	119	530	42.78	0.01	0.00	0.27	0.15	0.15
452	119	536	70.26	0.17	0.00	0.45	0.37	0.37
458	536	2079	30.00	0.05	0.00	0.19	0.08	0.08
461	540	2079	1.88	0.00	0.00	0.01	0.00	0.00
464	544	543	24.76	0.02	0.00	0.16	0.05	0.05
472	552	J-100	56.84	0.02	0.00	0.36	0.25	0.25
476	I-AV-1	J-114	0.00	0.00	0.00	0.00	0.00	0.00
486	569	573	1.30	0.00	0.00	0.01	0.00	0.00
490	385	166	90.93	0.05	0.00	0.58	0.19	0.19
495	J-138	579	22.91	0.01	0.00	0.15	0.02	0.02
497	582	584	19.54	0.01	0.00	0.12	0.02	0.02
503	590	J-73	1.51	0.00	0.00	0.01	0.00	0.00
511	599	601	1.30	0.00	0.00	0.01	0.00	0.00
526	599	619	2.00	0.00	0.00	0.01	0.00	0.00
531	620	623	1.70	0.00	0.00	0.01	0.00	0.00
538	628	631	34.50	0.01	0.00	0.22	0.07	0.07
541	1049	632	0.80	0.00	0.00	0.01	0.00	0.00
547	631	642	1.60	0.00	0.00	0.01	0.00	0.00
552	High Level	2090	90.10	0.46	0.00	0.58	0.42	0.42
565	509	661	32.68	0.12	0.00	0.21	0.09	0.09
569	1284	597	23.26	0.01	0.00	0.15	0.03	0.03
571	2086	46	50.02	0.07	0.00	0.32	0.14	0.14
574	668	665	9.82	0.00	0.00	0.06	0.00	0.00
577	668	675	1.40	0.00	0.00	0.01	0.00	0.00
584	J-27	676	2.50	0.00	0.00	0.02	0.00	0.00
590	54	682	0.50	0.00	0.00	0.00	0.00	0.00
591	J-95	683	5.40	0.00	0.00	0.03	0.00	0.00
593	J-78	686	0.90	0.00	0.00	0.01	0.00	0.00
597	408	J-79	93.52	0.01	0.00	0.60	0.63	0.63
601	361	1960	51.43	0.19	0.00	0.33	0.15	0.15
612	710	705	18.89	0.00	0.00	0.12	0.01	0.01
617	717	1134	4.03	0.00	0.00	0.03	0.00	0.00
623	247	718	0.10	0.00	0.00	0.00	0.00	0.00
630	424	726	54.30	0.02	0.00	0.35	0.23	0.23
632	726	J-80	16.60	0.01	0.00	0.11	0.03	0.03
652	468	780	8.00	0.01	0.00	0.05	0.00	0.00
684	2092	781	0.10	0.00	0.00	0.00	0.00	0.00
686	784	1698	3.08	0.00	0.00	0.02	0.00	0.00
690	788	791	7.53	0.00	0.00	0.05	0.00	0.00
693	791	792	0.30	0.00	0.00	0.00	0.00	0.00
697	797	784	5.55	0.00	0.00	0.04	0.00	0.00
700	800	802	0.80	0.00	0.00	0.01	0.00	0.00
702	803	1465	18.68	0.03	0.00	0.21	0.13	0.13
706	2009	808	5.79	0.01	0.00	0.07	0.01	0.01
710	815	813	11.87	0.02	0.00	0.13	0.06	0.06
712	121	2093	58.07	0.05	0.00	0.66	1.06	1.06
714	2094	40	4.26	0.06	0.00	0.11	0.06	0.06
723	2096	828	8.39	0.01	0.00	0.10	0.03	0.03
726	831	544	26.26	0.02	0.00	0.30	0.24	0.24
727	530	831	40.48	0.18	0.00	0.46	0.54	0.54
735	831	1989	12.52	0.01	0.00	0.14	0.06	0.06
739	844	842	6.39	0.01	0.00	0.07	0.02	0.02
741	817	844	17.56	0.08	0.00	0.20	0.12	0.12
749	J-115	856	8.19	0.01	0.00	0.09	0.03	0.03
751	2078	14	12.32	0.02	0.00	0.14	0.06	0.06
753	860	2097	24.73	0.12	0.00	0.28	0.22	0.22
757	868	865	6.77	0.00	0.00	0.08	0.02	0.02
760	J-113	868	2.63	0.00	0.00	0.03	0.00	0.00
762	872	868	6.74	0.00	0.00	0.08	0.02	0.02
772	881	2098	0.40	0.00	0.00	0.00	0.00	0.00
776	J-111	885	8.83	0.01	0.00	0.10	0.03	0.03
784	J-106	893	0.75	0.00	0.00	0.01	0.00	0.00
785	J-110	893	14.37	0.03	0.00	0.16	0.08	0.08
789	899	66	2.61	0.00	0.00	0.03	0.00	0.00
791	901	899	14.38	0.01	0.00	0.16	0.08	0.08
793	901	1742	23.34	0.22	0.00	0.26	0.20	0.20
797	910	906	2.10	0.00	0.00	0.02	0.00	0.00
801	910	38	3.27	0.00	0.00	0.04	0.01	0.01
807	842	2084	14.50	0.03	0.00	0.16	0.08	0.08
812	916	922	1.00	0.00	0.00	0.01	0.00	0.00

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814	J-20	923	12.57	0.04	0.00	0.14	0.06	0.06
817	J-21	929	0.70	0.00	0.00	0.01	0.00	0.00
823	J-2	937	3.52	0.01	0.00	0.04	0.01	0.01
825	J-2	556	9.33	0.02	0.00	0.11	0.04	0.04
831	2080	945	12.20	0.03	0.00	0.14	0.06	0.06
839	2081	954	3.30	0.00	0.00	0.04	0.01	0.01
846	962	964	0.20	0.00	0.00	0.00	0.00	0.00
858	1314	1387	19.20	0.06	0.00	0.49	0.98	0.98
861	108	104	3.55	0.00	0.00	0.04	0.00	0.00
867	J-110	958	7.79	0.03	0.00	0.09	0.03	0.03
874	994	65	11.12	0.04	0.00	0.13	0.05	0.05
876	65	1986	17.22	0.07	0.00	0.20	0.11	0.11
883	1003	1023	12.61	0.02	0.00	0.14	0.04	0.04
903	J-125	1024	39.50	0.13	0.00	0.45	0.37	0.37
905	O-High Lev	649	0.00	0.00	0.00	0.00	0.00	0.00
910	1024	628	36.70	0.21	0.00	0.42	0.32	0.32
912	1003	1032	8.59	0.02	0.00	0.10	0.02	0.02
930	1050	1053	3.60	0.01	0.00	0.04	0.00	0.00
933	394	2100	10.94	0.05	0.00	0.12	0.05	0.05
936	16	1057	27.78	0.08	0.00	0.32	0.19	0.19
938	1060	1063	2.40	0.00	0.00	0.03	0.00	0.00
941	J-129	1064	2.70	0.00	0.00	0.03	0.00	0.00
948	526	1071	28.27	0.06	0.00	0.32	0.20	0.20
949	526	1084	16.83	0.30	0.00	0.19	0.11	0.11
962	1085	1337	3.55	0.00	0.00	0.04	0.01	0.01
966	1099	J-78	19.64	0.14	0.00	0.22	0.10	0.10
975	1101	1100	0.60	0.00	0.00	0.01	0.00	0.00
976	O-Fairview	1101	15.00	0.01	0.00	0.17	0.06	0.06
982	J-81	2103	3.90	0.00	0.00	0.04	0.01	0.01
993	1121	1122	0.70	0.00	0.00	0.01	0.00	0.00
994	2076	2127	23.86	0.06	0.00	0.27	0.20	0.20
1000	1130	1125	1.80	0.00	0.00	0.02	0.00	0.00
1001	J-73	2104	6.37	0.01	0.00	0.07	0.02	0.02
1003	2104	1134	2.47	0.00	0.00	0.03	0.00	0.00
1004	509	1290	6.96	0.01	0.00	0.08	0.02	0.02
1007	2105	1137	13.13	0.02	0.00	0.15	0.07	0.07
1009	2013	1388	25.39	0.06	0.00	0.29	0.23	0.23
1012	2107	2106	30.82	0.19	0.00	0.35	0.33	0.33
1014	23	510	18.14	0.11	0.00	0.21	0.12	0.12
1017	2137	2109	21.92	0.08	0.00	0.25	0.17	0.17
1019	2109	2094	30.41	0.10	0.00	0.35	0.32	0.32
1020	2094	23	27.32	0.04	0.00	0.31	0.26	0.26
1023	23	1156	13.30	0.03	0.00	0.15	0.07	0.07
1024	2073	2096	15.22	0.02	0.00	0.17	0.09	0.09
1025	2096	2110	12.44	0.02	0.00	0.14	0.06	0.06
1026	2110	1997	1.97	0.00	0.00	0.02	0.00	0.00
1028	2111	1997	12.10	0.01	0.00	0.14	0.06	0.06
1030	2112	2111	28.99	0.08	0.00	0.33	0.29	0.29
1032	2113	1961	13.04	0.03	0.00	0.15	0.07	0.07
1035	704	1961	9.21	0.01	0.00	0.10	0.03	0.03
1036	1961	2109	19.45	0.04	0.00	0.22	0.14	0.14
1037	2010	2014	25.91	0.15	0.00	0.29	0.24	0.24
1040	2012	2013	44.74	0.21	0.00	0.51	0.65	0.65
1041	2065	2012	5.15	0.00	0.00	0.06	0.01	0.01
1042	2137	2065	2.87	0.00	0.00	0.03	0.00	0.00
1043	2137	2113	10.21	0.01	0.00	0.12	0.04	0.04
1044	1180	2113	38.44	0.13	0.00	0.44	0.49	0.49
1046	22	1181	13.83	0.01	0.00	0.16	0.07	0.07
1047	2095	22	27.25	0.04	0.00	0.31	0.26	0.26
1048	726	1184	36.20	0.00	0.00	0.23	0.05	0.05
1051	1996	1186	9.70	0.01	0.00	0.11	0.04	0.04
1053	827	1232	4.52	0.01	0.00	0.05	0.01	0.01
1058	1232	1156	7.35	0.01	0.00	0.08	0.02	0.02
1060	1156	512	15.05	0.08	0.00	0.17	0.09	0.09
1062	512	2107	8.45	0.02	0.00	0.10	0.03	0.03
1064	2115	2107	13.73	0.01	0.00	0.16	0.07	0.07
1069	2117	2065	28.53	0.17	0.00	0.34	0.30	0.30
1071	1210	2137	39.50	0.30	0.00	0.45	0.52	0.52
1074	1713	1211	0.20	0.00	0.00	0.00	0.00	0.00
1076	24	1713	27.90	0.03	0.00	0.32	0.12	0.12
1077	1215	J-58	15.26	0.03	0.00	0.17	0.09	0.09
1078	68	1217	2.85	0.00	0.00	0.03	0.00	0.00
1080	1218	2112	37.10	0.48	0.00	0.42	0.46	0.46
1083	2112	1223	22.70	0.06	0.00	0.26	0.19	0.19
1085	2111	1224	2.81	0.00	0.00	0.03	0.00	0.00
1087	1333	1085	6.23	0.01	0.00	0.07	0.02	0.02
1088	808	1085	1.42	0.00	0.00	0.02	0.00	0.00
1090	1229	808	0.03	0.00	0.00	0.00	0.00	0.00
1091	1181	1232	9.03	0.02	0.00	0.10	0.03	0.03
1094	1235	1483	1.19	0.00	0.00	0.01	0.00	0.00
1095	2120	1104	0.40	0.00	0.00	0.00	0.00	0.00
1096	2120	1239	1.60	0.00	0.00	0.02	0.00	0.00
1099	1214	1240	0.10	0.00	0.00	0.00	0.00	0.00
1100	1244	1214	64.40	0.27	0.00	0.73	0.58	0.58
1103	1251	1244	36.46	0.11	0.00	0.41	0.20	0.20
1110	Yankis (Va	1251	75.00	0.32	0.00	0.85	0.77	0.77
1116	J-25	1513	24.70	0.00	0.00	0.16	0.02	0.02
1117	J-159	1277	6.60	0.00	0.00	0.07	0.01	0.01
1118	1277	1262	0.30	0.00	0.00	0.00	0.00	0.00
1120	657	J-25	29.70	0.01	0.00	0.12	0.01	0.01
1125	1181	1270	1.60	0.00	0.00	0.02	0.00	0.00
1127	2103	1099	3.49	0.01	0.00	0.04	0.01	0.01
1132	1277	I-AV-4	0.00	0.00	0.00	0.00	0.00	0.00
1138	579	693	19.61	0.12	0.00	0.22	0.14	0.14
1140	1284	O-AV-3	0.00	0.00	0.00	0.00	0.00	0.00
1146	1290	2119	5.05	0.11	0.00	0.13	0.08	0.08
1148	1293	1295	7.55	0.06	0.00	0.19	0.17	0.17
1150	398	2016	40.94	0.04	0.00	0.46	0.55	0.55
1152	1120	1298	0.60	0.00	0.00	0.01	0.00	0.00
1154	432	1309	6.10	0.03	0.00	0.07	0.01	0.01
1165	1310	1314	5.00	0.09	0.00	0.13	0.08	0.08
1169	2127	J-61	4.54	0.07	0.00	0.12	0.07	0.07
1171	1318	2105	10.55	0.19	0.00	0.27	0.32	0.32
1173	2105	1322	6.78	0.07	0.00	0.17	0.14	0.14
1178	40	2115	11.02	0.11	0.00	0.28	0.35	0.35

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1179	2115	1328	9.88	0.17	0.00	0.25	0.29	0.29
1182	803	J-81	6.68	0.09	0.00	0.17	0.14	0.14
1185	1333	1337	2.35	0.01	0.00	0.06	0.02	0.02
1189	1338	807	3.09	0.05	0.00	0.08	0.03	0.03
1193	518	192	10.73	0.02	0.00	0.27	0.33	0.33
1195	1060	192	6.19	0.07	0.00	0.16	0.12	0.12
1198	705	1060	14.49	0.77	0.00	0.37	0.58	0.58
1205	492	J-80	1.10	0.00	0.00	0.03	0.00	0.00
1208	828	1356	4.99	0.02	0.00	0.13	0.08	0.08
1210	828	1359	0.70	0.00	0.00	0.02	0.00	0.00
1211	1364	1984	2.64	0.01	0.00	0.07	0.02	0.02
1212	1991	1364	0.50	0.00	0.00	0.01	0.00	0.00
1214	2121	1364	4.94	0.02	0.00	0.13	0.08	0.08
1215	1366	36	2.10	0.01	0.00	0.05	0.02	0.02
1217	1251	1244	32.74	0.11	0.00	0.37	0.17	0.17
1226	17	1375	3.40	0.07	0.00	0.09	0.03	0.03
1236	1387	17	15.30	0.18	0.00	0.39	0.46	0.46
1239	1392	1388	11.68	0.23	0.00	0.30	0.39	0.39
1244	33	1314	18.10	0.08	0.00	0.46	0.63	0.63
1245	937	1456	0.32	0.00	0.00	0.01	0.00	0.00
1247	384	1456	5.27	0.02	0.00	0.13	0.09	0.09
1248	1396I-Valley V		0.00	0.00	0.00	0.00	0.00	0.00
1258	1409	505	7.94	0.21	0.00	0.20	0.19	0.19
1261	1410	657	4.05	0.02	0.00	0.10	0.04	0.04
1269	1023	I-AV-2	0.00	0.00	0.00	0.00	0.00	0.00
1309	1456	881	2.90	0.01	0.00	0.07	0.03	0.03
1315	885	1056	4.11	0.01	0.00	0.10	0.04	0.04
1319	1465	2103	5.22	0.06	0.00	0.13	0.09	0.09
1322	407	509	9.07	0.20	0.00	0.23	0.24	0.24
1330	492	693	0.40	0.00	0.00	0.01	0.00	0.00
1338	1295	1483	3.85	0.05	0.00	0.10	0.05	0.05
1340	899	1484	5.87	0.21	0.00	0.15	0.11	0.11
1351	344	1497	2.20	0.00	0.00	0.06	0.01	0.01
1354	1502	1498	1.30	0.00	0.00	0.01	0.00	0.00
1358	J-133	1502	16.60	0.00	0.00	0.11	0.01	0.01
1371	1517	1519	0.80	0.01	0.00	0.08	0.04	0.04
1384	J-95	1544	34.00	0.02	0.00	0.10	0.01	0.01
1388	1544	1547	18.25	0.00	0.00	0.05	0.00	0.00
1389	1547	J-96	9.30	0.00	0.00	0.03	0.00	0.00
1396	1544	1547	2.05	0.00	0.00	0.01	0.00	0.00
1401	668	1674	26.46	0.00	0.00	0.08	0.00	0.00
1404	1674	102	14.70	0.00	0.00	0.04	0.00	0.00
1406	102	J-1	10.50	0.00	0.00	0.03	0.00	0.00
1409	92	J-143	11.70	0.00	0.00	0.03	0.00	0.00
1423	421	107	41.40	0.01	0.00	0.12	0.01	0.01
1426	34	1575	6.46	0.00	0.00	0.02	0.00	0.00
1427	1576	248	14.70	0.00	0.00	0.04	0.00	0.00
1429	248	1580	1.50	0.00	0.00	0.00	0.00	0.00
1433	51	26	131.77	0.03	0.00	0.37	0.07	0.07
1435	109	51	139.67	0.12	0.00	0.40	0.08	0.08
1440	109	6	67.95	0.01	0.00	0.19	0.02	0.02
1441	1647	6	9.66	0.00	0.00	0.03	0.00	0.00
1443	1637	1647	83.56	0.17	0.00	0.24	0.03	0.03
1454	72	1637	196.48	0.28	0.00	0.56	0.16	0.16
1455	1626	72	211.98	0.66	0.00	0.60	0.18	0.18
1458	1627	1626	530.08	0.75	0.00	1.50	0.98	0.98
1460	797	212	25.22	0.00	0.00	0.07	0.00	0.00
1464	1630	788	57.00	0.06	0.00	0.16	0.02	0.02
1477	1626	1630	302.61	0.39	0.00	0.86	0.35	0.35
1479	Yates Rese	1627	808.58	1.84	0.00	2.29	1.71	1.71
1481	1630	76	221.31	0.55	0.00	0.63	0.16	0.16
1483	76	1636	168.18	0.22	0.00	0.48	0.09	0.09
1487	1637	75	91.81	0.02	0.00	0.26	0.04	0.04
1492	75	49	106.54	0.03	0.00	0.30	0.05	0.05
1493	49	254	93.64	0.13	0.00	0.27	0.04	0.04
1494	J-35	254	16.58	0.00	0.00	0.05	0.00	0.00
1497	1647	2072	52.40	0.01	0.00	0.15	0.01	0.01
1499	247	1648	70.24	0.11	0.00	0.20	0.02	0.02
1500	343	1657	5.80	0.00	0.00	0.04	0.00	0.00
1509	1658	901	43.51	0.04	0.00	0.28	0.06	0.06
1526	1674	800	5.06	0.00	0.00	0.03	0.00	0.00
1531	800	174	0.76	0.00	0.00	0.00	0.00	0.00
1534	1679	1689	2.90	0.00	0.00	0.03	0.00	0.00
1544	1689	1690	0.40	0.00	0.00	0.00	0.00	0.00
1548	1698	2092	2.10	0.00	0.00	0.01	0.00	0.00
1552	1699	1700	2.20	0.00	0.00	0.01	0.00	0.00
1553	2138	89	3.90	0.00	0.00	0.02	0.00	0.00
1560	J-53	1710	3.00	0.00	0.00	0.02	0.00	0.00
1562	683	1711	0.60	0.00	0.00	0.00	0.00	0.00
1563	683	1712	1.40	0.00	0.00	0.01	0.00	0.00
1564	1713	1716	26.40	0.02	0.00	0.30	0.11	0.11
1567	1716	1719	0.50	0.00	0.00	0.01	0.00	0.00
1584	1742	1737	10.20	0.39	0.00	0.26	0.30	0.30
1588	1737	1375	4.70	0.03	0.00	0.12	0.07	0.07
1593	1742	1484	5.03	0.00	0.00	0.02	0.00	0.00
1596	975	1484	0.70	0.00	0.00	0.00	0.00	0.00
1611	975	1310	0.88	0.00	0.00	0.00	0.00	0.00
1612	2122	1310	8.92	0.00	0.00	0.04	0.00	0.00
1615	2123	1089	5.09	0.00	0.00	0.03	0.00	0.00
1617	1089	1186	15.94	0.02	0.00	0.18	0.10	0.10
1618	1186	1767	22.54	0.01	0.00	0.14	0.02	0.02
1621	J-135	1773	23.10	0.01	0.00	0.15	0.02	0.02
1626	1773	1775	19.00	0.00	0.00	0.12	0.01	0.01
1628	1775	1776	8.66	0.00	0.00	0.06	0.00	0.00
1629	1776	1782	3.76	0.00	0.00	0.02	0.00	0.00
1635	1788	1782	1.56	0.00	0.00	0.01	0.00	0.00
1641	1775	1788	8.84	0.00	0.00	0.06	0.00	0.00
1644	1773	1791	0.70	0.00	0.00	0.00	0.00	0.00
1645	1776	1793	0.90	0.00	0.00	0.01	0.00	0.00
1647	1788	1782	2.07	0.00	0.00	0.01	0.00	0.00
1654	1800	1801	0.70	0.00	0.00	0.00	0.00	0.00
1657	18053-inch or		0.30	0.00	0.00	0.00	0.00	0.00
1658	1806	1808	1.10	0.00	0.00	0.01	0.00	0.00
1660	1809	1806	2.30	0.00	0.00	0.01	0.00	0.00
1661	1810	1821	24.51	0.00	0.00	0.10	0.01	0.01

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1663	1821	1800	16.29	0.00	0.00	0.07	0.00	0.00
1664	1813	1809	6.70	0.00	0.00	0.03	0.00	0.00
1665	1814	1818	1.50	0.04	0.00	0.15	0.08	0.08
1669	1813	1814	3.89	0.00	0.00	0.02	0.00	0.00
1672	1821	J-112	4.12	0.00	0.00	0.03	0.00	0.00
1673	1826	1823	20.18	0.04	0.00	0.23	0.11	0.11
1676	1827	1071	34.31	0.00	0.00	0.22	0.07	0.07
1677	1636	J-128	12.38	0.00	0.00	0.08	0.01	0.01
1792	844	910	6.87	0.04	0.00	-0.18	0.15	0.15
1793	178	1823	17.98	0.00	0.00	0.11	0.02	0.02
1796	1063	1948	0.90	0.02	0.00	0.09	0.05	0.05
1799	1032	J-114	4.49	0.03	0.00	0.11	0.05	0.05
1810	1960	12	47.53	0.00	0.00	0.30	0.13	0.13
1811	12	10	44.23	0.12	0.00	0.29	0.11	0.11
1813	1767	J-117	2.60	0.00	0.00	0.03	0.00	0.00
1818	1737	1968	0.40	0.00	0.00	0.01	0.00	0.00
1820	1823	J-21	35.46	0.21	0.00	0.40	0.42	0.42
1821	175	384	118.05	0.31	0.00	0.48	0.15	0.15
1825	566	1973	1.50	0.00	0.00	0.04	0.01	0.01
1826	1974	1975	2.05	0.01	0.00	0.05	0.02	0.02
1828	J-3	1980	1.50	0.00	0.00	0.02	0.00	0.00
1830	19813	-inch or	0.10	0.00	0.00	0.00	0.00	0.00
1831	1767	1984	16.84	0.03	0.00	0.19	0.11	0.11
1834	1986	1985	0.20	0.00	0.00	0.01	0.00	0.00
1835	894	2125	3.56	0.00	0.00	0.02	0.00	0.00
1836	1987	568	0.49	0.00	0.00	0.01	0.00	0.00
1837	1989	1988	0.10	0.00	0.00	0.00	0.00	0.00
1839	2121	1991	16.35	0.02	0.00	0.19	0.10	0.10
1840	2123	2126	101.49	0.03	0.00	0.41	0.11	0.11
1841	994	1994	0.60	0.00	0.00	0.01	0.00	0.00
1842	1997	1996	10.67	0.03	0.00	0.12	0.05	0.05
1843	1184	2003	2.70	0.00	0.00	0.03	0.00	0.00
1852	2007	2009	17.41	0.03	0.00	0.20	0.11	0.11
1854	2065	2010	22.65	0.09	0.00	0.26	0.18	0.18
1855	J-39	2012	42.99	0.09	0.00	0.27	0.15	0.15
1856	2013	2014	16.45	0.02	0.00	0.19	0.05	0.05
1858	2016	J-81	3.92	0.08	0.00	0.10	0.05	0.05
1860	504	2127	4.44	0.06	0.00	0.11	0.06	0.06
1864	1121	2023	0.50	0.00	0.00	0.01	0.00	0.00
1865	2127	1215	16.86	0.03	0.00	0.19	0.11	0.11
1866	2025	2028	1.10	0.02	0.00	0.11	0.05	0.05
1869	2029	2030	0.60	0.00	0.00	0.06	0.01	0.01
1870	2031	2029	5.30	0.00	0.00	0.14	0.03	0.03
1871	2029	2025	3.70	0.00	0.00	0.09	0.01	0.01
1872	2025	2032	0.70	0.00	0.00	0.02	0.00	0.00
1873	2031	2033	1.70	0.00	0.00	0.04	0.00	0.00
1877	J-124	2031	9.40	0.00	0.00	0.06	0.00	0.00
1883	J-74	2047	0.60	0.00	0.00	0.01	0.00	0.00
1887	2053	582	10.35	0.15	0.00	0.26	0.22	0.22
1892	2129	582	13.59	0.13	0.00	0.35	0.37	0.37
1893	46	590	16.76	0.06	0.00	0.19	0.08	0.08
1894	J-45	2061	0.90	0.00	0.00	0.01	0.00	0.00
1895	J-44	2063	46.94	0.11	0.00	0.30	0.13	0.13
1896	5	361	71.82	0.01	0.00	0.29	0.09	0.09
1898	14	540	2.68	0.00	0.00	0.03	0.00	0.00
1900	163	-in or sm	0.10	0.00	0.00	0.00	0.00	0.00
1901	17	18	3.10	0.00	0.00	0.04	0.00	0.00
1904	2088	24	30.50	0.00	0.00	0.35	0.15	0.15
1907	36	2130	3.73	0.00	0.00	0.04	0.01	0.01
1908	2083	38	0.33	0.00	0.00	0.00	0.00	0.00
1909	2014	J-87	26.51	0.07	0.00	0.30	0.25	0.25
1917	69	J-61	0.46	0.00	0.00	0.00	0.00	0.00
1920	295	J-30	19.80	0.00	0.00	0.06	0.00	0.00
1924	2066	86	8.60	0.00	0.00	0.02	0.00	0.00
1927	104	J-112	3.49	0.00	0.00	0.04	0.01	0.01
1930	118	710	387.82	1.04	0.00	0.81	0.41	0.41
1935	2106	247	83.74	0.01	0.00	0.53	0.51	0.51
1936	2122	325	53.50	0.00	0.00	0.15	0.01	0.01
1938	1218	375	362.77	0.37	0.00	0.76	0.51	0.51
1940	1318	396	206.06	0.05	0.00	0.43	0.18	0.18
1941	480	2138	10.30	0.00	0.00	0.04	0.00	0.00
1947	2093	530	0.59	0.00	0.00	0.01	0.00	0.00
1948	536	2078	36.36	0.03	0.00	0.23	0.11	0.11
1949	565	1084	40.09	0.08	0.00	0.26	0.13	0.13
1950	556	944	5.69	0.01	0.00	0.06	0.01	0.01
1951	543	565	46.11	0.01	0.00	0.29	0.17	0.17
1954	J-84	O-AV-5	0.00	0.00	0.00	0.00	0.00	0.00
1956	584	717	25.19	0.01	0.00	0.10	0.01	0.01
1958	590	584	10.15	0.00	0.00	0.04	0.00	0.00
1960	620	2133	14.00	0.00	0.00	0.09	0.01	0.01
1962	1410	649	43.20	0.01	0.00	0.28	0.11	0.11
1964	661	424	27.06	0.00	0.00	0.11	0.02	0.02
1965	665	172	8.94	0.00	0.00	0.03	0.00	0.00
1967	710	137	355.53	0.69	0.00	0.74	0.35	0.35
1972	791	784	2.63	0.00	0.00	0.02	0.00	0.00
1975	798	797	34.57	0.00	0.00	0.10	0.01	0.01
1977	813	J-120	9.15	0.02	0.00	0.10	0.03	0.03
1978	815	803	0.25	0.00	0.00	0.00	0.00	0.00
1979	817	1338	11.97	0.03	0.00	0.14	0.06	0.06
1982	856	2121	20.85	0.05	0.00	0.24	0.16	0.16
1983	375	860	203.85	0.05	0.00	0.42	0.17	0.17
1984	865	65	38.16	0.05	0.00	0.24	0.12	0.12
1985	14	872	7.84	0.00	0.00	0.09	0.03	0.03
1986	923	J-3	12.07	0.02	0.00	0.14	0.06	0.06
1987	1987	944	8.74	0.01	0.00	0.10	0.03	0.03
1989	945	954	7.63	0.01	0.00	0.09	0.02	0.02
1990	958	J-106	8.11	0.01	0.00	0.09	0.03	0.03
1992	994	1658	95.31	0.05	0.00	0.39	0.10	0.10
1993	2101	60	2.87	0.00	0.00	0.03	0.00	0.00
1995	1049	1003	26.20	0.09	0.00	0.30	0.17	0.17
1996	631	1049	30.10	0.02	0.00	0.19	0.05	0.05
1997	1050	975	7.88	0.01	0.00	0.09	0.02	0.02
1998	1057	518	18.78	0.02	0.00	0.12	0.03	0.03
2000	1084	552	46.12	0.07	0.00	0.29	0.17	0.17
2001	1120	1099	30.53	0.08	0.00	0.35	0.32	0.32

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2002	J-79	1107	57.41	0.05	0.00	0.37	0.25	0.25
2003	1130	J-63	26.31	0.03	0.00	0.17	0.06	0.06
2005	398	1137	51.63	0.13	0.00	0.33	0.21	0.21
2010	1180	704	64.46	0.15	0.00	0.41	0.32	0.32
2011	704	1183	53.05	0.03	0.00	0.60	0.89	0.89
2014	2067	1210	359.41	0.28	0.00	0.75	0.50	0.50
2020	1223	1224	13.64	0.02	0.00	0.15	0.07	0.07
2021	1224	827	12.95	0.04	0.00	0.15	0.07	0.07
2022	1229	815	15.32	0.03	0.00	-0.17	0.09	0.09
2024	1517	1235	34.48	0.09	0.00	0.22	0.10	0.10
2025	1099	J-82	4.87	0.00	0.00	0.06	0.01	0.01
2027	46	1284	27.76	0.03	0.00	0.18	0.05	0.05
2031	1392	1318	220.01	0.06	0.00	0.46	0.20	0.20
2032	J-87	1322	24.13	0.05	0.00	0.27	0.21	0.21
2033	2091	1328	48.24	0.06	0.00	0.31	0.18	0.18
2035	1337	2110	2.59	0.00	0.00	0.03	0.00	0.00
2036	1338	813	1.48	0.00	0.00	0.02	0.00	0.00
2037	1356	1089	13.06	0.00	0.00	0.15	0.07	0.07
2039	945	1366	1.37	0.00	0.00	0.02	0.00	0.00
2040	1387	979	1.30	0.00	0.00	0.01	0.00	0.00
2042	J-39	1392	235.89	0.14	0.00	0.49	0.23	0.23
2045	1409	407	96.65	0.07	0.00	0.39	0.23	0.23
2048	1465	J-120	10.75	0.00	0.00	0.12	0.05	0.05
2053	1107	1517	39.78	0.05	0.00	0.25	0.13	0.13
2058	J-8	1570	39.10	0.03	0.00	0.16	0.03	0.03
2060	1575	342	20.70	0.00	0.00	0.06	0.00	0.00
2063	1627	J-135	269.40	0.10	0.00	0.76	0.28	0.28
2067	1648	432	20.20	0.03	0.00	0.08	0.01	0.01
2068	1658	421	46.00	0.02	0.00	0.19	0.03	0.03
2070	1101	1679	13.00	0.00	0.00	0.15	0.05	0.05
2071	212	1698	3.32	0.00	0.00	0.02	0.00	0.00
2078	1800	1813	13.39	0.00	0.00	0.05	0.00	0.00
2079	1809	1805	2.40	0.00	0.00	0.01	0.00	0.00
2080	107	1810	32.15	0.00	0.00	0.09	0.00	0.00
2087	1960	700	0.10	0.00	0.00	0.00	0.00	0.00
2089	1973	J-2	11.51	0.02	0.00	0.13	0.05	0.05
2090	1974	1366	5.03	0.00	0.00	0.06	0.01	0.01
2091	1975	36	5.43	0.00	0.00	0.06	0.01	0.01
2092	1981	J-4	16.29	0.03	0.00	0.18	0.10	0.10
2093	1984	994	112.33	0.05	0.00	0.46	0.13	0.13
2095	1986	552	13.62	0.04	0.00	0.15	0.07	0.07
2096	893	1987	12.53	0.00	0.00	0.14	0.06	0.06
2097	1989	842	11.22	0.01	0.00	0.13	0.05	0.05
2102	827	1996	2.53	0.00	0.00	0.03	0.00	0.00
2104	375	2007	154.32	0.16	0.00	0.63	0.24	0.24
2105	2009	2096	8.32	0.00	0.00	0.09	0.03	0.03
2111	2016	1120	32.53	0.01	0.00	0.37	0.36	0.36
2114	1107	1293	14.74	0.03	0.00	0.17	0.08	0.08
2118	J-57	2053	55.54	0.07	0.00	0.35	0.17	0.17
2120	717	2063	15.16	0.00	0.00	0.06	0.01	0.01
2127	2067	1218	405.77	0.21	0.00	0.85	0.62	0.62
2128	2067	1180	106.50	0.46	0.00	0.68	0.80	0.80
2139	2007	2073	134.41	0.01	0.00	0.55	0.19	0.19
2141	2074	483	1.20	0.00	0.00	0.01	0.00	0.00
2145	492	2076	19.09	0.01	0.00	0.12	0.03	0.03
2146	504	2076	2.27	0.00	0.00	0.01	0.00	0.00
2148	693	J-64	13.81	0.00	0.00	0.09	0.01	0.01
2149	2078	865	33.89	0.03	0.00	0.22	0.10	0.10
2150	1991	2078	13.05	0.02	0.00	0.15	0.07	0.07
2152	2079	543	23.35	0.01	0.00	0.15	0.05	0.05
2153	2080	2081	28.85	0.03	0.00	0.33	0.13	0.13
2154	2080	958	10.89	0.03	0.00	0.12	0.05	0.05
2155	2125	J-99	24.23	0.00	0.00	0.15	0.02	0.02
2156	958	2081	4.57	0.00	0.00	0.05	0.01	0.01
2159	2084	2083	9.64	0.00	0.00	0.06	0.01	0.01
2160	2083	916	2.42	0.00	0.00	0.03	0.00	0.00
2161	565	2084	3.32	0.00	0.00	0.02	0.00	0.00
2162	2094	916	3.58	0.00	0.00	0.04	0.01	0.01
2165	2086	578	1.60	0.00	0.00	0.01	0.00	0.00
2166	2132	2086	56.32	0.10	0.00	0.36	0.18	0.18
2169	2088	620	24.70	0.06	0.00	0.16	0.02	0.02
2170	1214	2088	62.50	0.09	0.00	0.71	0.55	0.55
2173	2090	1410	48.95	0.00	0.00	0.31	0.14	0.14
2174	2090	657	33.35	0.02	0.00	0.21	0.04	0.04
2175	1137	2091	60.86	0.13	0.00	0.39	0.28	0.28
2176	2091	505	36.63	0.03	0.00	0.23	0.11	0.11
2179	2093	817	33.63	0.12	0.00	0.38	0.38	0.38
2180	2093	1229	18.85	0.10	0.00	0.21	0.13	0.13
2181	2095	2094	6.77	0.01	0.00	0.08	0.02	0.02
2183	1223	2095	6.66	0.01	0.00	0.08	0.02	0.02
2184	1183	2095	31.26	0.11	0.00	0.35	0.34	0.34
2187	2097	856	15.36	0.04	0.00	0.17	0.09	0.09
2188	2073	2097	6.72	0.00	0.00	0.09	0.02	0.02
2189	885	2098	1.82	0.00	0.00	0.02	0.00	0.00
2190	2098	2100	9.53	0.01	0.00	0.11	0.04	0.04
2192	954	2130	8.23	0.01	0.00	0.09	0.03	0.03
2193	2100	1050	17.18	0.03	0.00	0.19	0.08	0.08
2194	1056	2100	2.31	0.00	0.00	0.03	0.00	0.00
2195	807	2101	13.69	0.02	0.00	0.16	0.03	0.03
2196	2101	J-82	4.23	0.01	0.00	0.05	0.01	0.01
2198	1293	1290	4.09	0.00	0.00	0.05	0.01	0.01
2199	60	2103	1.47	0.00	0.00	0.02	0.00	0.00
2202	2104	2021	0.70	0.00	0.00	0.02	0.00	0.00
2203	1388	2105	13.96	0.02	0.00	0.16	0.08	0.08
2206	1328	2106	55.12	0.04	0.00	0.35	0.24	0.24
2207	510	2107	13.84	0.02	0.00	0.16	0.07	0.07
2212	2109	2010	7.16	0.01	0.00	0.08	0.02	0.02
2214	2110	1356	10.16	0.02	0.00	0.12	0.04	0.04
2216	2111	1333	11.48	0.00	0.00	0.13	0.05	0.05
2217	1183	2112	19.99	0.04	0.00	0.23	0.15	0.15
2221	2113	803	31.11	0.21	0.00	0.35	0.33	0.33
2223	J-87	2115	16.39	0.03	0.00	0.19	0.10	0.10
2228	1210	2117	315.82	0.13	0.00	0.66	0.39	0.39
2231	1483	2119	0.14	0.00	0.00	0.00	0.00	0.00
2234	J-77	2120	5.10	0.00	0.00	0.06	0.01	0.01

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2236	2126	2121	3.24	0.00	0.00	0.04	0.01	0.01
2240	2073	2123	109.97	0.06	0.00	0.45	0.13	0.13
2243	2125	961	4.85	0.00	0.00	0.03	0.00	0.00
2244	2081	2125	26.52	0.01	0.00	0.17	0.03	0.03
2246	2126	1984	96.05	0.03	0.00	0.39	0.10	0.10
2249	J-77	2050	0.10	0.00	0.00	0.00	0.00	0.00
2252	2053	2129	41.60	0.02	0.00	0.27	0.10	0.10
2253	961	2130	3.45	0.00	0.00	0.04	0.01	0.01
2254	2130	1973	12.41	0.00	0.00	0.14	0.06	0.06
2257	214	2132	114.87	0.00	0.00	0.73	0.66	0.66
2259	2133	599	8.30	0.00	0.00	0.05	0.00	0.00
2260	2133	47	2.30	0.00	0.00	0.01	0.00	0.00
2269	2138	481	0.20	0.00	0.00	0.00	0.00	0.00
P-1	J-1	97	6.90	0.00	0.00	0.02	0.00	0.00
F-100	J-112	1814	2.41	0.00	0.00	0.03	0.00	0.00
F-101	2079	J-113	5.03	0.00	0.00	0.06	0.01	0.01
F-102	1023	J-114	6.61	0.03	0.00	0.17	0.10	0.10
F-103	649	J-125	41.50	0.14	0.00	0.47	0.40	0.40
F-104	1103I-Fairview		15.00	0.00	0.00	0.17	0.06	0.06
F-105	J-116	J-115	10.09	0.02	0.00	0.11	0.04	0.04
F-106	2097	J-116	11.99	0.01	0.00	0.14	0.06	0.06
F-108	J-117	56	0.90	0.00	0.00	0.01	0.00	0.00
F-11	J-3	1975	7.17	0.01	0.00	0.08	0.02	0.02
F-111	J-120	807	17.50	0.03	0.00	0.20	0.11	0.11
F-113	2117	J-39	282.99	0.09	0.00	0.59	0.32	0.32
F-116	97	J-122	4.70	0.00	0.00	0.01	0.00	0.00
F-117	J-140	J-145	0.10	0.00	0.00	0.00	0.00	0.00
F-119	J-84	J-139	0.60	0.00	0.00	0.00	0.00	0.00
F-121	J-140	J-138	23.91	0.00	0.00	0.07	0.00	0.00
F-122	Main Reser	J-126	1298.10	0.43	0.00	2.71	3.83	3.83
F-124	O-AV-1	2083	0.00	0.00	0.00	0.00	0.00	0.00
F-125	O-AV-2	906	0.00	0.00	0.00	0.00	0.00	0.00
F-127	J-127	295	65.80	0.04	0.00	0.19	0.02	0.02
F-128	J-127	J-128	3.82	0.00	0.00	0.01	0.00	0.00
F-130	J-128	1831	1.70	0.00	0.00	0.01	0.00	0.00
F-131	1071	J-129	59.88	0.44	0.00	0.68	0.80	0.80
F-132	J-129	668	48.78	0.01	0.00	0.14	0.01	0.01
F-133	1513	J-133	17.50	0.00	0.00	0.11	0.01	0.01
F-134	J-122	J-132	2.20	0.00	0.00	0.01	0.00	0.00
F-135	1502	J-124	12.10	0.00	0.00	0.08	0.01	0.01
F-136	J-124	J-131	0.60	0.00	0.00	0.00	0.00	0.00
F-138-CV	Kennicott	J-53	227.72	0.04	0.00	0.36	0.05	0.05
F-140	O-AV-4	686	0.00	0.00	0.00	0.00	0.00	0.00
F-143	I-AV-5	J-63	0.00	0.00	0.00	0.00	0.00	0.00
F-144	O-AV-6	1134	0.00	0.00	0.00	0.00	0.00	0.00
F-146	J-73	J-134	1.10	0.00	0.00	0.01	0.00	0.00
F-147	J-64	J-141	0.40	0.00	0.00	0.00	0.00	0.00
F-148	J-134	O-RV-2	0.00	0.00	0.00	0.00	0.00	0.00
F-149	J-143	O-RV-1	0.00	0.00	0.00	0.00	0.00	0.00
F-15	J-126	J-91	1294.80	0.66	0.00	2.70	3.82	3.82
F-150-XXCV	J-141	J-134						
F-151	J-139	J-142	0.20	0.00	0.00	0.00	0.00	0.00
F-152	1570	J-144	1.90	0.00	0.00	0.01	0.00	0.00
F-153-XXCV	J-143	J-144						
F-154	I-RV-1	J-144	0.00	0.00	0.00	0.00	0.00	0.00
F-157	I-RV-2	J-141	0.00	0.00	0.00	0.00	0.00	0.00
F-1570	1716	1103	20.00	0.03	0.00	0.13	0.02	0.02
F-158	J-145I-18th St		0.00	0.00	0.00	0.00	0.00	0.00
F-159	J-145	J-146	0.00	0.00	0.00	0.00	0.00	0.00
F-160-XXCV	J-146	J-147						
F-161	J-146O-18th St		0.00	0.00	0.00	0.00	0.00	0.00
F-162	J-147	J-142	0.00	0.00	0.00	0.00	0.00	0.00
F-164	I-18th St	J-147	0.00	0.00	0.00	0.00	0.00	0.00
F-165	J-156	J-155	32.90	0.09	0.00	0.37	0.12	0.12
F-166	66	J-110	27.07	0.08	0.00	0.31	0.26	0.26
F-167	J-156	J-153	147.70	0.44	0.00	0.42	0.09	0.09
F-168	J-152	J-150	5.51	0.00	0.00	0.04	0.00	0.00
F-169	J-88	J-154	218.70	0.09	0.00	0.62	0.19	0.19
F-170	J-155	J-151	13.60	0.11	0.00	0.15	0.02	0.02
F-171	J-155	J-157	1.80	0.07	0.00	0.18	0.11	0.11
F-172	J-154	J-156	200.40	0.25	0.00	0.57	0.16	0.16
F-173	J-6	J-148	3.50	1.18	0.00	0.36	0.44	0.44
F-174	J-153	J-149	3.70	0.00	0.00	0.02	0.00	0.00
F-175	J-152	J-150	0.39	0.00	0.00	0.00	0.00	0.00
F-176	J-64	2076	9.31	0.01	0.00	0.06	0.01	0.01
F-178	1513	J-159	6.60	0.00	0.00	0.07	0.01	0.01
P-18	J-135I-South En		242.80	0.01	0.00	0.69	0.18	0.18
P-19	34	33	18.50	0.01	0.00	0.47	0.65	0.65
P-2	J-1	101	0.20	0.00	0.00	0.00	0.00	0.00
P-20	213	1576	16.10	0.00	0.00	0.05	0.00	0.00
P-25	J-30	2066	12.10	0.00	0.00	0.03	0.00	0.00
P-29	2063	J-8	55.80	0.06	0.00	0.23	0.06	0.06
P-3	O-Centrali	J-6	7.00	0.24	0.00	0.08	0.01	0.01
P-30	J-42	J-35	24.78	0.00	0.00	0.07	0.00	0.00
P-31	J-8	54	10.20	0.00	0.00	0.07	0.01	0.01
P-33	2072	J-42	42.40	0.00	0.00	0.12	0.01	0.01
P-34	J-42	1699	11.62	0.00	0.00	0.03	0.00	0.00
P-36	1322	2091	28.01	0.09	0.00	0.32	0.27	0.27
P-4	1570	J-7	29.10	0.02	0.00	0.12	0.02	0.02
P-40	10	J-44	34.03	0.06	0.00	0.22	0.07	0.07
P-42	J-45	J-44	19.11	0.01	0.00	0.12	0.02	0.02
P-43	O-South En	J-88	242.80	0.71	0.00	0.69	0.23	0.23
P-44	J-55	28	2.30	0.00	0.00	0.01	0.00	0.00
P-47	2132	J-57	56.74	0.00	0.00	0.36	0.18	0.18
P-48	41	J-90	0.10	0.00	0.00	0.00	0.00	0.00
P-49	2051	J-57	0.00	0.00	0.00	0.00	0.00	0.00
P-50	2052	J-57	0.00	0.00	0.00	0.00	0.00	0.00
P-51	O-18th St	J-142	0.00	0.00	0.00	0.00	0.00	0.00
P-53	J-4	1974	10.99	0.02	0.00	0.12	0.05	0.05
P-54	J-4	923	2.80	0.00	0.00	0.03	0.00	0.00
P-57	1217	I-AW-6	0.00	0.00	0.00	0.00	0.00	0.00
P-58	69	1217	4.05	0.00	0.00	0.03	0.00	0.00
P-6	J-88	J-11	2.80	0.00	0.00	0.02	0.00	0.00
P-61	J-58	68	13.76	0.01	0.00	0.16	0.03	0.03
P-62	J-61	J-136	0.80	0.00	0.00	0.01	0.00	0.00

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P-64	54	J-27	6.70	0.00	0.00	0.04	0.00	0.00
P-65	597	J-67	16.86	0.01	0.00	0.11	0.02	0.02
P-67	J-67	J-71	14.66	0.00	0.00	0.09	0.01	0.01
P-69	J-71	J-73	12.36	0.01	0.00	0.08	0.01	0.01
P-7	J-154	J-152	12.20	0.00	0.00	0.08	0.01	0.01
P-71	J-63	J-123	24.91	0.00	0.00	0.16	0.02	0.02
P-73	1678	J-74	7.50	0.00	0.00	0.09	0.02	0.02
P-74	J-74	J-77	5.80	0.00	0.00	0.07	0.01	0.01
P-75	I-AV-3	2120	0.00	0.00	0.00	0.00	0.00	0.00
P-76	J-78	408	13.54	0.00	0.00	0.09	0.01	0.01
P-77	J-78	1130	33.31	0.07	0.00	0.21	0.09	0.09
P-78	J-80	504	12.71	0.01	0.00	0.09	0.02	0.02
P-79	J-82	1396	2.50	0.00	0.00	0.03	0.00	0.00
P-80	1388	J-87	18.21	0.03	0.00	0.21	0.06	0.06
P-81	92	J-62	1.10	0.00	0.00	0.01	0.00	0.00
P-82	597	J-84	2.90	0.00	0.00	0.02	0.00	0.00
P-83	J-123	J-140	24.51	0.00	0.00	0.07	0.00	0.00
P-84	J-93	1971	0.10	0.00	0.00	0.00	0.00	0.00
P-86	I-High Lev	J-126	0.00	0.00	0.00	0.00	0.00	0.00
P-87	J-94	526	56.81	0.25	0.00	0.36	0.25	0.25
P-88	J-93	J-94	55.26	0.00	0.00	0.63	0.69	0.69
P-89	J-96inter-tie		2.80	0.00	0.00	0.01	0.00	0.00
P-9	J-2	2098	11.62	0.02	0.00	0.13	0.05	0.05
P-90	J-105	174	1.24	0.00	0.00	0.00	0.00	0.00
P-91	J-20	1981	17.49	0.01	0.00	0.20	0.11	0.11
P-92	J-21	J-20	32.26	0.05	0.00	0.37	0.36	0.36
P-93	J-99	568	1.61	0.00	0.00	0.01	0.00	0.00
P-94	J-99	556	18.62	0.00	0.00	0.12	0.01	0.01
P-95	J-99	566	2.90	0.00	0.00	0.02	0.00	0.00
P-96	J-100	2080	56.04	0.02	0.00	0.36	0.11	0.11
P-97	J-106	894	4.56	0.00	0.00	0.05	0.01	0.01
P-98	J-153I-Centrall		7.00	0.05	0.00	0.04	0.00	0.00
P-99	944	J-111	10.83	0.02	0.00	0.12	0.05	0.05
Valley Vie	O-Valley VYankis (Va		0.00	0.00	0.00	0.00	0.00	0.00
~@18th St -RV	I-18th St O-18th St							
~@AV-1-XX	I-AV-1 O-AV-1							
~@AV-2-XX	I-AV-2 O-AV-2							
~@AV-3-XX	I-AV-3 O-AV-3							
~@AV-4-XX	I-AV-4 O-AV-4							
~@AV-5-XX	I-AV-5 O-AV-5							
~@AV-6-XX	I-AV-6 O-AV-6							
~@High Lev-RV	I-High LevO-High Lev							
~@Valley V-RV	I-Valley VO-Valley V							

NODE RESULTS

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
5		0.30	397.81	243.40	154.41	66.91
6		5.50	397.81	244.40	153.41	66.48
9		2.30	397.49	205.80	191.69	83.07
10		7.90	397.49	213.70	183.79	79.64
11		0.10	397.61	236.90	160.71	69.64
12		3.20	397.61	236.50	161.11	69.82
13		0.10	397.04	198.90	198.14	85.86
14		1.80	397.05	201.40	195.65	84.78
15		6.80	397.62	186.10	211.52	91.66
16		1.30	397.61	186.10	211.51	91.66
17		8.80	396.37	175.70	220.67	95.62
18		1.90	396.37	171.90	224.47	97.27
19		1.20	396.35	165.30	231.05	100.12
22		2.90	397.14	186.50	210.64	91.28
23		6.40	397.13	187.70	209.43	90.75
24		1.60	635.11	604.50	30.61	13.26
26		7.40	397.67	240.30	157.37	68.19
28		1.70	397.67	322.60	75.07	32.53
29		0.60	397.67	319.00	78.67	34.09
31		2.00	397.06	216.80	180.26	78.11
32		4.80	397.21	214.70	182.51	79.09
33		0.40	396.70	183.00	213.70	92.60
34		3.00	396.71	183.50	213.21	92.39
36		3.80	396.80	194.40	202.40	87.71
37		0.50	397.03	319.00	78.03	33.81
38		3.10	397.03	290.50	106.53	46.16
40		4.30	397.11	190.80	206.31	89.40
41		0.30	397.80	219.10	178.70	77.44
43		0.10	398.45	253.50	144.95	62.81
46		5.50	397.39	229.90	167.49	72.58
47		1.80	635.05	544.40	90.65	39.28
48		0.50	635.05	543.60	91.45	39.63
49		12.00	397.92	243.00	154.92	67.13
50		0.90	397.92	244.20	153.72	66.61
51		5.90	397.71	240.00	157.71	68.34
52		1.30	397.71	261.50	136.21	59.02
54		3.00	397.26	209.30	187.96	81.45
56		0.90	397.10	193.00	204.10	88.44
59		0.30	397.04	252.50	144.54	62.64
60		1.10	397.04	252.90	144.14	62.46
65		5.80	396.99	192.40	204.59	88.66
66		1.80	396.92	191.30	205.62	89.10
68		3.70	396.52	205.20	191.32	82.90
69		2.70	396.52	208.70	187.82	81.39
70		0.70	397.71	285.20	112.51	48.75
72		15.30	398.26	255.00	143.26	62.08
75		12.70	397.96	247.70	150.26	65.11
76		25.70	397.97	256.00	141.97	61.52
83		0.10	397.70	221.90	175.80	76.18
85		0.10	397.70	222.10	175.60	76.10
86		4.70	397.70	222.40	175.30	75.97
89		3.90	397.20	225.60	171.60	74.36
92		15.30	396.63	192.40	204.23	88.50

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97	2.00	396.73	173.90	222.83	96.56
98	0.20	396.73	174.00	222.73	96.52
101	0.20	396.73	174.30	222.43	96.39
102	4.00	396.73	176.00	220.73	95.65
103	0.20	396.73	175.70	221.03	95.78
104	4.10	396.95	178.70	217.25	94.14
107	4.00	396.95	183.60	213.35	92.45
108	1.70	396.95	183.60	213.35	92.45
109	7.50	397.82	236.20	161.62	70.04
118	16.20	399.36	192.50	206.86	89.64
119	3.40	397.27	217.70	179.57	77.81
121	2.20	397.31	230.70	166.61	72.20
137	8.00	397.63	180.00	217.63	94.31
166	5.90	396.73	182.90	213.83	92.66
172	3.70	396.73	174.10	222.63	96.47
174	2.00	396.73	175.70	221.03	95.78
175	6.70	397.11	183.60	213.51	92.52
178	2.10	397.13	183.60	213.53	92.53
192	7.20	397.49	183.60	213.89	92.68
201	3.40	397.53	178.30	219.23	95.00
212	3.60	398.45	256.30	142.15	61.60
213	2.10	398.45	253.50	144.95	62.81
214	4.60	397.57	230.10	167.47	72.57
224	3.50	397.80	224.20	173.60	75.23
247	13.40	396.79	192.10	204.69	88.70
248	8.00	398.45	248.60	149.85	64.93
253	5.20	398.45	240.90	157.55	68.27
254	18.20	397.79	230.80	166.99	72.36
295	20.90	397.71	210.10	187.61	81.30
325	4.80	396.71	183.90	212.81	92.22
342	3.10	396.71	165.40	231.31	100.23
343	6.20	396.70	163.20	233.50	101.19
344	2.90	396.70	164.20	232.50	100.75
346	0.50	396.71	165.60	231.11	100.15
356	9.30	397.80	219.10	178.70	77.44
361	10.20	397.81	243.10	154.71	67.04
375	4.60	397.36	230.50	166.86	72.31
384	9.80	396.79	183.20	213.59	92.56
385	1.10	396.78	183.60	213.18	92.38
396	1.10	397.19	221.20	175.99	76.26
398	2.90	397.16	220.50	176.66	76.55
407	5.00	397.00	226.99	170.01	73.67
408	2.60	396.89	223.30	173.59	75.22
421	4.60	396.95	184.20	212.75	92.19
424	1.10	396.68	189.90	206.78	89.61
432	14.10	396.66	184.10	212.56	92.11
468	17.10	397.69	204.20	193.49	83.84
473	1.50	396.73	178.30	218.43	94.65
474	1.90	397.20	210.70	186.50	80.82
480	6.60	397.20	219.70	177.50	76.92
481	0.20	397.20	220.90	176.30	76.40
483	1.20	397.80	214.00	183.80	79.65
492	7.90	396.66	195.50	201.16	87.17
504	6.00	396.64	192.80	203.84	88.33
505	5.30	396.87	197.20	199.67	86.52
509	8.70	396.80	200.00	196.80	85.28
510	4.80	397.02	189.60	207.42	89.88
512	6.10	397.02	184.80	212.22	91.96
513	3.00	397.53	178.80	218.73	94.78
518	2.80	397.51	182.20	215.31	93.30
526	11.70	397.25	201.80	195.45	84.70
530	2.90	397.26	220.30	176.96	76.68
536	3.90	397.10	201.90	195.20	84.58
540	0.80	397.05	202.30	194.75	84.39
543	2.00	397.04	210.90	186.14	80.66
544	1.50	397.06	216.10	180.96	78.42
552	2.90	396.88	191.50	205.38	89.00
556	3.60	396.79	206.10	190.69	82.63
565	2.70	397.03	210.80	186.23	80.70
566	1.40	396.80	204.60	192.20	83.29
568	2.10	396.80	206.30	190.50	82.55
569	6.50	396.73	178.30	218.43	94.65
573	1.30	396.73	179.00	217.73	94.35
578	1.60	397.46	280.80	116.66	50.55
579	3.30	396.78	205.50	191.28	82.89
582	4.40	397.34	212.80	184.54	79.97
584	4.50	397.33	207.60	189.73	82.22
590	5.10	397.33	208.60	188.73	81.78
597	3.50	397.35	222.20	175.15	75.90
599	5.00	635.05	592.40	42.65	18.48
601	1.30	635.05	577.30	57.75	25.02
619	2.00	635.05	559.00	76.05	32.95
620	9.00	635.05	583.00	52.05	22.56
623	1.70	635.05	588.00	47.05	20.39
628	2.20	604.05	420.40	183.65	79.58
631	2.80	604.04	382.80	221.24	95.87
632	0.80	604.03	455.20	148.83	64.49
642	1.60	604.04	304.60	299.44	129.76
649	1.70	604.53	392.70	211.83	91.79
657	7.70	604.51	331.20	273.31	118.44
661	5.00	396.68	190.90	205.78	89.17
665	7.10	396.73	174.40	222.33	96.34
668	11.10	396.73	182.30	214.43	92.92
675	1.40	396.73	180.60	216.13	93.66
676	2.50	397.26	206.70	190.56	82.58
682	0.50	397.26	209.20	188.06	81.49
683	3.40	397.59	200.30	197.29	85.49
686	0.90	396.90	278.90	118.00	51.13
693	6.20	396.65	197.40	199.25	86.34
700	0.10	397.61	237.50	160.11	69.38
704	2.20	397.33	190.10	207.23	89.80
705	4.40	398.32	185.50	212.82	92.22
710	13.40	398.33	197.50	200.83	87.02
717	6.00	397.32	204.90	192.42	83.38
718	0.10	396.79	191.20	205.59	89.09

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726	1.50	396.66	190.00	206.66	89.55
780	8.00	397.68	195.00	202.68	87.83
781	0.10	398.45	252.20	146.25	63.38
784	5.10	398.45	258.80	138.65	60.08
788	14.90	398.45	258.50	139.95	60.65
791	4.60	398.45	256.00	142.45	61.73
792	0.30	398.45	254.90	143.55	62.21
797	3.80	398.45	255.30	143.15	62.03
800	3.50	396.73	177.30	219.43	95.09
802	0.80	396.73	178.00	218.73	94.78
803	6.00	397.13	217.90	179.23	77.67
807	6.90	397.07	272.60	124.47	53.94
808	4.40	397.16	215.50	181.66	78.72
813	4.20	397.12	244.90	152.22	65.96
815	3.20	397.13	219.20	177.93	77.10
817	4.10	397.14	275.20	121.94	52.84
827	5.90	397.13	186.80	210.33	91.14
828	2.70	397.16	192.50	204.66	88.69
831	1.70	397.08	216.90	180.18	78.08
842	3.10	397.06	234.00	163.06	70.66
844	4.30	397.07	260.00	137.07	59.40
856	2.70	397.15	194.40	202.75	87.86
860	2.40	397.31	230.20	167.11	72.42
865	2.50	397.04	195.90	201.14	87.16
868	2.60	397.04	197.00	200.04	86.68
872	1.00	397.04	199.50	197.54	85.60
881	2.50	396.76	199.80	196.96	85.35
885	2.90	396.76	204.20	192.56	83.44
893	2.60	396.80	198.10	198.70	86.10
894	1.00	396.80	206.30	190.50	82.55
899	5.90	396.92	192.10	204.82	88.75
901	5.80	396.93	189.00	207.93	90.10
906	2.10	397.03	292.50	104.53	45.30
910	1.50	397.03	294.90	102.13	44.26
916	5.00	397.03	222.40	174.63	75.67
922	1.00	397.03	238.30	158.73	68.78
923	3.30	396.83	182.20	214.63	93.01
929	0.70	396.92	181.60	215.32	93.30
937	3.20	396.77	183.80	212.97	92.29
944	3.60	396.79	196.50	200.29	86.79
945	3.20	396.81	192.00	204.81	88.75
954	2.70	396.80	193.70	203.10	88.01
958	6.00	396.81	201.60	195.21	84.59
961	1.40	396.80	205.40	191.40	82.94
962	3.60	396.73	179.30	217.43	94.22
964	0.20	396.73	179.40	217.33	94.18
975	6.30	396.71	184.50	212.21	91.96
979	1.30	396.55	173.70	222.85	96.57
994	5.30	397.03	192.30	204.73	88.71
1003	5.00	603.93	435.80	168.13	72.86
1023	6.00	603.92	389.60	214.32	92.87
1024	2.80	604.26	408.40	195.86	84.87
1032	4.10	603.92	455.00	148.92	64.53
1049	3.10	604.03	421.50	182.53	79.09
1050	5.70	396.72	188.20	208.52	90.36
1053	3.60	396.71	183.20	213.51	92.52
1056	1.80	396.75	192.00	204.75	88.72
1057	6.00	397.53	179.20	218.33	94.61
1060	5.90	397.56	196.50	201.06	87.12
1063	1.50	397.56	238.10	159.46	69.10
1064	2.70	396.75	181.30	215.45	93.36
1071	2.70	397.19	190.50	206.69	89.57
1084	10.80	396.95	198.50	198.45	86.00
1085	4.10	397.16	197.60	199.56	86.48
1089	2.20	397.14	190.70	206.44	89.46
1099	9.50	397.04	233.90	163.14	70.69
1100	0.60	466.49	339.70	126.79	54.94
1101	1.40	466.49	323.20	143.29	62.09
1103	5.00	635.03	346.40	288.63	125.07
1104	0.40	466.49	285.50	180.99	78.43
1107	2.90	396.83	211.40	185.43	80.35
1120	1.40	397.11	222.90	174.21	75.49
1121	2.00	396.52	205.30	191.22	82.86
1122	0.70	396.52	204.40	192.12	83.25
1125	1.80	396.81	205.00	191.81	83.12
1130	5.20	396.81	225.00	171.81	74.45
1134	6.50	397.32	202.90	194.42	84.25
1137	3.90	397.03	202.10	194.93	84.47
1156	5.60	397.10	184.90	212.20	91.95
1180	3.60	397.48	195.40	202.08	87.57
1181	3.20	397.13	186.00	211.13	91.49
1183	1.80	397.29	190.20	207.09	89.74
1184	5.40	396.66	189.70	206.96	89.68
1186	3.10	397.11	191.30	205.81	89.19
1210	4.10	397.66	215.60	182.06	78.89
1211	0.20	635.08	564.40	70.68	30.63
1214	1.80	635.20	607.60	27.60	11.96
1215	1.60	396.55	200.80	195.75	84.83
1217	3.70	396.52	207.80	188.72	81.78
1218	5.90	397.73	217.60	180.13	78.06
1223	2.40	397.19	187.20	209.99	91.00
1224	3.50	397.17	187.60	209.57	90.81
1229	3.50	397.16	224.40	172.76	74.86
1232	6.20	397.12	183.90	213.22	92.39
1235	4.80	396.68	197.20	199.48	86.44
1239	1.60	466.49	265.90	200.59	86.92
1240	0.10	635.20	608.90	26.30	11.40
1244	4.80	635.47	591.00	44.47	19.27
1251	5.80	635.58	622.30	13.28	5.76
1262	0.30	604.49	349.90	254.59	110.32
1270	1.60	397.13	184.30	212.83	92.23
1277	6.30	604.49	340.00	264.49	114.61
1284	4.50	397.36	224.00	173.36	75.12
1290	6.00	396.79	207.20	189.59	82.16
1293	3.10	396.80	206.60	190.20	82.42

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2020 Fireflow - Main Zone West

1295	3.70	396.73	200.40	196.33	85.08
1298	0.60	397.11	224.20	172.91	74.93
1309	6.10	396.63	185.00	211.63	91.71
1310	4.80	396.71	184.40	212.31	92.00
1314	3.90	396.62	183.00	213.62	92.57
1318	3.40	397.24	221.20	176.04	76.28
1322	2.90	396.99	194.60	202.39	87.70
1328	3.00	396.84	192.30	204.54	88.63
1333	2.90	397.17	191.30	205.87	89.21
1337	3.30	397.16	192.80	204.36	88.55
1338	7.40	397.12	257.70	139.42	60.41
1356	2.10	397.14	190.80	206.34	89.41
1359	0.70	397.16	193.30	203.86	88.34
1364	2.80	397.08	193.90	203.18	88.05
1366	4.30	396.81	190.60	206.21	89.36
1375	8.10	396.30	168.30	228.00	98.80
1387	2.60	396.55	182.40	214.15	92.80
1388	4.90	397.08	200.40	196.68	85.23
1392	4.20	397.30	220.30	177.00	76.70
1396	2.50	397.03	308.10	88.93	38.54
1409	4.80	397.07	222.20	174.87	75.78
1410	1.70	604.54	392.50	212.04	91.88
1456	2.70	396.77	183.20	213.57	92.55
1465	2.70	397.10	235.70	161.40	69.94
1483	4.90	396.68	193.40	203.28	88.09
1484	11.60	396.71	183.60	213.11	92.35
1497	2.20	396.70	167.20	229.50	99.45
1498	1.30	604.49	396.40	208.09	90.17
1502	3.20	604.49	385.30	219.19	94.98
1513	0.60	604.50	338.40	265.10	114.88
1517	4.50	396.77	205.40	191.37	82.93
1519	0.80	396.76	211.30	185.46	80.37
1524	1.00	635.11	615.60	19.51	8.45
1544	13.70	397.57	194.80	202.77	87.87
1547	11.00	397.57	208.00	189.57	82.15
1570	8.10	397.23	200.80	196.43	85.12
1575	6.50	396.71	171.60	225.11	97.55
1576	1.40	398.45	253.70	144.75	62.73
1580	1.50	398.45	245.80	152.65	66.15
1626	15.50	398.91	272.90	126.01	54.60
1627	9.10	399.66	289.00	110.66	47.95
1630	24.30	398.52	266.70	131.82	57.12
1636	155.80	397.75	245.70	152.05	65.89
1637	21.10	397.98	249.10	148.88	64.51
1647	21.50	397.81	236.20	161.61	70.03
1648	21.70	396.68	187.30	209.38	90.73
1657	5.80	396.70	163.30	233.40	101.14
1658	5.80	396.97	185.90	211.07	91.47
1674	6.70	396.73	178.00	218.73	94.78
1679	2.60	466.49	317.70	148.79	64.48
1689	2.50	466.49	323.60	142.89	61.92
1690	0.40	466.49	318.70	146.79	63.61
1698	4.30	398.45	256.80	141.65	61.38
1699	4.70	397.80	218.90	178.90	77.52
1700	2.20	397.80	216.20	181.60	78.69
1710	3.00	397.86	303.90	93.96	40.72
1711	0.60	397.59	208.80	187.79	81.37
1712	1.40	397.59	268.50	129.09	55.94
1713	1.30	635.08	571.10	63.98	27.73
1716	5.90	635.06	533.50	101.56	44.01
1719	0.50	635.06	516.50	118.56	51.38
1737	5.10	396.33	166.60	229.73	99.55
1742	8.10	396.71	183.60	213.11	92.35
1767	3.10	397.10	193.40	203.70	88.27
1773	3.40	399.55	272.20	127.35	55.18
1775	1.50	399.55	270.10	129.45	56.09
1776	4.00	399.55	269.20	130.35	56.48
1782	7.40	399.55	269.10	130.45	56.53
1788	5.20	399.55	269.00	130.55	56.57
1791	0.70	399.55	273.40	126.15	54.66
1793	0.90	399.55	270.60	128.95	55.88
1799	2.50	399.36	201.40	197.96	85.78
1800	2.20	396.94	166.10	230.84	100.03
1801	0.70	396.94	173.70	223.24	96.74
1805	2.10	396.94	178.70	217.24	94.14
1806	1.20	396.94	173.10	223.84	97.00
1808	1.10	396.94	178.80	217.14	94.09
1809	2.00	396.94	172.30	224.64	97.34
1810	3.60	396.95	178.50	217.45	94.23
1813	2.80	396.94	171.10	225.84	97.86
1814	4.80	396.94	167.10	229.84	99.60
1818	1.50	396.90	160.70	236.20	102.35
1821	4.10	396.94	168.80	227.14	98.43
1823	2.70	397.12	182.50	214.62	93.00
1826	3.10	397.16	183.30	213.86	92.67
1827	5.70	397.20	192.90	204.30	88.53
1831	1.70	397.75	234.10	163.65	70.91
1848	0.90	397.54	234.90	162.64	70.48
1860	3.80	397.61	237.60	160.01	69.34
1861	2.80	397.32	190.10	207.22	89.79
1868	0.40	396.33	164.90	231.43	100.29
1871	0.10	397.51	185.30	212.21	91.96
1873	2.40	396.79	198.40	198.39	85.97
1874	3.90	396.81	187.50	209.31	90.70
1875	3.80	396.80	186.60	210.20	91.09
1880	1.50	396.81	180.20	216.61	93.86
1881	1.10	396.86	183.10	213.76	92.63
1884	3.20	397.08	194.10	202.98	87.96
1885	0.20	396.92	195.20	201.72	87.41
1886	3.40	396.92	194.50	202.42	87.71
1887	3.30	396.80	198.50	198.30	85.93
1888	0.10	397.07	218.50	177.57	76.94
1889	1.20	397.07	222.30	174.77	75.73
1891	2.80	397.08	194.20	202.88	87.92
1894	0.60	397.03	190.70	206.33	89.41

2020 Fireflow - Main Zone West

1996	3.50	397.12	189.80	207.32	89.84
1997	3.40	397.16	191.50	205.66	89.12
2003	2.70	396.66	185.20	211.46	91.63
2007	2.50	397.20	200.60	196.60	85.19
2009	3.30	397.18	196.90	200.28	86.79
2010	3.90	397.27	191.70	205.57	89.08
2012	3.40	397.35	199.00	198.35	85.95
2013	2.90	397.14	200.10	197.04	85.38
2014	4.80	397.12	193.20	203.92	88.36
2016	4.50	397.12	222.30	174.82	75.76
2021	0.70	397.32	204.20	193.12	83.69
2023	0.50	396.52	206.90	189.62	82.17
2025	1.90	604.49	455.60	148.89	64.52
2028	1.10	604.47	520.90	83.57	36.21
2029	1.00	604.49	449.00	155.49	67.38
2030	0.60	604.48	460.10	144.38	62.57
2031	2.40	604.49	430.90	173.59	75.22
2032	0.70	604.49	484.00	120.49	52.21
2033	1.70	604.49	474.20	130.29	56.46
2047	0.60	466.49	309.00	157.49	68.25
2050	0.10	466.49	301.10	165.39	71.67
2051	0.00	397.56	229.60	167.96	72.78
2052	0.00	397.56	229.90	167.66	72.65
2053	3.60	397.49	220.60	176.89	76.65
2061	0.90	397.44	208.20	189.24	82.00
2063	6.30	397.32	205.00	192.32	83.34
2065	4.60	397.36	198.90	198.46	86.00
2066	3.40	397.70	222.20	175.50	76.05
2067	6.80	397.94	216.20	181.74	78.75
2072	6.50	397.80	221.90	175.90	76.22
2073	2.50	397.19	199.80	197.39	85.54
2074	4.00	397.80	220.90	176.90	76.66
2076	6.80	396.64	204.40	192.24	83.31
2078	3.20	397.06	199.20	197.86	85.74
2079	3.50	397.05	203.10	193.95	84.04
2080	4.10	396.84	191.60	205.24	88.94
2081	3.60	396.81	198.70	198.11	85.85
2083	6.90	397.03	255.40	141.63	61.37
2084	4.60	397.03	224.10	172.93	74.94
2086	4.70	397.46	230.30	167.16	72.44
2088	7.30	635.11	604.50	30.61	13.26
2090	7.80	604.54	391.30	213.24	92.40
2091	4.00	396.90	195.30	201.60	87.36
2092	2.00	398.45	251.60	146.85	63.64
2093	5.00	397.26	236.00	161.26	69.88
2094	5.60	397.17	188.50	208.67	90.42
2095	3.90	397.18	187.60	209.58	90.82
2096	2.70	397.17	196.50	200.67	86.96
2097	4.10	397.19	202.50	194.69	84.37
2098	4.30	396.76	202.10	194.66	84.35
2100	5.60	396.75	197.30	199.45	86.43
2101	6.60	397.04	270.60	126.44	54.79
2103	7.10	397.04	236.90	160.14	69.40
2104	3.20	397.32	200.50	196.82	85.29
2105	4.60	397.05	201.90	195.15	84.57
2106	2.20	396.80	192.10	204.70	88.71
2107	5.20	397.00	190.50	206.50	89.48
2109	3.80	397.28	190.80	206.48	89.47
2110	2.90	397.16	192.70	204.46	88.60
2111	2.60	397.17	191.00	206.17	89.34
2112	5.40	397.25	190.20	207.05	89.72
2113	4.50	397.34	195.50	201.84	87.47
2115	3.80	397.01	191.90	205.11	88.88
2117	3.30	397.53	217.50	180.03	78.01
2119	5.80	396.68	193.60	203.08	88.00
2120	3.10	466.49	268.60	197.89	85.75
2121	2.80	397.11	193.00	204.11	88.45
2122	4.80	396.71	183.70	213.01	92.31
2123	3.40	397.14	193.20	203.94	88.37
2125	1.00	396.80	206.20	190.60	82.59
2126	2.20	397.11	192.50	204.61	88.66
2127	6.90	396.58	203.70	192.88	83.58
2129	3.80	397.47	218.10	179.37	77.73
2130	3.00	396.80	198.00	198.80	86.15
2132	1.80	397.56	230.10	167.46	72.57
2133	3.40	635.05	578.00	57.05	24.72
2137	4.50	397.36	198.20	199.16	86.30
2138	6.20	397.20	221.50	175.70	76.14
I-18th St	0.00	397.35	218.20	179.15	77.63
O-18th St	0.00	397.35	218.20	179.15	77.63
3-in or sm	0.10	397.61	185.50	212.11	91.92
3-inch or	0.30	396.94	183.00	213.94	92.71
3-inch or	0.10	396.86	183.10	213.76	92.63
O-AV-1	0.00	397.03	283.80	113.23	49.07
I-AV-2	0.00	603.92	306.00	297.92	129.10
I-AV-3	0.00	466.49	253.40	213.09	92.34
O-AV-4	0.00	396.90	289.30	107.60	46.63
O-AV-5	0.00	397.35	225.30	172.05	74.56
O-AV-6	0.00	397.32	208.10	189.22	82.00
O-Centrali	----	541.19	333.50	207.69	90.00
O-Fairview	Fairview PRV	466.50	346.50	120.00	52.00
O-High Lev	High Level P	604.53	401.60	202.93	87.94
High Level	High Level R	605.00	605.00	0.00	0.00
Hillcrest		398.26	256.20	142.06	61.56
inter-tie		397.57	174.40	223.17	96.71
J-1		396.73	174.00	222.73	96.52
J-100		396.86	190.60	206.26	89.38
J-105		396.73	175.60	221.13	95.82
J-106		396.80	206.20	190.60	82.59
J-11		494.88	280.00	214.88	93.12
J-110		396.84	198.00	198.84	86.16
J-111		396.77	192.50	204.27	88.52
J-112		396.94	167.90	229.04	99.25
J-113		397.04	200.50	196.54	85.17
J-114		603.89	405.70	198.19	85.88

2020 Fireflow - Main Zone West

J-115	1.90	397.16	197.30	199.86	86.61	
J-116	1.90	397.18	207.10	190.08	82.37	
J-117	1.70	397.10	192.10	205.00	88.83	
J-120	2.40	397.10	237.50	159.60	69.16	
J-122	2.50	396.73	174.00	222.73	96.52	
J-123	0.40	396.78	224.70	172.08	74.57	
J-124	2.10	604.49	403.80	200.69	86.97	
J-125	2.00	604.39	383.00	221.39	95.94	
J-126	3.30	401.07	367.95	33.12	14.35	
J-127	22.40	397.75	225.20	172.55	74.77	
J-128	14.50	397.75	235.20	162.55	70.44	
J-129	8.40	396.75	184.80	211.95	91.84	
J-130	3.80	397.70	222.00	175.70	76.14	
J-131	0.60	604.49	418.00	186.49	80.81	
J-132	2.20	396.73	176.00	220.73	95.65	
J-133	0.90	604.50	339.60	264.90	114.79	
J-134	1.10	397.33	200.90	196.43	85.12	
J-135	3.50	399.56	288.30	111.26	48.21	
J-136	0.80	396.52	204.10	192.42	83.38	
J-138	1.00	396.78	219.60	177.18	76.78	
J-139	0.40	397.35	222.60	174.75	75.73	
J-140	0.50	396.78	218.20	178.58	77.39	
J-141	0.40	396.65	200.90	195.75	84.83	
J-142	0.20	397.35	218.20	179.15	77.63	
J-143	11.70	396.63	193.40	203.23	88.06	
J-144	1.90	397.23	193.40	203.83	88.33	
J-145	0.10	396.78	218.20	178.58	77.39	
J-146	0.00	396.78	218.20	178.58	77.39	
J-147	0.00	397.35	218.20	179.15	77.63	
J-148	3.50	539.78	498.90	40.88	17.71	
J-149	3.70	494.10	306.10	188.00	81.47	
J-150	5.90	494.79	272.40	222.39	96.37	
J-151	13.60	494.35	326.80	167.55	72.60	
J-152	6.30	494.79	272.40	222.39	96.37	
J-153	137.00	494.10	302.40	191.70	83.07	
J-154	6.10	494.79	267.60	227.19	98.45	
J-155	17.50	494.46	263.80	230.66	99.95	
J-156	19.80	494.54	261.30	233.24	101.07	
J-157	1.80	494.38	265.80	228.58	99.05	
J-159	0.00	604.50	343.00	261.50	113.32	
J-2	5.70	396.78	201.80	194.98	84.49	
J-20	2.20	396.87	182.90	213.97	92.72	
J-21	2.50	396.92	182.80	214.12	92.78	
J-25	5.00	604.50	311.10	293.40	127.14	
J-27	4.20	397.26	207.10	190.16	82.40	
J-3	3.40	396.81	182.20	214.61	93.00	
J-30	7.70	397.71	218.90	177.81	77.05	
J-35	8.20	397.80	222.10	175.70	76.14	
J-39	4.10	397.44	218.10	179.34	77.71	
J-4	2.50	396.83	184.40	212.43	92.05	
J-42	6.00	397.80	222.00	175.80	76.18	
J-44	6.20	397.43	208.40	189.03	81.91	
J-45	4.20	397.44	209.00	188.44	81.66	
J-53	9.60	397.86	294.30	103.56	44.88	
J-55	2.60	397.67	297.10	100.57	43.58	
J-57	1.20	397.56	229.20	168.36	72.96	
J-58	1.50	396.53	204.60	191.93	83.17	
J-6	3.50	540.96	473.40	67.56	29.27	
J-61	4.20	396.52	207.00	189.52	82.12	
J-62	1.10	396.63	191.50	205.13	88.89	
J-63	1.40	396.78	225.20	171.58	74.35	
J-64	4.10	396.65	202.30	194.35	84.22	
J-67	2.20	397.34	210.80	186.54	80.84	
J-7	3.50	397.21	214.70	182.51	79.09	
J-71	2.30	397.34	204.60	192.74	83.52	
J-73	6.40	397.33	199.60	197.73	85.68	
J-74	1.10	466.49	301.00	165.49	71.71	
J-77	0.60	466.49	296.10	170.39	73.84	
J-78	5.20	396.90	230.70	166.20	72.02	
J-79	2.80	396.88	223.40	173.48	75.17	
J-8	6.50	397.26	208.80	188.46	81.67	
J-80	5.00	396.65	190.70	205.95	89.24	
J-81	6.70	397.05	218.90	178.15	77.20	
J-82	6.60	397.03	257.90	139.13	60.29	
J-84	2.30	397.35	226.30	171.05	74.12	
J-87	4.20	397.04	194.40	202.64	87.81	
J-88	21.30	494.88	275.70	219.18	94.98	
J-90	0.10	397.80	219.10	178.70	77.44	
J-91	9.80	400.41	352.90	47.51	20.59	
J-93	1.70	397.51	187.50	210.01	91.00	
J-94	3.70	397.51	187.50	210.01	91.00	
J-95	13.30	397.59	189.50	208.09	90.17	
J-96	6.50	397.57	176.90	220.67	95.62	
J-99	1.10	396.80	205.50	181.30	82.90	
Kennicott	Kennicott Re	----	397.90	374.00	23.90	10.36
Main Reser	Main Reservo	----	401.50	383.30	18.20	7.89
physical d			397.19	222.00	175.19	75.91
I-RV-1			397.23	193.40	203.83	88.33
I-RV-2			396.65	200.90	195.75	84.83
O-South En			495.59	287.90	207.69	90.00
O-Valley V	Valley View		635.90	308.10	327.80	142.05
Yankis (Va	Yankis (Vall	----	635.90	631.50	4.40	1.91
Yates Rese	500,000 gal	----	401.50	376.00	25.50	11.05
O-18th St		----	396.78	218.20	178.58	77.39
I-18th St			396.78	218.20	178.58	77.39
I-AV-1			603.89	283.80	320.09	138.70
O-AV-2			397.03	306.00	91.03	39.45
O-AV-3			397.36	253.40	143.96	62.38
I-AV-4			604.49	289.30	315.19	136.58
I-AV-5			396.78	225.30	171.48	74.31
I-AV-6			396.52	208.10	188.42	81.65
I-Central1			494.05	333.50	160.55	69.57
I-Fairview	Fairview PRV		635.03	346.50	288.53	125.03
I-High Lev	High Level P		401.07	401.60	-0.53	-0.23
O-RV-1		----	396.63	193.40	203.23	88.06

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O-RV-2		----	397.33	200.90	196.43	85.12
I-South En		0.00	399.55	287.90	111.65	48.38
I-Valley V	Valley View	0.00	397.03	308.10	88.93	38.54

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
O-Valley Vie	142.05	I-High Level	-0.23
I-AV-1	138.70	Yankis (Vall)	1.91
I-AV-4	136.58	1251	5.76
642	129.76	Main Reservo	7.89
I-AV-2	129.10	1524	8.45

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-122	2.71	85	0.00
P-15	2.70	24	0.00
1479	2.29	45	0.00
107	1.83	46	0.00
1458	1.50	P-117	0.00

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-122	3.83	45	0.00
P-15	3.82	46	0.00
107	2.61	P-117	0.00
1479	1.71	24	0.00
712	1.06	85	0.00

HL / 1000

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-122	3.83	45	0.00
P-15	3.82	46	0.00
107	2.61	P-117	0.00
1479	1.71	24	0.00
712	1.06	85	0.00

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
18th St PRV	PRV-1	74.30	CLOSED	77.63	77.39	0.00
18th St Pump	FCV-2	0.00	BOOSTED	77.39	77.63	0.00
Centralia Al	PRV-2	90.00	BOOSTED	69.57	90.00	7.00
Fairview PRV	PRV-1	52.00	ACTIVATED	125.03	52.00	15.00
High Level P	FCV-2	0.00	BOOSTED	-0.23	87.94	0.00
RV-1	PRV-1	85.00	CLOSED	88.33	88.06	0.00
RV-2	PRV-1	81.80	CLOSED	84.83	85.12	0.00
South End Pu	PRV-2	90.00	BOOSTED	48.38	90.00	242.80
Valley View	FCV-2	0.00	BOOSTED	38.54	142.05	0.00

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
High Level	90.10	High Level R
Kennicott R	227.72	Kennicott Re
Main Reserv	1298.10	Main Reservo
Yankis (Val)	75.00	Yankis (Vall)
Yates Reser	808.58	500,000 gal

NET SYSTEM INFLOW = 2499.50
 NET SYSTEM OUTFLOW = 0.00
 NET SYSTEM DEMAND = 2499.50

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 FireFlow/Hydrant Report
 Fireflow/Hydrant Report:

Scenario: No Title
 Global Demand Factor for this Scenario: 1.000

Specified Minimum Pressure (psi): 20.0

Minimum Static Pressure (psi) : 21.0

Flow-1: Flowrate to maintain the specified pressure at (hydrant) node
 Node-2: Node that has a lower pressure than specified value at Flow-1
 Flow-2: Flowrate to maintain the specified pressure at Node-2

Hose Constant = 0.00

Hydrant Node	Hydrant Constant	Elevation	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2 gpm	Flow Capacity	NFPA Color
H-433	0.0	199.3	85.7	2562.0	2338.0	37	2338.0	BLUE
H-370	0.0	165.3	100.1	148.9			148.9	RED
H-514	0.0	193.3	88.3	3746.8			3746.8	BLUE
H-513	0.0	191.2	89.2	3360.8			3360.8	BLUE
H-178	0.0	205.2	82.9	943.2	931.7	69	931.7	ORANGE
H-359	0.0	174.0	96.5	2790.4			2790.4	BLUE
H-321	0.0	175.7	95.8	2993.7			2993.7	BLUE
H-441	0.0	217.5	77.9	5787.4	2705.5	37	2705.5	BLUE
H-298	0.0	203.6	84.8	2885.8			2885.8	BLUE
H-505	0.0	218.2	78.0	9054.2	3841.6	37	3841.6	BLUE
H-363	0.0	183.5	92.4	3615.0	3168.9	37	3168.9	BLUE
H-334	0.0	178.3	94.7	3769.4	3215.4	37	3215.4	BLUE
H-335	0.0	178.6	94.5	3789.2	3213.6	37	3213.6	BLUE
H-344	0.0	174.9	96.1	3396.9	3242.9	37	3242.9	BLUE
H-330	0.0	183.6	92.5	4570.7	3791.9	1712	3791.9	BLUE
H-329	0.0	182.6	93.0	4687.6	3769.0	1712	3769.0	BLUE
H-324	0.0	195.5	87.5	4733.1	3554.6	1712	3554.6	BLUE
H-308	0.0	185.5	91.9	4708.9	3126.6	1712	3126.6	BLUE
H-309	0.0	189.9	90.0	3572.5	2421.0	1712	2421.0	BLUE
H-365	0.0	165.8	100.1	3490.1	3168.5	37	3168.5	BLUE
H-247	0.0	221.7	76.0	4953.2	3319.3	1396	3319.3	BLUE
H-248	0.0	227.8	73.3	4334.5	3702.8	686	3702.8	BLUE
H-231	0.0	191.1	89.1	3901.8			3901.8	BLUE
H-341	0.0	174.8	96.2	3463.9	3423.6	473	3423.6	BLUE
H-342	0.0	178.0	94.8	3326.5	3241.1	37	3241.1	BLUE
H-343	0.0	178.1	94.7	3273.1			3273.1	BLUE
H-302	0.0	179.5	94.5	1634.1			1634.1	BLUE
H-301	0.0	180.4	94.1	2004.4			2004.4	BLUE
H-304	0.0	182.2	93.3	3859.8	3453.8	1712	3453.8	BLUE
H-268	0.0	191.5	88.9	3690.7			3690.7	BLUE
H-269	0.0	189.9	89.6	4121.9			4121.9	BLUE
H-440	0.0	207.1	82.4	4469.5	2558.1	37	2558.1	BLUE
H-439	0.0	201.9	84.6	4527.4	2462.6	37	2462.6	BLUE
H-438	0.0	207.3	82.2	3802.9	2303.1	37	2303.1	BLUE
H-443	0.0	213.1	79.7	3451.3	1902.9	37	1902.9	BLUE
H-397	0.0	191.3	89.1	3830.1	2539.7	37	2539.7	BLUE
H-336	0.0	178.6	94.5	3423.1	3217.1	37	3217.1	BLUE
H-337	0.0	179.0	94.4	2828.5			2828.5	BLUE
H-239	0.0	195.4	87.3	3208.4			3208.4	BLUE
H-238	0.0	192.6	88.5	3292.9			3292.9	BLUE
H-338	0.0	175.3	96.0	3393.4	3243.2	37	3243.2	BLUE
H-339	0.0	181.9	93.1	3123.8			3123.8	BLUE
H-340	0.0	180.7	93.6	2529.9			2529.9	BLUE
H-310	0.0	191.7	89.2	3206.3	2187.7	1712	2187.7	BLUE
H-348	0.0	177.9	94.8	2217.9			2217.9	BLUE
H-500	0.0	209.1	81.5	2084.3			2084.3	BLUE
H-475	0.0	197.3	86.6	3662.3	3003.6	37	3003.6	BLUE
H-512	0.0	189.7	89.9	886.7			886.7	ORANGE
H-442	0.0	216.1	78.4	3157.9	1957.5	37	1957.5	BLUE
H-454	0.0	243.2	66.7	1723.9	1396.2	37	1396.2	GREEN
H-455	0.0	258.6	59.6	1607.5	1269.4	37	1269.4	GREEN
H-469	0.0	197.3	86.6	2153.9			2153.9	BLUE
H-434	0.0	200.8	85.0	3158.8	2353.3	37	2353.3	BLUE
H-376	0.0	199.8	85.3	1469.0			1469.0	GREEN
H-405	0.0	197.6	86.3	2655.2			2655.2	BLUE
H-407	0.0	183.2	92.6	2173.2			2173.2	BLUE
H-453	0.0	232.3	71.4	2361.4	1546.1	37	1546.1	BLUE
H-446	0.0	219.6	76.9	1370.2	1255.2	922	1255.2	GREEN
H-447	0.0	238.3	68.8	920.1			920.1	ORANGE
H-388	0.0	182.1	93.1	1836.7			1836.7	BLUE
H-377	0.0	195.7	87.1	1472.8			1472.8	GREEN
H-393	0.0	206.1	82.6	2932.3	2769.5	37	2769.5	BLUE
H-333	0.0	179.3	94.2	3104.9			3104.9	BLUE
H-408	0.0	183.6	92.5	2571.1			2571.1	BLUE
H-404	0.0	193.7	88.0	1967.0			1967.0	BLUE
H-424	0.0	193.2	88.3	3393.3	2591.2	37	2591.2	BLUE
H-61	0.0	194.7	87.6	2091.4			2091.4	BLUE
H-332	0.0	183.2	92.5	857.1			857.1	ORANGE
H-375	0.0	183.2	92.6	3393.8	3190.0	37	3190.0	BLUE
H-325	0.0	195.5	87.2	2034.2			2034.2	BLUE
H-534	0.0	166.1	99.9	1133.0	1079.9	1064	1079.9	GREEN
H-533	0.0	182.6	92.8	1218.1			1218.1	GREEN
H-459	0.0	203.8	83.8	1296.3			1296.3	GREEN
H-457	0.0	210.9	80.7	1262.1			1262.1	GREEN
H-327	0.0	197.2	86.6	1465.7			1465.7	GREEN
H-328	0.0	197.5	86.4	1719.6			1719.6	BLUE
H-499	0.0	197.8	86.4	2451.3			2451.3	BLUE
H-243	0.0	234.2	70.6	2445.5	1504.7	1396	1504.7	BLUE
H-244	0.0	248.8	64.2	1681.8			1681.8	BLUE
H-176	0.0	205.2	82.9	807.4			807.4	ORANGE
H-216	0.0	225.0	74.5	2635.1			2635.1	BLUE
H-217	0.0	209.1	81.3	1104.5			1104.5	GREEN
H-240	0.0	200.9	84.9	3309.4			3309.4	BLUE
H-252	0.0	191.4	89.0	3716.2			3716.2	BLUE
H-497	0.0	188.7	90.3	2175.3			2175.3	BLUE
H-515	0.0	191.5	89.2	3269.7			3269.7	BLUE
H-496	0.0	187.4	90.9	3614.6			3614.6	BLUE
H-494	0.0	193.1	88.4	3590.8	3071.4	37	3071.4	BLUE
H-493	0.0	191.5	89.1	3290.7	3185.7	37	3185.7	BLUE

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H-516	0.0	190.8	89.5	3284.8			3284.8	BLUE
H-520	0.0	198.9	86.0	3916.2			3916.2	BLUE
H-517	0.0	198.4	86.2	3695.5			3695.5	BLUE
H-511	0.0	195.3	87.6	4358.4	3656.0	37	3656.0	BLUE
H-477	0.0	191.0	89.3	3416.2	3060.5	37	3060.5	BLUE
H-481	0.0	184.9	92.0	2000.6			2000.6	BLUE
H-482	0.0	184.8	92.0	1987.7			1987.7	BLUE
H-483	0.0	184.5	92.1	1977.9			1977.9	BLUE
H-484	0.0	183.2	92.7	1949.1			1949.1	BLUE
H-485	0.0	183.6	92.5	2462.9			2462.9	BLUE
H-487	0.0	184.9	92.0	2417.1			2417.1	BLUE
H-488	0.0	185.2	91.8	2182.1			2182.1	BLUE
H-489	0.0	185.2	91.8	2208.2			2208.2	BLUE
H-518	0.0	214.5	79.4	5106.1	3801.0	37	3801.0	BLUE
H-180	0.0	201.3	84.6	1164.2	1143.7	69	1143.7	GREEN
H-177	0.0	204.6	83.2	916.8			916.8	ORANGE
H-504	0.0	215.4	79.0	4956.4	3385.1	37	3385.1	BLUE
H-503	0.0	196.0	87.3	2222.9			2222.9	BLUE
H-502	0.0	191.3	89.3	2878.2			2878.2	BLUE
H-501	0.0	213.8	79.5	2668.5			2668.5	BLUE
H-486	0.0	184.8	92.0	2382.8			2382.8	BLUE
H-490	0.0	185.2	91.8	1260.7			1260.7	GREEN
H-491	0.0	184.5	92.1	1104.0			1104.0	GREEN
H-291	0.0	236.9	69.4	1892.1			1892.1	BLUE
H-292	0.0	232.8	71.2	1436.3			1436.3	GREEN
H-185	0.0	197.4	86.3	2137.0			2137.0	BLUE
H-188	0.0	199.3	85.5	2001.8			2001.8	BLUE
H-187	0.0	205.0	83.1	2639.1			2639.1	BLUE
H-237	0.0	199.1	85.7	756.0			756.0	ORANGE
H-230	0.0	193.6	88.0	1784.8			1784.8	BLUE
H-234	0.0	200.4	85.1	758.7			758.7	ORANGE
H-242	0.0	224.2	74.9	1651.6			1651.6	BLUE
H-287	0.0	183.9	92.2	1083.9			1083.9	GREEN
H-288	0.0	187.1	90.8	712.2			712.2	ORANGE
H-182	0.0	207.5	81.9	687.5			687.5	ORANGE
H-181	0.0	206.8	82.2	846.1			846.1	ORANGE
H-463	0.0	257.7	60.4	1396.8			1396.8	GREEN
H-464	0.0	284.4	48.8	414.8			414.8	RED
H-300	0.0	195.2	87.7	607.3	562.2	1063	562.2	ORANGE
H-299	0.0	183.7	92.9	824.7			824.7	ORANGE
H-222	0.0	195.4	87.2	1899.3			1899.3	BLUE
H-229	0.0	197.2	86.4	825.3			825.3	ORANGE
H-228	0.0	191.9	88.7	1151.1			1151.1	GREEN
H-495	0.0	192.4	88.7	1667.0			1667.0	BLUE
H-430	0.0	194.2	87.9	1942.8			1942.8	BLUE
H-381	0.0	190.9	89.2	1737.0			1737.0	BLUE
H-382	0.0	192.0	88.7	981.2			981.2	ORANGE
H-372	0.0	166.7	99.5	434.4			434.4	RED
H-371	0.0	169.4	98.3	449.5			449.5	RED
H-519	0.0	200.8	85.1	2554.6			2554.6	BLUE
H-241	0.0	205.5	82.9	1016.4			1016.4	GREEN
H-186	0.0	195.3	87.3	800.5			800.5	ORANGE
H-233	0.0	197.7	86.2	720.0			720.0	ORANGE
H-232	0.0	193.8	87.9	1521.8			1521.8	BLUE
H-366	0.0	164.4	100.7	1924.7	1908.2	1497	1908.2	BLUE
H-367	0.0	167.0	99.5	636.3			636.3	ORANGE
H-314	0.0	185.3	92.0	3074.9	2353.8	1712	2353.8	BLUE
H-319	0.0	208.0	82.1	2324.7			2324.7	BLUE
H-347	0.0	195.7	87.5	2391.3	2345.5	1547	2345.5	BLUE
H-175	0.0	182.5	93.2	2452.0	2345.5	1547	2345.5	BLUE
H-322	0.0	177.3	95.4	2429.0	2345.5	1547	2345.5	BLUE
H-318	0.0	181.8	93.5	2462.5	2378.2	1547	2378.2	BLUE
H-317	0.0	176.3	95.9	2354.9			2354.9	BLUE
H-316	0.0	175.0	96.4	2353.1			2353.1	BLUE
H-315	0.0	181.0	93.8	2391.1	2359.5	1547	2359.5	BLUE
H-349	0.0	182.9	92.7	3197.7			3197.7	BLUE
H-350	0.0	182.5	92.8	3188.1			3188.1	BLUE
H-351	0.0	180.5	93.7	3186.4			3186.4	BLUE
H-352	0.0	179.0	94.4	3192.2			3192.2	BLUE
H-220	0.0	177.7	94.9	3170.7			3170.7	BLUE
H-320	0.0	176.1	95.6	3118.1			3118.1	BLUE
H-356	0.0	175.1	96.0	3003.1			3003.1	BLUE
H-271	0.0	187.8	90.5	3640.8	3616.7	92	3616.7	BLUE
H-272	0.0	184.5	91.9	3674.2	3579.4	89	3579.4	BLUE
H-274	0.0	184.5	91.9	3667.3	3551.5	89	3551.5	BLUE
H-273	0.0	185.1	91.7	3652.4	3518.2	89	3518.2	BLUE
H-275	0.0	186.3	91.1	3632.5	3493.4	89	3493.4	BLUE
H-276	0.0	186.4	91.1	3625.7	3460.8	89	3460.8	BLUE
H-277	0.0	186.7	91.0	3615.6	3412.2	89	3412.2	BLUE
H-278	0.0	186.5	91.1	3615.1	3378.7	89	3378.7	BLUE
H-285	0.0	188.5	90.2	3588.2	3346.0	89	3346.0	BLUE
H-283	0.0	189.6	89.7	3573.7	3313.8	89	3313.8	BLUE
H-284	0.0	191.6	88.8	3549.0	3282.3	89	3282.3	BLUE
H-286	0.0	193.1	88.2	3531.3	3255.9	89	3255.9	BLUE
H-281	0.0	193.4	88.1	3529.4	3231.9	89	3231.9	BLUE
H-280	0.0	192.7	88.4	3544.3	3188.5	89	3188.5	BLUE
H-364	0.0	169.2	98.6	3761.5	3168.5	37	3168.5	BLUE
H-267	0.0	188.8	90.1	4588.5	3916.7	1396	3916.7	BLUE
H-266	0.0	185.3	91.6	4543.4	3900.5	1396	3900.5	BLUE
H-265	0.0	183.6	92.4	4522.2	3890.6	1396	3890.6	BLUE
H-264	0.0	183.6	92.4	4494.8	3883.2	1396	3883.2	BLUE
H-263	0.0	183.6	92.4	4481.3	3878.4	1396	3878.4	BLUE
H-262	0.0	183.6	92.4	4467.0	3870.5	1396	3870.5	BLUE
H-259	0.0	183.6	92.4	4464.1	3865.6	1396	3865.6	BLUE
H-260	0.0	183.6	92.4	4467.0	3860.0	1396	3860.0	BLUE
H-261	0.0	183.6	92.4	4473.8	3856.1	1396	3856.1	BLUE
H-256	0.0	184.9	91.8	4464.4	3852.3	1396	3852.3	BLUE
H-257	0.0	186.8	91.0	4445.4	3849.5	1396	3849.5	BLUE
H-258	0.0	189.5	89.8	4417.1	3846.7	1396	3846.7	BLUE
H-535	0.0	176.4	95.5	2996.5			2996.5	BLUE
H-536	0.0	175.9	95.7	2640.7			2640.7	BLUE
H-537	0.0	175.1	96.0	2423.0			2423.0	BLUE
H-538	0.0	175.5	95.9	2187.8			2187.8	BLUE
H-539	0.0	177.2	95.1	2040.6			2040.6	BLUE
H-540	0.0	173.0	96.9	1929.5			1929.5	BLUE

2020 Fireflow - Main Zone West

H-541	0.0	177.2	95.1	1796.3			1796.3	BLUE
H-402	0.0	186.0	91.4	4123.6	2809.1	37	2809.1	BLUE
H-423	0.0	176.7	95.3	3166.7			3166.7	BLUE
H-346	0.0	176.0	95.6	3264.5			3264.5	BLUE
H-311	0.0	209.8	81.4	1887.6	1541.5	1712	1541.5	BLUE
H-312	0.0	200.3	85.5	2163.0	1541.5	1712	1541.5	BLUE
H-313	0.0	266.1	57.0	1349.0	1326.6	1712	1326.6	GREEN
H-374	0.0	183.7	92.3	1166.5			1166.5	GREEN
H-373	0.0	168.3	98.8	434.6			434.6	RED
H-368	0.0	184.4	92.0	3714.5	3150.8	37	3150.8	BLUE
H-361	0.0	183.8	92.3	3808.8	3166.3	37	3166.3	BLUE
H-478	0.0	190.6	89.5	4290.9	2980.8	37	2980.8	BLUE
H-476	0.0	192.8	88.5	3566.1	3014.9	37	3014.9	BLUE
H-413	0.0	172.5	97.3	2874.9	2854.23-inch or		2854.2	BLUE
H-419	0.0	181.7	93.3	2464.5	2453.83-inch or		2453.8	BLUE
H-410	0.0	178.3	94.7	3201.8	2826.3	37	2826.3	BLUE
H-411	0.0	176.1	95.7	3136.7	3067.23-inch or		3067.2	BLUE
H-416	0.0	167.1	99.6	2582.6			2582.6	BLUE
H-412	0.0	168.9	98.8	3048.6	2949.63-inch or		2949.6	BLUE
H-414	0.0	167.4	99.5	2841.5			2841.5	BLUE
H-331	0.0	182.1	93.1	4369.4	3826.5	1712	3826.5	BLUE
H-387	0.0	180.3	93.9	4138.9	3285.4	37	3285.4	BLUE
H-384	0.0	186.3	91.2	1506.3			1506.3	BLUE
H-385	0.0	186.4	91.2	1499.0			1499.0	GREEN
H-386	0.0	181.5	93.3	1318.9			1318.9	GREEN
H-420	0.0	191.0	89.3	2034.1			2034.1	BLUE
H-480	0.0	189.0	90.2	2463.2			2463.2	BLUE
H-270	0.0	185.4	91.5	1300.5			1300.5	GREEN
H-471	0.0	200.0	85.5	5428.2	2959.3	37	2959.3	BLUE
H-293	0.0	218.7	77.3	1194.6			1194.6	GREEN
H-225	0.0	203.7	83.6	1299.8			1299.8	GREEN
H-226	0.0	193.5	88.0	844.3			844.3	ORANGE
H-307	0.0	187.1	91.2	3727.7	3167.9	1712	3167.9	BLUE
H-369	0.0	175.2	95.8	624.2			624.2	ORANGE
H-379	0.0	197.4	86.4	2738.0			2738.0	ORANGE
H-452	0.0	273.4	53.6	1072.2	685.2	37	685.2	ORANGE
H-362	0.0	183.8	92.3	3710.8	3168.7	37	3168.7	BLUE
H-250	0.0	221.2	76.3	5970.8	3434.8	1396	3434.8	BLUE
H-467	0.0	234.4	70.6	2737.2			2737.2	BLUE
H-437	0.0	199.9	85.4	4454.0	2429.8	37	2429.8	BLUE
H-399	0.0	210.0	81.0	4101.1	1873.5	37	1873.5	BLUE
H-400	0.0	205.6	82.9	3599.7	2072.9	37	2072.9	BLUE
H-398	0.0	199.0	85.8	3613.8	2236.8	37	2236.8	BLUE
H-431	0.0	192.9	88.5	3439.0	2842.0	37	2842.0	BLUE
H-428	0.0	194.5	87.8	4063.8	2493.8	37	2493.8	BLUE
H-391	0.0	182.0	93.1	1839.2			1839.2	BLUE
H-406	0.0	199.0	85.7	2475.0			2475.0	BLUE
H-421	0.0	187.4	90.8	4998.3	2833.4	37	2833.4	BLUE
H-303	0.0	178.9	94.7	2964.9			2964.9	BLUE
H-251	0.0	202.8	84.2	4287.7	3571.4	1396	3571.4	BLUE
H-510	0.0	214.8	79.3	8161.9	3767.1	37	3767.1	BLUE
H-492	0.0	187.6	90.8	3228.2			3228.2	BLUE
H-479	0.0	187.2	91.0	2403.0			2403.0	BLUE
H-221	0.0	197.4	86.4	3193.0			3193.0	BLUE
H-425	0.0	208.0	81.8	2860.6			2860.6	BLUE
H-255	0.0	221.2	76.3	6100.9	3536.1	1396	3536.1	BLUE
H-254	0.0	194.6	87.7	2980.1			2980.1	BLUE
H-253	0.0	193.2	88.2	4306.7	3798.9	1396	3798.9	BLUE
H-465	0.0	245.4	65.7	2031.3			2031.3	BLUE
H-380	0.0	190.4	89.4	2153.4			2153.4	BLUE
H-523	0.0	220.3	76.7	6297.9	3644.9	1396	3644.9	BLUE
H-522	0.0	218.8	77.4	6559.2	3754.5	1396	3754.5	BLUE
H-219	0.0	205.6	82.8	3097.4	3074.3	1519	3074.3	BLUE
H-426	0.0	185.0	91.9	4518.1	2826.3	37	2826.3	BLUE
H-427	0.0	166.1	100.0	3000.7	2843.33-inch or		2843.3	BLUE
H-415	0.0	171.1	97.9	2882.5	2773.03-inch or		2773.0	BLUE
H-417	0.0	176.2	95.7	2746.9	2685.93-inch or		2685.9	BLUE
H-418	0.0	179.4	94.3	2594.0	2563.13-inch or		2563.1	BLUE
H-409	0.0	180.8	93.7	3276.6	2826.3	37	2826.3	BLUE
H-383	0.0	194.1	87.8	2063.9			2063.9	BLUE
H-422	0.0	192.8	88.5	5342.2	2851.6	37	2851.6	BLUE
H-355	0.0	194.5	87.7	2027.9			2027.9	BLUE
H-472	0.0	217.7	77.8	6297.3	2934.2	37	2934.2	BLUE
H-218	0.0	211.0	80.5	3370.1			3370.1	BLUE
H-236	0.0	207.2	82.2	2254.3			2254.3	BLUE
H-223	0.0	204.0	83.5	3007.3			3007.3	BLUE
H-227	0.0	204.2	83.4	2756.2			2756.2	BLUE
H-436	0.0	203.1	84.0	4335.3	2098.2	37	2098.2	BLUE
H-396	0.0	191.6	88.9	3750.5	2638.1	37	2638.1	BLUE
H-395	0.0	197.6	86.3	3555.8	2709.9	37	2709.9	BLUE
H-403	0.0	200.7	85.0	2855.8	2710.0	37	2710.0	BLUE
H-444	0.0	226.7	73.8	2844.0	1349.5	37	1349.5	GREEN
H-448	0.0	247.5	64.8	1408.3	1251.5	37	1251.5	GREEN
H-445	0.0	217.1	78.0	1698.9	1340.1	37	1340.1	GREEN
H-249	0.0	197.3	86.5	3856.5	3713.2	1396	3713.2	BLUE
H-466	0.0	270.6	54.8	1970.4			1970.4	BLUE
H-468	0.0	231.6	71.8	2075.7			2075.7	BLUE
H-498	0.0	187.9	90.7	3748.4	3561.3	37	3561.3	BLUE
H-392	0.0	205.3	83.0	2090.8			2090.8	BLUE
H-378	0.0	202.1	84.4	2591.8			2591.8	BLUE
H-326	0.0	197.4	86.4	2442.3			2442.3	BLUE
H-508	0.0	271.9	54.2	1562.2			1562.2	BLUE
H-507	0.0	278.1	51.5	1440.4			1440.4	GREEN
H-290	0.0	259.7	59.5	1173.6			1173.6	GREEN
H-289	0.0	266.5	56.6	1126.1	1005.5	1396	1005.5	GREEN
H-235	0.0	207.3	82.1	2112.5			2112.5	BLUE
H-432	0.0	192.8	88.5	4063.9	2873.6	37	2873.6	BLUE
H-474	0.0	193.5	88.2	6193.8	2940.4	37	2940.4	BLUE
H-473	0.0	196.1	87.1	6200.6	2948.3	37	2948.3	BLUE
H-429	0.0	194.1	88.0	5747.7	2889.3	37	2889.3	BLUE
H-358	0.0	173.7	96.6	2903.5	2881.7	J-132	2881.7	BLUE
H-435	0.0	202.3	84.4	2292.4	2220.7	37	2220.7	BLUE
H-470	0.0	207.1	82.4	2081.1			2081.1	BLUE
H-509	0.0	241.0	67.6	2180.7	2052.4	807	2052.4	BLUE
H-506	0.0	267.8	56.0	1599.5	1568.1	807	1568.1	BLUE

2020 Fireflow - Main Zone West

H-521	0.0	218.0	77.8	6869.4	3867.5	1396	3867.5	BLUE
H-360	0.0	173.9	96.6	2851.1	2831.5	J-132	2831.5	BLUE
H-450	0.0	274.6	53.1	1439.5	1157.4	37	1157.4	GREEN
H-449	0.0	260.6	59.1	1817.7	1157.4	37	1157.4	GREEN
H-456	0.0	295.7	43.9	445.3			445.3	RED
H-353	0.0	191.3	89.1	3378.2	2739.8	37	2739.8	BLUE
H-184	0.0	205.5	82.8	2238.2			2238.2	BLUE
H-224	0.0	205.4	82.9	2408.6			2408.6	BLUE
H-357	0.0	174.1	96.5	2885.3			2885.3	BLUE
H-390	0.0	182.2	93.0	2004.0			2004.0	BLUE
H-532	0.0	208.4	81.5	915.6			915.6	ORANGE
H-179	0.0	209.3	81.1	919.8			919.8	ORANGE
H-214	0.0	223.0	75.4	3659.8	2646.8	686	2646.8	BLUE
H-215	0.0	223.0	75.3	3061.0			3061.0	BLUE
H-305	0.0	187.0	91.2	3752.5	3550.4	1712	3550.4	BLUE
H-306	0.0	194.1	88.1	3071.7			3071.7	BLUE
H-323	0.0	173.1	97.3	2412.5	2345.5	1547	2345.5	BLUE
H-345	0.0	175.7	95.8	3341.7	3243.5	37	3243.5	BLUE
H-389	0.0	182.9	92.7	2050.8			2050.8	BLUE
H-394	0.0	206.3	82.5	3419.2	2746.4	37	2746.4	BLUE

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Master File : p:\0155_chehalis\1078 wsp_update\rpt-planning\mdlmg\01551078 city of chehalis water system model - calibrated.KYP\01551078 city of chehalis water system mod

 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

REGULATING VALVE DATA

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
18th St PRV	PRV-1	389.66
18th St Pump	Const_FLOW_Pump	1200.00
Centralia Al	Const_HEAD_Pump	541.19
Fairview PRV	PRV-1	466.50
High Level P	Const_FLOW_Pump	0.00
RV-1	PRV-1	389.55
RV-2	PRV-1	389.67
South End Pu	Const_HEAD_Pump	495.59
Valley View	Const_FLOW_Pump	0.00

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1	NODE NAMES #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
3	5	6	24.78	10.00	90.0000	0.00
5	9	10	824.44	6.00	90.0000	0.00
6	11	12	38.56	8.00	90.0000	0.00
7	13	872	38.38	6.00	75.0000	0.00
8	15	16	7.84	6.00	90.0000	0.00
10	18	19	437.00	2.00	140.0000	0.00
12	22	23	750.00	8.00	115.0000	0.00
13	24	1524	360.61	4.00	115.0000	0.00
14	26	J-55	539.97	8.00	115.0000	0.00
16	28	29	217.00	4.00	115.0000	0.00
17	31	32	723.00	2.00	113.0723	0.00
21	37	38	170.42	4.00	75.0000	0.00
22	2014	40	325.43	8.00	115.0000	0.00
23	41	1699	28.75	12.00	115.0000	0.00
24	43	213	42.27	12.00	115.0000	0.00
26	47	48	173.64	4.00	115.0000	0.00
27	49	50	310.00	10.00	115.0000	0.00
28	51	52	222.00	8.00	115.0000	0.00
32	59	60	108.37	6.00	75.0000	0.00
35	65	66	295.51	6.00	75.0000	0.00
37	68	69	412.00	8.00	115.0000	0.00
38	52	70	245.00	6.00	115.0000	0.00
39	Hillcrest	72	81.50	4.00	115.0000	0.00
41	75	76	3275.00	12.00	130.0000	0.00
45	83	2066	32.96	12.00	130.0000	0.00
46	85	86	33.07	12.00	130.0000	0.00
52	97	98	74.85	8.00	130.0000	0.00
55	102	103	68.31	8.00	130.0000	0.00
56	104	1810	34.98	12.00	130.0000	0.00
59	107	108	7.82	12.00	130.0000	0.00
60	109	J-53	785.00	16.00	115.0000	0.00
66	118	J-91	2359.00	14.00	90.0000	0.00
68	119	121	704.00	14.00	75.0000	0.00
70	121	860	23.71	14.00	75.0000	0.00
72	118	1799	900.00	8.00	130.0000	0.00
85	physical d	396	23.76	14.00	75.0000	0.00
107	J-91	2067	949.00	14.00	75.0000	0.00
109	325	34	484.84	12.00	115.0000	0.00
110	2122	166	948.74	12.00	115.0000	0.00
112	166	962	902.00	12.00	115.0000	0.00
114	569	962	308.00	12.00	115.0000	0.00
115	569	665	1519.00	12.00	115.0000	0.00
118	172	J-105	650.00	12.00	115.0000	0.00
120	175	178	251.61	12.00	115.0000	0.00
123	178	1826	444.69	12.00	115.0000	0.00
126	1826	1827	278.93	12.00	115.0000	0.00
129	1827	192	1658.25	12.00	115.0000	0.00

2020 Fireflow - Main Zone East

137	192	201	248.00	12.00	115.0000	0.00
139		137	409.00	12.00	115.0000	0.00
141	15	137	446.49	12.00	115.0000	0.00
142	15	J-95	1949.78	12.00	115.0000	0.00
145	201	J-93	562.05	12.00	90.0000	0.00
155	212	213	677.50	12.00	115.0000	0.00
156	214	26	1649.00	12.00	115.0000	0.00
163	2072	224	1245.00	12.00	115.0000	0.00
187	248	253	1835.17	12.00	130.0000	0.00
192	254	J-127	1507.19	12.00	130.0000	0.00
262	325	1575	908.76	12.00	115.0000	0.00
279	343	344	127.52	12.00	130.0000	0.00
280	344	342	115.85	12.00	130.0000	0.00
282	342	346	192.42	12.00	130.0000	0.00
283	86	J-130	1344.24	12.00	130.0000	0.00
292	356	361	2280.98	10.00	90.0000	0.00
298	32	J-7	60.00	10.00	90.0000	0.00
302	32	480	930.34	10.00	90.0000	0.00
318	384	385	126.00	10.00	115.0000	0.00
319	356	2074	983.94	10.00	90.0000	0.00
320	356	41	37.27	10.00	90.0000	0.00
329	396	398	31.65	10.00	75.0000	0.00
331	398	1409	306.52	10.00	75.0000	0.00
340	407	408	647.97	10.00	75.0000	0.00
353	661	2119	350.44	6.00	75.0000	0.00
355	424	1648	189.00	10.00	90.0000	0.00
363	295	468	3228.55	10.00	130.0000	0.00
398	172	473	539.00	12.00	115.0000	0.00
403	474	480	672.00	8.00	90.0000	0.00
411	J-45	2129	770.00	8.00	90.0000	0.00
414	1217	1121	284.43	6.00	90.0000	0.00
417	492	1235	414.07	8.00	75.0000	0.00
429	505	509	502.00	8.00	75.0000	0.00
433	510	512	462.00	8.00	115.0000	0.00
435	513	1057	1078.98	8.00	75.0000	0.00
440	518	J-94	278.47	8.00	75.0000	0.00
448	92	1184	943.86	8.00	115.0000	0.00
451	530	119	42.30	8.00	75.0000	0.00
452	119	536	464.52	8.00	75.0000	0.00
458	536	2079	637.02	8.00	75.0000	0.00
461	540	2079	30.24	8.00	75.0000	0.00
464	544	543	465.44	8.00	75.0000	0.00
472	552	J-100	98.00	8.00	75.0000	0.00
476	I-AV-1	J-114	1506.58	4.00	90.0000	0.00
486	569	573	476.00	8.00	115.0000	0.00
490	385	166	264.00	8.00	140.0000	0.00
495	579	J-138	330.16	8.00	115.0000	0.00
497	582	584	548.98	8.00	115.0000	0.00
503	590	J-73	801.25	8.00	75.0000	0.00
511	599	601	450.87	8.00	115.0000	0.00
526	599	619	720.36	8.00	115.0000	0.00
531	620	623	618.14	8.00	115.0000	0.00
538	628	631	136.23	8.00	90.0000	0.00
541	632	1049	299.05	8.00	90.0000	0.00
547	631	642	578.19	8.00	90.0000	0.00
552	High Level	2090	1103.00	8.00	90.0000	0.00
565	509	661	1328.00	8.00	75.0000	0.00
569	597	1284	174.94	8.00	90.0000	0.00
571	46	2086	497.00	8.00	90.0000	0.00
574	665	668	872.08	8.00	115.0000	0.00
577	668	675	492.96	8.00	115.0000	0.00
584	676	J-27	893.25	8.00	90.0000	0.00
590	54	682	182.20	8.00	90.0000	0.00
591	683	J-95	505.00	8.00	90.0000	0.00
593	686	J-78	241.00	8.00	90.0000	0.00
597	408	J-79	21.00	8.00	75.0000	0.00
601	361	1960	1287.07	8.00	90.0000	0.00
612	705	710	248.15	8.00	115.0000	0.00
617	717	1134	965.00	8.00	115.0000	0.00
623	718	247	34.04	8.00	75.0000	0.00
630	424	726	91.39	8.00	75.0000	0.00
632	726	J-80	386.08	8.00	75.0000	0.00
652	468	780	2846.84	8.00	130.0000	0.00
684	781	2092	25.00	8.00	115.0000	0.00
686	784	1698	594.45	8.00	115.0000	0.00
690	788	791	1019.18	8.00	115.0000	0.00
693	792	791	123.52	8.00	115.0000	0.00
697	797	784	720.40	8.00	115.0000	0.00
700	800	802	282.00	6.00	130.0000	0.00
702	803	1465	267.21	6.00	75.0000	0.00
706	808	2009	929.18	6.00	75.0000	0.00
710	813	815	302.18	6.00	75.0000	0.00
712	121	2093	46.99	6.00	75.0000	0.00
714	2094	40	934.76	4.00	75.0000	0.00
723	828	2096	426.19	6.00	75.0000	0.00
726	544	831	72.71	6.00	75.0000	0.00
727	831	530	335.47	6.00	75.0000	0.00
735	831	1989	226.92	6.00	75.0000	0.00
739	842	844	615.87	6.00	75.0000	0.00
741	844	817	669.95	6.00	75.0000	0.00
749	856	J-115	240.00	6.00	75.0000	0.00
751	2078	14	273.95	6.00	75.0000	0.00
753	860	2097	569.00	6.00	75.0000	0.00
757	865	868	222.76	6.00	75.0000	0.00
760	868	J-113	502.26	6.00	75.0000	0.00
762	868	872	205.21	6.00	75.0000	0.00
772	881	2098	449.61	6.00	75.0000	0.00
776	885	J-111	304.95	6.00	75.0000	0.00
784	893	J-106	418.44	6.00	75.0000	0.00
785	893	J-110	416.57	6.00	75.0000	0.00
789	66	899	48.00	6.00	75.0000	0.00
791	899	901	175.00	6.00	75.0000	0.00
793	901	1742	1127.00	6.00	75.0000	0.00
797	906	910	180.00	6.00	75.0000	0.00
801	910	38	116.53	6.00	75.0000	0.00

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807	842	2084	314.93	6.00	75.0000	0.00
812	916	922	348.45	6.00	75.0000	0.00
814	923	J-20	569.59	6.00	75.0000	0.00
817	J-21	929	248.00	6.00	75.0000	0.00
823	J-2	937	870.00	6.00	75.0000	0.00
825	J-2	556	502.00	6.00	75.0000	0.00
831	945	2080	473.03	6.00	75.0000	0.00
839	954	2081	460.04	6.00	75.0000	0.00
846	962	964	82.58	6.00	115.0000	0.00
858	1387	1314	65.93	4.00	75.0000	0.00
861	108	104	599.00	6.00	90.0000	0.00
867	958	J-110	1002.00	6.00	75.0000	0.00
874	994	65	736.58	6.00	75.0000	0.00
876	65	1986	656.95	6.00	75.0000	0.00
883	1003	1023	424.00	6.00	90.0000	0.00
903	1024	J-125	363.09	6.00	90.0000	0.00
905	O-High Lev	649	101.61	6.00	75.0000	0.00
910	1024	628	642.00	6.00	90.0000	0.00
912	1032	1003	811.00	6.00	90.0000	0.00
930	1050	1053	1269.52	6.00	90.0000	0.00
933	384	2100	964.00	6.00	75.0000	0.00
936	1057	16	435.81	6.00	90.0000	0.00
938	1060	1063	225.00	6.00	115.0000	0.00
941	1064	J-129	956.67	6.00	90.0000	0.00
948	1071	526	308.78	6.00	90.0000	0.00
949	526	1084	2823.47	6.00	75.0000	0.00
962	1085	1337	588.12	6.00	75.0000	0.00
966	1099	J-78	1370.13	6.00	90.0000	0.00
975	1100	1101	228.75	6.00	90.0000	0.00
976	O-Fairview	1101	118.14	6.00	90.0000	0.00
982	2103	J-81	265.32	6.00	75.0000	0.00
993	1121	1122	255.49	6.00	90.0000	0.00
994	2076	2127	300.30	6.00	75.0000	0.00
1000	1130	1125	650.51	6.00	75.0000	0.00
1001	2104	J-73	623.72	6.00	75.0000	0.00
1003	1134	2104	238.99	6.00	75.0000	0.00
1004	509	1290	478.00	6.00	75.0000	0.00
1007	1137	2105	327.02	6.00	75.0000	0.00
1009	1388	2013	267.00	6.00	75.0000	0.00
1012	2106	2107	591.74	6.00	75.0000	0.00
1014	510	23	924.74	6.00	75.0000	0.00
1017	2137	2109	470.82	6.00	75.0000	0.00
1019	2084	2109	326.70	6.00	75.0000	0.00
1020	2094	23	140.75	6.00	75.0000	0.00
1023	1156	23	477.86	6.00	75.0000	0.00
1024	2096	2073	229.38	6.00	75.0000	0.00
1025	2110	2096	273.09	6.00	75.0000	0.00
1026	2110	1997	279.58	6.00	75.0000	0.00
1028	1997	2111	244.00	6.00	75.0000	0.00
1030	2111	2112	268.86	6.00	75.0000	0.00
1032	1961	2113	418.00	6.00	75.0000	0.00
1035	704	1961	270.90	6.00	75.0000	0.00
1036	2109	1961	297.09	6.00	75.0000	0.00
1037	2010	2014	642.00	6.00	75.0000	0.00
1040	2012	2013	328.33	6.00	75.0000	0.00
1041	2065	2012	308.00	6.00	75.0000	0.00
1042	2137	2065	296.00	6.00	75.0000	0.00
1043	2113	2137	300.18	6.00	75.0000	0.00
1044	2113	1180	266.89	6.00	75.0000	0.00
1046	1181	22	93.00	6.00	75.0000	0.00
1047	2095	22	173.00	6.00	75.0000	0.00
1048	726	1184	40.06	8.00	115.0000	0.00
1051	1186	1996	269.43	6.00	75.0000	0.00
1053	827	1232	1143.25	6.00	75.0000	0.00
1058	1232	1156	597.28	6.00	75.0000	0.00
1060	1156	512	927.21	6.00	75.0000	0.00
1062	512	2107	783.40	6.00	75.0000	0.00
1064	2115	2107	155.32	6.00	75.0000	0.00
1069	2117	2065	579.53	6.00	75.0000	0.00
1071	2137	1210	580.23	6.00	75.0000	0.00
1074	1211	1713	81.79	6.00	115.0000	0.00
1076	24	1713	223.00	6.00	115.0000	0.00
1077	1215	J-58	327.00	6.00	75.0000	0.00
1078	68	1217	692.94	6.00	115.0000	0.00
1080	1218	2112	1049.55	6.00	75.0000	0.00
1083	2112	1223	326.05	6.00	75.0000	0.00
1085	1224	2111	321.86	6.00	75.0000	0.00
1087	1085	1333	418.92	6.00	75.0000	0.00
1088	1085	808	427.58	6.00	75.0000	0.00
1090	808	1229	207.76	6.00	75.0000	0.00
1091	1232	1181	476.00	6.00	75.0000	0.00
1094	1235	1483	375.00	6.00	75.0000	0.00
1095	2120	1104	147.00	6.00	90.0000	0.00
1096	2120	1239	581.73	6.00	115.0000	0.00
1099	1240	1214	42.84	6.00	115.0000	0.00
1100	1214	1244	471.00	6.00	115.0000	0.00
1103	1244	1251	558.00	6.00	115.0000	0.00
1110	Yankis (Va	1251	413.91	6.00	115.0000	0.00
1116	1513	J-25	173.82	8.00	130.0000	0.00
1117	1277	J-159	108.25	6.00	90.0000	0.00
1118	1277	1262	90.18	6.00	90.0000	0.00
1120	657	J-25	1605.00	10.00	130.0000	0.00
1125	1181	1270	559.53	6.00	75.0000	0.00
1127	2103	1099	1495.62	6.00	75.0000	0.00
1132	1277	I-AV-4	889.11	6.00	90.0000	0.00
1138	693	579	860.83	6.00	75.0000	0.00
1140	1284	O-AV-3	362.05	6.00	90.0000	0.00
1146	1290	2119	1322.78	4.00	75.0000	0.00
1148	1293	1295	372.96	4.00	75.0000	0.00
1150	398	2016	65.54	6.00	75.0000	0.00
1152	1120	1298	198.66	6.00	75.0000	0.00
1154	432	1309	2165.00	6.00	90.0000	0.00
1165	1310	1314	1161.00	4.00	75.0000	0.00
1169	2127	J-61	967.64	4.00	75.0000	0.00
1171	1318	2105	578.38	4.00	75.0000	0.00

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1173	2105	1322	469.84	4.00	75.0000	0.00
1178	2115	40	301.65	4.00	75.0000	0.00
1179	2115	1328	589.61	4.00	75.0000	0.00
1182	803	J-81	638.00	4.00	75.0000	0.00
1185	1333	1337	528.94	4.00	75.0000	0.00
1189	1338	807	1527.54	4.00	75.0000	0.00
1193	518	192	70.97	4.00	75.0000	0.00
1195	192	1060	583.00	4.00	75.0000	0.00
1198	1060	705	1317.00	4.00	75.0000	0.00
1205	492	J-80	987.90	4.00	75.0000	0.00
1208	1356	828	273.00	4.00	75.0000	0.00
1210	1359	828	233.00	4.00	75.0000	0.00
1211	1364	1984	203.81	4.00	75.0000	0.00
1212	1364	1991	514.02	4.00	75.0000	0.00
1214	1364	2121	287.23	4.00	75.0000	0.00
1215	1366	36	660.16	4.00	75.0000	0.00
1217	1244	1251	681.00	6.00	115.0000	0.00
1226	1375	17	2480.00	4.00	90.0000	0.00
1236	17	1387	400.00	4.00	90.0000	0.00
1239	1388	1392	578.80	4.00	75.0000	0.00
1244	1314	33	129.52	4.00	90.0000	0.00
1245	937	1456	272.00	4.00	75.0000	0.00
1247	384	1456	264.58	4.00	75.0000	0.00
1248	1396I-Valley V	4.38	4.00	140.0000	0.00	
1258	505	1409	1080.00	4.00	75.0000	0.00
1261	1410	657	558.39	4.00	90.0000	0.00
1269	1023	I-AV-2	712.27	4.00	90.0000	0.00
1309	1456	881	418.71	4.00	75.0000	0.00
1315	885	1056	245.12	4.00	90.0000	0.00
1319	1465	2103	636.67	4.00	75.0000	0.00
1322	509	407	820.07	4.00	75.0000	0.00
1330	693	492	1027.10	4.00	75.0000	0.00
1338	1295	1483	948.39	4.00	75.0000	0.00
1340	1484	899	1892.00	4.00	75.0000	0.00
1351	344	1497	767.00	4.00	130.0000	0.00
1354	1498	1502	449.05	8.00	130.0000	0.00
1358	1502	J-133	279.67	8.00	130.0000	0.00
1371	1517	1519	275.00	2.00	114.3142	0.00
1384	1544	J-95	2295.00	12.00	90.0000	0.00
1388	1547	1544	288.55	12.00	115.0000	0.00
1389	1547	J-96	1327.00	12.00	115.0000	0.00
1396	1544	1547	2300.00	8.00	115.0000	0.00
1401	668	1674	1132.70	12.00	130.0000	0.00
1404	1674	102	746.13	12.00	130.0000	0.00
1406	102	J-1	620.69	12.00	130.0000	0.00
1409	92	J-143	4125.62	12.00	115.0000	0.00
1423	421	107	867.00	12.00	130.0000	0.00
1426	1575	34	575.28	12.00	115.0000	0.00
1427	1576	248	446.87	12.00	130.0000	0.00
1429	248	1580	540.11	12.00	130.0000	0.00
1433	51	26	448.20	12.00	115.0000	0.00
1435	51	109	1427.59	12.00	115.0000	0.00
1440	6	109	475.62	12.00	115.0000	0.00
1441	6	1647	1469.07	12.00	115.0000	0.00
1443	1637	1647	5159.69	12.00	115.0000	0.00
1454	72	1637	1761.44	12.00	115.0000	0.00
1455	72	1626	3641.41	12.00	115.0000	0.00
1458	1627	1626	763.65	12.00	115.0000	0.00
1460	797	212	356.56	12.00	115.0000	0.00
1464	788	1630	3991.15	12.00	115.0000	0.00
1477	1630	1626	1130.08	12.00	115.0000	0.00
1479	1627Yates Rese	1075.00	12.00	130.0000	0.00	
1481	1630	76	3539.00	12.00	130.0000	0.00
1483	76	1636	2341.00	12.00	130.0000	0.00
1487	1637	75	595.62	12.00	115.0000	0.00
1492	75	49	651.30	12.00	115.0000	0.00
1493	254	49	3310.10	12.00	115.0000	0.00
1494	254	J-35	1688.26	12.00	115.0000	0.00
1497	2072	1647	1022.00	12.00	115.0000	0.00
1499	1648	247	4693.50	12.00	115.0000	0.00
1500	343	1657	2072.02	8.00	130.0000	0.00
1509	1658	901	754.77	8.00	130.0000	0.00
1526	1674	800	496.84	8.00	130.0000	0.00
1531	800	174	473.00	8.00	130.0000	0.00
1534	1679	1689	748.17	6.00	90.0000	0.00
1544	1690	1689	126.93	8.00	90.0000	0.00
1548	2092	1698	669.39	8.00	115.0000	0.00
1552	1699	1700	801.40	10.00	130.0000	0.00
1553	2138	89	1389.60	8.00	115.0000	0.00
1560	1710	J-53	1056.65	8.00	115.0000	0.00
1562	1711	683	220.00	8.00	90.0000	0.00
1563	683	1712	500.00	8.00	115.0000	0.00
1564	1713	1716	178.58	6.00	115.0000	0.00
1567	1716	1719	185.05	6.00	115.0000	0.00
1584	1742	1737	1268.00	4.00	75.0000	0.00
1588	1737	1375	375.00	4.00	75.0000	0.00
1593	1742	1484	452.00	10.00	130.0000	0.00
1596	1484	975	1798.00	10.00	130.0000	0.00
1611	975	1310	71.00	10.00	130.0000	0.00
1612	1310	2122	454.00	10.00	130.0000	0.00
1615	2123	1089	511.48	8.00	115.0000	0.00
1617	1089	1186	243.51	6.00	75.0000	0.00
1618	1186	1767	570.00	8.00	115.0000	0.00
1621	J-135	1773	742.00	8.00	130.0000	0.00
1626	1773	1775	197.00	8.00	130.0000	0.00
1628	1775	1776	68.00	8.00	130.0000	0.00
1629	1776	1782	1030.00	8.00	130.0000	0.00
1635	1782	1788	996.00	8.00	130.0000	0.00
1641	1788	1775	237.00	8.00	130.0000	0.00
1644	1773	1791	251.00	8.00	130.0000	0.00
1645	1776	1793	338.00	8.00	130.0000	0.00
1647	1788	1782	591.00	8.00	130.0000	0.00
1654	1800	1801	235.53	10.00	130.0000	0.00
1657	18053-inch or	110.20	8.00	130.0000	0.00	
1658	1806	1808	400.00	6.00	115.0000	0.00

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1660	1809	1806	19.02	8.00	130.0000	0.00
1661	1810	1821	671.00	10.00	130.0000	0.00
1663	1800	1821	258.00	10.00	130.0000	0.00
1664	1813	1809	50.87	10.00	130.0000	0.00
1665	1814	1818	535.81	2.00	140.0000	0.00
1669	1813	1814	675.00	8.00	130.0000	0.00
1672	1821	J-112	525.00	8.00	130.0000	0.00
1673	1823	1826	385.26	6.00	90.0000	0.00
1676	1827	1071	62.38	8.00	90.0000	0.00
1677	1636	J-128	438.35	8.00	130.0000	0.00
1792	910	844	262.20	4.00	75.0000	0.00
1793	178	1823	69.34	8.00	90.0000	0.00
1796	1063	1948	325.00	2.00	106.5232	0.00
1799	1032	J-114	642.00	4.00	90.0000	0.00
1810	1960	12	21.03	8.00	90.0000	0.00
1811	12	10	1053.00	8.00	90.0000	0.00
1813	1767	J-117	290.12	6.00	75.0000	0.00
1818	1737	1968	132.00	4.00	75.0000	0.00
1820	1823	J-21	491.61	6.00	75.0000	0.00
1821	175	384	2123.70	10.00	115.0000	0.00
1825	1973	566	454.00	4.00	75.0000	0.00
1826	1974	1975	651.00	4.00	75.0000	0.00
1828	J-3	1980	517.00	6.00	75.0000	0.00
1830	3-inch or	1981	48.33	4.00	75.0000	0.00
1831	1984	1767	235.15	6.00	75.0000	0.00
1834	1985	1986	56.59	4.00	75.0000	0.00
1835	894	2125	20.33	8.00	115.0000	0.00
1836	1987	568	717.00	4.00	75.0000	0.00
1837	1988	1989	52.11	4.00	75.0000	0.00
1839	2121	1991	219.88	6.00	75.0000	0.00
1840	2126	2123	286.00	10.00	115.0000	0.00
1841	1994	994	209.00	6.00	75.0000	0.00
1842	1996	1997	691.73	6.00	75.0000	0.00
1843	1184	2003	971.73	6.00	115.0000	0.00
1852	2007	2009	230.57	6.00	75.0000	0.00
1854	2010	2065	472.04	6.00	75.0000	0.00
1855	2012	J-39	579.11	8.00	75.0000	0.00
1856	2013	2014	469.09	6.00	115.0000	0.00
1858	2016	J-81	1482.47	4.00	75.0000	0.00
1860	2127	504	947.53	4.00	75.0000	0.00
1864	1121	2023	183.59	6.00	90.0000	0.00
1865	2127	1215	263.88	6.00	75.0000	0.00
1866	2025	2028	384.00	2.00	140.0000	0.00
1869	2029	2030	216.99	2.00	140.0000	0.00
1870	2031	2029	117.40	4.00	140.0000	0.00
1871	2029	2025	27.90	4.00	140.0000	0.00
1872	2025	2032	248.94	4.00	140.0000	0.00
1873	2033	2031	618.97	4.00	140.0000	0.00
1877	2031	J-124	145.24	8.00	115.0000	0.00
1883	2047	J-74	206.38	6.00	90.0000	0.00
1887	2053	582	671.02	4.00	90.0000	0.00
1892	2129	582	343.45	4.00	90.0000	0.00
1893	590	46	757.00	6.00	90.0000	0.00
1894	2061	J-45	335.58	6.00	90.0000	0.00
1895	2063	J-44	880.19	8.00	90.0000	0.00
1896	5	361	64.75	10.00	90.0000	0.00
1898	14	540	265.00	6.00	75.0000	0.00
1900	163-in or sm		34.44	6.00	90.0000	0.00
1901	17	18	236.00	6.00	90.0000	0.00
1904	24	2088	5.94	6.00	115.0000	0.00
1907	36	2130	291.60	6.00	75.0000	0.00
1908	38	2083	817.68	6.00	75.0000	0.00
1909	2014	J-87	300.00	6.00	75.0000	0.00
1917	69	J-61	263.00	8.00	115.0000	0.00
1920	295	J-30	1850.87	12.00	130.0000	0.00
1924	86	2066	285.00	12.00	130.0000	0.00
1927	104	J-112	808.02	6.00	75.0000	0.00
1930	118	710	2530.00	14.00	90.0000	0.00
1935	247	2106	22.48	8.00	75.0000	0.00
1936	325	2122	272.19	12.00	115.0000	0.00
1938	375	1218	736.59	14.00	75.0000	0.00
1940	396	1318	307.00	14.00	75.0000	0.00
1941	480	2138	730.48	10.00	90.0000	0.00
1947	530	2093	691.48	6.00	75.0000	0.00
1948	536	2078	287.42	8.00	75.0000	0.00
1949	565	1084	590.00	8.00	75.0000	0.00
1950	556	944	498.75	6.00	75.0000	0.00
1951	565	543	35.00	8.00	75.0000	0.00
1954	J-84	O-AV-5	54.14	8.00	90.0000	0.00
1956	584	717	786.89	10.00	90.0000	0.00
1958	590	584	267.70	10.00	90.0000	0.00
1960	620	2133	155.65	8.00	115.0000	0.00
1962	1410	649	52.91	8.00	90.0000	0.00
1964	661	424	118.60	10.00	75.0000	0.00
1965	665	172	143.00	12.00	115.0000	0.00
1967	710	137	1990.58	14.00	90.0000	0.00
1972	784	791	500.36	8.00	115.0000	0.00
1975	797	788	291.38	12.00	115.0000	0.00
1977	813	J-120	564.60	6.00	75.0000	0.00
1978	815	803	563.97	6.00	75.0000	0.00
1979	817	1338	454.00	6.00	75.0000	0.00
1982	856	2121	290.89	6.00	75.0000	0.00
1983	860	375	259.21	14.00	75.0000	0.00
1984	865	65	387.79	8.00	75.0000	0.00
1985	872	14	110.22	6.00	75.0000	0.00
1986	923	J-3	345.89	6.00	75.0000	0.00
1987	944	1987	383.07	6.00	75.0000	0.00
1989	954	945	225.61	6.00	75.0000	0.00
1990	958	J-106	266.00	6.00	75.0000	0.00
1992	994	1658	528.00	10.00	115.0000	0.00
1993	2101	60	140.36	6.00	75.0000	0.00
1995	1003	1049	529.64	6.00	90.0000	0.00
1996	1049	631	275.61	8.00	90.0000	0.00
1997	1050	975	402.00	6.00	90.0000	0.00
1998	1057	518	652.00	8.00	75.0000	0.00

2020 Fireflow - Main Zone East

2000	1084	552	435.20	8.00	75.0000	0.00
2001	1099	1120	246.00	6.00	75.0000	0.00
2002	1107	J-79	210.02	8.00	75.0000	0.00
2003	1130	J-63	457.60	8.00	75.0000	0.00
2005	1137	398	600.00	8.00	75.0000	0.00
2010	1180	704	473.80	8.00	75.0000	0.00
2011	1183	704	38.34	6.00	75.0000	0.00
2014	1210	2067	566.74	14.00	75.0000	0.00
2020	1223	1224	265.83	6.00	75.0000	0.00
2021	1224	827	666.42	6.00	75.0000	0.00
2022	1229	815	301.07	6.00	75.0000	0.00
2024	1235	1517	896.98	8.00	75.0000	0.00
2025	1099	J-82	293.00	6.00	75.0000	0.00
2027	1284	46	713.52	8.00	90.0000	0.00
2031	1318	1392	306.00	14.00	75.0000	0.00
2032	1322	J-87	262.00	6.00	75.0000	0.00
2033	1328	2091	322.03	8.00	75.0000	0.00
2035	1337	2110	39.43	6.00	75.0000	0.00
2036	1338	813	634.51	6.00	75.0000	0.00
2037	1356	1089	17.89	6.00	75.0000	0.00
2039	1366	945	480.02	6.00	75.0000	0.00
2040	1387	979	479.26	6.00	115.0000	0.00
2042	1392	J-39	591.86	14.00	75.0000	0.00
2045	1409	407	306.00	10.00	75.0000	0.00
2048	1465	J-120	38.32	6.00	75.0000	0.00
2053	1107	1517	423.01	8.00	75.0000	0.00
2058	1570	J-8	1066.00	10.00	90.0000	0.00
2060	1575	342	808.04	12.00	130.0000	0.00
2063	1627	J-135	354.12	12.00	115.0000	0.00
2067	1648	432	2857.00	10.00	90.0000	0.00
2068	1658	421	772.00	10.00	115.0000	0.00
2070	1679	1101	25.75	6.00	90.0000	0.00
2071	1698	212	264.80	8.00	115.0000	0.00
2078	1800	1813	297.00	10.00	130.0000	0.00
2079	1809	1805	635.00	10.00	130.0000	0.00
2080	1810	107	583.38	12.00	130.0000	0.00
2087	1960	700	19.01	8.00	90.0000	0.00
2089	1973	J-2	345.00	6.00	75.0000	0.00
2090	1974	1366	377.42	6.00	75.0000	0.00
2091	1975	36	374.90	6.00	75.0000	0.00
2092	1981	J-4	275.32	6.00	75.0000	0.00
2093	994	1984	383.00	10.00	115.0000	0.00
2095	1986	552	515.83	6.00	75.0000	0.00
2096	1987	893	54.17	6.00	75.0000	0.00
2097	1989	842	189.64	6.00	75.0000	0.00
2102	1996	827	273.45	6.00	75.0000	0.00
2104	2007	375	649.59	10.00	115.0000	0.00
2105	2009	2096	41.52	6.00	75.0000	0.00
2111	2016	1120	22.21	6.00	75.0000	0.00
2114	1107	1293	379.00	6.00	75.0000	0.00
2118	2053	J-57	404.65	8.00	90.0000	0.00
2120	2063	717	379.81	10.00	90.0000	0.00
2127	2067	1218	331.70	14.00	75.0000	0.00
2128	2067	1180	580.16	8.00	75.0000	0.00
2139	2073	2007	37.55	10.00	115.0000	0.00
2141	2074	483	444.39	8.00	115.0000	0.00
2145	2076	492	344.58	8.00	75.0000	0.00
2146	2076	504	784.60	8.00	75.0000	0.00
2148	693	J-64	330.00	8.00	115.0000	0.00
2149	2078	865	288.23	8.00	75.0000	0.00
2150	2078	1991	297.24	6.00	75.0000	0.00
2152	2079	543	202.12	8.00	75.0000	0.00
2153	2080	2081	236.10	6.00	115.0000	0.00
2154	2080	958	585.00	6.00	75.0000	0.00
2155	2125	J-99	48.00	8.00	115.0000	0.00
2156	2081	958	325.04	6.00	75.0000	0.00
2159	2083	2084	265.54	8.00	75.0000	0.00
2160	2083	916	678.90	6.00	75.0000	0.00
2161	2084	565	310.77	8.00	75.0000	0.00
2162	2084	916	736.88	6.00	75.0000	0.00
2165	2086	578	560.00	8.00	115.0000	0.00
2166	2086	2132	593.29	8.00	90.0000	0.00
2169	2088	620	2465.45	8.00	115.0000	0.00
2170	2088	1214	158.00	6.00	115.0000	0.00
2173	2090	1410	14.60	8.00	90.0000	0.00
2174	2090	657	565.72	8.00	115.0000	0.00
2175	2091	1137	468.76	8.00	75.0000	0.00
2176	2091	505	311.20	8.00	75.0000	0.00
2179	2093	817	304.87	6.00	75.0000	0.00
2180	2093	1229	758.42	6.00	75.0000	0.00
2181	2094	2095	604.36	6.00	75.0000	0.00
2183	2095	1223	294.47	6.00	75.0000	0.00
2184	2095	1183	324.33	6.00	75.0000	0.00
2187	2097	856	426.07	6.00	75.0000	0.00
2188	2097	2073	206.00	6.00	75.0000	0.00
2189	2098	885	448.98	6.00	75.0000	0.00
2190	2098	2100	273.62	6.00	75.0000	0.00
2192	954	2130	268.01	6.00	75.0000	0.00
2193	2100	1050	360.00	6.00	90.0000	0.00
2194	2100	1056	405.41	6.00	75.0000	0.00
2195	2101	807	693.00	6.00	115.0000	0.00
2196	2101	J-82	1519.00	6.00	75.0000	0.00
2198	1290	1293	372.41	6.00	75.0000	0.00
2199	2103	60	154.27	6.00	75.0000	0.00
2202	2104	2021	244.00	4.00	75.0000	0.00
2203	2105	1388	298.00	6.00	75.0000	0.00
2206	2106	1328	152.76	8.00	75.0000	0.00
2207	2107	510	314.14	6.00	75.0000	0.00
2212	2109	2010	299.72	6.00	75.0000	0.00
2214	2110	1356	429.11	6.00	75.0000	0.00
2216	2111	1333	54.05	6.00	75.0000	0.00
2217	2112	1183	291.22	6.00	75.0000	0.00
2221	803	2113	632.05	6.00	75.0000	0.00
2223	2115	J-87	328.38	6.00	75.0000	0.00
2228	2117	1210	322.00	14.00	75.0000	0.00

2020 Fireflow - Main Zone East

2231	2119	1483	385.00	6.00	75.0000	0.00
2234	2120	J-77	147.00	6.00	90.0000	0.00
2236	2121	2126	209.47	6.00	75.0000	0.00
2240	2123	2073	427.00	10.00	115.0000	0.00
2243	2125	961	36.45	8.00	115.0000	0.00
2244	2125	2081	266.99	8.00	115.0000	0.00
2246	2126	1984	286.12	10.00	115.0000	0.00
2249	2050	J-77	44.67	6.00	90.0000	0.00
2252	2129	2053	226.85	8.00	90.0000	0.00
2253	2130	961	455.00	6.00	75.0000	0.00
2254	2130	1973	40.73	6.00	75.0000	0.00
2257	2132	214	7.31	8.00	90.0000	0.00
2259	2133	599	622.41	8.00	115.0000	0.00
2260	2133	47	462.96	8.00	115.0000	0.00
2269	2138	481	66.26	10.00	90.0000	0.00
P-1	J-1	97	547.15	12.00	130.0000	0.00
P-100	J-112	1814	500.93	6.00	75.0000	0.00
P-101	J-113	2079	368.16	6.00	75.0000	0.00
P-102	J-114	1023	302.00	4.00	90.0000	0.00
P-103	J-125	649	346.91	6.00	90.0000	0.00
P-104	I-Fairview	1103	20.94	6.00	90.0000	0.00
P-105	J-115	J-116	419.54	6.00	75.0000	0.00
P-106	J-116	2097	250.67	6.00	75.0000	0.00
P-108	J-117	56	305.00	6.00	75.0000	0.00
P-11	J-3	1975	323.06	6.00	75.0000	0.00
P-111	J-120	807	266.76	6.00	75.0000	0.00
P-113	J-39	2117	288.00	14.00	75.0000	0.00
P-116	97	J-122	121.15	12.00	130.0000	0.00
P-117	J-140	J-145	46.63	12.00	130.0000	0.00
P-119	J-139	J-84	78.98	8.00	130.0000	0.00
P-121	J-140	J-138	42.92	12.00	130.0000	0.00
P-122	J-126Main Reser		111.73	14.00	90.0000	0.00
P-124	O-AV-1	2083	364.42	8.00	75.0000	0.00
P-125	O-AV-2	906	282.73	4.00	75.0000	0.00
P-127	J-127	295	2367.21	12.00	130.0000	0.00
P-128	J-127	J-128	4129.32	12.00	130.0000	0.00
P-130	J-128	1831	615.85	8.00	130.0000	0.00
P-131	J-129	1071	558.33	6.00	90.0000	0.00
P-132	668	J-129	1448.22	12.00	130.0000	0.00
P-133	J-133	1513	25.35	8.00	130.0000	0.00
P-134	J-122	J-132	800.00	12.00	130.0000	0.00
P-135	J-124	1502	393.57	8.00	130.0000	0.00
P-136	J-124	J-131	198.84	8.00	130.0000	0.00
P-138-CV	Kennicott	J-53	790.00	16.00	115.0000	0.00
P-140	O-AV-4	686	40.89	6.00	90.0000	0.00
P-143	I-AV-5	J-63	2.85	8.00	130.0000	0.00
P-144	O-AV-6	1134	545.75	4.00	75.0000	0.00
P-146	J-73	J-134	384.83	8.00	115.0000	0.00
P-147	J-64	J-141	135.51	8.00	115.0000	0.00
P-148	J-134	O-RV-2	6.27	8.00	130.0000	0.00
P-149	J-143	O-RV-1	5.82	12.00	130.0000	0.00
P-15	J-91	J-126	172.27	14.00	90.0000	0.00
P-150-CV	J-141	J-134	13.00	8.00	130.0000	0.00
P-151	J-142	J-139	80.78	8.00	130.0000	0.00
P-152	J-144	1570	631.51	12.00	115.0000	0.00
P-153-CV	J-143	J-144	24.87	12.00	130.0000	0.00
P-154	I-RV-1	J-144	5.63	12.00	130.0000	0.00
P-157	I-RV-2	J-141	7.13	8.00	130.0000	0.00
P-1570	1716	1103	1729.25	8.00	115.0000	0.00
P-158	J-145I-18th St		2.66	12.00	115.0000	0.00
P-159	J-145	J-146	2.68	12.00	115.0000	0.00
P-160-CV	J-146	J-147	9.25	12.00	115.0000	0.00
P-161	J-146O-18th St		3.23	12.00	130.0000	0.00
P-162	J-147	J-142	2.67	12.00	115.0000	0.00
P-164	I-18th St	J-147	3.12	12.00	130.0000	0.00
P-165	J-155	J-156	739.67	6.00	140.0000	0.00
P-166	66	J-110	322.75	6.00	75.0000	0.00
P-167	J-153	J-156	4747.12	12.00	115.0000	0.00
P-168	J-152	J-150	15.74	8.00	115.0000	0.00
P-169	J-154	J-88	471.34	12.00	115.0000	0.00
P-170	J-155	J-151	4833.50	6.00	140.0000	0.00
P-171	J-155	J-157	658.63	2.00	140.0000	0.00
P-172	J-156	J-154	1552.65	12.00	115.0000	0.00
P-173	J-148	J-6	2664.56	2.00	130.0000	0.00
P-174	J-149	J-153	1314.60	8.00	130.0000	0.00
P-175	J-150	J-152	2094.17	8.00	115.0000	0.00
P-176	J-64	2076	1014.00	8.00	75.0000	0.00
P-178	J-159	1513	18.67	6.00	90.0000	0.00
P-18	J-135I-South En		77.91	12.00	130.0000	0.00
P-19	33	34	11.57	4.00	90.0000	0.00
P-2	101	J-1	84.14	8.00	130.0000	0.00
P-20	1576	213	32.42	12.00	130.0000	0.00
P-25	J-30	2066	908.00	12.00	130.0000	0.00
P-29	J-8	2063	977.55	10.00	90.0000	0.00
P-3	J-60-Central11		24935.52	6.00	115.0000	0.00
P-30	J-35	J-42	1262.05	12.00	115.0000	0.00
P-31	54	J-8	271.99	8.00	90.0000	0.00
P-33	J-42	2072	33.95	12.00	115.0000	0.00
P-34	1699	J-42	861.64	12.00	115.0000	0.00
P-36	2091	1322	322.00	6.00	75.0000	0.00
P-4	J-7	1570	1181.00	10.00	90.0000	0.00
P-40	J-44	10	918.28	8.00	90.0000	0.00
P-42	J-45	J-44	388.00	8.00	90.0000	0.00
P-43	J-880-South En		3066.47	12.00	115.0000	0.00
P-44	J-55	28	392.03	8.00	115.0000	0.00
P-47	J-57	2132	26.83	8.00	90.0000	0.00
P-48	41	J-90	18.53	10.00	90.0000	0.00
P-49	2051	J-57	16.66	8.00	90.0000	0.00
P-50	2052	J-57	17.24	8.00	90.0000	0.00
P-51	O-18th St	J-142	1.13	8.00	115.0000	0.00
P-53	J-4	1974	369.00	6.00	75.0000	0.00
P-54	923	J-4	253.57	6.00	75.0000	0.00
P-57	1217	I-AV-6	27.22	4.00	75.0000	0.00
P-58	1217	69	273.00	8.00	115.0000	0.00
P-6	J-11	J-88	987.96	8.00	115.0000	0.00

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P-61	J-58	68	222.00	6.00	115.0000	0.00
P-62	J-61	J-136	302.00	8.00	115.0000	0.00
P-63	J-127	J-158	1896.96	12.00	130.0000	0.00
P-64	54	J-27	596.19	8.00	90.0000	0.00
P-65	J-67	597	417.00	8.00	90.0000	0.00
P-67	J-71	J-67	339.00	8.00	115.0000	0.00
P-69	J-73	J-71	449.75	8.00	75.0000	0.00
P-7	J-152	J-154	148.62	8.00	115.0000	0.00
P-71	J-63	J-123	21.02	8.00	130.0000	0.00
P-73	J-74	1679	128.71	6.00	90.0000	0.00
P-74	J-77	J-74	27.47	6.00	90.0000	0.00
P-75	I-AV-3	2120	128.95	6.00	90.0000	0.00
P-76	J-78	408	254.81	8.00	90.0000	0.00
P-77	J-79	1130	739.00	8.00	75.0000	0.00
P-78	J-80	504	390.06	8.00	75.0000	0.00
P-79	1396	J-82	521.89	6.00	90.0000	0.00
P-80	1388	J-87	625.00	6.00	115.0000	0.00
P-81	92	J-62	399.00	8.00	115.0000	0.00
P-82	J-84	597	632.70	8.00	90.0000	0.00
P-83	J-123	J-140	102.57	12.00	130.0000	0.00
P-84	J-93	1971	33.88	6.00	90.0000	0.00
P-86	I-High Lev	J-126	388.44	6.00	75.0000	0.00
P-87	J-94	526	1018.53	8.00	75.0000	0.00
P-88	J-93	J-94	3.82	6.00	90.0000	0.00
P-89	J-96inter-tie	1009.00	12.00	115.0000	0.00	
P-9	J-2	2098	329.00	6.00	75.0000	0.00
P-90	J-105	174	266.00	12.00	130.0000	0.00
P-91	J-20	1981	59.00	6.00	75.0000	0.00
P-92	J-21	J-20	140.66	6.00	75.0000	0.00
P-93	568	J-99	19.30	8.00	115.0000	0.00
P-94	J-99	556	294.00	8.00	115.0000	0.00
P-95	566	J-99	49.52	8.00	115.0000	0.00
P-96	J-100	2080	161.00	8.00	115.0000	0.00
P-97	J-106	894	329.00	6.00	75.0000	0.00
P-98	I-Centrali	J-153	21368.49	8.00	115.0000	0.00
P-99	J-111	944	378.41	6.00	75.0000	0.00
Valley Vie	O-Valley VYankis (Va	2731.89	4.00	140.0000	0.00	

N O D E D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
5		0.30	243.40	
6		5.50	244.40	
9		2.30	205.80	
10		7.80	213.70	
11		0.10	236.90	
12		3.10	236.50	
13		0.10	198.90	
14		1.80	201.40	
15		6.70	186.10	
16		1.30	186.10	
17		8.70	175.70	
18		1.90	171.90	
19		1.20	165.30	
22		2.90	186.50	
23		6.40	187.70	
24		1.60	604.50	
26		7.40	240.30	
28		1.70	322.60	
29		0.60	319.00	
31		2.00	216.80	
32		4.80	214.70	
33		0.40	183.00	
34		3.00	183.50	
36		3.60	194.40	
37		0.50	319.00	
38		3.10	290.50	
40		4.30	190.80	
41		0.30	219.10	
43		0.10	253.50	
46		5.50	229.90	
47		1.80	544.40	
48		0.50	543.60	
49		12.00	243.00	
50		0.90	244.20	
51		5.90	240.00	
52		1.30	261.50	
54		3.00	209.30	
56		0.90	193.00	
59		0.30	252.50	
60		1.10	252.90	
65		5.80	192.40	
66		1.80	191.30	
68		3.70	205.20	
69		2.70	208.70	
70		0.70	285.20	
72		15.30	255.00	
75		12.70	247.70	
76		25.60	256.00	
83		0.10	221.90	
85		0.10	222.10	
86		4.70	222.40	
89		3.90	225.60	
92		15.20	192.40	
97		2.00	173.90	
98		0.20	174.00	
101		0.20	174.30	
102		4.00	176.00	
103		0.20	175.70	

2020 Fireflow - Main Zone East

104	4.10	179.70
107	4.00	183.60
108	1.70	183.60
109	7.50	236.20
118	16.20	192.50
119	3.40	217.70
121	2.20	230.70
137	7.90	180.00
166	5.90	182.90
172	3.70	174.10
174	2.00	175.70
175	6.60	183.60
178	2.10	183.60
192	7.10	183.60
201	3.40	178.30
212	3.60	256.30
213	2.10	253.50
214	4.60	230.10
224	3.50	224.20
247	13.30	192.10
248	7.80	248.60
253	5.10	240.90
254	18.20	230.80
295	20.80	210.10
325	4.70	183.90
342	3.10	165.40
343	6.20	163.20
344	2.80	164.20
346	0.50	165.60
356	9.30	219.10
361	10.20	243.10
375	4.60	230.50
384	9.70	183.20
385	1.10	183.60
396	1.10	221.20
398	2.90	220.50
407	5.00	226.99
408	2.60	223.30
421	4.60	184.20
424	1.10	189.90
432	14.10	184.10
468	17.00	204.20
473	1.50	178.30
474	1.90	210.70
480	6.50	219.70
481	0.20	220.90
483	1.20	214.00
492	7.90	195.50
504	5.90	192.80
505	5.30	197.20
509	8.70	200.00
510	4.80	189.60
512	6.10	184.80
513	3.00	178.80
518	2.80	182.20
526	11.60	201.80
530	2.90	220.30
536	3.90	201.90
540	0.80	202.30
543	2.00	210.90
544	1.50	216.10
552	2.90	191.50
556	3.60	206.10
565	2.60	210.80
566	1.40	204.60
568	2.10	206.30
569	6.40	178.30
573	1.30	179.00
578	1.60	280.80
579	3.30	205.50
582	4.40	212.80
584	4.40	207.60
590	5.00	208.60
597	3.50	222.20
599	5.00	592.40
601	1.30	577.30
619	2.00	559.00
620	9.00	583.00
623	1.70	588.00
628	2.20	420.40
631	2.80	382.80
632	0.80	455.20
642	1.60	304.60
649	1.70	392.70
657	7.70	331.20
661	5.00	190.90
665	7.00	174.40
668	11.00	182.30
675	1.40	180.60
676	2.50	206.70
682	0.50	209.20
683	3.40	200.30
686	0.90	278.90
693	6.20	197.40
700	0.10	237.50
704	2.20	190.10
705	4.40	185.50
710	13.40	197.50
717	6.00	204.90
718	0.10	191.20
726	1.50	180.00
780	8.00	195.00
781	0.10	252.20
784	5.10	259.80
788	14.80	258.50

2020 Fireflow - Main Zone East

791	4.50	256.00
792	0.30	254.90
797	3.80	255.30
800	3.50	177.30
802	0.80	178.00
803	5.90	217.90
807	6.90	272.60
808	4.40	215.50
813	4.20	244.90
815	3.20	219.20
817	4.10	275.20
827	5.90	186.80
828	2.70	192.50
831	1.70	216.90
842	3.10	234.00
844	4.30	260.00
856	2.70	194.40
860	2.40	230.20
865	2.50	195.90
868	2.60	197.00
872	1.00	199.50
881	2.50	199.80
885	2.90	204.20
893	2.60	198.10
894	1.00	206.30
899	5.90	192.10
901	5.80	189.00
906	2.10	292.50
910	1.50	294.90
916	5.00	222.40
922	1.00	238.30
923	3.30	182.20
929	0.70	181.60
937	3.20	183.80
944	3.60	196.50
945	3.20	192.00
954	2.60	193.70
958	6.00	201.60
961	1.40	205.40
962	3.60	179.30
964	0.20	179.40
975	6.30	184.50
979	1.30	173.70
994	5.30	192.30
1003	5.00	435.80
1023	6.00	389.60
1024	2.80	408.40
1032	4.10	455.00
1049	3.10	421.50
1050	5.60	188.20
1053	3.50	183.20
1056	1.80	192.00
1057	6.00	179.20
1060	5.90	196.50
1063	1.50	238.10
1064	2.70	181.30
1071	2.70	190.50
1084	10.70	198.50
1085	4.00	197.60
1089	2.20	190.70
1099	9.50	233.90
1100	0.60	339.70
1101	1.40	323.20
1103	4.90	346.40
1104	0.40	285.50
1107	2.90	211.40
1120	1.40	222.90
1121	2.00	205.30
1122	0.70	204.40
1125	1.80	205.00
1130	5.20	225.00
1134	6.50	202.90
1137	3.90	202.10
1156	5.60	184.90
1180	3.60	195.40
1181	3.20	186.00
1183	1.80	190.20
1184	5.40	189.70
1186	3.10	191.30
1210	4.10	215.60
1211	0.20	564.40
1214	1.80	607.60
1215	1.60	200.80
1217	3.70	207.80
1218	5.90	217.60
1223	2.40	187.20
1224	3.50	187.60
1229	3.50	224.40
1232	6.20	183.90
1235	4.70	197.20
1239	1.60	265.90
1240	0.10	608.90
1244	4.80	591.00
1251	5.80	622.30
1262	0.30	349.90
1270	1.60	184.30
1277	5.60	340.00
1284	4.50	224.00
1290	6.00	207.20
1293	3.10	206.60
1295	3.70	200.40
1298	0.60	224.20
1309	6.10	185.00
1310	4.70	184.40
1314	3.80	183.00

6" and 2"

2020 Fireflow - Main Zone East

1318	3.40	221.20
1322	2.90	194.60
1328	2.90	192.30
1333	2.90	191.30
1337	3.20	192.80
1338	7.40	257.70
1356	2.10	190.80
1359	0.70	193.30
1364	2.80	193.90
1366	4.20	190.60
1375	7.90	168.30
1387	2.60	182.40
1388	4.80	200.40
1392	4.20	220.30
1396	1.50	308.10
1409	4.80	222.20
1410	1.70	392.50
1456	2.70	183.20
1465	2.60	235.70
1483	4.80	193.40
1484	11.60	183.60
1497	2.10	167.20
1498	1.30	396.40
1502	3.20	385.30
1513	0.70	339.40
1517	4.50	205.40
1519	0.80	211.30
1524	1.00	615.60
1544	13.60	194.80
1547	10.90	208.00
1570	8.10	200.80
1575	6.40	171.60
1576	1.30	253.70
1580	1.50	245.80
1626	15.50	272.90
1627	9.10	289.00
1630	24.30	266.70
1636	151.70	245.70
1637	21.00	249.10
1647	21.40	236.20
1648	21.60	187.30
1657	5.80	163.30
1658	5.80	185.90
1674	6.70	178.00
1679	2.60	317.70
1689	2.50	323.60
1690	0.40	319.70
1698	4.30	256.80
1699	4.70	218.50
1700	2.20	216.20
1710	3.00	303.90
1711	0.60	209.80
1712	1.40	268.50
1713	1.30	571.10
1716	5.80	533.50
1719	0.50	516.50
1737	4.90	166.60
1742	8.00	183.60
1767	3.10	193.40
1773	3.40	272.20
1775	1.50	270.10
1776	4.00	269.20
1782	7.40	269.10
1788	5.20	269.00
1791	0.70	273.40
1793	0.90	270.60
1799	2.50	201.40
1800	2.20	166.10
1801	0.70	173.70
1805	2.10	179.70
1806	1.20	173.10
1808	1.10	179.80
1809	2.00	172.30
1810	3.60	179.50
1813	2.80	171.10
1814	4.80	167.10
1818	1.50	160.70
1821	4.10	169.80
1823	2.70	182.50
1826	3.10	183.30
1827	5.60	192.90
1831	1.70	234.10
1848	0.90	234.90
1860	3.80	237.60
1861	2.80	190.10
1868	0.40	164.90
1871	0.10	185.30
1873	2.40	198.40
1874	3.90	187.50
1875	3.70	186.60
1880	1.40	180.20
1881	1.10	183.10
1884	3.20	194.10
1885	0.20	195.20
1886	3.40	194.50
1887	3.30	198.50
1888	0.10	219.50
1889	1.20	222.30
1891	2.80	194.20
1894	0.60	190.70
1896	3.50	189.80
1897	3.40	191.50
2003	2.70	185.20
2007	2.50	200.60
2009	3.30	196.90

2020 Fireflow - Main Zone East

2010	3.90	191.70	
2012	3.40	199.00	
2013	2.90	200.10	
2014	4.80	193.20	
2016	4.40	222.30	
2021	0.70	204.20	
2023	0.50	206.90	
2025	1.90	455.60	
2028	1.10	520.90	
2029	1.00	449.00	
2030	0.60	460.10	
2031	2.40	430.90	
2032	0.70	484.00	
2033	1.70	474.20	
2047	0.60	309.00	
2050	0.10	301.10	
2051	0.00	229.60	
2052	0.00	229.90	
2053	3.60	220.60	
2061	0.90	208.20	
2063	6.30	205.00	
2065	4.60	198.90	
2066	3.40	222.20	
2067	6.80	216.20	
2072	6.50	221.90	
2073	2.50	199.80	
2074	4.00	220.90	
2076	6.80	204.40	
2078	3.20	199.20	
2079	3.50	203.10	
2080	4.10	191.60	
2081	3.60	198.70	
2083	6.90	255.40	
2084	4.60	224.10	
2086	4.70	230.30	
2088	7.30	604.50	
2090	7.80	391.30	
2091	4.00	195.30	
2092	2.00	251.60	
2093	5.00	236.00	
2094	5.60	188.50	
2095	3.90	187.60	
2096	2.70	196.50	
2097	4.10	202.50	
2098	4.30	202.10	
2100	5.60	197.30	
2101	6.50	270.60	
2103	7.10	236.90	
2104	3.10	200.50	
2105	4.60	201.90	
2106	2.20	192.10	
2107	5.20	190.50	
2109	3.80	190.80	
2110	2.90	192.70	
2111	2.60	191.00	
2112	5.40	190.20	
2113	4.50	195.50	
2115	3.70	191.90	
2117	3.30	217.50	
2119	5.80	193.60	
2120	3.10	268.60	
2121	2.80	193.00	
2122	4.80	183.70	
2123	3.40	193.20	
2125	1.00	206.20	
2126	2.20	192.50	
2127	6.80	203.70	
2129	3.80	218.10	
2130	2.90	198.00	
2132	1.80	230.10	
2133	3.40	578.00	
2137	4.50	198.20	
2138	6.10	221.50	
I-18th St	0.00	218.20	
O-18th St	0.00	218.20	
3-in or sm	0.10	185.50	
3-inch or	0.30	183.00	
3-inch or	0.10	183.10	
O-AV-1	0.00	283.80	
I-AV-2	0.00	306.00	
I-AV-3	0.00	253.40	
O-AV-4	0.00	289.30	
O-AV-5	0.00	225.30	
O-AV-6	0.00	208.10	
O-Central1	----	333.50	541.19
O-Fairview	Fairview PRV	346.50	466.50
O-High Lev	High Level P	401.60	
High Level	High Level R	605.00	605.00
Hillcrest		0.20	256.20
inter-tie		2.80	174.40
J-1		3.40	174.00
J-100		0.80	190.60
J-105		2.50	175.60
J-106		2.80	206.20
J-11		2.80	280.00
J-110		4.90	198.00
J-111		2.00	192.50
J-112		5.20	167.90
J-113		2.40	200.50
J-114		11.00	405.70
J-115		1.90	197.30
J-116		1.90	207.10
J-117		1.70	192.10
J-120		2.40	237.50
J-122		2.50	174.00

2020 Fireflow - Main Zone East

J-123		0.40	224.70	
J-124		2.10	403.80	
J-125		2.00	383.00	
J-126		3.30	367.95	
J-127		27.60	225.20	
J-128		14.40	235.20	
J-129		8.30	184.80	
J-130		3.80	222.00	
J-131		0.60	418.00	
J-132		2.20	176.00	
J-133		0.90	339.60	
J-134		1.10	200.90	
J-135		3.50	288.30	
J-136		0.80	204.10	
J-138		1.00	219.60	
J-139		0.40	222.60	
J-140		0.50	218.20	
J-141		0.40	200.90	
J-142		0.20	218.20	
J-143		11.60	193.40	
J-144		1.90	193.40	
J-145		0.10	218.20	
J-146		0.00	218.20	
J-147		0.00	218.20	
J-148		7.40	498.90	
J-149		3.70	306.10	
J-150		5.90	272.40	
J-151		13.50	326.80	
J-152		6.30	272.40	
J-153		136.50	302.40	
J-154		6.00	267.60	
J-155		17.40	263.80	
J-156		19.70	261.30	
J-157		1.80	265.80	
J-158		5.30	211.40	
J-159		0.40	343.00	
J-2		5.70	201.80	
J-20		2.20	182.90	
J-21		2.50	182.80	
J-25		5.00	311.10	
J-27		4.20	207.10	
J-3		3.30	182.20	
J-30		7.70	219.90	
J-35		8.20	222.10	
J-39		4.10	218.10	
J-4		2.50	184.40	
J-42		6.00	222.00	
J-44		6.20	208.40	
J-45		4.20	205.00	
J-53		9.60	294.30	
J-55		2.60	297.10	
J-57		1.20	229.20	
J-58		1.50	204.60	
J-6		2.80	473.40	
J-61		4.20	207.00	
J-62		1.10	191.50	
J-63		1.40	225.20	
J-64		4.10	202.30	
J-67		2.10	210.80	
J-7		3.50	214.70	
J-71		2.20	204.60	
J-73		6.30	199.60	
J-74		1.10	301.00	
J-77		0.60	296.10	
J-78		5.20	230.70	
J-79		2.80	223.40	
J-8		6.50	208.80	
J-80		5.00	190.70	
J-81		6.60	218.90	
J-82		6.50	257.90	
J-84		2.30	226.30	
J-87		4.10	194.40	
J-88		21.20	275.70	
J-90		0.10	219.10	
J-91		9.80	352.90	
J-93		1.70	187.50	
J-94		3.60	187.50	
J-95		13.30	189.50	
J-96		6.50	176.90	
J-99		1.10	205.50	
Kennicott	Kennicott Re	----	374.00	397.90
Main Reser	Main Reservo	----	383.30	401.50
physical d		0.10	222.00	
I-RV-1		0.00	193.40	
I-RV-2		0.00	200.90	
O-South En		----	287.90	495.59
O-Valley V	Valley View	0.00	308.10	
Yankis (Va	Yankis (Vall	----	631.50	635.90
Yates Rese	500,000 gal	----	376.00	401.50
O-18th St		----	218.20	389.66
I-18th St		0.00	218.20	
I-AV-1		0.00	283.80	
O-AV-2		0.00	306.00	
O-AV-3		0.00	253.40	
I-AV-4		0.00	289.30	
I-AV-5		0.00	225.30	
I-AV-6		0.00	208.10	
I-Centrall		0.00	333.50	
I-Fairview	Fairview PRV	0.00	346.50	
I-High Lev	High Level P	0.00	401.60	
O-RV-1		----	193.40	389.55
O-RV-2		----	200.90	389.67
I-South En		0.00	287.90	
I-Valley V	Valley View	0.00	308.10	

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 5
 MAXIMUM AND MINIMUM VELOCITIES = 5
 MAXIMUM AND MINIMUM HEAD LOSS/1000 = 5

SUPPLY ZONE DATA

THIS SYSTEM HAS MULTIPLE SUPPLY ZONES

ZONE NO. 1 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@18th St PRV ~@RV-2 ~@RV-1~@Yankis (Valley V
 ~@Fairview PRV~@Kennicott Reserv~@High Level Reser ~@Main Reservoir
 ~@Yates Reservoir
 ZONE NO. 2 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@Centralia Alpha
 ZONE NO. 3 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@South End Pump S

SYSTEM CONFIGURATION

NUMBER OF PIPES(P) = 714
 NUMBER OF END NODES(J) = 562
 NUMBER OF PRIMARY LOOPS(L) = 148
 NUMBER OF SUPPLY NODES(F) = 7
 NUMBER OF SUPPLY ZONES(Z) = 3

Case: 0

RESULTS OBTAINED AFTER 24 TRIALS: ACCURACY = 0.39037E-04

SIMULATION DESCRIPTION (LABEL)

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS		FLOWRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/ 1000 ft/f	HL/ 1000 ft/f
	#1	#2						
3	6	5	18.42	0.00	0.00	0.08	0.01	0.01
5	10	9	2.30	0.00	0.00	0.03	0.00	0.00
6	12	11	0.10	0.00	0.00	0.00	0.00	0.00
7	872	13	0.10	0.00	0.00	0.00	0.00	0.00
8	15	16	34.32	0.00	0.00	0.39	0.28	0.28
10	18	19	1.20	0.02	0.00	0.12	0.05	0.05
12	22	23	31.65	0.03	0.00	0.20	0.04	0.04
13	24	1524	1.00	0.00	0.00	0.03	0.00	0.00
14	26	J-55	4.90	0.00	0.00	0.03	0.00	0.00
16	28	29	0.60	0.00	0.00	0.02	0.00	0.00
17	32	31	2.00	0.15	0.00	0.20	0.20	0.20
21	38	37	0.50	0.00	0.00	0.01	0.00	0.00
22	2014	40	9.61	0.00	0.00	0.06	0.00	0.00
23	41	1699	11.64	0.00	0.00	0.03	0.00	0.00
24	213	43	0.10	0.00	0.00	0.00	0.00	0.00
26	47	48	0.50	0.00	0.00	0.01	0.00	0.00
27	49	50	0.90	0.00	0.00	0.00	0.00	0.00
28	51	52	2.00	0.00	0.00	0.01	0.00	0.00
32	60	59	0.30	0.00	0.00	0.00	0.00	0.00
35	65	66	18.96	0.04	0.00	0.22	0.13	0.13
37	68	69	7.21	0.00	0.00	0.05	0.00	0.00
38	52	70	0.70	0.00	0.00	0.01	0.00	0.00
39	72Hillcrest		0.20	0.00	0.00	0.01	0.00	0.00
41	76	75	10.31	0.00	0.00	0.03	0.00	0.00
45	2066	83	0.10	0.00	0.00	0.00	0.00	0.00
46	86	85	0.10	0.00	0.00	0.00	0.00	0.00
52	97	98	0.20	0.00	0.00	0.00	0.00	0.00
55	102	103	0.20	0.00	0.00	0.00	0.00	0.00
56	1810	104	4.04	0.00	0.00	0.01	0.00	0.00
59	107	108	5.25	0.00	0.00	0.01	0.00	0.00
60	109	J-53	12.60	0.00	0.00	0.02	0.00	0.00
66	J-91	118	462.20	1.34	0.00	0.96	0.57	0.57
68	121	119	117.16	0.04	0.00	0.24	0.06	0.06
70	860	121	186.55	0.00	0.00	0.39	0.15	0.15
72	118	1799	2.50	0.00	0.00	0.02	0.00	0.00
85	396physical d		0.10	0.00	0.00	0.00	0.00	0.00
107	J-91	2067	1105.22	3.79	0.00	2.30	3.99	3.99
109	325	34	27.72	0.00	0.00	0.08	0.00	0.00
110	166	2122	91.49	0.04	0.00	0.26	0.04	0.04
112	166	962	5.92	0.00	0.00	0.02	0.00	0.00
114	962	569	2.12	0.00	0.00	0.01	0.00	0.00
115	665	569	5.58	0.00	0.00	0.02	0.00	0.00
118	J-105	172	2.89	0.00	0.00	0.01	0.00	0.00
120	178	175	149.38	0.02	0.00	0.42	0.09	0.09
123	1826	178	176.14	0.06	0.00	0.50	0.13	0.13
126	1827	1826	203.91	0.05	0.00	0.58	0.17	0.17
129	192	1827	251.53	0.41	0.00	0.71	0.25	0.25

2020 Fireflow - Main Zone East

137	201	192	237.27	0.05	0.00	0.67	0.22	0.22
139	137	201	307.75	0.15	0.00	0.87	0.36	0.36
141	137	15	93.52	0.02	0.00	0.27	0.04	0.04
142	15	J-95	52.50	0.03	0.00	0.15	0.01	0.01
145	201	J-93	67.07	0.02	0.00	0.19	0.03	0.03
155	212	213	17.90	0.00	0.00	0.05	0.00	0.00
156	214	26	100.71	0.07	0.00	0.29	0.05	0.05
163	2072	224	3.50	0.00	0.00	0.01	0.00	0.00
187	248	253	5.10	0.00	0.00	0.01	0.00	0.00
192	254	J-127	110.88	0.07	0.00	0.31	0.04	0.04
262	325	1575	20.56	0.00	0.00	0.06	0.00	0.00
279	344	343	12.00	0.00	0.00	0.03	0.00	0.00
280	342	344	16.90	0.00	0.00	0.05	0.00	0.00
282	342	346	0.50	0.00	0.00	0.00	0.00	0.00
283	86	J-130	3.80	0.00	0.00	0.01	0.00	0.00
292	361	356	26.54	0.03	0.00	0.11	0.01	0.01
298	J-7	32	25.40	0.00	0.00	0.10	0.01	0.01
302	32	480	18.60	0.01	0.00	0.08	0.01	0.01
318	384	385	104.41	0.01	0.00	0.43	0.12	0.12
319	356	2074	5.20	0.00	0.00	0.02	0.00	0.00
320	356	41	12.04	0.00	0.00	0.05	0.00	0.00
329	396	398	350.34	0.08	0.00	1.43	2.45	2.45
331	398	1409	238.43	0.37	0.00	0.97	1.20	1.20
340	407	408	205.27	0.59	0.00	0.84	0.91	0.91
353	661	2119	29.17	0.10	0.00	0.33	0.29	0.29
355	1648	424	102.15	0.03	0.00	0.42	0.18	0.18
363	295	468	25.00	0.02	0.00	0.10	0.01	0.01
398	172	473	1.50	0.00	0.00	0.00	0.00	0.00
403	480	474	1.90	0.00	0.00	0.01	0.00	0.00
411	2129	J-45	10.69	0.01	0.00	0.07	0.01	0.01
414	1217	1121	3.20	0.00	0.00	0.04	0.00	0.00
417	1235	492	73.90	0.17	0.00	0.47	0.41	0.41
429	505	509	87.74	0.28	0.00	0.56	0.56	0.56
433	512	510	5.06	0.00	0.00	0.03	0.00	0.00
435	1057	513	3.00	0.00	0.00	0.02	0.00	0.00
440	518	J-94	8.00	0.00	0.00	0.05	0.01	0.01
448	1184	92	27.90	0.03	0.00	0.18	0.03	0.03
451	119	530	47.52	0.01	0.00	0.30	0.18	0.18
452	119	536	66.25	0.15	0.00	0.42	0.33	0.33
458	536	2079	26.54	0.04	0.00	0.17	0.06	0.06
461	2079	540	1.36	0.00	0.00	0.01	0.00	0.00
464	544	543	20.31	0.02	0.00	0.13	0.04	0.04
472	552	J-100	37.24	0.01	0.00	0.24	0.11	0.11
476	I-AV-1	J-114	0.00	0.00	0.00	0.00	0.00	0.00
486	569	573	1.30	0.00	0.00	0.01	0.00	0.00
490	385	166	103.31	0.06	0.00	0.66	0.24	0.24
495	579	J-138	88.09	0.08	0.00	0.56	0.25	0.25
497	584	582	32.38	0.02	0.00	0.21	0.04	0.04
503	J-73	590	74.94	0.33	0.00	0.48	0.42	0.42
511	599	601	1.30	0.00	0.00	0.01	0.00	0.00
526	599	619	2.00	0.00	0.00	0.01	0.00	0.00
531	620	623	1.70	0.00	0.00	0.01	0.00	0.00
538	628	631	34.40	0.01	0.00	0.22	0.07	0.07
541	1049	632	0.80	0.00	0.00	0.01	0.00	0.00
547	631	642	1.60	0.00	0.00	0.01	0.00	0.00
552	High Level	2090	89.80	0.46	0.00	0.57	0.42	0.42
565	509	661	52.61	0.29	0.00	0.34	0.22	0.22
569	597	1284	156.16	0.20	0.00	1.00	1.16	1.16
571	46	2086	104.72	0.27	0.00	0.67	0.55	0.55
574	668	665	15.09	0.01	0.00	0.10	0.01	0.01
577	668	675	1.40	0.00	0.00	0.01	0.00	0.00
584	J-27	676	2.50	0.00	0.00	0.02	0.00	0.00
590	54	682	0.50	0.00	0.00	0.00	0.00	0.00
591	J-95	683	5.40	0.00	0.00	0.03	0.00	0.00
593	J-78	686	0.90	0.00	0.00	0.01	0.00	0.00
597	408	J-79	256.75	0.09	0.00	1.64	4.08	4.08
601	1960	361	18.61	0.03	0.00	0.12	0.02	0.02
612	710	705	20.94	0.00	0.00	0.13	0.02	0.02
617	1134	717	29.72	0.03	0.00	0.19	0.03	0.03
623	247	718	0.10	0.00	0.00	0.00	0.00	0.00
630	424	726	119.49	0.09	0.00	0.76	0.99	0.99
632	726	J-80	81.99	0.19	0.00	0.52	0.49	0.49
652	468	780	8.00	0.01	0.00	0.05	0.00	0.00
684	2092	781	0.10	0.00	0.00	0.00	0.00	0.00
686	784	1698	3.03	0.00	0.00	0.02	0.00	0.00
690	788	791	7.44	0.00	0.00	0.05	0.00	0.00
693	791	792	0.30	0.00	0.00	0.00	0.00	0.00
697	797	784	5.49	0.00	0.00	0.04	0.00	0.00
700	800	802	0.80	0.00	0.00	0.01	0.00	0.00
702	803	1465	31.54	0.09	0.00	0.36	0.34	0.34
706	2009	808	13.67	0.07	0.00	0.16	0.07	0.07
710	815	813	15.72	0.03	0.00	0.18	0.09	0.09
712	121	2093	67.19	0.06	0.00	0.76	1.38	1.38
714	2094	40	12.19	0.39	0.00	0.31	0.42	0.42
723	2096	828	7.89	0.01	0.00	0.09	0.03	0.03
726	831	544	21.81	0.01	0.00	0.25	0.17	0.17
727	530	831	37.91	0.16	0.00	0.43	0.48	0.48
735	831	1989	14.40	0.02	0.00	0.16	0.08	0.08
739	842	844	2.40	0.00	0.00	0.03	0.00	0.00
741	817	844	5.87	0.01	0.00	0.07	0.02	0.02
749	J-115	856	7.77	0.01	0.00	0.09	0.03	0.03
751	2078	14	8.57	0.01	0.00	0.10	0.03	0.03
753	860	2097	27.21	0.15	0.00	0.31	0.26	0.26
757	868	865	6.32	0.00	0.00	0.07	0.02	0.02
760	J-113	868	2.68	0.00	0.00	0.03	0.00	0.00
762	872	868	6.23	0.00	0.00	0.07	0.02	0.02
772	881	2098	1.27	0.00	0.00	0.01	0.00	0.00
776	J-111	885	0.78	0.00	0.00	0.01	0.00	0.00
784	J-106	893	2.40	0.00	0.00	0.03	0.00	0.00
785	J-110	893	6.01	0.01	0.00	0.07	0.02	0.02
789	66	899	3.97	0.00	0.00	0.05	0.01	0.01
791	901	899	4.48	0.00	0.00	0.05	0.01	0.01
793	901	1742	10.03	0.05	0.00	0.11	0.04	0.04
797	910	906	2.10	0.00	0.00	0.02	0.00	0.00
801	910	38	0.37	0.00	0.00	0.00	0.00	0.00

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807	842	2084	7.60	0.01	0.00	0.09	0.02	0.02
812	916	922	1.00	0.00	0.00	0.01	0.00	0.00
814	J-20	923	17.32	0.06	0.00	0.20	0.11	0.11
817	J-21	929	0.70	0.00	0.00	0.01	0.00	0.00
823	937	J-2	1.32	0.00	0.00	0.01	0.00	0.00
825	556	J-2	2.67	0.00	0.00	0.03	0.00	0.00
831	2080	945	5.82	0.01	0.00	0.07	0.01	0.01
839	954	2081	1.45	0.00	0.00	0.02	0.00	0.00
846	962	964	0.20	0.00	0.00	0.00	0.00	0.00
858	1314	1387	19.00	0.06	0.00	0.49	0.96	0.96
861	108	104	3.55	0.00	0.00	0.04	0.00	0.00
867	J-110	958	2.28	0.00	0.00	0.03	0.00	0.00
874	994	65	3.13	0.00	0.00	0.04	0.00	0.00
876	65	1986	9.24	0.02	0.00	0.10	0.04	0.04
883	1003	1023	12.55	0.02	0.00	0.14	0.04	0.04
903	J-125	1024	39.40	0.13	0.00	0.45	0.37	0.37
905	O-High Lev	649	0.00	0.00	0.00	0.00	0.00	0.00
910	1024	628	36.60	0.21	0.00	0.42	0.32	0.32
912	1003	1032	8.55	0.02	0.00	0.10	0.02	0.02
930	1050	1053	3.50	0.01	0.00	0.04	0.00	0.00
933	384	2100	17.67	0.11	0.00	0.20	0.12	0.12
936	16	1057	32.92	0.11	0.00	0.37	0.26	0.26
938	1060	1063	2.40	0.00	0.00	0.03	0.00	0.00
941	J-129	1064	2.70	0.00	0.00	0.03	0.00	0.00
948	526	1071	32.06	0.08	0.00	0.36	0.25	0.25
949	526	1084	26.01	0.67	0.00	0.30	0.24	0.24
962	1337	1085	7.97	0.02	0.00	0.09	0.03	0.03
966	1099	J-78	60.19	1.10	0.00	0.68	0.80	0.80
975	1101	1100	0.60	0.00	0.00	0.01	0.00	0.00
976	O-Fairview	1101	15.00	0.01	0.00	0.17	0.06	0.06
982	J-81	2103	3.35	0.00	0.00	0.04	0.01	0.01
993	1121	1122	0.70	0.00	0.00	0.01	0.00	0.00
994	2076	2127	19.42	0.04	0.00	0.22	0.14	0.14
1000	1130	1125	1.80	0.00	0.00	0.02	0.00	0.00
1001	J-73	2104	40.02	0.33	0.00	0.45	0.53	0.53
1003	2104	1134	36.22	0.11	0.00	0.41	0.44	0.44
1004	509	1290	38.61	0.24	0.00	0.44	0.50	0.50
1007	2105	1137	34.35	0.13	0.00	0.39	0.40	0.40
1009	2013	1388	46.92	0.19	0.00	0.53	0.71	0.71
1012	2107	2106	64.80	0.77	0.00	0.74	1.29	1.29
1014	23	510	37.96	0.44	0.00	0.43	0.48	0.48
1017	2137	2109	25.83	0.11	0.00	0.29	0.24	0.24
1019	2109	2094	30.44	0.10	0.00	0.35	0.32	0.32
1020	2094	23	32.64	0.05	0.00	0.37	0.36	0.36
1023	23	1156	19.93	0.07	0.00	0.23	0.15	0.15
1024	2073	2096	23.38	0.04	0.00	0.27	0.20	0.20
1025	2096	2110	20.95	0.04	0.00	0.24	0.16	0.16
1026	2110	1997	12.99	0.02	0.00	0.15	0.07	0.07
1028	1997	2111	1.35	0.00	0.00	0.02	0.00	0.00
1030	2112	2111	19.10	0.04	0.00	0.22	0.13	0.13
1032	2113	1961	8.37	0.01	0.00	0.09	0.03	0.03
1035	704	1961	26.97	0.07	0.00	0.31	0.25	0.25
1036	1961	2109	32.53	0.11	0.00	0.37	0.36	0.36
1037	2010	2014	45.74	0.44	0.00	0.52	0.68	0.68
1040	2012	2013	66.27	0.44	0.00	0.75	1.35	1.35
1041	2065	2012	27.19	0.08	0.00	0.31	0.26	0.26
1042	2137	2065	24.74	0.06	0.00	0.28	0.22	0.22
1043	2113	2137	8.28	0.01	0.00	0.09	0.03	0.03
1044	1180	2113	55.16	0.26	0.00	0.63	0.96	0.96
1046	22	1181	9.80	0.00	0.00	0.11	0.04	0.04
1047	2095	22	44.36	0.11	0.00	0.50	0.64	0.64
1048	726	1184	36.00	0.00	0.00	0.23	0.05	0.05
1051	1186	1996	14.26	0.02	0.00	0.16	0.08	0.08
1053	827	1232	21.41	0.19	0.00	0.24	0.17	0.17
1058	1232	1156	20.22	0.09	0.00	0.23	0.15	0.15
1060	1156	512	34.55	0.37	0.00	0.39	0.40	0.40
1062	512	2107	23.39	0.15	0.00	0.27	0.20	0.20
1064	2115	2107	8.39	0.00	0.00	0.10	0.03	0.03
1069	2117	2065	32.57	0.21	0.00	0.37	0.36	0.36
1071	1210	2137	46.79	0.41	0.00	0.53	0.71	0.71
1074	1713	1211	0.20	0.00	0.00	0.00	0.00	0.00
1076	24	1713	27.70	0.03	0.00	0.31	0.12	0.12
1077	1215	J-58	15.26	0.03	0.00	0.17	0.09	0.09
1078	68	1217	2.85	0.00	0.00	0.03	0.00	0.00
1080	1218	2112	45.21	0.70	0.00	0.51	0.66	0.66
1083	2112	1223	25.78	0.08	0.00	0.29	0.23	0.23
1085	2111	1224	17.43	0.04	0.00	0.20	0.11	0.11
1087	1333	1085	0.42	0.00	0.00	0.00	0.00	0.00
1088	1085	808	4.40	0.00	0.00	0.05	0.01	0.01
1090	808	1229	13.67	0.02	0.00	0.16	0.07	0.07
1091	1181	1232	5.00	0.01	0.00	0.06	0.01	0.01
1094	1483	1235	29.99	0.12	0.00	0.34	0.31	0.31
1095	2120	1104	0.40	0.00	0.00	0.00	0.00	0.00
1096	2120	1239	1.60	0.00	0.00	0.02	0.00	0.00
1099	1214	1240	0.10	0.00	0.00	0.00	0.00	0.00
1100	1244	1214	64.20	0.27	0.00	0.73	0.58	0.58
1103	1251	1244	36.35	0.11	0.00	0.41	0.20	0.20
1110	Yankis (Va	1251	74.80	0.32	0.00	0.85	0.76	0.76
1116	J-25	1513	24.50	0.00	0.00	0.16	0.02	0.02
1117	J-159	1277	5.90	0.00	0.00	0.07	0.01	0.01
1118	1277	1262	0.30	0.00	0.00	0.00	0.00	0.00
1120	657	J-25	29.50	0.01	0.00	0.12	0.01	0.01
1125	1181	1270	1.60	0.00	0.00	0.02	0.00	0.00
1127	2103	1099	21.78	0.26	0.00	0.25	0.17	0.17
1132	1277	I-AV-4	0.00	0.00	0.00	0.00	0.00	0.00
1138	693	579	91.39	2.10	0.00	1.04	2.44	2.44
1140	1284	O-AV-3	0.00	0.00	0.00	0.00	0.00	0.00
1146	1290	2119	6.08	0.15	0.00	0.16	0.12	0.12
1148	1293	1295	9.04	0.09	0.00	0.23	0.24	0.24
1150	398	2016	35.19	0.03	0.00	0.40	0.42	0.42
1152	1120	1298	0.60	0.00	0.00	0.01	0.00	0.00
1154	432	1309	6.10	0.03	0.00	0.07	0.01	0.01
1165	1310	1314	4.82	0.09	0.00	0.12	0.08	0.08
1169	2127	J-61	4.54	0.07	0.00	0.12	0.07	0.07
1171	1318	2105	14.51	0.34	0.00	0.37	0.58	0.58

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1173	2105	1322	10.38	0.15	0.00	0.26	0.31	0.31
1178	40	2115	17.51	0.25	0.00	0.45	0.83	0.83
1179	2115	1328	20.83	0.67	0.00	0.53	1.14	1.14
1182	803	J-81	15.58	0.42	0.00	0.40	0.67	0.67
1185	1337	1333	2.90	0.02	0.00	0.07	0.03	0.03
1189	1338	807	8.56	0.34	0.00	0.22	0.22	0.22
1193	518	192	13.12	0.03	0.00	0.34	0.48	0.48
1195	1060	192	8.24	0.12	0.00	0.21	0.20	0.20
1198	705	1060	16.54	0.98	0.00	0.42	0.74	0.74
1205	J-80	492	8.67	0.22	0.00	0.22	0.22	0.22
1208	828	1356	4.45	0.02	0.00	0.11	0.07	0.07
1210	828	1359	0.70	0.00	0.00	0.02	0.00	0.00
1211	1364	1984	3.62	0.01	0.00	0.09	0.04	0.04
1212	1991	1364	2.32	0.01	0.00	0.06	0.02	0.02
1214	2121	1364	4.10	0.02	0.00	0.10	0.06	0.06
1215	1366	36	1.69	0.01	0.00	0.04	0.01	0.01
1217	1251	1244	32.65	0.11	0.00	0.37	0.16	0.16
1226	17	1375	3.30	0.07	0.00	0.08	0.03	0.03
1236	1387	17	15.10	0.18	0.00	0.39	0.45	0.45
1239	1392	1388	15.37	0.38	0.00	0.39	0.65	0.65
1244	33	1314	17.97	0.08	0.00	0.46	0.62	0.62
1245	1456	937	4.52	0.02	0.00	0.12	0.07	0.07
1247	384	1456	11.00	0.09	0.00	0.28	0.35	0.35
1248	1396I-Valley V		0.00	0.00	0.00	0.00	0.00	0.00
1258	1409	505	11.18	0.39	0.00	0.29	0.36	0.36
1261	1410	657	4.03	0.02	0.00	0.10	0.04	0.04
1269	1023	I-AV-2	0.00	0.00	0.00	0.00	0.00	0.00
1309	1456	881	3.77	0.02	0.00	0.10	0.05	0.05
1315	1056	885	0.40	0.00	0.00	0.01	0.00	0.00
1319	1465	2103	13.73	0.33	0.00	0.35	0.53	0.53
1322	407	509	12.19	0.35	0.00	0.31	0.42	0.42
1330	492	693	15.93	0.71	0.00	0.41	0.69	0.69
1338	1295	1483	5.34	0.09	0.00	0.14	0.09	0.09
1340	899	1484	2.55	0.04	0.00	0.07	0.02	0.02
1351	344	1497	2.10	0.00	0.00	0.05	0.01	0.01
1354	1502	1498	1.30	0.00	0.00	0.01	0.00	0.00
1358	J-133	1502	16.60	0.00	0.00	0.11	0.01	0.01
1371	1517	1519	0.80	0.01	0.00	0.08	0.04	0.04
1384	J-95	1544	33.80	0.02	0.00	0.10	0.01	0.01
1388	1544	1547	18.16	0.00	0.00	0.05	0.00	0.00
1389	1547	J-96	9.30	0.00	0.00	0.03	0.00	0.00
1396	1544	1547	2.04	0.00	0.00	0.01	0.00	0.00
1401	668	1674	32.89	0.01	0.00	0.09	0.00	0.00
1404	1674	102	14.70	0.00	0.00	0.04	0.00	0.00
1406	102	J-1	10.50	0.00	0.00	0.03	0.00	0.00
1409	92	J-143	11.60	0.00	0.00	0.03	0.00	0.00
1423	421	107	41.40	0.01	0.00	0.12	0.01	0.01
1426	34	1575	6.34	0.00	0.00	0.02	0.00	0.00
1427	1576	248	14.40	0.00	0.00	0.04	0.00	0.00
1429	248	1580	1.50	0.00	0.00	0.00	0.00	0.00
1433	26	51	88.41	0.02	0.00	0.25	0.04	0.04
1435	51	109	80.51	0.04	0.00	0.23	0.03	0.03
1440	109	6	60.41	0.01	0.00	0.17	0.02	0.02
1441	6	1647	36.49	0.01	0.00	0.10	0.01	0.01
1443	1637	1647	54.96	0.08	0.00	0.16	0.01	0.01
1454	72	1637	169.75	0.21	0.00	0.48	0.12	0.12
1455	1626	72	185.25	0.51	0.00	0.53	0.14	0.14
1458	1627	1626	472.78	0.61	0.00	1.34	0.79	0.79
1460	797	212	24.87	0.00	0.00	0.07	0.00	0.00
1464	1630	788	56.40	0.06	0.00	0.16	0.02	0.02
1477	1626	1630	272.03	0.32	0.00	0.77	0.29	0.29
1479	Yates Rese	1627	753.48	1.61	0.00	2.14	1.50	1.50
1481	1630	76	191.33	0.42	0.00	0.54	0.12	0.12
1483	76	1636	155.42	0.19	0.00	0.44	0.08	0.08
1487	1637	75	93.75	0.02	0.00	0.27	0.04	0.04
1492	75	49	91.40	0.02	0.00	0.26	0.04	0.04
1493	49	254	78.50	0.09	0.00	0.22	0.03	0.03
1494	J-35	254	50.58	0.02	0.00	0.14	0.01	0.01
1497	1647	2072	70.05	0.02	0.00	0.20	0.02	0.02
1499	247	1648	143.95	0.41	0.00	0.41	0.09	0.09
1500	343	1657	5.80	0.00	0.00	0.04	0.00	0.00
1509	1658	901	20.31	0.01	0.00	0.13	0.01	0.01
1526	1674	800	11.49	0.00	0.00	0.07	0.00	0.00
1531	800	174	7.19	0.00	0.00	0.05	0.00	0.00
1534	1679	1689	2.90	0.00	0.00	0.03	0.00	0.00
1544	1689	1690	0.40	0.00	0.00	0.00	0.00	0.00
1548	1698	2092	2.10	0.00	0.00	0.01	0.00	0.00
1552	1699	1700	2.20	0.00	0.00	0.01	0.00	0.00
1553	2138	89	3.90	0.00	0.00	0.02	0.00	0.00
1560	J-53	1710	3.00	0.00	0.00	0.02	0.00	0.00
1562	683	1711	0.60	0.00	0.00	0.00	0.00	0.00
1563	683	1712	1.40	0.00	0.00	0.01	0.00	0.00
1564	1713	1716	26.20	0.02	0.00	0.30	0.11	0.11
1567	1716	1719	0.50	0.00	0.00	0.01	0.00	0.00
1584	1742	1737	9.90	0.36	0.00	0.25	0.29	0.29
1588	1737	1375	4.60	0.03	0.00	0.12	0.07	0.07
1593	1484	1742	7.87	0.00	0.00	0.03	0.00	0.00
1596	975	1484	16.92	0.01	0.00	0.07	0.00	0.00
1611	1310	975	24.19	0.00	0.00	0.10	0.01	0.01
1612	2122	1310	33.72	0.01	0.00	0.14	0.01	0.01
1615	2123	1089	27.56	0.02	0.00	0.18	0.03	0.03
1617	1089	1186	18.73	0.03	0.00	0.21	0.13	0.13
1618	1186	1767	1.37	0.00	0.00	0.01	0.00	0.00
1621	J-135	1773	23.10	0.01	0.00	0.15	0.02	0.02
1626	1773	1775	19.00	0.00	0.00	0.12	0.01	0.01
1628	1775	1776	8.66	0.00	0.00	0.06	0.00	0.00
1629	1776	1782	3.76	0.00	0.00	0.02	0.00	0.00
1635	1788	1782	1.56	0.00	0.00	0.01	0.00	0.00
1641	1775	1788	8.84	0.00	0.00	0.06	0.00	0.00
1644	1773	1791	0.70	0.00	0.00	0.00	0.00	0.00
1645	1776	1793	0.90	0.00	0.00	0.01	0.00	0.00
1647	1788	1782	2.07	0.00	0.00	0.01	0.00	0.00
1654	1800	1801	0.70	0.00	0.00	0.00	0.00	0.00
1657	18053-inch or		0.30	0.00	0.00	0.00	0.00	0.00
1658	1806	1808	1.10	0.00	0.00	0.01	0.00	0.00

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1660	1809	1806	2.30	0.00	0.00	0.01	0.00	0.00
1661	1810	1821	24.51	0.00	0.00	0.10	0.01	0.01
1663	1821	1800	16.29	0.00	0.00	0.07	0.00	0.00
1664	1813	1809	6.70	0.00	0.00	0.03	0.00	0.00
1665	1814	1818	1.50	0.04	0.00	0.15	0.08	0.08
1669	1813	1814	3.89	0.00	0.00	0.02	0.00	0.00
1672	1821	J-112	4.12	0.00	0.00	0.03	0.00	0.00
1673	1826	1823	24.67	0.06	0.00	0.28	0.15	0.15
1676	1827	1071	42.03	0.01	0.00	-0.27	0.10	0.10
1677	1636	J-128	3.72	0.00	0.00	0.02	0.00	0.00
1792	844	910	3.97	0.01	0.00	0.10	0.05	0.05
1793	178	1823	24.66	0.00	0.00	0.16	0.04	0.04
1796	1063	1948	0.90	0.02	0.00	0.09	0.05	0.05
1799	1032	J-114	4.45	0.03	0.00	0.11	0.05	0.05
1810	12	1960	22.51	0.00	0.00	0.14	0.03	0.03
1811	10	12	25.71	0.04	0.00	0.16	0.04	0.04
1813	1767	J-117	2.60	0.00	0.00	0.03	0.00	0.00
1818	1737	1968	0.40	0.00	0.00	0.01	0.00	0.00
1820	1823	J-21	46.63	0.35	0.00	0.53	0.70	0.70
1821	175	384	142.78	0.45	0.00	0.58	0.21	0.21
1825	1973	566	0.50	0.00	0.00	0.01	0.00	0.00
1826	1974	1975	2.18	0.01	0.00	0.06	0.02	0.02
1828	J-3	1980	1.40	0.00	0.00	0.02	0.00	0.00
1830	19813-inch	or	0.10	0.00	0.00	0.00	0.00	0.00
1831	1984	1767	4.33	0.00	0.00	0.05	0.01	0.01
1834	1986	1985	0.20	0.00	0.00	0.01	0.00	0.00
1835	2125	894	1.43	0.00	0.00	0.01	0.00	0.00
1836	568	1987	0.73	0.00	0.00	0.02	0.00	0.00
1837	1989	1988	0.10	0.00	0.00	0.00	0.00	0.00
1839	2121	1991	8.14	0.01	0.00	0.09	0.03	0.03
1840	2123	2126	82.49	0.02	0.00	0.34	0.08	0.08
1841	994	1994	0.60	0.00	0.00	0.01	0.00	0.00
1842	1997	1996	8.24	0.02	0.00	0.09	0.03	0.03
1843	1184	2003	2.70	0.00	0.00	0.03	0.00	0.00
1852	2007	2009	25.13	0.05	0.00	0.29	0.22	0.22
1854	2065	2010	25.52	0.11	0.00	0.29	0.23	0.23
1855	J-39	2012	42.48	0.08	0.00	0.27	0.15	0.15
1856	2013	2014	16.45	0.02	0.00	0.19	0.05	0.05
1858	J-81	2016	5.63	0.15	0.00	0.14	0.10	0.10
1860	504	2127	8.78	0.22	0.00	0.22	0.23	0.23
1864	1121	2023	0.50	0.00	0.00	0.01	0.00	0.00
1865	2127	1215	16.86	0.03	0.00	0.19	0.11	0.11
1866	2025	2028	1.10	0.02	0.00	0.11	0.05	0.05
1869	2029	2030	0.60	0.00	0.00	0.06	0.01	0.01
1870	2031	2029	5.30	0.00	0.00	0.14	0.03	0.03
1871	2029	2025	3.70	0.00	0.00	0.09	0.01	0.01
1872	2025	2032	0.70	0.00	0.00	0.02	0.00	0.00
1873	2031	2033	1.70	0.00	0.00	0.04	0.00	0.00
1877	J-124	2031	5.40	0.00	0.00	0.06	0.00	0.00
1883	J-74	2047	0.60	0.00	0.00	0.01	0.00	0.00
1887	582	2053	11.49	0.18	0.00	0.29	0.27	0.27
1892	582	2129	16.49	0.18	0.00	0.42	0.53	0.53
1893	46	590	41.44	0.31	0.00	0.47	0.40	0.40
1894	J-45	2061	0.90	0.00	0.00	0.01	0.00	0.00
1895	2063	J-44	36.42	0.07	0.00	0.23	0.08	0.08
1896	5	361	18.12	0.00	0.00	0.07	0.01	0.01
1898	540	14	0.56	0.00	0.00	0.01	0.00	0.00
1900	163-in	or sm	0.10	0.00	0.00	0.00	0.00	0.00
1901	17	18	3.10	0.00	0.00	0.04	0.00	0.00
1904	2088	24	30.30	0.00	0.00	0.34	0.14	0.14
1907	36	2130	8.41	0.01	0.00	0.10	0.03	0.03
1908	2083	38	3.23	0.00	0.00	0.04	0.01	0.01
1909	2014	J-87	47.77	0.22	0.00	0.54	0.74	0.74
1917	69	J-61	0.46	0.00	0.00	0.00	0.00	0.00
1920	295	J-30	19.80	0.00	0.00	0.06	0.00	0.00
1924	2066	86	8.60	0.00	0.00	0.02	0.00	0.00
1927	104	J-112	3.49	0.00	0.00	0.04	0.01	0.01
1930	118	710	443.50	1.33	0.00	0.92	0.52	0.52
1935	2106	247	157.35	0.04	0.00	1.00	1.65	1.65
1936	2122	325	52.97	0.00	0.00	0.15	0.01	0.01
1938	1218	375	390.91	0.43	0.00	0.81	0.58	0.58
1940	1318	396	351.54	0.15	0.00	0.73	0.48	0.48
1941	480	2138	10.20	0.00	0.00	0.04	0.00	0.00
1947	530	2093	6.70	0.01	0.00	0.08	0.02	0.02
1948	536	2078	35.81	0.03	0.00	0.23	0.11	0.11
1949	565	1084	19.18	0.02	0.00	0.12	0.03	0.03
1950	556	944	3.14	0.00	0.00	0.04	0.00	0.00
1951	543	565	34.91	0.00	0.00	0.22	0.10	0.10
1954	J-84	O-AV-5	0.00	0.00	0.00	0.00	0.00	0.00
1956	584	717	74.60	0.08	0.00	0.30	0.10	0.10
1958	590	584	111.39	0.06	0.00	0.45	0.21	0.21
1960	620	2133	14.00	0.00	0.00	0.09	0.01	0.01
1962	1410	649	43.10	0.01	0.00	0.28	0.11	0.11
1964	661	424	18.45	0.00	0.00	0.08	0.01	0.01
1965	665	172	2.51	0.00	0.00	0.01	0.00	0.00
1967	710	137	409.17	0.90	0.00	0.85	0.45	0.45
1972	791	784	2.64	0.00	0.00	0.02	0.00	0.00
1975	788	797	34.16	0.00	0.00	0.10	0.01	0.01
1977	813	J-120	26.70	0.14	0.00	0.30	0.25	0.25
1978	815	803	19.01	0.08	0.00	0.22	0.13	0.13
1979	817	1338	31.15	0.15	0.00	0.35	0.33	0.33
1982	856	2121	19.80	0.04	0.00	0.22	0.14	0.14
1983	375	860	216.16	0.05	0.00	0.45	0.19	0.19
1984	865	65	30.88	0.03	0.00	0.20	0.08	0.08
1985	14	872	7.33	0.00	0.00	0.08	0.02	0.02
1986	923	J-3	16.54	0.04	0.00	0.19	0.10	0.10
1987	1987	944	3.24	0.00	0.00	0.04	0.01	0.01
1989	945	954	8.35	0.01	0.00	0.09	0.03	0.03
1990	958	J-106	4.77	0.00	0.00	0.05	0.01	0.01
1992	994	1658	72.11	0.03	0.00	0.29	0.06	0.06
1993	2101	60	13.20	0.01	0.00	0.15	0.07	0.07
1995	1049	1003	26.10	0.09	0.00	0.30	0.17	0.17
1996	631	1049	30.00	0.02	0.00	0.19	0.05	0.05
1997	975	1050	0.97	0.00	0.00	0.01	0.00	0.00
1998	1057	518	23.92	0.03	0.00	0.15	0.05	0.05

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2000	1084	552	34.49	0.04	0.00	0.22	0.10	0.10
2001	1120	1099	34.43	0.10	0.00	0.39	0.40	0.40
2002	J-79	1107	42.43	0.03	0.00	0.27	0.15	0.15
2003	1130	J-63	204.53	1.22	0.00	1.31	2.68	2.68
2005	398	1137	73.81	0.24	0.00	0.47	0.41	0.41
2010	1180	704	75.28	0.20	0.00	0.48	0.42	0.42
2011	704	1183	46.12	0.03	0.00	0.52	0.69	0.69
2014	2067	1210	522.35	0.56	0.00	1.09	1.00	1.00
2020	1224	1223	5.61	0.00	0.00	-0.06	0.01	0.01
2021	1224	827	8.32	0.02	0.00	0.09	0.03	0.03
2022	1229	815	37.93	0.14	0.00	0.43	0.48	0.48
2024	1517	1235	48.61	0.17	0.00	0.31	0.19	0.19
2025	J-82	1099	13.48	0.02	0.00	0.15	0.07	0.07
2027	1284	46	151.66	0.78	0.00	0.97	1.10	1.10
2031	1392	1318	369.44	0.16	0.00	0.77	0.52	0.52
2032	J-87	1322	50.93	0.22	0.00	0.58	0.83	0.83
2033	2091	1328	76.82	0.14	0.00	0.49	0.44	0.44
2035	2110	1337	14.08	0.00	0.00	0.16	0.08	0.08
2036	1338	813	15.19	0.06	0.00	0.17	0.09	0.09
2037	1089	1356	6.62	0.00	0.00	0.08	0.02	0.02
2039	1366	945	5.73	0.01	0.00	0.06	0.01	0.01
2040	1387	979	1.30	0.00	0.00	0.01	0.00	0.00
2042	J-39	1392	389.02	0.34	0.00	0.81	0.58	0.58
2045	1409	407	222.46	0.32	0.00	0.91	1.05	1.05
2048	1465	J-120	15.21	0.00	0.00	0.17	0.09	0.09
2053	1107	1517	53.91	0.10	0.00	0.34	0.23	0.23
2058	J-8	1570	38.90	0.03	0.00	0.16	0.03	0.03
2060	1575	342	20.50	0.00	0.00	0.06	0.00	0.00
2063	1627	J-135	271.60	0.10	0.00	0.77	0.28	0.28
2067	1648	432	20.20	0.03	0.00	0.08	0.01	0.01
2068	1658	421	46.00	0.02	0.00	0.19	0.03	0.03
2070	1101	1679	13.00	0.00	0.00	0.15	0.05	0.05
2071	212	1698	3.37	0.00	0.00	0.02	0.00	0.00
2078	1800	1813	13.39	0.00	0.00	0.05	0.00	0.00
2079	1809	1805	2.40	0.00	0.00	0.01	0.00	0.00
2080	107	1810	32.15	0.00	0.00	0.09	0.00	0.00
2087	1960	700	0.10	0.00	0.00	0.00	0.00	0.00
2089	1973	J-2	4.71	0.00	0.00	0.05	0.01	0.01
2090	1974	1366	11.62	0.02	0.00	0.13	0.05	0.05
2091	1975	36	10.31	0.02	0.00	0.12	0.04	0.04
2092	1981	J-4	22.72	0.05	0.00	0.26	0.19	0.19
2093	1984	994	81.14	0.03	0.00	0.33	0.07	0.07
2095	1986	552	5.64	0.01	0.00	0.06	0.01	0.01
2096	893	1987	5.81	0.00	0.00	0.07	0.01	0.01
2097	1989	842	13.10	0.01	0.00	0.15	0.07	0.07
2102	1996	827	19.00	0.04	0.00	0.22	0.13	0.13
2104	375	2007	170.14	0.19	0.00	0.69	0.29	0.29
2105	2009	2096	8.16	0.00	0.00	0.09	0.03	0.03
2111	2016	1120	36.43	0.01	0.00	0.41	0.44	0.44
2114	1293	1107	14.39	0.03	0.00	0.16	0.08	0.08
2118	2053	J-57	9.89	0.00	0.00	0.06	0.01	0.01
2120	717	2063	98.32	0.06	0.00	0.40	0.17	0.17
2127	2067	1218	442.02	0.24	0.00	0.92	0.73	0.73
2128	2067	1180	134.05	0.71	0.00	0.86	1.22	1.22
2139	2007	2073	142.51	0.01	0.00	0.58	0.21	0.21
2141	2074	483	1.20	0.00	0.00	0.01	0.00	0.00
2145	492	2076	58.73	0.09	0.00	0.37	0.27	0.27
2146	504	2076	53.64	0.18	0.00	0.34	0.22	0.22
2148	J-64	693	81.66	0.07	0.00	0.52	0.22	0.22
2149	2078	865	27.06	0.02	0.00	0.17	0.06	0.06
2150	1991	2078	3.02	0.00	0.00	0.03	0.00	0.00
2152	2079	543	16.59	0.01	0.00	0.11	0.03	0.03
2153	2080	2081	18.91	0.01	0.00	0.21	0.06	0.06
2154	2080	958	7.60	0.01	0.00	0.09	0.02	0.02
2155	2125	J-99	14.23	0.00	0.00	0.09	0.01	0.01
2156	2081	958	0.89	0.00	0.00	0.01	0.00	0.00
2159	2084	2083	12.20	0.00	0.00	0.08	0.01	0.01
2160	2083	916	2.06	0.00	0.00	0.02	0.00	0.00
2161	565	2084	13.13	0.01	0.00	0.08	0.02	0.02
2162	2084	916	3.94	0.01	0.00	0.04	0.01	0.01
2165	2086	578	1.60	0.00	0.00	0.01	0.00	0.00
2166	2086	2132	98.42	0.29	0.00	0.63	0.49	0.49
2169	2088	620	24.70	0.06	0.00	0.16	0.02	0.02
2170	1214	2088	62.30	0.09	0.00	0.71	0.54	0.54
2173	2090	1410	48.83	0.00	0.00	0.31	0.13	0.13
2174	2090	657	33.17	0.02	0.00	0.21	0.04	0.04
2175	1137	2091	104.26	0.36	0.00	0.67	0.77	0.77
2176	2091	505	81.85	0.15	0.00	0.52	0.49	0.49
2179	2093	817	41.12	0.17	0.00	0.47	0.56	0.56
2180	2093	1229	27.77	0.20	0.00	0.32	0.27	0.27
2181	2095	2094	19.99	0.09	0.00	0.23	0.15	0.15
2183	1223	2095	28.99	0.09	0.00	0.33	0.29	0.29
2184	1183	2095	39.25	0.17	0.00	0.45	0.51	0.51
2187	2097	856	14.73	0.04	0.00	0.17	0.08	0.08
2188	2073	2097	3.19	0.00	0.00	0.04	0.00	0.00
2189	2098	885	1.72	0.00	0.00	0.02	0.00	0.00
2190	2100	2098	1.74	0.00	0.00	0.02	0.00	0.00
2192	954	2130	4.29	0.00	0.00	0.05	0.01	0.01
2193	2100	1050	8.13	0.01	0.00	0.09	0.02	0.02
2194	2100	1056	2.20	0.00	0.00	0.03	0.00	0.00
2195	807	2101	41.18	0.18	0.00	0.47	0.25	0.25
2196	2101	J-82	21.48	0.25	0.00	0.24	0.17	0.17
2198	1290	1293	26.53	0.09	0.00	0.30	0.25	0.25
2199	60	2103	11.80	0.01	0.00	0.13	0.06	0.06
2202	2104	2021	0.70	0.00	0.00	0.02	0.00	0.00
2203	1388	2105	34.82	0.12	0.00	0.40	0.41	0.41
2206	1328	2106	94.75	0.10	0.00	0.60	0.64	0.64
2207	510	2107	38.22	0.15	0.00	0.43	0.49	0.49
2212	2109	2010	24.12	0.06	0.00	0.27	0.21	0.21
2214	1356	2110	9.01	0.01	0.00	0.10	0.03	0.03
2216	2111	1333	0.42	0.00	0.00	0.00	0.00	0.00
2217	1183	2112	5.07	0.00	0.00	0.06	0.01	0.01
2221	2113	803	34.01	0.25	0.00	0.39	0.39	0.39
2223	J-87	2115	15.41	0.03	0.00	0.17	0.09	0.09
2228	1210	2117	471.47	0.27	0.00	0.98	0.82	0.82

2020 Fireflow - Main Zone East

2231	2119	1483	29.45	0.12	0.00	0.33	0.30	0.30
2234	J-77	2120	5.10	0.00	0.00	0.06	0.01	0.01
2236	2121	2126	4.76	0.00	0.00	0.05	0.01	0.01
2240	2073	2123	113.45	0.06	0.00	0.46	0.14	0.14
2243	961	2125	0.78	0.00	0.00	0.00	0.00	0.00
2244	2081	2125	15.88	0.00	0.00	0.10	0.01	0.01
2246	2126	1984	85.05	0.02	0.00	0.35	0.08	0.08
2249	J-77	2050	0.10	0.00	0.00	0.00	0.00	0.00
2252	2129	2053	2.00	0.00	0.00	0.01	0.00	0.00
2253	2130	961	2.18	0.00	0.00	0.02	0.00	0.00
2254	2130	1973	7.62	0.00	0.00	0.09	0.02	0.02
2257	2132	214	105.31	0.00	0.00	0.67	0.56	0.56
2259	2133	599	8.30	0.00	0.00	0.05	0.00	0.00
2260	2133	47	2.30	0.00	0.00	0.01	0.00	0.00
2269	2138	481	0.20	0.00	0.00	0.00	0.00	0.00
P-1	J-1	97	6.90	0.00	0.00	0.02	0.00	0.00
F-100	J-112	1814	2.41	0.00	0.00	0.03	0.00	0.00
F-101	2079	J-113	5.08	0.00	0.00	0.06	0.01	0.01
F-102	1023	J-114	6.55	0.03	0.00	0.17	0.10	0.10
F-103	649	J-125	41.40	0.14	0.00	0.47	0.40	0.40
F-104	1103I-Fairview		15.00	0.00	0.00	0.17	0.06	0.06
F-105	J-116	J-115	9.67	0.02	0.00	0.11	0.04	0.04
F-106	2097	J-116	11.57	0.01	0.00	0.13	0.05	0.05
F-108	J-117	56	0.90	0.00	0.00	0.01	0.00	0.00
P-11	J-3	1975	11.84	0.02	0.00	0.13	0.06	0.06
F-111	J-120	807	39.52	0.14	0.00	0.45	0.52	0.52
F-113	2117	J-39	435.60	0.20	0.00	0.91	0.71	0.71
F-116	97	J-122	4.70	0.00	0.00	0.01	0.00	0.00
F-117	J-140	J-145	289.32	0.01	0.00	0.82	0.26	0.26
F-119	J-139	J-84	288.62	0.14	0.00	1.84	1.83	1.83
F-121	J-138	J-140	87.09	0.00	0.00	0.25	0.03	0.03
F-122	Main Reser	J-126	1580.52	0.62	0.00	3.29	5.52	5.52
F-124	O-AV-1	2083	0.00	0.00	0.00	0.00	0.00	0.00
F-125	O-AV-2	906	0.00	0.00	0.00	0.00	0.00	0.00
F-127	J-127	295	65.60	0.04	0.00	0.19	0.02	0.02
F-128	J-127	J-128	12.38	0.00	0.00	0.04	0.00	0.00
F-130	J-128	1831	1.70	0.00	0.00	0.01	0.00	0.00
P-131	1071	J-129	71.38	0.62	0.00	0.81	1.10	1.10
P-132	J-129	668	60.38	0.02	0.00	0.17	0.01	0.01
P-133	1513	J-133	17.50	0.00	0.00	0.11	0.01	0.01
P-134	J-122	J-132	2.20	0.00	0.00	0.01	0.00	0.00
P-135	1502	J-124	12.10	0.00	0.00	0.08	0.01	0.01
P-136	J-124	J-131	0.60	0.00	0.00	0.00	0.00	0.00
F-138-XXCV	Kennicott	J-53						
P-140	O-AV-4	686	0.00	0.00	0.00	0.00	0.00	0.00
P-143	I-AV-5	J-63	0.00	0.00	0.00	0.00	0.00	0.00
P-144	O-AV-6	1134	0.00	0.00	0.00	0.00	0.00	0.00
P-146	J-73	J-134	1.10	0.00	0.00	0.01	0.00	0.00
P-147	J-64	J-141	0.40	0.00	0.00	0.00	0.00	0.00
P-148	J-134	O-RV-2	0.00	0.00	0.00	0.00	0.00	0.00
P-149	J-143	O-RV-1	0.00	0.00	0.00	0.00	0.00	0.00
P-15	J-126	J-91	1577.22	0.95	0.00	3.29	5.50	5.50
F-150-XXCV	J-141	J-134						
P-151	J-142	J-139	289.02	0.15	0.00	1.84	1.83	1.83
P-152	1570	J-144	1.90	0.00	0.00	0.01	0.00	0.00
P-153-XXCV	J-143	J-144						
P-154	I-RV-1	J-144	0.00	0.00	0.00	0.00	0.00	0.00
P-157	I-RV-2	J-141	0.00	0.00	0.00	0.00	0.00	0.00
F-1570	1716	1103	19.90	0.03	0.00	0.13	0.02	0.02
F-158	J-145I-18th St		1200.00	0.01	0.00	3.40	4.46	4.46
F-159	J-146	J-145	910.78	0.01	0.00	2.58	2.68	2.68
F-160-XXCV	J-146	J-147						
F-161	O-18th St	J-146	910.78	0.01	0.00	2.58	2.13	2.13
F-162	J-142	J-147	910.78	0.01	0.00	2.58	2.68	2.68
F-164	J-147I-18th St		910.78	0.01	0.00	2.58	2.13	2.13
F-165	J-156	J-155	32.70	0.08	0.00	0.37	0.11	0.11
F-166	66	J-110	13.20	0.02	0.00	0.15	0.07	0.07
F-167	J-156	J-153	150.40	0.45	0.00	0.43	0.10	0.10
F-168	J-152	J-150	5.51	0.00	0.00	0.04	0.00	0.00
F-169	J-88	J-154	221.00	0.09	0.00	0.63	0.19	0.19
F-170	J-155	J-151	13.50	0.11	0.00	0.15	0.02	0.02
F-171	J-155	J-157	1.80	0.07	0.00	0.18	0.11	0.11
F-172	J-154	J-156	202.80	0.26	0.00	0.58	0.17	0.17
F-173	J-6	J-148	7.40	4.71	0.00	0.76	1.77	1.77
F-174	J-153	J-149	3.70	0.00	0.00	0.02	0.00	0.00
F-175	J-152	J-150	0.39	0.00	0.00	0.00	0.00	0.00
F-176	2076	J-64	86.16	0.55	0.00	0.55	0.54	0.54
F-178	1513	J-159	6.30	0.00	0.00	0.07	0.01	0.01
P-18	J-135I-South En		245.00	0.01	0.00	0.69	0.19	0.19
P-19	34	33	18.37	0.01	0.00	0.47	0.64	0.64
P-2	J-1	101	0.20	0.00	0.00	0.00	0.00	0.00
P-20	213	1576	15.70	0.00	0.00	0.04	0.00	0.00
P-25	J-30	2066	12.10	0.00	0.00	0.03	0.00	0.00
P-29	2063	J-8	55.60	0.06	0.00	0.23	0.06	0.06
F-3	O-Central1	J-6	10.20	0.48	0.00	0.12	0.02	0.02
P-30	J-42	J-35	58.78	0.02	0.00	0.17	0.02	0.02
P-31	J-8	54	10.20	0.00	0.00	0.07	0.01	0.01
P-33	2072	J-42	60.05	0.00	0.00	0.17	0.02	0.02
P-34	1699	J-42	4.74	0.00	0.00	0.01	0.00	0.00
P-36	1322	2091	58.41	0.34	0.00	0.66	1.07	1.07
P-4	1570	J-7	28.90	0.02	0.00	0.12	0.02	0.02
P-40	J-44	10	35.81	0.07	0.00	0.23	0.08	0.08
P-42	J-45	J-44	5.59	0.00	0.00	0.04	0.00	0.00
P-43	O-South En	J-88	245.00	0.72	0.00	0.69	0.24	0.24
P-44	J-55	28	2.30	0.00	0.00	0.01	0.00	0.00
P-47	J-57	2132	8.69	0.00	0.00	0.06	0.01	0.01
P-48	41	J-90	0.10	0.00	0.00	0.00	0.00	0.00
P-49	2051	J-57	0.00	0.00	0.00	0.00	0.00	0.00
P-50	2052	J-57	0.00	0.00	0.00	0.00	0.00	0.00
P-51	O-18th St	J-142	1200.00	0.04	0.00	7.66	32.13	32.13
P-53	J-4	1974	17.69	0.04	0.00	0.20	0.12	0.12
P-54	J-4	923	2.52	0.00	0.00	0.03	0.00	0.00
P-57	1217	I-AV-6	0.00	0.00	0.00	0.00	0.00	0.00
P-58	69	1217	4.05	0.00	0.00	0.03	0.00	0.00
P-6	J-88	J-11	2.80	0.00	0.00	0.02	0.00	0.00

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P-61	J-58	68	13.76	0.01	0.00	0.16	0.03	0.03
P-62	J-61	J-136	0.80	0.00	0.00	0.01	0.00	0.00
P-63	J-127	J-158	5.30	0.00	0.00	0.02	0.00	0.00
P-64	54	J-27	6.70	0.00	0.00	0.04	0.00	0.00
P-65	597	J-67	126.66	0.33	0.00	0.81	0.79	0.79
P-67	J-67	J-71	124.56	0.16	0.00	0.79	0.48	0.48
P-69	J-71	J-73	122.36	0.46	0.00	0.78	1.03	1.03
P-7	J-154	J-152	12.20	0.00	0.00	0.08	0.01	0.01
P-71	J-63	J-123	203.13	0.02	0.00	1.30	0.95	0.95
P-73	1679	J-74	7.50	0.00	0.00	0.09	0.02	0.02
P-74	J-74	J-77	5.80	0.00	0.00	0.07	0.01	0.01
P-75	I-AV-3	2120	0.00	0.00	0.00	0.00	0.00	0.00
P-76	J-78	408	54.09	0.04	0.00	0.35	0.16	0.16
P-77	J-79	1130	211.53	2.11	0.00	1.35	2.85	2.85
P-78	J-80	504	68.32	0.14	0.00	0.44	0.35	0.35
P-79	J-82	1396	1.50	0.00	0.00	0.02	0.00	0.00
P-80	1388	J-87	22.67	0.05	0.00	0.26	0.08	0.08
P-81	92	J-62	1.10	0.00	0.00	0.01	0.00	0.00
P-82	J-84	597	286.32	2.25	0.00	1.83	3.56	3.56
P-83	J-123	J-140	202.73	0.01	0.00	0.58	0.13	0.13
P-84	J-93	1971	0.10	0.00	0.00	0.00	0.00	0.00
P-86	I-High Lev	J-126	0.00	0.00	0.00	0.00	0.00	0.00
P-87	J-94	526	69.67	0.37	0.00	0.44	0.36	0.36
P-88	J-93	J-94	65.27	0.00	0.00	0.74	0.93	0.93
P-89	J-96inter-tie		2.80	0.00	0.00	0.01	0.00	0.00
P-9	J-2	2098	3.01	0.00	0.00	0.03	0.00	0.00
P-90	174	J-105	5.19	0.00	0.00	0.01	0.00	0.00
P-91	J-20	1981	23.92	0.01	0.00	0.27	0.20	0.20
P-92	J-21	J-20	43.43	0.09	0.00	0.49	0.62	0.62
P-93	J-99	568	2.83	0.00	0.00	0.02	0.00	0.00
P-94	J-99	556	8.41	0.00	0.00	0.06	0.00	0.00
P-95	J-99	566	0.90	0.00	0.00	0.01	0.00	0.00
P-96	J-100	2080	36.44	0.01	0.00	0.23	0.05	0.05
P-97	894	J-106	0.43	0.00	0.00	0.00	0.00	0.00
P-98	J-153I-Centrali		10.20	0.10	0.00	0.07	0.00	0.00
P-99	944	J-111	2.78	0.00	0.00	0.03	0.00	0.00
Valley Vie	O-Valley VYankis (Va		0.00	0.00	0.00	0.00	0.00	0.00
~@18th St -RV	I-18th St O-18th St							
~@AV-1-XX	I-AV-1 O-AV-1							
~@AV-2-XX	I-AV-2 O-AV-2							
~@AV-3-XX	I-AV-3 O-AV-3							
~@AV-4-XX	I-AV-4 O-AV-4							
~@AV-5-XX	I-AV-5 O-AV-5							
~@AV-6-XX	I-AV-6 O-AV-6							
~@High Lev-RV	I-High LevO-High Lev							
~@Valley V-RV	I-Valley VO-Valley V							

N O D E R E S U L T S

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
5		0.30	398.49	243.40	155.09	67.21
6		5.50	398.49	244.40	154.09	66.77
9		2.30	398.56	205.80	192.76	83.53
10		7.80	398.57	213.70	184.87	80.11
11		0.10	398.52	236.90	161.62	70.04
12		3.10	398.52	236.50	162.02	70.21
13		0.10	395.18	198.90	196.28	85.06
14		1.80	395.19	201.40	193.79	83.97
15		6.70	396.35	186.10	210.25	91.11
16		1.30	396.35	186.10	210.25	91.11
17		8.70	394.74	175.70	219.04	94.92
18		1.90	394.74	171.90	222.84	96.56
19		1.20	394.71	165.30	229.41	99.41
22		2.90	394.94	186.50	208.44	90.32
23		6.40	394.91	187.70	207.21	89.79
24		1.60	635.11	604.50	30.61	13.27
26		7.40	398.56	240.30	158.26	68.58
28		1.70	398.56	322.60	75.96	32.92
29		0.60	398.56	319.00	79.56	34.48
31		2.00	398.45	216.80	181.65	78.71
32		4.80	398.59	214.70	183.89	79.69
33		0.40	395.06	183.00	212.06	91.89
34		3.00	395.07	183.50	211.57	91.68
36		3.60	395.09	194.40	200.69	86.97
37		0.50	395.16	319.00	76.16	33.00
38		3.10	395.17	290.50	104.67	45.35
40		4.30	394.56	190.80	203.76	88.30
41		0.30	398.46	218.10	179.36	77.72
43		0.10	398.89	253.50	145.39	63.00
46		5.50	399.21	229.90	169.31	73.37
47		1.80	635.05	544.40	90.65	39.28
48		0.50	635.05	543.60	91.45	39.63
49		12.00	398.51	243.00	155.51	67.39
50		0.90	398.51	244.20	154.31	66.87
51		5.90	398.54	240.00	158.54	68.70
52		1.30	398.54	261.50	137.04	59.39
54		3.00	398.65	209.30	189.35	82.05
56		0.90	395.17	193.00	202.17	87.61
59		0.30	394.52	252.50	142.02	61.54
60		1.10	394.52	252.90	141.62	61.37
65		5.80	395.15	192.40	202.75	87.86
66		1.80	395.11	191.30	203.81	88.32
68		3.70	392.36	205.20	187.16	81.10
69		2.70	392.36	208.70	183.66	79.59
70		0.70	398.54	285.20	113.34	49.12
72		15.30	398.77	255.00	143.77	62.30
75		12.70	398.54	247.70	150.84	65.36
76		25.60	398.54	256.00	142.54	61.77
83		0.10	398.31	221.90	176.41	76.44
85		0.10	398.31	222.10	176.21	76.36

2020 Fireflow - Main Zone East

86	4.70	398.31	222.40	175.91	76.23
89	3.90	398.58	225.60	172.98	74.96
92	15.20	392.94	192.40	200.54	86.90
97	2.00	395.11	173.90	221.21	95.86
98	0.20	395.11	174.00	221.11	95.82
101	0.20	395.11	174.30	220.81	95.69
102	4.00	395.11	176.00	219.11	94.95
103	0.20	395.11	175.70	219.41	95.08
104	4.10	395.09	178.70	215.39	93.34
107	4.00	395.09	183.60	211.49	91.65
108	1.70	395.09	183.60	211.49	91.65
109	7.50	398.50	236.20	162.30	70.33
118	16.20	398.60	192.50	206.10	89.31
119	3.40	395.38	217.70	177.68	76.99
121	2.20	395.42	230.70	164.72	71.38
137	7.90	396.37	180.00	216.37	93.76
166	5.90	395.11	182.90	212.21	91.96
172	3.70	395.11	174.10	221.01	95.77
174	2.00	395.11	175.70	219.41	95.08
175	6.60	395.63	183.60	212.03	91.88
178	2.10	395.66	183.60	212.06	91.89
192	7.10	396.17	183.60	212.57	92.11
201	3.40	396.23	178.30	217.93	94.43
212	3.60	398.89	256.30	142.59	61.79
213	2.10	398.89	253.50	145.39	63.00
214	4.60	398.63	230.10	168.53	73.03
224	3.50	398.46	224.20	174.26	75.51
247	13.30	393.51	192.10	201.41	87.28
248	7.80	398.89	248.60	150.29	65.13
253	5.10	398.89	240.90	157.99	68.46
254	18.20	398.42	230.80	167.62	72.63
295	20.80	398.31	210.10	188.21	81.56
325	4.70	395.07	183.90	211.17	91.51
342	3.10	395.07	165.40	229.67	99.52
343	6.20	395.07	163.20	231.87	100.48
344	2.80	395.07	164.20	230.87	100.04
346	0.50	395.07	165.60	229.47	99.44
356	9.30	398.46	219.10	179.36	77.72
361	10.20	398.49	243.10	155.39	67.34
375	4.60	395.48	230.50	164.98	71.49
384	9.70	395.19	183.20	211.99	91.86
385	1.10	395.17	183.60	211.57	91.68
396	1.10	394.47	221.20	173.27	75.08
398	2.90	394.39	220.50	173.89	75.35
407	5.00	393.70	226.99	166.71	72.24
408	2.60	393.11	223.30	169.81	73.58
421	4.60	395.10	184.20	210.90	91.39
424	1.10	393.06	188.90	203.16	88.04
432	14.10	393.07	184.10	208.97	90.55
468	17.00	398.29	204.20	194.09	84.11
473	1.50	395.11	178.30	216.81	93.95
474	1.90	398.59	210.70	187.89	81.42
480	6.50	398.59	218.70	178.89	77.52
481	0.20	398.59	220.90	177.69	77.00
483	1.20	398.46	214.00	184.46	79.93
492	7.90	392.56	195.50	197.06	85.39
504	5.90	392.65	192.80	199.85	86.60
505	5.30	393.63	197.20	196.43	85.12
509	8.70	393.35	200.00	193.35	83.79
510	4.80	394.46	188.60	204.86	88.77
512	6.10	394.46	184.80	209.66	90.85
513	3.00	396.24	178.80	217.44	94.22
518	2.80	396.20	182.20	214.00	92.74
526	11.60	395.83	201.80	194.03	84.08
530	2.90	395.37	220.30	175.07	75.86
536	3.90	395.23	201.90	193.33	83.77
540	0.80	395.19	202.30	192.89	83.58
543	2.00	395.18	210.90	184.28	79.86
544	1.50	395.20	216.10	179.10	77.61
552	2.90	395.12	191.50	203.62	88.23
556	3.60	395.08	206.10	188.98	81.89
565	2.60	395.18	210.80	184.38	79.90
566	1.40	395.08	204.60	190.48	82.54
568	2.10	395.08	206.30	188.78	81.80
569	6.40	395.11	178.30	216.81	93.95
573	1.30	395.11	178.00	216.11	93.65
578	1.60	398.93	280.80	118.13	51.19
579	3.30	389.74	205.50	184.24	79.84
582	4.40	398.82	212.80	186.02	80.61
584	4.40	398.84	207.60	191.24	82.87
590	5.00	398.90	208.60	190.30	82.46
597	3.50	400.19	222.20	177.99	77.13
599	5.00	635.05	592.40	42.65	18.48
601	1.30	635.05	577.30	57.75	25.03
619	2.00	635.05	559.00	76.05	32.96
620	9.00	635.05	583.00	52.05	22.56
623	1.70	635.05	588.00	47.05	20.39
628	2.20	604.06	420.40	183.66	79.58
631	2.80	604.05	382.80	221.25	95.87
632	0.80	604.03	455.20	148.83	64.49
642	1.60	604.05	304.60	299.45	129.76
649	1.70	604.53	392.70	211.83	91.79
657	7.70	604.52	331.20	273.32	118.44
661	5.00	393.06	190.90	202.16	87.60
665	7.00	395.11	174.40	220.71	95.64
668	11.00	395.12	182.30	212.82	92.22
675	1.40	395.12	180.60	214.52	92.96
676	2.50	398.64	206.70	191.94	83.18
682	0.50	398.65	208.20	189.45	82.09
683	3.40	396.33	200.30	196.03	84.95
686	0.90	393.15	278.90	114.25	49.51
693	6.20	391.85	197.40	194.45	84.26
700	0.10	398.52	237.50	161.02	69.78
704	2.20	395.24	190.10	205.14	88.89
705	4.40	397.27	185.50	211.77	91.77

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710	13.40	397.27	197.50	199.77	86.57
717	6.00	398.77	204.90	193.87	84.01
718	0.10	393.51	191.20	202.31	87.67
726	1.50	392.97	190.00	202.97	87.95
780	8.00	398.28	195.00	203.28	88.09
781	0.10	398.89	252.20	146.69	63.57
784	5.10	398.89	259.80	139.09	60.27
788	14.80	398.89	258.50	140.39	60.84
791	4.50	398.89	256.00	142.89	61.92
792	0.30	398.89	254.90	143.99	62.40
797	3.80	398.89	255.30	143.99	62.22
800	3.50	395.11	177.30	217.81	94.38
802	0.80	395.11	178.00	217.11	94.08
803	5.90	394.94	217.90	177.04	76.72
807	6.90	394.70	272.60	122.10	52.91
808	4.40	395.17	215.50	179.67	77.86
813	4.20	394.98	244.90	150.08	65.04
815	3.20	395.01	219.20	175.81	76.18
817	4.10	395.19	275.20	119.99	52.00
827	5.90	395.12	186.80	208.32	90.27
828	2.70	395.23	192.50	202.72	87.85
831	1.70	395.21	216.90	178.31	77.27
842	3.10	395.18	234.00	161.18	69.85
844	4.30	395.18	260.00	135.18	58.58
856	2.70	395.24	194.40	200.84	87.03
860	2.40	395.43	230.20	165.23	71.60
865	2.50	395.18	195.90	199.28	86.35
868	2.60	395.18	197.00	198.18	85.88
872	1.00	395.18	199.50	195.68	84.80
881	2.50	395.07	199.80	195.27	84.62
885	2.90	395.07	204.20	190.87	82.71
893	2.60	395.08	198.10	196.98	85.36
894	1.00	395.08	206.30	188.78	81.80
899	5.90	395.11	192.10	203.01	87.97
901	5.80	395.11	189.00	206.11	89.31
906	2.10	395.16	292.50	102.66	44.49
910	1.50	395.17	294.90	100.27	43.45
916	5.00	395.17	222.40	172.77	74.87
922	1.00	395.17	238.30	156.87	67.98
923	3.30	395.16	182.20	212.96	92.28
929	0.70	395.31	181.60	213.71	92.61
937	3.20	395.08	183.80	211.28	91.55
944	3.60	395.08	196.50	198.58	86.05
945	3.20	395.09	192.00	203.09	88.01
954	2.60	395.08	193.70	201.38	87.27
958	6.00	395.08	201.60	193.48	83.84
961	1.40	395.08	205.40	189.68	82.19
962	3.60	395.11	179.30	215.81	93.52
964	0.20	395.11	179.40	215.71	93.47
975	6.30	395.07	184.50	210.57	91.25
979	1.30	394.92	173.70	221.22	95.86
994	5.30	395.15	192.30	202.85	87.90
1003	5.00	603.94	435.80	168.14	72.86
1023	6.00	603.92	389.60	214.32	92.87
1024	2.80	604.26	408.40	195.86	84.87
1032	4.10	603.92	455.00	148.92	64.53
1049	3.10	604.03	421.50	182.53	79.10
1050	5.60	395.07	188.20	206.87	89.64
1053	3.50	395.06	183.20	211.86	91.81
1056	1.80	395.07	192.00	203.07	88.00
1057	6.00	396.24	179.20	217.04	94.05
1060	5.90	396.29	196.50	199.79	86.58
1063	1.50	396.29	238.10	158.19	68.55
1064	2.70	395.14	181.30	213.84	92.66
1071	2.70	395.75	190.50	205.25	88.94
1084	10.70	395.16	198.50	196.66	85.22
1085	4.00	395.17	197.60	197.57	85.62
1089	2.20	395.21	190.70	204.51	88.62
1099	9.50	394.25	233.90	160.35	69.49
1100	0.60	466.49	339.70	126.79	54.94
1101	1.40	466.49	323.20	143.29	62.09
1103	4.90	635.04	346.40	288.64	125.08
1104	0.40	466.49	285.50	180.99	78.43
1107	2.90	392.99	211.40	181.59	78.69
1120	1.40	394.35	222.90	171.45	74.30
1121	2.00	392.36	205.30	187.06	81.06
1122	0.70	392.36	204.40	187.96	81.45
1125	1.80	390.92	205.00	185.92	80.56
1130	5.20	390.92	225.00	165.92	71.90
1134	6.50	398.80	202.90	195.90	84.89
1137	3.90	394.15	202.10	192.05	83.22
1156	5.60	394.84	184.90	209.94	90.97
1180	3.60	395.44	195.40	200.04	86.68
1181	3.20	394.93	186.00	208.93	90.54
1183	1.80	395.21	190.20	205.01	88.84
1184	5.40	392.97	189.70	203.27	88.08
1186	3.10	395.18	191.30	203.88	88.35
1210	4.10	395.58	215.60	179.98	77.99
1211	0.20	635.09	564.40	70.69	30.63
1214	1.80	635.20	607.60	27.60	11.96
1215	1.60	392.40	200.80	191.60	83.03
1217	3.70	392.36	207.80	184.56	79.98
1218	5.90	395.91	217.60	178.31	77.27
1223	2.40	395.13	187.20	207.93	90.10
1224	3.50	395.14	187.60	207.54	89.93
1229	3.50	395.15	224.40	170.75	73.99
1232	6.20	394.93	183.90	211.03	91.45
1235	4.70	392.73	197.20	195.53	84.73
1239	1.60	466.49	265.90	200.59	86.92
1240	0.10	635.20	608.90	26.30	11.40
1244	4.80	635.47	591.00	44.47	19.27
1251	5.80	635.58	622.30	13.28	5.76
1262	0.30	604.50	349.90	254.60	110.33
1270	1.60	394.93	184.30	210.63	91.27
1277	5.60	604.50	340.00	264.50	114.62

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1284	4.50	399.99	224.00	175.99	76.26
1290	6.00	393.12	207.20	185.92	80.56
1293	3.10	393.02	206.60	186.42	80.78
1295	3.70	392.93	200.40	192.53	83.43
1298	0.60	394.35	224.20	170.15	73.73
1309	6.10	393.05	185.00	208.05	90.15
1310	4.70	395.07	184.40	210.67	91.29
1314	3.80	394.98	183.00	211.98	91.86
1318	3.40	394.61	221.20	173.41	75.15
1322	2.90	394.13	194.60	199.53	86.46
1328	2.90	393.64	192.30	201.34	87.25
1333	2.90	395.17	191.30	203.87	88.35
1337	3.20	395.19	192.80	202.39	87.70
1338	7.40	395.04	257.70	137.34	59.51
1356	2.10	395.21	190.80	204.41	88.58
1359	0.70	395.22	193.30	201.92	87.50
1364	2.80	395.19	193.90	201.29	87.22
1366	4.20	395.10	190.60	204.50	88.62
1375	7.90	394.67	168.30	226.37	98.09
1387	2.60	394.92	182.40	212.52	92.09
1388	4.80	394.40	200.40	194.00	84.07
1392	4.20	394.77	220.30	174.47	75.61
1396	1.50	394.27	308.10	86.17	37.34
1409	4.80	394.02	222.20	171.82	74.46
1410	1.70	604.54	392.50	212.04	91.88
1456	2.70	395.10	183.20	211.90	91.82
1465	2.60	394.84	235.70	159.14	68.96
1483	4.80	392.85	193.40	199.45	86.43
1484	11.60	395.06	183.60	211.46	91.63
1497	2.10	395.06	167.20	227.86	98.74
1498	1.30	604.50	396.40	208.10	90.18
1502	3.20	604.50	385.30	219.20	94.99
1513	0.70	604.50	339.40	265.10	114.88
1517	4.50	392.90	205.40	187.50	81.25
1519	0.80	392.89	211.30	181.59	78.69
1524	1.00	635.11	615.60	19.51	8.46
1544	13.60	396.31	194.80	201.51	87.32
1547	10.90	396.31	208.00	188.31	81.60
1570	8.10	398.62	200.80	197.82	85.72
1575	6.40	395.07	171.60	223.47	96.84
1576	1.30	398.89	253.70	145.19	62.92
1580	1.50	398.89	245.80	153.09	66.34
1626	15.50	399.28	272.90	126.38	54.76
1627	9.10	399.89	289.00	110.89	48.05
1630	24.30	398.96	266.70	132.26	57.31
1636	151.70	398.35	245.70	152.65	66.15
1637	21.00	398.56	248.10	149.46	64.77
1647	21.40	398.48	236.20	162.28	70.32
1648	21.60	393.10	187.30	205.80	89.18
1657	5.80	395.06	163.30	231.76	100.43
1658	5.80	395.12	185.90	209.22	90.66
1674	6.70	395.11	178.00	217.11	94.08
1679	2.60	466.49	317.70	148.79	64.48
1689	2.50	466.49	323.60	142.89	61.92
1690	0.40	466.49	319.70	146.79	63.61
1698	4.30	398.89	256.80	142.09	61.57
1699	4.70	398.46	218.90	179.56	77.81
1700	2.20	398.46	216.20	182.26	78.98
1710	3.00	398.50	303.90	94.60	40.99
1711	0.60	396.33	209.80	186.53	80.83
1712	1.40	396.33	268.50	127.83	55.39
1713	1.30	635.09	571.10	63.99	27.73
1716	5.80	635.07	533.50	101.57	44.01
1719	0.50	635.07	516.50	118.57	51.38
1737	4.90	394.70	166.60	228.10	98.84
1742	8.00	395.06	183.60	211.46	91.63
1767	3.10	395.18	193.40	201.78	87.44
1773	3.40	399.77	272.20	127.57	55.28
1775	1.50	399.77	270.10	129.67	56.19
1776	4.00	399.77	269.20	130.57	56.58
1782	7.40	399.77	269.10	130.67	56.62
1788	5.20	399.77	269.00	130.77	56.67
1791	0.70	399.77	273.40	126.37	54.76
1793	0.90	399.77	270.60	129.17	55.97
1799	2.50	398.60	201.40	197.20	85.45
1800	2.20	395.08	166.10	228.98	99.23
1801	0.70	395.08	173.70	221.38	95.93
1805	2.10	395.08	178.70	215.38	93.33
1806	1.20	395.08	173.10	221.98	96.19
1808	1.10	395.08	179.80	215.28	93.29
1809	2.00	395.08	172.30	222.78	96.54
1810	3.60	395.09	179.50	215.59	93.42
1813	2.80	395.08	171.10	223.98	97.06
1814	4.80	395.08	167.10	227.98	98.79
1818	1.50	395.04	160.70	234.34	101.55
1821	4.10	395.09	169.80	225.29	97.62
1823	2.70	395.65	182.50	213.15	92.37
1826	3.10	395.71	183.30	212.41	92.05
1827	5.60	395.76	192.90	202.86	87.91
1831	1.70	398.35	234.10	164.25	71.17
1948	0.90	396.27	234.90	161.37	69.93
1960	3.80	398.52	237.60	160.92	69.73
1961	2.80	395.17	190.10	205.07	88.86
1968	0.40	394.70	164.90	229.80	99.58
1971	0.10	396.21	185.30	210.91	91.39
1973	2.40	395.08	198.40	196.68	85.23
1974	3.90	395.12	187.50	207.62	89.97
1975	3.70	395.11	186.60	208.51	90.35
1980	1.40	395.12	180.20	214.92	93.13
1981	1.10	395.21	183.10	212.11	91.91
1984	3.20	395.18	194.10	201.08	87.13
1985	0.20	395.12	195.20	199.92	86.63
1986	3.40	395.12	194.50	200.62	86.94
1987	3.30	395.08	198.50	196.58	85.18
1988	0.10	395.19	219.50	175.69	76.13

2020 Fireflow - Main Zone East

1989	1.20	395.19	222.30	172.89	74.92
1991	2.80	395.20	194.20	201.00	87.10
1994	0.60	395.15	190.70	204.45	88.59
1996	3.50	395.15	188.80	205.35	88.99
1997	3.40	395.17	191.50	203.67	88.26
2003	2.70	392.97	185.20	207.77	90.03
2007	2.50	395.29	200.60	194.69	84.37
2009	3.30	395.24	196.90	198.34	85.95
2010	3.90	395.00	191.70	203.30	88.10
2012	3.40	395.03	199.00	196.03	84.95
2013	2.90	394.59	200.10	194.49	84.28
2014	4.80	394.57	193.20	201.37	87.26
2016	4.40	394.36	222.30	172.06	74.56
2021	0.70	398.90	204.20	194.70	84.37
2023	0.50	392.36	206.90	185.46	80.37
2025	1.90	604.49	455.60	148.89	64.52
2028	1.10	604.47	520.90	83.57	36.22
2029	1.00	604.49	449.00	155.49	67.38
2030	0.60	604.49	460.10	144.39	62.57
2031	2.40	604.49	430.90	173.59	75.22
2032	0.70	604.49	484.00	120.49	52.21
2033	1.70	604.49	474.20	130.29	56.46
2047	0.60	466.49	309.00	157.49	68.25
2050	0.10	466.49	301.10	165.39	71.67
2051	0.00	398.64	229.60	169.04	73.25
2052	0.00	398.64	229.90	168.74	73.12
2053	3.60	398.64	220.60	178.04	77.15
2061	0.90	398.64	208.20	190.44	82.52
2063	6.30	398.70	205.00	193.70	83.94
2065	4.60	395.11	198.90	196.21	85.02
2066	3.40	398.31	222.20	176.11	76.31
2067	6.80	396.15	216.20	179.95	77.98
2072	6.50	398.46	221.90	176.56	76.51
2073	2.50	395.28	199.80	195.48	84.71
2074	4.00	398.46	220.90	177.56	76.94
2076	6.80	392.47	204.40	188.07	81.50
2078	3.20	395.20	199.20	196.00	84.93
2079	3.50	395.19	203.10	192.09	83.24
2080	4.10	395.10	191.60	203.50	88.18
2081	3.60	395.08	198.70	196.38	85.10
2083	6.90	395.17	255.40	139.77	60.57
2084	4.60	395.17	224.10	171.07	74.13
2086	4.70	398.93	230.30	168.63	73.07
2088	7.30	635.11	604.50	30.61	13.27
2090	7.80	604.54	391.30	213.24	92.40
2091	4.00	393.79	195.30	198.49	86.01
2092	2.00	398.89	251.60	147.29	63.83
2093	5.00	395.36	236.00	159.36	69.06
2094	5.60	394.96	188.50	206.46	89.47
2095	3.90	395.05	187.60	207.45	89.89
2096	2.70	395.24	196.50	198.74	86.12
2097	4.10	395.28	202.50	192.78	83.54
2098	4.30	395.07	202.10	192.97	83.62
2100	5.60	395.07	197.30	197.77	85.70
2101	6.50	394.53	270.60	123.93	53.70
2103	7.10	394.51	236.90	157.61	68.30
2104	3.10	398.90	200.50	198.40	85.98
2105	4.60	394.28	201.90	192.38	83.36
2106	2.20	393.55	192.10	201.45	87.29
2107	5.20	394.31	190.50	203.81	88.32
2109	3.80	395.06	190.80	204.26	88.51
2110	2.90	395.19	192.70	202.49	87.75
2111	2.60	395.17	191.00	204.17	88.48
2112	5.40	395.21	190.20	205.01	88.84
2113	4.50	395.18	195.50	199.68	86.53
2115	3.70	394.32	191.90	202.42	87.71
2117	3.30	395.32	217.50	177.82	77.06
2119	5.80	392.96	193.60	199.36	86.39
2120	3.10	466.49	268.60	197.89	85.75
2121	2.80	395.20	193.00	202.20	87.62
2122	4.80	395.07	183.70	211.37	91.60
2123	3.40	395.22	193.20	202.02	87.54
2125	1.00	395.08	206.20	188.88	81.85
2126	2.20	395.20	192.50	202.70	87.84
2127	6.80	392.43	203.70	188.73	81.78
2129	3.80	398.64	218.10	180.54	78.23
2130	2.90	395.08	198.00	197.08	85.40
2132	1.80	398.64	230.10	168.54	73.03
2133	3.40	635.05	578.00	57.05	24.72
2137	4.50	395.17	198.20	196.97	85.36
2138	6.10	398.59	221.50	177.09	76.74
I-18th St	0.00	402.72	218.20	184.52	79.96
O-18th St	0.00	402.77	218.20	184.57	79.98
3-in or sm	0.10	396.35	185.50	210.85	91.37
3-inch or	0.30	395.08	183.00	212.08	91.90
3-inch or	0.10	395.21	183.10	212.11	91.91
O-AV-1	0.00	395.17	283.80	111.37	48.26
I-AV-2	0.00	603.92	306.00	297.92	129.10
I-AV-3	0.00	466.49	253.40	213.09	92.34
O-AV-4	0.00	393.15	289.30	103.85	45.00
O-AV-5	0.00	402.44	225.30	177.14	76.76
O-AV-6	0.00	398.80	208.10	190.70	82.64
O-Centrall	----	541.19	333.50	207.69	90.00
O-Fairview	Fairview PRV	466.50	346.50	120.00	52.00
O-High Lev	High Level F	604.53	401.60	202.93	87.94
High Level	High Level R	605.00	605.00	0.00	0.00
Hillcrest		398.77	256.20	142.57	61.78
inter-tie		396.31	174.40	221.91	96.16
J-1		395.11	174.00	221.11	95.82
J-100		395.10	190.60	204.50	88.62
J-105		395.11	175.60	219.51	95.12
J-106		395.08	206.20	188.88	81.85
J-11		494.87	280.00	214.87	93.11
J-110		395.08	198.00	197.08	85.40
J-111		395.07	192.50	202.57	87.78

2020 Fireflow - Main Zone East

J-112	5.20	395.08	167.90	227.18	98.45
J-113	2.40	395.18	200.50	194.68	84.36
J-114	11.00	603.89	405.70	198.19	85.88
J-115	1.90	395.25	197.30	197.95	85.78
J-116	1.90	395.27	207.10	188.17	81.54
J-117	1.70	395.17	192.10	203.07	88.00
J-120	2.40	394.84	237.50	157.34	68.18
J-122	2.50	395.11	174.00	221.11	95.82
J-123	0.40	389.67	224.70	164.97	71.49
J-124	2.10	604.50	403.80	200.70	86.97
J-125	2.00	604.39	383.00	221.39	95.94
J-126	3.30	400.88	367.95	32.93	14.27
J-127	27.60	398.35	225.20	173.15	75.03
J-128	14.40	398.35	235.20	163.15	70.70
J-129	8.30	395.14	184.80	210.34	91.15
J-130	3.80	398.31	222.00	176.31	76.40
J-131	0.60	604.50	418.00	186.50	80.81
J-132	2.20	395.11	176.00	219.11	94.95
J-133	0.90	604.50	338.60	264.90	114.79
J-134	1.10	399.23	200.90	198.33	85.95
J-135	3.50	399.79	288.30	111.49	48.31
J-136	0.80	392.36	204.10	188.26	81.58
J-138	1.00	389.66	218.60	170.06	73.69
J-139	0.40	402.59	222.60	179.99	78.00
J-140	0.50	389.66	218.20	171.46	74.30
J-141	0.40	391.92	200.90	191.02	82.78
J-142	0.20	402.74	218.20	184.54	79.97
J-143	11.60	392.94	193.40	199.54	86.47
J-144	1.90	398.62	193.40	205.22	88.93
J-145	0.10	389.65	218.20	171.45	74.29
J-146	0.00	389.65	218.20	171.45	74.30
J-147	0.00	402.73	218.20	184.53	79.96
J-148	7.40	536.00	498.90	37.10	16.08
J-149	3.70	494.07	306.10	187.97	81.45
J-150	5.90	494.78	272.40	222.38	96.36
J-151	13.50	494.33	326.80	167.53	72.60
J-152	6.30	494.78	272.40	222.38	96.36
J-153	136.50	494.07	302.40	191.67	83.06
J-154	6.00	494.78	267.60	227.18	98.44
J-155	17.40	494.44	263.80	230.64	99.94
J-156	19.70	494.52	261.30	233.22	101.06
J-157	1.80	494.36	265.80	228.56	99.04
J-158	5.30	398.35	211.40	186.95	81.01
J-159	0.40	604.50	343.00	261.50	113.32
J-2	5.70	395.08	201.80	193.28	83.75
J-20	2.20	395.22	182.90	212.32	92.01
J-21	2.50	395.31	182.80	212.51	92.09
J-25	5.00	604.50	311.10	293.40	127.14
J-27	4.20	398.64	207.10	191.54	83.00
J-3	3.30	395.12	182.20	212.92	92.27
J-30	7.70	398.31	219.90	178.41	77.31
J-35	8.20	398.44	222.10	176.34	76.41
J-39	4.10	395.11	218.10	177.01	76.71
J-4	2.50	395.16	184.40	210.76	91.33
J-42	6.00	398.46	222.00	176.46	76.47
J-44	6.20	398.63	208.40	190.23	82.44
J-45	4.20	398.64	208.00	189.64	82.18
J-53	9.60	398.50	294.30	104.20	45.15
J-55	2.60	398.56	297.10	101.46	43.97
J-57	1.20	398.64	228.20	169.44	73.42
J-58	1.50	392.37	204.60	187.77	81.37
J-6	2.80	540.72	473.40	67.32	29.17
J-61	4.20	392.36	207.00	185.36	80.32
J-62	1.10	392.94	191.50	201.44	87.29
J-63	1.40	389.69	225.20	164.49	71.28
J-64	4.10	391.92	202.30	189.62	82.17
J-67	2.10	399.86	210.80	189.06	81.93
J-7	3.50	398.60	214.70	183.89	79.69
J-71	2.20	399.70	204.60	195.10	84.54
J-73	6.30	399.23	199.60	199.63	86.51
J-74	1.10	466.49	301.00	165.49	71.71
J-77	0.60	466.49	296.10	170.39	73.84
J-78	5.20	393.15	230.70	162.45	70.40
J-79	2.80	393.02	223.40	169.62	73.50
J-8	6.50	398.65	208.80	189.85	82.27
J-80	5.00	392.78	190.70	202.08	87.57
J-81	6.60	394.51	218.90	175.61	76.10
J-82	6.50	394.27	257.90	136.37	59.10
J-84	2.30	402.44	226.30	176.14	76.33
J-87	4.10	394.35	194.40	199.95	86.64
J-88	21.20	494.87	275.70	219.17	94.97
J-90	0.10	398.46	218.10	179.36	77.72
J-91	9.80	399.94	352.90	47.04	20.38
J-93	1.70	396.21	187.50	208.71	90.44
J-94	3.60	396.20	187.50	208.70	90.44
J-95	13.30	396.33	189.50	206.83	89.63
J-96	6.50	396.31	176.90	219.41	95.08
J-99	1.10	395.08	205.50	189.58	82.15
Kennicott		397.90	374.00	23.90	10.36
Main Reser	Kennicott Re	----	401.50	383.30	18.20
physical d	Main Reservo	----	394.47	222.00	172.47
I-RV-1		0.00	398.62	193.40	205.22
I-RV-2		0.00	391.92	200.90	191.02
O-South En		----	495.59	287.90	207.69
O-Valley V	Valley View	0.00	635.90	308.10	327.80
Yankis (Va	Yankis (Vall	----	635.90	631.50	4.40
Yates Rese	500,000 gal	----	401.50	376.00	25.50
O-18th St		----	389.66	218.20	171.46
I-18th St		0.00	389.64	218.20	171.44
I-AV-1		0.00	603.89	283.80	320.09
O-AV-2		0.00	395.16	306.00	89.16
O-AV-3		0.00	399.99	253.40	146.59
I-AV-4		0.00	604.50	289.30	315.20
I-AV-5		0.00	389.69	225.30	164.39
I-AV-6		0.00	392.36	208.10	184.26

2020 Fireflow - Main Zone East

I-Centrali		0.00	493.97	333.50	160.47	69.54
I-Fairview	Fairview PRV	0.00	635.04	346.50	288.54	125.03
I-High Lev	High Level P	0.00	400.88	401.60	-0.72	-0.31
O-RV-1		----	392.94	193.40	199.54	86.47
O-RV-2		----	399.23	200.90	198.33	85.95
I-South En		0.00	399.77	287.90	111.87	48.48
I-Valley V	Valley View	0.00	394.27	308.10	86.17	37.34

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
O-Valley Vie	142.05	I-High Level	-0.31
I-AV-1	138.71	Yankis (Vall	1.91
I-AV-4	136.59	1251	5.76
642	129.76	Main Reservo	7.89
I-AV-2	129.10	1524	8.46

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-51	7.66	85	0.00
P-158	3.40	24	0.00
P-122	3.29	45	0.00
P-15	3.29	46	0.00
P-159	2.58	P-48	0.00

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-51	32.13	45	0.00
P-122	5.52	46	0.00
P-15	5.50	24	0.00
P-158	4.46	85	0.00
597	4.08	P-48	0.00

HL / 1000

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-51	32.13	45	0.00
P-122	5.52	46	0.00
P-15	5.50	24	0.00
P-158	4.46	85	0.00
597	4.08	P-48	0.00

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
18th St PRV	PRV-1	74.30	ACTIVATED	79.96	74.30	910.78
18th St Pump	FCV-2	1200.00	BOOSTED	74.29	79.98	1200.00
Centralia Al	PRV-2	90.00	BOOSTED	69.54	90.00	10.20
Fairview PRV	PRV-1	52.00	ACTIVATED	125.03	52.00	15.00
High Level P	FCV-2	0.00	BOOSTED	-0.31	87.94	0.00
RV-1	PRV-1	85.00	CLOSED	88.93	86.47	0.00
RV-2	PRV-1	81.80	CLOSED	82.78	85.95	0.00
South End Pu	PRV-2	90.00	BOOSTED	48.48	90.00	245.00
Valley View	FCV-2	0.00	BOOSTED	37.34	142.05	0.00

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
High Level	89.80	High Level R
Kennicott R	0.00	Kennicott Re
Main Reserv	1580.52	Main Reservo
Yankis (Val	74.80	Yankis (Vall
Yates Reser	753.48	500,000 gal

NET SYSTEM INFLOW = 2498.60
 NET SYSTEM OUTFLOW = 0.00
 NET SYSTEM DEMAND = 2498.60

FireFlow/Hydrant Report
 Fireflow/Hydrant Report:

Scenario: No Title
 Global Demand Factor for this Scenario: 1.000

Specified Minimum Pressure (psi): 20.0
 Minimum Static Pressure (psi) : 21.0

Flow-1: Flowrate to maintain the specified pressure at (hydrant) node
 Node-2: Node that has a lower pressure than specified value at Flow-1
 Flow-2: Flowrate to maintain the specified pressure at Node-2

Hose Constant = 0.00

Hydrant Node	Hydrant Constant	Elevation	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2 gpm	Flow Capacity	NFFA Color
H-146	0.0	200.8	85.7	1057.8	1038.5	9	1038.5	GREEN
H-157	0.0	208.8	82.2	2555.3			2555.3	BLUE
H-154	0.0	317.9	35.0	985.6			985.6	ORANGE
H-64	0.0	238.8	69.2	4640.9	4515.1	50	4515.1	BLUE
H-149	0.0	258.4	60.7	3757.5	3112.5	70	3112.5	BLUE
H-42	0.0	240.0	68.7	6306.1			6306.1	BLUE
H-41	0.0	239.1	69.1	6125.2			6125.2	BLUE
H-40	0.0	239.6	68.9	5960.8			5960.8	BLUE
H-39	0.0	240.2	68.6	5830.8			5830.8	BLUE
H-38	0.0	241.6	68.0	5714.0			5714.0	BLUE
H-37	0.0	245.7	66.2	5545.1			5545.1	BLUE
H-36	0.0	245.9	66.1	5523.5			5523.5	BLUE
H-35	0.0	246.3	66.0	5519.6			5519.6	BLUE
H-34	0.0	245.1	66.5	5590.4	5543.3	76	5543.3	BLUE
H-33	0.0	247.6	65.4	5568.9	5426.5	76	5426.5	BLUE
H-150	0.0	236.6	70.2	15821.7	7492.5	28	7492.5	BLUE
H-158	0.0	231.3	72.5	5657.2	3197.4	28	3197.4	BLUE
H-156	0.0	237.3	69.9	5984.0	2979.8	28	2979.8	BLUE
H-155	0.0	234.8	71.0	6253.6	2918.6	28	2918.6	BLUE
H-113	0.0	217.1	78.6	7571.2	7343.1	224	7343.1	BLUE
H-114	0.0	216.3	78.9	6507.5	6291.7	224	6291.7	BLUE
H-115	0.0	217.7	78.3	5647.4	5492.7	224	5492.7	BLUE
H-116	0.0	220.4	77.2	4878.6	4799.5	224	4799.5	BLUE
H-60	0.0	241.0	68.4	2349.3	2267.1	248	2267.1	BLUE
H-10	0.0	240.9	68.5	2291.9	2267.1	248	2267.1	BLUE
H-59	0.0	240.9	68.5	2234.2			2234.2	BLUE
H-62	0.0	234.7	71.1	2230.0	2163.6	253	2163.6	BLUE
H-63	0.0	234.2	71.4	2199.0	2128.5	253	2128.5	BLUE
H-79	0.0	224.6	75.3	5880.8			5880.8	BLUE
H-83	0.0	221.1	76.8	5751.7			5751.7	BLUE
H-82	0.0	220.2	77.2	5608.3	5559.8	J-127	5559.8	BLUE
H-81	0.0	219.0	77.7	5438.9	5313.5	J-127	5313.5	BLUE
H-526	0.0	212.0	80.7	2789.8	2676.4	J-130	2676.4	BLUE
H-527	0.0	213.1	80.3	2743.1	2643.3	J-130	2643.3	BLUE
H-528	0.0	214.6	79.6	2684.1	2602.3	J-130	2602.3	BLUE
H-529	0.0	215.3	79.3	2636.8	2563.7	J-130	2563.7	BLUE
H-530	0.0	214.7	79.6	2603.8	2525.5	J-130	2525.5	BLUE
H-120	0.0	214.6	79.7	5449.6			5449.6	BLUE
H-555	0.0	213.3	80.3	2198.4	2084.8	89	2084.8	BLUE
H-126	0.0	213.7	80.1	5034.2	4886.6	2074	4886.6	BLUE
H-127	0.0	212.8	80.5	3709.8	3589.2	2074	3589.2	BLUE
H-100	0.0	204.2	84.1	3711.9	3550.4	86	3550.4	BLUE
H-99	0.0	199.4	86.2	3645.4	3550.4	86	3550.4	BLUE
H-98	0.0	199.9	86.0	3317.0	3263.8	468	3263.8	BLUE
H-97	0.0	203.2	84.5	3028.8			3028.8	BLUE
H-101	0.0	203.3	84.5	2871.9			2871.9	BLUE
H-103	0.0	203.1	84.6	2621.2			2621.2	BLUE
H-102	0.0	200.1	85.9	2512.1	2474.0	468	2474.0	BLUE
H-104	0.0	202.2	85.0	2311.9	2294.6	468	2294.6	BLUE
H-134	0.0	208.1	82.5	1569.9	1553.8	474	1553.8	BLUE
H-133	0.0	210.5	81.5	1714.8			1714.8	BLUE
H-161	0.0	207.8	82.8	3344.9	3287.6	582	3287.6	BLUE
H-166	0.0	204.3	84.3	4277.7			4277.7	BLUE
H-165	0.0	226.7	74.7	3515.8	2744.1	578	2744.1	BLUE
H-143	0.0	206.2	83.4	1393.5			1393.5	GREEN
H-142	0.0	201.9	85.3	1523.6	1496.2	676	1496.2	GREEN
H-140	0.0	201.3	85.5	1657.8	1624.3	676	1624.3	BLUE
H-138	0.0	207.4	82.9	2370.0	2353.2	682	2353.2	BLUE
H-147	0.0	234.3	71.2	3376.0			3376.0	BLUE
H-170	0.0	200.1	86.1	4259.3			4259.3	BLUE
H-171	0.0	199.7	86.3	3522.0			3522.0	BLUE
H-172	0.0	203.2	84.8	3260.4			3260.4	BLUE
H-173	0.0	196.5	87.7	3025.2	2971.8	1134	2971.8	BLUE
H-105	0.0	201.5	85.3	2256.6	2236.4	468	2236.4	BLUE
H-106	0.0	202.2	85.0	2146.2			2146.2	BLUE
H-107	0.0	200.1	85.9	1847.8			1847.8	BLUE
H-108	0.0	199.5	86.1	1626.6			1626.6	BLUE
H-109	0.0	197.3	87.1	1507.6			1507.6	BLUE
H-110	0.0	199.5	86.1	1433.9			1433.9	GREEN
H-111	0.0	198.2	86.7	1359.9			1359.9	GREEN
H-17	0.0	253.9	62.8	2266.1	2243.2	1698	2243.2	BLUE
H-12	0.0	256.9	61.5	2173.3			2173.3	BLUE
H-13	0.0	250.0	64.5	2213.8	2149.7	791	2149.7	BLUE
H-15	0.0	252.9	63.3	2457.0	2386.3	784	2386.3	BLUE
H-183	0.0	198.5	86.9	2201.6			2201.6	BLUE
H-524	0.0	223.7	76.4	2341.8			2341.8	BLUE
H-57	0.0	247.9	65.4	2304.8	2268.6	1576	2268.6	BLUE
H-58	0.0	239.9	68.9	2330.2	2261.0	1580	2261.0	BLUE
H-148	0.0	235.7	70.6	11155.1	5348.3	28	5348.3	BLUE
H-119	0.0	229.4	73.3	8089.8	8020.6	1647	8020.6	BLUE
H-21	0.0	261.5	59.6	5329.7			5329.7	BLUE
H-22	0.0	258.4	60.9	5317.8			5317.8	BLUE
H-23	0.0	257.0	61.5	5270.9			5270.9	BLUE
H-24	0.0	258.1	61.0	5167.0			5167.0	BLUE
H-25	0.0	257.3	61.3	5148.7			5148.7	BLUE

2020 Fireflow - Main Zone East

H-26	0.0	256.7	61.6	5138.4			5138.4	BLUE
H-27	0.0	254.5	62.5	5194.4			5194.4	BLUE
H-28	0.0	253.3	63.0	5235.4			5235.4	BLUE
H-29	0.0	253.3	63.0	5261.6			5261.6	BLUE
H-30	0.0	251.6	63.7	5351.1			5351.1	BLUE
H-31	0.0	248.6	65.0	5486.9			5486.9	BLUE
H-32	0.0	250.5	64.2	5487.3	5405.3	76	5405.3	BLUE
H-47	0.0	250.2	64.3	5428.7	5382.3	76	5382.3	BLUE
H-53	0.0	244.3	66.8	5400.9			5400.9	BLUE
H-48	0.0	244.4	66.8	5219.1			5219.1	BLUE
H-52	0.0	240.4	68.5	5129.5			5129.5	BLUE
H-51	0.0	240.1	68.6	4959.8			4959.8	BLUE
H-50	0.0	239.0	69.1	4850.1	4767.3	1636	4767.3	BLUE
H-49	0.0	238.5	69.3	4783.7	4663.5	1636	4663.5	BLUE
H-46	0.0	240.6	68.4	4618.0	4501.5	1636	4501.5	BLUE
H-44	0.0	245.1	66.5	6386.8			6386.8	BLUE
H-45	0.0	243.6	67.1	6397.8			6397.8	BLUE
H-43	0.0	243.6	67.1	6391.7	6332.1	75	6332.1	BLUE
H-65	0.0	238.2	69.5	6174.3	6078.4	50	6078.4	BLUE
H-66	0.0	237.1	69.9	5970.6	5779.8	50	5779.8	BLUE
H-77	0.0	227.9	73.9	5937.3			5937.3	BLUE
H-76	0.0	226.5	74.5	5829.8			5829.8	BLUE
H-75	0.0	227.6	74.0	5735.7			5735.7	BLUE
H-74	0.0	226.2	74.6	5734.9			5734.9	BLUE
H-73	0.0	228.1	73.8	5676.0			5676.0	BLUE
H-72	0.0	231.4	72.4	5598.3			5598.3	BLUE
H-71	0.0	231.0	72.6	5647.2			5647.2	BLUE
H-70	0.0	230.3	72.9	5717.0			5717.0	BLUE
H-69	0.0	234.3	71.2	5683.5			5683.5	BLUE
H-68	0.0	233.4	71.5	5803.6			5803.6	BLUE
H-67	0.0	238.7	69.2	5764.7			5764.7	BLUE
H-117	0.0	216.2	79.0	7842.8	7799.9	224	7799.9	BLUE
H-118	0.0	217.9	78.2	7988.9			7988.9	BLUE
H-18	0.0	253.0	63.2	1776.0			1776.0	BLUE
H-19	0.0	253.1	63.2	1988.9			1988.9	BLUE
H-123	0.0	216.2	79.0	6323.3			6323.3	BLUE
H-125	0.0	214.8	79.6	5165.6	5136.2	1700	5136.2	BLUE
H-124	0.0	218.0	78.2	4521.9			4521.9	BLUE
H-128	0.0	216.6	78.9	1547.1	1488.0	89	1488.0	GREEN
H-130	0.0	221.3	76.8	1299.4	1275.1	89	1275.1	GREEN
H-129	0.0	220.9	77.0	1258.3	1232.7	89	1232.7	GREEN
H-153	0.0	294.8	44.9	1598.6	1454.9	1710	1454.9	GREEN
H-152	0.0	280.1	51.3	3361.0	2701.2	1710	2701.2	BLUE
H-151	0.0	288.0	47.9	12276.3	10461.9	1710	10461.9	BLUE
H-1	0.0	282.1	51.0	3316.3			3316.3	BLUE
H-2	0.0	271.0	55.8	2633.3	2589.9	1791	2589.9	BLUE
H-11	0.0	261.4	60.0	2045.1			2045.1	BLUE
H-9	0.0	264.5	58.6	1979.9			1979.9	BLUE
H-8	0.0	266.5	57.8	1919.1			1919.1	BLUE
H-7	0.0	264.6	58.6	1947.0			1947.0	BLUE
H-5	0.0	267.0	57.5	2100.9	2078.1	1788	2078.1	BLUE
H-3	0.0	266.9	57.6	2135.6	2044.4	1791	2044.4	BLUE
H-4	0.0	263.5	59.1	1893.5	1808.7	1793	1808.7	BLUE
H-6	0.0	264.1	58.8	2044.7	1994.9	1788	1994.9	BLUE
H-141	0.0	266.7	57.7	1970.5	1948.4	1782	1948.4	BLUE
H-56	0.0	234.2	71.1	4445.6			4445.6	BLUE
H-160	0.0	216.1	79.1	2424.3			2424.3	BLUE
H-190	0.0	224.4	75.7	3230.6			3230.6	BLUE
H-162	0.0	204.9	84.0	3302.8	3261.0	2061	3261.0	BLUE
H-144	0.0	200.4	85.9	3952.5			3952.5	BLUE
H-145	0.0	202.8	84.9	4032.5			4032.5	BLUE
H-96	0.0	202.1	85.0	3684.1	3393.8	86	3393.8	BLUE
H-95	0.0	202.8	84.7	3550.5	3279.7	86	3279.7	BLUE
H-94	0.0	204.7	83.9	3449.4	3209.6	86	3209.6	BLUE
H-93	0.0	208.0	82.5	3326.0	3134.8	86	3134.8	BLUE
H-92	0.0	209.3	81.9	3191.0	3023.1	86	3023.1	BLUE
H-91	0.0	211.3	81.0	3106.1	2966.1	86	2966.1	BLUE
H-88	0.0	213.7	80.0	2808.8	2708.5	86	2708.5	BLUE
H-132	0.0	213.9	80.0	1795.5	1707.4	89	1707.4	BLUE
H-167	0.0	203.7	84.6	4444.3			4444.3	BLUE
H-168	0.0	200.7	85.8	4520.7			4520.7	BLUE
H-169	0.0	201.5	85.5	4527.4			4527.4	BLUE
H-16	0.0	255.8	62.0	2267.4	2219.1	784	2219.1	BLUE
H-14	0.0	254.0	62.8	2519.2	2435.4	784	2435.4	BLUE
H-191	0.0	224.5	75.8	3435.7			3435.7	BLUE
H-159	0.0	217.7	78.4	4160.5	3816.7	28	3816.7	BLUE
H-131	0.0	211.3	81.1	2459.5	2433.6	483	2433.6	BLUE
H-164	0.0	258.3	60.9	2174.4	1862.2	578	1862.2	BLUE
H-163	0.0	228.2	73.9	5556.1	3319.5	28	3319.5	BLUE
H-531	0.0	224.0	77.3	3222.2	3198.8	J-84	3198.8	BLUE
H-80	0.0	215.9	79.1	5251.3	5106.2	86	5106.2	BLUE
H-78	0.0	219.3	77.6	4951.0	4884.1	86	4884.1	BLUE
H-84	0.0	212.8	80.4	4153.4	3988.5	86	3988.5	BLUE
H-85	0.0	199.7	86.1	4220.9	3852.8	86	3852.8	BLUE
H-87	0.0	200.0	85.9	4010.9	3665.4	86	3665.4	BLUE
H-86	0.0	200.4	85.8	3927.8	3594.9	86	3594.9	BLUE
H-543	0.0	220.9	76.9	5205.8			5205.8	BLUE
H-542	0.0	224.9	75.2	5019.5			5019.5	BLUE
H-545	0.0	216.2	78.9	5140.6			5140.6	BLUE
H-544	0.0	221.1	76.8	4966.6			4966.6	BLUE
H-546	0.0	223.1	75.9	4910.1			4910.1	BLUE
H-547	0.0	224.7	75.2	4836.8			4836.8	BLUE
H-548	0.0	226.5	74.5	4743.3			4743.3	BLUE
H-549	0.0	233.5	71.4	4557.3			4557.3	BLUE
H-550	0.0	243.5	67.1	4308.2			4308.2	BLUE
H-551	0.0	242.5	67.5	4299.5			4299.5	BLUE
H-552	0.0	230.9	72.6	4527.8			4527.8	BLUE
H-553	0.0	226.6	74.4	4607.7	4537.5	J-128	4537.5	BLUE
H-554	0.0	227.7	73.9	4578.4	4452.1	J-128	4452.1	BLUE
H-55	0.0	234.0	71.2	3187.6			3187.6	BLUE
H-54	0.0	233.4	71.5	2712.8			2712.8	BLUE
H-174	0.0	200.2	86.1	1579.1			1579.1	BLUE
H-282	0.0	186.8	91.8	3624.2	3167.3	89	3167.3	BLUE
H-279	0.0	191.3	89.8	3572.9	3144.3	89	3144.3	BLUE
H-20	0.0	253.3	63.1	2276.2			2276.2	BLUE

2020 Fireflow - Main Zone East

H-90	0.0	216.9	78.6	2895.5	2828.8	86	2828.8	BLUE
H-89	0.0	216.0	79.0	2845.1	2769.3	86	2769.3	BLUE
H-137	0.0	201.9	85.3	4200.7			4200.7	BLUE
H-112	0.0	216.5	78.8	7298.1			7298.1	BLUE
H-122	0.0	213.9	80.0	6835.5	6754.2	2074	6754.2	BLUE
H-121	0.0	216.9	78.7	7339.2			7339.2	BLUE
H-136	0.0	210.6	81.5	2517.7	2360.9	89	2360.9	BLUE
H-135	0.0	204.2	84.2	2815.0	2573.2	89	2573.2	BLUE
H-139	0.0	205.8	83.6	2373.9	2361.9	J-27	2361.9	BLUE
H-193	0.0	207.6	83.3	3426.8			3426.8	BLUE
H-196	0.0	199.7	86.5	4259.4			4259.4	BLUE
H-195	0.0	200.5	86.3	3537.5			3537.5	BLUE
H-189	0.0	223.9	77.2	3222.5			3222.5	BLUE
H-192	0.0	220.5	77.9	3604.7			3604.7	BLUE

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Date & Time: Thu Sep 30 11:19:32 2021

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 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

REGULATING VALVE DATA

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
18th St PRV	PRV-1	389.66
18th St Pump	Const_FLOW_Pump	0.00
Centralia Al	Const_HEAD_Pump	541.19
Fairview PRV	PRV-1	466.50
High Level P	Const_FLOW_Pump	360.00
RV-1	PRV-1	389.55
RV-2	PRV-1	389.67
South End Pu	Const_HEAD_Pump	495.59
Valley View	Const_FLOW_Pump	0.00

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1	NODE NAMES #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
3	5	6	24.78	10.00	90.0000	0.00
5	9	10	824.44	6.00	90.0000	0.00
6	11	12	38.56	8.00	90.0000	0.00
7	13	872	38.38	6.00	75.0000	0.00
8	15	16	7.84	6.00	90.0000	0.00
10	18	19	437.00	2.00	140.0000	0.00
12	22	23	750.00	8.00	115.0000	0.00
13	24	1524	360.61	4.00	115.0000	0.00
14	26	J-55	539.97	8.00	115.0000	0.00
16	28	29	217.00	4.00	115.0000	0.00
17	31	32	723.00	2.00	113.0723	0.00
21	37	38	170.42	4.00	75.0000	0.00
22	2014	40	325.43	8.00	115.0000	0.00
23	41	1699	28.75	12.00	115.0000	0.00
24	43	213	42.27	12.00	115.0000	0.00
26	47	48	173.64	4.00	115.0000	0.00
27	49	50	310.00	10.00	115.0000	0.00
28	51	52	222.00	8.00	115.0000	0.00
32	59	60	108.37	6.00	75.0000	0.00
35	65	66	295.51	6.00	75.0000	0.00
37	68	69	412.00	8.00	115.0000	0.00
38	52	70	245.00	6.00	115.0000	0.00
39	Hillcrest	72	81.50	4.00	115.0000	0.00
41	75	76	3275.00	12.00	130.0000	0.00
45	83	2066	32.96	12.00	130.0000	0.00
46	85	86	33.07	12.00	130.0000	0.00
52	97	98	74.85	8.00	130.0000	0.00
55	102	103	68.31	8.00	130.0000	0.00
56	104	1810	34.98	12.00	130.0000	0.00
59	107	108	7.82	12.00	130.0000	0.00
60	109	J-53	785.00	16.00	115.0000	0.00
66	118	J-91	2359.00	14.00	90.0000	0.00
68	119	121	704.00	14.00	75.0000	0.00
70	121	860	23.71	14.00	75.0000	0.00
72	118	1799	900.00	8.00	130.0000	0.00
85	physical d	396	23.76	14.00	75.0000	0.00
107	J-91	2067	949.00	14.00	75.0000	0.00
109	325	34	484.84	12.00	115.0000	0.00
110	2122	166	948.74	12.00	115.0000	0.00
112	166	962	902.00	12.00	115.0000	0.00
114	569	962	308.00	12.00	115.0000	0.00
115	569	665	1519.00	12.00	115.0000	0.00
118	172	J-105	650.00	12.00	115.0000	0.00
120	175	178	251.61	12.00	115.0000	0.00
123	178	1826	444.69	12.00	115.0000	0.00
126	1826	1827	278.93	12.00	115.0000	0.00
129	1827	192	1658.25	12.00	115.0000	0.00

2020 Fireflow - High Level Zone

137	192	201	248.00	12.00	115.0000	0.00
139	201	137	409.00	12.00	115.0000	0.00
141	15	137	446.49	12.00	115.0000	0.00
142	15	J-95	1949.78	12.00	115.0000	0.00
145	201	J-93	562.05	12.00	90.0000	0.00
155	212	213	677.50	12.00	115.0000	0.00
156	214	26	1649.00	12.00	115.0000	0.00
163	2072	224	1245.00	12.00	115.0000	0.00
187	248	253	1835.17	12.00	130.0000	0.00
192	254	J-127	1507.19	12.00	130.0000	0.00
262	325	1575	908.76	12.00	115.0000	0.00
279	343	344	127.52	12.00	130.0000	0.00
280	344	342	115.85	12.00	130.0000	0.00
282	342	346	192.42	12.00	130.0000	0.00
283	86	J-130	1344.24	12.00	130.0000	0.00
292	356	361	2280.98	10.00	90.0000	0.00
298	32	J-7	60.00	10.00	90.0000	0.00
302	32	480	930.34	10.00	90.0000	0.00
318	384	385	126.00	10.00	115.0000	0.00
319	356	2074	983.94	10.00	90.0000	0.00
320	356	41	37.27	10.00	90.0000	0.00
329	396	398	31.65	10.00	75.0000	0.00
331	398	1409	306.52	10.00	75.0000	0.00
340	407	408	647.97	10.00	75.0000	0.00
353	661	2119	350.44	6.00	75.0000	0.00
355	424	1648	189.00	10.00	90.0000	0.00
363	295	468	3228.55	10.00	130.0000	0.00
398	172	473	539.00	12.00	115.0000	0.00
403	474	480	672.00	8.00	90.0000	0.00
411	J-45	2129	770.00	8.00	90.0000	0.00
414	1217	1121	284.43	6.00	90.0000	0.00
417	492	1235	414.07	8.00	75.0000	0.00
429	505	509	502.00	8.00	75.0000	0.00
433	510	512	462.00	8.00	115.0000	0.00
435	513	1057	1078.98	8.00	75.0000	0.00
440	518	J-94	278.47	8.00	75.0000	0.00
448	92	1184	943.86	8.00	115.0000	0.00
451	530	119	42.30	8.00	75.0000	0.00
452	119	536	464.52	8.00	75.0000	0.00
458	536	2079	637.02	8.00	75.0000	0.00
461	540	2079	30.24	8.00	75.0000	0.00
464	544	543	465.44	8.00	75.0000	0.00
472	552	J-100	98.00	8.00	75.0000	0.00
476	I-AV-1	J-114	1506.58	4.00	90.0000	0.00
486	569	573	476.00	8.00	115.0000	0.00
490	385	166	264.00	8.00	140.0000	0.00
495	579	J-138	330.16	8.00	115.0000	0.00
497	582	584	548.98	8.00	115.0000	0.00
503	590	J-73	801.25	8.00	75.0000	0.00
511	599	601	450.87	8.00	115.0000	0.00
526	599	619	720.36	8.00	115.0000	0.00
531	620	623	618.14	8.00	115.0000	0.00
538	628	631	136.23	8.00	90.0000	0.00
541	632	1049	299.05	8.00	90.0000	0.00
547	631	642	578.19	8.00	90.0000	0.00
552	High Level	2090	1103.00	8.00	90.0000	0.00
565	509	661	1328.00	8.00	75.0000	0.00
569	597	1284	174.94	8.00	90.0000	0.00
571	46	2086	497.00	8.00	90.0000	0.00
574	665	668	872.08	8.00	115.0000	0.00
577	668	675	492.96	8.00	115.0000	0.00
584	676	J-27	893.25	8.00	90.0000	0.00
590	54	682	182.20	8.00	90.0000	0.00
591	683	J-95	505.00	8.00	90.0000	0.00
593	686	J-78	241.00	8.00	90.0000	0.00
597	408	J-79	21.00	8.00	75.0000	0.00
601	361	1960	1287.07	8.00	90.0000	0.00
612	705	710	248.15	8.00	115.0000	0.00
617	717	1134	965.00	8.00	115.0000	0.00
623	718	247	34.04	8.00	75.0000	0.00
630	424	726	91.39	8.00	75.0000	0.00
632	726	J-80	386.08	8.00	75.0000	0.00
652	468	780	2846.84	8.00	130.0000	0.00
684	781	2092	25.00	8.00	115.0000	0.00
686	784	1698	594.45	8.00	115.0000	0.00
690	788	791	1019.18	8.00	115.0000	0.00
693	792	791	123.52	8.00	115.0000	0.00
697	797	784	720.40	8.00	115.0000	0.00
700	800	802	282.00	6.00	130.0000	0.00
702	803	1465	267.21	6.00	75.0000	0.00
706	808	2009	929.18	6.00	75.0000	0.00
710	813	815	302.18	6.00	75.0000	0.00
712	121	2093	46.99	6.00	75.0000	0.00
714	2094	40	934.76	4.00	75.0000	0.00
723	828	2096	426.19	6.00	75.0000	0.00
726	544	831	72.71	6.00	75.0000	0.00
727	831	530	335.47	6.00	75.0000	0.00
735	831	1989	226.92	6.00	75.0000	0.00
739	842	844	615.87	6.00	75.0000	0.00
741	844	817	669.95	6.00	75.0000	0.00
749	856	J-115	240.00	6.00	75.0000	0.00
751	2078	14	273.95	6.00	75.0000	0.00
753	860	2097	569.00	6.00	75.0000	0.00
757	865	868	222.76	6.00	75.0000	0.00
760	868	J-113	502.26	6.00	75.0000	0.00
762	868	872	205.21	6.00	75.0000	0.00
772	881	2098	449.61	6.00	75.0000	0.00
776	885	J-111	304.95	6.00	75.0000	0.00
784	893	J-106	418.44	6.00	75.0000	0.00
785	893	J-110	416.57	6.00	75.0000	0.00
789	66	899	48.00	6.00	75.0000	0.00
791	899	901	175.00	6.00	75.0000	0.00
793	901	1742	1127.00	6.00	75.0000	0.00
797	906	910	180.00	6.00	75.0000	0.00
801	910	38	116.53	6.00	75.0000	0.00

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807	842	2084	314.93	6.00	75.0000	0.00
812	916	922	348.45	6.00	75.0000	0.00
814	923	J-20	569.59	6.00	75.0000	0.00
817	J-21	929	248.00	6.00	75.0000	0.00
823	J-2	937	870.00	6.00	75.0000	0.00
825	J-2	556	502.00	6.00	75.0000	0.00
831	945	2080	473.03	6.00	75.0000	0.00
839	954	2081	460.04	6.00	75.0000	0.00
846	962	964	82.58	6.00	115.0000	0.00
858	1387	1314	65.93	4.00	75.0000	0.00
861	108	104	599.00	6.00	90.0000	0.00
867	958	J-110	1002.00	6.00	75.0000	0.00
874	994	65	736.58	6.00	75.0000	0.00
876	65	1986	656.95	6.00	75.0000	0.00
883	1003	1023	424.00	6.00	90.0000	0.00
903	1024	J-125	363.09	6.00	90.0000	0.00
905	O-High Lev	649	101.61	6.00	75.0000	0.00
910	1024	628	642.00	6.00	90.0000	0.00
912	1032	1003	811.00	6.00	90.0000	0.00
930	1050	1053	1269.52	6.00	90.0000	0.00
933	384	2100	964.00	6.00	75.0000	0.00
936	1057	16	435.81	6.00	90.0000	0.00
938	1060	1063	225.00	6.00	115.0000	0.00
941	1064	J-129	956.67	6.00	90.0000	0.00
948	1071	526	308.78	6.00	90.0000	0.00
949	526	1084	2823.47	6.00	75.0000	0.00
962	1085	1337	588.12	6.00	75.0000	0.00
966	1099	J-78	1370.13	6.00	90.0000	0.00
975	1100	1101	228.75	6.00	90.0000	0.00
976	O-Fairview	1101	118.14	6.00	90.0000	0.00
982	2103	J-81	265.32	6.00	75.0000	0.00
993	1121	1122	255.49	6.00	90.0000	0.00
994	2076	2127	300.30	6.00	75.0000	0.00
1000	1130	1125	650.51	6.00	75.0000	0.00
1001	2104	J-73	623.72	6.00	75.0000	0.00
1003	1134	2104	238.99	6.00	75.0000	0.00
1004	509	1290	478.00	6.00	75.0000	0.00
1007	1137	2105	327.02	6.00	75.0000	0.00
1009	1388	2013	267.00	6.00	75.0000	0.00
1012	2106	2107	591.74	6.00	75.0000	0.00
1014	510	23	924.74	6.00	75.0000	0.00
1017	2137	2109	470.82	6.00	75.0000	0.00
1019	2084	2109	326.70	6.00	75.0000	0.00
1020	2094	23	140.75	6.00	75.0000	0.00
1023	1156	23	477.86	6.00	75.0000	0.00
1024	2096	2073	229.38	6.00	75.0000	0.00
1025	2110	2096	273.09	6.00	75.0000	0.00
1026	2110	1997	279.58	6.00	75.0000	0.00
1028	1997	2111	244.00	6.00	75.0000	0.00
1030	2111	2112	268.86	6.00	75.0000	0.00
1032	1961	2113	418.00	6.00	75.0000	0.00
1035	704	1961	270.90	6.00	75.0000	0.00
1036	2109	1961	297.09	6.00	75.0000	0.00
1037	2010	2014	642.00	6.00	75.0000	0.00
1040	2012	2013	328.33	6.00	75.0000	0.00
1041	2065	2012	308.00	6.00	75.0000	0.00
1042	2137	2065	296.00	6.00	75.0000	0.00
1043	2113	2137	300.18	6.00	75.0000	0.00
1044	2113	1180	266.89	6.00	75.0000	0.00
1046	1181	22	93.00	6.00	75.0000	0.00
1047	2095	22	173.00	6.00	75.0000	0.00
1048	726	1184	40.06	8.00	115.0000	0.00
1051	1186	1996	269.43	6.00	75.0000	0.00
1053	827	1232	1143.25	6.00	75.0000	0.00
1058	1232	1156	597.28	6.00	75.0000	0.00
1060	1156	512	927.21	6.00	75.0000	0.00
1062	512	2107	783.40	6.00	75.0000	0.00
1064	2115	2107	155.32	6.00	75.0000	0.00
1069	2117	2065	579.53	6.00	75.0000	0.00
1071	2137	1210	580.23	6.00	75.0000	0.00
1074	1211	1713	81.79	6.00	115.0000	0.00
1076	24	1713	223.00	6.00	115.0000	0.00
1077	1215	J-58	327.00	6.00	75.0000	0.00
1078	68	1217	692.94	6.00	115.0000	0.00
1080	1218	2112	1049.55	6.00	75.0000	0.00
1083	2112	1223	326.05	6.00	75.0000	0.00
1085	1224	2111	321.86	6.00	75.0000	0.00
1087	1085	1333	418.92	6.00	75.0000	0.00
1088	1085	808	427.58	6.00	75.0000	0.00
1090	808	1229	207.76	6.00	75.0000	0.00
1091	1232	1181	476.00	6.00	75.0000	0.00
1094	1235	1483	375.00	6.00	75.0000	0.00
1095	2120	1104	147.00	6.00	90.0000	0.00
1096	2120	1239	581.73	6.00	115.0000	0.00
1099	1240	1214	42.84	6.00	115.0000	0.00
1100	1214	1244	471.00	6.00	115.0000	0.00
1103	1244	1251	558.00	6.00	115.0000	0.00
1110	Yankis (Va	1251	413.91	6.00	115.0000	0.00
1116	1513	J-25	173.82	8.00	130.0000	0.00
1117	1277	J-159	108.25	6.00	90.0000	0.00
1118	1277	1262	90.18	6.00	90.0000	0.00
1120	657	J-25	1605.00	10.00	130.0000	0.00
1125	1181	1270	559.53	6.00	75.0000	0.00
1127	2103	1099	1495.62	6.00	75.0000	0.00
1132	1277	I-AV-4	889.11	6.00	90.0000	0.00
1138	693	579	860.83	6.00	75.0000	0.00
1140	1284	O-AV-3	362.05	6.00	90.0000	0.00
1146	1290	2119	1322.78	4.00	75.0000	0.00
1148	1293	1295	372.96	4.00	75.0000	0.00
1150	398	2016	65.54	6.00	75.0000	0.00
1152	1120	1298	198.66	6.00	75.0000	0.00
1154	432	1309	2165.00	6.00	90.0000	0.00
1165	1310	1314	1161.00	4.00	75.0000	0.00
1169	2127	J-61	967.64	4.00	75.0000	0.00
1171	1318	2105	578.38	4.00	75.0000	0.00

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1173	2105	1322	469.84	4.00	75.0000	0.00
1178	2115	40	301.65	4.00	75.0000	0.00
1179	2115	1328	589.61	4.00	75.0000	0.00
1182	803	J-81	638.00	4.00	75.0000	0.00
1185	1333	1337	528.94	4.00	75.0000	0.00
1189	1338	807	1527.54	4.00	75.0000	0.00
1193	518	192	70.97	4.00	75.0000	0.00
1195	192	1060	583.00	4.00	75.0000	0.00
1198	1060	705	1317.00	4.00	75.0000	0.00
1205	492	J-80	987.90	4.00	75.0000	0.00
1208	1356	828	273.00	4.00	75.0000	0.00
1210	1359	828	233.00	4.00	75.0000	0.00
1211	1364	1984	203.81	4.00	75.0000	0.00
1212	1364	1991	514.02	4.00	75.0000	0.00
1214	1364	2121	287.23	4.00	75.0000	0.00
1215	1366	36	660.16	4.00	75.0000	0.00
1217	1244	1251	681.00	6.00	115.0000	0.00
1226	1375	17	2480.00	4.00	90.0000	0.00
1236	17	1387	400.00	4.00	90.0000	0.00
1239	1388	1392	578.80	4.00	75.0000	0.00
1244	1314	33	129.52	4.00	90.0000	0.00
1245	937	1456	272.00	4.00	75.0000	0.00
1247	384	1456	264.58	4.00	75.0000	0.00
1248	1396I-Valley V	4.38	4.00	140.0000	0.00	
1258	505	1409	1080.00	4.00	75.0000	0.00
1261	1410	657	558.39	4.00	90.0000	0.00
1269	1023	I-AV-2	712.27	4.00	90.0000	0.00
1309	1456	881	418.71	4.00	75.0000	0.00
1315	885	1056	245.12	4.00	90.0000	0.00
1319	1465	2103	636.67	4.00	75.0000	0.00
1322	509	407	820.07	4.00	75.0000	0.00
1330	693	492	1027.10	4.00	75.0000	0.00
1338	1295	1483	948.39	4.00	75.0000	0.00
1340	1484	899	1892.00	4.00	75.0000	0.00
1351	344	1497	767.00	4.00	130.0000	0.00
1354	1498	1502	449.05	8.00	130.0000	0.00
1358	1502	J-133	279.67	8.00	130.0000	0.00
1371	1517	1519	275.00	2.00	114.3142	0.00
1384	1544	J-95	2295.00	12.00	90.0000	0.00
1388	1547	1544	288.55	12.00	115.0000	0.00
1389	1547	J-96	1327.00	12.00	115.0000	0.00
1396	1544	1547	2300.00	8.00	115.0000	0.00
1401	668	1674	1132.70	12.00	130.0000	0.00
1404	1674	102	746.13	12.00	130.0000	0.00
1406	102	J-1	620.69	12.00	130.0000	0.00
1409	92	J-143	4125.62	12.00	115.0000	0.00
1423	421	107	867.00	12.00	130.0000	0.00
1426	1575	34	575.28	12.00	115.0000	0.00
1427	1576	248	446.87	12.00	130.0000	0.00
1429	248	1580	540.11	12.00	130.0000	0.00
1433	51	26	448.20	12.00	115.0000	0.00
1435	51	109	1427.59	12.00	115.0000	0.00
1440	6	109	475.62	12.00	115.0000	0.00
1441	6	1647	1469.07	12.00	115.0000	0.00
1443	1637	1647	5159.69	12.00	115.0000	0.00
1454	72	1637	1761.44	12.00	115.0000	0.00
1455	72	1626	3641.41	12.00	115.0000	0.00
1458	1627	1626	763.65	12.00	115.0000	0.00
1460	797	212	356.56	12.00	115.0000	0.00
1464	788	1630	3991.15	12.00	115.0000	0.00
1477	1630	1626	1130.08	12.00	115.0000	0.00
1479	1627Yates Rese		1075.00	12.00	130.0000	0.00
1481	1630	76	3539.00	12.00	130.0000	0.00
1483	76	1636	2341.00	12.00	130.0000	0.00
1487	1637	75	595.62	12.00	115.0000	0.00
1492	75	49	651.30	12.00	115.0000	0.00
1493	254	49	3310.10	12.00	115.0000	0.00
1494	254	J-35	1688.26	12.00	115.0000	0.00
1497	2072	1647	1022.00	12.00	115.0000	0.00
1499	1648	247	4693.50	12.00	115.0000	0.00
1500	343	1657	2072.02	8.00	130.0000	0.00
1509	1658	901	754.77	8.00	130.0000	0.00
1526	1674	800	496.84	8.00	130.0000	0.00
1531	800	174	473.00	8.00	130.0000	0.00
1534	1679	1689	748.17	6.00	90.0000	0.00
1544	1690	1689	126.93	8.00	90.0000	0.00
1548	2092	1698	669.39	8.00	115.0000	0.00
1552	1699	1700	801.40	10.00	130.0000	0.00
1553	2138	89	1389.60	8.00	115.0000	0.00
1560	1710	J-53	1056.65	8.00	115.0000	0.00
1562	1711	683	220.00	8.00	90.0000	0.00
1563	683	1712	500.00	8.00	115.0000	0.00
1564	1713	1716	178.58	6.00	115.0000	0.00
1567	1716	1719	185.05	6.00	115.0000	0.00
1584	1742	1737	1268.00	4.00	75.0000	0.00
1588	1737	1375	375.00	4.00	75.0000	0.00
1593	1742	1484	452.00	10.00	130.0000	0.00
1596	1484	975	1798.00	10.00	130.0000	0.00
1611	975	1310	71.00	10.00	130.0000	0.00
1612	1310	2122	454.00	10.00	130.0000	0.00
1615	2123	1089	511.48	8.00	115.0000	0.00
1617	1089	1186	243.51	6.00	75.0000	0.00
1618	1186	1767	570.00	8.00	115.0000	0.00
1621	J-135	1773	742.00	8.00	130.0000	0.00
1626	1773	1775	197.00	8.00	130.0000	0.00
1628	1775	1776	68.00	8.00	130.0000	0.00
1629	1776	1782	1030.00	8.00	130.0000	0.00
1635	1782	1788	996.00	8.00	130.0000	0.00
1641	1788	1775	237.00	8.00	130.0000	0.00
1644	1773	1791	251.00	8.00	130.0000	0.00
1645	1776	1793	338.00	8.00	130.0000	0.00
1647	1788	1782	591.00	8.00	130.0000	0.00
1654	1800	1801	235.53	10.00	130.0000	0.00
1657	18053-inch or		110.20	8.00	130.0000	0.00
1658	1806	1808	400.00	6.00	115.0000	0.00

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1660	1809	1806	19.02	8.00	130.0000	0.00
1661	1810	1821	671.00	10.00	130.0000	0.00
1663	1800	1821	258.00	10.00	130.0000	0.00
1664	1813	1809	50.87	10.00	130.0000	0.00
1665	1814	1818	535.81	2.00	140.0000	0.00
1669	1813	1814	675.00	8.00	130.0000	0.00
1672	1821	J-112	525.00	8.00	130.0000	0.00
1673	1823	1826	385.26	6.00	90.0000	0.00
1676	1827	1071	62.38	8.00	90.0000	0.00
1677	1636	J-128	438.35	8.00	130.0000	0.00
1792	910	844	262.20	4.00	75.0000	0.00
1793	178	1823	69.34	8.00	90.0000	0.00
1796	1063	1948	325.00	2.00	106.5232	0.00
1799	1032	J-114	642.00	4.00	90.0000	0.00
1810	1960	12	21.03	8.00	90.0000	0.00
1811	12	10	1053.00	8.00	90.0000	0.00
1813	1767	J-117	290.12	6.00	75.0000	0.00
1818	1737	1968	132.00	4.00	75.0000	0.00
1820	1823	J-21	491.61	6.00	75.0000	0.00
1821	175	384	2123.70	10.00	115.0000	0.00
1825	1973	566	454.00	4.00	75.0000	0.00
1826	1974	1975	651.00	4.00	75.0000	0.00
1828	J-3	1980	517.00	6.00	75.0000	0.00
1830	3-inch or	1981	48.33	4.00	75.0000	0.00
1831	1984	1767	235.15	6.00	75.0000	0.00
1834	1985	1986	56.59	4.00	75.0000	0.00
1835	894	2125	20.33	8.00	115.0000	0.00
1836	1987	568	717.00	4.00	75.0000	0.00
1837	1988	1989	52.11	4.00	75.0000	0.00
1839	2121	1991	219.88	6.00	75.0000	0.00
1840	2126	2123	286.00	10.00	115.0000	0.00
1841	1994	994	209.00	6.00	75.0000	0.00
1842	1996	1997	691.73	6.00	75.0000	0.00
1843	1184	2003	971.73	6.00	115.0000	0.00
1852	2007	2009	230.57	6.00	75.0000	0.00
1854	2010	2065	472.04	6.00	75.0000	0.00
1855	2012	J-39	579.11	8.00	75.0000	0.00
1856	2013	2014	469.09	6.00	115.0000	0.00
1858	2016	J-81	1482.47	4.00	75.0000	0.00
1860	2127	504	947.53	4.00	75.0000	0.00
1864	1121	2023	183.59	6.00	90.0000	0.00
1865	2127	1215	263.88	6.00	75.0000	0.00
1866	2025	2028	384.00	2.00	140.0000	0.00
1869	2029	2030	216.99	2.00	140.0000	0.00
1870	2031	2029	117.40	4.00	140.0000	0.00
1871	2029	2025	27.90	4.00	140.0000	0.00
1872	2025	2032	248.94	4.00	140.0000	0.00
1873	2033	2031	618.97	4.00	140.0000	0.00
1877	2031	J-124	145.24	8.00	115.0000	0.00
1883	2047	J-74	206.38	6.00	90.0000	0.00
1887	2053	582	671.02	4.00	90.0000	0.00
1892	2129	582	343.45	4.00	90.0000	0.00
1893	590	46	757.00	6.00	90.0000	0.00
1894	2061	J-45	335.58	6.00	90.0000	0.00
1895	2063	J-44	880.19	8.00	90.0000	0.00
1896	5	361	64.75	10.00	90.0000	0.00
1898	14	540	265.00	6.00	75.0000	0.00
1900	163-in or sm		34.44	6.00	90.0000	0.00
1901	17	18	236.00	6.00	90.0000	0.00
1904	24	2088	5.94	6.00	115.0000	0.00
1907	36	2130	291.60	6.00	75.0000	0.00
1908	38	2083	817.68	6.00	75.0000	0.00
1909	2014	J-87	300.00	6.00	75.0000	0.00
1917	69	J-61	263.00	8.00	115.0000	0.00
1920	295	J-30	1850.87	12.00	130.0000	0.00
1924	86	2066	285.00	12.00	130.0000	0.00
1927	104	J-112	808.02	6.00	75.0000	0.00
1930	118	710	2530.00	14.00	90.0000	0.00
1935	247	2106	22.48	8.00	75.0000	0.00
1936	325	2122	272.19	12.00	115.0000	0.00
1938	375	1218	736.59	14.00	75.0000	0.00
1940	396	1318	307.00	14.00	75.0000	0.00
1941	480	2138	730.48	10.00	90.0000	0.00
1947	530	2093	691.48	6.00	75.0000	0.00
1948	536	2078	287.42	8.00	75.0000	0.00
1949	565	1084	590.00	8.00	75.0000	0.00
1950	556	944	498.75	6.00	75.0000	0.00
1951	565	543	35.00	8.00	75.0000	0.00
1954	J-84	O-AV-5	54.14	8.00	90.0000	0.00
1956	584	717	786.89	10.00	90.0000	0.00
1958	590	584	267.70	10.00	90.0000	0.00
1960	620	2133	155.65	8.00	115.0000	0.00
1962	1410	649	52.91	8.00	90.0000	0.00
1964	661	424	118.60	10.00	75.0000	0.00
1965	665	172	143.00	12.00	115.0000	0.00
1967	710	137	1990.58	14.00	90.0000	0.00
1972	784	791	500.36	8.00	115.0000	0.00
1975	797	788	291.38	12.00	115.0000	0.00
1977	813	J-120	564.60	6.00	75.0000	0.00
1978	815	803	563.97	6.00	75.0000	0.00
1979	817	1338	454.00	6.00	75.0000	0.00
1982	856	2121	290.89	6.00	75.0000	0.00
1983	860	375	259.21	14.00	75.0000	0.00
1984	865	65	387.79	8.00	75.0000	0.00
1985	872	14	110.22	6.00	75.0000	0.00
1986	923	J-3	345.89	6.00	75.0000	0.00
1987	944	1987	383.07	6.00	75.0000	0.00
1989	954	945	225.61	6.00	75.0000	0.00
1990	958	J-106	266.00	6.00	75.0000	0.00
1992	994	1658	528.00	10.00	115.0000	0.00
1993	2101	60	140.36	6.00	75.0000	0.00
1995	1003	1049	529.64	6.00	90.0000	0.00
1996	1049	631	275.61	8.00	90.0000	0.00
1997	1050	975	402.00	6.00	90.0000	0.00
1998	1057	518	652.00	8.00	75.0000	0.00

2020 Fireflow - High Level Zone

2000	1084	552	435.20	8.00	75.0000	0.00
2001	1099	1120	246.00	6.00	75.0000	0.00
2002	1107	J-79	210.02	8.00	75.0000	0.00
2003	1130	J-63	457.60	8.00	75.0000	0.00
2005	1137	398	600.00	8.00	75.0000	0.00
2010	1180	704	473.80	8.00	75.0000	0.00
2011	1183	704	38.34	6.00	75.0000	0.00
2014	1210	2067	566.74	14.00	75.0000	0.00
2020	1223	1224	265.83	6.00	75.0000	0.00
2021	1224	827	666.42	6.00	75.0000	0.00
2022	1229	815	301.07	6.00	75.0000	0.00
2024	1235	1517	896.98	8.00	75.0000	0.00
2025	1099	J-82	293.00	6.00	75.0000	0.00
2027	1284	46	713.52	8.00	90.0000	0.00
2031	1318	1392	306.00	14.00	75.0000	0.00
2032	1322	J-87	262.00	6.00	75.0000	0.00
2033	1328	2091	322.03	8.00	75.0000	0.00
2035	1337	2110	39.43	6.00	75.0000	0.00
2036	1338	813	634.51	6.00	75.0000	0.00
2037	1356	1089	17.89	6.00	75.0000	0.00
2039	1366	945	480.02	6.00	75.0000	0.00
2040	1387	979	479.26	6.00	115.0000	0.00
2042	1392	J-39	591.86	14.00	75.0000	0.00
2045	1409	407	306.00	10.00	75.0000	0.00
2048	1465	J-120	38.32	6.00	75.0000	0.00
2053	1107	1517	423.01	8.00	75.0000	0.00
2058	1570	J-8	1066.00	10.00	90.0000	0.00
2060	1575	342	808.04	12.00	130.0000	0.00
2063	1627	J-135	354.12	12.00	115.0000	0.00
2067	1648	432	2857.00	10.00	90.0000	0.00
2068	1658	421	772.00	10.00	115.0000	0.00
2070	1679	1101	25.75	6.00	90.0000	0.00
2071	1698	212	264.80	8.00	115.0000	0.00
2078	1800	1813	297.00	10.00	130.0000	0.00
2079	1809	1805	635.00	10.00	130.0000	0.00
2080	1810	107	583.38	12.00	130.0000	0.00
2087	1960	700	19.01	8.00	90.0000	0.00
2089	1973	J-2	345.00	6.00	75.0000	0.00
2090	1974	1366	377.42	6.00	75.0000	0.00
2091	1975	36	374.90	6.00	75.0000	0.00
2092	1981	J-4	275.32	6.00	75.0000	0.00
2093	994	1984	383.00	10.00	115.0000	0.00
2095	1986	552	515.83	6.00	75.0000	0.00
2096	1987	893	54.17	6.00	75.0000	0.00
2097	1989	842	189.64	6.00	75.0000	0.00
2102	1996	827	273.45	6.00	75.0000	0.00
2104	2007	375	649.59	10.00	115.0000	0.00
2105	2009	2096	41.52	6.00	75.0000	0.00
2111	2016	1120	22.21	6.00	75.0000	0.00
2114	1107	1293	379.00	6.00	75.0000	0.00
2118	2053	J-57	404.65	8.00	90.0000	0.00
2120	2063	717	379.81	10.00	90.0000	0.00
2127	2067	1218	331.70	14.00	75.0000	0.00
2128	2067	1180	580.16	8.00	75.0000	0.00
2139	2073	2007	37.55	10.00	115.0000	0.00
2141	2074	483	444.39	8.00	115.0000	0.00
2145	2076	492	344.58	8.00	75.0000	0.00
2146	2076	504	784.60	8.00	75.0000	0.00
2148	693	J-64	330.00	8.00	115.0000	0.00
2149	2078	865	288.23	8.00	75.0000	0.00
2150	2078	1991	297.24	6.00	75.0000	0.00
2152	2079	543	202.12	8.00	75.0000	0.00
2153	2080	2081	236.10	6.00	115.0000	0.00
2154	2080	958	585.00	6.00	75.0000	0.00
2155	2125	J-99	48.00	8.00	115.0000	0.00
2156	2081	958	325.04	6.00	75.0000	0.00
2159	2083	2084	265.54	8.00	75.0000	0.00
2160	2083	916	678.90	6.00	75.0000	0.00
2161	2084	565	310.77	8.00	75.0000	0.00
2162	2084	916	736.88	6.00	75.0000	0.00
2165	2086	578	560.00	8.00	115.0000	0.00
2166	2086	2132	593.29	8.00	90.0000	0.00
2169	2088	620	2465.45	8.00	115.0000	0.00
2170	2088	1214	158.00	6.00	115.0000	0.00
2173	2090	1410	14.60	8.00	90.0000	0.00
2174	2090	657	565.72	8.00	115.0000	0.00
2175	2091	1137	468.76	8.00	75.0000	0.00
2176	2091	505	311.20	8.00	75.0000	0.00
2179	2093	817	304.87	6.00	75.0000	0.00
2180	2093	1229	758.42	6.00	75.0000	0.00
2181	2094	2095	604.36	6.00	75.0000	0.00
2183	2095	1223	294.47	6.00	75.0000	0.00
2184	2095	1183	324.33	6.00	75.0000	0.00
2187	2097	856	426.07	6.00	75.0000	0.00
2188	2097	2073	206.00	6.00	75.0000	0.00
2189	2098	885	448.98	6.00	75.0000	0.00
2190	2098	2100	273.62	6.00	75.0000	0.00
2192	954	2130	268.01	6.00	75.0000	0.00
2193	2100	1050	360.00	6.00	90.0000	0.00
2194	2100	1056	405.41	6.00	75.0000	0.00
2195	2101	807	693.00	6.00	115.0000	0.00
2196	2101	J-82	1519.00	6.00	75.0000	0.00
2198	1290	1293	372.41	6.00	75.0000	0.00
2199	2103	60	154.27	6.00	75.0000	0.00
2202	2104	2021	244.00	4.00	75.0000	0.00
2203	2105	1388	298.00	6.00	75.0000	0.00
2206	2106	1328	152.76	8.00	75.0000	0.00
2207	2107	510	314.14	6.00	75.0000	0.00
2212	2109	2010	299.72	6.00	75.0000	0.00
2214	2110	1356	429.11	6.00	75.0000	0.00
2216	2111	1333	54.05	6.00	75.0000	0.00
2217	2112	1183	291.22	6.00	75.0000	0.00
2221	803	2113	632.05	6.00	75.0000	0.00
2223	2115	J-87	328.38	6.00	75.0000	0.00
2228	2117	1210	322.00	14.00	75.0000	0.00

2020 Fireflow - High Level Zone

2231	2119	1483	385.00	6.00	75.0000	0.00
2234	2120	J-77	147.00	6.00	90.0000	0.00
2236	2121	2126	209.47	6.00	75.0000	0.00
2240	2123	2073	427.00	10.00	115.0000	0.00
2243	2125	961	36.45	8.00	115.0000	0.00
2244	2125	2081	266.99	8.00	115.0000	0.00
2246	2126	1984	286.12	10.00	115.0000	0.00
2249	2050	J-77	44.67	6.00	90.0000	0.00
2252	2129	2053	226.85	8.00	90.0000	0.00
2253	2130	961	455.00	6.00	75.0000	0.00
2254	2130	1973	40.73	6.00	75.0000	0.00
2257	2132	214	7.31	8.00	90.0000	0.00
2259	2133	599	622.41	8.00	115.0000	0.00
2260	2133	47	462.96	8.00	115.0000	0.00
2269	2138	481	66.26	10.00	90.0000	0.00
P-1	J-1	97	547.15	12.00	130.0000	0.00
P-100	J-112	1814	500.93	6.00	75.0000	0.00
P-101	J-113	2079	368.16	6.00	75.0000	0.00
P-102	J-114	1023	302.00	4.00	90.0000	0.00
P-103	J-125	649	346.91	6.00	90.0000	0.00
P-104	I-Fairview	1103	20.94	6.00	90.0000	0.00
P-105	J-115	J-116	419.54	6.00	75.0000	0.00
P-106	J-116	2097	250.67	6.00	75.0000	0.00
P-108	J-117	56	305.00	6.00	75.0000	0.00
P-11	J-3	1975	323.06	6.00	75.0000	0.00
P-111	J-120	807	266.76	6.00	75.0000	0.00
P-113	J-39	2117	288.00	14.00	75.0000	0.00
P-116	97	J-122	121.15	12.00	130.0000	0.00
P-117	J-140	J-145	46.63	12.00	130.0000	0.00
P-119	J-139	J-84	78.98	8.00	130.0000	0.00
P-121	J-140	J-138	42.92	12.00	130.0000	0.00
P-122	J-126Main Reser		111.73	14.00	90.0000	0.00
P-124	O-AV-1	2083	364.42	8.00	75.0000	0.00
P-125	O-AV-2	906	282.73	4.00	75.0000	0.00
P-127	J-127	295	2367.21	12.00	130.0000	0.00
P-128	J-127	J-128	4129.32	12.00	130.0000	0.00
P-130	J-128	1831	615.85	8.00	130.0000	0.00
P-131	J-129	1071	558.33	6.00	90.0000	0.00
P-132	668	J-129	1448.22	12.00	130.0000	0.00
P-133	J-133	1513	25.35	8.00	130.0000	0.00
P-134	J-122	J-132	800.00	12.00	130.0000	0.00
P-135	J-124	1502	393.57	8.00	130.0000	0.00
P-136	J-124	J-131	198.84	8.00	130.0000	0.00
P-138-CV	Kennicott	J-53	790.00	16.00	115.0000	0.00
P-140	O-AV-4	686	40.89	6.00	90.0000	0.00
P-143	I-AV-5	J-63	2.85	8.00	130.0000	0.00
P-144	O-AV-6	1134	545.75	4.00	75.0000	0.00
P-146	J-73	J-134	384.83	8.00	115.0000	0.00
P-147	J-64	J-141	135.51	8.00	115.0000	0.00
P-148	J-134	O-RV-2	6.27	8.00	130.0000	0.00
P-149	J-143	O-RV-1	5.82	12.00	130.0000	0.00
P-15	J-91	J-126	172.27	14.00	90.0000	0.00
P-150-CV	J-141	J-134	13.00	8.00	130.0000	0.00
P-151	J-142	J-139	80.78	8.00	130.0000	0.00
P-152	J-144	1570	631.51	12.00	115.0000	0.00
P-153-CV	J-143	J-144	24.87	12.00	130.0000	0.00
P-154	I-RV-1	J-144	5.63	12.00	130.0000	0.00
P-157	I-RV-2	J-141	7.13	8.00	130.0000	0.00
P-1570	1716	1103	1729.25	8.00	115.0000	0.00
P-158	J-145I-18th St		2.66	12.00	115.0000	0.00
P-159	J-145	J-146	2.68	12.00	115.0000	0.00
P-160-CV	J-146	J-147	9.25	12.00	115.0000	0.00
P-161	J-146O-18th St		3.23	12.00	130.0000	0.00
P-162	J-147	J-142	2.67	12.00	115.0000	0.00
P-164	I-18th St	J-147	3.12	12.00	130.0000	0.00
P-165	J-155	J-156	739.67	6.00	140.0000	0.00
P-166	66	J-110	322.75	6.00	75.0000	0.00
P-167	J-153	J-156	4747.12	12.00	115.0000	0.00
P-168	J-152	J-150	15.74	8.00	115.0000	0.00
P-169	J-154	J-88	471.34	12.00	115.0000	0.00
P-170	J-155	J-151	4833.50	6.00	140.0000	0.00
P-171	J-155	J-157	658.63	2.00	140.0000	0.00
P-172	J-156	J-154	1552.65	12.00	115.0000	0.00
P-173	J-148	J-6	2664.56	2.00	130.0000	0.00
P-174	J-149	J-153	1314.60	8.00	130.0000	0.00
P-175	J-150	J-152	2094.17	8.00	115.0000	0.00
P-176	J-64	2076	1014.00	8.00	75.0000	0.00
P-178	J-159	1513	18.67	6.00	90.0000	0.00
P-18	J-135I-South En		77.91	12.00	130.0000	0.00
P-19	33	34	11.57	4.00	90.0000	0.00
P-2	101	J-1	84.14	8.00	130.0000	0.00
P-20	1576	213	32.42	12.00	130.0000	0.00
P-25	J-30	2066	908.00	12.00	130.0000	0.00
P-29	J-8	2063	977.55	10.00	90.0000	0.00
P-3	J-60-Central11		24935.52	6.00	115.0000	0.00
P-30	J-35	J-42	1262.05	12.00	115.0000	0.00
P-31	54	J-8	271.99	8.00	90.0000	0.00
P-33	J-42	2072	33.95	12.00	115.0000	0.00
P-34	1699	J-42	861.64	12.00	115.0000	0.00
P-36	2091	1322	322.00	6.00	75.0000	0.00
P-4	J-7	1570	1181.00	10.00	90.0000	0.00
P-40	J-44	10	918.28	8.00	90.0000	0.00
P-42	J-45	J-44	388.00	8.00	90.0000	0.00
P-43	J-880-South En		3066.47	12.00	115.0000	0.00
P-44	J-55	28	392.03	8.00	115.0000	0.00
P-47	J-57	2132	26.83	8.00	90.0000	0.00
P-48	41	J-90	18.53	10.00	90.0000	0.00
P-49	2051	J-57	16.66	8.00	90.0000	0.00
P-50	2052	J-57	17.24	8.00	90.0000	0.00
P-51	O-18th St	J-142	1.13	8.00	115.0000	0.00
P-53	J-4	1974	369.00	6.00	75.0000	0.00
P-54	923	J-4	253.57	6.00	75.0000	0.00
P-57	1217	I-AV-6	27.22	4.00	75.0000	0.00
P-58	1217	69	273.00	8.00	115.0000	0.00
P-6	J-11	J-88	987.96	8.00	115.0000	0.00

2020 Fireflow - High Level Zone

P-61	J-58	68	222.00	6.00	115.0000	0.00
P-62	J-61	J-136	302.00	8.00	115.0000	0.00
P-64	54	J-27	596.19	8.00	90.0000	0.00
P-65	J-67	597	417.00	8.00	90.0000	0.00
P-67	J-71	J-67	339.00	8.00	115.0000	0.00
P-69	J-73	J-71	449.75	8.00	75.0000	0.00
P-7	J-152	J-154	148.62	8.00	115.0000	0.00
P-71	J-63	J-123	21.02	8.00	130.0000	0.00
P-73	J-74	1679	128.71	6.00	90.0000	0.00
P-74	J-77	J-74	27.47	6.00	90.0000	0.00
P-75	I-AV-3	2120	128.95	6.00	90.0000	0.00
P-76	J-78	408	254.81	8.00	90.0000	0.00
P-77	J-79	1130	739.00	8.00	75.0000	0.00
P-78	J-80	504	390.06	8.00	75.0000	0.00
P-79	1396	J-82	521.89	6.00	90.0000	0.00
P-80	1388	J-87	625.00	6.00	115.0000	0.00
P-81	92	J-62	399.00	8.00	115.0000	0.00
P-82	J-84	597	632.70	8.00	90.0000	0.00
P-83	J-123	J-140	102.57	12.00	130.0000	0.00
P-84	J-93	1971	33.88	6.00	90.0000	0.00
P-86	I-High Lev	J-126	388.44	6.00	75.0000	0.00
P-87	J-94	526	1018.53	8.00	75.0000	0.00
P-88	J-93	J-94	3.82	6.00	90.0000	0.00
P-89	J-96inter-tie		1009.00	12.00	115.0000	0.00
P-9	J-2	2098	329.00	6.00	75.0000	0.00
P-90	J-105	174	266.00	12.00	130.0000	0.00
P-91	J-20	1981	59.00	6.00	75.0000	0.00
P-92	J-21	J-20	140.66	6.00	75.0000	0.00
P-93	568	J-99	19.30	8.00	115.0000	0.00
P-94	J-99	556	294.00	8.00	115.0000	0.00
P-95	566	J-99	49.52	8.00	115.0000	0.00
P-96	J-100	2080	161.00	8.00	115.0000	0.00
P-97	J-106	894	329.00	6.00	75.0000	0.00
P-98	I-Centrali	J-153	21368.49	8.00	115.0000	0.00
P-99	J-111	944	378.41	6.00	75.0000	0.00
Valley Vie	O-Valley VYankis (Va		2731.89	4.00	140.0000	0.00

N O D E D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
5		0.30	243.40	
6		5.50	244.40	
9		2.30	205.80	
10		7.90	213.70	
11		0.10	236.90	
12		3.20	236.50	
13		0.10	198.90	
14		1.80	201.40	
15		6.80	186.10	
16		1.30	186.10	
17		8.80	175.70	
18		1.90	171.90	
19		1.20	165.30	
22		2.90	186.50	
23		6.40	187.70	
24		1.60	604.50	
26		7.40	240.30	
28		1.70	322.60	
29		0.60	319.00	
31		2.00	216.80	
32		4.80	214.70	
33		0.40	183.00	
34		3.00	183.50	
36		3.80	194.40	
37		0.50	319.00	
38		3.10	290.50	
40		4.30	190.80	
41		0.30	219.10	
43		0.10	253.50	
46		5.50	229.90	
47		1.80	544.40	
48		0.50	543.60	
49		12.00	243.00	
50		0.90	244.20	
51		5.90	240.00	
52		1.30	261.50	
54		3.00	209.30	
56		0.90	193.00	
59		0.30	252.50	
60		1.10	252.90	
65		5.80	192.40	
66		1.80	191.30	
68		3.70	205.20	
69		2.70	208.70	
70		0.70	285.20	
72		15.30	255.00	
75		12.70	247.70	
76		25.70	256.00	
83		0.10	221.90	
85		0.10	222.10	
86		4.70	222.40	
89		3.90	225.60	
92		15.30	192.40	
97		2.00	173.90	
98		0.20	174.00	
101		0.20	174.30	
102		4.00	176.00	
103		0.20	175.70	
104		4.10	179.70	

2020 Fireflow - High Level Zone

107	4.00	183.60
108	1.70	183.60
109	7.50	236.20
118	16.20	192.50
119	3.40	217.70
121	2.20	230.70
137	8.00	180.00
166	5.90	182.90
172	3.70	174.10
174	2.00	175.70
175	6.70	183.60
178	2.10	183.60
192	7.20	183.60
201	3.40	178.30
212	3.60	256.30
213	2.10	253.50
214	4.60	230.10
224	3.50	224.20
247	13.40	192.10
248	8.00	248.60
253	5.20	240.90
254	18.20	230.80
295	20.90	210.10
325	4.80	183.90
342	3.10	165.40
343	6.20	163.20
344	2.90	164.20
346	0.50	165.60
356	9.30	219.10
361	10.20	243.10
375	4.60	230.50
384	9.80	183.20
385	1.10	183.60
396	1.10	221.20
398	2.90	220.50
407	5.00	226.99
408	2.60	223.30
421	4.60	184.20
424	1.10	189.90
432	14.10	184.10
468	17.10	204.20
473	1.50	178.30
474	1.90	210.70
480	6.60	219.70
481	0.20	220.90
483	1.20	214.00
492	7.90	195.50
504	6.00	192.80
505	5.30	197.20
509	8.70	200.00
510	4.80	189.60
512	6.10	184.80
513	3.00	178.80
518	2.80	182.20
526	11.70	201.80
530	2.90	220.30
536	3.90	201.90
540	0.80	202.30
543	2.00	210.90
544	1.50	216.10
552	2.90	191.50
556	3.60	206.10
565	2.70	210.80
566	1.40	204.60
568	2.10	206.30
569	6.50	178.30
573	1.30	178.00
578	1.60	280.80
579	3.30	205.50
582	4.40	212.80
584	4.50	207.60
590	5.10	208.60
597	3.50	222.20
599	5.00	592.40
601	1.30	577.30
619	2.00	559.00
620	9.00	583.00
623	1.70	588.00
628	2.20	420.40
631	2.80	382.80
632	0.80	455.20
642	1.60	304.60
649	1.70	392.70
657	7.70	331.20
661	5.00	190.90
665	7.10	174.40
668	11.10	182.30
675	1.40	180.60
676	2.50	206.70
682	0.50	209.20
683	3.40	200.30
686	0.90	278.90
693	6.20	197.40
700	0.10	237.50
704	2.20	190.10
705	4.40	185.50
710	13.40	197.50
717	6.00	204.90
718	0.10	191.20
726	1.50	180.00
780	8.00	195.00
781	0.10	252.20
784	5.10	259.80
788	14.90	258.50
791	4.60	256.00

2020 Fireflow - High Level Zone

792	0.30	254.90
797	3.80	255.30
800	3.50	177.30
802	0.80	178.00
803	6.00	217.90
807	6.90	272.60
808	4.40	215.50
813	4.20	244.90
815	3.20	219.20
817	4.10	275.20
827	5.90	186.80
828	2.70	192.50
831	1.70	216.50
842	3.10	234.00
844	4.30	260.00
856	2.70	194.40
860	2.40	230.20
865	2.50	195.90
868	2.60	197.00
872	1.00	199.50
881	2.50	199.80
885	2.90	204.20
893	2.60	198.10
894	1.00	206.30
899	5.90	192.10
901	5.80	189.00
906	2.10	292.50
910	1.50	294.90
916	5.00	222.40
922	1.00	238.30
923	3.30	182.20
929	0.70	181.60
937	3.20	183.80
944	3.60	196.50
945	3.20	192.00
954	2.70	193.70
958	6.00	201.60
961	1.40	205.40
962	3.60	179.30
964	0.20	179.40
975	6.30	184.50
979	1.30	173.70
994	5.30	192.30
1003	5.00	435.80
1023	6.00	389.60
1024	2.80	408.40
1032	4.10	455.00
1049	3.10	421.50
1050	5.70	188.20
1053	3.60	183.20
1056	1.80	192.00
1057	6.00	179.20
1060	5.90	196.50
1063	1.50	238.10
1064	2.70	181.30
1071	2.70	190.50
1084	10.80	198.50
1085	4.10	197.60
1089	2.20	190.70
1099	9.50	233.90
1100	0.60	339.70
1101	1.40	323.20
1103	6" and 2"	346.40
1104	0.40	285.50
1107	2.90	211.40
1120	1.40	222.90
1121	2.00	205.30
1122	0.70	204.40
1125	1.80	205.00
1130	5.20	225.00
1134	6.50	202.90
1137	3.90	202.10
1156	5.60	184.90
1180	3.60	195.40
1181	3.20	186.00
1183	1.80	190.20
1184	5.40	189.70
1186	3.10	191.30
1210	4.10	215.60
1211	0.20	564.40
1214	1.80	607.60
1215	1.60	200.80
1217	3.70	207.80
1218	5.90	217.60
1223	2.40	187.20
1224	3.50	187.60
1229	3.50	224.40
1232	6.20	183.90
1235	4.80	197.20
1239	1.60	265.90
1240	0.10	608.90
1244	4.80	591.00
1251	5.80	622.30
1262	0.30	349.90
1270	1.60	184.30
1277	6.30	340.00
1284	4.50	224.00
1290	6.00	207.20
1293	3.10	206.60
1295	3.70	200.40
1298	0.60	224.20
1309	6.10	185.00
1310	4.80	184.40
1314	3.90	183.00
1318	3.40	221.20

2020 Fireflow - High Level Zone

1322	2.90	194.60
1328	3.00	192.30
1333	2.90	191.30
1337	3.30	192.80
1338	7.40	257.70
1356	2.10	190.80
1359	0.70	193.30
1364	2.80	193.90
1366	4.30	190.60
1375	8.10	168.30
1387	2.60	182.40
1388	4.90	200.40
1392	4.20	220.30
1396	2.50	308.10
1409	4.80	222.20
1410	1.70	392.50
1456	2.70	183.20
1465	2.70	235.70
1483	4.90	193.40
1484	11.60	183.60
1497	2.20	167.20
1498	1.30	396.40
1502	3.20	385.30
1513	0.60	339.40
1517	4.50	205.40
1519	0.80	211.30
1524	1.00	615.60
1544	13.70	194.80
1547	11.00	208.00
1570	8.10	200.80
1575	6.50	171.60
1576	1.40	253.70
1580	1.50	245.80
1626	15.50	272.90
1627	9.10	289.00
1630	24.30	266.70
1636	155.80	245.70
1637	21.10	249.10
1647	21.50	236.20
1648	21.70	187.30
1657	5.80	163.30
1658	5.80	185.90
1674	6.70	178.00
1679	2.60	317.70
1689	2.50	323.60
1690	0.40	319.70
1698	4.30	256.80
1699	4.70	218.90
1700	2.20	216.20
1710	3.00	303.90
1711	0.60	209.80
1712	1.40	268.50
1713	1.30	571.10
1716	5.90	533.50
1719	0.50	516.50
1737	5.10	166.60
1742	8.10	183.60
1767	3.10	193.40
1773	3.40	272.20
1775	1.50	270.10
1776	4.00	269.20
1782	7.40	269.10
1788	5.20	269.00
1791	0.70	273.40
1793	0.90	270.60
1799	2.50	201.40
1800	2.20	166.10
1801	0.70	173.70
1805	2.10	179.70
1806	1.20	173.10
1808	1.10	179.80
1809	2.00	172.30
1810	3.60	179.50
1813	2.80	171.10
1814	4.80	167.10
1818	1.50	160.70
1821	4.10	169.80
1823	2.70	182.50
1826	3.10	183.30
1827	5.70	192.90
1831	1.70	234.10
1948	0.90	234.90
1960	3.80	237.60
1961	2.80	190.10
1968	0.40	164.90
1971	0.10	185.30
1973	2.40	198.40
1974	3.90	187.50
1975	3.80	186.60
1980	1.50	180.20
1981	1.10	183.10
1984	3.20	194.10
1985	0.20	195.20
1986	3.40	194.50
1987	3.30	198.50
1988	0.10	219.50
1989	1.20	222.30
1991	2.80	194.20
1994	0.60	190.70
1996	3.50	189.80
1997	3.40	191.50
2003	2.70	185.20
2007	2.50	200.60
2009	3.30	196.90
2010	3.90	191.70

2020 Fireflow - High Level Zone

2012	3.40	199.00	
2013	2.90	200.10	
2014	4.80	193.20	
2016	4.50	222.30	
2021	0.70	204.20	
2023	0.50	206.90	
2025	1.90	455.60	
2028	1.10	520.90	
2029	1.00	449.00	
2030	0.60	460.10	
2031	2.40	430.90	
2032	0.70	484.00	
2033	1.70	474.20	
2047	0.60	309.00	
2050	0.10	301.10	
2051	0.00	229.60	
2052	0.00	229.90	
2053	3.60	220.60	
2061	0.90	208.20	
2063	6.30	205.00	
2065	4.60	198.90	
2066	3.40	222.20	
2067	6.80	216.20	
2072	6.50	221.90	
2073	2.50	199.80	
2074	4.00	220.90	
2076	6.80	204.40	
2078	3.20	199.20	
2079	3.50	203.10	
2080	4.10	191.60	
2081	3.60	198.70	
2083	6.90	255.40	
2084	4.60	224.10	
2086	4.70	230.30	
2088	7.30	604.50	
2090	7.80	391.30	
2091	4.00	195.30	
2092	2.00	251.60	
2093	5.00	236.00	
2094	5.60	188.50	
2095	3.90	187.60	
2096	2.70	196.50	
2097	4.10	202.50	
2098	4.30	202.10	
2100	5.60	197.30	
2101	6.60	270.60	
2103	7.10	236.90	
2104	3.20	200.50	
2105	4.60	201.90	
2106	2.20	192.10	
2107	5.20	190.50	
2109	3.80	190.80	
2110	2.90	192.70	
2111	2.60	191.00	
2112	5.40	190.20	
2113	4.50	195.50	
2115	3.80	191.90	
2117	3.30	217.50	
2119	5.80	193.60	
2120	3.10	268.60	
2121	2.80	193.00	
2122	4.80	183.70	
2123	3.40	193.20	
2125	1.00	206.20	
2126	2.20	192.50	
2127	6.90	203.70	
2129	3.80	218.10	
2130	3.00	198.00	
2132	1.80	230.10	
2133	3.40	578.00	
2137	4.50	198.20	
2138	6.20	221.50	
I-18th St	0.00	218.20	
O-18th St	0.00	218.20	
3-in or sm	0.10	185.50	
3-inch or	0.30	183.00	
3-inch or	0.10	183.10	
O-AV-1	0.00	283.80	
I-AV-2	0.00	306.00	
I-AV-3	0.00	253.40	
O-AV-4	0.00	289.30	
O-AV-5	0.00	225.30	
O-AV-6	0.00	208.10	
O-Centrali	----	333.50	541.19
O-Fairview	Fairview PRV	346.50	466.50
O-High Lev	High Level P	0.00	401.60
High Level	High Level R	----	605.00
Hillcrest		0.20	256.20
inter-tie		2.80	174.40
J-1		3.40	174.00
J-100		0.80	190.60
J-105		2.50	175.60
J-106		2.80	206.20
J-11		2.80	280.00
J-110		4.90	198.00
J-111		2.00	192.50
J-112		5.20	167.90
J-113		2.40	200.50
J-114		11.10	405.70
J-115		1.90	197.30
J-116		1.90	207.10
J-117		1.70	192.10
J-120		2.40	237.50
J-122		2.50	174.00
J-123		0.40	224.70

2020 Fireflow - High Level Zone

J-124		2.10	403.80	
J-125		2.00	383.00	
J-126		3.30	367.95	
J-127		22.40	225.20	
J-128		14.50	235.20	
J-129		8.40	184.80	
J-130		3.80	222.00	
J-131		0.60	418.00	
J-132		2.20	176.00	
J-133		0.90	339.60	
J-134		1.10	200.90	
J-135		3.50	288.30	
J-136		0.80	204.10	
J-138		1.00	219.60	
J-139		0.40	222.60	
J-140		0.50	218.20	
J-141		0.40	200.90	
J-142		0.20	218.20	
J-143		11.70	193.40	
J-144		1.90	193.40	
J-145		0.10	218.20	
J-146		0.00	218.20	
J-147		0.00	218.20	
J-148		3.50	498.90	
J-149		3.70	306.10	
J-150		5.90	272.40	
J-151		13.60	326.80	
J-152		6.30	272.40	
J-153		137.00	302.40	
J-154		6.10	267.60	
J-155		17.50	263.80	
J-156		19.80	261.30	
J-157		1.80	265.80	
J-159		0.00	343.00	
J-2		5.70	201.80	
J-20		2.20	182.90	
J-21		2.50	182.80	
J-25		5.00	311.10	
J-27		4.20	207.10	
J-3		3.40	182.20	
J-30		7.70	219.90	
J-35		8.20	222.10	
J-39		4.10	218.10	
J-4		2.50	184.40	
J-42		6.00	222.00	
J-44		6.20	208.40	
J-45		4.20	209.00	
J-53		9.60	294.30	
J-55		2.60	297.10	
J-57		1.20	229.20	
J-58		1.50	204.60	
J-6		3.50	473.40	
J-61		4.20	207.00	
J-62		1.10	191.50	
J-63		1.40	225.20	
J-64		4.10	202.30	
J-67		2.20	210.80	
J-7		3.50	214.70	
J-71		2.30	204.60	
J-73		6.40	199.60	
J-74		1.10	301.00	
J-77		0.60	296.10	
J-78		5.20	230.70	
J-79		2.80	223.40	
J-8		6.50	208.80	
J-80		5.00	190.70	
J-81		6.70	218.90	
J-82		6.60	257.90	
J-84		2.30	226.30	
J-87		4.20	194.40	
J-88		21.30	275.70	
J-90		0.10	219.10	
J-91		9.80	352.90	
J-93		1.70	187.50	
J-94		3.70	187.50	
J-95		13.30	189.50	
J-96		6.50	176.90	
J-99		1.10	205.50	
Kennicott	Kennicott Re	----	374.00	397.90
Main Reser	Main Reservo	----	383.30	401.50
physical d		0.10	222.00	
I-RV-1		0.00	193.40	
I-RV-2		0.00	200.90	
O-South En		----	287.90	495.59
O-Valley V	Valley View	0.00	308.10	
Yankis (Va	Yankis (Vall	----	631.50	635.90
Yates Rese	500,000 gal	----	376.00	401.50
O-18th St		----	218.20	389.66
I-18th St		0.00	218.20	
I-AV-1		0.00	283.80	
O-AV-2		0.00	306.00	
O-AV-3		0.00	253.40	
I-AV-4		0.00	289.30	
I-AV-5		0.00	225.30	
I-AV-6		0.00	208.10	
I-Centrali		0.00	333.50	
I-Fairview	Fairview PRV	0.00	346.50	
I-High Lev	High Level P	0.00	401.60	
O-RV-1		----	193.40	389.55
O-RV-2		----	200.90	389.67
I-South En		0.00	287.90	
I-Valley V	Valley View	0.00	308.10	

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 5
 MAXIMUM AND MINIMUM VELOCITIES = 5
 MAXIMUM AND MINIMUM HEAD LOSS/1000 = 5

SUPPLY ZONE DATA

THIS SYSTEM HAS MULTIPLE SUPPLY ZONES

ZONE NO. 1 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@18th St FRV ~@RV-2 ~@RV-1~@Yankis (Valley V
 ~@Fairview FRV~@Kennicott Reserv~@High Level Reser ~@Main Reservoir
 ~@Yates Reservoir

ZONE NO. 2 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@Centralia Alpha

ZONE NO. 3 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@South End Pump S

SYSTEM CONFIGURATION

NUMBER OF PIPES(P) = 713
 NUMBER OF END NODES(J) = 561
 NUMBER OF PRIMARY LOOPS(L) = 148
 NUMBER OF SUPPLY NODES(F) = 7
 NUMBER OF SUPPLY ZONES(Z) = 3

Case: 0

RESULTS OBTAINED AFTER 27 TRIALS: ACCURACY = 0.10997E-03

SIMULATION DESCRIPTION (LABEL)

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS		FLOWRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/ 1000 ft/f	HL/ 1000 ft/f
	#1	#2						
3	6	5	72.12	0.00	0.00	0.29	0.09	0.09
5	10	9	2.30	0.00	0.00	0.03	0.00	0.00
6	12	11	0.10	0.00	0.00	0.00	0.00	0.00
7	872	13	0.10	0.00	0.00	0.00	0.00	0.00
8	15	16	29.18	0.00	0.00	0.33	0.21	0.21
10	18	19	1.20	0.02	0.00	0.12	0.05	0.05
12	22	23	10.52	0.00	0.00	0.07	0.00	0.00
13	24	1524	1.00	0.00	0.00	0.03	0.00	0.00
14	26	J-55	4.90	0.00	0.00	0.03	0.00	0.00
16	28	29	0.60	0.00	0.00	0.02	0.00	0.00
17	32	31	2.00	0.15	0.00	0.20	0.20	0.20
21	38	37	0.50	0.00	0.00	0.01	0.00	0.00
22	2014	40	11.06	0.00	0.00	0.07	0.01	0.01
23	1699	41	4.72	0.00	0.00	0.01	0.00	0.00
24	213	43	0.10	0.00	0.00	0.00	0.00	0.00
26	47	48	0.50	0.00	0.00	0.01	0.00	0.00
27	49	50	0.90	0.00	0.00	0.00	0.00	0.00
28	51	52	2.00	0.00	0.00	0.01	0.00	0.00
32	60	59	0.30	0.00	0.00	0.00	0.00	0.00
35	65	66	26.26	0.07	0.00	0.30	0.24	0.24
37	68	69	7.21	0.00	0.00	0.05	0.00	0.00
38	52	70	0.70	0.00	0.00	0.01	0.00	0.00
39	72	Hillcrest	0.20	0.00	0.00	0.01	0.00	0.00
41	76	75	27.43	0.01	0.00	0.08	0.00	0.00
45	2066	83	0.10	0.00	0.00	0.00	0.00	0.00
46	86	85	0.10	0.00	0.00	0.00	0.00	0.00
52	97	98	0.20	0.00	0.00	0.00	0.00	0.00
55	102	103	0.20	0.00	0.00	0.00	0.00	0.00
56	1810	104	4.04	0.00	0.00	0.01	0.00	0.00
59	107	108	5.25	0.00	0.00	0.01	0.00	0.00
60	J-53	109	215.12	0.04	0.00	0.34	0.05	0.05
66	J-91	118	406.52	1.05	0.00	0.85	0.45	0.45
68	121	119	116.44	0.04	0.00	0.24	0.06	0.06
70	860	121	176.71	0.00	0.00	0.37	0.13	0.13
72	118	1799	2.50	0.00	0.00	0.02	0.00	0.00
85	396	physical d	0.10	0.00	0.00	0.00	0.00	0.00
107	J-91	2067	878.48	2.47	0.00	1.83	2.61	2.61
109	325	34	27.95	0.00	0.00	0.08	0.00	0.00
110	166	2122	67.22	0.02	0.00	0.19	0.02	0.02
112	166	962	17.82	0.00	0.00	0.05	0.00	0.00
114	962	569	14.02	0.00	0.00	0.04	0.00	0.00
115	569	665	6.22	0.00	0.00	0.02	0.00	0.00
118	172	J-105	3.74	0.00	0.00	0.01	0.00	0.00
120	178	175	124.75	0.02	0.00	0.35	0.07	0.07
123	1826	178	144.82	0.04	0.00	0.41	0.09	0.09
126	1827	1826	168.11	0.03	0.00	0.49	0.12	0.12
129	192	1827	208.11	0.29	0.00	0.59	0.17	0.17
137	201	192	198.39	0.04	0.00	0.56	0.16	0.16
139	137	201	258.85	0.11	0.00	0.73	0.26	0.26

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141	137	15	88.68	0.02	0.00	0.25	0.04	0.04
142	15	J-95	52.70	0.03	0.00	0.15	0.01	0.01
145	201	J-93	57.06	0.01	0.00	0.16	0.02	0.02
155	212	213	18.30	0.00	0.00	0.05	0.00	0.00
156	26	214	119.47	0.10	0.00	0.34	0.06	0.06
163	2072	224	3.50	0.00	0.00	0.01	0.00	0.00
187	248	253	5.20	0.00	0.00	0.01	0.00	0.00
192	254	J-127	92.02	0.05	0.00	0.26	0.03	0.03
262	325	1575	20.74	0.00	0.00	0.06	0.00	0.00
279	344	343	12.00	0.00	0.00	0.03	0.00	0.00
280	342	344	17.10	0.00	0.00	0.05	0.00	0.00
282	342	346	0.50	0.00	0.00	0.00	0.00	0.00
283	86	J-130	3.80	0.00	0.00	0.01	0.00	0.00
292	361	356	10.18	0.01	0.00	0.04	0.00	0.00
298	J-7	32	25.60	0.00	0.00	0.10	0.01	0.01
302	32	480	18.80	0.01	0.00	0.08	0.01	0.01
318	384	385	92.03	0.01	0.00	0.38	0.09	0.09
319	356	2074	5.20	0.00	0.00	0.02	0.00	0.00
320	41	356	4.32	0.00	0.00	0.02	0.00	0.00
329	396	398	204.86	0.03	0.00	0.84	0.91	0.91
331	398	1409	109.39	0.09	0.00	0.45	0.28	0.28
340	407	408	82.58	0.11	0.00	0.34	0.17	0.17
353	661	2119	0.60	0.00	0.00	0.01	0.00	0.00
355	1648	424	28.34	0.00	0.00	0.12	0.02	0.02
363	295	468	25.10	0.02	0.00	0.10	0.01	0.01
398	172	473	1.50	0.00	0.00	0.00	0.00	0.00
403	480	474	1.90	0.00	0.00	0.01	0.00	0.00
411	2129	J-45	24.21	0.03	0.00	0.15	0.04	0.04
414	1217	1121	3.20	0.00	0.00	0.04	0.00	0.00
417	1235	492	28.47	0.03	0.00	0.18	0.07	0.07
429	505	509	39.26	0.06	0.00	0.25	0.13	0.13
433	512	510	0.50	0.00	0.00	0.00	0.00	0.00
435	1057	513	3.00	0.00	0.00	0.02	0.00	0.00
440	518	J-94	5.24	0.00	0.00	0.03	0.00	0.00
448	1184	92	28.10	0.03	0.00	0.18	0.03	0.03
451	119	530	42.78	0.01	0.00	0.27	0.15	0.15
452	119	536	70.26	0.17	0.00	0.45	0.37	0.37
458	536	2079	30.00	0.05	0.00	0.19	0.08	0.08
461	540	2079	1.88	0.00	0.00	0.01	0.00	0.00
464	544	543	24.76	0.02	0.00	0.16	0.05	0.05
472	552	J-100	56.84	0.02	0.00	0.36	0.25	0.25
476	I-AV-1	J-114	0.00	0.00	0.00	0.00	0.00	0.00
486	569	573	1.30	0.00	0.00	0.01	0.00	0.00
490	385	166	90.93	0.05	0.00	0.58	0.19	0.19
495	J-138	579	22.92	0.01	0.00	0.15	0.02	0.02
497	582	584	19.54	0.01	0.00	0.12	0.02	0.02
503	590	J-73	1.51	0.00	0.00	0.01	0.00	0.00
511	599	601	1.30	0.00	0.00	0.01	0.00	0.00
526	599	619	2.00	0.00	0.00	0.01	0.00	0.00
531	620	623	1.70	0.00	0.00	0.01	0.00	0.00
538	628	631	34.50	0.01	0.00	0.22	0.07	0.07
541	1049	632	0.80	0.00	0.00	0.01	0.00	0.00
547	631	642	1.60	0.00	0.00	0.01	0.00	0.00
552	2090	High Level	269.90	3.52	0.00	1.72	3.19	3.19
565	509	661	32.68	0.12	0.00	0.21	0.09	0.09
569	1284	597	23.26	0.01	0.00	0.15	0.03	0.03
571	2086	46	50.02	0.07	0.00	0.32	0.14	0.14
574	668	665	9.82	0.00	0.00	0.06	0.00	0.00
577	668	675	1.40	0.00	0.00	0.01	0.00	0.00
584	J-27	676	2.50	0.00	0.00	0.02	0.00	0.00
590	54	682	0.50	0.00	0.00	0.00	0.00	0.00
591	J-95	683	5.40	0.00	0.00	0.03	0.00	0.00
593	J-78	686	0.90	0.00	0.00	0.01	0.00	0.00
597	408	J-79	93.52	0.01	0.00	0.60	0.63	0.63
601	361	1960	51.43	0.19	0.00	0.33	0.15	0.15
612	710	705	18.89	0.00	0.00	0.12	0.01	0.01
617	717	1134	4.03	0.00	0.00	0.03	0.00	0.00
623	247	718	0.10	0.00	0.00	0.00	0.00	0.00
630	424	726	54.31	0.02	0.00	0.35	0.23	0.23
632	726	J-80	16.61	0.01	0.00	0.11	0.03	0.03
652	468	780	8.00	0.01	0.00	0.05	0.00	0.00
684	2092	781	0.10	0.00	0.00	0.00	0.00	0.00
686	784	1698	3.08	0.00	0.00	0.02	0.00	0.00
690	788	791	7.53	0.00	0.00	0.05	0.00	0.00
693	791	792	0.30	0.00	0.00	0.00	0.00	0.00
697	797	784	5.55	0.00	0.00	0.04	0.00	0.00
700	800	802	0.80	0.00	0.00	0.01	0.00	0.00
702	803	1465	18.68	0.03	0.00	0.21	0.13	0.13
706	2009	808	5.79	0.01	0.00	0.07	0.01	0.01
710	815	813	11.87	0.02	0.00	0.13	0.06	0.06
712	121	2093	58.07	0.05	0.00	0.66	1.06	1.06
714	2094	40	4.26	0.06	0.00	0.11	0.06	0.06
723	2096	828	8.39	0.01	0.00	0.10	0.03	0.03
726	831	544	26.26	0.02	0.00	0.30	0.24	0.24
727	530	831	40.48	0.18	0.00	0.46	0.54	0.54
735	831	1989	12.52	0.01	0.00	0.14	0.06	0.06
739	844	842	6.39	0.01	0.00	0.07	0.02	0.02
741	817	844	17.56	0.08	0.00	0.20	0.12	0.12
749	J-115	856	8.19	0.01	0.00	0.09	0.03	0.03
751	2078	14	12.32	0.02	0.00	0.14	0.06	0.06
753	860	2097	24.73	0.12	0.00	0.28	0.22	0.22
757	868	865	6.77	0.00	0.00	0.08	0.02	0.02
760	J-113	868	2.63	0.00	0.00	0.03	0.00	0.00
762	872	868	6.74	0.00	0.00	0.08	0.02	0.02
772	881	2098	0.40	0.00	0.00	0.00	0.00	0.00
776	J-111	885	8.83	0.01	0.00	0.10	0.03	0.03
784	J-106	893	0.75	0.00	0.00	0.01	0.00	0.00
785	J-110	893	14.37	0.03	0.00	0.16	0.08	0.08
789	899	66	2.61	0.00	0.00	0.03	0.00	0.00
791	901	899	14.38	0.01	0.00	0.16	0.08	0.08
793	901	1742	23.34	0.22	0.00	0.26	0.20	0.20
797	910	906	2.10	0.00	0.00	0.02	0.00	0.00
801	910	38	3.27	0.00	0.00	0.04	0.01	0.01
807	842	2084	14.50	0.03	0.00	0.16	0.08	0.08
812	916	922	1.00	0.00	0.00	0.01	0.00	0.00

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814	J-20	923	12.57	0.04	0.00	0.14	0.06	0.06
817	J-21	929	0.70	0.00	0.00	0.01	0.00	0.00
823	J-2	937	3.52	0.01	0.00	0.04	0.01	0.01
825	J-2	556	9.33	0.02	0.00	0.11	0.04	0.04
831	2080	945	12.20	0.03	0.00	0.14	0.06	0.06
839	2081	954	3.30	0.00	0.00	0.04	0.01	0.01
846	962	964	0.20	0.00	0.00	0.00	0.00	0.00
858	1314	1387	19.20	0.06	0.00	0.49	0.98	0.98
861	108	104	3.55	0.00	0.00	0.04	0.00	0.00
867	J-110	958	7.79	0.03	0.00	0.09	0.03	0.03
874	994	65	11.12	0.04	0.00	0.13	0.05	0.05
876	65	1986	17.22	0.07	0.00	0.20	0.11	0.11
883	1003	1023	12.61	0.02	0.00	0.14	0.04	0.04
903	J-125	1024	39.50	0.13	0.00	0.45	0.37	0.37
905	O-High Lev	649	360.00	3.15	0.00	4.08	30.96	30.96
910	1024	628	36.70	0.21	0.00	0.42	0.32	0.32
912	1003	1032	8.59	0.02	0.00	0.10	0.02	0.02
930	1050	1053	3.60	0.01	0.00	0.04	0.00	0.00
933	394	2100	10.94	0.05	0.00	0.12	0.05	0.05
936	16	1057	27.78	0.08	0.00	0.32	0.19	0.19
938	1060	1063	2.40	0.00	0.00	0.03	0.00	0.00
941	J-129	1064	2.70	0.00	0.00	0.03	0.00	0.00
948	526	1071	28.27	0.06	0.00	0.32	0.20	0.20
949	526	1084	16.83	0.30	0.00	0.19	0.11	0.11
962	1085	1337	3.55	0.00	0.00	0.04	0.01	0.01
966	1099	J-78	19.64	0.14	0.00	0.22	0.10	0.10
975	1101	1100	0.60	0.00	0.00	0.01	0.00	0.00
976	O-Fairview	1101	15.00	0.01	0.00	0.17	0.06	0.06
982	J-81	2103	3.90	0.00	0.00	0.04	0.01	0.01
993	1121	1122	0.70	0.00	0.00	0.01	0.00	0.00
994	2076	2127	23.86	0.06	0.00	0.27	0.20	0.20
1000	1130	1125	1.80	0.00	0.00	0.02	0.00	0.00
1001	J-73	2104	6.37	0.01	0.00	0.07	0.02	0.02
1003	2104	1134	2.47	0.00	0.00	0.03	0.00	0.00
1004	509	1290	6.96	0.01	0.00	0.08	0.02	0.02
1007	2105	1137	13.13	0.02	0.00	0.15	0.07	0.07
1009	2013	1388	25.39	0.06	0.00	0.29	0.23	0.23
1012	2107	2106	30.82	0.19	0.00	0.35	0.33	0.33
1014	23	510	18.14	0.11	0.00	0.21	0.12	0.12
1017	2137	2109	21.92	0.08	0.00	0.25	0.17	0.17
1019	2109	2094	30.41	0.10	0.00	0.35	0.32	0.32
1020	2094	23	27.32	0.04	0.00	0.31	0.26	0.26
1023	23	1156	13.30	0.03	0.00	0.15	0.07	0.07
1024	2073	2096	15.22	0.02	0.00	0.17	0.09	0.09
1025	2096	2110	12.44	0.02	0.00	0.14	0.06	0.06
1026	2110	1997	1.97	0.00	0.00	0.02	0.00	0.00
1028	2111	1997	12.10	0.01	0.00	0.14	0.06	0.06
1030	2112	2111	28.99	0.08	0.00	0.33	0.29	0.29
1032	2113	1961	13.04	0.03	0.00	0.15	0.07	0.07
1035	704	1961	9.21	0.01	0.00	0.10	0.03	0.03
1036	1961	2109	19.45	0.04	0.00	0.22	0.14	0.14
1037	2010	2014	25.91	0.15	0.00	0.29	0.24	0.24
1040	2012	2013	44.74	0.21	0.00	0.51	0.65	0.65
1041	2065	2012	5.15	0.00	0.00	0.06	0.01	0.01
1042	2137	2065	2.87	0.00	0.00	0.03	0.00	0.00
1043	2137	2113	10.21	0.01	0.00	0.12	0.04	0.04
1044	1180	2113	38.44	0.13	0.00	0.44	0.49	0.49
1046	22	1181	13.83	0.01	0.00	0.16	0.07	0.07
1047	2095	22	27.25	0.04	0.00	0.31	0.26	0.26
1048	726	1184	36.20	0.00	0.00	0.23	0.05	0.05
1051	1996	1186	9.70	0.01	0.00	0.11	0.04	0.04
1053	827	1232	4.52	0.01	0.00	0.05	0.01	0.01
1058	1232	1156	7.35	0.01	0.00	0.08	0.02	0.02
1060	1156	512	15.05	0.08	0.00	0.17	0.09	0.09
1062	512	2107	8.45	0.02	0.00	0.10	0.03	0.03
1064	2115	2107	13.73	0.01	0.00	0.16	0.07	0.07
1069	2117	2065	28.53	0.17	0.00	0.34	0.30	0.30
1071	1210	2137	39.50	0.30	0.00	0.45	0.52	0.52
1074	1713	1211	0.20	0.00	0.00	0.00	0.00	0.00
1076	24	1713	27.90	0.03	0.00	0.32	0.12	0.12
1077	1215	J-58	15.26	0.03	0.00	0.17	0.09	0.09
1078	68	1217	2.85	0.00	0.00	0.03	0.00	0.00
1080	1218	2112	37.10	0.48	0.00	0.42	0.46	0.46
1083	2112	1223	22.70	0.06	0.00	0.26	0.19	0.19
1085	2111	1224	2.81	0.00	0.00	0.03	0.00	0.00
1087	1333	1085	6.23	0.01	0.00	0.07	0.02	0.02
1088	808	1085	1.42	0.00	0.00	0.02	0.00	0.00
1090	1229	808	0.03	0.00	0.00	0.00	0.00	0.00
1091	1181	1232	9.03	0.02	0.00	0.10	0.03	0.03
1094	1235	1483	1.20	0.00	0.00	0.01	0.00	0.00
1095	2120	1104	0.40	0.00	0.00	0.00	0.00	0.00
1096	2120	1239	1.60	0.00	0.00	0.02	0.00	0.00
1099	1214	1240	0.10	0.00	0.00	0.00	0.00	0.00
1100	1244	1214	64.40	0.27	0.00	0.73	0.58	0.58
1103	1251	1244	36.46	0.11	0.00	0.41	0.20	0.20
1110	Yanks (Va	1251	75.00	0.32	0.00	0.85	0.77	0.77
1116	J-25	1513	24.70	0.00	0.00	0.16	0.02	0.02
1117	J-159	1277	6.60	0.00	0.00	0.07	0.01	0.01
1118	1277	1262	0.30	0.00	0.00	0.00	0.00	0.00
1120	657	J-25	29.70	0.01	0.00	0.12	0.01	0.01
1125	1181	1270	1.60	0.00	0.00	0.02	0.00	0.00
1127	2103	1099	3.49	0.01	0.00	0.04	0.01	0.01
1132	1277	I-AV-4	0.00	0.00	0.00	0.00	0.00	0.00
1138	579	693	19.62	0.12	0.00	0.22	0.14	0.14
1140	1284	O-AV-3	0.00	0.00	0.00	0.00	0.00	0.00
1146	1290	2119	5.05	0.11	0.00	0.13	0.08	0.08
1148	1293	1295	7.55	0.06	0.00	0.19	0.17	0.17
1150	398	2016	40.94	0.04	0.00	0.46	0.55	0.55
1152	1120	1298	0.60	0.00	0.00	0.01	0.00	0.00
1154	432	1309	6.10	0.03	0.00	0.07	0.01	0.01
1165	1310	1314	5.00	0.09	0.00	0.13	0.08	0.08
1169	2127	J-61	4.54	0.07	0.00	0.12	0.07	0.07
1171	1318	2105	10.55	0.19	0.00	0.27	0.32	0.32
1173	2105	1322	6.78	0.07	0.00	0.17	0.14	0.14
1178	40	2115	11.02	0.11	0.00	0.28	0.35	0.35

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1179	2115	1328	9.88	0.17	0.00	0.25	0.29	0.29
1182	803	J-81	6.68	0.09	0.00	0.17	0.14	0.14
1185	1333	1337	2.35	0.01	0.00	0.06	0.02	0.02
1189	1338	807	3.09	0.05	0.00	0.08	0.03	0.03
1193	518	192	10.73	0.02	0.00	0.27	0.33	0.33
1195	1060	192	6.19	0.07	0.00	0.16	0.12	0.12
1198	705	1060	14.49	0.77	0.00	0.37	0.58	0.58
1205	492	J-80	1.10	0.00	0.00	0.03	0.00	0.00
1208	828	1356	4.99	0.02	0.00	0.13	0.08	0.08
1210	828	1359	0.70	0.00	0.00	0.02	0.00	0.00
1211	1364	1984	2.64	0.01	0.00	0.07	0.02	0.02
1212	1991	1364	0.50	0.00	0.00	0.01	0.00	0.00
1214	2121	1364	4.94	0.02	0.00	0.13	0.08	0.08
1215	1366	36	2.10	0.01	0.00	0.05	0.02	0.02
1217	1251	1244	32.74	0.11	0.00	0.37	0.17	0.17
1226	17	1375	3.40	0.07	0.00	0.09	0.03	0.03
1236	1387	17	15.30	0.18	0.00	0.39	0.46	0.46
1239	1392	1388	11.68	0.23	0.00	0.30	0.39	0.39
1244	33	1314	18.10	0.08	0.00	0.46	0.63	0.63
1245	937	1456	0.32	0.00	0.00	0.01	0.00	0.00
1247	384	1456	5.27	0.02	0.00	0.13	0.09	0.09
1248	1396I-Valley V		0.00	0.00	0.00	0.00	0.00	0.00
1258	1409	505	7.94	0.21	0.00	0.20	0.19	0.19
1261	1410	657	8.05	0.08	0.00	0.21	0.14	0.14
1269	1023	I-AV-2	0.00	0.00	0.00	0.00	0.00	0.00
1309	1456	881	2.90	0.01	0.00	0.07	0.03	0.03
1315	895	1056	4.11	0.01	0.00	0.10	0.04	0.04
1319	1465	2103	5.22	0.06	0.00	0.13	0.09	0.09
1322	407	509	9.07	0.20	0.00	0.23	0.24	0.24
1330	492	693	0.32	0.00	0.00	0.01	0.00	0.00
1338	1295	1483	3.85	0.05	0.00	0.10	0.05	0.05
1340	899	1484	5.87	0.21	0.00	0.15	0.11	0.11
1351	344	1497	2.20	0.00	0.00	0.06	0.01	0.01
1354	1502	1498	1.30	0.00	0.00	0.01	0.00	0.00
1358	J-133	1502	16.60	0.00	0.00	0.11	0.01	0.01
1371	1517	1519	0.80	0.01	0.00	0.08	0.04	0.04
1384	J-95	1544	34.00	0.02	0.00	0.10	0.01	0.01
1388	1544	1547	18.25	0.00	0.00	0.05	0.00	0.00
1389	1547	J-96	9.30	0.00	0.00	0.03	0.00	0.00
1396	1544	1547	2.05	0.00	0.00	0.01	0.00	0.00
1401	668	1674	26.46	0.00	0.00	0.08	0.00	0.00
1404	1674	102	14.70	0.00	0.00	0.04	0.00	0.00
1406	102	J-1	10.50	0.00	0.00	0.03	0.00	0.00
1409	92	J-143	11.70	0.00	0.00	0.03	0.00	0.00
1423	421	107	41.40	0.01	0.00	0.12	0.01	0.01
1426	34	1575	6.46	0.00	0.00	0.02	0.00	0.00
1427	1576	248	14.70	0.00	0.00	0.04	0.00	0.00
1429	248	1580	1.50	0.00	0.00	0.00	0.00	0.00
1433	51	26	131.77	0.03	0.00	0.37	0.07	0.07
1435	109	51	139.67	0.12	0.00	0.40	0.08	0.08
1440	109	6	67.95	0.01	0.00	0.19	0.02	0.02
1441	1647	6	9.66	0.00	0.00	0.03	0.00	0.00
1443	1637	1647	83.56	0.17	0.00	0.24	0.03	0.03
1454	72	1637	196.48	0.28	0.00	0.56	0.16	0.16
1455	1626	72	211.98	0.66	0.00	0.60	0.18	0.18
1458	1627	1626	530.08	0.75	0.00	1.50	0.98	0.98
1460	797	212	25.22	0.00	0.00	0.07	0.00	0.00
1464	1630	788	57.00	0.06	0.00	0.16	0.02	0.02
1477	1626	1630	302.61	0.39	0.00	0.86	0.35	0.35
1479	Yates Rese	1627	808.58	1.84	0.00	2.29	1.71	1.71
1481	1630	76	221.31	0.55	0.00	0.63	0.16	0.16
1483	76	1636	168.18	0.22	0.00	0.48	0.09	0.09
1487	1637	75	91.81	0.02	0.00	0.26	0.04	0.04
1492	75	49	106.54	0.03	0.00	0.30	0.05	0.05
1493	49	254	93.64	0.13	0.00	0.27	0.04	0.04
1494	J-35	254	16.58	0.00	0.00	0.05	0.00	0.00
1497	1647	2072	52.40	0.01	0.00	0.15	0.01	0.01
1499	247	1648	70.24	0.11	0.00	0.20	0.02	0.02
1500	343	1657	5.80	0.00	0.00	0.04	0.00	0.00
1509	1658	901	43.51	0.04	0.00	0.28	0.06	0.06
1526	1674	800	5.06	0.00	0.00	0.03	0.00	0.00
1531	800	174	0.76	0.00	0.00	0.00	0.00	0.00
1534	1679	1689	2.90	0.00	0.00	0.03	0.00	0.00
1544	1689	1690	0.40	0.00	0.00	0.00	0.00	0.00
1548	1698	2092	2.10	0.00	0.00	0.01	0.00	0.00
1552	1699	1700	2.20	0.00	0.00	0.01	0.00	0.00
1553	2138	89	3.90	0.00	0.00	0.02	0.00	0.00
1560	J-53	1710	3.00	0.00	0.00	0.02	0.00	0.00
1562	683	1711	0.60	0.00	0.00	0.00	0.00	0.00
1563	683	1712	1.40	0.00	0.00	0.01	0.00	0.00
1564	1713	1716	26.40	0.02	0.00	0.30	0.11	0.11
1567	1716	1719	0.50	0.00	0.00	0.01	0.00	0.00
1584	1742	1737	10.20	0.39	0.00	0.26	0.30	0.30
1588	1737	1375	4.70	0.03	0.00	0.12	0.07	0.07
1593	1742	1484	5.03	0.00	0.00	0.02	0.00	0.00
1596	975	1484	0.70	0.00	0.00	0.00	0.00	0.00
1611	975	1310	0.88	0.00	0.00	0.00	0.00	0.00
1612	2122	1310	8.92	0.00	0.00	0.04	0.00	0.00
1615	2123	1089	5.09	0.00	0.00	0.03	0.00	0.00
1617	1089	1186	15.94	0.02	0.00	0.18	0.10	0.10
1618	1186	1767	22.54	0.01	0.00	0.14	0.02	0.02
1621	J-135	1773	23.10	0.01	0.00	0.15	0.02	0.02
1626	1773	1775	19.00	0.00	0.00	0.12	0.01	0.01
1628	1775	1776	8.66	0.00	0.00	0.06	0.00	0.00
1629	1776	1782	3.76	0.00	0.00	0.02	0.00	0.00
1635	1788	1782	1.56	0.00	0.00	0.01	0.00	0.00
1641	1775	1788	8.84	0.00	0.00	0.06	0.00	0.00
1644	1773	1791	0.70	0.00	0.00	0.00	0.00	0.00
1645	1776	1793	0.90	0.00	0.00	0.01	0.00	0.00
1647	1788	1782	2.07	0.00	0.00	0.01	0.00	0.00
1654	1800	1801	0.70	0.00	0.00	0.00	0.00	0.00
1657	18053-inch or		0.30	0.00	0.00	0.00	0.00	0.00
1658	1806	1808	1.10	0.00	0.00	0.01	0.00	0.00
1660	1809	1806	2.30	0.00	0.00	0.01	0.00	0.00
1661	1810	1821	24.51	0.00	0.00	0.10	0.01	0.01

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1663	1821	1800	16.29	0.00	0.00	0.07	0.00	0.00
1664	1813	1809	6.70	0.00	0.00	0.03	0.00	0.00
1665	1814	1818	1.50	0.04	0.00	0.15	0.08	0.08
1669	1813	1814	3.89	0.00	0.00	0.02	0.00	0.00
1672	1821	J-112	4.12	0.00	0.00	0.03	0.00	0.00
1673	1826	1823	20.18	0.04	0.00	0.23	0.11	0.11
1676	1827	1071	34.31	0.00	0.00	0.22	0.07	0.07
1677	1636	J-128	12.38	0.00	0.00	0.08	0.01	0.01
1792	844	910	6.87	0.04	0.00	-0.18	0.15	0.15
1793	178	1823	17.98	0.00	0.00	0.11	0.02	0.02
1796	1063	1948	0.90	0.02	0.00	0.09	0.05	0.05
1799	1032	J-114	4.49	0.03	0.00	0.11	0.05	0.05
1810	1960	12	47.53	0.00	0.00	0.30	0.13	0.13
1811	12	10	44.23	0.12	0.00	0.29	0.11	0.11
1813	1767	J-117	2.60	0.00	0.00	0.03	0.00	0.00
1818	1737	1968	0.40	0.00	0.00	0.01	0.00	0.00
1820	1823	J-21	35.46	0.21	0.00	0.40	0.42	0.42
1821	175	384	118.05	0.31	0.00	0.48	0.15	0.15
1825	566	1973	1.50	0.00	0.00	0.04	0.01	0.01
1826	1974	1975	2.05	0.01	0.00	0.05	0.02	0.02
1828	J-3	1980	1.50	0.00	0.00	0.02	0.00	0.00
1830	19813	-inch or	0.10	0.00	0.00	0.00	0.00	0.00
1831	1767	1984	16.84	0.03	0.00	0.19	0.11	0.11
1834	1986	1985	0.20	0.00	0.00	0.01	0.00	0.00
1835	894	2125	3.56	0.00	0.00	0.02	0.00	0.00
1836	1987	568	0.49	0.00	0.00	0.01	0.00	0.00
1837	1989	1988	0.10	0.00	0.00	0.00	0.00	0.00
1839	2121	1991	16.35	0.02	0.00	0.19	0.10	0.10
1840	2123	2126	101.49	0.03	0.00	0.41	0.11	0.11
1841	994	1994	0.60	0.00	0.00	0.01	0.00	0.00
1842	1997	1996	10.67	0.03	0.00	0.12	0.05	0.05
1843	1184	2003	2.70	0.00	0.00	0.03	0.00	0.00
1852	2007	2009	17.41	0.03	0.00	0.20	0.11	0.11
1854	2065	2010	22.65	0.09	0.00	0.26	0.18	0.18
1855	J-39	2012	42.99	0.09	0.00	0.27	0.15	0.15
1856	2013	2014	16.45	0.02	0.00	0.19	0.05	0.05
1858	2016	J-81	3.92	0.08	0.00	0.10	0.05	0.05
1860	504	2127	4.44	0.06	0.00	0.11	0.06	0.06
1864	1121	2023	0.50	0.00	0.00	0.01	0.00	0.00
1865	2127	1215	16.86	0.03	0.00	0.19	0.11	0.11
1866	2025	2028	1.10	0.02	0.00	0.11	0.05	0.05
1869	2029	2030	0.60	0.00	0.00	0.06	0.01	0.01
1870	2031	2029	5.30	0.00	0.00	0.14	0.03	0.03
1871	2029	2025	3.70	0.00	0.00	0.09	0.01	0.01
1872	2025	2032	0.70	0.00	0.00	0.02	0.00	0.00
1873	2031	2033	1.70	0.00	0.00	0.04	0.00	0.00
1877	J-124	2031	9.40	0.00	0.00	0.06	0.00	0.00
1883	J-74	2047	0.60	0.00	0.00	0.01	0.00	0.00
1887	2053	582	10.35	0.15	0.00	0.26	0.22	0.22
1892	2129	582	13.59	0.13	0.00	0.35	0.37	0.37
1893	46	590	16.76	0.06	0.00	0.19	0.08	0.08
1894	J-45	2061	0.90	0.00	0.00	0.01	0.00	0.00
1895	J-44	2063	46.94	0.11	0.00	0.30	0.13	0.13
1896	5	361	71.82	0.01	0.00	0.29	0.09	0.09
1898	14	540	2.68	0.00	0.00	0.03	0.00	0.00
1900	163	-in or sm	0.10	0.00	0.00	0.00	0.00	0.00
1901	17	18	3.10	0.00	0.00	0.04	0.00	0.00
1904	2088	24	30.50	0.00	0.00	0.35	0.15	0.15
1907	36	2130	3.73	0.00	0.00	0.04	0.01	0.01
1908	2083	38	0.33	0.00	0.00	0.00	0.00	0.00
1909	2014	J-87	26.51	0.07	0.00	0.30	0.25	0.25
1917	69	J-61	0.46	0.00	0.00	0.00	0.00	0.00
1920	295	J-30	19.80	0.00	0.00	0.06	0.00	0.00
1924	2066	86	8.60	0.00	0.00	0.02	0.00	0.00
1927	104	J-112	3.49	0.00	0.00	0.04	0.01	0.01
1930	118	710	387.82	1.04	0.00	0.81	0.41	0.41
1935	2106	247	83.74	0.01	0.00	0.53	0.51	0.51
1936	2122	325	53.50	0.00	0.00	0.15	0.01	0.01
1938	1218	375	362.77	0.37	0.00	0.76	0.51	0.51
1940	1318	396	206.06	0.05	0.00	0.43	0.18	0.18
1941	480	2138	10.30	0.00	0.00	0.04	0.00	0.00
1947	2093	530	0.59	0.00	0.00	0.01	0.00	0.00
1948	536	2078	36.36	0.03	0.00	0.23	0.11	0.11
1949	565	1084	40.09	0.08	0.00	0.26	0.13	0.13
1950	556	944	5.69	0.01	0.00	0.06	0.01	0.01
1951	543	565	46.11	0.01	0.00	0.29	0.17	0.17
1954	J-84	O-AV-5	0.00	0.00	0.00	0.00	0.00	0.00
1956	584	717	25.19	0.01	0.00	0.10	0.01	0.01
1958	590	584	10.15	0.00	0.00	0.04	0.00	0.00
1960	620	2133	14.00	0.00	0.00	0.09	0.01	0.01
1962	649	1410	316.80	0.23	0.00	2.02	4.29	4.29
1964	661	424	27.07	0.00	0.00	0.11	0.02	0.02
1965	665	172	8.94	0.00	0.00	0.03	0.00	0.00
1967	710	137	355.53	0.69	0.00	0.74	0.35	0.35
1972	791	784	2.63	0.00	0.00	0.02	0.00	0.00
1975	798	797	34.57	0.00	0.00	0.10	0.01	0.01
1977	813	J-120	9.15	0.02	0.00	0.10	0.03	0.03
1978	815	803	0.25	0.00	0.00	0.00	0.00	0.00
1979	817	1338	11.97	0.03	0.00	0.14	0.06	0.06
1982	856	2121	20.85	0.05	0.00	0.24	0.16	0.16
1983	375	860	203.85	0.05	0.00	0.42	0.17	0.17
1984	865	65	38.16	0.05	0.00	0.24	0.12	0.12
1985	14	872	7.84	0.00	0.00	0.09	0.03	0.03
1986	923	J-3	12.07	0.02	0.00	0.14	0.06	0.06
1987	1987	944	8.74	0.01	0.00	0.10	0.03	0.03
1989	945	954	7.63	0.01	0.00	0.09	0.02	0.02
1990	958	J-106	8.11	0.01	0.00	0.09	0.03	0.03
1992	994	1658	95.31	0.05	0.00	0.39	0.10	0.10
1993	2101	60	2.87	0.00	0.00	0.03	0.00	0.00
1995	1049	1003	26.20	0.09	0.00	0.30	0.17	0.17
1996	631	1049	30.10	0.02	0.00	0.19	0.05	0.05
1997	1050	975	7.88	0.01	0.00	0.09	0.02	0.02
1998	1057	518	18.78	0.02	0.00	0.12	0.03	0.03
2000	1084	552	46.12	0.07	0.00	0.29	0.17	0.17
2001	1120	1099	30.53	0.08	0.00	0.35	0.32	0.32

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2002	J-79	1107	57.41	0.05	0.00	0.37	0.25	0.25
2003	1130	J-63	26.32	0.03	0.00	0.17	0.06	0.06
2005	398	1137	51.63	0.13	0.00	0.33	0.21	0.21
2010	1180	704	64.46	0.15	0.00	0.41	0.32	0.32
2011	704	1183	53.05	0.03	0.00	0.60	0.89	0.89
2014	2067	1210	359.41	0.28	0.00	0.75	0.50	0.50
2020	1223	1224	13.64	0.02	0.00	0.15	0.07	0.07
2021	1224	827	12.95	0.04	0.00	0.15	0.07	0.07
2022	1229	815	15.33	0.03	0.00	-0.17	0.09	0.09
2024	1517	1235	34.47	0.09	0.00	0.22	0.10	0.10
2025	1099	J-82	4.87	0.00	0.00	0.06	0.01	0.01
2027	46	1284	27.76	0.03	0.00	0.18	0.05	0.05
2031	1392	1318	220.01	0.06	0.00	0.46	0.20	0.20
2032	J-87	1322	24.13	0.05	0.00	0.27	0.21	0.21
2033	2091	1328	48.24	0.06	0.00	0.31	0.18	0.18
2035	1337	2110	2.59	0.00	0.00	0.03	0.00	0.00
2036	1338	813	1.48	0.00	0.00	0.02	0.00	0.00
2037	1356	1089	13.06	0.00	0.00	0.15	0.07	0.07
2039	945	1366	1.37	0.00	0.00	0.02	0.00	0.00
2040	1387	979	1.30	0.00	0.00	0.01	0.00	0.00
2042	J-39	1392	235.89	0.14	0.00	0.49	0.23	0.23
2045	1409	407	96.65	0.07	0.00	0.39	0.23	0.23
2048	1465	J-120	10.75	0.00	0.00	0.12	0.05	0.05
2053	1107	1517	39.77	0.05	0.00	0.25	0.13	0.13
2058	J-8	1570	39.10	0.03	0.00	0.16	0.03	0.03
2060	1575	342	20.70	0.00	0.00	0.06	0.00	0.00
2063	1627	J-135	269.40	0.10	0.00	0.76	0.28	0.28
2067	1648	432	20.20	0.03	0.00	0.08	0.01	0.01
2068	1658	421	46.00	0.02	0.00	0.19	0.03	0.03
2070	1101	1679	13.00	0.00	0.00	0.15	0.05	0.05
2071	212	1698	3.32	0.00	0.00	0.02	0.00	0.00
2078	1800	1813	13.39	0.00	0.00	0.05	0.00	0.00
2079	1809	1805	2.40	0.00	0.00	0.01	0.00	0.00
2080	107	1810	32.15	0.00	0.00	0.09	0.00	0.00
2087	1960	700	0.10	0.00	0.00	0.00	0.00	0.00
2089	1973	J-2	11.51	0.02	0.00	0.13	0.05	0.05
2090	1974	1366	5.03	0.00	0.00	0.06	0.01	0.01
2091	1975	36	5.43	0.00	0.00	0.06	0.01	0.01
2092	1981	J-4	16.29	0.03	0.00	0.18	0.10	0.10
2093	1984	994	112.33	0.05	0.00	0.46	0.13	0.13
2095	1986	552	13.62	0.04	0.00	0.15	0.07	0.07
2096	893	1987	12.53	0.00	0.00	0.14	0.06	0.06
2097	1989	842	11.22	0.01	0.00	0.13	0.05	0.05
2102	827	1996	2.53	0.00	0.00	0.03	0.00	0.00
2104	375	2007	154.32	0.16	0.00	0.63	0.24	0.24
2105	2009	2096	8.32	0.00	0.00	0.09	0.03	0.03
2111	2016	1120	32.53	0.01	0.00	0.37	0.36	0.36
2114	1107	1293	14.74	0.03	0.00	0.17	0.08	0.08
2118	J-57	2053	55.54	0.07	0.00	0.35	0.17	0.17
2120	717	2063	15.16	0.00	0.00	0.06	0.01	0.01
2127	2067	1218	405.77	0.21	0.00	0.85	0.62	0.62
2128	2067	1180	106.50	0.46	0.00	0.68	0.80	0.80
2139	2007	2073	134.41	0.01	0.00	0.55	0.19	0.19
2141	2074	483	1.20	0.00	0.00	0.01	0.00	0.00
2145	492	2076	19.15	0.01	0.00	0.12	0.03	0.03
2146	504	2076	2.28	0.00	0.00	0.01	0.00	0.00
2148	693	J-64	13.73	0.00	0.00	0.09	0.01	0.01
2149	2078	865	33.89	0.03	0.00	0.22	0.10	0.10
2150	1991	2078	13.05	0.02	0.00	0.15	0.07	0.07
2152	2079	543	23.35	0.01	0.00	0.15	0.05	0.05
2153	2080	2081	28.85	0.03	0.00	0.33	0.13	0.13
2154	2080	958	10.89	0.03	0.00	0.12	0.05	0.05
2155	2125	J-99	24.23	0.00	0.00	0.15	0.02	0.02
2156	958	2081	4.57	0.00	0.00	0.05	0.01	0.01
2159	2084	2083	9.64	0.00	0.00	0.06	0.01	0.01
2160	2083	916	2.42	0.00	0.00	0.03	0.00	0.00
2161	565	2084	3.32	0.00	0.00	0.02	0.00	0.00
2162	2094	916	3.58	0.00	0.00	0.04	0.01	0.01
2165	2086	578	1.60	0.00	0.00	0.01	0.00	0.00
2166	2132	2086	56.32	0.10	0.00	0.36	0.18	0.18
2169	2088	620	24.70	0.06	0.00	0.16	0.02	0.02
2170	1214	2088	62.50	0.09	0.00	0.71	0.55	0.55
2173	1410	2090	307.05	0.06	0.00	1.96	4.05	4.05
2174	2090	657	29.35	0.02	0.00	0.19	0.03	0.03
2175	1137	2091	60.86	0.13	0.00	0.39	0.28	0.28
2176	2091	505	36.63	0.03	0.00	0.23	0.11	0.11
2179	2093	817	33.63	0.12	0.00	0.38	0.38	0.38
2180	2093	1229	18.85	0.10	0.00	0.21	0.13	0.13
2181	2095	2094	6.77	0.01	0.00	0.08	0.02	0.02
2183	1223	2095	6.66	0.01	0.00	0.08	0.02	0.02
2184	1183	2095	31.26	0.11	0.00	0.35	0.34	0.34
2187	2097	856	15.36	0.04	0.00	0.17	0.09	0.09
2188	2073	2097	6.72	0.00	0.00	0.09	0.02	0.02
2189	885	2098	1.82	0.00	0.00	0.02	0.00	0.00
2190	2098	2100	9.53	0.01	0.00	0.11	0.04	0.04
2192	954	2130	8.23	0.01	0.00	0.09	0.03	0.03
2193	2100	1050	17.18	0.03	0.00	0.19	0.08	0.08
2194	1056	2100	2.31	0.00	0.00	0.03	0.00	0.00
2195	807	2101	13.69	0.02	0.00	0.16	0.03	0.03
2196	2101	J-82	4.23	0.01	0.00	0.05	0.01	0.01
2198	1293	1290	4.09	0.00	0.00	0.05	0.01	0.01
2199	60	2103	1.47	0.00	0.00	0.02	0.00	0.00
2202	2104	2021	0.70	0.00	0.00	0.02	0.00	0.00
2203	1388	2105	13.96	0.02	0.00	0.16	0.08	0.08
2206	1328	2106	55.12	0.04	0.00	0.35	0.24	0.24
2207	510	2107	13.84	0.02	0.00	0.16	0.07	0.07
2212	2109	2010	7.16	0.01	0.00	0.08	0.02	0.02
2214	2110	1356	10.16	0.02	0.00	0.12	0.04	0.04
2216	2111	1333	11.48	0.00	0.00	0.13	0.05	0.05
2217	1183	2112	19.99	0.04	0.00	0.23	0.15	0.15
2221	2113	803	31.11	0.21	0.00	0.35	0.33	0.33
2223	J-87	2115	16.39	0.03	0.00	0.19	0.10	0.10
2228	1210	2117	315.82	0.13	0.00	0.66	0.39	0.39
2231	1483	2119	0.15	0.00	0.00	0.00	0.00	0.00
2234	J-77	2120	5.10	0.00	0.00	0.06	0.01	0.01

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2236	2126	2121	3.24	0.00	0.00	0.04	0.01	0.01
2240	2073	2123	109.97	0.06	0.00	0.45	0.13	0.13
2243	2125	961	4.85	0.00	0.00	0.03	0.00	0.00
2244	2081	2125	26.52	0.01	0.00	0.17	0.03	0.03
2246	2126	1984	96.05	0.03	0.00	0.39	0.10	0.10
2249	J-77	2050	0.10	0.00	0.00	0.00	0.00	0.00
2252	2053	2129	41.60	0.02	0.00	0.27	0.10	0.10
2253	961	2130	3.45	0.00	0.00	0.04	0.01	0.01
2254	2130	1973	12.41	0.00	0.00	0.14	0.06	0.06
2257	214	2132	114.87	0.00	0.00	0.73	0.66	0.66
2259	2133	599	8.30	0.00	0.00	0.05	0.00	0.00
2260	2133	47	2.30	0.00	0.00	0.01	0.00	0.00
2269	2138	481	0.20	0.00	0.00	0.00	0.00	0.00
P-1	J-1	97	6.90	0.00	0.00	0.02	0.00	0.00
F-100	J-112	1814	2.41	0.00	0.00	0.03	0.00	0.00
F-101	2079	J-113	5.03	0.00	0.00	0.06	0.01	0.01
F-102	1023	J-114	6.61	0.03	0.00	0.17	0.10	0.10
F-103	649	J-125	41.50	0.14	0.00	0.47	0.40	0.40
F-104	1103I-Fairview		15.00	0.00	0.00	0.17	0.06	0.06
F-105	J-116	J-115	10.09	0.02	0.00	0.11	0.04	0.04
F-106	2097	J-116	11.99	0.01	0.00	0.14	0.06	0.06
F-108	J-117	56	0.90	0.00	0.00	0.01	0.00	0.00
F-11	J-3	1975	7.17	0.01	0.00	0.08	0.02	0.02
F-111	J-120	807	17.50	0.03	0.00	0.20	0.11	0.11
F-113	2117	J-39	282.99	0.09	0.00	0.59	0.32	0.32
F-116	97	J-122	4.70	0.00	0.00	0.01	0.00	0.00
F-117	J-140	J-145	0.10	0.00	0.00	0.00	0.00	0.00
F-119	J-84	J-139	0.60	0.00	0.00	0.00	0.00	0.00
F-121	J-140	J-138	23.92	0.00	0.00	0.07	0.00	0.00
F-122	Main Reser	J-126	1658.10	0.67	0.00	3.46	6.03	6.03
F-124	O-AV-1	2083	0.00	0.00	0.00	0.00	0.00	0.00
F-125	O-AV-2	906	0.00	0.00	0.00	0.00	0.00	0.00
F-127	J-127	295	65.80	0.04	0.00	0.19	0.02	0.02
F-128	J-127	J-128	3.82	0.00	0.00	0.01	0.00	0.00
F-130	J-128	1831	1.70	0.00	0.00	0.01	0.00	0.00
F-131	1071	J-129	59.88	0.44	0.00	0.68	0.80	0.80
F-132	J-129	668	48.78	0.01	0.00	0.14	0.01	0.01
F-133	1513	J-133	17.50	0.00	0.00	0.11	0.01	0.01
F-134	J-122	J-132	2.20	0.00	0.00	0.01	0.00	0.00
F-135	1502	J-124	12.10	0.00	0.00	0.08	0.01	0.01
F-136	J-124	J-131	0.60	0.00	0.00	0.00	0.00	0.00
F-138-CV	Kennicott	J-53	227.72	0.04	0.00	0.36	0.05	0.05
F-140	O-AV-4	686	0.00	0.00	0.00	0.00	0.00	0.00
F-143	I-AV-5	J-63	0.00	0.00	0.00	0.00	0.00	0.00
F-144	O-AV-6	1134	0.00	0.00	0.00	0.00	0.00	0.00
F-146	J-73	J-134	1.10	0.00	0.00	0.01	0.00	0.00
F-147	J-64	J-141	0.40	0.00	0.00	0.00	0.00	0.00
F-148	J-134	O-RV-2	0.00	0.00	0.00	0.00	0.00	0.00
F-149	J-143	O-RV-1	0.00	0.00	0.00	0.00	0.00	0.00
F-15	J-126	J-91	1294.80	0.66	0.00	2.70	3.82	3.82
F-150-XXCV	J-141	J-134						
F-151	J-139	J-142	0.20	0.00	0.00	0.00	0.00	0.00
F-152	1570	J-144	1.90	0.00	0.00	0.01	0.00	0.00
F-153-XXCV	J-143	J-144						
F-154	I-RV-1	J-144	0.00	0.00	0.00	0.00	0.00	0.00
F-157	I-RV-2	J-141	0.00	0.00	0.00	0.00	0.00	0.00
F-1570	1716	1103	20.00	0.03	0.00	0.13	0.02	0.02
F-158	J-145I-18th St		0.00	0.00	0.00	0.00	0.00	0.00
F-159	J-145	J-146	0.00	0.00	0.00	0.00	0.00	0.00
F-160-XXCV	J-146	J-147						
F-161	J-146O-18th St		0.00	0.00	0.00	0.00	0.00	0.00
F-162	J-147	J-142	0.00	0.00	0.00	0.00	0.00	0.00
F-164	I-18th St	J-147	0.00	0.00	0.00	0.00	0.00	0.00
F-165	J-156	J-155	32.90	0.09	0.00	0.37	0.12	0.12
F-166	66	J-110	27.07	0.08	0.00	0.31	0.26	0.26
F-167	J-156	J-153	147.70	0.44	0.00	0.42	0.09	0.09
F-168	J-152	J-150	5.51	0.00	0.00	0.04	0.00	0.00
F-169	J-88	J-154	218.70	0.09	0.00	0.62	0.19	0.19
F-170	J-155	J-151	13.60	0.11	0.00	0.15	0.02	0.02
F-171	J-155	J-157	1.80	0.07	0.00	0.18	0.11	0.11
F-172	J-154	J-156	200.40	0.25	0.00	0.57	0.16	0.16
F-173	J-6	J-148	3.50	1.18	0.00	0.36	0.44	0.44
F-174	J-153	J-149	3.70	0.00	0.00	0.02	0.00	0.00
F-175	J-152	J-150	0.39	0.00	0.00	0.00	0.00	0.00
F-176	J-64	2076	9.23	0.01	0.00	0.06	0.01	0.01
F-178	1513	J-159	6.60	0.00	0.00	0.07	0.01	0.01
P-18	J-135I-South En		242.80	0.01	0.00	0.69	0.18	0.18
P-19	34	33	18.50	0.01	0.00	0.47	0.65	0.65
P-2	J-1	101	0.20	0.00	0.00	0.00	0.00	0.00
P-20	213	1576	16.10	0.00	0.00	0.05	0.00	0.00
P-25	J-30	2066	12.10	0.00	0.00	0.03	0.00	0.00
P-29	2063	J-8	55.80	0.06	0.00	0.23	0.06	0.06
P-3	O-Centrali	J-6	7.00	0.24	0.00	0.08	0.01	0.01
P-30	J-42	J-35	24.78	0.00	0.00	0.07	0.00	0.00
P-31	J-8	54	10.20	0.00	0.00	0.07	0.01	0.01
P-33	2072	J-42	42.40	0.00	0.00	0.12	0.01	0.01
P-34	J-42	1699	11.62	0.00	0.00	0.03	0.00	0.00
P-36	1322	2091	28.01	0.09	0.00	0.32	0.27	0.27
P-4	1570	J-7	29.10	0.02	0.00	0.12	0.02	0.02
P-40	10	J-44	34.03	0.06	0.00	0.22	0.07	0.07
P-42	J-45	J-44	19.11	0.01	0.00	0.12	0.02	0.02
P-43	O-South En	J-88	242.80	0.71	0.00	0.69	0.23	0.23
P-44	J-55	28	2.30	0.00	0.00	0.01	0.00	0.00
P-47	2132	J-57	56.74	0.00	0.00	0.36	0.18	0.18
P-48	41	J-90	0.10	0.00	0.00	0.00	0.00	0.00
P-49	2051	J-57	0.00	0.00	0.00	0.00	0.00	0.00
P-50	2052	J-57	0.00	0.00	0.00	0.00	0.00	0.00
P-51	O-18th St	J-142	0.00	0.00	0.00	0.00	0.00	0.00
P-53	J-4	1974	10.99	0.02	0.00	0.12	0.05	0.05
P-54	J-4	923	2.80	0.00	0.00	0.03	0.00	0.00
P-57	1217	I-AW-6	0.00	0.00	0.00	0.00	0.00	0.00
P-58	69	1217	4.05	0.00	0.00	0.03	0.00	0.00
P-6	J-88	J-11	2.80	0.00	0.00	0.02	0.00	0.00
P-61	J-58	68	13.76	0.01	0.00	0.16	0.03	0.03
P-62	J-61	J-136	0.80	0.00	0.00	0.01	0.00	0.00

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P-64	54	J-27	6.70	0.00	0.00	0.04	0.00	0.00
P-65	597	J-67	16.86	0.01	0.00	0.11	0.02	0.02
P-67	J-67	J-71	14.66	0.00	0.00	0.09	0.01	0.01
P-69	J-71	J-73	12.36	0.01	0.00	0.08	0.01	0.01
P-7	J-154	J-152	12.20	0.00	0.00	0.08	0.01	0.01
P-71	J-63	J-123	24.92	0.00	0.00	0.16	0.02	0.02
P-73	1678	J-74	7.50	0.00	0.00	0.09	0.02	0.02
P-74	J-74	J-77	5.80	0.00	0.00	0.07	0.01	0.01
P-75	I-AV-3	2120	0.00	0.00	0.00	0.00	0.00	0.00
P-76	J-78	408	13.54	0.00	0.00	0.09	0.01	0.01
P-77	J-78	1130	33.32	0.07	0.00	0.21	0.09	0.09
P-78	J-80	504	12.72	0.01	0.00	0.08	0.02	0.02
P-79	J-82	1396	2.50	0.00	0.00	0.03	0.00	0.00
P-80	1388	J-87	18.21	0.03	0.00	0.21	0.06	0.06
P-81	92	J-62	1.10	0.00	0.00	0.01	0.00	0.00
P-82	597	J-84	2.90	0.00	0.00	0.02	0.00	0.00
P-83	J-123	J-140	24.52	0.00	0.00	0.07	0.00	0.00
P-84	J-93	1971	0.10	0.00	0.00	0.00	0.00	0.00
P-86	J-126I-High Lev		360.00	12.03	0.00	4.08	30.96	30.96
P-87	J-94	526	56.81	0.25	0.00	0.36	0.25	0.25
P-88	J-93	J-94	55.26	0.00	0.00	0.63	0.69	0.69
P-89	J-96inter-tle		2.80	0.00	0.00	0.01	0.00	0.00
P-9	J-2	2098	11.62	0.02	0.00	0.13	0.05	0.05
P-90	J-105	174	1.24	0.00	0.00	0.00	0.00	0.00
P-91	J-20	1981	17.49	0.01	0.00	0.20	0.11	0.11
P-92	J-21	J-20	32.26	0.05	0.00	0.37	0.36	0.36
P-93	J-99	568	1.61	0.00	0.00	0.01	0.00	0.00
P-94	J-99	556	18.62	0.00	0.00	0.12	0.01	0.01
P-95	J-99	566	2.90	0.00	0.00	0.02	0.00	0.00
P-96	J-100	2080	56.04	0.02	0.00	0.36	0.11	0.11
P-97	J-106	894	4.56	0.00	0.00	0.05	0.01	0.01
P-98	J-153I-Centrall		7.00	0.05	0.00	0.04	0.00	0.00
P-99	944	J-111	10.83	0.02	0.00	0.12	0.05	0.05
Valley Vie	O-Valley VYankis (Va		0.00	0.00	0.00	0.00	0.00	0.00
~@18th St -RV	I-18th St O-18th St							
~@AV-1-XX	I-AV-1 O-AV-1							
~@AV-2-XX	I-AV-2 O-AV-2							
~@AV-3-XX	I-AV-3 O-AV-3							
~@AV-4-XX	I-AV-4 O-AV-4							
~@AV-5-XX	I-AV-5 O-AV-5							
~@AV-6-XX	I-AV-6 O-AV-6							
~@High Lev-RV	I-High LevO-High Lev							
~@Valley V-RV	I-Valley VO-Valley V							

N O D E R E S U L T S

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
5		0.30	397.81	243.40	154.41	66.91
6		5.50	397.81	244.40	153.41	66.48
9		2.30	397.49	205.80	191.69	83.07
10		7.90	397.49	213.70	183.79	79.64
11		0.10	397.61	236.90	160.71	69.64
12		3.20	397.61	236.50	161.11	69.82
13		0.10	396.80	198.90	197.90	85.76
14		1.80	396.80	201.40	195.40	84.67
15		6.80	397.37	186.10	211.27	91.55
16		1.30	397.37	186.10	211.27	91.55
17		8.80	396.12	175.70	220.42	95.52
18		1.90	396.12	171.90	224.22	97.16
19		1.20	396.10	165.30	230.80	100.01
22		2.90	396.89	186.50	210.39	91.17
23		6.40	396.89	187.70	209.19	90.65
24		1.60	635.11	604.50	30.61	13.26
26		7.40	397.67	240.30	157.37	68.19
28		1.70	397.67	322.60	75.07	32.53
29		0.60	397.67	319.00	78.67	34.09
31		2.00	397.06	216.80	180.26	78.11
32		4.80	397.21	214.70	182.51	79.09
33		0.40	396.45	183.00	213.45	92.50
34		3.00	396.46	183.50	212.96	92.28
36		3.80	396.55	194.40	202.15	87.60
37		0.50	396.78	319.00	77.78	33.71
38		3.10	396.78	290.50	106.28	46.06
40		4.30	396.87	190.80	206.07	89.30
41		0.30	397.80	219.10	178.70	77.44
43		0.10	398.45	253.50	144.95	62.81
46		5.50	397.39	229.90	167.49	72.58
47		1.80	635.05	544.40	90.65	39.28
48		0.50	635.05	543.60	91.45	39.63
49		12.00	397.92	243.00	154.92	67.13
50		0.90	397.92	244.20	153.72	66.61
51		5.90	397.71	240.00	157.71	68.34
52		1.30	397.71	261.50	136.21	59.02
54		3.00	397.26	209.30	187.96	81.45
56		0.90	396.86	193.00	203.86	88.34
59		0.30	396.80	252.50	144.30	62.53
60		1.10	396.80	252.90	143.90	62.36
65		5.80	396.74	192.40	204.34	88.55
66		1.80	396.67	191.30	205.37	88.99
68		3.70	396.27	205.20	191.07	82.80
69		2.70	396.27	208.70	187.57	81.28
70		0.70	397.71	285.20	112.51	48.75
72		15.30	398.26	255.00	143.26	62.08
75		12.70	397.96	247.70	150.26	65.11
76		25.70	397.97	256.00	141.97	61.52
83		0.10	397.70	221.90	175.80	76.18
85		0.10	397.70	222.10	175.60	76.10
86		4.70	397.70	222.40	175.30	75.97
89		3.90	397.20	225.60	171.60	74.36
92		15.30	396.38	192.40	203.98	88.39

2020 Fireflow - High Level Zone

97	2.00	396.48	173.90	222.58	96.45
98	0.20	396.48	174.00	222.48	96.41
101	0.20	396.48	174.30	222.18	96.28
102	4.00	396.48	176.00	220.48	95.54
103	0.20	396.48	175.70	220.78	95.67
104	4.10	396.70	178.70	217.00	94.03
107	4.00	396.70	183.60	213.10	92.34
108	1.70	396.70	183.60	213.10	92.34
109	7.50	397.82	236.20	161.62	70.04
118	16.20	399.11	192.50	206.61	89.53
119	3.40	397.02	217.70	179.32	77.71
121	2.20	397.06	230.70	166.36	72.09
137	8.00	397.39	180.00	217.39	94.20
166	5.90	396.49	182.90	213.59	92.55
172	3.70	396.48	174.10	222.38	96.37
174	2.00	396.48	175.70	220.78	95.67
175	6.70	396.86	183.60	213.26	92.41
178	2.10	396.88	183.60	213.28	92.42
192	7.20	397.24	183.60	213.64	92.58
201	3.40	397.28	178.30	218.98	94.89
212	3.60	398.45	256.30	142.15	61.60
213	2.10	398.45	253.50	144.95	62.81
214	4.60	397.57	230.10	167.47	72.57
224	3.50	397.80	224.20	173.60	75.23
247	13.40	396.55	192.10	204.45	88.59
248	8.00	398.45	248.60	149.85	64.93
253	5.20	398.45	240.90	157.55	68.27
254	18.20	397.79	230.80	166.99	72.36
295	20.90	397.71	210.10	187.61	81.30
325	4.80	396.46	183.90	212.56	92.11
342	3.10	396.46	165.40	231.06	100.13
343	6.20	396.46	163.20	233.26	101.08
344	2.90	396.46	164.20	232.26	100.65
346	0.50	396.46	165.60	230.86	100.04
356	9.30	397.80	219.10	178.70	77.44
361	10.20	397.81	243.10	154.71	67.04
375	4.60	397.11	230.50	166.61	72.20
384	9.80	396.55	183.20	213.35	92.45
385	1.10	396.54	183.60	212.94	92.27
396	1.10	396.94	221.20	175.74	76.15
398	2.90	396.91	220.50	176.41	76.45
407	5.00	396.76	226.99	169.77	73.57
408	2.60	396.65	223.30	173.35	75.12
421	4.60	396.71	184.20	212.51	92.09
424	1.10	396.44	189.90	206.54	89.50
432	14.10	396.41	184.10	212.31	92.00
468	17.10	397.69	204.20	193.49	83.84
473	1.50	396.48	178.30	218.18	94.55
474	1.90	397.20	210.70	186.50	80.82
480	6.60	397.20	219.70	177.50	76.92
481	0.20	397.20	220.90	176.30	76.40
483	1.20	397.80	214.00	183.80	79.65
492	7.90	396.41	195.50	200.91	87.06
504	6.00	396.40	192.80	203.60	88.23
505	5.30	396.62	197.20	199.42	86.42
509	8.70	396.56	200.00	196.56	85.17
510	4.80	396.78	189.60	207.18	89.78
512	6.10	396.78	184.80	211.98	91.86
513	3.00	397.28	178.80	218.48	94.68
518	2.80	397.26	182.20	215.06	93.19
526	11.70	397.01	201.80	195.21	84.59
530	2.90	397.02	220.30	176.72	76.58
536	3.90	396.85	201.90	194.95	84.48
540	0.80	396.80	202.30	194.50	84.28
543	2.00	396.79	210.90	185.89	80.55
544	1.50	396.82	216.10	180.72	78.31
552	2.90	396.63	191.50	205.13	88.89
556	3.60	396.55	206.10	190.45	82.53
565	2.70	396.79	210.80	185.99	80.59
566	1.40	396.55	204.60	191.95	83.18
568	2.10	396.55	206.30	190.25	82.44
569	6.50	396.49	178.30	218.19	94.55
573	1.30	396.49	179.00	217.49	94.24
578	1.60	397.46	280.80	116.66	50.55
579	3.30	396.53	205.50	191.03	82.78
582	4.40	397.34	212.80	184.54	79.97
584	4.50	397.33	207.60	189.73	82.22
590	5.10	397.33	208.60	188.73	81.78
597	3.50	397.35	222.20	175.15	75.90
599	5.00	635.05	592.40	42.65	18.48
601	1.30	635.05	577.30	57.75	25.02
619	2.00	635.05	559.00	76.05	32.95
620	9.00	635.05	583.00	52.05	22.56
623	1.70	635.05	588.00	47.05	20.39
628	2.20	608.33	420.40	187.93	81.43
631	2.80	608.32	382.80	225.52	97.72
632	0.80	608.30	455.20	153.10	66.34
642	1.60	608.32	304.60	303.72	131.61
649	1.70	608.81	392.70	216.11	93.65
657	7.70	608.50	331.20	277.30	120.16
661	5.00	396.44	190.90	205.54	89.07
665	7.10	396.48	174.40	222.08	96.24
668	11.10	396.49	182.30	214.19	92.82
675	1.40	396.49	180.60	215.89	93.55
676	2.50	397.26	206.70	190.56	82.58
682	0.50	397.26	209.20	188.06	81.49
683	3.40	397.34	200.30	197.04	85.38
686	0.90	396.65	278.90	117.75	51.03
693	6.20	396.41	197.40	199.01	86.24
700	0.10	397.61	237.50	160.11	69.38
704	2.20	397.08	190.10	206.98	89.69
705	4.40	398.08	185.50	212.58	92.12
710	13.40	398.08	197.50	200.58	86.92
717	6.00	397.32	204.90	192.42	83.38
718	0.10	396.55	191.20	205.35	88.98

2020 Fireflow - High Level Zone

726	1.50	396.41	190.00	206.41	89.45
780	8.00	397.68	195.00	202.68	87.83
781	0.10	398.45	252.20	146.25	63.38
784	5.10	398.45	258.80	138.65	60.08
788	14.90	398.45	258.50	139.95	60.65
791	4.60	398.45	256.00	142.45	61.73
792	0.30	398.45	254.90	143.55	62.21
797	3.80	398.45	255.30	143.15	62.03
800	3.50	396.48	177.30	219.18	94.98
802	0.80	396.48	178.00	218.48	94.68
803	6.00	396.89	217.90	178.99	77.56
807	6.90	396.82	272.60	124.22	53.83
808	4.40	396.92	215.50	181.42	78.61
813	4.20	396.87	244.90	151.97	65.85
815	3.20	396.89	219.20	177.69	77.00
817	4.10	396.90	275.20	121.70	52.74
827	5.90	396.88	186.80	210.08	91.03
828	2.70	396.92	192.50	204.42	88.58
831	1.70	396.83	216.90	179.93	77.97
842	3.10	396.81	234.00	162.81	70.55
844	4.30	396.82	260.00	136.82	59.29
856	2.70	396.91	194.40	202.51	87.75
860	2.40	397.07	230.20	166.87	72.31
865	2.50	396.79	195.90	200.89	87.05
868	2.60	396.79	197.00	199.79	86.58
872	1.00	396.80	199.50	197.30	85.50
881	2.50	396.51	199.80	196.71	85.24
885	2.90	396.51	204.20	192.31	83.34
893	2.60	396.56	198.10	198.46	86.00
894	1.00	396.55	206.30	190.25	82.44
899	5.90	396.67	192.10	204.57	88.65
901	5.80	396.69	189.00	207.69	90.00
906	2.10	396.78	292.50	104.28	45.19
910	1.50	396.78	294.90	101.88	44.15
916	5.00	396.78	222.40	174.38	75.56
922	1.00	396.78	238.30	158.48	68.67
923	3.30	396.58	182.20	214.38	92.90
929	0.70	396.67	181.60	215.07	93.20
937	3.20	396.53	183.80	212.73	92.18
944	3.60	396.54	196.50	200.04	86.68
945	3.20	396.56	192.00	204.56	88.64
954	2.70	396.56	193.70	202.86	87.91
958	6.00	396.56	201.60	194.96	84.48
961	1.40	396.55	205.40	191.15	82.83
962	3.60	396.49	178.30	217.19	94.11
964	0.20	396.49	178.40	217.09	94.07
975	6.30	396.47	184.50	211.97	91.85
979	1.30	396.31	173.70	222.61	96.46
994	5.30	396.78	192.30	204.48	88.61
1003	5.00	608.21	435.80	172.41	74.71
1023	6.00	608.19	389.60	218.59	94.72
1024	2.80	608.53	408.40	200.13	86.72
1032	4.10	608.19	455.00	153.19	66.38
1049	3.10	608.30	421.50	186.80	80.95
1050	5.70	396.47	188.20	208.27	90.25
1053	3.60	396.47	183.20	213.27	92.42
1056	1.80	396.50	192.00	204.50	88.62
1057	6.00	397.28	178.20	218.08	94.50
1060	5.90	397.31	196.50	200.81	87.02
1063	1.50	397.31	238.10	159.21	68.99
1064	2.70	396.50	181.30	215.20	93.25
1071	2.70	396.95	190.50	206.45	89.46
1084	10.80	396.71	198.50	198.21	85.89
1085	4.10	396.92	197.60	199.32	86.37
1089	2.20	396.89	190.70	206.19	89.35
1099	9.50	396.79	233.90	162.89	70.59
1100	0.60	466.49	338.70	126.79	54.94
1101	1.40	466.49	323.20	143.29	62.09
1103	5.00	635.03	346.40	288.63	125.07
1104	0.40	466.49	285.50	180.99	78.43
1107	2.90	396.58	211.40	185.18	80.25
1120	1.40	396.87	222.90	173.97	75.39
1121	2.00	396.27	205.30	190.97	82.75
1122	0.70	396.27	204.40	191.87	83.14
1125	1.80	396.56	205.00	191.56	83.01
1130	5.20	396.57	225.00	171.57	74.35
1134	6.50	397.32	202.90	194.42	84.25
1137	3.90	396.79	202.10	194.69	84.36
1156	5.60	396.86	184.90	211.96	91.85
1180	3.60	397.23	195.40	201.83	87.46
1181	3.20	396.89	186.00	210.89	91.38
1183	1.80	397.05	190.20	206.85	89.63
1184	5.40	396.41	188.70	206.71	89.58
1186	3.10	396.87	191.30	205.57	89.08
1210	4.10	397.41	215.60	181.81	78.78
1211	0.20	635.08	564.40	70.68	30.63
1214	1.80	635.20	607.60	27.60	11.96
1215	1.60	396.31	200.80	195.51	84.72
1217	3.70	396.27	207.80	188.47	81.67
1218	5.90	397.49	217.60	179.89	77.95
1223	2.40	396.94	187.20	209.74	90.89
1224	3.50	396.92	187.60	209.32	90.71
1229	3.50	396.92	224.40	172.52	74.76
1232	6.20	396.87	183.90	212.97	92.29
1235	4.80	396.44	197.20	199.24	86.34
1239	1.60	466.49	265.90	200.59	86.92
1240	0.10	635.20	608.90	26.30	11.40
1244	4.80	635.47	591.00	44.47	19.27
1251	5.80	635.58	622.30	13.28	5.76
1262	0.30	608.48	349.90	258.58	112.05
1270	1.60	396.88	184.30	212.58	92.12
1277	6.30	608.48	340.00	268.48	116.34
1284	4.50	397.36	224.00	173.36	75.12
1290	6.00	396.55	207.20	189.35	82.05
1293	3.10	396.55	206.60	189.95	82.31

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2020 Fireflow - High Level Zone

1295	3.70	396.49	200.40	196.09	84.97
1298	0.60	396.87	224.20	172.67	74.82
1309	6.10	396.39	185.00	211.39	91.60
1310	4.80	396.47	184.40	212.07	91.90
1314	3.90	396.37	183.00	213.37	92.46
1318	3.40	397.00	221.20	175.80	76.18
1322	2.90	396.74	194.60	202.14	87.60
1328	3.00	396.59	192.30	204.29	88.53
1333	2.90	396.92	191.30	205.62	89.10
1337	3.30	396.91	192.80	204.11	88.45
1338	7.40	396.87	257.70	139.17	60.31
1356	2.10	396.89	190.80	206.09	89.31
1359	0.70	396.92	193.30	203.62	88.23
1364	2.80	396.84	193.90	202.94	87.94
1366	4.30	396.56	190.60	205.96	89.25
1375	8.10	396.05	168.30	227.75	98.69
1387	2.60	396.31	182.40	213.91	92.69
1388	4.90	396.83	200.40	196.43	85.12
1392	4.20	397.06	220.30	176.76	76.59
1396	2.50	396.79	308.10	88.69	38.43
1409	4.80	396.83	222.20	174.63	75.67
1410	1.70	608.58	392.50	216.08	93.63
1456	2.70	396.52	183.20	213.32	92.44
1465	2.70	396.85	235.70	161.15	69.83
1483	4.90	396.44	193.40	203.04	87.98
1484	11.60	396.47	183.60	212.87	92.24
1497	2.20	396.45	167.20	229.25	99.34
1498	1.30	608.48	396.40	212.08	91.90
1502	3.20	608.48	385.30	223.18	96.71
1513	0.60	608.48	338.40	269.08	116.60
1517	4.50	396.53	205.40	191.13	82.82
1519	0.80	396.52	211.30	185.22	80.26
1524	1.00	635.11	615.60	19.51	8.45
1544	13.70	397.32	194.80	202.52	87.76
1547	11.00	397.32	208.00	189.32	82.04
1570	8.10	397.23	200.80	196.43	85.12
1575	6.50	396.46	171.60	224.86	97.44
1576	1.40	398.45	253.70	144.75	62.73
1580	1.50	398.45	245.80	152.65	66.15
1626	15.50	398.91	272.90	126.01	54.60
1627	9.10	399.66	289.00	110.66	47.95
1630	24.30	398.52	266.70	131.82	57.12
1636	155.80	397.75	245.70	152.05	65.89
1637	21.10	397.98	249.10	148.88	64.51
1647	21.50	397.81	236.20	161.61	70.03
1648	21.70	396.44	187.30	209.14	90.63
1657	5.80	396.46	163.30	233.16	101.03
1658	5.80	396.73	185.90	210.83	91.36
1674	6.70	396.49	178.00	218.49	94.68
1679	2.60	466.49	317.70	148.79	64.48
1689	2.50	466.49	323.60	142.89	61.92
1690	0.40	466.49	318.70	146.79	63.61
1698	4.30	398.45	256.80	141.65	61.38
1699	4.70	397.80	218.90	178.90	77.52
1700	2.20	397.80	216.20	181.60	78.69
1710	3.00	397.86	303.90	93.96	40.72
1711	0.60	397.34	208.80	187.54	81.27
1712	1.40	397.34	268.50	128.84	55.83
1713	1.30	635.08	571.10	63.98	27.73
1716	5.90	635.06	533.50	101.56	44.01
1719	0.50	635.06	516.50	118.56	51.38
1737	5.10	396.08	166.60	229.48	99.44
1742	8.10	396.47	183.60	212.87	92.24
1767	3.10	396.86	193.40	203.46	88.16
1773	3.40	399.55	272.20	127.35	55.18
1775	1.50	399.55	270.10	129.45	56.09
1776	4.00	399.55	269.20	130.35	56.48
1782	7.40	399.55	269.10	130.45	56.53
1788	5.20	399.55	269.00	130.55	56.57
1791	0.70	399.55	273.40	126.15	54.66
1793	0.90	399.55	270.60	128.95	55.88
1799	2.50	399.11	201.40	197.71	85.68
1800	2.20	396.69	166.10	230.59	99.92
1801	0.70	396.69	173.70	222.99	96.63
1805	2.10	396.69	178.70	216.99	94.03
1806	1.20	396.69	173.10	223.59	96.89
1808	1.10	396.69	178.80	216.89	93.99
1809	2.00	396.69	172.30	224.39	97.24
1810	3.60	396.70	178.50	217.20	94.12
1813	2.80	396.69	171.10	225.59	97.76
1814	4.80	396.69	167.10	229.59	99.49
1818	1.50	396.65	160.70	235.95	102.25
1821	4.10	396.70	168.80	226.90	98.32
1823	2.70	396.88	182.50	214.38	92.90
1826	3.10	396.92	183.30	213.62	92.57
1827	5.70	396.95	192.90	204.05	88.42
1831	1.70	397.75	234.10	163.65	70.91
1948	0.90	397.29	234.90	162.39	70.37
1960	3.80	397.61	237.60	160.01	69.34
1961	2.80	397.07	190.10	206.97	89.69
1968	0.40	396.08	164.90	231.18	100.18
1971	0.10	397.27	185.30	211.97	91.85
1973	2.40	396.55	198.40	198.15	85.86
1974	3.90	396.57	187.50	209.07	90.60
1975	3.80	396.56	186.60	209.96	90.98
1980	1.50	396.56	180.20	216.36	93.76
1981	1.10	396.61	183.10	213.51	92.52
1984	3.20	396.83	194.10	202.73	87.85
1985	0.20	396.67	195.20	201.47	87.30
1986	3.40	396.67	194.50	202.17	87.61
1987	3.30	396.55	198.50	198.05	85.82
1988	0.10	396.82	218.50	177.32	76.84
1989	1.20	396.82	222.30	174.52	75.63
1991	2.80	396.84	194.20	202.64	87.81
1994	0.60	396.78	190.70	206.08	89.30

2020 Fireflow - High Level Zone

1996	3.50	396.88	189.80	207.08	89.73
1997	3.40	396.91	191.50	205.41	89.01
2003	2.70	396.41	185.20	211.21	91.52
2007	2.50	396.96	200.60	196.36	85.09
2009	3.30	396.93	196.90	200.03	86.68
2010	3.90	397.02	191.70	205.32	88.97
2012	3.40	397.11	199.00	198.11	85.85
2013	2.90	396.89	200.10	196.79	85.28
2014	4.80	396.87	193.20	203.67	88.26
2016	4.50	396.88	222.30	174.58	75.65
2021	0.70	397.32	204.20	193.12	83.69
2023	0.50	396.27	206.90	189.37	82.06
2025	1.90	608.47	455.60	152.87	66.25
2028	1.10	608.46	520.90	87.56	37.94
2029	1.00	608.47	449.00	159.47	69.11
2030	0.60	608.47	460.10	148.37	64.29
2031	2.40	608.48	430.90	177.58	76.95
2032	0.70	608.47	484.00	124.47	53.94
2033	1.70	608.48	474.20	134.28	58.19
2047	0.60	466.49	309.00	157.49	68.25
2050	0.10	466.49	301.10	165.39	71.67
2051	0.00	397.56	229.60	167.96	72.78
2052	0.00	397.56	229.90	167.66	72.65
2053	3.60	397.49	220.60	176.89	76.65
2061	0.90	397.44	208.20	189.24	82.00
2063	6.30	397.32	205.00	192.32	83.34
2065	4.60	397.11	198.90	198.21	85.89
2066	3.40	397.70	222.20	175.50	76.05
2067	6.80	397.69	216.20	181.49	78.65
2072	6.50	397.80	221.90	175.90	76.22
2073	2.50	396.95	199.80	197.15	85.43
2074	4.00	397.80	220.90	176.90	76.66
2076	6.80	396.40	204.40	192.00	83.20
2078	3.20	396.82	199.20	197.62	85.63
2079	3.50	396.80	203.10	193.70	83.94
2080	4.10	396.59	191.60	204.99	88.83
2081	3.60	396.56	198.70	197.86	85.74
2083	6.90	396.78	255.40	141.38	61.27
2084	4.60	396.78	224.10	172.68	74.83
2086	4.70	397.46	230.30	167.16	72.44
2088	7.30	635.11	604.50	30.61	13.26
2090	7.80	608.52	391.30	217.22	94.13
2091	4.00	396.65	195.30	201.35	87.25
2092	2.00	398.45	251.60	146.85	63.64
2093	5.00	397.02	236.00	161.02	69.77
2094	5.60	396.93	188.50	208.43	90.32
2095	3.90	396.94	187.60	209.34	90.71
2096	2.70	396.93	196.50	200.43	86.85
2097	4.10	396.94	202.50	194.44	84.26
2098	4.30	396.51	202.10	194.41	84.25
2100	5.60	396.50	197.30	199.20	86.32
2101	6.60	396.80	270.60	126.20	54.69
2103	7.10	396.80	236.90	159.90	69.29
2104	3.20	397.32	200.50	196.82	85.29
2105	4.60	396.81	201.90	194.91	84.46
2106	2.20	396.56	192.10	204.46	88.60
2107	5.20	396.75	190.50	206.25	89.38
2109	3.80	397.03	190.80	206.23	89.37
2110	2.90	396.91	192.70	204.21	88.49
2111	2.60	396.92	191.00	205.92	89.23
2112	5.40	397.00	190.20	206.80	89.61
2113	4.50	397.10	195.50	201.60	87.36
2115	3.80	396.76	191.90	204.86	88.77
2117	3.30	397.28	217.50	179.78	77.91
2119	5.80	396.44	193.60	202.84	87.90
2120	3.10	466.49	268.60	197.89	85.75
2121	2.80	396.86	193.00	203.86	88.34
2122	4.80	396.47	183.70	212.77	92.20
2123	3.40	396.89	193.20	203.69	88.27
2125	1.00	396.55	206.20	190.35	82.49
2126	2.20	396.86	192.50	204.36	88.56
2127	6.90	396.34	203.70	192.64	83.48
2129	3.80	397.47	218.10	179.37	77.73
2130	3.00	396.55	198.00	198.55	86.04
2132	1.80	397.56	230.10	167.46	72.57
2133	3.40	635.05	578.00	57.05	24.72
2137	4.50	397.11	198.20	198.91	86.19
2138	6.20	397.20	221.50	175.70	76.14
I-18th St	0.00	397.35	218.20	179.15	77.63
O-18th St	0.00	397.35	218.20	179.15	77.63
3-in or sm	0.10	397.37	185.50	211.87	91.81
3-inch or	0.30	396.69	183.00	213.69	92.60
3-inch or	0.10	396.61	183.10	213.51	92.52
O-AV-1	0.00	396.78	283.80	112.98	48.96
I-AV-2	0.00	608.19	306.00	302.19	130.95
I-AV-3	0.00	466.49	253.40	213.09	92.34
O-AV-4	0.00	396.65	289.30	107.35	46.52
O-AV-5	0.00	397.35	225.30	172.05	74.56
O-AV-6	0.00	397.32	208.10	189.22	82.00
O-Centrali	----	541.19	333.50	207.69	90.00
O-Fairview	Fairview PRV	466.50	346.50	120.00	52.00
O-High Lev	High Level P	611.95	401.60	210.35	91.15
High Level	High Level R	605.00	605.00	0.00	0.00
Hillcrest		398.26	256.20	142.06	61.56
inter-tie		397.32	174.40	222.92	96.60
J-1		396.48	174.00	222.48	96.41
J-100		396.61	190.60	206.01	89.27
J-105		396.48	175.60	220.88	95.72
J-106		396.56	206.20	190.36	82.49
J-11		494.88	280.00	214.88	93.12
J-110		396.59	198.00	198.59	86.06
J-111		396.52	192.50	204.02	88.41
J-112		396.69	167.90	228.79	99.14
J-113		396.80	200.50	196.30	85.06
J-114		608.16	405.70	202.46	87.73

2020 Fireflow - High Level Zone

J-115		1.90	396.91	197.30	199.61	86.50
J-116		1.90	396.93	207.10	189.83	82.26
J-117		1.70	396.86	192.10	204.76	88.73
J-120		2.40	396.85	237.50	159.35	69.05
J-122		2.50	396.48	174.00	222.48	96.41
J-123		0.40	396.54	224.70	171.84	74.46
J-124		2.10	608.48	403.80	204.68	88.69
J-125		2.00	608.67	383.00	225.67	97.79
J-126		3.30	400.83	367.95	32.88	14.25
J-127		22.40	397.75	225.20	172.55	74.77
J-128		14.50	397.75	235.20	162.55	70.44
J-129		8.40	396.50	184.80	211.70	91.74
J-130		3.80	397.70	222.00	175.70	76.14
J-131		0.60	608.48	418.00	190.48	82.54
J-132		2.20	396.48	176.00	220.48	95.54
J-133		0.90	608.48	339.60	268.88	116.52
J-134		1.10	397.33	200.90	196.43	85.12
J-135		3.50	399.56	288.30	111.26	48.21
J-136		0.80	396.27	204.10	192.17	83.27
J-138		1.00	396.54	219.60	176.94	76.67
J-139		0.40	397.35	222.60	174.75	75.73
J-140		0.50	396.54	218.20	178.34	77.28
J-141		0.40	396.41	200.90	195.51	84.72
J-142		0.20	397.35	218.20	179.15	77.63
J-143		11.70	396.38	193.40	202.98	87.96
J-144		1.90	397.23	193.40	203.83	88.33
J-145		0.10	396.54	218.20	178.34	77.28
J-146		0.00	396.54	218.20	178.34	77.28
J-147		0.00	397.35	218.20	179.15	77.63
J-148		3.50	539.78	498.90	40.88	17.71
J-149		3.70	494.10	306.10	188.00	81.47
J-150		5.90	494.79	272.40	222.39	96.37
J-151		13.60	494.35	326.80	167.55	72.60
J-152		6.30	494.79	272.40	222.39	96.37
J-153		137.00	494.10	302.40	191.70	83.07
J-154		6.10	494.79	267.60	227.19	98.45
J-155		17.50	494.46	263.80	230.66	99.95
J-156		19.80	494.54	261.30	233.24	101.07
J-157		1.80	494.38	265.80	228.58	99.05
J-159		0.00	608.48	343.00	265.48	115.04
J-2		5.70	396.53	201.80	194.73	84.38
J-20		2.20	396.62	182.90	213.72	92.61
J-21		2.50	396.67	182.80	213.87	92.68
J-25		5.00	608.49	311.10	297.39	128.87
J-27		4.20	397.26	207.10	190.16	82.40
J-3		3.40	396.56	182.20	214.36	92.89
J-30		7.70	397.71	218.90	177.81	77.05
J-35		8.20	397.80	222.10	175.70	76.14
J-39		4.10	397.19	218.10	179.09	77.61
J-4		2.50	396.59	184.40	212.19	91.95
J-42		6.00	397.80	222.00	175.80	76.18
J-44		6.20	397.43	208.40	189.03	81.91
J-45		4.20	397.44	209.00	188.44	81.66
J-53		9.60	397.86	294.30	103.56	44.88
J-55		2.60	397.67	297.10	100.57	43.58
J-57		1.20	397.56	229.20	168.36	72.96
J-58		1.50	396.28	204.60	191.68	83.06
J-6		3.50	540.96	473.40	67.56	29.27
J-61		4.20	396.27	207.00	189.27	82.02
J-62		1.10	396.38	191.50	204.88	88.78
J-63		1.40	396.54	225.20	171.34	74.25
J-64		4.10	396.41	202.30	194.11	84.11
J-67		2.20	397.34	210.80	186.54	80.84
J-7		3.50	397.21	214.70	182.51	79.09
J-71		2.30	397.34	204.60	192.74	83.52
J-73		6.40	397.33	199.60	197.73	85.68
J-74		1.10	466.49	301.00	165.49	71.71
J-77		0.60	466.49	296.10	170.39	73.84
J-78		5.20	396.65	230.70	165.95	71.91
J-79		2.80	396.63	223.40	173.23	75.07
J-8		6.50	397.26	208.80	188.46	81.67
J-80		5.00	396.40	190.70	205.70	89.14
J-81		6.70	396.80	218.90	177.90	77.09
J-82		6.60	396.79	257.90	138.89	60.18
J-84		2.30	397.35	226.30	171.05	74.12
J-87		4.20	396.80	194.40	202.40	87.71
J-88		21.30	494.88	275.70	219.18	94.98
J-90		0.10	397.80	219.10	178.70	77.44
J-91		9.80	400.17	352.90	47.27	20.48
J-93		1.70	397.27	187.50	209.77	90.90
J-94		3.70	397.26	187.50	209.76	90.90
J-95		13.30	397.34	189.50	207.84	90.07
J-96		6.50	397.32	176.90	220.42	95.52
J-99		1.10	396.55	205.50	191.05	82.79
Kennicott	Kennicott Re	----	397.90	374.00	23.90	10.36
Main Reser	Main Reservo	----	401.50	383.30	18.20	7.89
physical d		0.10	396.94	222.00	174.94	75.81
I-RV-1		0.00	397.23	193.40	203.83	88.33
I-RV-2		0.00	396.41	200.90	195.51	84.72
O-South En		----	495.59	287.90	207.69	90.00
O-Valley V	Valley View	0.00	635.90	308.10	327.80	142.05
Yankis (Va	Yankis (Vall	----	635.90	631.50	4.40	1.91
Yates Rese	500,000 gal	----	401.50	376.00	25.50	11.05
O-18th St		----	396.54	218.20	178.34	77.28
I-18th St		0.00	396.54	218.20	178.34	77.28
I-AV-1		0.00	608.16	283.80	324.36	140.56
O-AV-2		0.00	396.78	306.00	90.78	39.34
O-AV-3		0.00	397.36	253.40	143.96	62.38
I-AV-4		0.00	608.48	289.30	319.18	138.31
I-AV-5		0.00	396.54	225.30	171.24	74.20
I-AV-6		0.00	396.27	208.10	188.17	81.54
I-Central1		0.00	494.05	333.50	160.55	69.57
I-Fairview	Fairview PRV	0.00	635.03	346.50	288.53	125.03
I-High Lev	High Level P	0.00	388.80	401.60	-12.80	-5.55
O-RV-1		----	396.38	193.40	202.98	87.96

2020 Fireflow - High Level Zone

O-RV-2		----	397.33	200.90	196.43	85.12
I-South En		0.00	399.55	287.90	111.65	48.38
I-Valley V	Valley View	0.00	396.79	308.10	88.69	38.43

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
O-Valley Vie	142.05	I-High Level	-5.55
I-AV-1	140.56	Yankis (Vall)	1.91
I-AV-4	138.31	1251	5.76
642	131.61	Main Reservo	7.89
I-AV-2	130.95	1524	8.45

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
905	4.08	85	0.00
P-86	4.08	24	0.00
P-122	3.46	45	0.00
P-15	2.70	46	0.00
1479	2.29	P-117	0.00

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
905	30.96	45	0.00
P-86	30.96	46	0.00
P-122	6.03	P-117	0.00
1962	4.29	24	0.00
2173	4.05	85	0.00

HL / 1000

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
905	30.96	45	0.00
P-86	30.96	46	0.00
P-122	6.03	P-117	0.00
1962	4.29	24	0.00
2173	4.05	85	0.00

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
18th St PRV	PRV-1	74.30	CLOSED	77.63	77.28	0.00
18th St Pump	FCV-2	0.00	BOOSTED	77.28	77.63	0.00
Centralia Al	PRV-2	90.00	BOOSTED	69.57	90.00	7.00
Fairview PRV	PRV-1	52.00	ACTIVATED	125.03	52.00	15.00
High Level P	FCV-2	360.00	BOOSTED	-5.55	91.15	360.00
RV-1	PRV-1	85.00	CLOSED	88.33	87.96	0.00
RV-2	PRV-1	81.80	CLOSED	84.72	85.12	0.00
South End Pu	PRV-2	90.00	BOOSTED	48.38	90.00	242.80
Valley View	FCV-2	0.00	BOOSTED	38.43	142.05	0.00

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
High Level	-269.90	High Level R
Kennicott R	227.72	Kennicott Re
Main Reserv	1658.10	Main Reservo
Yankis (Val)	75.00	Yankis (Vall)
Yates Reser	808.58	500,000 gal

NET SYSTEM INFLOW = 2769.40
 NET SYSTEM OUTFLOW = -269.90
 NET SYSTEM DEMAND = 2499.50

=====
 FireFlow/Hydrant Report
 Fireflow/Hydrant Report:

Scenario: No Title
 Global Demand Factor for this Scenario: 1.000

Specified Minimum Pressure(psi): 20.0



Minimum Static Pressure (psi) : 21.0

Flow-1: Flowrate to maintain the specified
pressure at (hydrant) node
Node-2: Node that has a lower pressure than
specified value at Flow-1
Flow-2: Flowrate to maintain the specified
pressure at Node-2

Hose Constant = 0.00

Hydrant Node	Hydrant Constant	Elevation	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2 gpm	Flow Capacity	NFPA Color
H-451	0.0	346.6	113.3	396.0			396.0	RED
H-462	0.0	436.4	74.5	674.1	615.6	632	615.6	ORANGE
H-461	0.0	345.7	113.8	914.3	633.4	632	633.4	ORANGE
H-401	0.0	456.0	66.0	471.9			471.9	RED
H-354	0.0	435.8	74.7	551.3	503.2	1032	503.2	ORANGE
H-297	0.0	321.7	124.3	2438.0	1020.3	2028	1020.3	GREEN
H-294	0.0	311.5	128.7	2317.7	939.5	2028	939.5	ORANGE
H-246	0.0	330.5	120.5	1551.1	904.3	2028	904.3	ORANGE
H-245	0.0	319.7	125.1	1290.0	904.3	2028	904.3	ORANGE
H-296	0.0	392.5	93.6	1994.2	1233.4	2028	1233.4	GREEN
H-458	0.0	413.0	84.6	515.9	507.8	1032	507.8	ORANGE
H-460	0.0	437.6	73.9	575.6	532.0	1032	532.0	ORANGE
H-295	0.0	338.9	116.8	2452.4	1072.6	2028	1072.6	GREEN
H-201	0.0	386.9	96.0	1699.5	814.3	2028	814.3	ORANGE

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 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

REGULATING VALVE DATA

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
18th St PRV	PRV-1	389.66
18th St Pump	Const_FLOW_Pump	0.00
Centralia Al	Const_HEAD_Pump	541.19
Fairview PRV	PRV-1	466.50
High Level P	Const_FLOW_Pump	0.00
RV-1	PRV-1	389.55
RV-2	PRV-1	389.67
South End Pu	Const_HEAD_Pump	495.59
Valley View	Const_FLOW_Pump	0.00

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1	NODE NAMES #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
3	5	6	24.78	10.00	90.0000	0.00
5	9	10	824.44	6.00	90.0000	0.00
6	11	12	38.56	8.00	90.0000	0.00
7	13	872	38.38	6.00	75.0000	0.00
8	15	16	7.84	6.00	90.0000	0.00
10	18	19	437.00	2.00	140.0000	0.00
12	22	23	750.00	8.00	115.0000	0.00
13	24	1524	360.61	4.00	115.0000	0.00
14	26	J-55	539.97	8.00	115.0000	0.00
16	28	29	217.00	4.00	115.0000	0.00
17	31	32	723.00	2.00	113.0723	0.00
21	37	38	170.42	4.00	75.0000	0.00
22	2014	40	325.43	8.00	115.0000	0.00
23	41	1699	28.75	12.00	115.0000	0.00
24	43	213	42.27	12.00	115.0000	0.00
26	47	48	173.64	4.00	115.0000	0.00
27	49	50	310.00	10.00	115.0000	0.00
28	51	52	222.00	8.00	115.0000	0.00
32	59	60	108.37	6.00	75.0000	0.00
35	65	66	295.51	6.00	75.0000	0.00
37	68	69	412.00	8.00	115.0000	0.00
38	52	70	245.00	6.00	115.0000	0.00
39	Hillcrest	72	81.50	4.00	115.0000	0.00
41	75	76	3275.00	12.00	130.0000	0.00
45	83	2066	32.96	12.00	130.0000	0.00
46	85	86	33.07	12.00	130.0000	0.00
52	97	98	74.85	8.00	130.0000	0.00
55	102	103	68.31	8.00	130.0000	0.00
56	104	1810	34.98	12.00	130.0000	0.00
59	107	108	7.82	12.00	130.0000	0.00
60	109	J-53	785.00	16.00	115.0000	0.00
66	118	J-91	2359.00	14.00	90.0000	0.00
68	119	121	704.00	14.00	75.0000	0.00
70	121	860	23.71	14.00	75.0000	0.00
72	118	1799	900.00	8.00	130.0000	0.00
85	physical d	396	23.76	14.00	75.0000	0.00
107	J-91	2067	949.00	14.00	75.0000	0.00
109	325	34	484.84	12.00	115.0000	0.00
110	2122	166	948.74	12.00	115.0000	0.00
112	166	962	902.00	12.00	115.0000	0.00
114	569	962	308.00	12.00	115.0000	0.00
115	569	665	1519.00	12.00	115.0000	0.00
118	172	J-105	650.00	12.00	115.0000	0.00
120	175	178	251.61	12.00	115.0000	0.00
123	178	1826	444.69	12.00	115.0000	0.00
126	1826	1827	278.93	12.00	115.0000	0.00
129	1827	192	1658.25	12.00	115.0000	0.00

2020 Peak Hour Demand

137	192	201	248.00	12.00	115.0000	0.00
139	201	137	409.00	12.00	115.0000	0.00
141	15	137	446.49	12.00	115.0000	0.00
142	15	J-95	1949.78	12.00	115.0000	0.00
145	201	J-93	562.05	12.00	90.0000	0.00
155	212	213	677.50	12.00	115.0000	0.00
156	214	26	1649.00	12.00	115.0000	0.00
163	2072	224	1245.00	12.00	115.0000	0.00
187	248	253	1835.17	12.00	130.0000	0.00
192	254	J-127	1507.19	12.00	130.0000	0.00
262	325	1575	908.76	12.00	115.0000	0.00
279	343	344	127.52	12.00	130.0000	0.00
280	344	342	115.85	12.00	130.0000	0.00
282	342	346	192.42	12.00	130.0000	0.00
283	86	J-130	1344.24	12.00	130.0000	0.00
292	356	361	2280.98	10.00	90.0000	0.00
298	32	J-7	60.00	10.00	90.0000	0.00
302	32	480	930.34	10.00	90.0000	0.00
318	384	385	126.00	10.00	115.0000	0.00
319	356	2074	983.94	10.00	90.0000	0.00
320	356	41	37.27	10.00	90.0000	0.00
329	396	398	31.65	10.00	75.0000	0.00
331	398	1409	306.52	10.00	75.0000	0.00
340	407	408	647.97	10.00	75.0000	0.00
353	661	2119	350.44	6.00	75.0000	0.00
355	424	1648	189.00	10.00	90.0000	0.00
363	295	468	3228.55	10.00	130.0000	0.00
398	172	473	539.00	12.00	115.0000	0.00
403	474	480	672.00	8.00	90.0000	0.00
411	J-45	2129	770.00	8.00	90.0000	0.00
414	1217	1121	284.43	6.00	90.0000	0.00
417	492	1235	414.07	8.00	75.0000	0.00
429	505	509	502.00	8.00	75.0000	0.00
433	510	512	462.00	8.00	115.0000	0.00
435	513	1057	1078.98	8.00	75.0000	0.00
440	518	J-94	278.47	8.00	75.0000	0.00
448	92	1184	943.86	8.00	115.0000	0.00
451	530	119	42.30	8.00	75.0000	0.00
452	119	536	464.52	8.00	75.0000	0.00
458	536	2079	637.02	8.00	75.0000	0.00
461	540	2079	30.24	8.00	75.0000	0.00
464	544	543	465.44	8.00	75.0000	0.00
472	552	J-100	98.00	8.00	75.0000	0.00
476	I-AV-1	J-114	1506.58	4.00	90.0000	0.00
486	569	573	476.00	8.00	115.0000	0.00
490	385	166	264.00	8.00	140.0000	0.00
495	579	J-138	330.16	8.00	115.0000	0.00
497	582	584	548.98	8.00	115.0000	0.00
503	590	J-73	801.25	8.00	75.0000	0.00
511	599	601	450.87	8.00	115.0000	0.00
526	599	619	720.36	8.00	115.0000	0.00
531	620	623	618.14	8.00	115.0000	0.00
538	628	631	136.23	8.00	90.0000	0.00
541	632	1049	299.05	8.00	90.0000	0.00
547	631	642	578.19	8.00	90.0000	0.00
552	High Level	2090	1103.00	8.00	90.0000	0.00
565	509	661	1328.00	8.00	75.0000	0.00
569	597	1284	174.94	8.00	90.0000	0.00
571	46	2086	497.00	8.00	90.0000	0.00
574	665	668	872.08	8.00	115.0000	0.00
577	668	675	492.96	8.00	115.0000	0.00
584	676	J-27	893.25	8.00	90.0000	0.00
590	54	682	182.20	8.00	90.0000	0.00
591	683	J-95	505.00	8.00	90.0000	0.00
593	686	J-78	241.00	8.00	90.0000	0.00
597	408	J-79	21.00	8.00	75.0000	0.00
601	361	1960	1287.07	8.00	90.0000	0.00
612	705	710	248.15	8.00	115.0000	0.00
617	717	1134	965.00	8.00	115.0000	0.00
623	718	247	34.04	8.00	75.0000	0.00
630	424	726	91.39	8.00	75.0000	0.00
632	726	J-80	386.08	8.00	75.0000	0.00
652	468	780	2846.84	8.00	130.0000	0.00
684	781	2092	25.00	8.00	115.0000	0.00
686	784	1698	594.45	8.00	115.0000	0.00
690	788	791	1019.18	8.00	115.0000	0.00
693	792	791	123.52	8.00	115.0000	0.00
697	797	784	720.40	8.00	115.0000	0.00
700	800	802	282.00	6.00	130.0000	0.00
702	803	1465	267.21	6.00	75.0000	0.00
706	808	2009	929.18	6.00	75.0000	0.00
710	813	815	302.18	6.00	75.0000	0.00
712	121	2093	46.99	6.00	75.0000	0.00
714	2094	40	934.76	4.00	75.0000	0.00
723	828	2096	426.19	6.00	75.0000	0.00
726	544	831	72.71	6.00	75.0000	0.00
727	831	530	335.47	6.00	75.0000	0.00
735	831	1989	226.92	6.00	75.0000	0.00
739	842	844	615.87	6.00	75.0000	0.00
741	844	817	669.95	6.00	75.0000	0.00
749	856	J-115	240.00	6.00	75.0000	0.00
751	2078	14	273.95	6.00	75.0000	0.00
753	860	2097	569.00	6.00	75.0000	0.00
757	865	868	222.76	6.00	75.0000	0.00
760	868	J-113	502.26	6.00	75.0000	0.00
762	868	872	205.21	6.00	75.0000	0.00
772	881	2098	449.61	6.00	75.0000	0.00
776	885	J-111	304.95	6.00	75.0000	0.00
784	893	J-106	418.44	6.00	75.0000	0.00
785	893	J-110	416.57	6.00	75.0000	0.00
789	66	899	48.00	6.00	75.0000	0.00
791	899	901	175.00	6.00	75.0000	0.00
793	901	1742	1127.00	6.00	75.0000	0.00
797	906	910	180.00	6.00	75.0000	0.00
801	910	38	116.53	6.00	75.0000	0.00

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807	842	2084	314.93	6.00	75.0000	0.00
812	916	922	348.45	6.00	75.0000	0.00
814	923	J-20	569.59	6.00	75.0000	0.00
817	J-21	929	248.00	6.00	75.0000	0.00
823	J-2	937	870.00	6.00	75.0000	0.00
825	J-2	556	502.00	6.00	75.0000	0.00
831	945	2080	473.03	6.00	75.0000	0.00
839	954	2081	460.04	6.00	75.0000	0.00
846	962	964	82.58	6.00	115.0000	0.00
858	1387	1314	65.93	4.00	75.0000	0.00
861	108	104	599.00	6.00	90.0000	0.00
867	958	J-110	1002.00	6.00	75.0000	0.00
874	994	65	736.58	6.00	75.0000	0.00
876	65	1986	656.95	6.00	75.0000	0.00
883	1003	1023	424.00	6.00	90.0000	0.00
903	1024	J-125	363.09	6.00	90.0000	0.00
905	O-High Lev	649	101.61	6.00	75.0000	0.00
910	1024	628	642.00	6.00	90.0000	0.00
912	1032	1003	811.00	6.00	90.0000	0.00
930	1050	1053	1269.52	6.00	90.0000	0.00
933	384	2100	964.00	6.00	75.0000	0.00
936	1057	16	435.81	6.00	90.0000	0.00
938	1060	1063	225.00	6.00	115.0000	0.00
941	1064	J-129	956.67	6.00	90.0000	0.00
948	1071	526	308.78	6.00	90.0000	0.00
949	526	1084	2823.47	6.00	75.0000	0.00
962	1085	1337	588.12	6.00	75.0000	0.00
966	1099	J-78	1370.13	6.00	90.0000	0.00
975	1100	1101	228.75	6.00	90.0000	0.00
976	O-Fairview	1101	118.14	6.00	90.0000	0.00
982	2103	J-81	265.32	6.00	75.0000	0.00
993	1121	1122	255.49	6.00	90.0000	0.00
994	2076	2127	300.30	6.00	75.0000	0.00
1000	1130	1125	650.51	6.00	75.0000	0.00
1001	2104	J-73	623.72	6.00	75.0000	0.00
1003	1134	2104	238.99	6.00	75.0000	0.00
1004	509	1290	478.00	6.00	75.0000	0.00
1007	1137	2105	327.02	6.00	75.0000	0.00
1009	1388	2013	267.00	6.00	75.0000	0.00
1012	2106	2107	591.74	6.00	75.0000	0.00
1014	510	23	924.74	6.00	75.0000	0.00
1017	2137	2109	470.82	6.00	75.0000	0.00
1019	2084	2109	326.70	6.00	75.0000	0.00
1020	2094	23	140.75	6.00	75.0000	0.00
1023	1156	23	477.86	6.00	75.0000	0.00
1024	2096	2073	229.38	6.00	75.0000	0.00
1025	2110	2096	273.09	6.00	75.0000	0.00
1026	2110	1997	279.58	6.00	75.0000	0.00
1028	1997	2111	244.00	6.00	75.0000	0.00
1030	2111	2112	268.86	6.00	75.0000	0.00
1032	1961	2113	418.00	6.00	75.0000	0.00
1035	704	1961	270.90	6.00	75.0000	0.00
1036	2109	1961	297.09	6.00	75.0000	0.00
1037	2010	2014	642.00	6.00	75.0000	0.00
1040	2012	2013	328.33	6.00	75.0000	0.00
1041	2065	2012	308.00	6.00	75.0000	0.00
1042	2137	2065	296.00	6.00	75.0000	0.00
1043	2113	2137	300.18	6.00	75.0000	0.00
1044	2113	1180	266.89	6.00	75.0000	0.00
1046	1181	22	93.00	6.00	75.0000	0.00
1047	2095	22	173.00	6.00	75.0000	0.00
1048	726	1184	40.06	8.00	115.0000	0.00
1051	1186	1996	269.43	6.00	75.0000	0.00
1053	827	1232	1143.25	6.00	75.0000	0.00
1058	1232	1156	597.28	6.00	75.0000	0.00
1060	1156	512	927.21	6.00	75.0000	0.00
1062	512	2107	783.40	6.00	75.0000	0.00
1064	2115	2107	155.32	6.00	75.0000	0.00
1069	2117	2065	579.53	6.00	75.0000	0.00
1071	2137	1210	580.23	6.00	75.0000	0.00
1074	1211	1713	81.79	6.00	115.0000	0.00
1076	24	1713	223.00	6.00	115.0000	0.00
1077	1215	J-58	327.00	6.00	75.0000	0.00
1078	68	1217	692.94	6.00	115.0000	0.00
1080	1218	2112	1049.55	6.00	75.0000	0.00
1083	2112	1223	326.05	6.00	75.0000	0.00
1085	1224	2111	321.86	6.00	75.0000	0.00
1087	1085	1333	418.92	6.00	75.0000	0.00
1088	1085	808	427.58	6.00	75.0000	0.00
1090	808	1229	207.76	6.00	75.0000	0.00
1091	1232	1181	476.00	6.00	75.0000	0.00
1094	1235	1483	375.00	6.00	75.0000	0.00
1095	2120	1104	147.00	6.00	90.0000	0.00
1096	2120	1239	581.73	6.00	115.0000	0.00
1099	1240	1214	42.84	6.00	115.0000	0.00
1100	1214	1244	471.00	6.00	115.0000	0.00
1103	1244	1251	558.00	6.00	115.0000	0.00
1110	Yankis (Va	1251	413.91	6.00	115.0000	0.00
1116	1513	J-25	173.82	8.00	130.0000	0.00
1117	1277	1396	339.91	6.00	90.0000	0.00
1118	1277	1262	90.18	6.00	90.0000	0.00
1120	657	J-25	1605.00	10.00	130.0000	0.00
1125	1181	1270	559.53	6.00	75.0000	0.00
1127	2103	1099	1495.62	6.00	75.0000	0.00
1132	1277	I-AV-4	889.11	6.00	90.0000	0.00
1138	693	579	860.83	6.00	75.0000	0.00
1140	1284	O-AV-3	362.05	6.00	90.0000	0.00
1146	1290	2119	1322.78	4.00	75.0000	0.00
1148	1293	1295	372.96	4.00	75.0000	0.00
1150	398	2016	65.54	6.00	75.0000	0.00
1152	1120	1298	198.66	6.00	75.0000	0.00
1154	432	1309	2165.00	6.00	90.0000	0.00
1165	1310	1314	1161.00	4.00	75.0000	0.00
1169	2127	J-61	967.64	4.00	75.0000	0.00
1171	1318	2105	578.38	4.00	75.0000	0.00

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1173	2105	1322	469.84	4.00	75.0000	0.00
1178	2115	40	301.65	4.00	75.0000	0.00
1179	2115	1328	589.61	4.00	75.0000	0.00
1182	803	J-81	638.00	4.00	75.0000	0.00
1185	1333	1337	528.94	4.00	75.0000	0.00
1189	1338	807	1527.54	4.00	75.0000	0.00
1193	518	192	70.97	4.00	75.0000	0.00
1195	192	1060	583.00	4.00	75.0000	0.00
1198	1060	705	1317.00	4.00	75.0000	0.00
1205	492	J-80	987.90	4.00	75.0000	0.00
1208	1356	828	273.00	4.00	75.0000	0.00
1210	1359	828	233.00	4.00	75.0000	0.00
1211	1364	1984	203.81	4.00	75.0000	0.00
1212	1364	1991	514.02	4.00	75.0000	0.00
1214	1364	2121	287.23	4.00	75.0000	0.00
1215	1366	36	660.16	4.00	75.0000	0.00
1217	1244	1251	681.00	6.00	115.0000	0.00
1226	1375	17	2480.00	4.00	90.0000	0.00
1236	17	1387	400.00	4.00	90.0000	0.00
1239	1388	1392	578.80	4.00	75.0000	0.00
1244	1314	33	129.52	4.00	90.0000	0.00
1245	937	1456	272.00	4.00	75.0000	0.00
1247	384	1456	264.58	4.00	75.0000	0.00
1248	1396I-Valley V		4.38	4.00	140.0000	0.00
1258	505	1409	1080.00	4.00	75.0000	0.00
1261	1410	657	558.39	4.00	90.0000	0.00
1269	1023	I-AV-2	712.27	4.00	90.0000	0.00
1309	1456	881	418.71	4.00	75.0000	0.00
1315	885	1056	245.12	4.00	90.0000	0.00
1319	1465	2103	636.67	4.00	75.0000	0.00
1322	509	407	820.07	4.00	75.0000	0.00
1330	693	492	1027.10	4.00	75.0000	0.00
1338	1295	1483	948.39	4.00	75.0000	0.00
1340	1484	899	1892.00	4.00	75.0000	0.00
1351	344	1497	767.00	4.00	130.0000	0.00
1354	1498	1502	449.05	8.00	130.0000	0.00
1358	1502	J-133	279.67	8.00	130.0000	0.00
1371	1517	1519	275.00	2.00	114.3142	0.00
1384	1544	J-95	2295.00	12.00	90.0000	0.00
1388	1547	1544	288.55	12.00	115.0000	0.00
1389	1547	J-96	1327.00	12.00	115.0000	0.00
1396	1544	1547	2300.00	8.00	115.0000	0.00
1401	668	1674	1132.70	12.00	130.0000	0.00
1404	1674	102	746.13	12.00	130.0000	0.00
1406	102	J-1	620.69	12.00	130.0000	0.00
1409	92	J-143	4125.62	12.00	115.0000	0.00
1423	421	107	867.00	12.00	130.0000	0.00
1426	1575	34	575.28	12.00	115.0000	0.00
1427	1576	248	446.87	12.00	130.0000	0.00
1429	248	1580	540.11	12.00	130.0000	0.00
1433	51	26	448.20	12.00	115.0000	0.00
1435	51	109	1427.59	12.00	115.0000	0.00
1440	6	109	475.62	12.00	115.0000	0.00
1441	6	1647	1469.07	12.00	115.0000	0.00
1443	1637	1647	5159.69	12.00	115.0000	0.00
1454	72	1637	1761.44	12.00	115.0000	0.00
1455	72	1626	3641.41	12.00	115.0000	0.00
1458	1627	1626	763.65	12.00	115.0000	0.00
1460	797	212	356.56	12.00	115.0000	0.00
1464	788	1630	3991.15	12.00	115.0000	0.00
1477	1630	1626	1130.08	12.00	115.0000	0.00
1479	1627Yates Rese		1075.00	12.00	130.0000	0.00
1481	1630	76	3539.00	12.00	130.0000	0.00
1483	76	1636	2341.00	12.00	130.0000	0.00
1487	1637	75	595.62	12.00	115.0000	0.00
1492	75	49	651.30	12.00	115.0000	0.00
1493	254	49	3310.10	12.00	115.0000	0.00
1494	254	J-35	1688.26	12.00	115.0000	0.00
1497	2072	1647	1022.00	12.00	115.0000	0.00
1499	1648	247	4693.50	12.00	115.0000	0.00
1500	343	1657	2072.02	8.00	130.0000	0.00
1509	1658	901	754.77	8.00	130.0000	0.00
1526	1674	800	496.84	8.00	130.0000	0.00
1531	800	174	473.00	8.00	130.0000	0.00
1534	1679	1689	748.17	6.00	90.0000	0.00
1544	1690	1689	126.93	8.00	90.0000	0.00
1548	2092	1698	669.39	8.00	115.0000	0.00
1552	1699	1700	801.40	10.00	130.0000	0.00
1553	2138	89	1389.60	8.00	115.0000	0.00
1560	1710	J-53	1056.65	8.00	115.0000	0.00
1562	1711	683	220.00	8.00	90.0000	0.00
1563	683	1712	500.00	8.00	115.0000	0.00
1564	1713	1716	178.58	6.00	115.0000	0.00
1567	1716	1719	185.05	6.00	115.0000	0.00
1584	1742	1737	1268.00	4.00	75.0000	0.00
1588	1737	1375	375.00	4.00	75.0000	0.00
1593	1742	1484	452.00	10.00	130.0000	0.00
1596	1484	975	1798.00	10.00	130.0000	0.00
1611	975	1310	71.00	10.00	130.0000	0.00
1612	1310	2122	454.00	10.00	130.0000	0.00
1615	2123	1089	511.48	8.00	115.0000	0.00
1617	1089	1186	243.51	6.00	75.0000	0.00
1618	1186	1767	570.00	8.00	115.0000	0.00
1621	J-135	1773	742.00	8.00	130.0000	0.00
1626	1773	1775	197.00	8.00	130.0000	0.00
1628	1775	1776	68.00	8.00	130.0000	0.00
1629	1776	1782	1030.00	8.00	130.0000	0.00
1635	1782	1788	996.00	8.00	130.0000	0.00
1641	1788	1775	237.00	8.00	130.0000	0.00
1644	1773	1791	251.00	8.00	130.0000	0.00
1645	1776	1793	338.00	8.00	130.0000	0.00
1647	1788	1782	591.00	8.00	130.0000	0.00
1654	1800	1801	235.53	10.00	130.0000	0.00
1657	18053-inch or		110.20	8.00	130.0000	0.00
1658	1806	1808	400.00	6.00	115.0000	0.00

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1660	1809	1806	19.02	8.00	130.0000	0.00
1661	1810	1821	671.00	10.00	130.0000	0.00
1663	1800	1821	258.00	10.00	130.0000	0.00
1664	1813	1809	50.87	10.00	130.0000	0.00
1665	1814	1818	535.81	2.00	140.0000	0.00
1669	1813	1814	675.00	8.00	130.0000	0.00
1672	1821	J-112	525.00	8.00	130.0000	0.00
1673	1823	1826	385.26	6.00	90.0000	0.00
1676	1827	1071	62.38	8.00	90.0000	0.00
1677	1636	J-128	438.35	8.00	130.0000	0.00
1792	910	844	262.20	4.00	75.0000	0.00
1793	178	1823	69.34	8.00	90.0000	0.00
1796	1063	1948	325.00	2.00	106.5232	0.00
1799	1032	J-114	642.00	4.00	90.0000	0.00
1810	1960	12	21.03	8.00	90.0000	0.00
1811	12	10	1053.00	8.00	90.0000	0.00
1813	1767	J-117	290.12	6.00	75.0000	0.00
1818	1737	1968	132.00	4.00	75.0000	0.00
1820	1823	J-21	491.61	6.00	75.0000	0.00
1821	175	384	2123.70	10.00	115.0000	0.00
1825	1973	566	454.00	4.00	75.0000	0.00
1826	1974	1975	651.00	4.00	75.0000	0.00
1828	J-3	1980	517.00	6.00	75.0000	0.00
1830	3-inch or	1981	48.33	4.00	75.0000	0.00
1831	1984	1767	235.15	6.00	75.0000	0.00
1834	1985	1986	56.59	4.00	75.0000	0.00
1835	894	2125	20.33	8.00	115.0000	0.00
1836	1987	568	717.00	4.00	75.0000	0.00
1837	1988	1989	52.11	4.00	75.0000	0.00
1839	2121	1991	219.88	6.00	75.0000	0.00
1840	2126	2123	286.00	10.00	115.0000	0.00
1841	1994	994	209.00	6.00	75.0000	0.00
1842	1996	1997	691.73	6.00	75.0000	0.00
1843	1184	2003	971.73	6.00	115.0000	0.00
1852	2007	2009	230.57	6.00	75.0000	0.00
1854	2010	2065	472.04	6.00	75.0000	0.00
1855	2012	J-39	579.11	8.00	75.0000	0.00
1856	2013	2014	469.09	6.00	115.0000	0.00
1858	2016	J-81	1482.47	4.00	75.0000	0.00
1860	2127	504	947.53	4.00	75.0000	0.00
1864	1121	2023	183.59	6.00	90.0000	0.00
1865	2127	1215	263.88	6.00	75.0000	0.00
1866	2025	2028	384.00	2.00	140.0000	0.00
1869	2029	2030	216.99	2.00	140.0000	0.00
1870	2031	2029	117.40	4.00	140.0000	0.00
1871	2029	2025	27.90	4.00	140.0000	0.00
1872	2025	2032	248.94	4.00	140.0000	0.00
1873	2033	2031	618.97	4.00	140.0000	0.00
1877	2031	J-124	145.24	8.00	115.0000	0.00
1883	2047	J-74	206.38	6.00	90.0000	0.00
1887	2053	582	671.02	4.00	90.0000	0.00
1892	2129	582	343.45	4.00	90.0000	0.00
1893	590	46	757.00	6.00	90.0000	0.00
1894	2061	J-45	335.58	6.00	90.0000	0.00
1895	2063	J-44	880.19	8.00	90.0000	0.00
1896	5	361	64.75	10.00	90.0000	0.00
1898	14	540	265.00	6.00	75.0000	0.00
1900	163-in or sm		34.44	6.00	90.0000	0.00
1901	17	18	236.00	6.00	90.0000	0.00
1904	24	2088	5.94	6.00	115.0000	0.00
1907	36	2130	291.60	6.00	75.0000	0.00
1908	38	2083	817.68	6.00	75.0000	0.00
1909	2014	J-87	300.00	6.00	75.0000	0.00
1917	69	J-61	263.00	8.00	115.0000	0.00
1920	295	J-30	1850.87	12.00	130.0000	0.00
1924	86	2066	285.00	12.00	130.0000	0.00
1927	104	J-112	808.02	6.00	75.0000	0.00
1930	118	710	2530.00	14.00	90.0000	0.00
1935	247	2106	22.48	8.00	75.0000	0.00
1936	325	2122	272.19	12.00	115.0000	0.00
1938	375	1218	736.59	14.00	75.0000	0.00
1940	396	1318	307.00	14.00	75.0000	0.00
1941	480	2138	730.48	10.00	90.0000	0.00
1947	530	2093	691.48	6.00	75.0000	0.00
1948	536	2078	287.42	8.00	75.0000	0.00
1949	565	1084	590.00	8.00	75.0000	0.00
1950	556	944	498.75	6.00	75.0000	0.00
1951	565	543	35.00	8.00	75.0000	0.00
1954	J-84	O-AV-5	54.14	8.00	90.0000	0.00
1956	584	717	786.89	10.00	90.0000	0.00
1958	590	584	267.70	10.00	90.0000	0.00
1960	620	2133	155.65	8.00	115.0000	0.00
1962	1410	649	52.91	8.00	90.0000	0.00
1964	661	424	118.60	10.00	75.0000	0.00
1965	665	172	143.00	12.00	115.0000	0.00
1967	710	137	1990.58	14.00	90.0000	0.00
1972	784	791	500.36	8.00	115.0000	0.00
1975	797	788	291.38	12.00	115.0000	0.00
1977	813	J-120	564.60	6.00	75.0000	0.00
1978	815	803	563.97	6.00	75.0000	0.00
1979	817	1338	454.00	6.00	75.0000	0.00
1982	856	2121	290.89	6.00	75.0000	0.00
1983	860	375	259.21	14.00	75.0000	0.00
1984	865	65	387.79	8.00	75.0000	0.00
1985	872	14	110.22	6.00	75.0000	0.00
1986	923	J-3	345.89	6.00	75.0000	0.00
1987	944	1987	383.07	6.00	75.0000	0.00
1989	954	945	225.61	6.00	75.0000	0.00
1990	958	J-106	266.00	6.00	75.0000	0.00
1992	994	1658	528.00	10.00	115.0000	0.00
1993	2101	60	140.36	6.00	75.0000	0.00
1995	1003	1049	529.64	6.00	90.0000	0.00
1996	1049	631	275.61	8.00	90.0000	0.00
1997	1050	975	402.00	6.00	90.0000	0.00
1998	1057	518	652.00	8.00	75.0000	0.00

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2000	1084	552	435.20	8.00	75.0000	0.00
2001	1099	1120	246.00	6.00	75.0000	0.00
2002	1107	J-79	210.02	8.00	75.0000	0.00
2003	1130	J-63	457.60	8.00	75.0000	0.00
2005	1137	398	600.00	8.00	75.0000	0.00
2010	1180	704	473.80	8.00	75.0000	0.00
2011	1183	704	38.34	6.00	75.0000	0.00
2014	1210	2067	566.74	14.00	75.0000	0.00
2020	1223	1224	265.83	6.00	75.0000	0.00
2021	1224	827	666.42	6.00	75.0000	0.00
2022	1229	815	301.07	6.00	75.0000	0.00
2024	1235	1517	896.98	8.00	75.0000	0.00
2025	1099	J-82	293.00	6.00	75.0000	0.00
2027	1284	46	713.52	8.00	90.0000	0.00
2031	1318	1392	306.00	14.00	75.0000	0.00
2032	1322	J-87	262.00	6.00	75.0000	0.00
2033	1328	2091	322.03	8.00	75.0000	0.00
2035	1337	2110	39.43	6.00	75.0000	0.00
2036	1338	813	634.51	6.00	75.0000	0.00
2037	1356	1089	17.89	6.00	75.0000	0.00
2039	1366	945	480.02	6.00	75.0000	0.00
2040	1387	979	479.26	6.00	115.0000	0.00
2042	1392	J-39	591.86	14.00	75.0000	0.00
2045	1409	407	306.00	10.00	75.0000	0.00
2048	1465	J-120	38.32	6.00	75.0000	0.00
2053	1107	1517	423.01	8.00	75.0000	0.00
2058	1570	J-8	1066.00	10.00	90.0000	0.00
2060	1575	342	808.04	12.00	130.0000	0.00
2063	1627	J-135	354.12	12.00	115.0000	0.00
2067	1648	432	2857.00	10.00	90.0000	0.00
2068	1658	421	772.00	10.00	115.0000	0.00
2070	1679	1101	25.75	6.00	90.0000	0.00
2071	1698	212	264.80	8.00	115.0000	0.00
2078	1800	1813	297.00	10.00	130.0000	0.00
2079	1809	1805	635.00	10.00	130.0000	0.00
2080	1810	107	583.38	12.00	130.0000	0.00
2087	1960	700	19.01	8.00	90.0000	0.00
2089	1973	J-2	345.00	6.00	75.0000	0.00
2090	1974	1366	377.42	6.00	75.0000	0.00
2091	1975	36	374.90	6.00	75.0000	0.00
2092	1981	J-4	275.32	6.00	75.0000	0.00
2093	994	1984	383.00	10.00	115.0000	0.00
2095	1986	552	515.83	6.00	75.0000	0.00
2096	1987	893	54.17	6.00	75.0000	0.00
2097	1989	842	189.64	6.00	75.0000	0.00
2102	1996	827	273.45	6.00	75.0000	0.00
2104	2007	375	649.59	10.00	115.0000	0.00
2105	2009	2096	41.52	6.00	75.0000	0.00
2111	2016	1120	22.21	6.00	75.0000	0.00
2114	1107	1293	379.00	6.00	75.0000	0.00
2118	2053	J-57	404.65	8.00	90.0000	0.00
2120	2063	717	379.81	10.00	90.0000	0.00
2127	2067	1218	331.70	14.00	75.0000	0.00
2128	2067	1180	580.16	8.00	75.0000	0.00
2139	2073	2007	37.55	10.00	115.0000	0.00
2141	2074	483	444.39	8.00	115.0000	0.00
2145	2076	492	344.58	8.00	75.0000	0.00
2146	2076	504	784.60	8.00	75.0000	0.00
2148	693	J-64	330.00	8.00	115.0000	0.00
2149	2078	865	288.23	8.00	75.0000	0.00
2150	2078	1991	297.24	6.00	75.0000	0.00
2152	2079	543	202.12	8.00	75.0000	0.00
2153	2080	2081	236.10	6.00	115.0000	0.00
2154	2080	958	585.00	6.00	75.0000	0.00
2155	2125	J-99	48.00	8.00	115.0000	0.00
2156	2081	958	325.04	6.00	75.0000	0.00
2159	2083	2084	265.54	8.00	75.0000	0.00
2160	2083	916	678.90	6.00	75.0000	0.00
2161	2084	565	310.77	8.00	75.0000	0.00
2162	2084	916	736.88	6.00	75.0000	0.00
2165	2086	578	560.00	8.00	115.0000	0.00
2166	2086	2132	593.29	8.00	90.0000	0.00
2169	2088	620	2465.45	8.00	115.0000	0.00
2170	2088	1214	158.00	6.00	115.0000	0.00
2173	2090	1410	14.60	8.00	90.0000	0.00
2174	2090	657	565.72	8.00	115.0000	0.00
2175	2091	1137	468.76	8.00	75.0000	0.00
2176	2091	505	311.20	8.00	75.0000	0.00
2179	2093	817	304.87	6.00	75.0000	0.00
2180	2093	1229	758.42	6.00	75.0000	0.00
2181	2094	2095	604.36	6.00	75.0000	0.00
2183	2095	1223	294.47	6.00	75.0000	0.00
2184	2095	1183	324.33	6.00	75.0000	0.00
2187	2097	856	426.07	6.00	75.0000	0.00
2188	2097	2073	206.00	6.00	75.0000	0.00
2189	2098	885	448.98	6.00	75.0000	0.00
2190	2098	2100	273.62	6.00	75.0000	0.00
2192	954	2130	268.01	6.00	75.0000	0.00
2193	2100	1050	360.00	6.00	90.0000	0.00
2194	2100	1056	405.41	6.00	75.0000	0.00
2195	2101	807	693.00	6.00	115.0000	0.00
2196	2101	J-82	1519.00	6.00	75.0000	0.00
2198	1290	1293	372.41	6.00	75.0000	0.00
2199	2103	60	154.27	6.00	75.0000	0.00
2202	2104	2021	244.00	4.00	75.0000	0.00
2203	2105	1388	298.00	6.00	75.0000	0.00
2206	2106	1328	152.76	8.00	75.0000	0.00
2207	2107	510	314.14	6.00	75.0000	0.00
2212	2109	2010	299.72	6.00	75.0000	0.00
2214	2110	1356	429.11	6.00	75.0000	0.00
2216	2111	1333	54.05	6.00	75.0000	0.00
2217	2112	1183	291.22	6.00	75.0000	0.00
2221	803	2113	632.05	6.00	75.0000	0.00
2223	2115	J-87	328.38	6.00	75.0000	0.00
2228	2117	1210	322.00	14.00	75.0000	0.00

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2231	2119	1483	385.00	6.00	75.0000	0.00
2234	2120	J-77	147.00	6.00	90.0000	0.00
2236	2121	2126	209.47	6.00	75.0000	0.00
2240	2123	2073	427.00	10.00	115.0000	0.00
2243	2125	961	36.45	8.00	115.0000	0.00
2244	2125	2081	266.99	8.00	115.0000	0.00
2246	2126	1984	286.12	10.00	115.0000	0.00
2249	2050	J-77	44.67	6.00	90.0000	0.00
2252	2129	2053	226.85	8.00	90.0000	0.00
2253	2130	961	455.00	6.00	75.0000	0.00
2254	2130	1973	40.73	6.00	75.0000	0.00
2257	2132	214	7.31	8.00	90.0000	0.00
2259	2133	599	622.41	8.00	115.0000	0.00
2260	2133	47	462.96	8.00	115.0000	0.00
2269	2138	481	66.26	10.00	90.0000	0.00
P-1	J-1	97	547.15	12.00	130.0000	0.00
P-100	J-112	1814	500.93	6.00	75.0000	0.00
P-101	J-113	2079	368.16	6.00	75.0000	0.00
P-102	J-114	1023	302.00	4.00	90.0000	0.00
P-103	J-125	649	346.91	6.00	90.0000	0.00
P-104	I-Fairview	1103	20.94	6.00	90.0000	0.00
P-105	J-115	J-116	419.54	6.00	75.0000	0.00
P-106	J-116	2097	250.67	6.00	75.0000	0.00
P-108	J-117	56	305.00	6.00	75.0000	0.00
P-11	J-3	1975	323.06	6.00	75.0000	0.00
P-111	J-120	807	266.76	6.00	75.0000	0.00
P-113	J-39	2117	288.00	14.00	75.0000	0.00
P-116	97	J-122	121.15	12.00	130.0000	0.00
P-117	J-140	J-145	46.63	12.00	130.0000	0.00
P-119	J-139	J-84	78.98	8.00	130.0000	0.00
P-121	J-140	J-138	42.92	12.00	130.0000	0.00
P-122	J-126Main Reser		111.73	14.00	90.0000	0.00
P-124	O-AV-1	2083	364.42	8.00	75.0000	0.00
P-125	O-AV-2	906	282.73	4.00	75.0000	0.00
P-127	J-127	295	2367.21	12.00	130.0000	0.00
P-128	J-127	J-128	4129.32	12.00	130.0000	0.00
P-130	J-128	1831	615.85	8.00	130.0000	0.00
P-131	J-129	1071	558.33	6.00	90.0000	0.00
P-132	668	J-129	1448.22	12.00	130.0000	0.00
P-133	J-133	1513	25.35	8.00	130.0000	0.00
P-134	J-122	J-132	800.00	12.00	130.0000	0.00
P-135	J-124	1502	393.57	8.00	130.0000	0.00
P-136	J-124	J-131	198.84	8.00	130.0000	0.00
P-138-CV	Kennicott	J-53	790.00	16.00	115.0000	0.00
P-140	O-AV-4	686	40.89	6.00	90.0000	0.00
P-143	I-AV-5	J-63	2.85	8.00	130.0000	0.00
P-144	O-AV-6	1134	545.75	4.00	75.0000	0.00
P-146	J-73	J-134	384.83	8.00	115.0000	0.00
P-147	J-64	J-141	135.51	8.00	115.0000	0.00
P-148	J-134	O-RV-2	6.27	8.00	130.0000	0.00
P-149	J-143	O-RV-1	5.82	12.00	130.0000	0.00
P-15	J-91	J-126	172.27	14.00	90.0000	0.00
P-150-CV	J-141	J-134	13.00	8.00	130.0000	0.00
P-151	J-142	J-139	80.78	8.00	130.0000	0.00
P-152	J-144	1570	631.51	12.00	115.0000	0.00
P-153-CV	J-143	J-144	24.87	12.00	130.0000	0.00
P-154	I-RV-1	J-144	5.63	12.00	130.0000	0.00
P-157	I-RV-2	J-141	7.13	8.00	130.0000	0.00
P-1570	1716	1103	1729.25	8.00	115.0000	0.00
P-158	J-145I-18th St		2.66	12.00	115.0000	0.00
P-159	J-145	J-146	2.68	12.00	115.0000	0.00
P-160-CV	J-146	J-147	9.25	12.00	115.0000	0.00
P-161	J-146O-18th St		3.23	12.00	130.0000	0.00
P-162	J-147	J-142	2.67	12.00	115.0000	0.00
P-164	I-18th St	J-147	3.12	12.00	130.0000	0.00
P-165	J-155	J-156	739.67	6.00	140.0000	0.00
P-166	66	J-110	322.75	6.00	75.0000	0.00
P-167	J-153	J-156	4747.12	12.00	115.0000	0.00
P-168	J-152	J-150	15.74	8.00	115.0000	0.00
P-169	J-154	J-88	471.34	12.00	115.0000	0.00
P-170	J-155	J-151	4833.50	6.00	140.0000	0.00
P-171	J-155	J-157	658.63	2.00	140.0000	0.00
P-172	J-156	J-154	1552.65	12.00	115.0000	0.00
P-173	J-148	J-6	2664.56	2.00	130.0000	0.00
P-174	J-149	J-153	1314.60	8.00	130.0000	0.00
P-175	J-150	J-152	2094.17	8.00	115.0000	0.00
P-18	J-135I-South En		77.91	12.00	130.0000	0.00
P-19	33	34	11.57	4.00	90.0000	0.00
P-2	101	J-1	84.14	8.00	130.0000	0.00
P-20	1576	213	32.42	12.00	130.0000	0.00
P-25	J-30	2066	908.00	12.00	130.0000	0.00
P-29	J-8	2063	977.55	10.00	90.0000	0.00
P-3	J-60-Centrali		24935.52	6.00	115.0000	0.00
P-30	J-35	J-42	1262.05	12.00	115.0000	0.00
P-31	54	J-8	271.99	8.00	90.0000	0.00
P-33	J-42	2072	33.95	12.00	115.0000	0.00
P-34	1699	J-42	861.64	12.00	115.0000	0.00
P-36	2091	1322	322.00	6.00	75.0000	0.00
P-4	J-7	1570	1181.00	10.00	90.0000	0.00
P-40	J-44	10	918.28	8.00	90.0000	0.00
P-42	J-45	J-44	388.00	8.00	90.0000	0.00
P-43	J-880-South En		3066.47	12.00	115.0000	0.00
P-44	J-55	28	392.03	8.00	115.0000	0.00
P-47	J-57	2132	26.83	8.00	90.0000	0.00
P-48	41	J-90	18.53	10.00	90.0000	0.00
P-49	2051	J-57	16.66	8.00	90.0000	0.00
P-50	2052	J-57	17.24	8.00	90.0000	0.00
P-51	O-18th St	J-142	1.13	8.00	115.0000	0.00
P-53	J-4	1974	369.00	6.00	75.0000	0.00
P-54	923	J-4	253.57	6.00	75.0000	0.00
P-57	1217	I-AV-6	27.22	4.00	75.0000	0.00
P-58	1217	69	273.00	8.00	115.0000	0.00
P-6	J-11	J-88	987.96	8.00	115.0000	0.00
P-61	J-58	68	222.00	6.00	115.0000	0.00
P-62	J-61	J-136	302.00	8.00	115.0000	0.00

2020 Peak Hour Demand

P-63	2076	J-64	1014.00	8.00	75.0000	0.00
P-64	54	J-27	596.19	8.00	90.0000	0.00
P-65	J-67	597	417.00	8.00	90.0000	0.00
P-67	J-71	J-67	339.00	8.00	115.0000	0.00
P-69	J-73	J-71	449.75	8.00	75.0000	0.00
P-7	J-152	J-154	148.62	8.00	115.0000	0.00
P-71	J-63	J-123	21.02	8.00	130.0000	0.00
P-73	J-74	1679	128.71	6.00	90.0000	0.00
P-74	J-77	J-74	27.47	6.00	90.0000	0.00
P-75	I-AV-3	2120	128.95	6.00	90.0000	0.00
P-76	J-78	408	254.81	8.00	90.0000	0.00
P-77	J-79	1130	739.00	8.00	75.0000	0.00
P-78	J-80	504	390.06	8.00	75.0000	0.00
P-79	1396	J-82	521.89	6.00	90.0000	0.00
P-80	1388	J-87	625.00	6.00	115.0000	0.00
P-81	92	J-62	399.00	8.00	115.0000	0.00
P-82	J-84	597	632.70	8.00	90.0000	0.00
P-83	J-123	J-140	102.57	12.00	130.0000	0.00
P-84	J-93	1971	33.88	6.00	90.0000	0.00
P-86	I-High Lev	J-126	388.44	6.00	75.0000	0.00
P-87	J-94	526	1018.53	8.00	75.0000	0.00
P-88	J-93	J-94	3.82	6.00	90.0000	0.00
P-89	J-96inter-tie	1009.00	12.00	115.0000	0.00	
P-9	J-2	2098	329.00	6.00	75.0000	0.00
P-90	J-105	174	266.00	12.00	130.0000	0.00
P-91	J-20	1981	59.00	6.00	75.0000	0.00
P-92	J-21	J-20	140.66	6.00	75.0000	0.00
P-93	568	J-99	19.30	8.00	115.0000	0.00
P-94	J-99	556	294.00	8.00	115.0000	0.00
P-95	566	J-99	49.52	8.00	115.0000	0.00
P-96	J-100	2080	161.00	8.00	115.0000	0.00
P-97	J-106	894	329.00	6.00	75.0000	0.00
P-98	I-Central	J-153	21368.49	8.00	115.0000	0.00
P-99	J-111	944	378.41	6.00	75.0000	0.00
Valley Vie	O-Valley VYankis (Va	2731.89	4.00	140.0000	0.00	

N O D E D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
5		0.40	243.40	
6		9.00	244.40	
9		3.80	205.80	
10		12.80	213.70	
11		0.20	236.90	
12		5.10	236.50	
13		0.20	198.90	
14		3.00	201.40	
15		10.90	186.10	
16		2.20	186.10	
17		14.20	175.70	
18		3.10	171.90	
19		2.00	165.30	
22		4.60	186.50	
23		10.40	187.70	
24		2.60	604.50	
26		12.00	240.30	
28		2.80	322.60	
29		1.00	323.60	
31		3.30	216.80	
32		7.80	214.70	
33		0.70	183.00	
34		4.90	183.50	
36		6.00	194.40	
37		0.80	333.40	
38		5.00	290.50	
40		7.20	190.80	
41		0.40	219.10	
43		0.20	253.50	
46		9.10	229.90	
47		2.90	544.40	
48		0.80	543.60	
49		19.50	243.00	
50		1.40	244.20	
51		9.50	240.00	
52		2.10	261.50	
54		4.70	209.30	
56		1.40	193.00	
59		0.50	252.50	
60		1.80	252.90	
65		9.50	192.40	
66		3.00	191.30	
68		6.10	205.20	
69		4.30	208.70	
70		1.10	285.20	
72		25.00	255.00	
75		20.60	247.70	
76		41.80	256.00	
83		0.20	221.90	
85		0.20	222.10	
86		7.60	222.40	
89		6.30	225.60	
92		24.90	192.40	
97		3.40	173.90	
98		0.30	174.00	
101		0.40	174.30	
102		6.50	176.00	
103		0.30	175.70	
104		6.60	179.70	
107		6.70	183.60	

2020 Peak Hour Demand

108	2.70	183.60
109	12.30	236.20
118	26.40	192.50
119	5.50	217.70
121	3.50	230.70
137	13.00	180.00
166	9.60	182.90
172	6.20	174.10
174	3.40	175.70
175	10.80	183.60
178	3.40	183.60
192	11.70	183.60
201	5.60	178.30
212	5.90	256.30
213	3.40	253.50
214	7.50	230.10
224	5.70	224.20
247	21.70	192.10
248	12.90	248.60
253	8.40	240.90
254	29.70	230.80
295	33.90	210.10
325	7.50	183.90
342	5.10	165.40
343	10.10	163.20
344	4.60	164.20
346	0.90	165.60
356	15.10	219.10
361	16.60	243.10
375	7.60	230.50
384	15.90	183.20
385	1.80	183.60
396	1.60	221.20
398	4.50	220.50
407	8.10	226.99
408	4.30	223.30
421	7.50	184.20
424	1.80	189.90
432	22.90	184.10
468	27.70	204.20
473	2.50	178.30
474	3.10	210.70
480	10.60	219.70
481	0.30	220.90
483	2.00	214.00
492	12.70	195.50
504	9.70	182.80
505	8.60	197.20
509	14.30	200.00
510	7.70	189.60
512	9.90	184.80
513	4.90	178.80
518	4.60	182.20
526	18.90	201.80
530	4.90	220.30
536	6.30	201.90
540	1.30	202.30
543	3.20	210.90
544	2.40	216.10
552	4.80	191.50
556	5.90	206.10
565	4.30	210.80
566	2.30	204.60
568	3.40	206.30
569	10.50	178.30
573	2.20	179.00
578	2.60	280.80
579	5.40	205.50
582	7.20	212.80
584	7.30	207.60
590	8.40	208.60
597	5.60	222.20
599	8.20	592.40
601	2.10	577.30
619	3.30	559.00
620	14.80	583.00
623	2.80	588.00
628	3.50	420.40
631	4.50	382.80
632	1.40	455.20
642	2.60	304.60
649	2.70	392.70
657	12.40	331.20
661	8.20	190.90
665	11.60	174.40
668	18.10	182.30
675	2.30	180.60
676	4.10	206.70
682	0.80	209.20
683	5.60	200.30
686	1.50	278.90
693	10.10	197.40
700	0.10	237.50
704	3.60	190.10
705	7.10	185.50
710	21.70	197.50
717	9.70	204.90
718	0.20	191.20
726	2.40	190.00
780	13.00	185.00
781	0.10	252.20
784	8.30	259.80
788	24.20	258.50
791	7.60	256.00
792	0.60	254.90

2020 Peak Hour Demand

797	6.20	255.30	
800	5.80	177.30	
802	1.30	178.00	
803	9.60	217.90	
807	11.40	272.60	
808	7.10	215.50	
813	6.90	244.90	
815	5.40	219.20	
817	6.60	275.20	
827	9.40	186.80	
828	4.20	192.50	
831	2.80	216.90	
842	5.10	234.00	
844	7.10	260.00	
856	4.30	194.40	
860	3.90	230.20	
865	4.10	195.90	
868	4.20	197.00	
872	1.60	199.50	
881	4.00	199.80	
885	4.50	204.20	
893	4.00	198.10	
894	1.60	206.30	
899	9.60	192.10	
901	9.30	189.00	
906	3.40	292.50	
910	2.50	294.90	
916	8.10	222.40	
922	1.60	238.30	
923	5.40	182.20	
929	1.10	181.60	
937	5.20	183.80	
944	5.70	196.50	
945	5.40	192.00	
954	4.30	193.70	
958	10.00	201.60	
961	2.30	205.40	
962	5.90	179.30	
964	0.40	179.40	
975	10.30	184.50	
979	2.20	173.70	
994	8.50	192.30	
1003	8.00	435.80	
1023	9.80	389.60	
1024	4.60	408.40	
1032	6.60	455.00	
1049	5.10	421.50	
1050	9.20	188.20	
1053	5.80	183.20	
1056	3.00	192.00	
1057	9.90	179.20	
1060	9.70	196.50	
1063	2.50	238.10	
1064	4.40	181.30	
1071	4.20	190.50	
1084	17.60	198.50	
1085	6.60	197.60	
1089	3.50	190.70	
1099	15.50	233.90	
1100	1.00	339.70	
1101	2.20	323.20	
1103	6" and 2"	8.10	346.40
1104	0.70	285.50	
1107	4.60	211.40	
1120	2.10	222.90	
1121	3.30	205.30	
1122	1.20	204.40	
1125	3.00	205.00	
1130	8.50	225.00	
1134	10.50	202.90	
1137	6.30	202.10	
1156	9.10	184.90	
1180	6.00	195.40	
1181	5.20	186.00	
1183	3.00	190.20	
1184	8.90	189.70	
1186	4.90	191.30	
1210	6.70	215.60	
1211	0.40	564.40	
1214	3.10	607.60	
1215	2.70	200.80	
1217	5.90	207.80	
1218	9.70	217.60	
1223	4.00	187.20	
1224	5.70	187.60	
1229	5.80	224.40	
1232	10.10	183.90	
1235	7.70	197.20	
1239	2.70	265.90	
1240	0.20	608.90	
1244	7.80	591.00	
1251	9.40	622.30	
1262	0.40	349.90	
1270	2.60	184.30	
1277	10.10	340.00	
1284	7.40	224.00	
1290	9.90	207.20	
1293	5.10	206.60	
1295	6.00	200.40	
1298	0.90	224.20	
1309	9.90	185.00	
1310	7.70	184.40	
1314	6.20	183.00	
1318	5.40	221.20	
1322	4.80	194.60	

2020 Peak Hour Demand

1328	4.90	192.30
1333	4.50	191.30
1337	5.30	192.80
1338	12.00	257.70
1356	3.30	190.80
1359	1.10	193.30
1364	4.50	193.90
1366	6.90	190.60
1375	13.00	168.30
1387	4.30	182.40
1388	8.10	200.40
1392	6.70	220.30
1396	4.00	308.10
1409	7.70	222.20
1410	2.80	392.50
1456	4.30	183.20
1465	4.30	235.70
1483	7.80	193.40
1484	18.90	183.60
1497	3.50	167.20
1498	2.00	396.40
1502	5.10	385.30
1513	0.90	339.40
1517	7.30	205.40
1519	1.30	211.30
1524	1.60	615.60
1544	22.30	194.80
1547	17.90	208.00
1570	13.20	200.80
1575	10.40	171.60
1576	2.10	253.70
1580	2.50	245.80
1626	25.30	272.90
1627	14.90	289.00
1630	39.60	266.70
1636	216.80	245.70
1637	34.30	249.10
1647	35.00	236.20
1648	35.30	187.30
1657	9.50	163.30
1658	9.30	185.90
1674	10.90	178.00
1679	4.10	317.70
1689	4.00	323.60
1690	0.60	319.70
1698	7.00	256.80
1699	7.70	218.90
1700	3.70	216.20
1710	4.80	303.50
1711	1.00	209.80
1712	2.30	268.50
1713	2.20	571.10
1716	9.50	533.50
1719	0.80	516.50
1737	8.10	166.60
1742	13.00	183.60
1767	5.00	193.40
1773	5.40	272.20
1775	2.30	270.10
1776	6.50	269.20
1782	11.90	269.10
1788	8.30	269.00
1791	1.10	273.40
1793	1.50	270.60
1799	4.10	201.40
1800	3.70	166.10
1801	1.10	173.70
1805	3.40	179.70
1806	1.90	173.10
1808	1.80	179.80
1809	3.20	172.30
1810	6.00	179.50
1813	4.70	171.10
1814	7.80	167.10
1818	2.40	160.70
1821	6.70	169.80
1823	4.30	182.50
1826	5.10	183.30
1827	9.20	192.90
1831	2.80	234.10
1948	1.50	234.90
1960	6.10	237.60
1961	4.50	190.10
1968	0.60	164.80
1971	0.20	185.30
1973	3.90	198.40
1974	6.40	187.50
1975	6.20	186.60
1980	2.40	180.20
1981	1.80	183.10
1984	5.00	194.10
1985	0.30	195.20
1986	5.70	194.50
1987	5.20	198.50
1988	0.20	219.50
1989	2.10	222.30
1991	4.70	194.20
1994	1.00	190.70
1996	5.60	189.80
1997	5.60	191.50
2003	4.40	185.20
2007	4.30	200.60
2009	5.50	196.90
2010	6.50	191.70
2012	5.50	199.00

2020 Peak Hour Demand

2013	4.80	200.10	
2014	7.90	193.20	
2016	7.20	222.30	
2021	1.10	204.20	
2023	0.80	206.90	
2025	3.00	455.60	
2028	1.80	520.90	
2029	1.60	449.00	
2030	1.00	460.10	
2031	4.00	430.90	
2032	1.10	484.00	
2033	2.80	474.20	
2047	0.90	309.00	
2050	0.20	301.10	
2051	0.10	229.60	
2052	0.10	229.90	
2053	5.90	220.60	
2061	1.50	208.20	
2063	10.20	205.00	
2065	7.60	198.90	
2066	5.60	222.20	
2067	11.00	216.20	
2072	10.60	221.90	
2073	4.00	199.80	
2074	6.50	220.90	
2076	11.20	204.40	
2078	5.30	199.20	
2079	5.60	203.10	
2080	6.70	191.60	
2081	5.90	198.70	
2083	11.30	255.40	
2084	7.40	224.10	
2086	7.60	230.30	
2088	12.00	604.50	
2090	12.80	391.30	
2091	6.50	195.30	
2092	3.20	251.60	
2093	8.30	236.00	
2094	9.20	188.50	
2095	6.40	187.60	
2096	4.30	196.50	
2097	6.50	202.50	
2098	6.80	202.10	
2100	9.10	197.30	
2101	10.70	270.60	
2103	11.60	236.90	
2104	5.00	200.50	
2105	7.60	201.90	
2106	3.50	192.10	
2107	8.40	190.50	
2109	6.40	190.80	
2110	4.70	192.70	
2111	4.00	191.00	
2112	8.80	190.20	
2113	7.40	195.50	
2115	6.30	191.90	
2117	5.40	217.50	
2119	9.40	193.60	
2120	5.30	268.60	
2121	4.60	193.00	
2122	7.60	183.70	
2123	5.50	193.20	
2125	1.70	206.20	
2126	3.60	192.50	
2127	11.30	203.70	
2129	6.10	218.10	
2130	4.80	198.00	
2132	2.80	230.10	
2133	5.60	578.00	
2137	7.50	198.20	
2138	9.90	221.50	
I-18th St	0.00	218.20	
O-18th St	0.00	218.20	
3-in or sm	0.20	185.50	
3-inch or	0.50	183.00	
3-inch or	0.20	183.10	
O-AV-1	0.00	283.80	
I-AV-2	0.00	306.00	
I-AV-3	0.00	253.40	
O-AV-4	0.00	289.30	
O-AV-5	0.00	225.30	
O-AV-6	0.00	208.10	
O-Centrali	----	333.50	541.19
O-Fairview	Fairview PRV	346.50	466.50
O-High Lev	High Level F	401.60	
High Level	High Level R	605.00	614.00
Hillcrest		256.20	
inter-tie		174.40	
J-1		5.70	174.00
J-100		1.10	190.60
J-105		4.20	175.60
J-106		4.60	206.20
J-11		4.50	280.00
J-110		8.00	198.00
J-111		3.10	192.50
J-112		8.40	167.90
J-113		4.00	200.50
J-114		18.10	405.70
J-115		3.00	197.30
J-116		3.00	207.10
J-117		2.70	192.10
J-120		4.00	237.50
J-122		4.30	174.00
J-123		0.60	224.70
J-124		3.40	403.80

2020 Peak Hour Demand

J-125		3.30	383.00	
J-126		5.30	367.95	
J-127		36.50	225.20	
J-128		23.60	235.20	
J-129		13.50	184.80	
J-130		6.10	222.00	
J-131		0.90	418.00	
J-132		3.70	176.00	
J-133		1.40	339.60	
J-134		2.00	200.90	
J-135		5.70	288.30	
J-136		1.40	204.10	
J-138		1.70	219.60	
J-139		0.80	222.60	
J-140		0.90	218.20	
J-141		0.80	200.90	
J-142		0.40	218.20	
J-143		19.00	193.40	
J-144		3.10	193.40	
J-145		0.20	218.20	
J-146		0.00	218.20	
J-147		0.00	218.20	
J-148		12.20	498.90	
J-149		6.00	306.10	
J-150		9.70	272.40	
J-151		22.10	326.80	
J-152		10.40	272.40	
J-153		222.80	302.40	
J-154		10.00	267.60	
J-155		28.50	263.80	
J-156		32.20	261.30	
J-157		3.00	265.80	
J-2		9.40	201.80	
J-20		3.50	182.90	
J-21		3.90	182.80	
J-25		8.10	311.10	
J-27		6.80	207.10	
J-3		5.50	182.20	
J-30		12.50	219.90	
J-35		13.50	222.10	
J-39		6.60	218.10	
J-4		4.20	184.40	
J-42		9.90	222.00	
J-44		10.00	208.40	
J-45		6.80	209.00	
J-53		15.60	294.30	
J-55		4.30	297.10	
J-57		2.10	229.20	
J-58		2.50	204.60	
J-6		35.80	473.40	
J-61		7.00	207.00	
J-62		1.80	191.50	
J-63		2.20	225.20	
J-64		6.70	202.30	
J-67		3.40	210.80	
J-7		5.70	214.70	
J-71		3.60	204.60	
J-73		10.40	199.60	
J-74		1.60	301.00	
J-77		1.00	296.10	
J-78		8.60	230.70	
J-79		4.50	223.40	
J-8		10.60	208.80	
J-80		8.10	190.70	
J-81		10.90	218.90	
J-82		10.60	257.90	
J-84		3.80	226.30	
J-87		7.00	194.40	
J-88		34.70	275.70	
J-90		0.10	219.10	
J-91		15.90	352.90	
J-93		2.80	187.50	
J-94		5.90	187.50	
J-95		21.70	189.50	
J-96		10.70	176.90	
J-99		1.80	205.50	
Kennicott	Kennicott Re	----	374.00	397.90
Main Reser	Main Reservo	----	383.30	402.80
physical d		0.10	222.00	
I-RV-1		0.00	193.40	
I-RV-2		0.00	200.90	
O-South En		----	287.90	495.59
O-Valley V	Valley View	0.00	308.10	
Yankis (Va	Yankis (Vall	----	631.50	699.50
Yates Rese	500,000 gal	----	376.00	402.80
O-18th St		----	218.20	389.66
I-18th St		0.00	218.20	
I-AV-1		0.00	283.80	
O-AV-2		0.00	306.00	
O-AV-3		0.00	253.40	
I-AV-4		0.00	289.30	
I-AV-5		0.00	225.30	
I-AV-6		0.00	208.10	
I-Centrali		0.00	333.50	
I-Fairview	Fairview PRV	0.00	346.50	
I-High Lev	High Level P	0.00	401.60	
O-RV-1		----	193.40	389.55
O-RV-2		----	200.90	389.67
I-South En		0.00	287.90	
I-Valley V	Valley View	0.00	308.10	

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 5
 MAXIMUM AND MINIMUM VELOCITIES = 5
 MAXIMUM AND MINIMUM HEAD LOSS/1000 = 5

S U P P L Y Z O N E D A T A

THIS SYSTEM HAS MULTIPLE SUPPLY ZONES

ZONE NO. 1 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@18th St PRV ~@RV-2 ~@RV-1-@Yankis (Valley V
 ~@Fairview PRV-@Kennicott Reserv ~@Main Reservoir ~@Yates Reservoir
 ~@High Level Reser

ZONE NO. 2 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@Centralia Alpha

ZONE NO. 3 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@South End Pump S

S Y S T E M C O N F I G U R A T I O N

NUMBER OF PIPES(P) = 712
 NUMBER OF END NODES(J) = 560
 NUMBER OF PRIMARY LOOPS(L) = 148
 NUMBER OF SUPPLY NODES(F) = 7
 NUMBER OF SUPPLY ZONES(Z) = 3

Case: 0

RESULTS OBTAINED AFTER 21 TRIALS: ACCURACY = 0.77334E-05

S I M U L A T I O N D E S C R I P T I O N (L A B E L)

P I P E L I N E R E S U L T S

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

P I P E N A M E	N O D E N U M B E R S		F L O W R A T E gpm	H E A D L O S S ft	M I N O R L O S S ft	L I N E V E L O . ft/s	H L + M L / 1000 ft/f	H L / 1000 ft/f
	#1	#2						
3	6	5	154.34	0.01	0.00	0.63	0.38	0.38
5	10	9	3.80	0.00	0.00	0.04	0.00	0.00
6	12	11	0.20	0.00	0.00	0.00	0.00	0.00
7	872	13	0.20	0.00	0.00	0.00	0.00	0.00
8	15	16	47.76	0.00	0.00	0.54	0.52	0.52
10	18	19	2.00	0.06	0.00	0.20	0.14	0.14
12	22	23	17.65	0.01	0.00	0.11	0.01	0.01
13	24	1524	1.60	0.00	0.00	0.04	0.00	0.00
14	26	J-55	8.10	0.00	0.00	0.05	0.00	0.00
16	28	29	1.00	0.00	0.00	0.03	0.00	0.00
17	32	31	3.30	0.37	0.00	0.34	0.51	0.51
21	38	37	0.80	0.00	0.00	0.02	0.00	0.00
22	2014	40	17.97	0.00	0.00	0.11	0.01	0.01
23	41	1699	34.10	0.00	0.00	0.10	0.01	0.01
24	213	43	0.20	0.00	0.00	0.00	0.00	0.00
26	47	48	0.80	0.00	0.00	0.02	0.00	0.00
27	49	50	1.40	0.00	0.00	0.01	0.00	0.00
28	51	52	3.20	0.00	0.00	0.02	0.00	0.00
32	60	59	0.50	0.00	0.00	0.01	0.00	0.00
35	65	66	42.30	0.17	0.00	0.48	0.59	0.59
37	68	69	11.78	0.00	0.00	0.08	0.01	0.01
38	52	70	1.10	0.00	0.00	0.01	0.00	0.00
39	72Hillcrest		0.40	0.00	0.00	0.01	0.00	0.00
41	75	76	17.16	0.00	0.00	0.05	0.00	0.00
45	2066	83	0.20	0.00	0.00	0.00	0.00	0.00
46	86	85	0.20	0.00	0.00	0.00	0.00	0.00
52	97	98	0.30	0.00	0.00	0.00	0.00	0.00
55	102	103	0.30	0.00	0.00	0.00	0.00	0.00
56	1810	104	6.49	0.00	0.00	0.02	0.00	0.00
59	107	108	8.48	0.00	0.00	0.02	0.00	0.00
60	J-53	109	540.88	0.20	0.00	0.86	0.25	0.25
66	J-91	118	663.20	2.61	0.00	1.38	1.11	1.11
68	121	119	190.01	0.11	0.00	0.40	0.15	0.15
70	860	121	288.55	0.01	0.00	0.60	0.33	0.33
72	118	1799	4.10	0.00	0.00	0.03	0.00	0.00
85	396physical d		0.10	0.00	0.00	0.00	0.00	0.00
107	J-91	2067	1437.10	6.16	0.00	2.99	6.49	6.49
109	325	34	45.32	0.01	0.00	0.13	0.01	0.01
110	166	2122	108.78	0.05	0.00	0.31	0.05	0.05
112	166	962	30.03	0.00	0.00	0.09	0.00	0.00
114	962	569	23.73	0.00	0.00	0.07	0.00	0.00
115	569	665	11.03	0.00	0.00	0.03	0.00	0.00
118	172	J-105	6.72	0.00	0.00	0.02	0.00	0.00
120	178	175	203.55	0.04	0.00	0.58	0.17	0.17
123	1826	178	236.31	0.10	0.00	0.67	0.22	0.22
126	1827	1826	274.34	0.08	0.00	0.78	0.29	0.29
129	192	1827	339.49	0.71	0.00	0.96	0.43	0.43
137	201	192	323.71	0.10	0.00	0.92	0.39	0.39
139	137	201	422.46	0.26	0.00	1.20	0.65	0.65
141	137	15	144.76	0.04	0.00	0.41	0.09	0.09
142	15	J-95	86.10	0.07	0.00	0.24	0.03	0.03

2020 Peak Hour Demand

145	201	J-93	93.15	0.03	0.00	0.26	0.06	0.06
155	212	213	29.50	0.00	0.00	0.08	0.00	0.00
156	26	214	198.27	0.26	0.00	0.56	0.16	0.16
163	2072	224	5.70	0.00	0.00	0.02	0.00	0.00
187	248	253	8.40	0.00	0.00	0.02	0.00	0.00
192	254	J-127	172.82	0.15	0.00	0.49	0.10	0.10
262	325	1575	33.63	0.01	0.00	0.10	0.01	0.01
279	344	343	19.60	0.00	0.00	0.06	0.00	0.00
280	342	344	27.70	0.00	0.00	0.09	0.00	0.00
282	342	346	0.90	0.00	0.00	0.00	0.00	0.00
283	86	J-130	6.10	0.00	0.00	0.02	0.00	0.00
292	361	356	58.20	0.14	0.00	0.24	0.06	0.06
298	J-7	32	41.30	0.00	0.00	0.17	0.03	0.03
302	32	480	30.20	0.02	0.00	0.12	0.02	0.02
318	394	385	150.21	0.03	0.00	0.61	0.23	0.23
319	356	2074	8.50	0.00	0.00	0.03	0.00	0.00
320	356	41	34.60	0.00	0.00	0.14	0.02	0.02
329	396	398	337.90	0.07	0.00	1.38	2.29	2.29
331	398	1409	179.05	0.22	0.00	0.73	0.71	0.71
340	407	408	135.60	0.27	0.00	0.55	0.42	0.42
353	661	2119	1.26	0.00	0.00	0.01	0.00	0.00
355	1648	424	46.91	0.01	0.00	0.19	0.04	0.04
363	295	468	40.70	0.05	0.00	0.17	0.02	0.02
398	172	473	2.50	0.00	0.00	0.01	0.00	0.00
403	480	474	3.10	0.00	0.00	0.02	0.00	0.00
411	2129	J-45	41.95	0.08	0.00	0.27	0.10	0.10
414	1217	1121	5.30	0.00	0.00	0.06	0.01	0.01
417	1235	492	46.61	0.07	0.00	0.30	0.17	0.17
429	505	509	64.43	0.16	0.00	0.41	0.32	0.32
433	512	510	0.91	0.00	0.00	0.01	0.00	0.00
435	1057	513	4.90	0.00	0.00	0.03	0.00	0.00
440	518	J-94	8.46	0.00	0.00	0.05	0.01	0.01
448	1184	92	45.70	0.07	0.00	0.29	0.08	0.08
451	119	530	70.56	0.02	0.00	0.45	0.37	0.37
452	119	536	113.95	0.42	0.00	0.73	0.91	0.91
458	536	2079	48.64	0.12	0.00	0.31	0.19	0.19
461	540	2079	2.99	0.00	0.00	0.02	0.00	0.00
464	544	543	39.92	0.06	0.00	0.25	0.13	0.13
472	552	J-100	91.26	0.06	0.00	0.58	0.60	0.60
476	I-AV-1	J-114	0.00	0.00	0.00	0.00	0.00	0.00
486	569	573	2.20	0.00	0.00	0.01	0.00	0.00
490	385	166	148.41	0.12	0.00	0.95	0.47	0.47
495	J-138	579	37.17	0.02	0.00	0.24	0.05	0.05
497	582	584	31.83	0.02	0.00	0.20	0.04	0.04
503	590	J-73	2.16	0.00	0.00	0.01	0.00	0.00
511	599	601	2.10	0.00	0.00	0.01	0.00	0.00
526	599	619	3.30	0.00	0.00	0.02	0.00	0.00
531	620	623	2.80	0.00	0.00	0.02	0.00	0.00
538	628	631	56.10	0.02	0.00	0.36	0.17	0.17
541	1049	632	1.40	0.00	0.00	0.01	0.00	0.00
547	631	642	2.60	0.00	0.00	0.02	0.00	0.00
552	High Level	2090	135.30	0.98	0.00	0.86	0.89	0.89
565	509	661	53.17	0.29	0.00	0.34	0.22	0.22
569	1284	597	38.31	0.02	0.00	0.24	0.09	0.09
571	2086	46	82.48	0.18	0.00	0.53	0.36	0.36
574	668	665	15.99	0.01	0.00	0.10	0.01	0.01
577	668	675	2.30	0.00	0.00	0.01	0.00	0.00
584	J-27	676	4.10	0.00	0.00	0.03	0.00	0.00
590	54	682	0.80	0.00	0.00	0.01	0.00	0.00
591	J-95	683	8.90	0.00	0.00	0.06	0.01	0.01
593	J-78	686	1.50	0.00	0.00	0.01	0.00	0.00
597	408	J-79	151.52	0.03	0.00	0.97	1.54	1.54
601	361	1960	79.13	0.42	0.00	0.51	0.33	0.33
612	710	705	30.78	0.01	0.00	0.20	0.04	0.04
617	717	1134	6.13	0.00	0.00	0.04	0.00	0.00
623	247	718	0.20	0.00	0.00	0.00	0.00	0.00
630	424	726	88.82	0.05	0.00	0.57	0.57	0.57
632	726	J-80	27.42	0.03	0.00	0.18	0.06	0.06
652	468	780	13.00	0.02	0.00	0.08	0.01	0.01
684	2092	781	0.10	0.00	0.00	0.00	0.00	0.00
686	784	1698	4.85	0.00	0.00	0.03	0.00	0.00
690	788	791	12.29	0.01	0.00	0.08	0.01	0.01
693	791	792	0.60	0.00	0.00	0.00	0.00	0.00
697	797	784	9.07	0.00	0.00	0.06	0.00	0.00
700	800	802	1.30	0.00	0.00	0.01	0.00	0.00
702	803	1465	32.12	0.09	0.00	0.36	0.35	0.35
706	2009	808	10.15	0.04	0.00	0.12	0.04	0.04
710	815	813	19.73	0.04	0.00	0.22	0.14	0.14
712	121	2093	95.05	0.12	0.00	1.08	2.63	2.63
714	2094	40	7.18	0.15	0.00	0.18	0.16	0.16
723	2096	828	13.37	0.03	0.00	0.15	0.07	0.07
726	831	544	42.32	0.04	0.00	0.48	0.59	0.59
727	530	831	65.70	0.45	0.00	0.75	1.33	1.33
735	831	1989	20.58	0.04	0.00	0.23	0.15	0.15
739	844	842	9.91	0.02	0.00	0.11	0.04	0.04
741	817	844	27.92	0.18	0.00	0.32	0.27	0.27
749	J-115	856	13.35	0.02	0.00	0.15	0.07	0.07
751	2078	14	19.97	0.04	0.00	0.23	0.15	0.15
753	860	2097	40.21	0.30	0.00	0.46	0.53	0.53
757	868	865	10.87	0.01	0.00	0.12	0.05	0.05
760	J-113	868	4.19	0.00	0.00	0.05	0.01	0.01
762	872	868	10.88	0.01	0.00	0.12	0.05	0.05
772	881	2098	0.68	0.00	0.00	0.01	0.00	0.00
776	J-111	885	14.13	0.02	0.00	0.16	0.08	0.08
784	J-106	893	1.00	0.00	0.00	0.01	0.00	0.00
785	J-110	893	22.93	0.08	0.00	0.26	0.19	0.19
789	899	66	4.10	0.00	0.00	0.05	0.01	0.01
791	901	899	23.11	0.03	0.00	0.26	0.19	0.19
793	901	1742	37.42	0.53	0.00	0.42	0.47	0.47
797	910	906	3.40	0.00	0.00	0.04	0.01	0.01
801	910	38	5.01	0.00	0.00	0.06	0.01	0.01
807	842	2084	23.09	0.06	0.00	0.26	0.19	0.19
812	916	922	1.60	0.00	0.00	0.02	0.00	0.00
814	J-20	923	20.67	0.09	0.00	0.23	0.16	0.16
817	J-21	929	1.10	0.00	0.00	0.01	0.00	0.00

2020 Peak Hour Demand

823	J-2	937	5.44	0.01	0.00	0.06	0.01	0.01
825	J-2	556	14.88	0.04	0.00	0.17	0.08	0.08
831	2080	945	19.53	0.07	0.00	0.22	0.14	0.14
839	2081	954	5.13	0.01	0.00	0.06	0.01	0.01
846	962	964	0.40	0.00	0.00	0.00	0.00	0.00
858	1314	1387	31.13	0.16	0.00	0.79	2.40	2.40
861	108	104	5.78	0.01	0.00	0.07	0.01	0.01
867	J-110	958	12.47	0.06	0.00	0.14	0.06	0.06
874	994	65	17.94	0.09	0.00	0.20	0.12	0.12
876	65	1986	27.71	0.18	0.00	0.31	0.27	0.27
883	1003	1023	20.56	0.05	0.00	0.23	0.11	0.11
903	J-125	1024	64.20	0.33	0.00	0.73	0.91	0.91
905	O-High Lev	649	0.00	0.00	0.00	0.00	0.00	0.00
910	1024	628	59.60	0.51	0.00	0.68	0.79	0.79
912	1003	1032	13.94	0.04	0.00	0.16	0.05	0.05
930	1050	1053	5.80	0.01	0.00	0.07	0.01	0.01
933	384	2100	17.90	0.12	0.00	0.20	0.12	0.12
936	16	1057	45.36	0.21	0.00	0.51	0.48	0.48
938	1060	1063	4.00	0.00	0.00	0.05	0.00	0.00
941	J-129	1064	4.40	0.01	0.00	0.05	0.01	0.01
948	526	1071	46.03	0.15	0.00	0.52	0.49	0.49
949	526	1084	27.78	0.76	0.00	0.32	0.27	0.27
962	1085	1337	4.83	0.01	0.00	0.05	0.01	0.01
966	1099	J-78	30.31	0.31	0.00	0.34	0.23	0.23
975	1101	1100	1.00	0.00	0.00	0.01	0.00	0.00
976	O-Fairview	1101	24.30	0.02	0.00	0.28	0.15	0.15
982	J-81	2103	7.54	0.01	0.00	0.09	0.02	0.02
993	1121	1122	1.20	0.00	0.00	0.01	0.00	0.00
994	2076	2127	39.20	0.15	0.00	0.44	0.51	0.51
1000	1130	1125	3.00	0.00	0.00	0.03	0.00	0.00
1001	J-73	2104	10.47	0.03	0.00	0.12	0.04	0.04
1003	2104	1134	4.37	0.00	0.00	0.05	0.01	0.01
1004	509	1290	11.70	0.03	0.00	0.13	0.05	0.05
1007	2105	1137	21.71	0.06	0.00	0.25	0.17	0.17
1009	2013	1388	41.73	0.15	0.00	0.47	0.57	0.57
1012	2107	2106	50.62	0.48	0.00	0.57	0.82	0.82
1014	23	510	29.90	0.29	0.00	0.34	0.31	0.31
1017	2137	2109	35.71	0.20	0.00	0.41	0.43	0.43
1019	2109	2094	49.27	0.25	0.00	0.56	0.78	0.78
1020	2094	23	44.30	0.09	0.00	0.50	0.64	0.64
1023	23	1156	21.65	0.08	0.00	0.25	0.17	0.17
1024	2073	2096	25.23	0.05	0.00	0.29	0.23	0.23
1025	2096	2110	20.68	0.04	0.00	0.23	0.16	0.16
1026	2110	1997	3.43	0.00	0.00	0.04	0.01	0.01
1028	2111	1997	19.37	0.03	0.00	0.22	0.14	0.14
1030	2112	2111	46.99	0.19	0.00	0.53	0.71	0.71
1032	2113	1961	20.99	0.07	0.00	0.24	0.16	0.16
1035	704	1961	15.55	0.02	0.00	0.18	0.09	0.09
1036	1961	2109	32.04	0.10	0.00	0.36	0.35	0.35
1037	2010	2014	42.54	0.38	0.00	0.48	0.59	0.59
1040	2012	2013	73.30	0.53	0.00	0.83	1.62	1.62
1041	2065	2012	8.72	0.01	0.00	0.10	0.03	0.03
1042	2137	2065	5.00	0.00	0.00	0.06	0.01	0.01
1043	2137	2113	16.45	0.03	0.00	0.19	0.10	0.10
1044	1180	2113	63.11	0.33	0.00	0.72	1.23	1.23
1046	22	1181	22.25	0.02	0.00	0.25	0.18	0.18
1047	2095	22	44.50	0.11	0.00	0.50	0.64	0.64
1048	726	1184	59.00	0.00	0.00	0.38	0.12	0.12
1051	1996	1186	15.03	0.02	0.00	0.17	0.09	0.09
1053	827	1232	8.02	0.03	0.00	0.09	0.03	0.03
1058	1232	1156	12.38	0.04	0.00	0.14	0.06	0.06
1060	1156	512	24.92	0.20	0.00	0.28	0.22	0.22
1062	512	2107	14.11	0.06	0.00	0.16	0.08	0.08
1064	2115	2107	21.80	0.03	0.00	0.25	0.17	0.17
1069	2117	2065	48.28	0.43	0.00	0.55	0.75	0.75
1071	1210	2137	64.66	0.75	0.00	0.73	1.29	1.29
1074	1713	1211	0.40	0.00	0.00	0.00	0.00	0.00
1076	24	1713	45.30	0.07	0.00	0.51	0.30	0.30
1077	1215	J-58	25.04	0.07	0.00	0.28	0.22	0.22
1078	68	1217	4.66	0.00	0.00	0.05	0.00	0.00
1080	1218	2112	60.67	1.20	0.00	0.69	1.14	1.14
1083	2112	1223	37.08	0.15	0.00	0.42	0.46	0.46
1085	2111	1224	4.87	0.00	0.00	0.06	0.01	0.01
1087	1333	1085	10.52	0.02	0.00	0.12	0.04	0.04
1088	808	1085	0.91	0.00	0.00	0.01	0.00	0.00
1090	808	1229	2.14	0.00	0.00	0.02	0.00	0.00
1091	1181	1232	14.45	0.04	0.00	0.16	0.08	0.08
1094	1235	1483	1.51	0.00	0.00	0.02	0.00	0.00
1095	2120	1104	0.70	0.00	0.00	0.01	0.00	0.00
1096	2120	1239	2.70	0.00	0.00	0.03	0.00	0.00
1099	1214	1240	0.20	0.00	0.00	0.00	0.00	0.00
1100	1244	1214	105.30	0.68	0.00	1.19	1.44	1.44
1103	1251	1244	59.59	0.28	0.00	0.68	0.50	0.50
1110	Yankis (Va	1251	122.50	0.79	0.00	1.39	1.91	1.91
1116	J-25	1513	29.00	0.00	0.00	0.19	0.03	0.03
1117	1396	1277	10.50	0.01	0.00	0.12	0.03	0.03
1118	1277	1262	0.40	0.00	0.00	0.00	0.00	0.00
1120	657	J-25	37.10	0.02	0.00	0.15	0.01	0.01
1125	1181	1270	2.60	0.00	0.00	0.03	0.00	0.00
1127	2103	1099	7.31	0.03	0.00	0.08	0.02	0.02
1132	1277	I-AV-4	0.00	0.00	0.00	0.00	0.00	0.00
1138	579	693	31.77	0.30	0.00	0.36	0.35	0.35
1140	1284	O-AV-3	0.00	0.00	0.00	0.00	0.00	0.00
1146	1290	2119	8.20	0.27	0.00	0.21	0.20	0.20
1148	1293	1295	12.24	0.16	0.00	0.31	0.43	0.43
1150	398	2016	70.53	0.10	0.00	0.80	1.51	1.51
1152	1120	1298	0.90	0.00	0.00	0.01	0.00	0.00
1154	432	1309	9.90	0.06	0.00	0.11	0.03	0.03
1165	1310	1314	8.08	0.23	0.00	0.21	0.20	0.20
1169	2127	J-61	7.46	0.16	0.00	0.19	0.17	0.17
1171	1318	2105	17.21	0.46	0.00	0.44	0.80	0.80
1173	2105	1322	11.03	0.16	0.00	0.28	0.35	0.35
1178	40	2115	17.95	0.26	0.00	0.46	0.86	0.86
1179	2115	1328	16.21	0.42	0.00	0.41	0.72	0.72
1182	803	J-81	11.74	0.25	0.00	0.30	0.39	0.39

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1185	1333	1337	3.73	0.02	0.00	0.10	0.05	0.05
1189	1338	807	5.52	0.15	0.00	0.14	0.10	0.10
1193	518	192	17.50	0.06	0.00	0.45	0.82	0.82
1195	1060	192	9.98	0.17	0.00	0.25	0.29	0.29
1198	705	1060	23.68	1.90	0.00	0.60	1.44	1.44
1205	492	J-80	1.78	0.01	0.00	0.05	0.01	0.01
1208	828	1356	8.07	0.05	0.00	0.21	0.20	0.20
1210	828	1359	1.10	0.00	0.00	0.03	0.00	0.00
1211	1364	1984	4.26	0.01	0.00	-0.11	0.06	0.06
1212	1991	1364	0.75	0.00	0.00	0.02	0.00	0.00
1214	2121	1364	8.00	0.06	0.00	0.20	0.19	0.19
1215	1366	36	3.36	0.03	0.00	0.09	0.04	0.04
1217	1251	1244	53.51	0.28	0.00	0.61	0.41	0.41
1226	17	1375	5.33	0.16	0.00	0.14	0.07	0.07
1236	1387	17	24.63	0.44	0.00	0.63	1.11	1.11
1239	1392	1388	19.07	0.56	0.00	0.49	0.97	0.97
1244	33	1314	29.25	0.20	0.00	0.75	1.52	1.52
1245	937	1456	0.24	0.00	0.00	0.01	0.00	0.00
1247	384	1456	8.74	0.06	0.00	0.22	0.23	0.23
1248	1396I-Valley V		0.00	0.00	0.00	0.00	0.00	0.00
1258	1409	505	12.90	0.51	0.00	0.33	0.47	0.47
1261	1410	657	5.27	0.04	0.00	0.13	0.06	0.06
1269	1023	I-AV-2	0.00	0.00	0.00	0.00	0.00	0.00
1309	1456	881	4.68	0.03	0.00	0.12	0.07	0.07
1315	885	1056	6.64	0.02	0.00	0.17	0.10	0.10
1319	1465	2103	9.32	0.16	0.00	0.24	0.26	0.26
1322	407	509	14.75	0.49	0.00	0.38	0.60	0.60
1330	492	693	0.58	0.00	0.00	0.01	0.00	0.00
1338	1295	1483	6.24	0.12	0.00	0.16	0.12	0.12
1340	899	1484	9.41	0.49	0.00	0.24	0.26	0.26
1351	344	1497	3.50	0.01	0.00	0.09	0.02	0.02
1354	1502	1498	2.00	0.00	0.00	0.01	0.00	0.00
1358	J-133	1502	26.70	0.01	0.00	0.17	0.02	0.02
1371	1517	1519	1.30	0.02	0.00	0.13	0.09	0.09
1384	J-95	1544	55.50	0.05	0.00	0.16	0.02	0.02
1388	1544	1547	29.85	0.00	0.00	0.08	0.00	0.00
1389	1547	J-96	15.30	0.00	0.00	0.04	0.00	0.00
1396	1544	1547	3.35	0.00	0.00	0.02	0.00	0.00
1401	668	1674	43.48	0.01	0.00	0.12	0.01	0.01
1404	1674	102	24.60	0.00	0.00	0.07	0.00	0.00
1406	102	J-1	17.80	0.00	0.00	0.05	0.00	0.00
1409	92	J-143	19.00	0.01	0.00	0.05	0.00	0.00
1423	421	107	67.60	0.01	0.00	0.19	0.02	0.02
1426	34	1575	10.47	0.00	0.00	0.03	0.00	0.00
1427	1576	248	23.80	0.00	0.00	0.07	0.00	0.00
1429	248	1580	2.50	0.00	0.00	0.01	0.00	0.00
1433	51	26	218.37	0.09	0.00	0.62	0.19	0.19
1435	109	51	231.07	0.30	0.00	0.66	0.21	0.21
1440	109	6	297.51	0.16	0.00	0.84	0.34	0.34
1441	6	1647	134.17	0.11	0.00	0.38	0.08	0.08
1443	1637	1647	22.75	0.01	0.00	0.06	0.00	0.00
1454	72	1637	213.30	0.32	0.00	0.61	0.18	0.18
1455	1626	72	238.70	0.82	0.00	0.68	0.22	0.22
1458	1627	1626	634.52	1.05	0.00	1.80	1.37	1.37
1460	797	212	40.85	0.00	0.00	0.12	0.01	0.01
1464	1630	788	92.60	0.15	0.00	0.26	0.04	0.04
1477	1626	1630	370.52	0.57	0.00	1.05	0.51	0.51
1479	Yates Reese	1627	1124.02	3.39	0.00	3.19	3.15	3.15
1481	1630	76	238.32	0.63	0.00	0.68	0.18	0.18
1483	76	1636	213.68	0.34	0.00	0.61	0.15	0.15
1487	1637	75	156.25	0.06	0.00	0.44	0.10	0.10
1492	75	49	118.49	0.04	0.00	0.34	0.06	0.06
1493	49	254	97.59	0.14	0.00	0.28	0.04	0.04
1494	J-35	254	104.93	0.08	0.00	0.30	0.05	0.05
1497	1647	2072	121.92	0.07	0.00	0.35	0.06	0.06
1499	247	1648	115.01	0.27	0.00	0.33	0.06	0.06
1500	343	1657	8.50	0.01	0.00	0.06	0.00	0.00
1509	1658	901	69.83	0.10	0.00	0.45	0.13	0.13
1526	1674	800	7.98	0.00	0.00	0.05	0.00	0.00
1531	800	174	0.88	0.00	0.00	0.01	0.00	0.00
1534	1679	1689	4.60	0.01	0.00	0.05	0.01	0.01
1544	1689	1690	0.60	0.00	0.00	0.00	0.00	0.00
1548	1698	2092	3.30	0.00	0.00	0.02	0.00	0.00
1552	1699	1700	3.70	0.00	0.00	0.02	0.00	0.00
1553	2138	89	6.30	0.00	0.00	0.04	0.00	0.00
1560	J-53	1710	4.80	0.00	0.00	0.03	0.00	0.00
1562	683	1711	1.00	0.00	0.00	0.01	0.00	0.00
1563	683	1712	2.30	0.00	0.00	0.01	0.00	0.00
1564	1713	1716	42.70	0.05	0.00	0.48	0.27	0.27
1567	1716	1719	0.80	0.00	0.00	0.01	0.00	0.00
1584	1742	1737	16.37	0.92	0.00	0.42	0.73	0.73
1588	1737	1375	7.67	0.07	0.00	0.20	0.18	0.18
1593	1742	1484	8.05	0.00	0.00	0.03	0.00	0.00
1596	975	1484	1.44	0.00	0.00	0.01	0.00	0.00
1611	975	1310	1.05	0.00	0.00	0.00	0.00	0.00
1612	2122	1310	14.73	0.00	0.00	0.06	0.00	0.00
1615	2123	1089	8.94	0.00	0.00	0.06	0.00	0.00
1617	1089	1186	26.02	0.06	0.00	0.30	0.24	0.24
1618	1186	1767	36.15	0.03	0.00	0.23	0.05	0.05
1621	J-135	1773	37.00	0.03	0.00	0.24	0.04	0.04
1626	1773	1775	30.50	0.01	0.00	0.19	0.03	0.03
1628	1775	1776	14.02	0.00	0.00	0.09	0.01	0.01
1629	1776	1782	6.02	0.00	0.00	0.04	0.00	0.00
1635	1788	1782	2.53	0.00	0.00	0.02	0.00	0.00
1641	1775	1788	14.18	0.00	0.00	0.09	0.01	0.01
1644	1773	1791	1.10	0.00	0.00	0.01	0.00	0.00
1645	1776	1793	1.50	0.00	0.00	0.01	0.00	0.00
1647	1788	1782	3.35	0.00	0.00	0.02	0.00	0.00
1654	1800	1801	1.10	0.00	0.00	0.00	0.00	0.00
1657	18053-inch or		0.50	0.00	0.00	0.00	0.00	0.00
1658	1806	1808	1.80	0.00	0.00	0.02	0.00	0.00
1660	1809	1806	3.70	0.00	0.00	0.02	0.00	0.00
1661	1810	1821	39.52	0.01	0.00	0.16	0.02	0.02
1663	1821	1800	26.58	0.00	0.00	0.11	0.01	0.01
1664	1813	1809	10.80	0.00	0.00	0.04	0.00	0.00

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1665	1814	1818	2.40	0.10	0.00	0.25	0.19	0.19
1669	1813	1814	6.28	0.00	0.00	0.04	0.00	0.00
1672	1821	J-112	6.64	0.00	0.00	0.04	0.00	0.00
1673	1826	1823	32.93	0.10	0.00	0.37	0.26	0.26
1676	1827	1071	55.95	0.01	0.00	0.36	0.17	0.17
1677	J-128	1636	3.12	0.00	0.00	0.02	0.00	0.00
1792	844	910	10.91	0.09	0.00	0.28	0.34	0.34
1793	178	1823	29.35	0.00	0.00	0.19	0.05	0.05
1796	1063	1948	1.50	0.04	0.00	0.15	0.13	0.13
1799	1032	J-114	7.34	0.08	0.00	0.19	0.12	0.12
1810	1960	12	72.93	0.01	0.00	0.47	0.28	0.28
1811	12	10	67.63	0.26	0.00	0.43	0.25	0.25
1813	1767	J-117	4.10	0.00	0.00	0.05	0.01	0.01
1818	1737	1968	0.60	0.00	0.00	0.02	0.00	0.00
1820	1823	J-21	57.99	0.52	0.00	0.66	1.05	1.05
1821	175	384	192.75	0.78	0.00	0.79	0.37	0.37
1825	566	1973	2.35	0.01	0.00	0.06	0.02	0.02
1826	1974	1975	3.31	0.02	0.00	0.08	0.04	0.04
1828	J-3	1980	2.40	0.00	0.00	0.03	0.00	0.00
1830	19813-inch or		0.20	0.00	0.00	0.01	0.00	0.00
1831	1767	1984	27.05	0.06	0.00	0.31	0.26	0.26
1834	1986	1985	0.30	0.00	0.00	0.01	0.00	0.00
1835	894	2125	5.68	0.00	0.00	0.04	0.00	0.00
1836	1987	568	0.81	0.00	0.00	0.02	0.00	0.00
1837	1989	1988	0.20	0.00	0.00	0.01	0.00	0.00
1839	2121	1991	26.51	0.05	0.00	0.30	0.25	0.25
1840	2123	2126	164.15	0.08	0.00	0.67	0.27	0.27
1841	994	1994	1.00	0.00	0.00	0.01	0.00	0.00
1842	1997	1996	17.21	0.08	0.00	0.20	0.11	0.11
1843	1184	2003	4.40	0.00	0.00	0.05	0.00	0.00
1852	2007	2009	28.77	0.07	0.00	0.33	0.29	0.29
1854	2065	2010	36.96	0.22	0.00	0.42	0.46	0.46
1855	J-39	2012	70.08	0.21	0.00	0.45	0.37	0.37
1856	2013	2014	26.77	0.05	0.00	0.30	0.11	0.11
1858	2016	J-81	6.69	0.21	0.00	0.17	0.14	0.14
1860	504	2127	7.30	0.15	0.00	0.19	0.16	0.16
1864	1121	2023	0.80	0.00	0.00	0.01	0.00	0.00
1865	2127	1215	27.74	0.07	0.00	0.31	0.27	0.27
1866	2025	2028	1.80	0.04	0.00	0.18	0.11	0.11
1869	2029	2030	1.00	0.01	0.00	0.10	0.04	0.04
1870	2031	2029	8.50	0.01	0.00	0.22	0.07	0.07
1871	2029	2025	5.90	0.00	0.00	0.15	0.03	0.03
1872	2025	2032	1.10	0.00	0.00	0.03	0.00	0.00
1873	2031	2033	2.80	0.01	0.00	0.07	0.01	0.01
1877	J-124	2031	15.30	0.00	0.00	0.10	0.01	0.01
1883	J-74	2047	0.90	0.00	0.00	0.01	0.00	0.00
1887	2053	582	16.93	0.37	0.00	0.43	0.55	0.55
1892	2129	582	22.11	0.31	0.00	0.56	0.91	0.91
1893	46	590	27.67	0.14	0.00	0.31	0.19	0.19
1894	J-45	2061	1.50	0.00	0.00	0.02	0.00	0.00
1895	J-44	2063	74.68	0.26	0.00	0.48	0.30	0.30
1896	5	361	153.94	0.02	0.00	0.63	0.38	0.38
1898	14	540	4.29	0.00	0.00	0.05	0.01	0.01
1900	163-in or sm		0.20	0.00	0.00	0.00	0.00	0.00
1901	17	18	5.10	0.00	0.00	0.06	0.01	0.01
1904	2088	24	49.50	0.00	0.00	0.56	0.36	0.36
1907	36	2130	6.30	0.01	0.00	0.07	0.02	0.02
1908	2083	38	0.79	0.00	0.00	0.01	0.00	0.00
1909	2014	J-87	43.44	0.18	0.00	0.49	0.62	0.62
1917	69	J-61	0.94	0.00	0.00	0.01	0.00	0.00
1920	295	J-30	32.20	0.01	0.00	0.09	0.00	0.00
1924	2066	86	13.90	0.00	0.00	0.04	0.00	0.00
1927	104	J-112	5.68	0.01	0.00	0.06	0.01	0.01
1930	118	710	632.70	2.56	0.00	1.32	1.01	1.01
1935	2106	247	136.91	0.03	0.00	0.87	1.27	1.27
1936	2122	325	86.45	0.01	0.00	0.25	0.03	0.03
1938	1218	375	591.67	0.92	0.00	1.23	1.25	1.25
1940	1318	396	338.60	0.14	0.00	0.71	0.45	0.45
1941	480	2138	16.50	0.00	0.00	0.07	0.01	0.01
1947	2093	530	0.05	0.00	0.00	0.00	0.00	0.00
1948	536	2078	59.01	0.08	0.00	0.38	0.27	0.27
1949	565	1084	64.16	0.18	0.00	0.41	0.31	0.31
1950	556	944	9.00	0.02	0.00	0.10	0.03	0.03
1951	543	565	74.56	0.01	0.00	0.48	0.41	0.41
1954	J-84	O-AV-5	0.00	0.00	0.00	0.00	0.00	0.00
1956	584	717	41.65	0.03	0.00	0.17	0.03	0.03
1958	590	584	17.12	0.00	0.00	0.07	0.01	0.01
1960	620	2133	22.90	0.00	0.00	0.15	0.02	0.02
1962	1410	649	70.20	0.01	0.00	0.45	0.26	0.26
1964	661	424	43.71	0.01	0.00	0.18	0.05	0.05
1965	665	172	15.42	0.00	0.00	0.04	0.00	0.00
1967	710	137	580.22	1.72	0.00	1.21	0.86	0.86
1972	791	784	4.09	0.00	0.00	0.03	0.00	0.00
1975	788	797	56.11	0.00	0.00	0.16	0.02	0.02
1977	813	J-120	16.40	0.06	0.00	0.19	0.10	0.10
1978	815	803	2.30	0.00	0.00	0.03	0.00	0.00
1979	817	1338	21.09	0.07	0.00	0.24	0.16	0.16
1982	856	2121	33.93	0.11	0.00	0.39	0.39	0.39
1983	375	860	332.67	0.11	0.00	0.69	0.43	0.43
1984	865	65	61.57	0.11	0.00	0.39	0.29	0.29
1985	14	872	12.68	0.01	0.00	0.14	0.06	0.06
1986	923	J-3	19.74	0.05	0.00	0.22	0.14	0.14
1987	1987	944	13.93	0.03	0.00	0.16	0.07	0.07
1989	945	954	12.32	0.01	0.00	0.14	0.06	0.06
1990	958	J-106	12.88	0.02	0.00	0.15	0.06	0.06
1992	994	1658	154.23	0.13	0.00	0.63	0.24	0.24
1993	2101	60	4.35	0.00	0.00	0.05	0.01	0.01
1995	1049	1003	42.50	0.22	0.00	0.48	0.42	0.42
1996	631	1049	49.00	0.04	0.00	0.31	0.14	0.14
1997	1050	975	12.79	0.02	0.00	0.15	0.05	0.05
1998	1057	518	30.56	0.05	0.00	0.20	0.08	0.08
2000	1084	552	74.34	0.18	0.00	0.47	0.41	0.41
2001	1120	1099	53.64	0.22	0.00	0.61	0.91	0.91
2002	J-75	1107	92.75	0.13	0.00	0.59	0.62	0.62
2003	1130	J-63	42.77	0.07	0.00	0.27	0.15	0.15

2020 Peak Hour Demand

2005	398	1137	83.82	0.31	0.00	0.53	0.51	0.51
2010	1180	704	105.26	0.37	0.00	0.67	0.78	0.78
2011	704	1183	86.11	0.08	0.00	0.98	2.19	2.19
2014	2067	1210	589.69	0.71	0.00	1.23	1.25	1.25
2020	1223	1224	21.68	0.05	0.00	0.25	0.17	0.17
2021	1224	827	20.85	0.11	0.00	0.24	0.16	0.16
2022	1229	815	27.43	0.08	0.00	0.31	0.26	0.26
2024	1517	1235	55.82	0.22	0.00	0.36	0.24	0.24
2025	1099	J-82	15.14	0.03	0.00	0.17	0.09	0.09
2027	46	1284	45.71	0.08	0.00	0.29	0.12	0.12
2031	1392	1318	362.20	0.15	0.00	0.75	0.51	0.51
2032	J-87	1322	39.65	0.14	0.00	0.45	0.52	0.52
2033	2091	1328	78.48	0.15	0.00	0.50	0.45	0.45
2035	1337	2110	3.26	0.00	0.00	0.04	0.01	0.01
2036	1338	813	3.57	0.00	0.00	0.04	0.01	0.01
2037	1356	1089	20.58	0.00	0.00	0.23	0.15	0.15
2039	945	1366	1.82	0.00	0.00	0.02	0.00	0.00
2040	1387	979	2.20	0.00	0.00	0.02	0.00	0.00
2042	J-39	1392	387.97	0.34	0.00	0.81	0.57	0.57
2045	1409	407	158.45	0.17	0.00	0.65	0.56	0.56
2048	1465	J-120	18.49	0.00	0.00	0.21	0.13	0.13
2053	1107	1517	64.42	0.13	0.00	0.41	0.32	0.32
2058	J-8	1570	63.30	0.08	0.00	0.26	0.07	0.07
2060	1575	342	33.70	0.00	0.00	0.10	0.00	0.00
2063	1627	J-135	474.60	0.28	0.00	1.35	0.80	0.80
2067	1648	432	32.80	0.06	0.00	0.13	0.02	0.02
2068	1658	421	75.10	0.05	0.00	0.31	0.06	0.06
2070	1101	1679	21.10	0.00	0.00	0.24	0.12	0.12
2071	212	1698	5.45	0.00	0.00	0.03	0.00	0.00
2078	1800	1813	21.78	0.00	0.00	0.09	0.01	0.01
2079	1805	1805	3.90	0.00	0.00	0.02	0.00	0.00
2080	107	1810	52.42	0.01	0.00	0.15	0.01	0.01
2087	1960	700	0.10	0.00	0.00	0.00	0.00	0.00
2089	1973	J-2	18.43	0.04	0.00	0.21	0.13	0.13
2090	1974	1366	8.45	0.01	0.00	0.10	0.03	0.03
2091	1975	36	8.94	0.01	0.00	0.10	0.03	0.03
2092	1981	J-4	26.81	0.07	0.00	0.30	0.25	0.25
2093	1984	994	181.67	0.13	0.00	0.74	0.33	0.33
2095	1986	552	21.71	0.09	0.00	0.25	0.17	0.17
2096	893	1987	19.94	0.01	0.00	0.23	0.15	0.15
2097	1989	842	18.28	0.02	0.00	0.21	0.12	0.12
2102	827	1996	3.42	0.00	0.00	0.04	0.01	0.01
2104	375	2007	251.40	0.39	0.00	1.03	0.60	0.60
2105	2009	2096	13.12	0.00	0.00	0.15	0.07	0.07
2111	2016	1120	56.64	0.02	0.00	0.64	1.01	1.01
2114	1107	1293	23.73	0.08	0.00	0.27	0.20	0.20
2118	J-57	2053	92.98	0.18	0.00	0.59	0.44	0.44
2120	717	2063	25.82	0.01	0.00	0.11	0.01	0.01
2127	2067	1218	662.04	0.51	0.00	1.38	1.54	1.54
2128	2067	1180	174.37	1.16	0.00	1.11	1.99	1.99
2139	2007	2073	218.34	0.02	0.00	0.89	0.46	0.46
2141	2074	483	2.00	0.00	0.00	0.01	0.00	0.00
2145	492	2076	31.55	0.03	0.00	0.20	0.08	0.08
2146	504	2076	4.11	0.00	0.00	0.03	0.00	0.00
2148	693	J-64	22.25	0.01	0.00	0.14	0.02	0.02
2149	2078	865	54.80	0.07	0.00	0.35	0.23	0.23
2150	1991	2078	21.06	0.05	0.00	0.24	0.16	0.16
2152	2079	543	37.84	0.02	0.00	0.24	0.12	0.12
2153	2080	2081	46.37	0.07	0.00	0.53	0.32	0.32
2154	2080	958	17.55	0.07	0.00	0.20	0.12	0.12
2155	2125	J-99	38.82	0.00	0.00	0.25	0.06	0.06
2156	958	2081	7.14	0.01	0.00	0.08	0.02	0.02
2159	2084	2083	15.95	0.01	0.00	0.10	0.02	0.02
2160	2083	916	3.86	0.00	0.00	0.04	0.01	0.01
2161	565	2084	6.10	0.00	0.00	0.04	0.00	0.00
2162	2084	916	5.84	0.01	0.00	0.07	0.01	0.01
2165	2086	578	2.60	0.00	0.00	0.02	0.00	0.00
2166	2132	2086	92.68	0.26	0.00	0.59	0.44	0.44
2169	2088	620	40.50	0.15	0.00	0.26	0.06	0.06
2170	1214	2088	102.00	0.21	0.00	1.16	1.36	1.36
2173	2090	1410	78.27	0.00	0.00	0.50	0.32	0.32
2174	2090	657	44.23	0.04	0.00	0.28	0.07	0.07
2175	1137	2091	99.22	0.33	0.00	0.63	0.70	0.70
2176	2091	505	60.13	0.09	0.00	0.38	0.28	0.28
2179	2093	817	55.61	0.30	0.00	0.63	0.97	0.97
2180	2093	1229	31.09	0.25	0.00	0.35	0.33	0.33
2181	2095	2094	11.40	0.03	0.00	0.13	0.05	0.05
2183	1223	2095	11.40	0.02	0.00	0.13	0.05	0.05
2184	1183	2095	50.91	0.27	0.00	0.58	0.83	0.83
2187	2097	856	24.88	0.09	0.00	0.28	0.22	0.22
2188	2073	2097	10.52	0.01	0.00	0.12	0.04	0.04
2189	885	2098	2.99	0.00	0.00	0.03	0.00	0.00
2190	2098	2100	15.35	0.02	0.00	0.17	0.09	0.09
2192	954	2130	13.15	0.02	0.00	0.15	0.07	0.07
2193	2100	1050	27.79	0.07	0.00	0.32	0.19	0.19
2194	1056	2100	3.64	0.00	0.00	0.04	0.01	0.01
2195	807	2101	25.02	0.07	0.00	0.28	0.10	0.10
2196	2101	J-82	8.96	0.06	0.00	0.11	0.04	0.04
2198	1293	1290	6.39	0.01	0.00	0.07	0.02	0.02
2199	60	2103	2.05	0.00	0.00	0.02	0.00	0.00
2202	2104	2021	1.10	0.00	0.00	0.03	0.00	0.00
2203	1388	2105	23.13	0.06	0.00	0.26	0.19	0.19
2206	1328	2106	89.79	0.09	0.00	0.57	0.58	0.58
2207	510	2107	23.11	0.06	0.00	0.26	0.19	0.19
2212	2109	2010	12.08	0.02	0.00	0.14	0.06	0.06
2214	2110	1356	15.81	0.04	0.00	0.18	0.09	0.09
2216	2111	1333	18.75	0.01	0.00	0.21	0.13	0.13
2217	1183	2112	32.20	0.10	0.00	0.37	0.35	0.35
2221	2113	803	51.16	0.53	0.00	0.58	0.83	0.83
2223	J-87	2115	26.36	0.08	0.00	0.30	0.24	0.24
2228	1210	2117	518.33	0.32	0.00	1.09	0.98	0.98
2231	2119	1483	0.05	0.00	0.00	0.00	0.00	0.00
2234	J-77	2120	8.70	0.00	0.00	0.10	0.02	0.02
2236	2126	2121	5.18	0.00	0.00	0.06	0.01	0.01
2240	2073	2123	178.58	0.14	0.00	0.73	0.32	0.32

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2243	2125	961	7.63	0.00	0.00	0.05	0.00	0.00
2244	2081	2125	42.48	0.02	0.00	0.27	0.07	0.07
2246	2126	1984	155.36	0.07	0.00	0.63	0.25	0.25
2249	J-77	2050	0.20	0.00	0.00	0.00	0.00	0.00
2252	2053	2129	70.16	0.06	0.00	0.45	0.26	0.26
2253	961	2130	5.33	0.01	0.00	0.06	0.01	0.01
2254	2130	1973	19.98	0.01	0.00	0.23	0.15	0.15
2257	214	2132	190.77	0.01	0.00	1.22	1.68	1.68
2259	2133	599	13.60	0.00	0.00	0.09	0.01	0.01
2260	2133	47	3.70	0.00	0.00	0.02	0.00	0.00
2269	2138	481	0.30	0.00	0.00	0.00	0.00	0.00
P-1	J-1	97	11.70	0.00	0.00	0.03	0.00	0.00
P-100	J-112	1814	3.92	0.00	0.00	0.04	0.01	0.01
F-101	2075	J-113	8.19	0.01	0.00	0.09	0.03	0.03
F-102	1023	J-114	10.76	0.07	0.00	0.27	0.24	0.24
F-103	649	J-125	67.50	0.35	0.00	0.77	0.99	0.99
F-104	1103I-Fairview		24.30	0.00	0.00	0.28	0.15	0.15
F-105	J-116	J-115	16.35	0.04	0.00	0.19	0.10	0.10
F-106	2097	J-116	19.35	0.03	0.00	0.22	0.14	0.14
P-108	J-117	56	1.40	0.00	0.00	0.02	0.00	0.00
P-111	J-3	1975	11.84	0.02	0.00	0.13	0.06	0.06
F-111	J-120	807	30.90	0.09	0.00	0.35	0.33	0.33
F-113	2117	J-39	464.65	0.23	0.00	0.97	0.80	0.80
P-116	97	J-122	8.00	0.00	0.00	0.02	0.00	0.00
P-117	J-140	J-145	0.20	0.00	0.00	0.00	0.00	0.00
F-119	J-84	J-139	1.20	0.00	0.00	0.01	0.00	0.00
F-121	J-140	J-138	38.87	0.00	0.00	0.11	0.01	0.01
F-122	Main Reser	J-126	2121.50	1.06	0.00	4.42	9.52	9.52
F-124	O-AV-1	2083	0.00	0.00	0.00	0.00	0.00	0.00
F-125	O-AV-2	906	0.00	0.00	0.00	0.00	0.00	0.00
F-127	J-127	295	106.80	0.10	0.00	0.30	0.04	0.04
F-128	J-127	J-128	29.52	0.02	0.00	0.09	0.00	0.00
F-130	J-128	1831	2.80	0.00	0.00	0.02	0.00	0.00
P-131	1071	J-129	97.77	1.10	0.00	1.11	1.98	1.98
P-132	J-129	668	79.87	0.03	0.00	0.23	0.02	0.02
P-133	1513	J-133	28.10	0.00	0.00	0.18	0.02	0.02
P-134	J-122	J-132	3.70	0.00	0.00	0.01	0.00	0.00
P-135	1502	J-124	19.60	0.00	0.00	0.13	0.01	0.01
P-136	J-124	J-131	0.90	0.00	0.00	0.01	0.00	0.00
F-138-CV	Kennicott	J-53	561.28	0.21	0.00	0.90	0.27	0.27
P-140	O-AV-4	686	0.00	0.00	0.00	0.00	0.00	0.00
P-143	I-AV-5	J-63	0.00	0.00	0.00	0.00	0.00	0.00
P-144	O-AV-6	1134	0.00	0.00	0.00	0.00	0.00	0.00
P-146	J-73	J-134	2.00	0.00	0.00	0.01	0.00	0.00
P-147	J-64	J-141	0.80	0.00	0.00	0.01	0.00	0.00
F-148	J-134	O-RV-2	0.00	0.00	0.00	0.00	0.00	0.00
F-149	J-143	O-RV-1	0.00	0.00	0.00	0.00	0.00	0.00
P-15	J-126	J-91	2116.20	1.63	0.00	4.41	9.48	9.48
F-150-XXCV	J-141	J-134						
F-151	J-139	J-142	0.40	0.00	0.00	0.00	0.00	0.00
F-152	1570	J-144	3.10	0.00	0.00	0.01	0.00	0.00
F-153-XXCV	J-143	J-144						
P-154	I-RV-1	J-144	0.00	0.00	0.00	0.00	0.00	0.00
P-157	I-RV-2	J-141	0.00	0.00	0.00	0.00	0.00	0.00
F-1570	1716	1103	32.40	0.07	0.00	0.21	0.04	0.04
P-158	J-145I-18th St		0.00	0.00	0.00	0.00	0.00	0.00
P-159	J-145	J-146	0.00	0.00	0.00	0.00	0.00	0.00
F-160-XXCV	J-146	J-147						
P-161	J-146O-18th St		0.00	0.00	0.00	0.00	0.00	0.00
P-162	J-147	J-142	0.00	0.00	0.00	0.00	0.00	0.00
F-164	I-18th St	J-147	0.00	0.00	0.00	0.00	0.00	0.00
P-165	J-156	J-155	53.60	0.21	0.00	0.61	0.29	0.29
P-166	66	J-110	43.40	0.20	0.00	0.49	0.62	0.62
P-167	J-156	J-153	276.80	1.40	0.00	0.79	0.29	0.29
P-168	J-152	J-150	9.05	0.00	0.00	0.06	0.00	0.00
P-169	J-88	J-154	392.70	0.27	0.00	1.11	0.56	0.56
F-170	J-155	J-151	22.10	0.27	0.00	0.25	0.06	0.06
F-171	J-155	J-157	3.00	0.19	0.00	0.31	0.29	0.29
P-172	J-154	J-156	362.60	0.75	0.00	1.03	0.49	0.49
P-173	J-6	J-148	12.20	11.89	0.00	1.25	4.46	4.46
P-174	J-153	J-149	6.00	0.00	0.00	0.04	0.00	0.00
P-175	J-152	J-150	0.65	0.00	0.00	0.00	0.00	0.00
P-18	J-135I-South En		431.90	0.04	0.00	1.23	0.54	0.54
P-19	34	33	29.95	0.02	0.00	0.76	1.59	1.59
P-2	J-1	101	0.40	0.00	0.00	0.00	0.00	0.00
P-20	213	1576	25.90	0.00	0.00	0.07	0.00	0.00
P-25	J-30	2066	19.70	0.00	0.00	0.06	0.00	0.00
P-29	2063	J-8	90.30	0.14	0.00	0.37	0.14	0.14
P-3	O-Centrali	J-6	48.00	8.38	0.00	0.54	0.34	0.34
P-30	J-42	J-35	118.43	0.08	0.00	0.34	0.06	0.06
P-31	J-8	54	16.40	0.00	0.00	0.10	0.02	0.02
P-33	2072	J-42	105.62	0.00	0.00	0.30	0.05	0.05
P-34	1699	J-42	22.70	0.00	0.00	0.06	0.00	0.00
P-36	1322	2091	45.88	0.22	0.00	0.52	0.68	0.68
P-4	1570	J-7	47.00	0.05	0.00	0.19	0.04	0.04
P-40	10	J-44	51.03	0.13	0.00	0.33	0.15	0.15
P-42	J-45	J-44	33.65	0.03	0.00	0.21	0.07	0.07
P-43	O-South En	J-88	431.90	2.06	0.00	1.23	0.67	0.67
P-44	J-55	28	3.80	0.00	0.00	0.02	0.00	0.00
P-47	2132	J-57	95.28	0.01	0.00	0.61	0.46	0.46
P-48	41	J-90	0.10	0.00	0.00	0.00	0.00	0.00
P-49	J-57	2051	0.10	0.00	0.00	0.00	0.00	0.00
P-50	J-57	2052	0.10	0.00	0.00	0.00	0.00	0.00
P-51	O-18th St	J-142	0.00	0.00	0.00	0.00	0.00	0.00
P-53	J-4	1974	18.15	0.05	0.00	0.21	0.12	0.12
P-54	J-4	923	4.46	0.00	0.00	0.05	0.01	0.01
P-57	1217	I-AV-6	0.00	0.00	0.00	0.00	0.00	0.00
P-58	69	1217	6.54	0.00	0.00	0.04	0.00	0.00
P-6	J-88	J-11	4.50	0.00	0.00	0.03	0.00	0.00
P-61	J-58	68	22.54	0.02	0.00	0.26	0.08	0.08
P-62	J-61	J-136	1.40	0.00	0.00	0.01	0.00	0.00
P-63	J-64	2076	14.75	0.02	0.00	0.09	0.02	0.02
P-64	54	J-27	10.90	0.00	0.00	0.07	0.01	0.01
P-65	597	J-67	27.71	0.02	0.00	0.18	0.05	0.05
P-67	J-67	J-71	24.31	0.01	0.00	0.16	0.02	0.02

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P-69	J-71	J-73	20.71	0.02	0.00	0.13	0.04	0.04
P-7	J-154	J-152	20.10	0.00	0.00	0.13	0.02	0.02
P-71	J-63	J-123	40.57	0.00	0.00	0.26	0.05	0.05
P-73	1679	J-74	12.40	0.01	0.00	0.14	0.04	0.04
P-74	J-74	J-77	9.90	0.00	0.00	0.11	0.03	0.03
P-75	I-AV-3	2120	0.00	0.00	0.00	0.00	0.00	0.00
P-76	J-78	408	20.21	0.01	0.00	0.13	0.03	0.03
P-77	J-79	1130	54.27	0.17	0.00	0.35	0.23	0.23
P-78	J-80	504	21.11	0.02	0.00	0.13	0.04	0.04
P-79	J-82	1396	14.50	0.03	0.00	0.16	0.06	0.06
P-80	1388	J-87	29.57	0.09	0.00	0.34	0.14	0.14
P-81	92	J-62	1.80	0.00	0.00	0.01	0.00	0.00
P-82	597	J-84	5.00	0.00	0.00	0.03	0.00	0.00
P-83	J-123	J-140	39.97	0.00	0.00	0.11	0.01	0.01
P-84	J-93	1971	0.20	0.00	0.00	0.00	0.00	0.00
P-86	I-High Lev	J-126	0.00	0.00	0.00	0.00	0.00	0.00
P-87	J-94	526	92.71	0.63	0.00	0.59	0.62	0.62
P-88	J-93	J-94	90.15	0.01	0.00	1.02	1.70	1.70
P-89	J-96inter-tie		4.60	0.00	0.00	0.01	0.00	0.00
P-9	J-2	2098	18.48	0.04	0.00	0.21	0.13	0.13
P-90	J-105	174	2.52	0.00	0.00	0.01	0.00	0.00
P-91	J-20	1981	28.81	0.02	0.00	0.33	0.29	0.29
P-92	J-21	J-20	52.99	0.13	0.00	0.60	0.89	0.89
P-93	J-99	568	2.59	0.00	0.00	0.02	0.00	0.00
P-94	J-99	556	29.78	0.01	0.00	0.19	0.03	0.03
P-95	J-99	566	4.65	0.00	0.00	0.03	0.00	0.00
P-96	J-100	2080	90.16	0.04	0.00	0.58	0.27	0.27
P-97	J-106	894	7.28	0.01	0.00	0.08	0.02	0.02
P-98	J-153I-Centrali		48.00	1.77	0.00	0.31	0.08	0.08
P-99	944	J-111	17.23	0.04	0.00	0.20	0.11	0.11
Valley Vie	O-Valley VYankis (Va		0.00	0.00	0.00	0.00	0.00	0.00
~@18th St -RV	I-18th St O-18th St							
~@AV-1-XX	I-AV-1 O-AV-1							
~@AV-2-XX	I-AV-2 O-AV-2							
~@AV-3-XX	I-AV-3 O-AV-3							
~@AV-4-XX	I-AV-4 O-AV-4							
~@AV-5-XX	I-AV-5 O-AV-5							
~@AV-6-XX	I-AV-6 O-AV-6							
~@High Lev-RV	I-High LevO-High Lev							
~@Valley V-RV	I-Valley VO-Valley V							

N O D E R E S U L T S

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
5		0.40	397.32	243.40	153.92	66.70
6		9.00	397.33	244.40	152.93	66.27
9		3.80	396.60	205.80	190.80	82.68
10		12.80	396.61	213.70	182.91	79.26
11		0.20	396.87	236.90	159.97	69.32
12		5.10	396.87	236.50	160.37	69.49
13		0.20	391.74	198.90	192.84	83.56
14		3.00	391.74	201.40	190.34	82.48
15		10.90	393.17	186.10	207.07	89.73
16		2.20	393.17	186.10	207.07	89.73
17		14.20	390.11	175.70	214.41	92.91
18		3.10	390.10	171.90	218.20	94.56
19		2.00	390.05	165.30	224.75	97.39
22		4.60	391.95	186.50	205.45	89.03
23		10.40	391.94	187.70	204.24	88.51
24		2.60	697.54	604.50	93.04	40.32
26		12.00	397.10	240.30	156.80	67.95
28		2.80	397.10	322.60	74.50	32.28
29		1.00	397.10	323.60	73.50	31.85
31		3.30	395.57	216.80	178.77	77.47
32		7.80	395.94	214.70	181.24	78.54
33		0.70	390.90	183.00	207.90	90.09
34		4.90	390.92	183.50	207.42	89.88
36		6.00	391.14	194.40	196.74	85.26
37		0.80	391.69	333.40	58.29	25.26
38		5.00	391.69	290.50	101.19	43.85
40		7.20	391.89	190.80	201.09	87.14
41		0.40	397.15	219.10	178.05	77.16
43		0.20	397.63	253.50	144.13	62.46
46		9.10	396.39	229.90	166.49	72.15
47		2.90	697.39	544.40	152.99	66.29
48		0.80	697.39	543.60	153.79	66.64
49		19.50	397.13	243.00	154.13	66.79
50		1.40	397.13	244.20	152.93	66.27
51		9.50	397.19	240.00	157.19	68.12
52		2.10	397.19	261.50	135.69	58.80
54		4.70	396.07	209.30	186.77	80.93
56		1.40	391.88	193.00	198.88	86.18
59		0.50	391.68	252.50	139.18	60.31
60		1.80	391.68	252.90	138.78	60.14
65		9.50	391.60	192.40	199.20	86.32
66		3.00	391.43	191.30	200.13	86.72
68		6.10	390.40	205.20	185.20	80.25
69		4.30	390.39	208.70	181.69	78.73
70		1.10	397.19	285.20	111.99	48.53
72		25.00	397.55	255.00	142.55	61.77
75		20.60	397.17	247.70	149.47	64.77
76		41.80	397.17	256.00	141.17	61.17
83		0.20	396.74	221.90	174.84	75.76
85		0.20	396.74	222.10	174.64	75.68
86		7.60	396.74	222.40	174.34	75.55
89		6.30	395.92	225.60	170.32	73.81
92		24.90	390.68	192.40	198.28	85.92
97		3.40	390.98	173.90	217.08	94.07
98		0.30	390.98	174.00	216.98	94.02
101		0.40	390.98	174.30	216.68	93.89

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102	6.50	390.98	176.00	214.98	93.16
103	0.30	390.98	175.70	215.28	93.29
104	6.60	391.49	179.70	211.79	91.78
107	6.70	391.50	183.60	207.90	90.09
108	2.70	391.50	183.60	207.90	90.09
109	12.30	397.49	236.20	161.29	69.89
118	26.40	397.50	192.50	205.00	88.83
119	5.50	392.28	217.70	174.58	75.65
121	3.50	392.39	230.70	161.69	70.07
137	13.00	393.21	180.00	213.21	92.39
166	9.60	390.99	182.90	208.09	90.17
172	6.20	390.98	174.10	216.88	93.98
174	3.40	390.98	175.70	215.28	93.29
175	10.80	391.92	183.60	208.32	90.27
178	3.40	391.96	183.60	208.36	90.29
192	11.70	392.85	183.60	209.25	90.68
201	5.60	392.95	178.30	214.65	93.01
212	5.90	397.63	256.30	141.33	61.24
213	3.40	397.63	253.50	144.13	62.46
214	7.50	396.84	230.10	166.74	72.25
224	5.70	397.15	224.20	172.95	74.95
247	21.70	391.09	192.10	198.99	86.23
248	12.90	397.63	248.60	149.03	64.58
253	8.40	397.63	240.90	156.73	67.92
254	29.70	396.99	230.80	166.19	72.02
295	33.90	396.75	210.10	186.65	80.88
325	7.50	390.93	183.90	207.03	89.71
342	5.10	390.92	165.40	225.52	97.72
343	10.10	390.92	163.20	227.72	98.68
344	4.60	390.92	164.20	226.72	98.24
346	0.90	390.92	165.60	225.32	97.64
356	15.10	397.15	219.10	178.05	77.16
361	16.60	397.30	243.10	154.20	66.82
375	7.60	392.51	230.50	162.01	70.20
384	15.90	391.14	183.20	207.94	90.11
385	1.80	391.11	183.60	207.51	89.92
396	1.60	392.06	221.20	170.86	74.04
398	4.50	391.99	220.50	171.49	74.31
407	8.10	391.60	226.99	164.61	71.33
408	4.30	391.32	223.30	168.02	72.81
421	7.50	391.51	184.20	207.31	89.84
424	1.80	390.81	189.90	200.91	87.06
432	22.90	390.75	184.10	206.65	89.55
468	27.70	396.69	204.20	192.49	83.41
473	2.50	390.98	178.30	212.68	92.16
474	3.10	395.93	210.70	185.23	80.26
480	10.60	395.93	218.70	176.23	76.37
481	0.30	395.92	220.90	175.02	75.84
493	2.00	397.15	214.00	183.15	79.37
492	12.70	390.74	195.50	195.24	84.60
504	9.70	390.71	192.80	197.91	85.76
505	8.60	391.26	197.20	194.06	84.09
509	14.30	391.11	200.00	191.11	82.81
510	7.70	391.66	189.60	202.06	87.56
512	9.90	391.66	184.80	206.86	89.64
513	4.90	392.96	178.80	214.16	92.80
518	4.60	392.91	182.20	210.71	91.31
526	18.90	392.28	201.80	190.48	82.54
530	4.90	392.27	220.30	171.97	74.52
536	6.30	391.86	201.90	189.96	82.32
540	1.30	391.74	202.30	189.44	82.09
543	3.20	391.72	210.90	180.82	78.35
544	2.40	391.78	216.10	175.68	76.13
552	4.80	391.34	191.50	199.84	86.60
556	5.90	391.13	206.10	185.03	80.18
565	4.30	391.70	210.90	180.90	78.39
566	2.30	391.14	204.60	186.54	80.84
568	3.40	391.14	206.30	184.84	80.10
569	10.50	390.98	178.30	212.68	92.16
573	2.20	390.98	178.00	211.98	91.86
578	2.60	396.57	280.80	115.77	50.17
579	5.40	391.04	205.50	185.54	80.40
582	7.20	396.27	212.80	183.47	79.50
584	7.30	396.25	207.60	188.65	81.75
590	8.40	396.25	208.60	187.65	81.31
597	5.60	396.29	222.20	174.09	75.44
599	8.20	697.38	592.40	104.98	45.49
601	2.10	697.38	577.30	120.08	52.04
619	3.30	697.38	559.00	138.38	59.97
620	14.80	697.39	583.00	114.39	49.57
623	2.80	697.39	588.00	109.39	47.40
628	3.50	611.82	420.40	191.42	82.95
631	4.50	611.80	382.80	229.00	99.23
632	1.40	611.76	455.20	156.56	67.84
642	2.60	611.80	304.60	307.20	133.12
649	2.70	613.00	392.70	220.30	95.46
657	12.40	612.98	331.20	281.78	122.10
661	8.20	390.81	190.90	199.91	86.63
665	11.60	390.98	174.40	216.58	93.85
668	18.10	390.99	182.30	208.69	90.43
675	2.30	390.99	180.60	210.39	91.17
676	4.10	396.06	206.70	189.36	82.06
682	0.80	396.07	209.20	186.87	80.98
683	5.60	393.11	200.30	192.81	83.55
686	1.50	391.33	278.90	112.43	48.72
693	10.10	390.74	197.40	193.34	83.78
700	0.10	396.87	237.50	159.37	69.06
704	3.60	392.42	190.10	202.32	87.67
705	7.10	394.92	185.50	209.42	90.75
710	21.70	394.93	197.50	197.43	85.55
717	9.70	396.22	204.90	191.32	82.90
718	0.20	391.09	191.20	199.89	86.62
726	2.40	390.75	190.00	200.75	86.99
780	13.00	396.68	195.00	201.68	87.39
781	0.10	397.63	252.20	145.43	63.02

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784	8.30	397.63	259.80	137.83	59.73
788	24.20	397.64	258.50	139.14	60.29
791	7.60	397.63	256.00	141.63	61.38
792	0.60	397.63	254.90	142.73	61.85
797	6.20	397.64	255.30	142.34	61.68
800	5.80	390.98	177.30	213.68	92.59
802	1.30	390.98	178.00	212.98	92.29
803	9.60	391.93	217.90	174.03	75.41
807	11.40	391.75	272.60	119.15	51.63
808	7.10	392.01	215.50	176.51	76.49
813	6.90	391.89	244.90	146.99	63.70
815	5.40	391.93	218.20	172.73	74.85
817	6.60	391.97	275.20	116.77	50.60
827	9.40	391.93	186.80	205.13	88.89
828	4.20	392.02	192.50	199.52	86.46
831	2.80	391.82	216.90	174.92	75.80
842	5.10	391.76	234.00	157.76	68.36
844	7.10	391.79	260.00	131.79	57.11
856	4.30	392.00	194.40	197.60	85.63
860	3.90	392.40	230.20	162.20	70.29
865	4.10	391.72	195.90	195.82	84.85
868	4.20	391.73	197.00	194.73	84.38
872	1.60	391.74	199.50	192.24	83.30
881	4.00	391.05	199.80	191.25	82.87
885	4.50	391.05	204.20	186.85	80.97
893	4.00	391.15	198.10	193.05	83.66
894	1.60	391.15	206.30	184.85	80.10
899	9.60	391.43	192.10	199.33	86.38
901	9.30	391.46	189.00	202.46	87.73
906	3.40	391.70	292.50	99.20	42.98
910	2.50	391.70	294.90	96.80	41.94
916	8.10	391.69	222.40	169.29	73.36
922	1.60	391.69	238.30	153.39	66.47
923	5.40	391.22	182.20	209.02	90.58
929	1.10	391.44	181.60	209.84	90.93
937	5.20	391.08	183.80	207.28	89.82
944	5.70	391.12	196.50	194.62	84.33
945	5.40	391.17	192.00	199.17	86.31
954	4.30	391.16	193.70	197.46	85.57
958	10.00	391.17	201.60	189.57	82.15
961	2.30	391.15	205.40	185.75	80.49
962	5.90	390.98	179.30	211.68	91.73
964	0.40	390.98	179.40	211.58	91.69
975	10.30	390.94	184.50	206.44	89.46
979	2.20	390.55	173.70	216.85	93.97
994	8.50	391.69	192.30	199.39	86.40
1003	8.00	611.54	435.80	175.74	76.15
1023	9.80	611.49	389.60	221.89	96.15
1024	4.60	612.33	408.40	203.93	88.37
1032	6.60	611.49	455.00	156.49	67.81
1049	5.10	611.76	421.50	190.26	82.45
1050	9.20	390.95	188.20	202.75	87.86
1053	5.80	390.94	183.20	207.74	90.02
1056	3.00	391.03	192.00	199.03	86.24
1057	9.90	392.96	179.20	213.76	92.63
1060	9.70	393.02	196.50	196.52	85.16
1063	2.50	393.02	238.10	154.92	67.13
1064	4.40	391.02	181.30	209.72	90.88
1071	4.20	392.13	190.50	201.63	87.37
1084	17.60	391.52	198.50	193.02	83.64
1085	6.60	392.01	197.60	194.41	84.25
1089	3.50	391.96	190.70	201.26	87.21
1099	15.50	391.64	233.90	157.74	68.35
1100	1.00	466.48	339.70	126.78	54.94
1101	2.20	466.48	323.20	143.28	62.09
1103	6" and 2"	697.35	346.40	350.95	152.08
1104	0.70	466.47	285.50	180.97	78.42
1107	4.60	391.16	211.40	179.76	77.90
1120	2.10	391.87	222.90	168.97	73.22
1121	3.30	390.39	205.30	185.09	80.21
1122	1.20	390.39	204.40	185.99	80.60
1125	3.00	391.12	205.00	186.12	80.65
1130	8.50	391.12	225.00	166.12	71.99
1134	10.50	396.22	202.90	193.32	83.77
1137	6.30	391.68	202.10	189.58	82.15
1156	9.10	391.86	184.90	206.96	89.68
1180	6.00	392.79	195.40	197.39	85.54
1181	5.20	391.94	186.00	205.94	89.24
1183	3.00	392.33	190.20	202.13	87.59
1184	8.90	390.75	189.70	201.05	87.12
1186	4.90	391.91	191.30	200.61	86.93
1210	6.70	393.24	215.60	177.64	76.98
1211	0.40	697.47	564.40	133.07	57.66
1214	3.10	697.75	607.60	90.15	39.07
1215	2.70	390.49	200.80	189.69	82.20
1217	5.90	390.39	207.80	182.59	79.12
1218	9.70	393.43	217.60	175.83	76.19
1223	4.00	392.08	187.20	204.88	88.78
1224	5.70	392.04	187.60	204.44	88.59
1229	5.80	392.01	224.40	167.61	72.63
1232	10.10	391.90	183.90	208.00	90.13
1235	7.70	390.81	197.20	193.61	83.90
1239	2.70	466.47	265.90	200.57	86.91
1240	0.20	697.75	608.90	88.85	38.50
1244	7.80	698.43	591.00	107.43	46.55
1251	9.40	698.71	622.30	76.41	33.11
1262	0.40	391.57	349.90	41.67	18.06
1270	2.60	391.94	184.30	207.64	89.98
1277	10.10	391.57	340.00	51.57	22.35
1284	7.40	396.31	224.00	172.31	74.67
1290	9.90	391.08	207.20	183.88	79.68
1293	5.10	391.09	206.60	184.49	79.94
1295	6.00	390.93	200.40	190.53	82.56
1298	0.90	391.87	224.20	167.67	72.65
1309	9.90	390.69	185.00	205.69	89.13

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1310	7.70	390.94	184.40	206.54	89.50
1314	6.20	390.71	183.00	207.71	90.01
1318	5.40	392.20	221.20	171.00	74.10
1322	4.80	391.57	194.60	196.97	85.35
1328	4.90	391.20	192.30	198.90	86.19
1333	4.50	392.03	191.30	200.73	86.98
1337	5.30	392.01	192.80	199.21	86.32
1338	12.00	391.89	257.70	134.19	58.15
1356	3.30	391.97	190.80	201.17	87.17
1359	1.10	392.02	193.30	198.72	86.11
1364	4.50	391.83	193.90	197.93	85.77
1366	6.90	391.17	190.60	200.57	86.91
1375	13.00	389.95	168.30	221.65	96.05
1387	4.30	390.55	182.40	208.15	90.20
1388	8.10	391.79	200.40	191.39	82.94
1392	6.70	392.35	220.30	172.05	74.56
1396	4.00	391.59	308.10	83.49	36.18
1409	7.70	391.77	222.20	169.57	73.48
1410	2.80	613.02	392.50	220.52	95.56
1456	4.30	391.08	183.20	207.88	90.08
1465	4.30	391.84	235.70	156.14	67.66
1483	7.80	390.81	193.40	197.41	85.55
1484	18.90	390.94	183.60	207.34	89.85
1497	3.50	390.91	167.20	223.71	96.94
1498	2.00	612.95	396.40	216.55	93.84
1502	5.10	612.95	385.30	227.65	98.65
1513	0.90	612.95	339.40	273.55	118.54
1517	7.30	391.03	205.40	185.63	80.44
1519	1.30	391.00	211.30	179.70	77.87
1524	1.60	687.54	615.60	81.94	35.51
1544	22.30	393.05	194.80	198.25	85.91
1547	17.90	393.05	208.00	185.05	80.19
1570	13.20	396.00	200.80	195.20	84.59
1575	10.40	390.92	171.60	219.32	95.04
1576	2.10	397.63	253.70	143.93	62.37
1580	2.50	397.63	245.80	151.83	65.79
1626	25.30	398.37	272.90	125.47	54.37
1627	14.90	399.41	289.00	110.41	47.85
1630	39.60	397.80	266.70	131.10	56.81
1636	216.80	396.83	245.70	151.13	65.49
1637	34.30	397.23	249.10	148.13	64.19
1647	35.00	397.22	236.20	161.02	69.77
1648	35.30	390.81	187.30	203.51	88.19
1657	9.50	390.91	163.30	227.61	98.63
1658	9.30	391.56	185.90	205.66	89.12
1674	10.90	390.98	178.00	212.98	92.29
1679	4.10	466.48	317.70	148.78	64.47
1689	4.00	466.47	323.60	142.87	61.91
1690	0.60	466.47	319.70	146.77	63.60
1698	7.00	397.63	256.80	140.83	61.03
1699	7.70	397.15	218.90	178.25	77.24
1700	3.70	397.15	216.20	180.95	78.41
1710	4.80	397.69	303.90	93.79	40.64
1711	1.00	393.11	209.80	183.31	79.43
1712	2.30	393.10	268.50	124.60	54.00
1713	2.20	697.47	571.10	126.37	54.76
1716	9.50	697.42	533.50	163.92	71.03
1719	0.80	697.42	516.50	180.92	78.40
1737	8.10	390.01	166.60	223.41	96.81
1742	13.00	390.94	183.60	207.34	89.85
1767	5.00	391.88	193.40	198.48	86.01
1773	5.40	399.10	272.20	126.90	54.99
1775	2.30	399.10	270.10	129.00	55.90
1776	6.50	399.10	269.20	129.90	56.29
1782	11.90	399.09	269.10	129.99	56.33
1788	8.30	399.09	269.00	130.09	56.37
1791	1.10	399.10	273.40	125.70	54.47
1793	1.50	399.10	270.60	128.50	55.68
1799	4.10	397.49	201.40	196.09	84.97
1800	3.70	391.48	166.10	225.38	97.66
1801	1.10	391.48	173.70	217.78	94.37
1805	3.40	391.48	179.70	211.78	91.77
1806	1.90	391.48	173.10	218.38	94.63
1808	1.80	391.48	179.80	211.68	91.73
1809	3.20	391.48	172.30	219.18	94.98
1810	6.00	391.49	179.50	211.99	91.86
1813	4.70	391.48	171.10	220.38	95.50
1814	7.80	391.48	167.10	224.38	97.23
1818	2.40	391.38	160.70	230.68	99.96
1821	6.70	391.48	169.80	221.68	96.06
1823	4.30	391.96	182.50	209.46	90.76
1826	5.10	392.06	183.30	208.76	90.46
1827	9.20	392.14	192.90	199.24	86.34
1831	2.80	396.83	234.10	162.73	70.51
1948	1.50	392.98	234.90	158.08	68.50
1960	6.10	396.87	237.60	159.27	69.02
1961	4.50	392.39	190.10	202.29	87.66
1968	0.60	390.01	164.90	225.11	97.55
1971	0.20	392.92	185.30	207.62	89.97
1973	3.90	391.13	198.40	192.73	83.52
1974	6.40	391.18	187.50	203.68	88.26
1975	6.20	391.16	186.60	204.56	88.64
1980	2.40	391.17	180.20	210.97	91.42
1981	1.80	391.30	183.10	208.20	90.22
1984	5.00	391.82	194.10	197.72	85.68
1985	0.30	391.43	195.20	196.23	85.03
1986	5.70	391.43	194.50	196.93	85.34
1987	5.20	391.15	198.50	192.65	83.48
1988	0.20	391.79	219.50	172.29	74.66
1989	2.10	391.79	222.30	169.49	73.44
1991	4.70	391.83	194.20	197.63	85.64
1994	1.00	391.69	190.70	200.99	87.10
1996	5.60	391.93	189.80	202.13	87.59
1997	5.60	392.01	191.50	200.51	86.89
2003	4.40	390.75	185.20	205.55	89.07

2020 Peak Hour Demand

2007	4.30	392.12	200.60	191.52	82.99
2009	5.50	392.05	196.90	195.15	84.57
2010	6.50	392.27	191.70	200.57	86.91
2012	5.50	392.48	199.00	193.48	83.84
2013	4.80	391.94	200.10	191.84	83.13
2014	7.90	391.89	193.20	198.69	86.10
2016	7.20	391.89	222.30	169.59	73.49
2021	1.10	396.22	204.20	192.02	83.21
2023	0.80	390.39	206.90	183.49	79.51
2025	3.00	612.93	455.60	157.33	68.18
2028	1.80	612.89	520.90	91.99	39.86
2029	1.60	612.93	449.00	163.93	71.04
2030	1.00	612.92	460.10	152.82	66.22
2031	4.00	612.94	430.90	182.04	78.88
2032	1.10	612.93	484.00	128.93	55.87
2033	2.80	612.93	474.20	138.73	60.12
2047	0.90	466.47	309.00	157.47	68.24
2050	0.20	466.47	301.10	165.37	71.66
2051	0.10	396.82	229.60	167.22	72.46
2052	0.10	396.82	229.90	166.92	72.33
2053	5.90	396.64	220.60	176.04	76.28
2061	1.50	396.50	208.20	188.30	81.60
2063	10.20	396.21	205.00	191.21	82.86
2065	7.60	392.49	198.90	193.59	83.89
2066	5.60	396.74	222.20	174.54	75.63
2067	11.00	393.94	216.20	177.74	77.02
2072	10.60	397.15	221.90	175.25	75.94
2073	4.00	392.10	199.80	192.30	83.33
2074	6.50	397.15	220.90	176.25	76.38
2076	11.20	390.71	204.40	186.31	80.74
2078	5.30	391.78	199.20	192.58	83.45
2079	5.60	391.74	203.10	188.64	81.74
2080	6.70	391.24	191.60	199.64	86.51
2081	5.90	391.16	198.70	192.46	83.40
2083	11.30	391.70	255.40	136.30	59.06
2084	7.40	391.70	224.10	167.60	72.63
2086	7.60	396.57	230.30	166.27	72.05
2088	12.00	697.54	604.50	93.04	40.32
2090	12.80	613.02	391.30	221.72	96.08
2091	6.50	391.35	195.30	196.05	84.96
2092	3.20	397.63	251.60	146.03	63.28
2093	8.30	392.27	236.00	156.27	67.71
2094	9.20	392.03	188.50	203.53	88.20
2095	6.40	392.07	187.60	204.47	88.60
2096	4.30	392.05	196.50	195.55	84.74
2097	6.50	392.09	202.50	189.59	82.16
2098	6.80	391.05	202.10	189.95	81.88
2100	9.10	391.02	197.30	193.72	83.95
2101	10.70	391.68	270.60	121.08	52.47
2103	11.60	391.68	236.90	154.78	67.07
2104	5.00	396.22	200.50	195.72	84.81
2105	7.60	391.73	201.90	189.83	82.26
2106	3.50	391.12	192.10	199.02	86.24
2107	8.40	391.60	190.50	201.10	87.14
2109	6.40	392.29	190.80	201.49	87.31
2110	4.70	392.01	192.70	199.31	86.37
2111	4.00	392.04	191.00	201.04	87.12
2112	8.80	392.23	190.20	202.03	87.55
2113	7.40	392.46	195.50	196.96	85.35
2115	6.30	391.63	191.90	199.73	86.55
2117	5.40	392.92	217.50	175.42	76.02
2119	9.40	390.81	193.60	197.21	85.46
2120	5.30	466.47	268.60	197.87	85.74
2121	4.60	391.89	193.00	198.89	86.18
2122	7.60	390.94	183.70	207.24	89.80
2123	5.50	391.97	193.20	196.77	86.13
2125	1.70	391.15	206.20	184.95	80.14
2126	3.60	391.89	192.50	199.39	86.40
2127	11.30	390.56	203.70	186.86	80.97
2129	6.10	396.58	218.10	178.48	77.34
2130	4.80	391.14	198.00	193.14	83.69
2132	2.80	396.83	230.10	166.73	72.25
2133	5.60	697.39	578.00	119.39	51.73
2137	7.50	392.49	198.20	194.29	84.19
2138	9.90	395.92	221.50	174.42	75.58
I-18th St	0.00	396.29	218.20	178.09	77.17
O-18th St	0.00	396.29	218.20	178.09	77.17
3-in or sm	0.20	393.17	185.50	207.67	89.99
3-inch or	0.50	391.48	183.00	208.48	90.34
3-inch or	0.20	391.30	183.10	208.20	90.22
O-AV-1	0.00	391.70	283.80	107.90	46.75
I-AV-2	0.00	611.49	306.00	305.49	132.38
I-AV-3	0.00	466.47	253.40	213.07	92.33
O-AV-4	0.00	391.33	289.30	102.03	44.21
O-AV-5	0.00	396.29	225.30	170.99	74.10
O-AV-6	0.00	396.22	208.10	188.12	81.52
O-Centrall	----	541.19	333.50	207.69	90.00
O-Fairview	Fairview PRV	466.50	346.50	120.00	52.00
O-High Lev	High Level P	613.00	401.60	211.40	91.61
High Level	High Level R	614.00	605.00	9.00	3.90
Hillcrest		397.55	256.20	141.35	61.25
inter-tie		393.05	174.40	218.65	94.75
J-1		390.98	174.00	216.98	94.02
J-100		391.28	190.60	200.68	86.96
J-105		390.98	175.60	215.38	93.33
J-106		391.15	206.20	184.95	80.15
J-11		493.53	280.00	213.53	92.53
J-110		391.23	198.00	193.23	83.73
J-111		391.07	192.50	198.57	86.05
J-112		391.48	167.90	223.58	96.89
J-113		391.73	200.50	191.23	82.87
J-114		611.42	405.70	205.72	89.14
J-115		392.02	197.30	194.72	84.38
J-116		392.06	207.10	184.96	80.15
J-117		391.88	192.10	199.78	86.57

2020 Peak Hour Demand

J-120	4.00	391.83	237.50	154.33	66.88	
J-122	4.30	390.98	174.00	216.98	94.02	
J-123	0.60	391.05	224.70	166.35	72.09	
J-124	3.40	612.94	403.80	209.14	90.63	
J-125	3.30	612.66	383.00	229.66	99.52	
J-126	5.30	401.74	367.95	33.79	14.64	
J-127	36.50	396.84	225.20	171.64	74.38	
J-128	23.60	396.83	235.20	161.63	70.04	
J-129	13.50	391.02	184.80	206.22	89.36	
J-130	6.10	396.74	222.00	174.74	75.72	
J-131	0.90	612.94	418.00	194.94	84.47	
J-132	3.70	390.98	176.00	214.98	93.16	
J-133	1.40	612.95	338.60	273.35	118.45	
J-134	2.00	396.25	200.90	195.35	84.65	
J-135	5.70	399.13	288.30	110.83	48.03	
J-136	1.40	390.39	204.10	186.29	80.73	
J-138	1.70	391.05	218.60	171.45	74.30	
J-139	0.80	396.29	222.60	173.69	75.27	
J-140	0.90	391.05	218.20	172.85	74.90	
J-141	0.80	390.73	200.90	189.83	82.26	
J-142	0.40	396.29	218.20	178.09	77.17	
J-143	19.00	390.67	193.40	197.27	85.48	
J-144	3.10	396.00	193.40	202.60	87.79	
J-145	0.20	391.05	218.20	172.85	74.90	
J-146	0.00	391.05	218.20	172.85	74.90	
J-147	0.00	396.29	218.20	178.09	77.17	
J-148	12.20	520.92	498.90	22.02	9.54	
J-149	6.00	491.11	306.10	185.01	80.17	
J-150	9.70	493.26	272.40	220.86	95.71	
J-151	22.10	492.03	326.80	165.23	71.60	
J-152	10.40	493.26	272.40	220.86	95.71	
J-153	222.80	491.11	302.40	188.71	81.77	
J-154	10.00	493.27	267.60	225.67	97.79	
J-155	28.50	492.30	263.80	228.50	99.02	
J-156	32.20	492.51	261.30	231.21	100.19	
J-157	3.00	492.11	265.80	226.31	98.07	
J-2	9.40	391.09	201.80	189.29	82.03	
J-20	3.50	391.31	182.90	208.41	90.31	
J-21	3.90	391.44	182.80	208.64	90.41	
J-25	8.10	612.96	311.10	301.86	130.80	
J-27	6.80	396.06	207.10	188.96	81.88	
J-3	5.50	391.18	182.20	208.98	90.56	
J-30	12.50	396.74	218.90	176.84	76.63	
J-35	13.50	397.07	222.10	174.97	75.82	
J-39	6.60	392.69	218.10	174.59	75.66	
J-4	4.20	391.23	184.40	206.83	89.63	
J-42	9.90	397.15	222.00	175.15	75.90	
J-44	10.00	396.47	208.40	188.07	81.50	
J-45	6.80	396.50	208.00	187.50	81.25	
J-53	15.60	397.69	294.30	103.39	44.80	
J-55	4.30	397.10	297.10	100.00	43.33	
J-57	2.10	396.82	228.20	167.62	72.63	
J-58	2.50	390.42	204.60	185.82	80.52	
J-6	35.80	532.81	473.40	59.41	25.75	
J-61	7.00	390.39	207.00	183.39	79.47	
J-62	1.80	390.68	191.50	199.18	86.31	
J-63	2.20	391.06	225.20	165.86	71.87	
J-64	6.70	390.73	202.30	188.43	81.65	
J-67	3.40	396.27	210.80	185.47	80.37	
J-7	5.70	395.95	214.70	181.25	78.54	
J-71	3.60	396.26	204.60	191.66	83.05	
J-73	10.40	396.25	199.60	196.65	85.21	
J-74	1.60	466.47	301.00	165.47	71.71	
J-77	1.00	466.47	296.10	170.37	73.83	
J-78	8.60	391.33	230.70	160.63	69.61	
J-79	4.50	391.29	223.40	167.89	72.75	
J-8	10.60	396.07	208.80	187.27	81.15	
J-80	8.10	390.73	190.70	200.03	86.68	
J-81	10.90	391.68	218.90	172.78	74.87	
J-82	10.60	391.62	257.90	133.72	57.94	
J-84	3.80	396.29	226.30	169.99	73.66	
J-87	7.00	391.71	194.40	197.31	85.50	
J-88	34.70	493.53	275.70	217.83	94.39	
J-90	0.10	397.15	218.10	178.05	77.16	
J-91	15.90	400.10	352.90	47.20	20.45	
J-93	2.80	392.92	187.50	205.42	89.01	
J-94	5.90	392.91	187.50	205.41	89.01	
J-95	21.70	393.11	188.50	203.61	88.23	
J-96	10.70	393.05	176.90	216.15	93.67	
J-99	1.80	391.14	205.50	185.64	80.45	
Kennicott	Kennicott Re	----	397.90	374.00	23.90	10.36
Main Reser	Main Reservo	----	402.80	383.30	19.50	8.45
physical d		0.10	392.06	222.00	170.06	73.69
I-RV-1		0.00	396.00	193.40	202.60	87.79
I-RV-2		0.00	390.73	200.90	189.83	82.26
O-South En		----	495.59	287.90	207.69	90.00
O-Valley V	Valley View	0.00	699.50	308.10	391.40	169.61
Yankis (Va	Yankis (Vall	----	699.50	631.50	68.00	29.47
Yates Rese	500,000 gal	----	402.80	376.00	26.80	11.61
O-18th St		----	391.05	218.20	172.85	74.90
I-18th St		0.00	391.05	218.20	172.85	74.90
I-AV-1		0.00	611.42	283.80	327.62	141.97
O-AV-2		0.00	391.70	306.00	85.70	37.13
O-AV-3		0.00	396.31	253.40	142.91	61.93
I-AV-4		0.00	391.57	289.30	102.27	44.32
I-AV-5		0.00	391.06	225.30	165.76	71.83
I-AV-6		0.00	390.39	208.10	182.29	78.99
I-Centrall		0.00	489.34	333.50	155.84	67.53
I-Fairview	Fairview PRV	0.00	697.35	346.50	350.85	152.03
I-High Lev	High Level P	0.00	401.74	401.60	0.14	0.06
O-RV-1		----	390.67	193.40	197.27	85.48
O-RV-2		----	396.25	200.90	195.35	84.65
I-South En		0.00	399.09	287.90	111.19	48.18
I-Valley V	Valley View	0.00	391.59	308.10	83.49	36.18

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
O-Valley Vie	169.61	I-High Level	0.06
1103	152.08	High Level R	3.90
I-Fairview P	152.03	Main Reservo	9.45
I-AV-1	141.97	J-148	9.54
642	133.12	Kennicott Re	10.36

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-122	4.42	85	0.00
P-15	4.41	P-48	0.00
1479	3.19	1947	0.00
107	2.99	24	0.00
1458	1.80	45	0.00

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-122	9.52	85	0.00
P-15	9.48	45	0.00
107	6.49	46	0.00
P-173	4.46	P-117	0.00
1479	3.15	24	0.00

HL / 1000

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-122	9.52	85	0.00
P-15	9.48	45	0.00
107	6.49	46	0.00
P-173	4.46	P-117	0.00
1479	3.15	24	0.00

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
18th St PRV	PRV-1	74.30	CLOSED	77.17	74.90	0.00
18th St Pump	FCV-2	0.00	BOOSTED	74.90	77.17	0.00
Centralia Al	PRV-2	90.00	BOOSTED	67.53	90.00	48.00
Fairview PRV	PRV-1	52.00	ACTIVATED	152.03	52.00	24.30
High Level P	FCV-2	0.00	BOOSTED	0.06	91.61	0.00
RV-1	PRV-1	85.00	CLOSED	87.79	85.48	0.00
RV-2	PRV-1	81.80	CLOSED	82.26	84.65	0.00
South End Pu	PRV-2	90.00	BOOSTED	48.18	90.00	431.90
Valley View	FCV-2	0.00	BOOSTED	36.18	169.61	0.00

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
High Level	135.30	High Level R
Kennicott R	561.28	Kennicott Re
Main Reserv	2121.50	Main Reservo
Yankis (Val	122.50	Yankis (Vall
Yates Reser	1124.02	500,000 gal

NET SYSTEM INFLOW = 4064.60
 NET SYSTEM OUTFLOW = 0.00
 NET SYSTEM DEMAND = 4064.60

***** HYDRAULIC ANALYSIS COMPLETED *****

***** KYPIPE *****
 *
 * Pipe Network Modeling Software
 *
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Date & Time: Tue Feb 08 08:33:37 2022

Master File : p:\0155_chehalis\1078_wsp_update\rpt-planning\mdlng\01551078 city of chehalis capital improvement program 2030.KYP\01551078 city of chehalis capital improve :

 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

REGULATING VALVE DATA

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
18th St PRV	PRV-1	389.66
18th St Pump	Const_FLOW_Pump	0.00
Centralia Al	Const_HEAD_Pump	541.19
Fairview PRV	PRV-1	466.50
High Level P	Const_FLOW_Pump	0.00
RV-1	PRV-1	382.95
RV-2	PRV-1	389.67
South End Pu	Const_HEAD_Pump	495.59
Valley View	Const_FLOW_Pump	0.00

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1	NODE NAMES #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
3	5	6	24.78	10.00	90.0000	0.00
5	9	10	824.44	6.00	90.0000	0.00
6	11	12	38.56	8.00	90.0000	0.00
7	13	872	38.38	6.00	75.0000	0.00
8	15	16	7.84	6.00	90.0000	0.00
10	18	19	437.00	2.00	140.0000	0.00
12	22	23	750.00	8.00	130.0000	0.00
13	24	1524	360.61	4.00	130.0000	0.00
14	26	J-55	539.97	8.00	115.0000	0.00
16	28	29	217.00	4.00	115.0000	0.00
17	31	32	723.00	12.00	130.0000	0.00
21	37	38	170.42	4.00	75.0000	0.00
22	2014	40	325.43	8.00	130.0000	0.00
23	41	1699	28.75	12.00	130.0000	0.00
24	43	213	42.27	12.00	130.0000	0.00
26	47	48	173.64	4.00	130.0000	0.00
27	49	50	310.00	10.00	130.0000	0.00
28	51	52	222.00	8.00	130.0000	0.00
32	59	60	108.37	6.00	75.0000	0.00
35	65	66	295.51	6.00	75.0000	0.00
37	68	69	412.00	8.00	130.0000	0.00
38	52	70	245.00	6.00	130.0000	0.00
39	Hillcrest	72	81.50	4.00	130.0000	0.00
41	75	76	3275.00	12.00	130.0000	0.00
45	83	2066	32.96	12.00	130.0000	0.00
46	85	86	33.07	12.00	130.0000	0.00
52	97	98	74.85	8.00	130.0000	0.00
55	102	103	68.31	8.00	130.0000	0.00
56	104	1810	34.98	12.00	130.0000	0.00
59	107	108	7.82	12.00	130.0000	0.00
60	109	J-53	785.00	16.00	130.0000	0.00
66	118	J-169	2076.37	14.00	90.0000	0.00
68	119	121	704.00	14.00	75.0000	0.00
70	121	860	23.71	14.00	75.0000	0.00
72	118	1799	900.00	8.00	130.0000	0.00
85	physical d	396	23.76	14.00	75.0000	0.00
107	J-91	2067	949.00	18.00	130.0000	0.00
109	325	34	484.84	12.00	130.0000	0.00
110	2122	166	948.74	12.00	130.0000	0.00
112	166	962	902.00	12.00	130.0000	0.00
114	569	962	308.00	12.00	130.0000	0.00
115	569	665	1519.00	12.00	130.0000	0.00
118	172	J-105	650.00	12.00	130.0000	0.00
120	175	178	251.61	12.00	130.0000	0.00
123	178	1826	444.69	12.00	130.0000	0.00
126	1826	1827	278.93	12.00	130.0000	0.00
129	1827	192	1658.25	12.00	130.0000	0.00

2030 Fireflow - Main Zone West

137	192	201	248.00	12.00	130.0000	0.00
139		137	409.00	12.00	130.0000	0.00
141	15	137	446.49	12.00	130.0000	0.00
142	15	J-162	456.08	12.00	130.0000	0.00
145	201	J-93	562.05	12.00	90.0000	0.00
155	212	213	677.50	12.00	130.0000	0.00
156	214	26	1649.00	12.00	130.0000	0.00
163	2072	224	1245.00	12.00	130.0000	0.00
187	248	253	1835.17	12.00	130.0000	0.00
192	254	J-127	1507.19	12.00	130.0000	0.00
262	325	1575	908.76	12.00	130.0000	0.00
279	343	344	127.52	12.00	130.0000	0.00
280	344	342	115.85	12.00	130.0000	0.00
282	342	346	192.42	12.00	130.0000	0.00
283	86	J-130	1344.24	12.00	130.0000	0.00
292	356	361	2280.98	10.00	90.0000	0.00
298	32	J-7	60.00	10.00	90.0000	0.00
302	32	480	930.34	10.00	90.0000	0.00
318	384	385	126.00	10.00	130.0000	0.00
319	356	J-167	699.21	10.00	90.0000	0.00
320	356	41	37.27	10.00	90.0000	0.00
329	396	398	31.65	10.00	75.0000	0.00
331	398	1409	306.52	10.00	75.0000	0.00
340	407	408	647.97	10.00	75.0000	0.00
353	661	2119	350.44	6.00	75.0000	0.00
355	424	1648	189.00	10.00	90.0000	0.00
363	295	468	3228.55	10.00	130.0000	0.00
398	172	473	539.00	12.00	130.0000	0.00
403	474	480	672.00	8.00	90.0000	0.00
411	J-45	2129	770.00	8.00	90.0000	0.00
414	1217	1121	284.43	6.00	90.0000	0.00
417	492	1235	414.07	8.00	75.0000	0.00
429	505	509	502.00	8.00	75.0000	0.00
433	510	512	462.00	8.00	130.0000	0.00
435	513	J-160	231.52	8.00	75.0000	0.00
440	518	J-94	278.47	8.00	75.0000	0.00
448	92	1184	943.86	8.00	130.0000	0.00
451	530	119	42.30	8.00	75.0000	0.00
452	119	536	464.52	8.00	75.0000	0.00
458	536	2079	637.02	8.00	75.0000	0.00
461	540	2079	30.24	8.00	75.0000	0.00
464	544	543	465.44	8.00	75.0000	0.00
472	552	J-100	98.00	8.00	75.0000	0.00
476	I-AV-1	J-114	1506.58	8.00	130.0000	0.00
486	569	573	476.00	8.00	130.0000	0.00
490	385	166	264.00	8.00	140.0000	0.00
495	579	J-138	330.16	8.00	130.0000	0.00
497	582	584	548.98	8.00	130.0000	0.00
503	590	J-73	801.25	8.00	75.0000	0.00
511	599	601	450.87	8.00	130.0000	0.00
526	599	619	720.36	8.00	130.0000	0.00
531	620	623	618.14	8.00	130.0000	0.00
538	628	631	136.23	8.00	90.0000	0.00
541	632	1049	299.05	8.00	90.0000	0.00
547	631	642	578.19	8.00	90.0000	0.00
552	High Level	2090	1103.00	10.00	130.0000	0.00
565	509	661	1328.00	8.00	75.0000	0.00
569	597	1284	174.94	8.00	90.0000	0.00
571	46	2086	497.00	8.00	90.0000	0.00
574	665	668	872.08	8.00	130.0000	0.00
577	668	675	492.96	8.00	130.0000	0.00
584	676	J-27	893.25	8.00	90.0000	0.00
590	54	682	182.20	8.00	90.0000	0.00
591	683	J-95	505.00	8.00	90.0000	0.00
593	686	J-78	241.00	8.00	90.0000	0.00
597	408	J-79	21.00	8.00	75.0000	0.00
601	361	1960	1287.07	8.00	90.0000	0.00
612	705	710	248.15	8.00	130.0000	0.00
617	717	1134	965.00	8.00	130.0000	0.00
623	718	247	34.04	8.00	75.0000	0.00
630	424	726	91.39	8.00	75.0000	0.00
632	726	J-80	386.08	8.00	75.0000	0.00
652	468	780	2846.84	8.00	130.0000	0.00
684	781	2092	25.00	8.00	130.0000	0.00
686	784	1698	594.45	8.00	130.0000	0.00
690	788	791	1019.18	8.00	130.0000	0.00
693	792	791	123.52	8.00	130.0000	0.00
697	797	784	720.40	8.00	130.0000	0.00
700	800	802	282.00	6.00	130.0000	0.00
702	803	1465	267.21	6.00	75.0000	0.00
706	808	2009	929.18	6.00	75.0000	0.00
710	813	815	302.18	6.00	75.0000	0.00
712	121	2093	46.99	6.00	75.0000	0.00
714	2094	40	934.76	4.00	75.0000	0.00
723	828	2096	426.19	6.00	75.0000	0.00
726	544	831	72.71	6.00	75.0000	0.00
727	831	530	335.47	6.00	75.0000	0.00
735	831	1989	226.92	6.00	75.0000	0.00
739	842	844	615.87	6.00	75.0000	0.00
741	844	817	669.95	6.00	75.0000	0.00
749	856	J-115	240.00	6.00	75.0000	0.00
751	2078	14	273.95	6.00	75.0000	0.00
753	860	2097	569.00	6.00	75.0000	0.00
757	865	868	222.76	6.00	75.0000	0.00
760	868	J-113	502.26	6.00	75.0000	0.00
762	868	872	205.21	6.00	75.0000	0.00
772	881	2098	449.61	6.00	75.0000	0.00
776	885	J-111	304.95	6.00	75.0000	0.00
784	893	J-106	418.44	6.00	75.0000	0.00
785	893	J-110	416.57	6.00	75.0000	0.00
789	66	899	48.00	6.00	75.0000	0.00
791	899	901	175.00	6.00	75.0000	0.00
793	901	1742	1127.00	6.00	75.0000	0.00
797	906	910	180.00	6.00	75.0000	0.00
801	910	38	116.53	6.00	75.0000	0.00

2030 Fireflow - Main Zone West

807	842	2084	314.93	6.00	75.0000	0.00
812	916	922	348.45	6.00	75.0000	0.00
814	923	J-20	569.59	8.00	130.0000	0.00
817	J-21	929	248.00	6.00	75.0000	0.00
823	J-2	937	870.00	6.00	130.0000	0.00
825	J-2	556	502.00	6.00	75.0000	0.00
831	945	2080	473.03	6.00	75.0000	0.00
839	954	2081	460.04	6.00	75.0000	0.00
846	962	964	82.58	6.00	130.0000	0.00
858	1387	1314	65.93	4.00	75.0000	0.00
861	108	104	599.00	6.00	90.0000	0.00
867	958	J-110	1002.00	6.00	75.0000	0.00
874	994	65	736.58	6.00	75.0000	0.00
876	65	1986	656.95	6.00	75.0000	0.00
883	1003	1023	424.00	8.00	130.0000	0.00
903	1024	J-125	363.09	8.00	130.0000	0.00
905	O-High Lev	649	101.61	6.00	75.0000	0.00
910	1024	628	642.00	8.00	130.0000	0.00
912	1032	1003	811.00	6.00	90.0000	0.00
930	1050	1053	1269.52	6.00	90.0000	0.00
933	384	2100	964.00	6.00	75.0000	0.00
936	1057	16	435.81	6.00	90.0000	0.00
938	1060	1063	225.00	6.00	130.0000	0.00
941	1064	J-129	956.67	8.00	130.0000	0.00
948	1071	526	308.78	6.00	90.0000	0.00
949	526	1084	2823.93	8.00	130.0000	0.00
962	1085	1337	588.12	6.00	75.0000	0.00
966	1099	J-78	1370.13	8.00	130.0000	0.00
975	1100	1101	228.75	6.00	90.0000	0.00
976	O-Fairview	1101	118.14	6.00	90.0000	0.00
982	2103	J-81	265.32	6.00	75.0000	0.00
993	1121	1122	255.49	6.00	90.0000	0.00
994	2076	2127	300.30	6.00	75.0000	0.00
1000	1130	1125	650.51	6.00	75.0000	0.00
1001	2104	J-73	623.72	6.00	75.0000	0.00
1003	1134	2104	238.99	6.00	75.0000	0.00
1004	509	1290	478.00	6.00	75.0000	0.00
1007	1137	2105	327.02	6.00	75.0000	0.00
1009	1388	2013	267.00	6.00	75.0000	0.00
1012	2106	2107	591.74	6.00	75.0000	0.00
1014	510	23	924.74	6.00	75.0000	0.00
1017	2137	2109	470.82	6.00	75.0000	0.00
1019	2084	2109	326.70	6.00	75.0000	0.00
1020	2094	23	140.75	6.00	75.0000	0.00
1023	1156	23	477.86	6.00	75.0000	0.00
1024	2096	2073	229.38	6.00	75.0000	0.00
1025	2110	2096	273.09	6.00	75.0000	0.00
1026	2110	1997	279.58	6.00	75.0000	0.00
1028	1997	2111	244.00	6.00	75.0000	0.00
1030	2111	2112	268.86	6.00	75.0000	0.00
1032	1961	2113	418.00	6.00	75.0000	0.00
1035	704	1961	270.90	6.00	75.0000	0.00
1036	2109	1961	297.09	6.00	75.0000	0.00
1037	2010	2014	642.00	6.00	75.0000	0.00
1040	2012	2013	328.33	6.00	75.0000	0.00
1041	2065	2012	308.00	6.00	75.0000	0.00
1042	2137	2065	296.00	6.00	75.0000	0.00
1043	2113	2137	300.18	6.00	75.0000	0.00
1044	2113	1180	266.89	6.00	75.0000	0.00
1046	1181	22	93.00	6.00	75.0000	0.00
1047	2095	22	173.00	6.00	75.0000	0.00
1048	726	1184	40.06	8.00	130.0000	0.00
1051	1186	1996	269.43	6.00	75.0000	0.00
1053	827	1232	1143.25	6.00	75.0000	0.00
1058	1232	1156	597.28	6.00	75.0000	0.00
1060	1156	512	927.21	6.00	75.0000	0.00
1062	512	2107	783.40	6.00	75.0000	0.00
1064	2115	2107	155.32	6.00	75.0000	0.00
1069	2117	2065	579.53	6.00	75.0000	0.00
1071	2137	1210	580.23	6.00	75.0000	0.00
1074	1211	1713	81.79	6.00	130.0000	0.00
1076	24	1713	223.00	6.00	130.0000	0.00
1077	1215	J-58	327.00	6.00	75.0000	0.00
1078	68	1217	692.94	6.00	130.0000	0.00
1080	1218	2112	1049.55	6.00	75.0000	0.00
1083	2112	1223	326.05	6.00	75.0000	0.00
1085	1224	2111	321.86	6.00	75.0000	0.00
1087	1085	1333	418.92	6.00	75.0000	0.00
1088	1085	808	427.58	6.00	75.0000	0.00
1090	808	1229	207.76	6.00	75.0000	0.00
1091	1232	1181	476.00	6.00	75.0000	0.00
1094	1235	1483	375.00	6.00	75.0000	0.00
1095	2120	1104	147.00	6.00	90.0000	0.00
1096	2120	1239	581.73	6.00	130.0000	0.00
1099	1240	1214	42.84	6.00	130.0000	0.00
1100	1214	1244	471.00	6.00	130.0000	0.00
1103	1244	1251	558.00	6.00	130.0000	0.00
1110	Yankis (Va	1251	416.98	6.00	130.0000	0.00
1116	1513	J-25	173.82	8.00	130.0000	0.00
1117	1277	J-159	108.25	6.00	90.0000	0.00
1118	1277	1262	90.18	6.00	90.0000	0.00
1120	657	J-25	1605.00	10.00	130.0000	0.00
1125	1181	1270	559.53	6.00	75.0000	0.00
1127	2103	1099	1495.62	8.00	130.0000	0.00
1132	1277	I-AV-4	889.11	6.00	90.0000	0.00
1138	693	579	860.83	6.00	75.0000	0.00
1140	1284	O-AV-3	362.05	6.00	90.0000	0.00
1146	1290	2119	1322.78	4.00	75.0000	0.00
1148	1293	1295	372.96	4.00	75.0000	0.00
1150	398	2016	65.54	8.00	130.0000	0.00
1152	1120	1298	198.66	6.00	75.0000	0.00
1154	432	1309	2165.00	6.00	90.0000	0.00
1165	1310	1314	1161.00	4.00	75.0000	0.00
1169	2127	J-61	967.64	4.00	75.0000	0.00
1171	1318	2105	578.38	4.00	75.0000	0.00

2030 Fireflow - Main Zone West

1173	2105	1322	469.84	4.00	75.0000	0.00
1178	2115	40	301.65	4.00	75.0000	0.00
1179	2115	1328	589.61	4.00	75.0000	0.00
1182	803	J-81	638.00	4.00	75.0000	0.00
1185	1333	1337	528.94	4.00	75.0000	0.00
1189	1338	807	1527.54	8.00	130.0000	0.00
1193	518	192	70.97	4.00	75.0000	0.00
1195	192	1060	583.00	4.00	75.0000	0.00
1198	1060	705	1317.00	4.00	75.0000	0.00
1205	492	J-80	987.90	4.00	75.0000	0.00
1208	1356	828	273.00	4.00	75.0000	0.00
1210	1359	828	233.00	4.00	75.0000	0.00
1211	1364	1984	203.81	4.00	75.0000	0.00
1212	1364	1991	514.02	4.00	75.0000	0.00
1214	1364	2121	287.23	4.00	75.0000	0.00
1215	1366	36	660.16	6.00	130.0000	0.00
1217	1244	1251	681.00	6.00	130.0000	0.00
1226	1375	17	2480.00	4.00	90.0000	0.00
1236	17	1387	400.00	4.00	90.0000	0.00
1239	1388	1392	578.80	4.00	75.0000	0.00
1244	1314	33	129.52	4.00	90.0000	0.00
1245	937	1456	272.00	6.00	75.0000	0.00
1247	384	1456	264.58	6.00	75.0000	0.00
1248	1396I-Valley V	4.38	4.00	140.0000	0.00	
1258	505	1409	1080.00	4.00	75.0000	0.00
1261	1410	657	558.39	4.00	90.0000	0.00
1269	1023	I-AV-2	712.27	4.00	90.0000	0.00
1309	1456	881	418.71	6.00	130.0000	0.00
1315	885	1056	245.12	4.00	90.0000	0.00
1319	1465	2103	636.67	4.00	75.0000	0.00
1322	509	407	820.07	4.00	75.0000	0.00
1330	693	492	1027.10	4.00	75.0000	0.00
1338	1295	1483	948.39	4.00	75.0000	0.00
1340	1484	899	1892.00	4.00	75.0000	0.00
1351	344	1497	767.00	4.00	130.0000	0.00
1354	1498	1502	449.05	8.00	130.0000	0.00
1358	1502	J-133	279.67	8.00	130.0000	0.00
1371	1517	1519	275.00	2.00	135.0000	0.00
1384	1544	J-95	2295.00	12.00	90.0000	0.00
1388	1547	1544	288.55	12.00	130.0000	0.00
1389	1547	J-96	1327.00	12.00	130.0000	0.00
1396	1544	1547	2300.00	8.00	130.0000	0.00
1401	668	1674	1132.70	12.00	130.0000	0.00
1404	1674	102	746.13	12.00	130.0000	0.00
1406	102	J-1	620.69	12.00	130.0000	0.00
1409	92	J-164	484.87	12.00	130.0000	0.00
1423	421	107	867.00	12.00	130.0000	0.00
1426	1575	34	575.28	12.00	130.0000	0.00
1427	1576	248	446.87	12.00	130.0000	0.00
1429	248	1580	540.11	12.00	130.0000	0.00
1433	51	26	448.20	12.00	130.0000	0.00
1435	51	109	1427.59	12.00	130.0000	0.00
1440	6	109	475.62	12.00	130.0000	0.00
1441	6	1647	1469.07	12.00	130.0000	0.00
1443	1637	1647	5159.69	12.00	130.0000	0.00
1454	72	1637	1761.44	12.00	130.0000	0.00
1455	72	1626	3641.41	12.00	130.0000	0.00
1458	1627	1626	763.65	12.00	130.0000	0.00
1460	797	212	356.56	12.00	130.0000	0.00
1464	788	1630	3991.15	12.00	130.0000	0.00
1477	1630	1626	1130.08	12.00	130.0000	0.00
1479	1627Yates Rese		1075.00	12.00	130.0000	0.00
1481	1630	76	3539.00	12.00	130.0000	0.00
1483	76	1636	2341.00	12.00	130.0000	0.00
1487	1637	75	595.62	12.00	130.0000	0.00
1492	75	49	651.30	12.00	130.0000	0.00
1493	254	49	3310.10	12.00	130.0000	0.00
1494	254	J-35	1688.26	12.00	130.0000	0.00
1497	2072	1647	1022.00	12.00	130.0000	0.00
1499	1648	247	4693.50	12.00	130.0000	0.00
1500	343	1657	2072.02	8.00	130.0000	0.00
1509	1658	901	754.77	8.00	130.0000	0.00
1526	1674	800	496.84	8.00	130.0000	0.00
1531	800	174	473.00	8.00	130.0000	0.00
1534	1679	1689	748.17	6.00	90.0000	0.00
1544	1690	1689	126.93	8.00	90.0000	0.00
1548	2092	1698	669.39	8.00	130.0000	0.00
1552	1699	1700	801.40	10.00	130.0000	0.00
1553	2138	89	1389.60	8.00	130.0000	0.00
1560	1710	J-53	1056.65	8.00	130.0000	0.00
1562	1711	683	220.00	8.00	90.0000	0.00
1563	683	1712	500.00	8.00	115.0000	0.00
1564	1713	1716	178.58	6.00	130.0000	0.00
1567	1716	1719	185.05	6.00	130.0000	0.00
1584	1742	1737	1268.00	4.00	75.0000	0.00
1588	1737	1375	375.00	4.00	75.0000	0.00
1593	1742	1484	452.00	10.00	130.0000	0.00
1596	1484	975	1798.00	10.00	130.0000	0.00
1611	975	1310	71.00	10.00	130.0000	0.00
1612	1310	2122	454.00	10.00	130.0000	0.00
1615	2123	1089	511.48	8.00	130.0000	0.00
1617	1089	1186	243.51	6.00	75.0000	0.00
1618	1186	1767	570.00	8.00	130.0000	0.00
1621	J-135	J-171	184.70	8.00	130.0000	0.00
1626	1773	1775	197.00	8.00	130.0000	0.00
1628	1775	1776	68.00	8.00	130.0000	0.00
1629	1776	1782	1030.00	8.00	130.0000	0.00
1635	1782	1788	996.00	8.00	130.0000	0.00
1641	1788	1775	237.00	8.00	130.0000	0.00
1644	1773	1791	251.00	8.00	130.0000	0.00
1645	1776	1793	338.00	8.00	130.0000	0.00
1647	1788	1782	591.00	8.00	130.0000	0.00
1654	1800	1801	235.53	10.00	130.0000	0.00
1657	18053-inch or		110.20	8.00	130.0000	0.00
1658	1806	1808	400.00	6.00	130.0000	0.00

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1660	1809	1806	19.02	8.00	130.0000	0.00	
1661		1810	671.00	10.00	130.0000	0.00	
1663	1800	1821	258.00	10.00	130.0000	0.00	
1664	1813	1809	50.87	10.00	130.0000	0.00	
1665	1814	1818	715.34	2.00	140.0000	0.00	
1669	1813	1814	675.00	8.00	130.0000	0.00	
1672	1821	J-112	525.00	8.00	130.0000	0.00	
1673	1823	1826	385.26	6.00	90.0000	0.00	
1676	1827	1071	62.38	12.00	130.0000	0.00	
1677	1636	J-128	438.35	8.00	130.0000	0.00	
1792	910	844	262.20	4.00	75.0000	0.00	
1793	178	1823	69.34	8.00	90.0000	0.00	
1796	1063	1948	325.00	2.00	135.0000	0.00	
1799	1032	J-114	642.00	6.00	130.0000	0.00	
1810	1960	12	21.03	8.00	90.0000	0.00	
1811	12	10	1053.00	8.00	90.0000	0.00	
1813	1767	J-117	290.12	6.00	75.0000	0.00	
1818	1737	1968	132.00	4.00	75.0000	0.00	
1820	1823	J-168	334.71	6.00	75.0000	0.00	
1821	175	384	2123.70	10.00	130.0000	0.00	
1825	1973	566	454.00	4.00	75.0000	0.00	
1826	1974	1975	651.00	6.00	130.0000	0.00	
1828	J-3	1980	517.00	6.00	75.0000	0.00	
1830	3-inch or	1981	48.33	4.00	75.0000	0.00	
1831		1984	1767	235.15	6.00	75.0000	0.00
1834		1985	1986	56.59	4.00	75.0000	0.00
1835		894	2125	20.33	8.00	130.0000	0.00
1836		1987	568	717.00	4.00	75.0000	0.00
1837		1988	1989	52.11	4.00	75.0000	0.00
1839		2121	1991	219.88	6.00	75.0000	0.00
1840		2126	2123	286.00	10.00	130.0000	0.00
1841		1994	994	209.00	6.00	75.0000	0.00
1842		1996	1997	691.73	6.00	75.0000	0.00
1843		1184	J-163	895.08	6.00	130.0000	0.00
1852		2007	2009	230.57	6.00	75.0000	0.00
1854		2010	2065	472.04	6.00	75.0000	0.00
1855		2012	J-39	579.11	8.00	75.0000	0.00
1856		2013	2014	469.09	6.00	130.0000	0.00
1858		2016	J-81	1482.47	4.00	75.0000	0.00
1860		2127	504	947.53	4.00	75.0000	0.00
1864		1121	2023	183.59	6.00	90.0000	0.00
1865		2127	1215	263.88	6.00	75.0000	0.00
1866		2025	2028	384.00	2.00	140.0000	0.00
1869		2029	2030	216.99	2.00	140.0000	0.00
1870		2031	2029	117.40	4.00	140.0000	0.00
1871		2029	2025	27.90	4.00	140.0000	0.00
1872		2025	2032	248.94	4.00	140.0000	0.00
1873		2033	2031	618.97	4.00	140.0000	0.00
1877		2031	J-124	145.24	8.00	130.0000	0.00
1883		2047	J-74	206.38	6.00	90.0000	0.00
1887		2053	582	671.02	4.00	90.0000	0.00
1892		2129	582	343.45	4.00	90.0000	0.00
1893		590	46	757.00	6.00	90.0000	0.00
1894		2061	J-45	335.58	6.00	90.0000	0.00
1895		2063	J-44	880.19	8.00	90.0000	0.00
1896		5	361	64.75	10.00	90.0000	0.00
1898		14	540	265.00	6.00	75.0000	0.00
1900		163-in or sm		34.44	6.00	90.0000	0.00
1901		17	18	236.00	6.00	90.0000	0.00
1904		24	2088	5.94	6.00	130.0000	0.00
1907		36	2130	291.60	6.00	75.0000	0.00
1908		38	2083	817.68	6.00	75.0000	0.00
1909		2014	J-87	300.00	6.00	75.0000	0.00
1917		69	J-61	263.00	8.00	130.0000	0.00
1920		295	J-30	1850.87	12.00	130.0000	0.00
1924		86	2066	285.00	12.00	130.0000	0.00
1927		104	J-112	808.02	6.00	75.0000	0.00
1930		118	710	2530.00	14.00	90.0000	0.00
1935		247	2106	22.48	8.00	75.0000	0.00
1936		325	2122	272.19	12.00	130.0000	0.00
1938		375	1218	736.59	14.00	75.0000	0.00
1940		396	1318	307.00	14.00	75.0000	0.00
1941		480	2138	730.48	10.00	90.0000	0.00
1947		530	2093	691.48	6.00	75.0000	0.00
1948		536	2078	287.42	8.00	75.0000	0.00
1949		565	1084	590.00	8.00	75.0000	0.00
1950		556	944	498.75	6.00	75.0000	0.00
1951		565	543	35.00	8.00	75.0000	0.00
1954		J-84	O-AV-5	54.14	8.00	90.0000	0.00
1956		584	717	786.89	10.00	90.0000	0.00
1958		590	584	267.70	10.00	90.0000	0.00
1960		620	2133	155.65	8.00	130.0000	0.00
1962		1410	649	52.91	8.00	90.0000	0.00
1964		661	424	118.60	10.00	75.0000	0.00
1965		665	172	143.00	12.00	130.0000	0.00
1967		710	137	1990.58	14.00	90.0000	0.00
1972		784	791	500.36	8.00	130.0000	0.00
1975		797	788	291.38	12.00	130.0000	0.00
1977		813	J-120	564.60	6.00	75.0000	0.00
1978		815	803	563.97	6.00	75.0000	0.00
1979		817	1338	454.00	6.00	75.0000	0.00
1982		856	2121	290.89	6.00	75.0000	0.00
1983		860	375	259.21	14.00	75.0000	0.00
1984		865	65	387.79	8.00	75.0000	0.00
1985		872	14	110.22	6.00	75.0000	0.00
1986		923	J-3	345.89	8.00	130.0000	0.00
1987		944	1987	383.07	6.00	75.0000	0.00
1989		954	945	225.61	6.00	75.0000	0.00
1990		958	J-106	266.00	6.00	75.0000	0.00
1992		994	1658	528.00	10.00	130.0000	0.00
1993		2101	60	140.36	6.00	75.0000	0.00
1995		1003	1049	529.64	8.00	130.0000	0.00
1996		1049	631	275.61	8.00	90.0000	0.00
1997		1050	975	402.00	6.00	90.0000	0.00
1998		1057	518	652.00	8.00	75.0000	0.00

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2000	1084	552	435.20	8.00	75.0000	0.00
2001	1099	1120	246.00	8.00	130.0000	0.00
2002	1107	J-79	210.02	8.00	75.0000	0.00
2003	1130	J-63	457.60	8.00	75.0000	0.00
2005	1137	398	600.00	8.00	75.0000	0.00
2010	1180	704	473.80	8.00	75.0000	0.00
2011	1183	704	38.34	6.00	75.0000	0.00
2014	1210	2067	566.74	14.00	75.0000	0.00
2020	1223	1224	265.83	6.00	75.0000	0.00
2021	1224	827	666.42	6.00	75.0000	0.00
2022	1229	815	301.07	6.00	75.0000	0.00
2024	1235	1517	896.98	8.00	75.0000	0.00
2025	1099	J-82	293.00	8.00	130.0000	0.00
2027	1284	46	713.52	8.00	90.0000	0.00
2031	1318	1392	306.00	14.00	75.0000	0.00
2032	1322	J-87	262.00	6.00	75.0000	0.00
2033	1328	2091	322.03	8.00	75.0000	0.00
2035	1337	2110	39.43	6.00	75.0000	0.00
2036	1338	813	634.51	6.00	75.0000	0.00
2037	1356	1089	17.89	6.00	75.0000	0.00
2039	1366	945	480.02	6.00	75.0000	0.00
2040	1387	979	479.26	6.00	130.0000	0.00
2042	1392	J-39	591.86	14.00	75.0000	0.00
2045	1409	407	306.00	10.00	75.0000	0.00
2048	1465	J-120	38.32	6.00	75.0000	0.00
2053	1107	1517	423.01	8.00	75.0000	0.00
2058	1570	J-8	1066.00	10.00	90.0000	0.00
2060	1575	342	808.04	12.00	130.0000	0.00
2063	1627	J-135	354.12	12.00	115.0000	0.00
2067	1648	432	2857.00	10.00	90.0000	0.00
2068	1658	421	772.00	10.00	130.0000	0.00
2070	1679	1101	25.75	6.00	90.0000	0.00
2071	1698	212	264.80	8.00	130.0000	0.00
2078	1800	1813	297.00	10.00	130.0000	0.00
2079	1809	1805	635.00	10.00	130.0000	0.00
2080	1810	107	583.38	12.00	130.0000	0.00
2087	1960	700	19.01	8.00	90.0000	0.00
2089	1973	J-2	345.00	6.00	75.0000	0.00
2090	1974	1366	377.42	6.00	75.0000	0.00
2091	1975	36	374.90	6.00	75.0000	0.00
2092	1981	J-4	275.32	6.00	75.0000	0.00
2093	994	1984	383.00	10.00	130.0000	0.00
2095	1986	552	515.83	6.00	75.0000	0.00
2096	1987	893	54.17	6.00	75.0000	0.00
2097	1989	842	189.64	6.00	75.0000	0.00
2102	1996	827	273.45	6.00	75.0000	0.00
2104	2007	375	649.59	10.00	130.0000	0.00
2105	2009	2096	41.52	6.00	75.0000	0.00
2111	2016	1120	22.21	8.00	130.0000	0.00
2114	1107	1293	379.00	6.00	75.0000	0.00
2118	2053	J-57	404.65	8.00	90.0000	0.00
2120	2063	717	379.81	10.00	90.0000	0.00
2127	2067	1218	331.70	14.00	75.0000	0.00
2128	2067	1180	580.16	8.00	75.0000	0.00
2139	2073	2007	37.55	10.00	130.0000	0.00
2141	2074	483	444.39	8.00	130.0000	0.00
2145	2076	492	344.58	8.00	75.0000	0.00
2146	2076	504	784.60	8.00	75.0000	0.00
2148	693	J-64	330.00	8.00	130.0000	0.00
2149	2078	865	288.23	8.00	75.0000	0.00
2150	2078	1991	297.24	6.00	75.0000	0.00
2152	2079	543	202.12	8.00	75.0000	0.00
2153	2080	2081	236.10	6.00	130.0000	0.00
2154	2080	958	585.00	6.00	75.0000	0.00
2155	2125	J-99	48.00	8.00	130.0000	0.00
2156	2081	958	325.04	6.00	75.0000	0.00
2159	2083	2084	265.54	8.00	75.0000	0.00
2160	2083	916	678.90	6.00	75.0000	0.00
2161	2084	565	310.77	8.00	75.0000	0.00
2162	2084	916	736.88	6.00	75.0000	0.00
2165	2086	578	560.00	8.00	130.0000	0.00
2166	2086	2132	593.29	8.00	90.0000	0.00
2169	2088	620	2465.45	8.00	130.0000	0.00
2170	2088	1214	158.00	6.00	130.0000	0.00
2173	2090	1410	14.60	8.00	90.0000	0.00
2174	2090	657	565.72	10.00	130.0000	0.00
2175	2091	1137	468.76	8.00	75.0000	0.00
2176	2091	505	311.20	8.00	75.0000	0.00
2179	2093	817	304.87	6.00	75.0000	0.00
2180	2093	1229	758.42	6.00	75.0000	0.00
2181	2094	2095	604.36	6.00	75.0000	0.00
2183	2095	1223	294.47	6.00	75.0000	0.00
2184	2095	1183	324.33	6.00	75.0000	0.00
2187	2097	856	426.07	6.00	75.0000	0.00
2188	2097	2073	206.00	6.00	75.0000	0.00
2189	2098	885	448.98	6.00	75.0000	0.00
2190	2098	2100	273.62	6.00	75.0000	0.00
2192	954	2130	268.01	6.00	75.0000	0.00
2193	2100	1050	360.00	6.00	90.0000	0.00
2194	2100	1056	405.41	6.00	75.0000	0.00
2195	2101	807	693.00	8.00	130.0000	0.00
2196	2101	J-82	1519.00	8.00	130.0000	0.00
2198	1290	1293	372.41	6.00	75.0000	0.00
2199	2103	60	154.27	6.00	75.0000	0.00
2202	2104	2021	244.00	4.00	75.0000	0.00
2203	2105	1388	298.00	6.00	75.0000	0.00
2206	2106	1328	152.76	8.00	75.0000	0.00
2207	2107	510	314.14	6.00	75.0000	0.00
2212	2109	2010	299.72	6.00	75.0000	0.00
2214	2110	1356	429.11	6.00	75.0000	0.00
2216	2111	1333	54.05	6.00	75.0000	0.00
2217	2112	1183	291.22	6.00	75.0000	0.00
2221	803	2113	632.05	6.00	75.0000	0.00
2223	2115	J-87	328.38	6.00	75.0000	0.00
2228	2117	1210	322.00	14.00	75.0000	0.00

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2231	2119	1483	385.00	6.00	75.0000	0.00
2234	2120	J-77	147.00	6.00	90.0000	0.00
2236	2121	2126	209.47	6.00	75.0000	0.00
2240	2123	2073	427.00	10.00	130.0000	0.00
2243	2125	961	36.45	8.00	130.0000	0.00
2244	2125	2081	266.99	8.00	130.0000	0.00
2246	2126	1984	286.12	10.00	130.0000	0.00
2249	2050	J-77	44.67	6.00	90.0000	0.00
2252	2129	2053	226.85	8.00	90.0000	0.00
2253	2130	961	455.00	6.00	75.0000	0.00
2254	2130	1973	40.73	6.00	75.0000	0.00
2257	2132	214	7.31	8.00	90.0000	0.00
2259	2133	599	622.41	8.00	130.0000	0.00
2260	2133	47	462.96	8.00	130.0000	0.00
2269	2138	481	66.26	10.00	90.0000	0.00
P-1	J-1	97	547.15	12.00	130.0000	0.00
P-100	J-112	1814	500.93	6.00	75.0000	0.00
P-101	J-113	2079	368.16	6.00	75.0000	0.00
P-102	J-114	1023	302.00	8.00	130.0000	0.00
P-103	J-125	649	346.91	8.00	130.0000	0.00
P-104	I-Fairview	1103	20.94	6.00	90.0000	0.00
P-105	J-115	J-116	419.54	6.00	75.0000	0.00
P-106	J-116	2097	250.67	6.00	75.0000	0.00
P-108	J-117	56	305.00	6.00	75.0000	0.00
P-11	J-3	1975	323.06	6.00	75.0000	0.00
P-111	J-120	807	266.76	6.00	75.0000	0.00
P-113	J-39	2117	288.00	14.00	75.0000	0.00
P-116	97	J-122	121.15	12.00	130.0000	0.00
P-117	J-140	J-145	46.63	12.00	130.0000	0.00
P-119	J-139	J-84	78.98	8.00	130.0000	0.00
P-121	J-140	J-138	42.92	12.00	130.0000	0.00
P-122	J-126Main Reser		111.73	18.00	130.0000	0.00
P-124	O-AV-1	2083	364.42	8.00	75.0000	0.00
P-125	O-AV-2	906	282.73	4.00	75.0000	0.00
P-127	J-127	295	2367.21	12.00	130.0000	0.00
P-128	J-127	J-128	4129.32	12.00	130.0000	0.00
P-130	J-128	1831	615.85	8.00	130.0000	0.00
P-131	J-129	1071	558.33	12.00	130.0000	0.00
P-132	668	J-129	1448.22	12.00	130.0000	0.00
P-133	J-133	1513	25.35	8.00	130.0000	0.00
P-134	J-122	J-132	800.00	12.00	130.0000	0.00
P-135	J-124	1502	393.57	8.00	130.0000	0.00
P-136	J-124	J-131	198.84	8.00	130.0000	0.00
P-138-CV	Kennicott	J-53	790.00	16.00	130.0000	0.00
P-140	O-AV-4	686	40.89	6.00	90.0000	0.00
P-143	I-AV-5	J-63	2.85	8.00	130.0000	0.00
P-144	O-AV-6	1134	545.75	4.00	75.0000	0.00
P-146	J-73	J-134	384.83	8.00	130.0000	0.00
P-147	J-64	J-141	135.51	8.00	130.0000	0.00
P-148	J-134	O-RV-2	6.27	8.00	130.0000	0.00
P-149	J-143	O-RV-1	5.82	12.00	130.0000	0.00
P-15	J-91	J-126	172.27	18.00	130.0000	0.00
P-150-CV	J-141	J-134	13.00	8.00	130.0000	0.00
P-151	J-142	J-139	80.78	8.00	130.0000	0.00
P-152	J-144	1570	631.51	12.00	130.0000	0.00
P-153-CV	J-143	J-144	24.87	12.00	130.0000	0.00
P-154	I-RV-1	J-144	5.63	12.00	130.0000	0.00
P-157	I-RV-2	J-141	7.13	8.00	130.0000	0.00
P-1570	1716	1103	1729.25	8.00	130.0000	0.00
P-158	J-145I-18th St		2.66	12.00	130.0000	0.00
P-159	J-145	J-146	2.68	12.00	130.0000	0.00
P-160-CV	J-146	J-147	9.25	12.00	130.0000	0.00
P-161	J-146O-18th St		3.23	12.00	130.0000	0.00
P-162	J-147	J-142	2.67	12.00	130.0000	0.00
P-164	I-18th St	J-147	3.12	12.00	130.0000	0.00
P-165	J-155	J-156	739.67	6.00	140.0000	0.00
P-166	66	J-110	322.75	6.00	75.0000	0.00
P-167	J-153	J-156	4747.12	12.00	115.0000	0.00
P-168	J-152	J-150	15.74	8.00	115.0000	0.00
P-169	J-154	J-88	471.34	12.00	115.0000	0.00
P-170	J-155	J-151	4833.50	6.00	140.0000	0.00
P-171	J-155	J-157	658.63	2.00	140.0000	0.00
P-172	J-156	J-154	1552.65	12.00	115.0000	0.00
P-173	J-148	J-6	2664.56	2.00	130.0000	0.00
P-174	J-149	J-153	1314.60	8.00	130.0000	0.00
P-175	J-150	J-152	2094.17	8.00	115.0000	0.00
P-176	J-64	2076	1014.00	8.00	75.0000	0.00
P-177	J-160	1057	847.45	8.00	75.0000	0.00
P-178	J-159	1513	18.67	6.00	90.0000	0.00
P-179	J-160	J-162	533.75	8.00	130.0000	0.00
P-18	J-135I-South En		77.91	12.00	130.0000	0.00
P-180	J-162	J-95	1493.70	12.00	130.0000	0.00
P-181	1818	J-161	94.69	2.00	140.0000	0.00
P-182	J-163	2003	50.56	6.00	130.0000	0.00
P-183	J-164	J-143	3640.74	12.00	130.0000	0.00
P-184	J-163	J-177	465.62	8.00	130.0000	0.00
P-188	31	J-158	1171.71	12.00	130.0000	0.00
P-19	33	34	11.57	4.00	90.0000	0.00
P-190	J-167	2074	284.73	10.00	90.0000	0.00
P-194	76	1580	1373.43	12.00	130.0000	0.00
P-195	J-170	J-176	367.83	12.00	130.0000	0.00
P-196	J-168	J-21	156.89	6.00	75.0000	0.00
P-197	J-168	1980	565.74	8.00	130.0000	0.00
P-198	J-880-South En		3066.47	12.00	115.0000	0.00
P-199	J-171	1773	557.30	8.00	130.0000	0.00
P-2	101	J-1	84.14	8.00	130.0000	0.00
P-20	1576	213	32.42	12.00	130.0000	0.00
P-200	J-169	J-91	282.63	18.00	130.0000	0.00
P-201	J-173	J-153	21062.56	8.00	115.0000	0.00
P-203	J-177	J-164	335.35	8.00	130.0000	0.00
P-25	J-30	2066	908.00	12.00	130.0000	0.00
P-29	J-8	2063	977.55	10.00	90.0000	0.00
P-3	J-60-Central1		24935.52	6.00	115.0000	0.00
P-30	J-35	J-42	1262.05	12.00	130.0000	0.00
P-31	54	J-8	271.99	8.00	90.0000	0.00

2030 Fireflow - Main Zone West

P-33	J-42	2072	33.95	12.00	130.0000	0.00
P-34	1699	J-42	861.64	12.00	130.0000	0.00
P-36	2091	1322	322.00	6.00	75.0000	0.00
P-4	J-7	1570	1181.00	10.00	90.0000	0.00
P-40	J-44	10	918.28	8.00	90.0000	0.00
P-42	J-45	J-44	388.00	8.00	90.0000	0.00
P-43	J-132	J-170	232.78	12.00	130.0000	0.00
P-44	J-55	28	392.03	8.00	115.0000	0.00
P-47	J-57	2132	26.83	8.00	90.0000	0.00
P-48	41	J-90	18.53	10.00	90.0000	0.00
P-49	2051	J-57	16.66	8.00	90.0000	0.00
P-50	2052	J-57	17.24	8.00	90.0000	0.00
P-51	O-18th St	J-142	1.13	8.00	130.0000	0.00
P-53	J-4	1974	369.00	6.00	75.0000	0.00
P-54	923	J-4	253.57	6.00	75.0000	0.00
P-57	1217	I-AV-6	27.22	4.00	75.0000	0.00
P-58	1217	69	273.00	8.00	130.0000	0.00
P-6	J-11	J-88	987.96	8.00	115.0000	0.00
P-61	J-58	68	222.00	6.00	115.0000	0.00
P-62	J-61	J-136	302.00	8.00	130.0000	0.00
P-63	J-127	J-158	1896.96	12.00	130.0000	0.00
P-64	54	J-27	596.19	8.00	90.0000	0.00
P-65	J-67	597	417.00	8.00	90.0000	0.00
P-67	J-71	J-67	339.00	8.00	130.0000	0.00
P-69	J-73	J-71	449.75	8.00	75.0000	0.00
P-7	J-152	J-154	148.62	8.00	115.0000	0.00
P-71	J-63	J-123	21.02	8.00	130.0000	0.00
P-73	J-74	1679	128.71	6.00	90.0000	0.00
P-74	J-77	J-74	27.47	6.00	90.0000	0.00
P-75	I-AV-3	2120	128.95	6.00	90.0000	0.00
P-76	J-78	408	254.81	8.00	90.0000	0.00
P-77	J-79	1130	739.00	8.00	75.0000	0.00
P-78	J-80	504	390.06	8.00	75.0000	0.00
P-79	1396	J-82	521.89	6.00	90.0000	0.00
P-80	1388	J-87	625.00	6.00	130.0000	0.00
P-81	92	J-62	399.00	8.00	130.0000	0.00
P-82	J-84	597	632.70	8.00	90.0000	0.00
P-83	J-123	J-140	102.57	12.00	130.0000	0.00
P-84	J-93	1971	33.88	6.00	90.0000	0.00
P-86	I-High Lev	J-126	388.44	6.00	75.0000	0.00
P-87	J-94	526	1018.53	8.00	75.0000	0.00
P-88	J-93	J-94	3.82	6.00	90.0000	0.00
P-89	J-96inter-tie	1009.00	12.00	130.0000	0.00	
P-9	J-2	2098	329.00	6.00	75.0000	0.00
P-90	J-105	174	266.00	12.00	130.0000	0.00
P-91	J-20	1981	59.00	6.00	75.0000	0.00
P-92	J-21	J-20	140.66	6.00	75.0000	0.00
P-93	568	J-99	19.30	8.00	130.0000	0.00
P-94	J-99	556	294.00	8.00	130.0000	0.00
P-95	566	J-99	49.52	8.00	130.0000	0.00
P-96	J-100	2080	161.00	8.00	130.0000	0.00
P-97	J-106	894	329.00	6.00	75.0000	0.00
P-98	I-Centrali	J-173	305.94	8.00	115.0000	0.00
P-99	J-111	944	378.41	6.00	75.0000	0.00
Valley Vie	O-Valley VYankis (Va	2734.85	4.00	140.0000	0.00	

N O D E D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
5		0.30	243.40	
6		6.80	244.40	
9		2.80	205.80	
10		9.60	213.70	
11		0.10	236.90	
12		3.80	236.50	
13		0.10	198.90	
14		2.20	201.40	
15		3.10	186.10	
16		1.60	186.10	
17		10.70	175.70	
18		2.30	171.90	
19		1.50	165.30	
22		3.50	186.50	
23		7.90	187.70	
24		2.00	604.50	
26		9.10	240.30	
28		2.10	322.60	
29		0.70	319.00	
31		6.50	216.80	
32		5.90	214.70	
33		0.40	183.00	
34		3.70	183.50	
36		4.60	194.40	
37		0.60	319.00	
38		3.80	290.50	
40		5.30	190.80	
41		0.30	219.10	
43		0.10	253.50	
46		6.80	229.90	
47		2.20	544.40	
48		0.60	543.60	
49		14.70	243.00	
50		1.10	244.20	
51		7.20	240.00	
52		1.60	261.50	
54		3.60	209.30	
56		1.10	193.00	
59		0.40	252.50	
60		1.40	252.90	

2030 Fireflow - Main Zone West

65	7.10	192.40
66	2.30	191.30
68	4.60	205.20
69	3.20	208.70
70	0.80	285.20
72	19.00	255.00
75	15.60	247.70
76	36.30	256.00
83	0.10	221.90
85	0.10	222.10
86	5.70	222.40
89	4.80	225.60
92	6.40	192.40
97	2.60	173.90
98	0.30	174.00
101	0.30	174.30
102	4.90	176.00
103	0.20	175.70
104	5.00	179.70
107	5.00	183.60
108	2.10	183.60
109	9.20	236.20
118	19.00	192.50
119	4.10	217.70
121	2.70	230.70
137	9.80	180.00
166	7.30	182.90
172	4.60	174.10
174	2.50	175.70
175	8.20	183.60
178	2.60	183.60
192	8.80	183.60
201	4.20	178.30
212	4.40	256.30
213	2.50	253.50
214	5.70	230.10
224	4.30	224.20
247	16.40	192.10
248	9.70	248.60
253	6.30	240.90
254	22.40	230.80
295	25.70	210.10
325	5.70	183.90
342	3.90	165.40
343	7.50	163.20
344	3.40	164.20
346	0.70	165.60
356	10.40	219.10
361	12.50	243.10
375	5.60	230.50
384	11.90	183.20
385	1.30	183.60
396	1.30	221.20
398	3.50	220.50
407	6.10	226.99
408	3.20	223.30
421	5.70	184.20
424	1.40	189.90
432	17.30	184.10
468	20.90	204.20
473	1.90	178.30
474	2.30	210.70
480	8.00	219.70
481	0.20	220.90
483	1.50	214.00
492	9.50	195.50
504	7.30	192.80
505	6.50	197.20
509	10.70	200.00
510	5.90	189.60
512	7.50	184.80
513	0.80	178.80
518	3.40	182.20
526	14.30	201.80
530	3.70	220.30
536	4.80	201.90
540	1.00	202.30
543	2.40	210.90
544	1.90	216.10
552	3.60	191.50
556	4.40	206.10
565	3.20	210.80
566	1.80	204.60
568	2.60	206.30
569	7.90	178.30
573	1.60	179.00
578	1.90	280.80
579	4.10	205.50
582	5.40	212.80
584	5.50	207.60
590	6.30	208.60
597	4.20	222.20
599	6.20	592.40
601	1.60	577.30
619	2.50	559.00
620	11.10	583.00
623	2.10	588.00
628	2.70	420.40
631	3.50	382.80
632	1.00	455.20
642	2.00	304.60
649	2.10	392.70
657	9.40	331.20
661	6.20	190.90
665	8.70	174.40

2030 Fireflow - Main Zone West

668	13.60	182.30	
675	1.70	180.60	
676	3.10	206.70	
682	0.60	209.20	
683	4.20	200.30	
686	1.10	278.90	
693	7.60	197.40	
700	0.10	237.50	
704	2.60	190.10	
705	5.40	185.50	
710	16.50	197.50	
717	7.30	204.90	
718	0.10	191.20	
726	1.70	190.00	
780	9.80	195.00	
781	0.10	252.20	
784	6.20	259.80	
788	18.30	258.50	
791	5.60	256.00	
792	0.40	254.90	
797	4.70	255.30	
800	4.30	177.30	
802	1.00	178.00	
803	7.20	217.90	
807	8.60	272.60	
808	5.40	215.50	
813	5.10	244.90	
815	3.90	219.20	
817	5.00	275.20	
827	7.10	186.80	
828	3.20	192.50	
831	2.30	216.90	
842	3.90	234.00	
844	5.30	260.00	
856	3.30	194.40	
860	3.00	230.20	
865	3.10	195.90	
868	3.20	197.00	
872	1.20	199.50	
881	3.00	199.80	
885	3.40	204.20	
893	3.00	198.10	
894	1.20	206.30	
899	7.30	192.10	
901	7.10	189.00	
906	2.50	292.50	
910	1.90	294.90	
916	6.00	222.40	
922	1.20	238.30	
923	4.10	182.20	
929	0.90	181.60	
937	3.90	183.80	
944	4.30	196.50	
945	4.10	192.00	
954	3.30	193.70	
958	7.50	201.60	
961	1.70	205.40	
962	4.50	179.30	
964	0.30	179.40	
975	7.80	184.50	
979	1.70	173.70	
994	6.30	192.30	
1003	6.10	435.80	
1023	7.40	389.60	
1024	3.50	408.40	
1032	5.00	455.00	
1049	3.80	421.50	
1050	7.00	188.20	
1053	4.40	183.20	
1056	2.20	192.00	
1057	6.60	179.20	
1060	7.30	196.50	
1063	1.90	238.10	
1064	3.30	181.30	
1071	3.20	190.50	
1084	13.20	198.50	
1085	4.90	197.60	
1089	2.70	190.70	
1099	11.70	233.90	
1100	0.80	339.70	
1101	1.70	323.20	
1103	6" and 2"	6.10	346.40
1104	0.50	285.50	
1107	3.50	211.40	
1120	1.60	222.90	
1121	2.50	205.30	
1122	0.90	204.40	
1125	2.20	205.00	
1130	6.30	225.00	
1134	7.90	202.90	
1137	4.80	202.10	
1156	6.90	184.90	
1180	4.50	195.40	
1181	3.80	186.00	
1183	2.20	190.20	
1184	6.50	189.70	
1186	3.70	191.30	
1210	5.10	215.60	
1211	0.30	564.40	
1214	2.20	607.60	
1215	2.00	200.80	
1217	4.50	207.80	
1218	7.20	217.60	
1223	3.00	187.20	
1224	4.30	187.60	

2030 Fireflow - Main Zone West

1229	4.30	224.40
1232	7.60	183.90
1235	5.80	197.20
1239	2.00	265.90
1240	0.10	608.90
1244	5.80	591.00
1251	7.10	622.30
1262	0.30	349.90
1270	1.90	184.30
1277	6.80	340.00
1284	5.60	224.00
1290	7.50	207.20
1293	3.90	206.60
1295	4.60	200.40
1298	0.70	224.20
1309	7.50	185.00
1310	5.80	184.40
1314	4.60	183.00
1318	4.20	221.20
1322	3.60	194.60
1328	3.60	192.30
1333	3.40	191.30
1337	3.90	192.80
1338	9.10	257.70
1356	2.50	190.80
1359	0.80	193.30
1364	3.50	193.90
1366	5.30	190.60
1375	9.80	168.30
1387	3.30	182.40
1388	6.10	200.40
1392	5.10	220.30
1396	1.80	308.10
1409	5.90	222.20
1410	2.20	392.50
1456	3.20	183.20
1465	3.20	235.70
1483	5.90	193.40
1484	14.30	183.60
1497	2.60	167.20
1498	1.50	396.40
1502	3.90	385.30
1513	0.80	339.40
1517	5.50	205.40
1519	0.90	211.30
1524	1.20	615.60
1544	16.80	194.80
1547	13.50	208.00
1570	10.00	195.50
1575	7.90	171.60
1576	1.60	253.70
1580	6.60	245.80
1626	19.10	272.90
1627	11.20	289.00
1630	29.90	266.70
1636	186.00	245.70
1637	26.00	249.10
1647	26.40	236.20
1648	26.70	187.30
1657	7.10	176.60
1658	7.10	185.90
1674	8.20	178.00
1679	3.10	317.70
1689	3.00	323.60
1690	0.40	319.70
1698	5.20	256.80
1699	5.90	218.90
1700	2.80	216.20
1710	3.60	303.90
1711	0.80	209.80
1712	1.70	268.50
1713	1.70	571.10
1716	7.20	533.50
1719	0.60	516.50
1737	6.20	166.60
1742	9.90	183.60
1767	3.80	193.40
1773	3.50	272.20
1775	1.70	270.10
1776	5.00	269.20
1782	9.00	269.10
1788	6.20	269.00
1791	0.90	273.40
1793	1.20	270.60
1799	3.10	201.40
1800	2.70	166.10
1801	0.80	173.70
1805	2.60	179.70
1806	1.50	173.10
1808	1.40	179.80
1809	2.50	172.30
1810	4.40	179.50
1813	3.50	171.10
1814	6.50	167.10
1818	2.80	178.50
1821	5.00	169.80
1823	2.70	182.50
1826	3.80	183.30
1827	6.90	192.90
1831	2.10	234.10
1948	1.10	234.90
1960	4.60	237.60
1961	3.30	190.10
1968	0.50	164.90
1971	0.10	185.30

2030 Fireflow - Main Zone West

1973	2.90	198.40	
1974	4.80	187.50	
1975	4.60	186.60	
1980	3.80	180.20	
1981	1.30	183.10	
1984	3.80	194.10	
1985	0.20	195.20	
1986	4.30	194.50	
1987	4.00	198.50	
1988	0.20	219.50	
1989	1.70	222.30	
1991	3.60	194.20	
1994	0.70	190.70	
1996	4.20	189.80	
1997	4.20	191.50	
2003	0.20	185.20	
2007	3.10	200.60	
2009	4.10	196.90	
2010	4.80	191.70	
2012	4.20	199.00	
2013	3.60	200.10	
2014	5.90	193.20	
2016	5.40	222.30	
2021	0.80	204.20	
2023	0.60	206.90	
2025	2.30	455.60	
2028	1.30	520.90	
2029	1.20	449.00	
2030	0.70	460.10	
2031	3.00	430.90	
2032	0.90	484.00	
2033	2.10	474.20	
2047	0.70	309.00	
2050	0.20	301.10	
2051	0.10	229.60	
2052	0.10	229.90	
2053	4.50	220.60	
2061	1.20	208.20	
2063	7.70	205.00	
2065	5.70	198.90	
2066	4.20	222.20	
2067	8.40	216.20	
2072	7.90	221.90	
2073	3.10	199.80	
2074	2.50	220.90	
2076	8.40	204.40	
2078	3.90	199.20	
2079	4.30	203.10	
2080	5.00	191.60	
2081	4.40	198.70	
2083	8.50	255.40	
2084	5.60	224.10	
2086	5.60	230.30	
2088	9.00	604.50	
2090	9.70	391.30	
2091	4.90	195.30	
2092	2.40	251.60	
2093	6.30	236.00	
2094	6.90	188.50	
2095	4.80	187.60	
2096	3.30	196.50	
2097	5.10	202.50	
2098	5.10	202.10	
2100	6.80	197.30	
2101	8.10	270.60	
2103	8.80	236.90	
2104	3.80	200.50	
2105	5.70	201.90	
2106	2.60	192.10	
2107	6.30	190.50	
2109	4.70	190.80	
2110	3.50	192.70	
2111	3.00	191.00	
2112	6.60	190.20	
2113	5.50	195.50	
2115	4.60	191.90	
2117	4.10	217.50	
2119	7.10	193.60	
2120	3.90	268.60	
2121	3.50	193.00	
2122	5.80	183.70	
2123	4.30	193.20	
2125	1.30	206.20	
2126	2.70	192.50	
2127	8.50	203.70	
2129	4.70	218.10	
2130	3.60	198.00	
2132	2.10	230.10	
2133	4.20	578.00	
2137	5.60	198.20	
2138	7.50	221.50	
I-18th St	0.00	218.20	
O-18th St	0.00	218.20	
3-in or sm	0.10	185.50	
3-inch or	0.40	183.00	
3-inch or	0.20	183.10	
O-AV-1	0.00	283.80	
I-AV-2	0.00	306.00	
I-AV-3	0.00	253.40	
O-AV-4	0.00	289.30	
O-AV-5	0.00	225.30	
O-AV-6	0.00	208.10	
O-Central1	---	333.50	541.19
O-Fairview	Fairview PRV	346.50	466.50
O-High Lev	High Level P	401.60	

2030 Fireflow - Main Zone West

High Level	High Level R	----	605.00	605.00
Hillcrest		0.30	256.20	
inter-tie		3.50	174.40	
J-1		4.30	174.00	
J-100		0.90	190.60	
J-105		3.10	175.60	
J-106		3.40	206.20	
J-11		3.40	280.00	
J-110		6.00	198.00	
J-111		2.40	192.50	
J-112		6.30	167.90	
J-113		3.00	200.50	
J-114	13.60		405.70	
J-115	2.20		197.30	
J-116	2.30		207.10	
J-117	2.10		192.10	
J-120	2.90		237.50	
J-122	3.20		174.00	
J-123	0.50		224.70	
J-124	2.60		403.80	
J-125	2.50		383.00	
J-126	4.10		367.95	
J-127	34.10		225.20	
J-128	17.80		235.20	
J-129	10.20		184.80	
J-130	4.60		222.00	
J-131	0.70		418.00	
J-132	3.60		176.00	
J-133	1.10		339.60	
J-134	1.30		200.90	
J-135	2.30		288.30	
J-136	1.00		204.10	
J-138	1.20		219.60	
J-139	0.60		222.60	
J-140	0.70		218.20	
J-141	0.50		200.90	
J-142	0.30		218.20	
J-143	12.70		186.90	
J-144	2.30		186.80	
J-145	0.20		218.20	
J-146	0.00		218.20	
J-147	0.00		218.20	
J-148	9.20		498.90	
J-149	4.50		306.10	
J-150	7.30		272.40	
J-151	16.70		326.80	
J-152	7.80		272.40	
J-153	93.50		302.40	
J-154	7.50		267.60	
J-155	21.60		263.80	
J-156	24.40		261.30	
J-157	2.30		265.80	
J-158	10.50		211.40	
J-159	0.50		343.00	
J-160	5.50		172.60	
J-161	0.30		178.60	
J-162	8.50		183.00	
J-163	4.90		183.70	
J-164	15.50		177.50	
J-167	3.40		0.00	
J-168	3.70		0.00	
J-169	8.20		413.50	
J-170	2.10		174.50	
J-171	2.50		286.90	
J-173	74.70		329.80	
J-176	1.30		166.40	
J-177	2.80		179.10	
J-2	7.00		201.80	
J-20	2.70		182.90	
J-21	1.90		182.80	
J-25	6.10		311.10	
J-27	5.20		207.10	
J-3	4.10		182.20	
J-30	9.50		219.90	
J-35	10.20		222.10	
J-39	5.00		218.10	
J-4	3.10		184.40	
J-42	7.50		222.00	
J-44	7.50		208.40	
J-45	5.20		209.00	
J-53	11.70		294.30	
J-55	3.30		297.10	
J-57	1.70		229.20	
J-58	1.90		204.60	
J-6	4.70		473.40	
J-61	5.20		207.00	
J-62	1.40		191.50	
J-63	1.70		225.20	
J-64	5.10		202.30	
J-67	2.60		210.80	
J-7	4.30		214.70	
J-71	2.80		204.60	
J-73	7.90		199.60	
J-74	1.20		301.00	
J-77	0.80		296.10	
J-78	6.40		230.70	
J-79	3.30		223.40	
J-8	8.00		208.80	
J-80	6.00		190.70	
J-81	8.20		218.90	
J-82	8.00		257.90	
J-84	2.90		226.30	
J-87	5.20		194.40	
J-88	26.00		275.70	
J-90	0.10		219.10	

J-91		4.90	352.90	
J-93		2.00	187.50	
J-94		4.50	187.50	
J-95		14.70	189.50	
J-96		8.10	176.90	
J-99		1.50	205.50	
Kennicott	Kennicott Re	----	374.00	397.90
Main Reser	Main Reservo	----	383.30	401.10
physical d		0.10	222.00	
I-RV-1		0.00	186.80	
I-RV-2		0.00	200.90	
O-South En		----	287.90	495.59
O-Valley V	Valley View	0.00	308.10	
Yankis (Va	Yankis (Vall	----	631.50	635.90
Yates Rese	500,000 gal	----	376.00	401.10
O-18th St		----	218.20	389.66
I-18th St		0.00	218.20	
I-AV-1		0.00	283.80	
O-AV-2		0.00	306.00	
O-AV-3		0.00	253.40	
I-AV-4		0.00	289.30	
I-AV-5		0.00	225.30	
I-AV-6		0.00	208.10	
I-Centrali		0.00	333.50	
I-Fairview	Fairview PRV	0.00	346.50	
I-High Lev	High Level P	0.00	401.60	
O-RV-1		----	186.80	382.95
O-RV-2		----	200.90	389.67
I-South En		0.00	287.90	
I-Valley V	Valley View	0.00	308.10	

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 5
 MAXIMUM AND MINIMUM VELOCITIES = 5
 MAXIMUM AND MINIMUM HEAD LOSS/1000 = 5

SUPPLY ZONE DATA

THIS SYSTEM HAS MULTIPLE SUPPLY ZONES

- ZONE NO. 1 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@18th St PRV ~@RV-2 ~@RV-1~@Yankis (Valley V
 ~@Fairview PRV~@Kennicott Reserv~@High Level Reser ~@Main Reservoir
 ~@Yates Reservoir
- ZONE NO. 2 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@Centralia Alpha
- ZONE NO. 3 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@South End Pump S

SYSTEM CONFIGURATION

NUMBER OF PIPES(P) = 732
 NUMBER OF END NODES(J) = 575
 NUMBER OF PRIMARY LOOPS(L) = 153
 NUMBER OF SUPPLY NODES(F) = 7
 NUMBER OF SUPPLY ZONES(Z) = 3

Case: 0

RESULTS OBTAINED AFTER 24 TRIALS: ACCURACY = 0.34697E-03

SIMULATION DESCRIPTION (LABEL)

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS		FLOWRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/ 1000 ft/f	HL/ 1000 ft/f
	#1	#2						
3	6	5	87.76	0.00	0.00	0.36	0.13	0.13
5	10	9	2.80	0.00	0.00	0.03	0.00	0.00
6	12	11	0.10	0.00	0.00	0.00	0.00	0.00
7	872	13	0.10	0.00	0.00	0.00	0.00	0.00
8	15	16	17.61	0.00	0.00	0.20	0.08	0.08
10	18	19	1.50	0.04	0.00	0.15	0.08	0.08
12	22	23	16.18	0.01	0.00	0.10	0.01	0.01
13	24	1524	1.20	0.00	0.00	0.03	0.00	0.00
14	26	J-55	6.10	0.00	0.00	0.04	0.00	0.00
16	28	29	0.70	0.00	0.00	0.02	0.00	0.00
17	32	31	10.96	0.00	0.00	0.03	0.00	0.00
21	38	37	0.60	0.00	0.00	0.02	0.00	0.00
22	2014	40	14.68	0.00	0.00	0.09	0.01	0.01
23	41	1699	21.64	0.00	0.00	0.06	0.00	0.00
24	213	43	0.10	0.00	0.00	0.00	0.00	0.00
26	47	48	0.60	0.00	0.00	0.02	0.00	0.00

2030 Fireflow - Main Zone West

27	49	50	1.10	0.00	0.00	0.00	0.00	0.00
28	51	52	2.40	0.00	0.00	0.02	0.00	0.00
32	60	59	0.40	0.00	0.00	0.00	0.00	0.00
35	65	66	38.59	0.15	0.00	0.44	0.50	0.50
37	68	69	8.81	0.00	0.00	0.06	0.00	0.00
38	52	70	0.80	0.00	0.00	0.01	0.00	0.00
39	72	Hillcrest	0.30	0.00	0.00	0.01	0.00	0.00
41	76	75	2.43	0.00	0.00	0.01	0.00	0.00
45	2066	83	0.10	0.00	0.00	0.00	0.00	0.00
46	86	85	0.10	0.00	0.00	0.00	0.00	0.00
52	97	98	0.30	0.00	0.00	0.00	0.00	0.00
55	102	103	0.20	0.00	0.00	0.00	0.00	0.00
56	1810	104	4.97	0.00	0.00	0.01	0.00	0.00
59	107	108	6.64	0.00	0.00	0.02	0.00	0.00
60	J-53	109	305.72	0.05	0.00	0.49	0.07	0.07
66	J-169	118	412.73	0.95	0.00	0.86	0.46	0.46
68	121	119	172.94	0.09	0.00	0.36	0.13	0.13
70	860	121	258.86	0.01	0.00	0.54	0.27	0.27
72	118	1799	3.10	0.00	0.00	0.02	0.00	0.00
85	396	physical d	0.10	0.00	0.00	0.00	0.00	0.00
107	J-91	2067	1278.36	0.53	0.00	1.61	0.55	0.55
109	325	34	34.03	0.00	0.00	0.10	0.00	0.00
110	166	2122	71.92	0.02	0.00	0.20	0.02	0.02
112	962	166	26.64	0.00	0.00	0.08	0.00	0.00
114	569	962	31.44	0.00	0.00	0.09	0.00	0.00
115	665	569	40.94	0.01	0.00	0.12	0.01	0.01
118	J-105	172	17.79	0.00	0.00	0.05	0.00	0.00
120	178	175	78.80	0.01	0.00	0.22	0.02	0.02
123	1826	178	94.74	0.01	0.00	0.27	0.03	0.03
126	1827	1826	110.35	0.01	0.00	0.31	0.04	0.04
129	192	1827	202.17	0.22	0.00	0.57	0.13	0.13
137	201	192	195.70	0.03	0.00	0.56	0.12	0.12
139	137	201	234.00	0.07	0.00	0.66	0.17	0.17
141	137	15	110.55	0.02	0.00	0.31	0.04	0.04
142	15	J-162	89.84	0.01	0.00	0.25	0.03	0.03
145	201	J-93	34.10	0.01	0.00	0.10	0.01	0.01
155	212	213	83.06	0.02	0.00	0.24	0.03	0.03
156	26	214	83.45	0.04	0.00	0.24	0.03	0.03
163	2072	224	4.30	0.00	0.00	0.01	0.00	0.00
187	248	253	6.30	0.00	0.00	0.02	0.00	0.00
192	254	J-127	148.51	0.11	0.00	0.42	0.07	0.07
262	325	1575	25.25	0.00	0.00	0.07	0.00	0.00
279	344	343	14.60	0.00	0.00	0.04	0.00	0.00
280	342	344	20.60	0.00	0.00	0.06	0.00	0.00
282	342	346	0.70	0.00	0.00	0.00	0.00	0.00
283	86	J-130	4.60	0.00	0.00	0.01	0.00	0.00
292	361	356	39.84	0.07	0.00	0.16	0.03	0.03
298	J-7	32	35.66	0.00	0.00	0.16	0.03	0.03
302	32	480	22.80	0.01	0.00	0.09	0.01	0.01
318	384	385	53.88	0.00	0.00	0.22	0.03	0.03
319	356	J-167	7.40	0.00	0.00	0.03	0.00	0.00
320	356	41	22.04	0.00	0.00	0.09	0.01	0.01
329	396	398	313.70	0.06	0.00	1.28	1.99	1.99
331	398	1409	140.48	0.14	0.00	0.57	0.45	0.45
340	407	408	103.31	0.17	0.00	0.42	0.25	0.25
353	2119	661	2.47	0.00	0.00	0.03	0.00	0.00
355	1648	424	66.18	0.02	0.00	0.27	0.08	0.08
363	295	468	30.70	0.03	0.00	0.13	0.01	0.01
398	172	473	1.90	0.00	0.00	0.01	0.00	0.00
403	480	474	2.30	0.00	0.00	0.01	0.00	0.00
411	2129	J-45	23.00	0.03	0.00	0.15	0.03	0.03
414	1217	1121	4.00	0.00	0.00	0.05	0.01	0.01
417	1235	492	53.13	0.09	0.00	0.34	0.22	0.22
429	505	509	56.66	0.12	0.00	0.36	0.25	0.25
433	512	510	1.53	0.00	0.00	0.01	0.00	0.00
435	J-160	513	0.80	0.00	0.00	0.01	0.00	0.00
440	518	J-94	6.46	0.00	0.00	0.04	0.00	0.00
448	1184	92	55.65	0.08	0.00	0.36	0.09	0.09
451	119	530	62.69	0.01	0.00	0.40	0.30	0.30
452	119	536	106.16	0.37	0.00	0.68	0.79	0.79
458	536	2079	49.51	0.12	0.00	0.32	0.19	0.19
461	540	2079	9.18	0.00	0.00	0.06	0.01	0.01
464	544	543	40.39	0.06	0.00	0.26	0.13	0.13
472	552	J-100	83.07	0.05	0.00	0.53	0.50	0.50
476	I-AV-1	J-114	0.00	0.00	0.00	0.00	0.00	0.00
486	569	573	1.60	0.00	0.00	0.01	0.00	0.00
490	385	166	52.58	0.02	0.00	0.34	0.07	0.07
495	J-138	579	22.31	0.01	0.00	0.14	0.02	0.02
497	582	584	8.20	0.00	0.00	0.05	0.00	0.00
503	J-73	590	17.03	0.02	0.00	0.11	0.03	0.03
511	599	601	1.60	0.00	0.00	0.01	0.00	0.00
526	599	619	2.50	0.00	0.00	0.02	0.00	0.00
531	620	623	2.10	0.00	0.00	0.01	0.00	0.00
538	628	631	42.40	0.01	0.00	0.27	0.10	0.10
541	1049	632	1.00	0.00	0.00	0.01	0.00	0.00
547	631	642	2.00	0.00	0.00	0.01	0.00	0.00
552	High Level	2090	110.30	0.11	0.00	0.45	0.10	0.10
565	509	661	52.92	0.29	0.00	0.34	0.22	0.22
569	597	1284	9.85	0.00	0.00	0.06	0.01	0.01
571	2086	46	20.46	0.01	0.00	0.13	0.03	0.03
574	668	665	38.35	0.04	0.00	0.24	0.04	0.04
577	668	675	1.70	0.00	0.00	0.01	0.00	0.00
584	J-27	676	3.10	0.00	0.00	0.02	0.00	0.00
590	54	682	0.60	0.00	0.00	0.00	0.00	0.00
591	J-95	683	6.70	0.00	0.00	0.04	0.00	0.00
593	J-78	686	1.10	0.00	0.00	0.01	0.00	0.00
597	408	J-79	177.30	0.04	0.00	1.13	2.05	2.05
601	361	1960	35.12	0.09	0.00	0.22	0.07	0.07
612	710	705	19.78	0.00	0.00	0.13	0.01	0.01
617	717	1134	0.40	0.00	0.00	0.00	0.00	0.00
623	247	718	0.10	0.00	0.00	0.00	0.00	0.00
630	424	726	113.97	0.08	0.00	0.73	0.91	0.91
632	726	J-80	24.26	0.02	0.00	0.15	0.05	0.05
652	468	780	9.80	0.01	0.00	0.06	0.00	0.00
684	2092	781	0.10	0.00	0.00	0.00	0.00	0.00

2030 Fireflow - Main Zone West

686	784	1698	15.54	0.00	0.00	0.10	0.01	0.01
690	788	791	17.21	0.01	0.00	0.11	0.01	0.01
693	791	792	0.40	0.00	0.00	0.00	0.00	0.00
697	797	784	10.54	0.00	0.00	0.07	0.00	0.00
700	800	802	1.00	0.00	0.00	0.01	0.00	0.00
702	803	1465	25.31	0.06	0.00	0.29	0.23	0.23
706	2009	808	7.24	0.02	0.00	0.08	0.02	0.02
710	815	813	21.80	0.05	0.00	0.25	0.17	0.17
712	121	2093	83.21	0.10	0.00	0.94	2.05	2.05
714	2094	40	6.86	0.14	0.00	0.18	0.15	0.15
723	2096	828	11.57	0.02	0.00	0.13	0.05	0.05
726	831	544	42.29	0.04	0.00	0.48	0.59	0.59
727	530	831	63.57	0.42	0.00	0.72	1.25	1.25
735	831	1989	18.98	0.03	0.00	0.22	0.13	0.13
739	844	842	12.32	0.04	0.00	0.14	0.06	0.06
741	817	844	29.46	0.20	0.00	0.33	0.30	0.30
749	J-115	856	12.17	0.01	0.00	0.14	0.06	0.06
751	2078	14	22.84	0.05	0.00	0.26	0.19	0.19
753	860	2097	32.57	0.21	0.00	0.37	0.36	0.36
757	868	865	5.02	0.00	0.00	0.06	0.01	0.01
760	868	J-113	0.94	0.00	0.00	0.01	0.00	0.00
762	872	868	9.15	0.01	0.00	0.10	0.03	0.03
772	2098	881	0.49	0.00	0.00	0.01	0.00	0.00
776	J-111	885	13.93	0.02	0.00	0.16	0.08	0.08
784	893	J-106	5.29	0.01	0.00	0.06	0.01	0.01
785	J-110	893	29.68	0.13	0.00	0.34	0.30	0.30
789	899	66	17.34	0.01	0.00	0.20	0.11	0.11
791	901	899	34.78	0.07	0.00	0.39	0.41	0.41
793	901	1742	41.47	0.64	0.00	0.47	0.57	0.57
797	910	906	2.50	0.00	0.00	0.03	0.00	0.00
801	910	39	7.44	0.00	0.00	0.08	0.02	0.02
807	842	2084	25.50	0.07	0.00	0.29	0.23	0.23
812	916	922	1.20	0.00	0.00	0.01	0.00	0.00
814	J-20	923	1.96	0.00	0.00	0.01	0.00	0.00
817	J-21	929	0.90	0.00	0.00	0.01	0.00	0.00
823	J-2	937	10.96	0.02	0.00	0.12	0.02	0.02
825	556	J-2	16.58	0.05	0.00	0.19	0.10	0.10
831	2080	945	21.19	0.08	0.00	0.24	0.16	0.16
839	2081	954	11.89	0.03	0.00	0.13	0.06	0.06
846	962	964	0.30	0.00	0.00	0.00	0.00	0.00
858	1314	1387	23.56	0.09	0.00	0.60	1.43	1.43
861	108	104	4.54	0.00	0.00	0.05	0.01	0.01
867	J-110	958	17.96	0.12	0.00	0.20	0.12	0.12
874	994	65	25.11	0.16	0.00	0.28	0.22	0.22
876	65	1986	35.47	0.28	0.00	0.40	0.42	0.42
883	1003	1023	20.56	0.01	0.00	0.13	0.01	0.01
903	J-125	1024	48.60	0.02	0.00	0.31	0.07	0.07
905	O-High Lev	649	0.00	0.00	0.00	0.00	0.00	0.00
910	1024	628	45.10	0.04	0.00	0.29	0.06	0.06
912	1003	1032	5.44	0.01	0.00	0.06	0.01	0.01
930	1050	1053	4.40	0.01	0.00	0.05	0.01	0.01
933	384	2100	6.16	0.02	0.00	0.07	0.02	0.02
936	16	1057	15.91	0.03	0.00	0.18	0.07	0.07
938	1060	1063	3.00	0.00	0.00	0.03	0.00	0.00
941	J-129	1064	3.30	0.00	0.00	0.02	0.00	0.00
948	526	1071	45.12	0.15	0.00	0.51	0.47	0.47
949	1084	526	25.46	0.06	0.00	0.16	0.02	0.02
962	1085	1337	4.82	0.01	0.00	0.05	0.01	0.01
966	1099	J-78	84.69	0.26	0.00	0.54	0.19	0.19
975	1101	1100	0.80	0.00	0.00	0.01	0.00	0.00
976	O-Fairview	1101	18.30	0.01	0.00	0.21	0.09	0.09
982	J-81	2103	2.96	0.00	0.00	0.03	0.00	0.00
993	1121	1122	0.90	0.00	0.00	0.01	0.00	0.00
994	2076	2127	29.31	0.09	0.00	0.33	0.30	0.30
1000	1130	1125	2.20	0.00	0.00	0.02	0.00	0.00
1001	J-73	2104	12.10	0.04	0.00	0.14	0.06	0.06
1003	2104	1134	7.50	0.01	0.00	0.09	0.02	0.02
1004	509	1290	6.69	0.01	0.00	0.08	0.02	0.02
1007	2105	1137	22.70	0.06	0.00	0.26	0.19	0.19
1009	2013	1388	38.95	0.13	0.00	0.44	0.50	0.50
1012	2107	2106	49.51	0.46	0.00	0.56	0.79	0.79
1014	23	510	27.45	0.24	0.00	0.31	0.26	0.26
1017	2137	2109	30.48	0.15	0.00	0.35	0.32	0.32
1019	2109	2094	42.59	0.19	0.00	0.48	0.59	0.59
1020	2094	23	38.50	0.07	0.00	0.44	0.49	0.49
1023	23	1156	19.33	0.07	0.00	0.22	0.14	0.14
1024	2073	2096	19.24	0.03	0.00	0.22	0.14	0.14
1025	2096	2110	15.51	0.02	0.00	0.18	0.09	0.09
1026	1997	2110	0.02	0.00	0.00	0.00	0.00	0.00
1028	2111	1997	19.06	0.03	0.00	0.22	0.13	0.13
1030	2112	2111	42.22	0.16	0.00	0.48	0.58	0.58
1032	2113	1961	17.78	0.05	0.00	0.20	0.12	0.12
1035	704	1961	13.93	0.02	0.00	0.16	0.07	0.07
1036	1961	2109	28.41	0.08	0.00	0.32	0.28	0.28
1037	2010	2014	38.20	0.31	0.00	0.43	0.49	0.49
1040	2012	2013	64.83	0.42	0.00	0.74	1.29	1.29
1041	2065	2012	11.49	0.02	0.00	0.13	0.05	0.05
1042	2137	2065	7.54	0.01	0.00	0.09	0.02	0.02
1043	2137	2113	12.30	0.02	0.00	0.14	0.06	0.06
1044	1180	2113	55.58	0.26	0.00	0.63	0.97	0.97
1046	22	1181	18.96	0.01	0.00	0.22	0.13	0.13
1047	2095	22	38.64	0.09	0.00	0.44	0.50	0.50
1048	726	1184	88.01	0.01	0.00	0.56	0.20	0.20
1051	1996	1186	17.10	0.03	0.00	0.19	0.11	0.11
1053	827	1232	5.02	0.01	0.00	0.06	0.01	0.01
1058	1232	1156	10.69	0.03	0.00	0.12	0.05	0.05
1060	1156	512	23.12	0.18	0.00	0.26	0.19	0.19
1062	512	2107	14.09	0.06	0.00	0.16	0.08	0.08
1064	2115	2107	18.65	0.02	0.00	0.21	0.13	0.13
1069	2117	2065	41.04	0.32	0.00	0.47	0.55	0.55
1071	1210	2137	55.92	0.57	0.00	0.63	0.98	0.98
1074	1713	1211	0.30	0.00	0.00	0.00	0.00	0.00
1076	24	1713	34.20	0.03	0.00	0.39	0.14	0.14
1077	1215	J-58	18.81	0.04	0.00	0.21	0.13	0.13
1078	68	1217	3.50	0.00	0.00	0.04	0.00	0.00

2030 Fireflow - Main Zone West

1080	1218	2112	52.41	0.92	0.00	0.59	0.87	0.87
1083	2112	1223	32.34	0.12	0.00	0.37	0.36	0.36
1085	2111	1224	2.17	0.00	0.00	0.02	0.00	0.00
1087	1333	1085	10.80	0.02	0.00	0.12	0.05	0.05
1088	1085	808	1.07	0.00	0.00	0.01	0.00	0.00
1090	808	1229	2.92	0.00	0.00	0.03	0.00	0.00
1091	1181	1232	13.26	0.03	0.00	0.15	0.07	0.07
1094	1483	1235	0.03	0.00	0.00	0.00	0.00	0.00
1095	2120	1104	0.50	0.00	0.00	0.01	0.00	0.00
1096	2120	1239	2.00	0.00	0.00	0.02	0.00	0.00
1099	1214	1240	0.10	0.00	0.00	0.00	0.00	0.00
1100	1244	1214	79.20	0.32	0.00	0.90	0.68	0.68
1103	1251	1244	44.78	0.13	0.00	0.51	0.24	0.24
1110	Yankis (Va	1251	92.10	0.37	0.00	1.05	0.90	0.90
1116	J-25	1513	29.70	0.00	0.00	0.19	0.03	0.03
1117	J-159	1277	7.10	0.00	0.00	0.08	0.02	0.02
1118	1277	1262	0.30	0.00	0.00	0.00	0.00	0.00
1120	657	J-25	35.80	0.02	0.00	0.15	0.01	0.01
1125	1181	1270	1.90	0.00	0.00	0.02	0.00	0.00
1127	2103	1099	5.55	0.00	0.00	0.04	0.00	0.00
1132	1277	I-AV-4	0.00	0.00	0.00	0.00	0.00	0.00
1138	579	693	18.21	0.11	0.00	0.21	0.12	0.12
1140	1284	O-AV-3	0.00	0.00	0.00	0.00	0.00	0.00
1146	1290	2119	8.40	0.28	0.00	0.21	0.21	0.21
1148	1293	1295	11.70	0.15	0.00	0.30	0.39	0.39
1150	398	2016	99.71	0.02	0.00	0.64	0.26	0.26
1152	1120	1298	0.70	0.00	0.00	0.01	0.00	0.00
1154	432	1309	7.50	0.04	0.00	0.09	0.02	0.02
1165	1310	1314	6.07	0.13	0.00	0.16	0.12	0.12
1169	2127	J-61	5.59	0.10	0.00	0.14	0.10	0.10
1171	1318	2105	14.64	0.34	0.00	0.37	0.59	0.59
1173	2105	1322	9.39	0.12	0.00	0.24	0.26	0.26
1178	40	2115	16.25	0.22	0.00	0.41	0.72	0.72
1179	2115	1328	15.76	0.40	0.00	0.40	0.68	0.68
1182	803	J-81	7.96	0.12	0.00	0.20	0.19	0.19
1185	1333	1337	3.80	0.03	0.00	0.10	0.05	0.05
1189	1338	807	16.79	0.01	0.00	0.11	0.01	0.01
1193	518	192	11.19	0.03	0.00	0.29	0.36	0.36
1195	1060	192	4.08	0.03	0.00	0.10	0.06	0.06
1198	705	1060	14.38	0.75	0.00	0.37	0.57	0.57
1205	492	J-80	2.39	0.02	0.00	0.06	0.02	0.02
1208	828	1356	7.57	0.05	0.00	0.19	0.17	0.17
1210	828	1359	0.80	0.00	0.00	0.02	0.00	0.00
1211	1364	1984	0.77	0.00	0.00	0.02	0.00	0.00
1212	1364	1991	3.15	0.02	0.00	0.08	0.03	0.03
1214	2121	1364	7.42	0.05	0.00	0.19	0.17	0.17
1215	1366	36	1.08	0.00	0.00	0.01	0.00	0.00
1217	1251	1244	40.22	0.13	0.00	0.46	0.19	0.19
1226	17	1375	4.06	0.10	0.00	0.10	0.04	0.04
1236	1387	17	18.56	0.26	0.00	0.47	0.66	0.66
1239	1392	1388	16.31	0.42	0.00	0.42	0.72	0.72
1244	33	1314	22.09	0.12	0.00	0.56	0.91	0.91
1245	937	1456	7.06	0.01	0.00	0.08	0.02	0.02
1247	1456	384	1.34	0.00	0.00	0.02	0.00	0.00
1248	1396I-Valley V		0.00	0.00	0.00	0.00	0.00	0.00
1258	1409	505	11.52	0.41	0.00	0.29	0.38	0.38
1261	1410	657	2.28	0.01	0.00	0.06	0.01	0.01
1269	1023	I-AV-2	0.00	0.00	0.00	0.00	0.00	0.00
1309	1456	881	2.51	0.00	0.00	0.03	0.00	0.00
1315	885	1056	5.72	0.02	0.00	0.15	0.07	0.07
1319	1465	2103	5.57	0.06	0.00	0.14	0.10	0.10
1322	407	509	13.65	0.43	0.00	0.35	0.52	0.52
1330	492	693	3.55	0.04	0.00	0.09	0.04	0.04
1338	1295	1483	7.10	0.15	0.00	0.18	0.16	0.16
1340	899	1484	10.14	0.57	0.00	0.26	0.30	0.30
1351	344	1497	2.60	0.01	0.00	0.07	0.01	0.01
1354	1502	1498	1.50	0.00	0.00	0.01	0.00	0.00
1358	J-133	1502	20.20	0.00	0.00	0.13	0.01	0.01
1371	1517	1519	0.90	0.01	0.00	0.09	0.03	0.03
1384	J-95	1544	41.90	0.03	0.00	0.12	0.01	0.01
1388	1544	1547	22.57	0.00	0.00	0.06	0.00	0.00
1389	1547	J-96	11.60	0.00	0.00	0.03	0.00	0.00
1396	1544	1547	2.53	0.00	0.00	0.02	0.00	0.00
1401	668	1674	59.69	0.02	0.00	0.17	0.01	0.01
1404	1674	102	22.80	0.00	0.00	0.06	0.00	0.00
1406	102	J-1	17.70	0.00	0.00	0.05	0.00	0.00
1409	92	J-164	47.85	0.00	0.00	0.14	0.01	0.01
1423	421	107	52.80	0.01	0.00	0.15	0.01	0.01
1426	34	1575	7.85	0.00	0.00	0.02	0.00	0.00
1427	1576	248	78.86	0.01	0.00	0.22	0.02	0.02
1429	248	1580	62.86	0.01	0.00	0.18	0.02	0.02
1433	51	26	98.65	0.02	0.00	0.28	0.03	0.03
1435	109	51	108.25	0.06	0.00	0.31	0.04	0.04
1440	109	6	188.26	0.05	0.00	0.53	0.12	0.12
1441	6	1647	93.70	0.05	0.00	0.27	0.03	0.03
1443	1637	1647	33.18	0.02	0.00	0.09	0.00	0.00
1454	72	1637	175.53	0.18	0.00	0.50	0.10	0.10
1455	1626	72	194.83	0.45	0.00	0.55	0.12	0.12
1458	1627	1626	534.79	0.61	0.00	1.52	0.80	0.80
1460	797	212	79.61	0.01	0.00	0.23	0.02	0.02
1464	1630	788	130.36	0.23	0.00	0.37	0.06	0.06
1477	1626	1630	320.86	0.35	0.00	0.91	0.31	0.31
1479	Yates Rese	1627	881.89	2.16	0.00	2.50	2.01	2.01
1481	1630	76	160.61	0.30	0.00	0.46	0.09	0.09
1483	76	1636	178.13	0.24	0.00	0.51	0.10	0.10
1487	1637	75	116.34	0.03	0.00	0.33	0.05	0.05
1492	75	49	103.17	0.02	0.00	0.29	0.04	0.04
1493	49	254	87.37	0.09	0.00	0.25	0.03	0.03
1494	J-35	254	83.53	0.04	0.00	0.24	0.03	0.03
1497	1647	2072	100.49	0.04	0.00	0.29	0.04	0.04
1499	247	1648	117.68	0.23	0.00	0.33	0.05	0.05
1500	343	1657	7.10	0.00	0.00	0.05	0.00	0.00
1509	1658	901	83.35	0.14	0.00	0.53	0.18	0.18
1526	1674	800	28.69	0.01	0.00	0.18	0.03	0.03
1531	800	174	23.39	0.01	0.00	0.15	0.02	0.02

2030 Fireflow - Main Zone West

1534	1679	1689	3.40	0.00	0.00	0.04	0.00	0.00
1544	1689	1690	0.40	0.00	0.00	0.00	0.00	0.00
1548	1698	2092	2.50	0.00	0.00	0.02	0.00	0.00
1552	1699	1700	2.80	0.00	0.00	0.01	0.00	0.00
1553	2136	89	4.80	0.00	0.00	0.03	0.00	0.00
1560	J-53	1710	3.60	0.00	0.00	0.02	0.00	0.00
1562	683	1711	0.80	0.00	0.00	0.01	0.00	0.00
1563	683	1712	1.70	0.00	0.00	0.01	0.00	0.00
1564	1713	1716	32.20	0.02	0.00	-0.37	0.13	0.13
1567	1716	1719	0.60	0.00	0.00	0.01	0.00	0.00
1584	1742	1737	12.44	0.56	0.00	0.32	0.44	0.44
1588	1737	1375	5.74	0.04	0.00	0.15	0.10	0.10
1593	1742	1484	19.12	0.00	0.00	0.09	0.00	0.00
1596	1484	975	14.96	0.00	0.00	0.06	0.00	0.00
1611	975	1310	10.74	0.00	0.00	0.04	0.00	0.00
1612	2122	1310	1.13	0.00	0.00	0.00	0.00	0.00
1615	2123	1089	2.01	0.00	0.00	0.01	0.00	0.00
1617	1089	1186	21.13	0.04	0.00	0.24	0.16	0.16
1618	1186	1767	34.53	0.02	0.00	0.22	0.04	0.04
1621	J-135	J-171	30.00	0.01	0.00	0.19	0.03	0.03
1626	1773	1775	23.10	0.00	0.00	0.15	0.02	0.02
1628	1775	1776	10.72	0.00	0.00	0.07	0.00	0.00
1629	1776	1782	4.52	0.00	0.00	0.03	0.00	0.00
1635	1788	1782	1.92	0.00	0.00	0.01	0.00	0.00
1641	1775	1788	10.68	0.00	0.00	0.07	0.00	0.00
1644	1773	1791	0.90	0.00	0.00	0.01	0.00	0.00
1645	1776	1793	1.20	0.00	0.00	0.01	0.00	0.00
1647	1788	1782	2.55	0.00	0.00	0.02	0.00	0.00
1654	1800	1801	0.80	0.00	0.00	0.00	0.00	0.00
1657	18053-inch	or	0.40	0.00	0.00	0.00	0.00	0.00
1658	1806	1808	1.40	0.00	0.00	0.02	0.00	0.00
1660	1809	1806	2.90	0.00	0.00	0.02	0.00	0.00
1661	1810	1821	31.78	0.01	0.00	0.13	0.01	0.01
1663	1821	1800	21.56	0.00	0.00	0.09	0.01	0.01
1664	1813	1809	8.40	0.00	0.00	0.03	0.00	0.00
1665	1814	1818	3.10	0.22	0.00	0.32	0.31	0.31
1669	1813	1814	6.16	0.00	0.00	0.04	0.00	0.00
1672	1821	J-112	5.22	0.00	0.00	0.03	0.00	0.00
1673	1826	1823	11.81	0.02	0.00	0.13	0.04	0.04
1676	1827	1071	84.92	0.00	0.00	0.24	0.03	0.03
1677	J-128	1636	7.87	0.00	0.00	0.05	0.00	0.00
1792	844	910	11.84	0.10	0.00	0.30	0.40	0.40
1793	178	1823	13.34	0.00	0.00	0.09	0.01	0.01
1796	1063	1948	1.10	0.02	0.00	0.11	0.05	0.05
1799	1032	J-114	0.44	0.00	0.00	0.00	0.00	0.00
1810	1960	12	30.42	0.00	0.00	0.19	0.06	0.06
1811	12	10	26.52	0.05	0.00	0.17	0.04	0.04
1813	1767	J-117	3.20	0.00	0.00	0.04	0.00	0.00
1818	1737	1968	0.50	0.00	0.00	0.01	0.00	0.00
1820	1823	J-168	22.45	0.06	0.00	0.25	0.18	0.18
1821	175	384	70.60	0.10	0.00	0.29	0.05	0.05
1825	566	1973	4.60	0.03	0.00	0.12	0.07	0.07
1826	1975	1974	0.19	0.00	0.00	0.00	0.00	0.00
1828	1980	J-3	5.43	0.01	0.00	0.06	0.01	0.01
1830	19813-inch	or	0.20	0.00	0.00	0.01	0.00	0.00
1831	1767	1984	27.53	0.06	0.00	0.31	0.26	0.26
1834	1986	1985	0.20	0.00	0.00	0.01	0.00	0.00
1835	894	2125	11.13	0.00	0.00	0.07	0.00	0.00
1836	1987	568	2.64	0.02	0.00	0.07	0.02	0.02
1837	1989	1988	0.20	0.00	0.00	0.01	0.00	0.00
1839	2121	1991	29.47	0.07	0.00	0.33	0.30	0.30
1840	2123	2126	168.94	0.07	0.00	0.69	0.23	0.23
1841	994	1994	0.70	0.00	0.00	0.01	0.00	0.00
1842	1997	1996	14.84	0.06	0.00	0.17	0.08	0.08
1843	1184	J-163	25.86	0.08	0.00	0.29	0.09	0.09
1852	2007	2009	22.47	0.04	0.00	0.26	0.18	0.18
1854	2065	2010	31.40	0.16	0.00	0.36	0.34	0.34
1855	J-39	2012	57.55	0.15	0.00	0.37	0.26	0.26
1856	2013	2014	22.28	0.03	0.00	0.25	0.06	0.06
1858	2016	J-81	3.20	0.05	0.00	0.08	0.04	0.04
1860	504	2127	5.59	0.09	0.00	0.14	0.10	0.10
1864	1121	2023	0.60	0.00	0.00	0.01	0.00	0.00
1865	2127	1215	20.81	0.04	0.00	0.24	0.16	0.16
1866	2025	2028	1.30	0.02	0.00	0.13	0.06	0.06
1869	2029	2030	0.70	0.00	0.00	0.07	0.02	0.02
1870	2031	2029	6.40	0.00	0.00	0.16	0.04	0.04
1871	2029	2025	4.50	0.00	0.00	0.11	0.02	0.02
1872	2025	2032	0.90	0.00	0.00	0.02	0.00	0.00
1873	2031	2033	2.10	0.00	0.00	0.05	0.01	0.01
1877	J-124	2031	11.50	0.00	0.00	0.07	0.00	0.00
1883	J-74	2047	0.70	0.00	0.00	0.01	0.00	0.00
1887	2053	582	6.19	0.06	0.00	0.16	0.09	0.09
1892	2129	582	7.40	0.04	0.00	0.19	0.12	0.12
1893	46	590	17.91	0.06	0.00	0.20	0.09	0.09
1894	J-45	2061	1.20	0.00	0.00	0.01	0.00	0.00
1895	J-44	2063	23.22	0.03	0.00	0.15	0.03	0.03
1896	5	361	87.46	0.01	0.00	0.36	0.13	0.13
1898	14	540	10.18	0.01	0.00	0.12	0.04	0.04
1900	163-in	or sm	0.10	0.00	0.00	0.00	0.00	0.00
1901	17	18	3.80	0.00	0.00	0.04	0.00	0.00
1904	2088	24	37.40	0.00	0.00	0.42	0.17	0.17
1907	2130	36	9.86	0.01	0.00	0.11	0.04	0.04
1908	38	2083	3.04	0.00	0.00	0.03	0.00	0.00
1909	2014	J-87	39.90	0.16	0.00	0.45	0.53	0.53
1917	69	J-61	0.61	0.00	0.00	0.00	0.00	0.00
1920	295	J-30	24.20	0.00	0.00	0.07	0.00	0.00
1924	2066	86	10.40	0.00	0.00	0.03	0.00	0.00
1927	104	J-112	4.52	0.01	0.00	0.05	0.01	0.01
1930	118	710	390.63	1.05	0.00	0.81	0.41	0.41
1935	2106	247	134.18	0.03	0.00	0.86	1.23	1.23
1936	2122	325	64.99	0.00	0.00	0.18	0.02	0.02
1938	1218	375	534.24	0.76	0.00	1.11	1.04	1.04
1940	1318	396	315.10	0.12	0.00	0.66	0.39	0.39
1941	480	2138	12.50	0.00	0.00	0.05	0.00	0.00
1947	2093	530	4.58	0.01	0.00	0.05	0.01	0.01

2030 Fireflow - Main Zone West

1948	536	2078	51.84	0.06	0.00	0.33	0.21	0.21
1949	565	1084	94.36	0.38	0.00	0.60	0.64	0.64
1950	556	944	5.88	0.01	0.00	0.07	0.02	0.02
1951	543	565	90.32	0.02	0.00	0.58	0.59	0.59
1954	J-84	O-AV-5	0.00	0.00	0.00	0.00	0.00	0.00
1956	584	717	31.34	0.02	0.00	0.13	0.02	0.02
1958	590	584	28.64	0.00	0.00	0.12	0.02	0.02
1960	620	2133	17.30	0.00	0.00	0.11	0.01	0.01
1962	1410	649	53.20	0.01	0.00	-0.34	0.16	0.16
1964	661	424	49.19	0.01	0.00	0.20	0.06	0.06
1965	172	665	11.29	0.00	0.00	0.03	0.00	0.00
1967	710	137	354.35	0.69	0.00	0.74	0.35	0.35
1972	791	784	11.21	0.00	0.00	0.07	0.00	0.00
1975	788	797	94.85	0.01	0.00	0.27	0.03	0.03
1977	813	J-120	5.72	0.01	0.00	0.06	0.01	0.01
1978	803	815	4.12	0.00	0.00	0.05	0.01	0.01
1979	817	1338	14.91	0.04	0.00	0.17	0.09	0.09
1982	856	2121	30.72	0.09	0.00	0.35	0.32	0.32
1983	375	860	294.42	0.09	0.00	0.61	0.34	0.34
1984	865	65	56.05	0.09	0.00	0.36	0.24	0.24
1985	14	872	10.45	0.00	0.00	0.12	0.04	0.04
1986	J-3	923	2.88	0.00	0.00	0.02	0.00	0.00
1987	1987	944	14.75	0.03	0.00	0.17	0.08	0.08
1989	945	954	4.30	0.00	0.00	0.05	0.01	0.01
1990	958	J-106	10.44	0.01	0.00	-0.12	0.04	0.04
1992	994	1658	148.95	0.10	0.00	0.61	0.18	0.18
1993	2101	60	7.62	0.00	0.00	0.09	0.02	0.02
1995	1049	1003	32.10	0.02	0.00	0.20	0.03	0.03
1996	631	1049	36.90	0.02	0.00	0.24	0.08	0.08
1997	1050	975	3.58	0.00	0.00	0.04	0.00	0.00
1998	1057	518	21.05	0.03	0.00	0.13	0.04	0.04
2000	1084	552	55.70	0.10	0.00	0.36	0.24	0.24
2001	1120	1099	88.81	0.05	0.00	0.57	0.21	0.21
2002	J-79	1107	93.61	0.13	0.00	0.60	0.63	0.63
2003	1130	J-63	71.90	0.18	0.00	0.46	0.39	0.39
2005	398	1137	70.01	0.22	0.00	0.45	0.37	0.37
2010	1180	704	91.98	0.29	0.00	0.59	0.61	0.61
2011	704	1183	75.45	0.07	0.00	0.86	1.71	1.71
2014	2067	1210	524.05	0.57	0.00	1.09	1.00	1.00
2020	1223	1224	20.72	0.04	0.00	0.24	0.16	0.16
2021	1224	827	18.59	0.09	0.00	0.21	0.13	0.13
2022	1229	815	21.57	0.05	0.00	0.24	0.17	0.17
2024	1517	1235	58.89	0.24	0.00	0.38	0.27	0.27
2025	J-82	1099	2.04	0.00	0.00	0.01	0.00	0.00
2027	1284	46	4.25	0.00	0.00	0.03	0.00	0.00
2031	1392	1318	333.94	0.13	0.00	0.70	0.43	0.43
2032	J-87	1322	37.95	0.13	0.00	0.43	0.48	0.48
2033	2091	1328	75.10	0.13	0.00	0.48	0.42	0.42
2035	1337	2110	4.72	0.00	0.00	0.05	0.01	0.01
2036	813	1338	10.98	0.03	0.00	0.12	0.05	0.05
2037	1356	1089	21.82	0.00	0.00	0.25	0.17	0.17
2039	945	1366	12.79	0.03	0.00	0.15	0.06	0.06
2040	1387	979	1.70	0.00	0.00	0.02	0.00	0.00
2042	J-39	1392	355.35	0.29	0.00	0.74	0.49	0.49
2045	1409	407	123.07	0.11	0.00	0.50	0.35	0.35
2048	1465	J-120	16.55	0.00	0.00	0.19	0.10	0.10
2053	1107	1517	65.29	0.14	0.00	0.42	0.32	0.32
2058	J-8	1570	18.65	0.01	0.00	0.08	0.01	0.01
2060	1575	342	25.20	0.00	0.00	0.07	0.00	0.00
2063	1627	J-135	335.90	0.15	0.00	0.95	0.42	0.42
2067	1648	432	24.80	0.04	0.00	0.10	0.01	0.01
2068	1658	421	58.50	0.02	0.00	0.24	0.03	0.03
2070	1101	1679	15.80	0.00	0.00	0.18	0.07	0.07
2071	1698	212	7.84	0.00	0.00	0.05	0.00	0.00
2078	1800	1813	18.06	0.00	0.00	0.07	0.00	0.00
2079	1809	1805	3.00	0.00	0.00	0.01	0.00	0.00
2080	107	1810	41.16	0.00	0.00	0.12	0.01	0.01
2087	1960	700	0.10	0.00	0.00	0.00	0.00	0.00
2089	1973	J-2	14.25	0.03	0.00	0.16	0.08	0.08
2090	1366	1974	6.41	0.01	0.00	0.07	0.02	0.02
2091	36	1975	6.34	0.01	0.00	0.07	0.02	0.02
2092	1981	J-4	0.57	0.00	0.00	0.01	0.00	0.00
2093	1984	994	181.06	0.10	0.00	0.74	0.26	0.26
2095	1986	552	30.97	0.17	0.00	0.35	0.33	0.33
2096	893	1987	21.39	0.01	0.00	0.24	0.17	0.17
2097	1989	842	17.08	0.02	0.00	0.19	0.11	0.11
2102	827	1996	6.46	0.00	0.00	0.07	0.02	0.02
2104	375	2007	234.22	0.27	0.00	0.96	0.42	0.42
2105	2009	2096	11.13	0.00	0.00	0.13	0.05	0.05
2111	2016	1120	91.11	0.00	0.00	0.58	0.22	0.22
2114	1107	1293	24.81	0.08	0.00	0.28	0.22	0.22
2118	J-57	2053	45.80	0.05	0.00	0.29	0.12	0.12
2120	717	2063	23.64	0.00	0.00	0.10	0.01	0.01
2127	2067	1218	593.85	0.42	0.00	1.24	1.26	1.26
2128	2067	1180	152.06	0.90	0.00	0.97	1.55	1.55
2139	2007	2073	208.65	0.01	0.00	0.85	0.34	0.34
2141	2074	483	1.50	0.00	0.00	0.01	0.00	0.00
2145	492	2076	37.68	0.04	0.00	0.24	0.12	0.12
2146	504	2076	7.76	0.00	0.00	0.05	0.01	0.01
2148	693	J-64	14.16	0.00	0.00	0.09	0.01	0.01
2149	2078	865	54.13	0.07	0.00	0.35	0.23	0.23
2150	1991	2078	29.02	0.09	0.00	0.33	0.29	0.29
2152	2079	543	52.33	0.04	0.00	0.33	0.21	0.21
2153	2080	2081	43.79	0.05	0.00	0.50	0.23	0.23
2154	2080	958	12.19	0.03	0.00	0.14	0.06	0.06
2155	2125	J-99	34.72	0.00	0.00	0.22	0.04	0.04
2156	958	2081	12.20	0.02	0.00	0.14	0.06	0.06
2159	2084	2083	8.68	0.00	0.00	0.06	0.01	0.01
2160	2083	916	3.22	0.00	0.00	0.04	0.00	0.00
2161	2084	565	7.24	0.00	0.00	0.05	0.01	0.01
2162	2084	916	3.98	0.01	0.00	0.05	0.01	0.01
2165	2086	578	1.90	0.00	0.00	0.01	0.00	0.00
2166	2132	2086	27.96	0.03	0.00	0.18	0.05	0.05
2169	2088	620	30.50	0.07	0.00	0.19	0.03	0.03
2170	1214	2088	76.90	0.10	0.00	0.87	0.64	0.64

2030 Fireflow - Main Zone West

2173	2090	1410	57.68	0.00	0.00	0.37	0.18	0.18
2174	2090	657	42.92	0.01	0.00	0.18	0.02	0.02
2175	1137	2091	87.91	0.26	0.00	0.56	0.56	0.56
2176	2091	505	51.64	0.07	0.00	0.33	0.21	0.21
2179	2093	817	49.37	0.24	0.00	0.56	0.78	0.78
2180	2093	1229	22.96	0.14	0.00	0.26	0.19	0.19
2181	2095	2094	9.68	0.02	0.00	0.11	0.04	0.04
2183	1223	2095	8.62	0.01	0.00	0.10	0.03	0.03
2184	1183	2095	44.50	0.21	0.00	0.50	0.64	0.64
2187	2097	856	21.85	0.07	0.00	0.25	0.17	0.17
2188	2073	2097	11.05	0.01	0.00	0.13	0.05	0.05
2189	885	2098	4.82	0.00	0.00	0.05	0.01	0.01
2190	2098	2100	12.10	0.02	0.00	0.14	0.06	0.06
2192	954	2130	12.90	0.02	0.00	0.15	0.07	0.07
2193	2100	1050	14.98	0.02	0.00	0.17	0.06	0.06
2194	1056	2100	3.52	0.00	0.00	0.04	0.01	0.01
2195	807	2101	27.56	0.02	0.00	0.18	0.02	0.02
2196	2101	J-82	11.84	0.01	0.00	0.08	0.00	0.00
2198	1293	1290	9.21	0.01	0.00	0.10	0.03	0.03
2199	60	2103	5.82	0.00	0.00	0.07	0.01	0.01
2202	2104	2021	0.80	0.00	0.00	0.02	0.00	0.00
2203	1388	2105	23.15	0.06	0.00	0.26	0.19	0.19
2206	1328	2106	87.26	0.08	0.00	0.56	0.55	0.55
2207	510	2107	23.07	0.06	0.00	0.26	0.19	0.19
2212	2109	2010	11.60	0.02	0.00	0.13	0.05	0.05
2214	2110	1356	16.75	0.05	0.00	0.19	0.11	0.11
2216	2111	1333	18.00	0.01	0.00	0.20	0.12	0.12
2217	1183	2112	28.75	0.08	0.00	0.33	0.29	0.29
2221	2113	803	44.60	0.41	0.00	0.51	0.65	0.65
2223	J-87	2115	22.76	0.06	0.00	0.26	0.19	0.19
2228	1210	2117	463.03	0.26	0.00	0.96	0.80	0.80
2231	1483	2119	1.17	0.00	0.00	0.01	0.00	0.00
2234	J-77	2120	6.40	0.00	0.00	0.07	0.01	0.01
2236	2126	2121	9.68	0.01	0.00	0.11	0.04	0.04
2240	2073	2123	175.25	0.10	0.00	0.72	0.24	0.24
2243	2125	961	14.82	0.00	0.00	0.09	0.01	0.01
2244	2081	2125	39.70	0.01	0.00	0.25	0.05	0.05
2246	2126	1984	156.57	0.06	0.00	0.64	0.20	0.20
2249	J-77	2050	0.20	0.00	0.00	0.00	0.00	0.00
2252	2053	2129	35.10	0.02	0.00	0.22	0.07	0.07
2253	961	2130	13.12	0.03	0.00	0.15	0.07	0.07
2254	2130	1973	12.55	0.00	0.00	0.14	0.06	0.06
2257	214	2132	77.75	0.00	0.00	0.50	0.32	0.32
2259	2133	599	10.30	0.00	0.00	0.07	0.00	0.00
2260	2133	47	2.80	0.00	0.00	0.02	0.00	0.00
2269	2138	481	0.20	0.00	0.00	0.00	0.00	0.00
F-1	J-1	97	13.10	0.00	0.00	0.04	0.00	0.00
F-100	J-112	1814	3.44	0.00	0.00	0.04	0.01	0.01
F-101	2079	J-113	2.06	0.00	0.00	0.02	0.00	0.00
F-102	1023	J-114	13.16	0.00	0.00	0.08	0.01	0.01
F-103	649	J-125	51.10	0.03	0.00	0.33	0.07	0.07
F-104	1103I-Fairview		18.30	0.00	0.00	0.21	0.09	0.09
F-105	J-116	J-115	14.37	0.03	0.00	0.16	0.08	0.08
F-106	2097	J-116	16.67	0.03	0.00	0.19	0.10	0.10
F-108	J-117	56	1.10	0.00	0.00	0.01	0.00	0.00
F-11	1975	J-3	1.56	0.00	0.00	0.02	0.00	0.00
F-111	J-120	807	19.37	0.04	0.00	0.22	0.14	0.14
F-113	2117	J-39	417.89	0.19	0.00	0.87	0.66	0.66
F-116	97	J-122	10.20	0.00	0.00	0.03	0.00	0.00
F-117	J-140	J-145	45.49	0.00	0.00	0.13	0.01	0.01
F-119	J-139	J-84	44.39	0.00	0.00	0.28	0.06	0.06
F-121	J-140	J-138	23.51	0.00	0.00	0.07	0.00	0.00
F-122	Main Reser	J-126	1708.29	0.11	0.00	2.15	0.95	0.95
F-124	O-AV-1	2083	0.00	0.00	0.00	0.00	0.00	0.00
F-125	O-AV-2	906	0.00	0.00	0.00	0.00	0.00	0.00
F-127	J-127	295	80.60	0.06	0.00	0.23	0.02	0.02
F-128	J-127	J-128	27.77	0.01	0.00	0.08	0.00	0.00
F-130	J-128	1831	2.10	0.00	0.00	0.01	0.00	0.00
F-131	1071	J-129	126.84	0.03	0.00	0.36	0.06	0.06
F-132	J-129	668	113.34	0.07	0.00	0.32	0.04	0.04
F-133	1513	J-133	21.30	0.00	0.00	0.14	0.01	0.01
F-134	J-122	J-132	7.00	0.00	0.00	0.02	0.00	0.00
F-135	1502	J-124	14.80	0.00	0.00	0.09	0.01	0.01
F-136	J-124	J-131	0.70	0.00	0.00	0.00	0.00	0.00
F-138-CV	Kennicott	J-53	321.02	0.06	0.00	0.51	0.08	0.08
F-140	O-AV-4	686	0.00	0.00	0.00	0.00	0.00	0.00
F-143	I-AV-5	J-63	0.00	0.00	0.00	0.00	0.00	0.00
F-144	O-AV-6	1134	0.00	0.00	0.00	0.00	0.00	0.00
F-146	J-134	J-73	14.99	0.00	0.00	0.10	0.01	0.01
F-147	J-64	J-141	16.79	0.00	0.00	0.11	0.01	0.01
F-148	J-134	O-RV-2	0.00	0.00	0.00	0.00	0.00	0.00
F-149	J-143	O-RV-1	0.00	0.00	0.00	0.00	0.00	0.00
F-15	J-126	J-91	1704.19	0.16	0.00	2.15	0.94	0.94
F-150-CV	J-141	J-134	16.29	0.00	0.00	0.10	0.01	0.01
F-151	J-142	J-139	44.99	0.00	0.00	0.29	0.06	0.06
F-152	J-144	1570	35.31	0.00	0.00	0.10	0.01	0.01
F-153-CV	J-143	J-144	37.61	0.00	0.00	0.11	0.01	0.01
F-154	I-RV-1	J-144	0.00	0.00	0.00	0.00	0.00	0.00
F-157	I-RV-2	J-141	0.00	0.00	0.00	0.00	0.00	0.00
F-1570	1716	1103	24.40	0.03	0.00	0.16	0.02	0.02
F-158	J-145I-18th St		0.00	0.00	0.00	0.00	0.00	0.00
F-159	J-145	J-146	45.29	0.00	0.00	0.13	0.01	0.01
F-160-CV	J-146	J-147	45.29	0.00	0.00	0.13	0.01	0.01
F-161	J-146O-18th St		0.00	0.00	0.00	0.00	0.00	0.00
F-162	J-147	J-142	45.29	0.00	0.00	0.13	0.01	0.01
F-164	I-18th St	J-147	0.00	0.00	0.00	0.00	0.00	0.00
F-165	J-156	J-155	40.60	0.13	0.00	0.46	0.17	0.17
F-166	66	J-110	53.63	0.29	0.00	0.61	0.91	0.91
F-167	J-156	J-153	186.60	0.67	0.00	0.53	0.14	0.14
F-168	J-152	J-150	6.81	0.00	0.00	0.04	0.00	0.00
F-169	J-98	J-154	274.20	0.14	0.00	0.78	0.29	0.29
F-170	J-155	J-151	16.70	0.16	0.00	0.19	0.03	0.03
F-171	J-155	J-157	2.30	0.12	0.00	0.23	0.18	0.18
F-172	J-154	J-156	251.60	0.38	0.00	0.71	0.25	0.25
F-173	J-6	J-148	9.20	7.05	0.00	0.94	2.65	2.65

2030 Fireflow - Main Zone West

P-174	J-153	J-149	4.50	0.00	0.00	0.03	0.00	0.00
P-175	J-152	J-150	0.49	0.00	0.00	0.00	0.00	0.00
P-176	2076	J-64	7.73	0.01	0.00	0.05	0.01	0.01
P-177	J-160	1057	11.74	0.01	0.00	0.07	0.01	0.01
P-178	1513	J-159	7.60	0.00	0.00	0.09	0.02	0.02
P-179	J-162	J-160	18.04	0.01	0.00	0.12	0.01	0.01
P-18	J-135I-South En		303.60	0.02	0.00	0.86	0.28	0.28
P-180	J-162	J-95	63.30	0.02	0.00	0.18	0.02	0.02
P-181	1818	J-161	0.30	0.00	0.00	0.03	0.00	0.00
P-182	J-163	2003	0.20	0.00	0.00	0.00	0.00	0.00
P-183	J-164	J-143	50.31	0.04	0.00	0.14	0.01	0.01
P-184	J-163	J-177	20.76	0.01	0.00	0.13	0.01	0.01
P-188	31	J-158	4.46	0.00	0.00	0.01	0.00	0.00
P-19	34	33	22.49	0.01	0.00	0.57	0.94	0.94
P-190	J-167	2074	4.00	0.00	0.00	0.02	0.00	0.00
P-194	1580	76	56.26	0.02	0.00	0.16	0.01	0.01
P-195	J-170	J-176	1.30	0.00	0.00	0.00	0.00	0.00
P-196	J-168	J-21	9.52	0.01	0.00	0.11	0.04	0.04
P-197	J-168	1980	9.23	0.00	0.00	0.06	0.00	0.00
P-198	O-South En	J-88	303.60	1.07	0.00	0.86	0.35	0.35
P-199	J-171	1773	27.50	0.01	0.00	0.18	0.02	0.02
P-2	J-1	101	0.30	0.00	0.00	0.00	0.00	0.00
P-20	213	1576	80.46	0.00	0.00	0.23	0.02	0.02
P-200	J-91	J-169	420.93	0.02	0.00	0.53	0.07	0.07
P-201	J-153	J-173	88.60	5.43	0.00	0.57	0.26	0.26
P-203	J-177	J-164	17.96	0.00	0.00	0.11	0.01	0.01
P-25	J-30	2066	14.70	0.00	0.00	0.04	0.00	0.00
P-29	2063	J-8	39.15	0.03	0.00	0.16	0.03	0.03
P-3	O-Centrali	J-6	13.90	0.84	0.00	0.16	0.03	0.03
P-30	J-42	J-35	93.73	0.04	0.00	0.27	0.03	0.03
P-31	J-8	54	12.50	0.00	0.00	0.09	0.01	0.01
P-33	2072	J-42	88.29	0.00	0.00	0.25	0.03	0.03
P-34	1699	J-42	12.94	0.00	0.00	0.04	0.00	0.00
P-36	1322	2091	43.73	0.20	0.00	0.50	0.62	0.62
P-4	1570	J-7	43.96	0.04	0.00	0.18	0.04	0.04
P-40	10	J-44	14.12	0.01	0.00	0.09	0.01	0.01
P-42	J-45	J-44	16.60	0.01	0.00	0.11	0.02	0.02
P-43	J-132	J-170	3.40	0.00	0.00	0.01	0.00	0.00
P-44	J-55	28	2.80	0.00	0.00	0.02	0.00	0.00
P-47	2132	J-57	47.70	0.00	0.00	0.30	0.13	0.13
P-48	41	J-90	0.10	0.00	0.00	0.00	0.00	0.00
P-49	J-57	2051	0.10	0.00	0.00	0.00	0.00	0.00
P-50	J-57	2052	0.10	0.00	0.00	0.00	0.00	0.00
P-51	O-18th St	J-142	0.00	0.00	0.00	0.00	0.00	0.00
P-53	1974	J-4	1.79	0.00	0.00	0.02	0.00	0.00
P-54	923	J-4	0.74	0.00	0.00	0.01	0.00	0.00
P-57	1217	I-AV-6	0.00	0.00	0.00	0.00	0.00	0.00
P-58	69	1217	5.00	0.00	0.00	0.03	0.00	0.00
P-6	J-88	J-11	3.40	0.00	0.00	0.02	0.00	0.00
P-61	J-58	68	16.91	0.01	0.00	0.19	0.05	0.05
P-62	J-61	J-136	1.00	0.00	0.00	0.01	0.00	0.00
P-63	J-127	J-158	6.04	0.00	0.00	0.02	0.00	0.00
P-64	54	J-27	8.30	0.00	0.00	0.05	0.01	0.01
P-65	597	J-67	27.43	0.02	0.00	0.18	0.05	0.05
P-67	J-67	J-71	24.83	0.01	0.00	0.16	0.02	0.02
P-69	J-71	J-73	22.03	0.02	0.00	0.14	0.04	0.04
P-7	J-154	J-152	15.10	0.00	0.00	0.10	0.01	0.01
P-71	J-63	J-123	70.20	0.00	0.00	0.45	0.13	0.13
P-73	1679	J-74	9.30	0.00	0.00	0.11	0.03	0.03
P-74	J-74	J-77	7.40	0.00	0.00	0.08	0.02	0.02
P-75	I-AV-3	2120	0.00	0.00	0.00	0.00	0.00	0.00
P-76	J-78	408	77.19	0.08	0.00	0.49	0.31	0.31
P-77	J-79	1130	80.40	0.35	0.00	0.51	0.47	0.47
P-78	J-80	504	20.65	0.01	0.00	0.13	0.04	0.04
P-79	J-82	1396	1.80	0.00	0.00	0.02	0.00	0.00
P-80	1388	J-87	26.01	0.05	0.00	0.30	0.09	0.09
P-81	92	J-62	1.40	0.00	0.00	0.01	0.00	0.00
P-82	J-84	597	41.49	0.06	0.00	0.26	0.10	0.10
P-83	J-123	J-140	69.70	0.00	0.00	0.20	0.02	0.02
P-84	J-93	1971	0.10	0.00	0.00	0.00	0.00	0.00
P-86	I-High Lev	J-126	0.00	0.00	0.00	0.00	0.00	0.00
P-87	J-94	526	33.96	0.10	0.00	0.22	0.10	0.10
P-88	J-93	J-94	32.00	0.00	0.00	0.36	0.25	0.25
P-89	J-96inter-tie		3.50	0.00	0.00	0.01	0.00	0.00
P-9	J-2	2098	12.87	0.02	0.00	0.15	0.06	0.06
P-90	174	J-105	20.89	0.00	0.00	0.06	0.00	0.00
P-91	J-20	1981	2.07	0.00	0.00	0.02	0.00	0.00
P-92	J-21	J-20	6.72	0.00	0.00	0.08	0.02	0.02
P-93	568	J-99	0.04	0.00	0.00	0.00	0.00	0.00
P-94	J-99	556	26.86	0.01	0.00	0.17	0.02	0.02
P-95	J-99	566	6.40	0.00	0.00	0.04	0.00	0.00
P-96	J-100	2080	82.17	0.03	0.00	0.52	0.18	0.18
P-97	J-106	894	12.33	0.02	0.00	0.14	0.06	0.06
P-98	J-173I-Centrali		13.90	0.00	0.00	0.09	0.01	0.01
P-99	944	J-111	16.33	0.04	0.00	0.19	0.10	0.10
Valley Vie	O-Valley VYankis (Va		0.00	0.00	0.00	0.00	0.00	0.00
~@18th St -RV	I-18th St O-18th St							
~@AV-1-XX	I-AV-1 O-AV-1							
~@AV-2-XX	I-AV-2 O-AV-2							
~@AV-3-XX	I-AV-3 O-AV-3							
~@AV-4-XX	I-AV-4 O-AV-4							
~@AV-5-XX	I-AV-5 O-AV-5							
~@AV-6-XX	I-AV-6 O-AV-6							
~@High Lev-RV	I-High LevO-High Lev							
~@Valley V-RV	I-Valley VO-Valley V							

NODE RESULTS

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
5		0.30	397.73	243.40	154.33	66.88

2030 Fireflow - Main Zone West

6	6.80	397.73	244.40	153.33	66.44
9	2.80	397.58	205.80	191.78	83.10
10	9.60	397.58	213.70	183.88	79.68
11	0.10	397.62	236.90	160.72	69.65
12	3.80	397.62	236.50	161.12	69.82
13	0.10	398.45	198.90	199.55	86.47
14	2.20	398.45	201.40	197.05	85.39
15	3.10	398.10	186.10	212.00	91.87
16	1.60	398.10	186.10	212.00	91.87
17	10.70	397.14	175.70	221.44	95.96
18	2.30	397.14	171.90	225.24	97.60
19	1.50	397.10	165.30	231.80	100.45
22	3.50	398.76	186.50	212.26	91.98
23	7.90	398.75	187.70	211.05	91.46
24	2.00	634.97	604.50	30.47	13.21
26	9.10	397.71	240.30	157.41	68.21
28	2.10	397.71	322.60	75.11	32.55
29	0.70	397.71	319.00	78.71	34.11
31	6.50	397.45	216.80	180.65	78.28
32	5.90	397.45	214.70	182.75	79.19
33	0.40	397.61	183.00	214.61	93.00
34	3.70	397.62	183.50	214.12	92.79
36	4.60	397.71	194.40	203.31	88.10
37	0.60	398.38	319.00	79.38	34.40
38	3.80	398.38	290.50	107.88	46.75
40	5.30	398.69	190.80	207.89	90.08
41	0.30	397.65	219.10	178.55	77.37
43	0.10	397.72	253.50	144.22	62.49
46	6.80	397.62	229.90	167.72	72.68
47	2.20	634.90	544.40	90.50	39.22
48	0.60	634.90	543.60	91.30	39.56
49	14.70	397.66	243.00	154.66	67.02
50	1.10	397.66	244.20	153.46	66.50
51	7.20	397.73	240.00	157.73	68.35
52	1.60	397.73	261.50	136.23	59.03
54	3.60	397.50	209.30	188.20	81.55
56	1.10	398.67	193.00	205.67	89.12
59	0.40	398.62	252.50	146.12	63.32
60	1.40	398.62	252.90	145.72	63.14
65	7.10	398.35	192.40	205.95	89.24
66	2.30	398.20	191.30	206.90	89.66
68	4.60	397.41	205.20	192.21	83.29
69	3.20	397.41	208.70	188.71	81.77
70	0.80	397.73	285.20	112.53	48.76
72	19.00	397.89	255.00	142.89	61.92
75	15.60	397.68	247.70	149.98	64.99
76	36.30	397.68	256.00	141.68	61.39
83	0.10	397.39	221.90	175.49	76.05
85	0.10	397.39	222.10	175.29	75.96
86	5.70	397.39	222.40	174.99	75.83
89	4.80	397.44	225.60	171.84	74.46
92	6.40	397.54	192.40	205.14	88.89
97	2.60	397.68	173.90	223.78	96.97
98	0.30	397.68	174.00	223.68	96.93
101	0.30	397.68	174.30	223.38	96.80
102	4.90	397.69	176.00	221.69	96.06
103	0.20	397.69	175.70	221.99	96.19
104	5.00	398.38	179.70	218.68	94.76
107	5.00	398.38	183.60	214.78	93.07
108	2.10	398.38	183.60	214.78	93.07
109	9.20	397.79	236.20	161.59	70.02
118	19.00	399.86	192.50	207.36	89.85
119	4.10	398.93	217.70	181.23	78.54
121	2.70	399.03	230.70	168.33	72.94
137	9.80	398.12	180.00	218.12	94.52
166	7.30	397.65	182.90	214.75	93.06
172	4.60	397.66	174.10	223.56	96.88
174	2.50	397.67	175.70	221.97	96.19
175	8.20	397.77	183.60	214.17	92.81
178	2.60	397.77	183.60	214.17	92.81
192	8.80	398.02	183.60	214.42	92.91
201	4.20	398.05	178.30	219.75	95.22
212	4.40	397.73	256.30	141.43	61.29
213	2.50	397.72	253.50	144.22	62.49
214	5.70	397.67	230.10	167.57	72.61
224	4.30	397.65	224.20	173.45	75.16
247	16.40	397.96	192.10	205.86	89.20
248	9.70	397.70	248.60	149.10	64.61
253	6.30	397.70	240.90	156.80	67.95
254	22.40	397.56	230.80	166.76	72.26
295	25.70	397.39	210.10	187.29	81.16
325	5.70	397.63	183.90	213.73	92.62
342	3.90	397.62	165.40	232.22	100.63
343	7.50	397.62	163.20	234.42	101.58
344	3.40	397.62	164.20	233.42	101.15
346	0.70	397.62	165.60	232.02	100.54
356	10.40	397.65	219.10	178.55	77.37
361	12.50	397.72	243.10	154.62	67.00
375	5.60	399.12	230.50	168.62	73.07
384	11.90	397.67	183.20	214.47	92.94
385	1.30	397.67	183.60	214.07	92.76
396	1.30	398.75	221.20	177.55	76.94
398	3.50	398.69	220.50	178.19	77.21
407	6.10	398.44	226.99	171.45	74.30
408	3.20	398.27	223.30	174.97	75.82
421	5.70	398.39	184.20	214.19	92.82
424	1.40	397.71	189.90	207.81	90.05
432	17.30	397.69	184.10	213.59	92.56
468	20.90	397.36	204.20	193.16	83.70
473	1.90	397.66	178.30	219.36	95.06
474	2.30	397.44	210.70	186.74	80.92
480	8.00	397.44	219.70	177.74	77.02
481	0.20	397.44	220.90	176.54	76.50
483	1.50	397.65	214.00	183.65	79.58
492	9.50	397.63	195.50	202.13	87.59

2030 Fireflow - Main Zone West

504	7.30	397.60	192.80	204.80	88.75
505	6.50	398.14	197.20	200.94	87.07
509	10.70	398.01	200.00	198.01	85.81
510	5.90	398.51	188.60	208.91	90.53
512	7.50	398.51	184.80	213.71	92.61
513	0.80	398.08	178.80	219.28	95.02
518	3.40	398.04	182.20	215.84	93.53
526	14.30	397.94	201.80	196.14	85.00
530	3.70	398.92	220.30	178.62	77.40
536	4.80	398.57	201.90	196.67	85.22
540	1.00	398.44	202.30	196.14	85.00
543	2.40	398.40	210.90	187.50	81.25
544	1.90	398.46	216.10	182.36	79.02
552	3.60	397.90	191.50	206.40	89.44
556	4.40	397.74	206.10	191.64	83.05
565	3.20	398.38	210.80	187.58	81.28
566	1.80	397.75	204.60	193.15	83.70
568	2.60	397.75	206.30	191.45	82.96
569	7.90	397.65	178.30	219.35	95.05
573	1.60	397.65	178.00	218.65	94.75
578	1.90	397.64	280.80	116.84	50.63
579	4.10	397.69	205.50	192.19	83.28
582	5.40	397.56	212.80	184.76	80.06
584	5.50	397.56	207.60	189.96	82.31
590	6.30	397.56	208.60	188.96	81.88
597	4.20	397.63	222.20	175.43	76.02
599	6.20	634.90	592.40	42.50	18.42
601	1.60	634.90	577.30	57.60	24.96
619	2.50	634.90	558.00	75.90	32.89
620	11.10	634.90	583.00	51.90	22.49
623	2.10	634.90	588.00	46.90	20.33
628	2.70	604.79	420.40	184.39	79.90
631	3.50	604.77	382.80	221.97	96.19
632	1.00	604.75	455.20	149.55	64.81
642	2.00	604.77	304.60	300.17	130.07
649	2.10	604.87	392.70	212.17	91.94
657	9.40	604.88	331.20	273.68	118.59
661	6.20	397.72	190.90	206.82	89.62
665	8.70	397.66	174.40	223.26	96.75
668	13.60	397.70	182.30	215.40	93.34
675	1.70	397.70	180.60	217.10	94.08
676	3.10	397.50	206.70	190.80	82.68
682	0.60	397.50	208.20	188.30	81.60
683	4.20	398.06	200.30	197.76	85.70
686	1.10	398.35	278.90	119.45	51.76
693	7.60	397.59	197.40	200.19	86.75
700	0.10	397.62	237.50	160.12	69.39
704	2.60	399.12	190.10	209.02	90.57
705	5.40	398.80	185.50	213.30	92.43
710	16.50	398.81	197.50	201.31	87.23
717	7.30	397.54	204.90	192.64	83.48
718	0.10	397.96	191.20	206.76	89.59
726	1.70	397.63	190.00	207.63	89.97
780	9.80	397.35	195.00	202.35	87.69
781	0.10	397.73	252.20	145.53	63.06
784	6.20	397.74	258.80	137.94	59.77
788	18.30	397.75	258.50	139.25	60.34
791	5.60	397.74	256.00	141.74	61.42
792	0.40	397.74	254.90	142.84	61.90
797	4.70	397.74	255.30	142.44	61.72
800	4.30	397.67	177.30	220.37	95.50
802	1.00	397.67	178.00	219.67	95.19
803	7.20	398.74	217.90	180.84	78.36
807	8.60	398.64	272.60	126.04	54.62
808	5.40	398.79	215.50	183.29	79.42
813	5.10	398.68	244.90	153.78	66.64
815	3.90	398.73	218.20	179.53	77.80
817	5.00	398.69	275.20	123.49	53.51
827	7.10	398.73	186.80	211.93	91.83
828	3.20	398.78	192.50	206.28	89.39
831	2.30	398.50	216.90	181.60	78.69
842	3.90	398.45	234.00	164.45	71.26
844	5.30	398.49	260.00	138.49	60.01
856	3.30	398.75	194.40	204.35	88.55
860	3.00	399.03	230.20	168.83	73.16
865	3.10	398.44	195.90	202.54	87.77
868	3.20	398.44	197.00	201.44	87.29
872	1.20	398.45	198.50	198.95	86.21
881	3.00	397.67	198.80	197.87	85.74
885	3.40	397.68	204.20	193.48	83.84
893	3.00	397.78	198.10	199.68	86.53
894	1.20	397.75	206.30	191.45	82.96
899	7.30	398.20	192.10	206.10	89.31
901	7.10	398.28	188.00	209.28	90.69
906	2.50	398.38	292.50	105.88	45.88
910	1.90	398.38	294.90	103.48	44.84
916	6.00	398.37	222.40	175.97	76.26
922	1.20	398.37	238.30	160.07	69.37
923	4.10	397.70	182.20	215.50	93.38
929	0.90	397.71	181.60	216.11	93.65
937	3.90	397.68	183.80	213.88	92.68
944	4.30	397.74	196.50	201.24	87.20
945	4.10	397.74	192.00	205.74	89.15
954	3.30	397.74	193.70	204.04	88.42
958	7.50	397.78	201.60	196.18	85.01
961	1.70	397.75	205.40	192.35	83.35
962	4.50	397.65	178.30	218.35	94.62
964	0.30	397.65	178.40	218.25	94.58
975	7.80	397.63	184.50	213.13	92.36
979	1.70	397.40	173.70	223.70	96.94
994	6.30	398.51	192.30	206.21	89.36
1003	6.10	604.73	435.80	168.93	73.20
1023	7.40	604.73	389.60	215.13	93.22
1024	3.50	604.82	408.40	196.42	85.12
1032	5.00	604.73	455.00	149.73	64.88

2030 Fireflow - Main Zone West

1049	3.80	604.75	421.50	183.25	79.41
1050	7.00	397.63	188.20	209.43	90.75
1053	4.40	397.63	183.20	214.43	92.92
1056	2.20	397.66	192.00	205.66	89.12
1057	6.60	398.07	179.20	218.87	94.84
1060	7.30	398.05	196.50	201.55	87.34
1063	1.90	398.05	238.10	159.95	69.31
1064	3.30	397.77	181.30	216.47	93.80
1071	3.20	397.80	190.50	207.30	89.83
1084	13.20	398.00	198.50	199.50	86.45
1085	4.90	398.79	197.60	201.19	87.18
1089	2.70	398.73	190.70	208.03	90.15
1099	11.70	398.61	233.90	164.71	71.38
1100	0.80	466.49	339.70	126.79	54.94
1101	1.70	466.49	323.20	143.29	62.09
1103	6.10	634.89	346.40	288.49	125.01
1104	0.50	466.48	285.50	180.98	78.43
1107	3.50	398.10	211.40	186.70	80.90
1120	1.60	398.66	222.90	175.76	76.16
1121	2.50	397.40	205.30	192.10	83.25
1122	0.90	397.40	204.40	193.00	83.64
1125	2.20	397.88	205.00	192.88	83.58
1130	6.30	397.88	225.00	172.88	74.92
1134	7.90	397.54	202.90	194.64	84.34
1137	4.80	398.47	202.10	196.37	85.09
1156	6.90	398.69	184.90	213.79	92.64
1180	4.50	399.41	195.40	204.01	88.40
1181	3.80	398.75	186.00	212.75	92.19
1183	2.20	399.05	190.20	208.85	90.50
1184	6.50	397.62	189.70	207.92	90.10
1186	3.70	398.69	191.30	207.39	89.87
1210	5.10	399.74	215.60	184.14	79.79
1211	0.30	634.94	564.40	70.54	30.57
1214	2.20	635.08	607.60	27.48	11.91
1215	2.00	397.46	200.80	196.66	85.22
1217	4.50	397.41	207.80	189.61	82.16
1218	7.20	399.89	217.60	182.29	78.99
1223	3.00	398.85	187.20	211.65	91.72
1224	4.30	398.81	187.60	211.21	91.53
1229	4.30	398.79	224.40	174.39	75.57
1232	7.60	398.71	183.90	214.81	93.09
1235	5.80	397.72	197.20	200.52	86.89
1239	2.00	466.48	265.90	200.58	86.92
1240	0.10	635.08	608.90	26.18	11.34
1244	5.80	635.40	591.00	44.40	19.24
1251	7.10	635.53	622.30	13.23	5.73
1262	0.30	604.85	349.90	254.95	110.48
1270	1.90	398.75	184.30	214.45	92.93
1277	6.80	604.85	340.00	264.85	114.77
1284	5.60	397.63	224.00	173.63	75.24
1290	7.50	398.00	207.20	190.80	82.68
1293	3.90	398.02	206.60	181.42	82.95
1295	4.60	397.87	200.40	197.47	85.57
1298	0.70	398.66	224.20	174.46	75.60
1309	7.50	397.66	185.00	212.66	92.15
1310	5.80	397.63	184.40	213.23	92.40
1314	4.60	397.50	183.00	214.50	92.95
1318	4.20	398.87	221.20	177.67	76.99
1322	3.60	398.40	194.60	203.80	88.31
1328	3.60	398.07	192.30	205.77	89.17
1333	3.40	398.81	191.30	207.51	89.92
1337	3.90	398.78	192.80	205.98	89.26
1338	9.10	398.65	257.70	140.95	61.08
1356	2.50	398.73	190.80	207.93	90.10
1359	0.80	398.78	193.30	205.48	89.04
1364	3.50	398.61	193.90	204.71	88.71
1366	5.30	397.71	190.60	207.11	89.75
1375	9.80	397.04	168.30	228.74	99.12
1387	3.30	397.40	182.40	215.00	93.17
1388	6.10	398.58	200.40	198.18	85.88
1392	5.10	399.00	220.30	178.70	77.44
1396	1.80	398.61	308.10	90.51	39.22
1409	5.90	398.55	222.20	176.35	76.42
1410	2.20	604.88	392.50	212.38	92.03
1456	3.20	397.67	183.20	214.47	92.94
1465	3.20	398.68	235.70	162.98	70.62
1483	5.90	397.72	193.40	204.32	88.54
1484	14.30	397.64	183.60	214.04	92.75
1497	2.60	397.62	167.20	230.42	99.85
1498	1.50	604.85	396.40	208.45	90.33
1502	3.90	604.85	385.30	219.55	95.14
1513	0.80	604.85	339.40	265.45	115.03
1517	5.50	397.96	205.40	192.56	83.44
1519	0.90	397.95	211.30	186.65	80.88
1524	1.20	634.97	615.60	19.37	8.40
1544	16.80	398.03	194.80	203.23	88.07
1547	13.50	398.03	208.00	190.03	82.35
1570	10.00	397.50	195.50	202.00	87.53
1575	7.90	397.62	171.60	226.02	97.94
1576	1.60	397.72	253.70	144.02	62.41
1580	6.60	397.70	245.80	151.90	65.82
1626	19.10	398.33	272.90	125.43	54.35
1627	11.20	398.94	289.00	109.94	47.64
1630	29.90	397.98	266.70	131.28	56.89
1636	186.00	397.44	245.70	151.74	65.75
1637	26.00	397.71	249.10	148.61	64.40
1647	26.40	397.68	236.20	161.48	69.98
1648	26.70	397.73	187.30	210.43	91.19
1657	7.10	397.62	176.60	221.02	95.77
1658	7.10	398.41	185.90	212.51	92.09
1674	8.20	397.69	178.00	219.69	95.20
1679	3.10	466.49	317.70	148.79	64.47
1689	3.00	466.48	323.60	142.88	61.92
1690	0.40	466.48	319.70	146.78	63.61
1698	5.20	397.73	256.80	140.93	61.07

6" and 2"

2030 Fireflow - Main Zone West

1699	5.90	397.65	218.90	178.75	77.46
1700	2.80	397.65	216.20	181.45	78.63
1710	3.60	397.84	303.90	93.94	40.71
1711	0.80	398.06	208.80	188.26	81.58
1712	1.70	398.06	268.50	129.56	56.14
1713	1.70	634.94	571.10	63.84	27.67
1716	7.20	634.92	533.50	101.42	43.95
1719	0.60	634.92	516.50	118.42	51.32
1737	6.20	397.08	166.60	230.48	99.88
1742	9.90	397.64	183.60	214.04	92.75
1767	3.80	398.67	193.40	205.27	88.95
1773	3.50	398.77	272.20	126.57	54.85
1775	1.70	398.77	270.10	128.67	55.76
1776	5.00	398.77	269.20	129.57	56.15
1782	9.00	398.77	269.10	129.67	56.19
1788	6.20	398.77	269.00	129.77	56.23
1791	0.90	398.77	273.40	125.37	54.33
1793	1.20	398.77	270.60	128.17	55.54
1799	3.10	399.86	201.40	198.46	86.00
1800	2.70	398.37	166.10	232.27	100.65
1801	0.80	398.37	173.70	224.67	97.36
1805	2.60	398.37	178.70	218.67	94.76
1806	1.50	398.37	173.10	225.27	97.62
1808	1.40	398.37	178.80	218.57	94.71
1809	2.50	398.37	172.30	226.07	97.96
1810	4.40	398.38	179.50	218.88	94.85
1813	3.50	398.37	171.10	227.27	98.48
1814	6.50	398.37	167.10	231.27	100.22
1818	2.80	398.15	178.50	219.65	95.18
1821	5.00	398.37	168.80	228.57	99.05
1823	2.70	397.77	182.50	215.27	93.28
1826	3.80	397.79	183.30	214.49	92.94
1827	6.90	397.80	192.90	204.90	98.79
1831	2.10	397.44	234.10	163.34	70.78
1948	1.10	398.03	234.90	163.13	70.69
1960	4.60	397.62	237.60	160.02	69.34
1961	3.30	399.10	190.10	209.00	90.57
1968	0.50	397.08	164.90	232.18	100.61
1971	0.10	398.04	185.30	212.74	92.19
1973	2.90	397.72	198.40	199.32	86.37
1974	4.80	397.70	187.50	210.20	91.09
1975	4.60	397.70	186.60	211.10	91.48
1980	3.80	397.71	180.20	217.51	94.25
1981	1.30	397.70	183.10	214.60	92.99
1984	3.80	398.61	194.10	204.51	88.62
1985	0.20	398.07	195.20	202.87	87.91
1986	4.30	398.07	194.50	203.57	88.21
1987	4.00	397.77	198.50	199.27	86.35
1988	0.20	398.47	218.50	178.97	77.56
1989	1.70	398.47	222.30	176.17	76.34
1991	3.60	398.59	194.20	204.39	88.57
1994	0.70	398.51	190.70	207.81	90.05
1996	4.20	398.72	189.80	208.92	90.53
1997	4.20	398.78	191.50	207.28	89.82
2003	0.20	397.55	185.20	212.35	92.02
2007	3.10	398.85	200.60	198.25	85.91
2009	4.10	398.81	196.90	201.91	87.49
2010	4.80	399.00	191.70	207.30	89.83
2012	4.20	399.14	199.00	200.14	86.73
2013	3.60	398.72	200.10	198.62	86.07
2014	5.90	398.69	193.20	205.49	89.04
2016	5.40	398.67	222.30	176.37	76.43
2021	0.80	397.54	204.20	193.34	83.78
2023	0.60	397.40	206.90	190.50	82.55
2025	2.30	604.84	455.60	149.24	64.67
2028	1.30	604.81	520.90	83.91	36.36
2029	1.20	604.84	448.00	155.84	67.53
2030	0.70	604.83	460.10	144.73	62.72
2031	3.00	604.84	430.90	173.94	75.37
2032	0.90	604.84	484.00	120.84	52.36
2033	2.10	604.84	474.20	130.64	56.61
2047	0.70	466.48	309.00	157.48	68.24
2050	0.20	466.48	301.10	165.38	71.67
2051	0.10	397.66	229.60	168.06	72.83
2052	0.10	397.66	229.90	167.76	72.70
2053	4.50	397.61	220.60	177.01	76.71
2061	1.20	397.57	208.20	189.37	82.06
2063	7.70	397.54	205.00	192.54	83.43
2065	5.70	399.16	198.90	200.26	86.78
2066	4.20	397.39	222.20	175.19	75.92
2067	8.40	400.30	216.20	184.10	79.78
2072	7.90	397.65	221.90	175.75	76.16
2073	3.10	398.84	198.80	199.04	86.25
2074	2.50	397.65	220.90	176.75	76.59
2076	8.40	397.59	204.40	193.19	83.72
2078	3.90	398.51	199.20	199.31	86.37
2079	4.30	398.44	203.10	195.34	84.65
2080	5.00	397.82	191.60	206.22	89.36
2081	4.40	397.77	198.70	199.07	86.26
2083	8.50	398.38	255.40	142.98	61.96
2084	5.60	398.38	224.10	174.28	75.52
2086	5.60	397.64	230.30	167.34	72.51
2088	9.00	634.98	604.50	30.48	13.21
2090	9.70	604.89	391.30	213.59	92.55
2091	4.90	398.20	195.30	202.90	87.92
2092	2.40	397.73	251.60	146.13	63.32
2093	6.30	398.93	236.00	162.93	70.60
2094	6.90	398.82	188.50	210.32	91.14
2095	4.80	398.84	187.60	211.24	91.54
2096	3.30	398.80	196.50	202.30	87.67
2097	5.10	398.83	202.50	196.33	85.07
2098	5.10	397.67	202.10	195.57	84.75
2100	6.80	397.66	197.30	200.36	86.82
2101	8.10	398.62	270.60	128.02	55.48
2103	8.80	398.62	236.90	161.72	70.08

2030 Fireflow - Main Zone West

2104	3.80	397.55	200.50	197.05	85.39	
2105	5.70	398.53	201.90	196.63	85.20	
2106	2.60	397.98	192.10	205.88	89.22	
2107	6.30	398.45	190.50	207.95	90.11	
2109	4.70	399.02	190.80	208.22	90.23	
2110	3.50	398.78	192.70	206.08	89.30	
2111	3.00	398.81	191.00	207.81	90.05	
2112	6.60	398.97	190.20	208.77	90.47	
2113	5.50	399.15	195.50	203.65	88.25	
2115	4.60	398.47	191.90	206.57	89.51	
2117	4.10	399.48	217.50	181.98	78.86	
2119	7.10	397.72	193.60	204.12	88.45	
2120	3.90	466.48	268.60	197.88	85.75	
2121	3.50	398.66	193.00	205.66	89.12	
2122	5.80	397.63	183.70	213.93	92.70	
2123	4.30	398.73	193.20	205.53	89.06	
2125	1.30	397.75	206.20	191.55	83.01	
2126	2.70	398.67	192.50	206.17	89.34	
2127	8.50	397.50	203.70	193.80	83.98	
2129	4.70	397.60	218.10	179.50	77.78	
2130	3.60	397.72	198.00	199.72	86.55	
2132	2.10	397.67	230.10	167.57	72.61	
2133	4.20	634.90	578.00	56.90	24.66	
2137	5.60	399.17	198.20	200.97	87.09	
2138	7.50	397.44	221.50	175.94	76.24	
I-18th St	0.00	397.70	218.20	179.50	77.78	
O-18th St	0.00	397.70	218.20	179.50	77.78	
3-in or sm	0.10	398.10	185.50	212.60	92.13	
3-inch or	0.40	398.37	183.00	215.37	93.33	
3-inch or	0.20	397.70	183.10	214.60	92.99	
O-AV-1	0.00	398.38	283.80	114.58	49.65	
I-AV-2	0.00	604.73	306.00	298.73	129.45	
I-AV-3	0.00	466.48	253.40	213.08	92.34	
O-AV-4	0.00	398.35	289.30	109.05	47.26	
O-AV-5	0.00	397.69	225.30	172.39	74.70	
O-AV-6	0.00	397.54	208.10	189.44	82.09	
O-Centrali	----	541.19	333.50	207.69	90.00	
O-Fairview	Fairview PRV	466.50	346.50	120.00	52.00	
O-High Lev	High Level F	0.00	604.87	401.60	203.27	88.09
High Level	High Level R	----	605.00	605.00	0.00	0.00
Hillcrest		0.30	397.89	256.20	141.69	61.40
inter-tie		3.50	398.03	174.40	223.63	96.91
J-1		4.30	397.68	174.00	223.68	96.93
J-100		0.90	397.85	190.60	207.25	89.81
J-105		3.10	397.67	175.60	222.07	96.23
J-106		3.40	397.77	206.20	191.57	83.01
J-11		3.40	494.52	280.00	214.52	92.96
J-110		6.00	397.90	198.00	199.90	86.63
J-111		2.40	397.70	192.50	205.20	88.92
J-112		6.30	398.37	167.90	230.47	99.87
J-113		3.00	398.44	200.50	197.94	85.77
J-114		13.60	604.73	405.70	199.03	86.24
J-115		2.20	398.77	197.30	201.47	87.30
J-116		2.30	398.80	207.10	191.70	83.07
J-117		2.10	398.67	192.10	206.57	89.51
J-120		2.90	398.67	237.50	161.17	69.84
J-122		3.20	397.68	174.00	223.68	96.93
J-123		0.50	397.70	224.70	173.00	74.97
J-124		2.60	604.84	403.80	201.04	87.12
J-125		2.50	604.85	383.00	221.85	96.13
J-126		4.10	400.99	367.95	33.04	14.32
J-127		34.10	397.45	225.20	172.25	74.64
J-128		17.80	397.44	235.20	162.24	70.30
J-129		10.20	397.77	184.80	212.97	92.29
J-130		4.60	397.39	222.00	175.39	76.00
J-131		0.70	604.84	418.00	186.84	80.97
J-132		3.60	397.68	176.00	221.68	96.06
J-133		1.10	604.85	339.60	265.25	114.94
J-134		1.30	397.58	200.90	196.68	85.23
J-135		2.30	398.79	288.30	110.49	47.88
J-136		1.00	397.41	204.10	193.31	83.77
J-138		1.20	397.70	219.60	178.10	77.18
J-139		0.60	397.69	222.60	175.09	75.87
J-140		0.70	397.70	218.20	179.50	77.78
J-141		0.50	397.58	200.90	196.68	85.23
J-142		0.30	397.70	218.20	179.50	77.78
J-143		12.70	397.50	186.90	210.60	91.26
J-144		2.30	397.50	186.80	210.70	91.30
J-145		0.20	397.70	218.20	179.50	77.78
J-146		0.00	397.70	218.20	179.50	77.78
J-147		0.00	397.70	218.20	179.50	77.78
J-148		9.20	533.30	498.90	34.40	14.91
J-149		4.50	493.32	306.10	187.22	81.13
J-150		7.30	494.38	272.40	221.98	96.19
J-151		16.70	493.71	326.80	166.91	72.33
J-152		7.80	494.38	272.40	221.98	96.19
J-153		93.50	493.32	302.40	190.92	82.73
J-154		7.50	494.38	267.60	226.78	98.27
J-155		21.60	493.87	263.80	230.07	99.70
J-156		24.40	494.00	261.30	232.70	100.84
J-157		2.30	493.76	265.80	227.96	98.78
J-158		10.50	397.45	211.40	186.05	80.62
J-159		0.50	604.85	343.00	261.85	113.47
J-160		5.50	398.08	172.60	225.48	97.71
J-161		0.30	398.14	178.60	219.54	95.14
J-162		8.50	398.09	183.00	215.09	93.20
J-163		4.90	397.55	183.70	213.85	92.67
J-164		15.50	397.54	177.50	220.04	95.35
J-167		3.40	397.65	0.00	397.65	172.31
J-168		3.70	397.71	0.00	397.71	172.34
J-169		8.20	400.81	413.50	-12.69	-5.50
J-170		2.10	397.68	174.50	223.18	96.71
J-171		2.50	398.79	286.90	111.89	48.48
J-173		74.70	487.90	329.80	158.10	68.51
J-176		1.30	397.68	166.40	231.28	100.22

2030 Fireflow - Main Zone West

J-177	2.80	397.54	175.10	218.44	94.66	
J-2	7.00	397.69	201.80	195.89	84.89	
J-20	2.70	397.70	182.90	214.80	93.08	
J-21	1.90	397.71	182.80	214.91	93.13	
J-25	6.10	604.85	311.10	293.75	127.29	
J-27	5.20	397.50	207.10	190.40	82.51	
J-3	4.10	397.70	182.20	215.50	93.38	
J-30	9.50	397.39	219.90	177.49	76.91	
J-35	10.20	397.61	222.10	175.51	76.05	
J-39	5.00	399.29	218.10	181.19	78.52	
J-4	3.10	397.70	184.40	213.30	92.43	
J-42	7.50	397.65	222.00	175.65	76.11	
J-44	7.50	397.57	208.40	189.17	81.97	
J-45	5.20	397.57	209.00	188.57	81.71	
J-53	11.70	397.84	294.30	103.54	44.87	
J-55	3.30	397.71	297.10	100.61	43.60	
J-57	1.70	397.66	228.20	168.46	73.00	
J-58	1.90	397.42	204.60	192.82	83.55	
J-6	4.70	540.35	473.40	66.95	29.01	
J-61	5.20	397.41	207.00	190.41	82.51	
J-62	1.40	397.54	191.50	206.04	89.28	
J-63	1.70	397.70	225.20	172.50	74.75	
J-64	5.10	397.59	202.30	195.29	84.62	
J-67	2.60	397.61	210.80	186.81	80.95	
J-7	4.30	397.45	214.70	182.75	79.19	
J-71	2.80	397.60	204.60	193.00	83.63	
J-73	7.90	397.58	199.60	197.98	85.79	
J-74	1.20	466.48	301.00	165.48	71.71	
J-77	0.80	466.48	296.10	170.38	73.83	
J-78	6.40	398.35	230.70	167.65	72.65	
J-79	3.30	398.23	223.40	174.83	75.76	
J-8	8.00	397.51	208.80	188.71	81.77	
J-80	6.00	397.61	190.70	206.91	89.66	
J-81	8.20	398.62	218.90	179.72	77.88	
J-82	8.00	398.61	257.90	140.71	60.98	
J-84	2.90	397.69	226.30	171.39	74.27	
J-87	5.20	398.53	194.40	204.13	88.46	
J-88	26.00	494.52	275.70	218.82	94.82	
J-90	0.10	397.65	219.10	178.55	77.37	
J-91	4.90	400.83	352.90	47.93	20.77	
J-93	2.00	398.04	187.50	210.54	91.24	
J-94	4.50	398.04	187.50	210.54	91.23	
J-95	14.70	398.06	189.50	208.56	90.38	
J-96	8.10	398.03	176.90	221.13	95.82	
J-99	1.50	397.75	205.50	192.25	83.31	
Kennicott	Kennicott Re	----	397.90	374.00	23.90	10.36
Main Reser	Main Reservo	----	401.10	383.30	17.80	7.71
physical d		0.10	398.75	222.00	176.75	76.59
I-RV-1		0.00	397.50	186.80	210.70	91.30
I-RV-2		0.00	397.58	200.90	196.68	85.23
O-South En		----	495.59	287.90	207.69	90.00
O-Valley V	Valley View	0.00	635.90	308.10	327.80	142.05
Yankis (Va	Yankis (Vall	----	635.90	631.50	4.40	1.91
Yates Rese	500,000 gal	----	401.10	376.00	25.10	10.88
O-18th St		----	397.70	218.20	179.50	77.78
I-18th St		0.00	397.70	218.20	179.50	77.78
I-AV-1		0.00	604.73	283.80	320.93	139.07
O-AV-2		0.00	398.38	306.00	92.38	40.03
O-AV-3		0.00	397.63	253.40	144.23	62.50
I-AV-4		0.00	604.85	289.30	315.55	136.74
I-AV-5		0.00	397.70	225.30	172.40	74.71
I-AV-6		0.00	397.41	208.10	189.31	82.03
I-Centrali		0.00	487.90	333.50	154.40	66.91
I-Fairview	Fairview PRV	0.00	634.89	346.50	288.39	124.97
I-High Lev	High Level P	0.00	400.99	401.60	-0.61	-0.26
O-RV-1		----	397.50	186.80	210.70	91.30
O-RV-2		----	397.58	200.90	196.68	85.23
I-South En		0.00	398.77	287.90	110.87	48.04
I-Valley V	Valley View	0.00	398.61	308.10	90.51	39.22

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
J-168	172.34	J-169	-5.50
J-167	172.31	I-High Level	-0.26
O-Valley Vie	142.05	Yankis (Vall	1.91
I-AV-1	139.07	1251	5.73
I-AV-4	136.74	Main Reservo	7.71

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
1479	2.50	85	0.00
P-122	2.15	1026	0.00
P-15	2.15	P-93	0.00
107	1.61	24	0.00
1458	1.52	45	0.00

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
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P-173	2.65	45	0.00
712	2.05	24	0.00
597	2.05	46	0.00
1479	2.01	P-93	0.00
329	1.99	85	0.00

H L / 1 0 0 0

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-173	2.65	45	0.00
712	2.05	24	0.00
597	2.05	46	0.00
1479	2.01	P-93	0.00
329	1.99	85	0.00

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
18th St PRV	PRV-1	74.30	CLOSED	77.78	77.78	0.00
18th St Pump	FCV-2	0.00	ACTIVATED	77.78	77.78	0.00
Centralia Al	PRV-2	90.00	BOOSTED	66.91	90.00	13.90
Fairview PRV	PRV-1	52.00	ACTIVATED	124.97	52.00	18.30
High Level P	FCV-2	0.00	BOOSTED	-0.26	88.09	0.00
RV-1	PRV-1	85.00	CLOSED	91.30	91.30	0.00
RV-2	PRV-1	81.80	CLOSED	85.23	85.23	0.00
South End Pu	PRV-2	90.00	BOOSTED	48.04	90.00	303.60
Valley View	FCV-2	0.00	BOOSTED	39.22	142.05	0.00

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
High Level	110.30	High Level R
Kennicott R	321.02	Kennicott Re
Main Reserv	1708.29	Main Reserv
Yankis (Val	92.10	Yankis (Vall
Yates Reser	881.89	500,000 gal

NET SYSTEM INFLOW = 3113.60
 NET SYSTEM OUTFLOW = 0.00
 NET SYSTEM DEMAND = 3113.60

FireFlow/Hydrant Report
 Fireflow/Hydrant Report:

Scenario: No Title
 Global Demand Factor for this Scenario: 1.000

Specified Minimum Pressure (psi): 20.0
 Minimum Static Pressure (psi) : 21.0

Flow-1: Flowrate to maintain the specified pressure at (hydrant) node
 Node-2: Node that has a lower pressure than specified value at Flow-1
 Flow-2: Flowrate to maintain the specified pressure at Node-2

Hose Constant = 0.00

Hydrant Node	Hydrant Constant	Elevation	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2 gpm	Flow Capacity	NFPA Color
H-433	0.0	199.3	86.3	2695.4			2695.4	BLUE
H-370	0.0	165.3	100.4	149.0			149.0	RED
H-514	0.0	193.3	89.0	4215.5			4215.5	BLUE
H-513	0.0	191.2	89.9	3778.4			3778.4	BLUE
H-178	0.0	205.2	83.3	935.0	923.2	69	923.2	ORANGE
H-359	0.0	174.0	96.9	3552.9			3552.9	BLUE
H-321	0.0	175.7	96.2	3997.2			3997.2	BLUE
H-441	0.0	217.5	78.6	7561.8	4029.1	37	4029.1	BLUE
H-298	0.0	203.6	85.0	2991.7			2991.7	BLUE
H-505	0.0	218.2	78.9	25488.6	11767.1	37	11767.1	BLUE
H-363	0.0	183.5	92.8	4297.5			4297.5	BLUE
H-334	0.0	178.3	95.1	4808.7	4538.4	1712	4538.4	BLUE
H-335	0.0	178.6	94.9	4814.9	4543.1	1712	4543.1	BLUE
H-344	0.0	174.9	96.5	4618.5	4463.4	1712	4463.4	BLUE
H-330	0.0	183.6	92.8	5237.8	4396.0	1712	4396.0	BLUE
H-329	0.0	182.6	93.2	5388.3	4384.7	1712	4384.7	BLUE
H-324	0.0	195.5	87.7	5533.7	4141.4	1712	4141.4	BLUE
H-308	0.0	185.5	92.1	5459.2	3622.8	1712	3622.8	BLUE
H-365	0.0	165.8	100.5	4027.7	3957.7	1657	3957.7	BLUE
H-247	0.0	221.7	76.6	6212.3	4940.9	1396	4940.9	BLUE
H-248	0.0	227.8	73.9	5338.7	5129.4	1396	5129.4	BLUE
H-231	0.0	191.1	89.5	4558.8			4558.8	BLUE
H-341	0.0	174.8	96.6	4703.0	4470.7	1712	4470.7	BLUE

2030 Fireflow - Main Zone West

H-342	0.0	178.0	95.2	4463.9	4343.9	37	4343.9	BLUE
H-343	0.0	178.1	95.1	4366.4			4366.4	BLUE
H-302	0.0	179.5	94.7	3879.8	3520.5	1712	3520.5	BLUE
H-304	0.0	182.2	93.5	4362.3	3968.0	1712	3968.0	BLUE
H-268	0.0	191.5	89.3	5173.4			5173.4	BLUE
H-269	0.0	189.9	90.0	5378.4			5378.4	BLUE
H-440	0.0	207.1	83.1	5152.0	3622.8	37	3622.8	BLUE
H-439	0.0	201.9	85.2	5202.0	3396.8	37	3396.8	BLUE
H-438	0.0	207.3	82.9	4232.0	3059.4	37	3059.4	BLUE
H-443	0.0	213.1	80.3	3827.8	2353.9	37	2353.9	BLUE
H-397	0.0	191.3	89.5	4345.9	3642.8	37	3642.8	BLUE
H-336	0.0	178.6	94.9	4292.4			4292.4	BLUE
H-337	0.0	179.0	94.8	3435.1			3435.1	BLUE
H-239	0.0	195.4	87.8	3519.3			3519.3	BLUE
H-238	0.0	192.6	88.9	3643.1			3643.1	BLUE
H-338	0.0	175.3	96.4	4644.4	4461.1	1712	4461.1	BLUE
H-339	0.0	181.9	93.5	4609.7	4405.3	1712	4405.3	BLUE
H-340	0.0	180.7	94.0	3369.4			3369.4	BLUE
H-310	0.0	191.7	89.4	3640.7	2493.0	1712	2493.0	BLUE
H-348	0.0	177.9	95.2	2537.7			2537.7	BLUE
H-500	0.0	209.1	82.2	2173.9			2173.9	BLUE
H-475	0.0	197.3	87.3	4030.8			4030.8	BLUE
H-512	0.0	189.7	90.6	903.0			903.0	ORANGE
H-442	0.0	216.1	79.0	3450.0	2441.1	37	2441.1	BLUE
H-454	0.0	243.2	67.3	1808.8	1623.7	37	1623.7	BLUE
H-455	0.0	259.6	60.2	1703.6	1462.1	37	1462.1	GREEN
H-469	0.0	197.3	87.3	2241.3			2241.3	BLUE
H-434	0.0	200.8	85.7	3394.9	3158.5	37	3158.5	BLUE
H-376	0.0	199.8	85.7	2381.1			2381.1	BLUE
H-405	0.0	197.6	86.8	2792.0			2792.0	BLUE
H-407	0.0	183.2	93.1	2248.3			2248.3	BLUE
H-453	0.0	232.3	72.0	2519.0	1821.0	37	1821.0	BLUE
H-446	0.0	219.6	77.5	1413.1	1299.2	922	1299.2	GREEN
H-447	0.0	238.3	69.4	949.0			949.0	ORANGE
H-388	0.0	182.1	93.4	2424.4			2424.4	BLUE
H-377	0.0	195.7	87.5	2494.4			2494.4	BLUE
H-393	0.0	206.1	83.0	3243.5			3243.5	BLUE
H-333	0.0	179.3	94.6	3784.0			3784.0	BLUE
H-408	0.0	183.6	93.1	2790.6			2790.6	BLUE
H-404	0.0	193.7	88.5	2031.6			2031.6	BLUE
H-424	0.0	193.2	88.9	3653.8			3653.8	BLUE
H-61	0.0	194.7	88.2	2165.4			2165.4	BLUE
H-332	0.0	183.2	92.9	870.3			870.3	ORANGE
H-375	0.0	183.2	92.9	3790.9			3790.9	BLUE
H-325	0.0	195.5	87.6	2119.5			2119.5	BLUE
H-534	0.0	166.1	100.4	3043.3	2899.5	1064	2899.5	BLUE
H-533	0.0	182.6	93.2	3172.7			3172.7	BLUE
H-459	0.0	203.8	84.1	3433.0			3433.0	BLUE
H-457	0.0	210.9	81.1	3389.6			3389.6	BLUE
H-327	0.0	197.2	87.0	3759.5	3475.0	37	3475.0	BLUE
H-328	0.0	197.5	86.9	3994.5	3366.3	37	3366.3	BLUE
H-499	0.0	197.8	87.1	2572.1			2572.1	BLUE
H-243	0.0	234.2	71.2	5993.1	3554.1	1396	3554.1	BLUE
H-244	0.0	248.8	64.9	4104.5			4104.5	BLUE
H-176	0.0	205.2	83.3	805.1			805.1	ORANGE
H-216	0.0	225.0	74.9	2839.1			2839.1	BLUE
H-217	0.0	209.1	81.8	1124.2			1124.2	GREEN
H-240	0.0	200.9	85.4	3650.3			3650.3	BLUE
H-252	0.0	191.4	89.5	4190.5			4190.5	BLUE
H-497	0.0	188.7	91.0	2247.3			2247.3	BLUE
H-515	0.0	191.5	89.9	3516.8			3516.8	BLUE
H-496	0.0	187.4	91.6	3952.7			3952.7	BLUE
H-494	0.0	193.1	89.1	3926.9			3926.9	BLUE
H-493	0.0	191.5	89.8	3548.2			3548.2	BLUE
H-516	0.0	190.8	90.3	3537.1			3537.1	BLUE
H-520	0.0	198.9	86.8	4374.6			4374.6	BLUE
H-517	0.0	198.4	87.0	4067.5			4067.5	BLUE
H-511	0.0	195.3	88.4	4973.2			4973.2	BLUE
H-477	0.0	191.0	90.0	3717.7			3717.7	BLUE
H-481	0.0	184.9	92.7	2060.2			2060.2	BLUE
H-482	0.0	184.8	92.7	2046.2			2046.2	BLUE
H-483	0.0	184.5	92.8	2035.4			2035.4	BLUE
H-484	0.0	183.2	93.4	2003.2			2003.2	BLUE
H-485	0.0	183.6	93.2	2563.5			2563.5	BLUE
H-487	0.0	184.9	92.6	2510.5			2510.5	BLUE
H-488	0.0	185.2	92.5	2255.7			2255.7	BLUE
H-489	0.0	185.2	92.4	2285.0			2285.0	BLUE
H-518	0.0	214.5	80.3	6281.2			6281.2	BLUE
H-180	0.0	201.3	85.0	1159.8	1137.2	69	1137.2	GREEN
H-177	0.0	204.6	83.5	914.7			914.7	ORANGE
H-504	0.0	215.4	79.9	6018.0			6018.0	BLUE
H-503	0.0	196.0	88.1	2322.2			2322.2	BLUE
H-502	0.0	191.3	90.0	3058.5			3058.5	BLUE
H-501	0.0	213.8	80.2	2851.2			2851.2	BLUE
H-486	0.0	184.8	92.7	2477.7			2477.7	BLUE
H-490	0.0	185.2	92.5	1284.5			1284.5	GREEN
H-491	0.0	184.5	92.8	1124.4			1124.4	GREEN
H-291	0.0	236.9	70.1	3499.8			3499.8	BLUE
H-292	0.0	232.8	71.9	3965.7	3672.1	1396	3672.1	BLUE
H-185	0.0	197.4	86.8	2238.5			2238.5	BLUE
H-188	0.0	199.3	85.9	2083.1			2083.1	BLUE
H-187	0.0	205.0	83.5	2849.1			2849.1	BLUE
H-237	0.0	199.1	86.2	760.5			760.5	ORANGE
H-230	0.0	193.6	88.5	1839.7			1839.7	BLUE
H-234	0.0	200.4	85.6	762.8			762.8	ORANGE
H-242	0.0	224.2	75.6	1889.2			1889.2	BLUE
H-287	0.0	183.9	92.6	1080.0			1080.0	GREEN
H-288	0.0	187.1	91.2	712.3			712.3	ORANGE
H-182	0.0	207.5	82.3	688.9			688.9	ORANGE
H-181	0.0	206.8	82.6	842.9			842.9	ORANGE
H-463	0.0	257.7	61.1	2744.1			2744.1	BLUE
H-464	0.0	284.4	49.5	2322.3			2322.3	BLUE
H-300	0.0	195.2	87.9	610.6	565.9	1063	565.9	ORANGE
H-299	0.0	183.7	93.1	832.6			832.6	ORANGE
H-222	0.0	195.4	87.6	1965.7			1965.7	BLUE

2030 Fireflow - Main Zone West

H-229	0.0	197.2	86.9	822.9			822.9	ORANGE
H-228	0.0	191.9	89.1	1151.9			1151.9	GREEN
H-495	0.0	192.4	89.4	1714.8			1714.8	BLUE
H-430	0.0	194.2	88.6	2008.0			2008.0	BLUE
H-381	0.0	190.9	89.6	2569.9			2569.9	BLUE
H-382	0.0	192.0	89.1	2470.6			2470.6	BLUE
H-372	0.0	166.7	99.8	435.3			435.3	RED
H-371	0.0	169.4	98.7	450.9			450.9	RED
H-519	0.0	200.8	85.7	2712.5			2712.5	BLUE
H-241	0.0	205.5	83.5	1020.4			1020.4	GREEN
H-186	0.0	185.3	87.7	801.3			801.3	ORANGE
H-233	0.0	197.7	86.7	725.0			725.0	ORANGE
H-232	0.0	193.8	88.4	1547.8			1547.8	BLUE
H-366	0.0	164.4	101.1	2019.2	2002.1	1497	2002.1	BLUE
H-367	0.0	167.0	99.9	644.1			644.1	ORANGE
H-314	0.0	185.3	92.2	3436.0	2734.5	1712	2734.5	BLUE
H-319	0.0	208.0	82.3	2521.5			2521.5	BLUE
H-347	0.0	195.7	87.7	2596.2	2542.0	1547	2542.0	BLUE
H-175	0.0	182.5	93.4	2665.2	2542.0	1547	2542.0	BLUE
H-322	0.0	177.3	95.6	2645.3	2542.0	1547	2542.0	BLUE
H-318	0.0	181.8	93.7	2676.4	2574.3	1547	2574.3	BLUE
H-317	0.0	176.3	96.1	2571.3			2571.3	BLUE
H-316	0.0	175.0	96.6	2570.2			2570.2	BLUE
H-315	0.0	181.0	94.0	2605.2	2555.9	1547	2555.9	BLUE
H-349	0.0	182.9	93.1	4762.9	4407.7	1712	4407.7	BLUE
H-350	0.0	182.5	93.3	4683.1	4410.7	1712	4410.7	BLUE
H-351	0.0	180.5	94.1	4580.9	4415.3	1712	4415.3	BLUE
H-352	0.0	179.0	94.8	4548.2	4417.2	1712	4417.2	BLUE
H-220	0.0	177.7	95.3	4455.5			4455.5	BLUE
H-320	0.0	176.1	96.0	4299.7			4299.7	BLUE
H-356	0.0	175.1	96.5	4012.8			4012.8	BLUE
H-271	0.0	187.8	90.9	5575.3	5526.3	92	5526.3	BLUE
H-364	0.0	169.2	99.0	4468.3	4338.7	34	4338.7	BLUE
H-267	0.0	188.8	90.5	5706.9			5706.9	BLUE
H-266	0.0	185.3	92.1	5599.3			5599.3	BLUE
H-265	0.0	183.6	92.8	5543.8			5543.8	BLUE
H-264	0.0	183.6	92.8	5489.9			5489.9	BLUE
H-263	0.0	183.6	92.8	5460.4			5460.4	BLUE
H-262	0.0	183.6	92.8	5421.6			5421.6	BLUE
H-259	0.0	183.6	92.9	5404.7			5404.7	BLUE
H-260	0.0	183.6	92.9	5392.6			5392.6	BLUE
H-261	0.0	183.6	92.9	5389.3			5389.3	BLUE
H-256	0.0	184.9	92.3	5367.3			5367.3	BLUE
H-257	0.0	186.8	91.5	5337.0			5337.0	BLUE
H-258	0.0	189.5	90.3	5295.1			5295.1	BLUE
H-535	0.0	176.4	95.9	3355.4			3355.4	BLUE
H-536	0.0	175.9	96.1	2885.0			2885.0	BLUE
H-537	0.0	175.1	96.4	2611.7	2599.1	1657	2599.1	BLUE
H-538	0.0	175.5	96.3	2328.8			2328.8	BLUE
H-539	0.0	177.2	95.5	2158.8			2158.8	BLUE
H-540	0.0	173.0	97.3	2029.2	2006.1	1657	2006.1	BLUE
H-541	0.0	177.2	95.5	1881.9			1881.9	BLUE
H-402	0.0	186.0	92.0	4601.3	4120.3	37	4120.3	BLUE
H-423	0.0	176.7	95.8	4214.8			4214.8	BLUE
H-346	0.0	176.0	96.1	4384.5			4384.5	BLUE
H-311	0.0	209.8	81.6	1994.4	1659.7	1712	1659.7	BLUE
H-312	0.0	200.3	85.7	2305.7	1659.7	1712	1659.7	BLUE
H-313	0.0	266.1	57.2	1432.5	1409.6	1712	1409.6	GREEN
H-374	0.0	183.7	92.7	1194.5			1194.5	GREEN
H-373	0.0	168.3	99.1	435.2			435.2	RED
H-368	0.0	184.4	92.4	4344.2			4344.2	BLUE
H-361	0.0	183.8	92.7	4539.4	4271.6	37	4271.6	BLUE
H-495b	0.0	192.4	89.4	6291.7	4711.5	37	4711.5	BLUE
H-478	0.0	190.6	90.2	4946.7	4785.0	37	4785.0	BLUE
H-476	0.0	192.8	89.2	3965.6			3965.6	BLUE
H-413	0.0	172.5	97.9	3155.4	3143.5	1801	3143.5	BLUE
H-419	0.0	181.7	93.9	2655.3	2644.03-inch or		2644.0	BLUE
H-410	0.0	178.3	95.4	3608.7	3554.43-inch or		3554.4	BLUE
H-411	0.0	176.1	96.3	3512.6	3435.93-inch or		3435.9	BLUE
H-416	0.0	167.1	100.2	2780.1	2682.7	J-161	2682.7	BLUE
H-412	0.0	168.9	99.4	3376.3	3276.23-inch or		3276.2	BLUE
H-414	0.0	167.4	100.1	3103.5			3103.5	BLUE
H-331	0.0	182.1	93.4	5000.4	4412.0	1712	4412.0	BLUE
H-387	0.0	180.3	94.2	4799.7	4490.4	1712	4490.4	BLUE
H-384	0.0	186.3	91.6	2389.0			2389.0	BLUE
H-385	0.0	186.4	91.6	2416.2			2416.2	BLUE
H-386	0.0	181.5	93.7	2089.5			2089.5	BLUE
H-420	0.0	191.0	89.9	2113.9			2113.9	BLUE
H-480	0.0	189.0	90.9	2577.3			2577.3	BLUE
H-471	0.0	200.0	86.2	6715.0	4754.2	37	4754.2	BLUE
H-293	0.0	218.7	78.0	1308.7			1308.7	GREEN
H-225	0.0	203.7	84.0	1306.7			1306.7	GREEN
H-226	0.0	193.5	88.4	841.6			841.6	ORANGE
H-307	0.0	187.1	91.4	4063.6	3658.6	1712	3658.6	BLUE
H-369	0.0	175.2	96.2	628.3			628.3	ORANGE
H-379	0.0	197.4	86.8	3050.3			3050.3	BLUE
H-452	0.0	273.4	54.2	1125.0	748.5	37	748.5	ORANGE
H-362	0.0	183.8	92.7	4425.0	4273.1	37	4273.1	BLUE
H-250	0.0	221.2	76.9	8495.3	5122.4	1396	5122.4	BLUE
H-467	0.0	234.4	71.3	2969.2			2969.2	BLUE
H-437	0.0	199.9	86.1	5080.7	3322.3	37	3322.3	BLUE
H-399	0.0	210.0	81.6	4767.5	2314.9	37	2314.9	BLUE
H-400	0.0	205.6	83.5	4200.1	2704.7	37	2704.7	BLUE
H-398	0.0	199.0	86.2	4429.8	3105.2	37	3105.2	BLUE
H-431	0.0	192.9	89.2	3724.9			3724.9	BLUE
H-428	0.0	194.5	88.4	4509.4	3460.4	37	3460.4	BLUE
H-391	0.0	182.0	93.5	2464.0			2464.0	BLUE
H-406	0.0	199.0	86.1	2609.0			2609.0	BLUE
H-421	0.0	187.4	91.5	6043.0	4285.5	37	4285.5	BLUE
H-303	0.0	178.9	95.0	3900.7	3769.8	1712	3769.8	BLUE
H-251	0.0	202.8	84.8	4936.1			4936.1	BLUE
H-510	0.0	214.8	80.3	15687.8	10429.9	1396	10429.9	BLUE
H-492	0.0	187.6	91.5	3460.0			3460.0	BLUE
H-479	0.0	187.2	91.7	2506.0			2506.0	BLUE
H-221	0.0	197.4	86.8	3515.0			3515.0	BLUE

2030 Fireflow - Main Zone West

H-425	0.0	208.0	82.3	3117.0			3117.0	BLUE
H-255	0.0	221.2	77.0	8686.9	5453.1	1396	5453.1	BLUE
H-254	0.0	194.6	88.3	3193.0			3193.0	BLUE
H-253	0.0	193.2	88.8	5020.0			5020.0	BLUE
H-465	0.0	245.4	66.4	2340.7			2340.7	BLUE
H-380	0.0	190.4	89.8	2414.9			2414.9	BLUE
H-523	0.0	220.3	77.4	9042.7	5840.4	1396	5840.4	BLUE
H-522	0.0	218.8	78.2	9585.7	6276.4	1396	6276.4	BLUE
H-219	0.0	205.6	83.4	3421.0			3421.0	BLUE
H-426	0.0	185.0	92.5	5371.7	4254.7	37	4254.7	BLUE
H-427	0.0	166.1	100.6	3307.1	3134.93-inch or		3134.9	BLUE
H-415	0.0	171.1	98.5	3162.4	3043.13-inch or		3043.1	BLUE
H-417	0.0	176.2	96.3	2997.2	2931.73-inch or		2931.7	BLUE
H-418	0.0	179.4	94.9	2811.1	2778.23-inch or		2778.2	BLUE
H-409	0.0	180.8	94.3	3721.9	3695.03-inch or		3695.0	BLUE
H-383	0.0	194.1	88.2	2473.9			2473.9	BLUE
H-422	0.0	192.8	89.1	6599.6	4353.4	37	4353.4	BLUE
H-355	0.0	194.5	88.2	2098.3			2098.3	BLUE
H-472	0.0	217.7	78.6	8937.1	4691.9	37	4691.9	BLUE
H-218	0.0	211.0	81.1	3818.2			3818.2	BLUE
H-236	0.0	207.2	82.7	2373.4			2373.4	BLUE
H-223	0.0	204.0	83.9	3305.3			3305.3	BLUE
H-227	0.0	204.2	83.8	3001.5			3001.5	BLUE
H-436	0.0	203.1	84.6	4978.0	2684.9	37	2684.9	BLUE
H-396	0.0	191.6	89.4	4244.0	3761.5	37	3761.5	BLUE
H-395	0.0	197.6	86.7	4028.1	3840.9	37	3840.9	BLUE
H-403	0.0	200.7	85.4	3055.2			3055.2	BLUE
H-444	0.0	226.7	74.4	3091.1	1563.2	37	1563.2	BLUE
H-448	0.0	247.5	65.4	1466.4			1466.4	GREEN
H-445	0.0	217.1	78.6	1760.4	1551.2	37	1551.2	BLUE
H-249	0.0	197.3	87.0	4347.9			4347.9	BLUE
H-466	0.0	270.6	55.5	2299.5			2299.5	BLUE
H-468	0.0	231.6	72.5	2193.9			2193.9	BLUE
H-498	0.0	187.9	91.4	4106.6			4106.6	BLUE
H-392	0.0	205.3	83.4	2208.9			2208.9	BLUE
H-378	0.0	202.1	84.7	2914.7			2914.7	BLUE
H-326	0.0	197.4	86.8	2601.3			2601.3	BLUE
H-508	0.0	271.9	54.9	3221.9			3221.9	BLUE
H-507	0.0	278.1	52.2	2952.2			2952.2	BLUE
H-290	0.0	259.7	60.2	3342.3	3167.5	1396	3167.5	BLUE
H-289	0.0	266.5	57.3	3407.3	2814.2	1396	2814.2	BLUE
H-235	0.0	207.3	82.6	2206.3			2206.3	BLUE
H-432	0.0	192.8	89.2	4541.8			4541.8	BLUE
H-474	0.0	193.5	88.9	8161.8	4667.9	37	4667.9	BLUE
H-473	0.0	196.1	87.8	8252.0	4702.8	37	4702.8	BLUE
H-429	0.0	194.1	88.6	7286.9	4476.9	37	4476.9	BLUE
H-358	0.0	173.7	97.1	3782.1	3753.8	J-132	3753.8	BLUE
H-435	0.0	202.3	85.0	2397.3			2397.3	BLUE
H-470	0.0	207.1	83.1	2167.8			2167.8	BLUE
H-509	0.0	241.0	68.3	2845.0			2845.0	BLUE
H-506	0.0	267.8	56.7	2910.3			2910.3	BLUE
H-521	0.0	218.0	78.6	10364.0	6778.8	1396	6778.8	BLUE
H-360	0.0	173.9	97.0	3674.3	3649.2	J-132	3649.2	BLUE
H-561	0.0	173.8	97.0	3661.4	3635.3	J-132	3635.3	BLUE
H-450	0.0	274.6	53.6	1523.9	1322.9	37	1322.9	GREEN
H-449	0.0	260.6	59.7	1927.4	1322.9	37	1322.9	GREEN
H-456	0.0	295.7	44.5	460.5			460.5	RED
H-562	0.0	174.4	96.8	3534.3	3516.0	J-132	3516.0	BLUE
H-563	0.0	175.8	96.1	3442.8			3442.8	BLUE
H-564	0.0	176.3	95.9	3388.3			3388.3	BLUE
H-353	0.0	191.3	89.6	3613.6			3613.6	BLUE
H-184	0.0	205.5	83.2	2359.8			2359.8	BLUE
H-224	0.0	205.4	83.3	2562.6			2562.6	BLUE
H-301	0.0	180.4	94.3	3539.7			3539.7	BLUE
H-309	0.0	189.9	90.2	4149.1	2814.9	1712	2814.9	BLUE
H-270	0.0	185.4	91.9	3588.2			3588.2	BLUE
H-558	0.0	177.1	95.5	5854.7	5643.7	92	5643.7	BLUE
H-274	0.0	178.4	95.0	5837.6	5716.9	92	5716.9	BLUE
H-273	0.0	179.1	94.7	5838.3			5838.3	BLUE
H-275	0.0	179.8	94.3	5838.9			5838.9	BLUE
H-276	0.0	179.8	94.3	5862.3			5862.3	BLUE
H-277	0.0	181.0	93.8	5885.7			5885.7	BLUE
H-278	0.0	178.2	95.0	5981.3			5981.3	BLUE
H-285	0.0	179.7	94.4	6001.1			6001.1	BLUE
H-283	0.0	181.3	93.7	6026.6			6026.6	BLUE
H-284	0.0	182.7	93.1	6064.2			6064.2	BLUE
H-286	0.0	185.9	91.7	6062.2			6062.2	BLUE
H-281	0.0	185.3	92.0	6139.2			6139.2	BLUE
H-280	0.0	187.8	90.9	6226.2			6226.2	BLUE
H-357	0.0	174.1	96.9	3747.1			3747.1	BLUE
H-566	0.0	178.8	94.8	4713.1			4713.1	BLUE
H-272	0.0	175.4	96.3	3359.0			3359.0	BLUE
H-390	0.0	182.2	93.4	2377.0			2377.0	BLUE
H-532	0.0	208.4	81.9	910.8			910.8	ORANGE
H-179	0.0	209.3	81.5	913.4			913.4	ORANGE
H-214	0.0	223.0	76.0	5020.8	3866.9	686	3866.9	BLUE
H-215	0.0	223.0	75.8	3393.8			3393.8	BLUE
H-305	0.0	187.0	91.4	4188.8			4188.8	BLUE
H-306	0.0	194.1	88.3	3622.4			3622.4	BLUE
H-323	0.0	173.1	97.5	2630.9	2542.0	1547	2542.0	BLUE
H-345	0.0	175.7	96.2	4531.2	4458.8	1712	4458.8	BLUE
H-389	0.0	182.9	93.1	2268.5			2268.5	BLUE
H-394	0.0	206.3	83.0	3865.6			3865.6	BLUE

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Master File : p:\0155_chehalis\1078_wsp_update\rpt-planning\mdlmg\01551078 city of chehalis capital improvement program 2030.KYP\01551078 city of chehalis capital improve :

 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

REGULATING VALVE DATA

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
18th St PRV	PRV-1	389.66
18th St Pump	Const_FLOW_Pump	1200.00
Centralia Al	Const_HEAD_Pump	541.19
Fairview PRV	PRV-1	466.50
High Level P	Const_FLOW_Pump	0.00
RV-1	PRV-1	382.95
RV-2	PRV-1	389.67
South End Pu	Const_HEAD_Pump	495.59
Valley View	Const_FLOW_Pump	0.00

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1	#2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
3	5	6	24.78	10.00	90.0000	0.00
5	9	10	824.44	6.00	90.0000	0.00
6	11	12	38.56	8.00	90.0000	0.00
7	13	872	38.38	6.00	75.0000	0.00
8	15	16	7.84	6.00	90.0000	0.00
10	18	19	437.00	2.00	140.0000	0.00
12	22	23	750.00	8.00	130.0000	0.00
13	24	1524	360.61	4.00	130.0000	0.00
14	26	J-55	539.97	8.00	115.0000	0.00
16	28	29	217.00	4.00	115.0000	0.00
17	31	32	723.00	12.00	130.0000	0.00
21	37	38	170.42	4.00	75.0000	0.00
22	2014	40	325.43	8.00	130.0000	0.00
23	41	1699	28.75	12.00	130.0000	0.00
24	43	213	42.27	12.00	130.0000	0.00
26	47	48	173.64	4.00	130.0000	0.00
27	49	50	310.00	10.00	130.0000	0.00
28	51	52	222.00	8.00	130.0000	0.00
32	59	60	108.37	6.00	75.0000	0.00
35	65	66	295.51	6.00	75.0000	0.00
37	68	69	412.00	8.00	130.0000	0.00
38	52	70	245.00	6.00	130.0000	0.00
39	Hillcrest	72	81.50	4.00	130.0000	0.00
41	75	76	3275.00	12.00	130.0000	0.00
45	83	2066	32.96	12.00	130.0000	0.00
46	85	86	33.07	12.00	130.0000	0.00
52	97	98	74.85	8.00	130.0000	0.00
55	102	103	68.31	8.00	130.0000	0.00
56	104	1810	34.98	12.00	130.0000	0.00
59	107	108	7.82	12.00	130.0000	0.00
60	109	J-53	785.00	16.00	130.0000	0.00
66	118	J-169	2076.37	14.00	90.0000	0.00
68	119	121	704.00	14.00	75.0000	0.00
70	121	860	23.71	14.00	75.0000	0.00
72	118	1799	900.00	8.00	130.0000	0.00
85	physical d	396	23.76	14.00	75.0000	0.00
107	J-91	2067	949.00	18.00	130.0000	0.00
109	325	34	484.84	12.00	130.0000	0.00
110	2122	166	948.74	12.00	130.0000	0.00
112	166	962	902.00	12.00	130.0000	0.00
114	569	962	308.00	12.00	130.0000	0.00
115	569	665	1519.00	12.00	130.0000	0.00
118	172	J-105	650.00	12.00	130.0000	0.00
120	175	178	251.61	12.00	130.0000	0.00
123	178	1826	444.69	12.00	130.0000	0.00
126	1826	1827	278.93	12.00	130.0000	0.00
129	1827	192	1658.25	12.00	130.0000	0.00

2030 Fireflow - Main Zone East

137	192	201	248.00	12.00	130.0000	0.00
139		137	409.00	12.00	130.0000	0.00
141	15	137	446.49	12.00	130.0000	0.00
142	15	J-162	456.08	12.00	130.0000	0.00
145	201	J-93	562.05	12.00	90.0000	0.00
155	212	213	677.50	12.00	130.0000	0.00
156	214	26	1649.00	12.00	130.0000	0.00
163	2072	224	1245.00	12.00	130.0000	0.00
187	248	253	1835.17	12.00	130.0000	0.00
192	254	J-127	1507.19	12.00	130.0000	0.00
262	325	1575	908.76	12.00	130.0000	0.00
279	343	344	127.52	12.00	130.0000	0.00
280	344	342	115.85	12.00	130.0000	0.00
282	342	346	192.42	12.00	130.0000	0.00
283	86	J-130	1344.24	12.00	130.0000	0.00
292	356	361	2280.98	10.00	90.0000	0.00
298	32	J-7	60.00	10.00	90.0000	0.00
302	32	480	930.34	10.00	90.0000	0.00
318	384	385	126.00	10.00	130.0000	0.00
319	356	J-167	699.21	10.00	90.0000	0.00
320	356	41	37.27	10.00	90.0000	0.00
329	396	398	31.65	10.00	75.0000	0.00
331	398	1409	306.52	10.00	75.0000	0.00
340	407	408	647.97	10.00	75.0000	0.00
353	661	2119	350.44	6.00	75.0000	0.00
355	424	1648	189.00	10.00	90.0000	0.00
363	295	468	3228.55	10.00	130.0000	0.00
398	172	473	539.00	12.00	130.0000	0.00
403	474	480	672.00	8.00	90.0000	0.00
411	J-45	2129	770.00	8.00	90.0000	0.00
414	1217	1121	284.43	6.00	90.0000	0.00
417	492	1235	414.07	8.00	75.0000	0.00
429	505	509	502.00	8.00	75.0000	0.00
433	510	512	462.00	8.00	130.0000	0.00
435	513	J-160	231.52	8.00	75.0000	0.00
440	518	J-94	278.47	8.00	75.0000	0.00
448	92	1184	943.86	8.00	130.0000	0.00
451	530	119	42.30	8.00	75.0000	0.00
452	119	536	464.52	8.00	75.0000	0.00
458	536	2079	637.02	8.00	75.0000	0.00
461	540	2079	30.24	8.00	75.0000	0.00
464	544	543	465.44	8.00	75.0000	0.00
472	552	J-100	98.00	8.00	75.0000	0.00
476	I-AV-1	J-114	1506.58	8.00	130.0000	0.00
486	569	573	476.00	8.00	130.0000	0.00
490	385	166	264.00	8.00	140.0000	0.00
495	579	J-138	330.16	8.00	130.0000	0.00
497	582	584	548.98	8.00	130.0000	0.00
503	590	J-73	801.25	8.00	75.0000	0.00
511	599	601	450.87	8.00	130.0000	0.00
526	599	619	720.36	8.00	130.0000	0.00
531	620	623	618.14	8.00	130.0000	0.00
538	628	631	136.23	8.00	90.0000	0.00
541	632	1049	299.05	8.00	90.0000	0.00
547	631	642	578.19	8.00	90.0000	0.00
552	High Level	2090	1103.00	10.00	130.0000	0.00
565	509	661	1328.00	8.00	75.0000	0.00
569	597	1284	174.94	8.00	90.0000	0.00
571	46	2086	497.00	8.00	90.0000	0.00
574	665	668	872.08	8.00	130.0000	0.00
577	668	675	492.96	8.00	130.0000	0.00
584	676	J-27	893.25	8.00	90.0000	0.00
590	54	682	182.20	8.00	90.0000	0.00
591	683	J-95	505.00	8.00	90.0000	0.00
593	686	J-78	241.00	8.00	90.0000	0.00
597	408	J-79	21.00	8.00	75.0000	0.00
601	361	1960	1287.07	8.00	90.0000	0.00
612	705	710	248.15	8.00	130.0000	0.00
617	717	1134	965.00	8.00	130.0000	0.00
623	718	247	34.04	8.00	75.0000	0.00
630	424	726	91.39	8.00	75.0000	0.00
632	726	J-80	386.08	8.00	75.0000	0.00
652	468	780	2846.84	8.00	130.0000	0.00
684	781	2092	25.00	8.00	130.0000	0.00
686	784	1698	594.45	8.00	130.0000	0.00
690	788	791	1019.18	8.00	130.0000	0.00
693	792	791	123.52	8.00	130.0000	0.00
697	797	784	720.40	8.00	130.0000	0.00
700	800	802	282.00	6.00	130.0000	0.00
702	803	1465	267.21	6.00	75.0000	0.00
706	808	2009	929.18	6.00	75.0000	0.00
710	813	815	302.18	6.00	75.0000	0.00
712	121	2093	46.99	6.00	75.0000	0.00
714	2094	40	934.76	4.00	75.0000	0.00
723	828	2096	426.19	6.00	75.0000	0.00
726	544	831	72.71	6.00	75.0000	0.00
727	831	530	335.47	6.00	75.0000	0.00
735	831	1989	226.92	6.00	75.0000	0.00
739	842	844	615.87	6.00	75.0000	0.00
741	844	817	669.95	6.00	75.0000	0.00
749	856	J-115	240.00	6.00	75.0000	0.00
751	2078	14	273.95	6.00	75.0000	0.00
753	860	2097	569.00	6.00	75.0000	0.00
757	865	868	222.76	6.00	75.0000	0.00
760	868	J-113	502.26	6.00	75.0000	0.00
762	868	872	205.21	6.00	75.0000	0.00
772	881	2098	449.61	6.00	75.0000	0.00
776	885	J-111	304.95	6.00	75.0000	0.00
784	893	J-106	418.44	6.00	75.0000	0.00
785	893	J-110	416.57	6.00	75.0000	0.00
789	66	899	48.00	6.00	75.0000	0.00
791	899	901	175.00	6.00	75.0000	0.00
793	901	1742	1127.00	6.00	75.0000	0.00
797	906	910	180.00	6.00	75.0000	0.00
801	910	38	116.53	6.00	75.0000	0.00

2030 Fireflow - Main Zone East

807	842	2084	314.93	6.00	75.0000	0.00
812	916	922	348.45	6.00	75.0000	0.00
814	923	J-20	569.59	8.00	130.0000	0.00
817	J-21	929	248.00	6.00	75.0000	0.00
823	J-2	937	870.00	6.00	130.0000	0.00
825	J-2	556	502.00	6.00	75.0000	0.00
831	945	2080	473.03	6.00	75.0000	0.00
839	954	2081	460.04	6.00	75.0000	0.00
846	962	964	82.58	6.00	130.0000	0.00
858	1387	1314	65.93	4.00	75.0000	0.00
861	108	104	599.00	6.00	90.0000	0.00
867	958	J-110	1002.00	6.00	75.0000	0.00
874	994	65	736.58	6.00	75.0000	0.00
876	65	1986	656.95	6.00	75.0000	0.00
883	1003	1023	424.00	8.00	130.0000	0.00
903	1024	J-125	363.09	8.00	130.0000	0.00
905	O-High Lev	649	101.61	6.00	75.0000	0.00
910	1024	628	642.00	8.00	130.0000	0.00
912	1032	1003	811.00	6.00	90.0000	0.00
930	1050	1053	1269.52	6.00	90.0000	0.00
933	384	2100	964.00	6.00	75.0000	0.00
936	1057	16	435.81	6.00	90.0000	0.00
938	1060	1063	225.00	6.00	130.0000	0.00
941	1064	J-129	956.67	8.00	130.0000	0.00
948	1071	526	308.78	6.00	90.0000	0.00
949	526	1084	2823.93	8.00	130.0000	0.00
962	1085	1337	588.12	6.00	75.0000	0.00
966	1099	J-78	1370.13	8.00	130.0000	0.00
975	1100	1101	228.75	6.00	90.0000	0.00
976	O-Fairview	1101	118.14	6.00	90.0000	0.00
982	2103	J-81	265.32	6.00	75.0000	0.00
993	1121	1122	255.49	6.00	90.0000	0.00
994	2076	2127	300.30	6.00	75.0000	0.00
1000	1130	1125	650.51	6.00	75.0000	0.00
1001	2104	J-73	623.72	6.00	75.0000	0.00
1003	1134	2104	238.99	6.00	75.0000	0.00
1004	509	1290	478.00	6.00	75.0000	0.00
1007	1137	2105	327.02	6.00	75.0000	0.00
1009	1388	2013	267.00	6.00	75.0000	0.00
1012	2106	2107	591.74	6.00	75.0000	0.00
1014	510	23	924.74	6.00	75.0000	0.00
1017	2137	2109	470.82	6.00	75.0000	0.00
1019	2084	2109	326.70	6.00	75.0000	0.00
1020	2094	23	140.75	6.00	75.0000	0.00
1023	1156	23	477.86	6.00	75.0000	0.00
1024	2096	2073	229.38	6.00	75.0000	0.00
1025	2110	2096	273.09	6.00	75.0000	0.00
1026	2110	1997	279.58	6.00	75.0000	0.00
1028	1997	2111	244.00	6.00	75.0000	0.00
1030	2111	2112	268.86	6.00	75.0000	0.00
1032	1961	2113	418.00	6.00	75.0000	0.00
1035	704	1961	270.90	6.00	75.0000	0.00
1036	2109	1961	297.09	6.00	75.0000	0.00
1037	2010	2014	642.00	6.00	75.0000	0.00
1040	2012	2013	328.33	6.00	75.0000	0.00
1041	2065	2012	308.00	6.00	75.0000	0.00
1042	2137	2065	296.00	6.00	75.0000	0.00
1043	2113	2137	300.18	6.00	75.0000	0.00
1044	2113	1180	266.89	6.00	75.0000	0.00
1046	1181	22	93.00	6.00	75.0000	0.00
1047	2095	22	173.00	6.00	75.0000	0.00
1048	726	1184	40.06	8.00	130.0000	0.00
1051	1186	1996	269.43	6.00	75.0000	0.00
1053	827	1232	1143.25	6.00	75.0000	0.00
1058	1232	1156	597.28	6.00	75.0000	0.00
1060	1156	512	927.21	6.00	75.0000	0.00
1062	512	2107	783.40	6.00	75.0000	0.00
1064	2115	2107	155.32	6.00	75.0000	0.00
1069	2117	2065	579.53	6.00	75.0000	0.00
1071	2137	1210	580.23	6.00	75.0000	0.00
1074	1211	1713	81.79	6.00	130.0000	0.00
1076	24	1713	223.00	6.00	130.0000	0.00
1077	1215	J-58	327.00	6.00	75.0000	0.00
1078	68	1217	692.94	6.00	130.0000	0.00
1080	1218	2112	1049.55	6.00	75.0000	0.00
1083	2112	1223	326.05	6.00	75.0000	0.00
1085	1224	2111	321.86	6.00	75.0000	0.00
1087	1085	1333	418.92	6.00	75.0000	0.00
1088	1085	808	427.58	6.00	75.0000	0.00
1090	808	1229	207.76	6.00	75.0000	0.00
1091	1232	1181	476.00	6.00	75.0000	0.00
1094	1235	1483	375.00	6.00	75.0000	0.00
1095	2120	1104	147.00	6.00	90.0000	0.00
1096	2120	1239	581.73	6.00	130.0000	0.00
1099	1240	1214	42.84	6.00	130.0000	0.00
1100	1214	1244	471.00	6.00	130.0000	0.00
1103	1244	1251	558.00	6.00	130.0000	0.00
1110	Yankis (Va	1251	416.98	6.00	130.0000	0.00
1116	1513	J-25	173.82	8.00	130.0000	0.00
1117	1277	J-159	108.25	6.00	90.0000	0.00
1118	1277	1262	90.18	6.00	90.0000	0.00
1120	657	J-25	1605.00	10.00	130.0000	0.00
1125	1181	1270	559.53	6.00	75.0000	0.00
1127	2103	1099	1495.62	8.00	130.0000	0.00
1132	1277	I-AV-4	889.11	6.00	90.0000	0.00
1138	693	579	860.83	6.00	75.0000	0.00
1140	1284	O-AV-3	362.05	6.00	90.0000	0.00
1146	1290	2119	1322.78	4.00	75.0000	0.00
1148	1293	1295	372.96	4.00	75.0000	0.00
1150	398	2016	65.54	8.00	130.0000	0.00
1152	1120	1298	198.66	6.00	75.0000	0.00
1154	432	1309	2165.00	6.00	90.0000	0.00
1165	1310	1314	1161.00	4.00	75.0000	0.00
1169	2127	J-61	967.64	4.00	75.0000	0.00
1171	1318	2105	578.38	4.00	75.0000	0.00

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1173	2105	1322	469.84	4.00	75.0000	0.00
1178	2115	40	301.65	4.00	75.0000	0.00
1179	2115	1328	589.61	4.00	75.0000	0.00
1182	803	J-81	638.00	4.00	75.0000	0.00
1185	1333	1337	528.94	4.00	75.0000	0.00
1189	1338	807	1527.54	8.00	130.0000	0.00
1193	518	192	70.97	4.00	75.0000	0.00
1195	192	1060	583.00	4.00	75.0000	0.00
1198	1060	705	1317.00	4.00	75.0000	0.00
1205	492	J-80	987.90	4.00	75.0000	0.00
1208	1356	828	273.00	4.00	75.0000	0.00
1210	1359	828	233.00	4.00	75.0000	0.00
1211	1364	1984	203.81	4.00	75.0000	0.00
1212	1364	1991	514.02	4.00	75.0000	0.00
1214	1364	2121	287.23	4.00	75.0000	0.00
1215	1366	36	660.16	6.00	130.0000	0.00
1217	1244	1251	681.00	6.00	130.0000	0.00
1226	1375	17	2480.00	4.00	90.0000	0.00
1236	17	1387	400.00	4.00	90.0000	0.00
1239	1388	1392	578.80	4.00	75.0000	0.00
1244	1314	33	129.52	4.00	90.0000	0.00
1245	937	1456	272.00	6.00	75.0000	0.00
1247	384	1456	264.58	6.00	75.0000	0.00
1248	1396I-Valley V	4.38	4.00	140.0000	0.00	
1258	505	1409	1080.00	4.00	75.0000	0.00
1261	1410	657	558.39	4.00	90.0000	0.00
1269	1023	I-AV-2	712.27	4.00	90.0000	0.00
1309	1456	881	418.71	6.00	130.0000	0.00
1315	885	1056	245.12	4.00	90.0000	0.00
1319	1465	2103	636.67	4.00	75.0000	0.00
1322	509	407	820.07	4.00	75.0000	0.00
1330	693	492	1027.10	4.00	75.0000	0.00
1338	1295	1483	948.39	4.00	75.0000	0.00
1340	1484	899	1892.00	4.00	75.0000	0.00
1351	344	1497	767.00	4.00	130.0000	0.00
1354	1498	1502	449.05	8.00	130.0000	0.00
1358	1502	J-133	279.67	8.00	130.0000	0.00
1371	1517	1519	275.00	2.00	135.0000	0.00
1384	1544	J-95	2295.00	12.00	90.0000	0.00
1388	1547	1544	288.55	12.00	130.0000	0.00
1389	1547	J-96	1327.00	12.00	130.0000	0.00
1396	1544	1547	2300.00	8.00	130.0000	0.00
1401	668	1674	1132.70	12.00	130.0000	0.00
1404	1674	102	746.13	12.00	130.0000	0.00
1406	102	J-1	620.69	12.00	130.0000	0.00
1409	92	J-164	484.87	12.00	130.0000	0.00
1423	421	107	867.00	12.00	130.0000	0.00
1426	1575	34	575.28	12.00	130.0000	0.00
1427	1576	248	446.87	12.00	130.0000	0.00
1429	248	1580	540.11	12.00	130.0000	0.00
1433	51	26	448.20	12.00	130.0000	0.00
1435	51	109	1427.59	12.00	130.0000	0.00
1440	6	109	475.62	12.00	130.0000	0.00
1441	6	1647	1469.07	12.00	130.0000	0.00
1443	1637	1647	5159.69	12.00	130.0000	0.00
1454	72	1637	1761.44	12.00	130.0000	0.00
1455	72	1626	3641.41	12.00	130.0000	0.00
1458	1627	1626	763.65	12.00	130.0000	0.00
1460	797	212	356.56	12.00	130.0000	0.00
1464	788	1630	3991.15	12.00	130.0000	0.00
1477	1630	1626	1130.08	12.00	130.0000	0.00
1479	1627Yates Rese		1075.00	12.00	130.0000	0.00
1481	1630	76	3539.00	12.00	130.0000	0.00
1483	76	1636	2341.00	12.00	130.0000	0.00
1487	1637	75	595.62	12.00	130.0000	0.00
1492	75	49	651.30	12.00	130.0000	0.00
1493	254	49	3310.10	12.00	130.0000	0.00
1494	254	J-35	1688.26	12.00	130.0000	0.00
1497	2072	1647	1022.00	12.00	130.0000	0.00
1499	1648	247	4693.50	12.00	130.0000	0.00
1500	343	1657	2072.02	8.00	130.0000	0.00
1509	1658	901	754.77	8.00	130.0000	0.00
1526	1674	800	496.84	8.00	130.0000	0.00
1531	800	174	473.00	8.00	130.0000	0.00
1534	1679	1689	748.17	6.00	90.0000	0.00
1544	1690	1689	126.93	8.00	90.0000	0.00
1548	2092	1698	669.39	8.00	130.0000	0.00
1552	1699	1700	801.40	10.00	130.0000	0.00
1553	2138	89	1389.60	8.00	130.0000	0.00
1560	1710	J-53	1056.65	8.00	130.0000	0.00
1562	1711	683	220.00	8.00	90.0000	0.00
1563	683	1712	500.00	8.00	115.0000	0.00
1564	1713	1716	178.58	6.00	130.0000	0.00
1567	1716	1719	185.05	6.00	130.0000	0.00
1584	1742	1737	1268.00	4.00	75.0000	0.00
1588	1737	1375	375.00	4.00	75.0000	0.00
1593	1742	1484	452.00	10.00	130.0000	0.00
1596	1484	975	1798.00	10.00	130.0000	0.00
1611	975	1310	71.00	10.00	130.0000	0.00
1612	1310	2122	454.00	10.00	130.0000	0.00
1615	2123	1089	511.48	8.00	130.0000	0.00
1617	1089	1186	243.51	6.00	75.0000	0.00
1618	1186	1767	570.00	8.00	130.0000	0.00
1621	J-135	J-171	184.70	8.00	130.0000	0.00
1626	1773	1775	197.00	8.00	130.0000	0.00
1628	1775	1776	68.00	8.00	130.0000	0.00
1629	1776	1782	1030.00	8.00	130.0000	0.00
1635	1782	1788	996.00	8.00	130.0000	0.00
1641	1788	1775	237.00	8.00	130.0000	0.00
1644	1773	1791	251.00	8.00	130.0000	0.00
1645	1776	1793	338.00	8.00	130.0000	0.00
1647	1788	1782	591.00	8.00	130.0000	0.00
1654	1800	1801	235.53	10.00	130.0000	0.00
1657	18053-inch or		110.20	8.00	130.0000	0.00
1658	1806	1808	400.00	6.00	130.0000	0.00

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1660	1809	1806	19.02	8.00	130.0000	0.00
1661		1810	671.00	10.00	130.0000	0.00
1663	1800	1821	258.00	10.00	130.0000	0.00
1664	1813	1809	50.87	10.00	130.0000	0.00
1665	1814	1818	715.34	2.00	140.0000	0.00
1669	1813	1814	675.00	8.00	130.0000	0.00
1672	1821	J-112	525.00	8.00	130.0000	0.00
1673	1823	1826	385.26	6.00	90.0000	0.00
1676	1827	1071	62.38	12.00	130.0000	0.00
1677	1636	J-128	438.35	8.00	130.0000	0.00
1792	910	844	262.20	4.00	75.0000	0.00
1793	178	1823	69.34	8.00	90.0000	0.00
1796	1063	1948	325.00	2.00	135.0000	0.00
1799	1032	J-114	642.00	6.00	130.0000	0.00
1810	1960	12	21.03	8.00	90.0000	0.00
1811	12	10	1053.00	8.00	90.0000	0.00
1813	1767	J-117	290.12	6.00	75.0000	0.00
1818	1737	1968	132.00	4.00	75.0000	0.00
1820	1823	J-168	334.71	6.00	75.0000	0.00
1821	175	384	2123.70	10.00	130.0000	0.00
1825	1973	566	454.00	4.00	75.0000	0.00
1826	1974	1975	651.00	6.00	130.0000	0.00
1828	J-3	1980	517.00	6.00	75.0000	0.00
1830	3-inch or	1981	48.33	4.00	75.0000	0.00
1831	1984	1767	235.15	6.00	75.0000	0.00
1834	1985	1986	56.59	4.00	75.0000	0.00
1835	894	2125	20.33	8.00	130.0000	0.00
1836	1987	568	717.00	4.00	75.0000	0.00
1837	1988	1989	52.11	4.00	75.0000	0.00
1839	2121	1991	219.88	6.00	75.0000	0.00
1840	2126	2123	286.00	10.00	130.0000	0.00
1841	1994	994	209.00	6.00	75.0000	0.00
1842	1996	1997	691.73	6.00	75.0000	0.00
1843	1184	J-163	895.08	6.00	130.0000	0.00
1852	2007	2009	230.57	6.00	75.0000	0.00
1854	2010	2065	472.04	6.00	75.0000	0.00
1855	2012	J-39	579.11	8.00	75.0000	0.00
1856	2013	2014	469.09	6.00	130.0000	0.00
1858	2016	J-81	1482.47	4.00	75.0000	0.00
1860	2127	504	947.53	4.00	75.0000	0.00
1864	1121	2023	183.59	6.00	90.0000	0.00
1865	2127	1215	263.88	6.00	75.0000	0.00
1866	2025	2028	384.00	2.00	140.0000	0.00
1869	2029	2030	216.99	2.00	140.0000	0.00
1870	2031	2029	117.40	4.00	140.0000	0.00
1871	2029	2025	27.90	4.00	140.0000	0.00
1872	2025	2032	248.94	4.00	140.0000	0.00
1873	2033	2031	618.97	4.00	140.0000	0.00
1877	2031	J-124	145.24	8.00	130.0000	0.00
1883	2047	J-74	206.38	6.00	90.0000	0.00
1887	2053	582	671.02	4.00	90.0000	0.00
1892	2129	582	343.45	4.00	90.0000	0.00
1893	590	46	757.00	6.00	90.0000	0.00
1894	2061	J-45	335.58	6.00	90.0000	0.00
1895	2063	J-44	880.19	8.00	90.0000	0.00
1896	5	361	64.75	10.00	90.0000	0.00
1898	14	540	265.00	6.00	75.0000	0.00
1900	163-in or sm		34.44	6.00	90.0000	0.00
1901	17	18	236.00	6.00	90.0000	0.00
1904	24	2088	5.94	6.00	130.0000	0.00
1907	36	2130	291.60	6.00	75.0000	0.00
1908	38	2083	817.68	6.00	75.0000	0.00
1909	2014	J-87	300.00	6.00	75.0000	0.00
1917	69	J-61	263.00	8.00	130.0000	0.00
1920	295	J-30	1850.87	12.00	130.0000	0.00
1924	86	2066	285.00	12.00	130.0000	0.00
1927	104	J-112	808.02	6.00	75.0000	0.00
1930	118	710	2530.00	14.00	90.0000	0.00
1935	247	2106	22.48	8.00	75.0000	0.00
1936	325	2122	272.19	12.00	130.0000	0.00
1938	375	1218	736.59	14.00	75.0000	0.00
1940	396	1318	307.00	14.00	75.0000	0.00
1941	480	2138	730.48	10.00	90.0000	0.00
1947	530	2093	691.48	6.00	75.0000	0.00
1948	536	2078	287.42	8.00	75.0000	0.00
1949	565	1084	590.00	8.00	75.0000	0.00
1950	556	944	498.75	6.00	75.0000	0.00
1951	565	543	35.00	8.00	75.0000	0.00
1954	J-84	O-AV-5	54.14	8.00	90.0000	0.00
1956	584	717	786.89	10.00	90.0000	0.00
1958	590	584	267.70	10.00	90.0000	0.00
1960	620	2133	155.65	8.00	130.0000	0.00
1962	1410	649	52.91	8.00	90.0000	0.00
1964	661	424	118.60	10.00	75.0000	0.00
1965	665	172	143.00	12.00	130.0000	0.00
1967	710	137	1990.58	14.00	90.0000	0.00
1972	784	791	500.36	8.00	130.0000	0.00
1975	797	788	291.38	12.00	130.0000	0.00
1977	813	J-120	564.60	6.00	75.0000	0.00
1978	815	803	563.97	6.00	75.0000	0.00
1979	817	1338	454.00	6.00	75.0000	0.00
1982	856	2121	290.89	6.00	75.0000	0.00
1983	860	375	259.21	14.00	75.0000	0.00
1984	865	65	387.79	8.00	75.0000	0.00
1985	872	14	110.22	6.00	75.0000	0.00
1986	923	J-3	345.89	8.00	130.0000	0.00
1987	944	1987	383.07	6.00	75.0000	0.00
1989	954	945	225.61	6.00	75.0000	0.00
1990	958	J-106	266.00	6.00	75.0000	0.00
1992	994	1658	528.00	10.00	130.0000	0.00
1993	2101	60	140.36	6.00	75.0000	0.00
1995	1003	1049	529.64	8.00	130.0000	0.00
1996	1049	631	275.61	8.00	90.0000	0.00
1997	1050	975	402.00	6.00	90.0000	0.00
1998	1057	518	652.00	8.00	75.0000	0.00

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2000	1084	552	435.20	8.00	75.0000	0.00
2001	1099	1120	246.00	8.00	130.0000	0.00
2002	1107	J-79	210.02	8.00	75.0000	0.00
2003	1130	J-63	457.60	8.00	75.0000	0.00
2005	1137	398	600.00	8.00	75.0000	0.00
2010	1180	704	473.80	8.00	75.0000	0.00
2011	1183	704	38.34	6.00	75.0000	0.00
2014	1210	2067	566.74	14.00	75.0000	0.00
2020	1223	1224	265.83	6.00	75.0000	0.00
2021	1224	827	666.42	6.00	75.0000	0.00
2022	1229	815	301.07	6.00	75.0000	0.00
2024	1235	1517	896.98	8.00	75.0000	0.00
2025	1099	J-82	293.00	8.00	130.0000	0.00
2027	1284	46	713.52	8.00	90.0000	0.00
2031	1318	1392	306.00	14.00	75.0000	0.00
2032	1322	J-87	262.00	6.00	75.0000	0.00
2033	1328	2091	322.03	8.00	75.0000	0.00
2035	1337	2110	39.43	6.00	75.0000	0.00
2036	1338	813	634.51	6.00	75.0000	0.00
2037	1356	1089	17.89	6.00	75.0000	0.00
2039	1366	945	480.02	6.00	75.0000	0.00
2040	1387	979	479.26	6.00	130.0000	0.00
2042	1392	J-39	591.86	14.00	75.0000	0.00
2045	1409	407	306.00	10.00	75.0000	0.00
2048	1465	J-120	38.32	6.00	75.0000	0.00
2053	1107	1517	423.01	8.00	75.0000	0.00
2058	1570	J-8	1066.00	10.00	90.0000	0.00
2060	1575	342	808.04	12.00	130.0000	0.00
2063	1627	J-135	354.12	12.00	115.0000	0.00
2067	1648	432	2857.00	10.00	90.0000	0.00
2068	1658	421	772.00	10.00	130.0000	0.00
2070	1679	1101	25.75	6.00	90.0000	0.00
2071	1698	212	264.80	8.00	130.0000	0.00
2078	1800	1813	297.00	10.00	130.0000	0.00
2079	1809	1805	635.00	10.00	130.0000	0.00
2080	1810	107	583.38	12.00	130.0000	0.00
2087	1960	700	19.01	8.00	90.0000	0.00
2089	1973	J-2	345.00	6.00	75.0000	0.00
2090	1974	1366	377.42	6.00	75.0000	0.00
2091	1975	36	374.90	6.00	75.0000	0.00
2092	1981	J-4	275.32	6.00	75.0000	0.00
2093	994	1984	383.00	10.00	130.0000	0.00
2095	1986	552	515.83	6.00	75.0000	0.00
2096	1987	893	54.17	6.00	75.0000	0.00
2097	1989	842	189.64	6.00	75.0000	0.00
2102	1996	827	273.45	6.00	75.0000	0.00
2104	2007	375	649.59	10.00	130.0000	0.00
2105	2009	2096	41.52	6.00	75.0000	0.00
2111	2016	1120	22.21	8.00	130.0000	0.00
2114	1107	1293	379.00	6.00	75.0000	0.00
2118	2053	J-57	404.65	8.00	90.0000	0.00
2120	2063	717	379.81	10.00	90.0000	0.00
2127	2067	1218	331.70	14.00	75.0000	0.00
2128	2067	1180	580.16	8.00	75.0000	0.00
2139	2073	2007	37.55	10.00	130.0000	0.00
2141	2074	483	444.39	8.00	130.0000	0.00
2145	2076	492	344.58	8.00	75.0000	0.00
2146	2076	504	784.60	8.00	75.0000	0.00
2148	693	J-64	330.00	8.00	130.0000	0.00
2149	2078	865	288.23	8.00	75.0000	0.00
2150	2078	1991	297.24	6.00	75.0000	0.00
2152	2079	543	202.12	8.00	75.0000	0.00
2153	2080	2081	236.10	6.00	130.0000	0.00
2154	2080	958	585.00	6.00	75.0000	0.00
2155	2125	J-99	48.00	8.00	130.0000	0.00
2156	2081	958	325.04	6.00	75.0000	0.00
2159	2083	2084	265.54	8.00	75.0000	0.00
2160	2083	916	678.90	6.00	75.0000	0.00
2161	2084	565	310.77	8.00	75.0000	0.00
2162	2084	916	736.88	6.00	75.0000	0.00
2165	2086	578	560.00	8.00	130.0000	0.00
2166	2086	2132	593.29	8.00	90.0000	0.00
2169	2088	620	2465.45	8.00	130.0000	0.00
2170	2088	1214	158.00	6.00	130.0000	0.00
2173	2090	1410	14.60	8.00	90.0000	0.00
2174	2090	657	565.72	10.00	130.0000	0.00
2175	2091	1137	468.76	8.00	75.0000	0.00
2176	2091	505	311.20	8.00	75.0000	0.00
2179	2093	817	304.87	6.00	75.0000	0.00
2180	2093	1229	758.42	6.00	75.0000	0.00
2181	2094	2095	604.36	6.00	75.0000	0.00
2183	2095	1223	294.47	6.00	75.0000	0.00
2184	2095	1183	324.33	6.00	75.0000	0.00
2187	2097	856	426.07	6.00	75.0000	0.00
2188	2097	2073	206.00	6.00	75.0000	0.00
2189	2098	885	448.98	6.00	75.0000	0.00
2190	2098	2100	273.62	6.00	75.0000	0.00
2192	954	2130	268.01	6.00	75.0000	0.00
2193	2100	1050	360.00	6.00	90.0000	0.00
2194	2100	1056	405.41	6.00	75.0000	0.00
2195	2101	807	693.00	8.00	130.0000	0.00
2196	2101	J-82	1519.00	8.00	130.0000	0.00
2198	1290	1293	372.41	6.00	75.0000	0.00
2199	2103	60	154.27	6.00	75.0000	0.00
2202	2104	2021	244.00	4.00	75.0000	0.00
2203	2105	1388	298.00	6.00	75.0000	0.00
2206	2106	1328	152.76	8.00	75.0000	0.00
2207	2107	510	314.14	6.00	75.0000	0.00
2212	2109	2010	299.72	6.00	75.0000	0.00
2214	2110	1356	429.11	6.00	75.0000	0.00
2216	2111	1333	54.05	6.00	75.0000	0.00
2217	2112	1183	291.22	6.00	75.0000	0.00
2221	803	2113	632.05	6.00	75.0000	0.00
2223	2115	J-87	328.38	6.00	75.0000	0.00
2228	2117	1210	322.00	14.00	75.0000	0.00

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2231	2119	1483	385.00	6.00	75.0000	0.00
2234	2120	J-77	147.00	6.00	90.0000	0.00
2236	2121	2126	209.47	6.00	75.0000	0.00
2240	2123	2073	427.00	10.00	130.0000	0.00
2243	2125	961	36.45	8.00	130.0000	0.00
2244	2125	2081	266.99	8.00	130.0000	0.00
2246	2126	1984	286.12	10.00	130.0000	0.00
2249	2050	J-77	44.67	6.00	90.0000	0.00
2252	2129	2053	226.85	8.00	90.0000	0.00
2253	2130	961	455.00	6.00	75.0000	0.00
2254	2130	1973	40.73	6.00	75.0000	0.00
2257	2132	214	7.31	8.00	90.0000	0.00
2259	2133	599	622.41	8.00	130.0000	0.00
2260	2133	47	462.96	8.00	130.0000	0.00
2269	2138	481	66.26	10.00	90.0000	0.00
P-1	J-1	97	547.15	12.00	130.0000	0.00
P-100	J-112	1814	500.93	6.00	75.0000	0.00
P-101	J-113	2079	368.16	6.00	75.0000	0.00
P-102	J-114	1023	302.00	8.00	130.0000	0.00
P-103	J-125	649	346.91	8.00	130.0000	0.00
P-104	I-Fairview	1103	20.94	6.00	90.0000	0.00
P-105	J-115	J-116	419.54	6.00	75.0000	0.00
P-106	J-116	2097	250.67	6.00	75.0000	0.00
P-108	J-117	56	305.00	6.00	75.0000	0.00
P-11	J-3	1975	323.06	6.00	75.0000	0.00
P-111	J-120	807	266.76	6.00	75.0000	0.00
P-113	J-39	2117	288.00	14.00	75.0000	0.00
P-116	97	J-122	121.15	12.00	130.0000	0.00
P-117	J-140	J-145	46.63	12.00	130.0000	0.00
P-119	J-139	J-84	78.98	8.00	130.0000	0.00
P-121	J-140	J-138	42.92	12.00	130.0000	0.00
P-122	J-126Main Reser		111.73	18.00	130.0000	0.00
P-124	O-AV-1	2083	364.42	8.00	75.0000	0.00
P-125	O-AV-2	906	282.73	4.00	75.0000	0.00
P-127	J-127	295	2367.21	12.00	130.0000	0.00
P-128	J-127	J-128	4129.32	12.00	130.0000	0.00
P-130	J-128	1831	615.85	8.00	130.0000	0.00
P-131	J-129	1071	558.33	12.00	130.0000	0.00
P-132	668	J-129	1448.22	12.00	130.0000	0.00
P-133	J-133	1513	25.35	8.00	130.0000	0.00
P-134	J-122	J-132	800.00	12.00	130.0000	0.00
P-135	J-124	1502	393.57	8.00	130.0000	0.00
P-136	J-124	J-131	198.84	8.00	130.0000	0.00
P-138-CV	Kennicott	J-53	790.00	16.00	130.0000	0.00
P-140	O-AV-4	686	40.89	6.00	90.0000	0.00
P-143	I-AV-5	J-63	2.85	8.00	130.0000	0.00
P-144	O-AV-6	1134	545.75	4.00	75.0000	0.00
P-146	J-73	J-134	384.83	8.00	130.0000	0.00
P-147	J-64	J-141	135.51	8.00	130.0000	0.00
P-148	J-134	O-RV-2	6.27	8.00	130.0000	0.00
P-149	J-143	O-RV-1	5.82	12.00	130.0000	0.00
P-15	J-91	J-126	172.27	18.00	130.0000	0.00
P-150-CV	J-141	J-134	13.00	8.00	130.0000	0.00
P-151	J-142	J-139	80.78	8.00	130.0000	0.00
P-152	J-144	1570	631.51	12.00	130.0000	0.00
P-153-CV	J-143	J-144	24.87	12.00	130.0000	0.00
P-154	I-RV-1	J-144	5.63	12.00	130.0000	0.00
P-157	I-RV-2	J-141	7.13	8.00	130.0000	0.00
P-1570	1716	1103	1729.25	8.00	130.0000	0.00
P-158	J-145I-18th St		2.66	12.00	130.0000	0.00
P-159	J-145	J-146	2.68	12.00	130.0000	0.00
P-160-CV	J-146	J-147	9.25	12.00	130.0000	0.00
P-161	J-146O-18th St		3.23	12.00	130.0000	0.00
P-162	J-147	J-142	2.67	12.00	130.0000	0.00
P-164	I-18th St	J-147	3.12	12.00	130.0000	0.00
P-165	J-155	J-156	739.67	6.00	140.0000	0.00
P-166	66	J-110	322.75	6.00	75.0000	0.00
P-167	J-153	J-156	4747.12	12.00	115.0000	0.00
P-168	J-152	J-150	15.74	8.00	115.0000	0.00
P-169	J-154	J-88	471.34	12.00	115.0000	0.00
P-170	J-155	J-151	4833.50	6.00	140.0000	0.00
P-171	J-155	J-157	658.63	2.00	140.0000	0.00
P-172	J-156	J-154	1552.65	12.00	115.0000	0.00
P-173	J-148	J-6	2664.56	2.00	130.0000	0.00
P-174	J-149	J-153	1314.60	8.00	130.0000	0.00
P-175	J-150	J-152	2094.17	8.00	115.0000	0.00
P-176	J-64	2076	1014.00	8.00	75.0000	0.00
P-177	J-160	1057	847.45	8.00	75.0000	0.00
P-178	J-159	1513	18.67	6.00	90.0000	0.00
P-179	J-160	J-162	533.75	8.00	130.0000	0.00
P-18	J-135I-South En		77.91	12.00	130.0000	0.00
P-180	J-162	J-95	1493.70	12.00	130.0000	0.00
P-181	1818	J-161	94.69	2.00	140.0000	0.00
P-182	J-163	2003	50.56	6.00	130.0000	0.00
P-183	J-164	J-143	3640.74	12.00	130.0000	0.00
P-184	J-163	J-177	465.62	8.00	130.0000	0.00
P-188	31	J-158	1171.71	12.00	130.0000	0.00
P-19	33	34	11.57	4.00	90.0000	0.00
P-190	J-167	2074	284.73	10.00	90.0000	0.00
P-194	76	1580	1373.43	12.00	130.0000	0.00
P-195	J-170	J-176	367.83	12.00	130.0000	0.00
P-196	J-168	J-21	156.89	6.00	75.0000	0.00
P-197	J-168	1980	565.74	8.00	130.0000	0.00
P-198	J-880-South En		3066.47	12.00	115.0000	0.00
P-199	J-171	1773	557.30	8.00	130.0000	0.00
P-2	101	J-1	84.14	8.00	130.0000	0.00
P-20	1576	213	32.42	12.00	130.0000	0.00
P-200	J-169	J-91	282.63	18.00	130.0000	0.00
P-201	J-173	J-153	21062.56	8.00	115.0000	0.00
P-203	J-177	J-164	335.35	8.00	130.0000	0.00
P-25	J-30	2066	908.00	12.00	130.0000	0.00
P-29	J-8	2063	977.55	10.00	90.0000	0.00
P-3	J-60-Central1		24935.52	6.00	115.0000	0.00
P-30	J-35	J-42	1262.05	12.00	130.0000	0.00
P-31	54	J-8	271.99	8.00	90.0000	0.00

2030 Fireflow - Main Zone East

P-33	J-42	2072	33.95	12.00	130.0000	0.00
P-34	1699	J-42	861.64	12.00	130.0000	0.00
P-36	2091	1322	322.00	6.00	75.0000	0.00
P-4	J-7	1570	1181.00	10.00	90.0000	0.00
P-40	J-44	10	918.28	8.00	90.0000	0.00
P-42	J-45	J-44	388.00	8.00	90.0000	0.00
P-43	J-132	J-170	232.78	12.00	130.0000	0.00
P-44	J-55	28	392.03	8.00	115.0000	0.00
P-47	J-57	2132	26.83	8.00	90.0000	0.00
P-48	41	J-90	18.53	10.00	90.0000	0.00
P-49	2051	J-57	16.66	8.00	90.0000	0.00
P-50	2052	J-57	17.24	8.00	90.0000	0.00
P-51	O-18th St	J-142	1.13	8.00	130.0000	0.00
P-53	J-4	1974	369.00	6.00	75.0000	0.00
P-54	923	J-4	253.57	6.00	75.0000	0.00
P-57	1217	I-AV-6	27.22	4.00	75.0000	0.00
P-58	1217	69	273.00	8.00	130.0000	0.00
P-6	J-11	J-88	987.96	8.00	115.0000	0.00
P-61	J-58	68	222.00	6.00	115.0000	0.00
P-62	J-61	J-136	302.00	8.00	130.0000	0.00
P-63	J-127	J-158	1896.96	12.00	130.0000	0.00
P-64	54	J-27	596.19	8.00	90.0000	0.00
P-65	J-67	597	417.00	8.00	90.0000	0.00
P-67	J-71	J-67	339.00	8.00	130.0000	0.00
P-69	J-73	J-71	449.75	8.00	75.0000	0.00
P-7	J-152	J-154	148.62	8.00	115.0000	0.00
P-71	J-63	J-123	21.02	8.00	130.0000	0.00
P-73	J-74	1679	128.71	6.00	90.0000	0.00
P-74	J-77	J-74	27.47	6.00	90.0000	0.00
P-75	I-AV-3	2120	128.95	6.00	90.0000	0.00
P-76	J-78	408	254.81	8.00	90.0000	0.00
P-77	J-79	1130	739.00	8.00	75.0000	0.00
P-78	J-80	504	390.06	8.00	75.0000	0.00
P-79	1396	J-82	521.89	6.00	90.0000	0.00
P-80	1388	J-87	625.00	6.00	130.0000	0.00
P-81	92	J-62	399.00	8.00	130.0000	0.00
P-82	J-84	597	632.70	8.00	90.0000	0.00
P-83	J-123	J-140	102.57	12.00	130.0000	0.00
P-84	J-93	1971	33.88	6.00	90.0000	0.00
P-86	I-High Lev	J-126	388.44	6.00	75.0000	0.00
P-87	J-94	526	1018.53	8.00	75.0000	0.00
P-88	J-93	J-94	3.82	6.00	90.0000	0.00
P-89	J-96inter-tie	1009.00	12.00	130.0000	0.00	
P-9	J-2	2098	329.00	6.00	75.0000	0.00
P-90	J-105	174	266.00	12.00	130.0000	0.00
P-91	J-20	1981	59.00	6.00	75.0000	0.00
P-92	J-21	J-20	140.66	6.00	75.0000	0.00
P-93	568	J-99	19.30	8.00	130.0000	0.00
P-94	J-99	556	294.00	8.00	130.0000	0.00
P-95	566	J-99	49.52	8.00	130.0000	0.00
P-96	J-100	2080	161.00	8.00	130.0000	0.00
P-97	J-106	894	329.00	6.00	75.0000	0.00
P-98	I-Centrali	J-173	305.94	8.00	115.0000	0.00
P-99	J-111	944	378.41	6.00	75.0000	0.00
Valley Vie	O-Valley VYankis (Va	2734.85	4.00	140.0000	0.00	

N O D E D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
5		0.30	243.40	
6		6.80	244.40	
9		2.80	205.80	
10		9.60	213.70	
11		0.10	236.90	
12		3.80	236.50	
13		0.10	198.90	
14		2.20	201.40	
15		3.10	186.10	
16		1.60	186.10	
17		10.70	175.70	
18		2.30	171.90	
19		1.50	165.30	
22		3.50	186.50	
23		7.90	187.70	
24		2.00	604.50	
26		9.10	240.30	
28		2.10	322.60	
29		0.70	319.00	
31		6.50	216.80	
32		5.90	214.70	
33		0.40	183.00	
34		3.70	183.50	
36		4.60	194.40	
37		0.60	319.00	
38		3.80	290.50	
40		5.30	190.80	
41		0.30	219.10	
43		0.10	253.50	
46		6.80	229.90	
47		2.20	544.40	
48		0.60	543.60	
49		14.70	243.00	
50		1.10	244.20	
51		7.20	240.00	
52		1.60	261.50	
54		3.60	209.30	
56		1.10	193.00	
59		0.40	252.50	
60		1.40	252.90	

2030 Fireflow - Main Zone East

65	7.10	192.40
66	2.30	191.30
68	4.60	205.20
69	3.20	208.70
70	0.80	285.20
72	19.00	255.00
75	15.60	247.70
76	36.30	256.00
83	0.10	221.90
85	0.10	222.10
86	5.70	222.40
89	4.80	225.60
92	6.40	192.40
97	2.60	173.90
98	0.30	174.00
101	0.30	174.30
102	4.90	176.00
103	0.20	175.70
104	5.00	179.70
107	5.00	183.60
108	2.10	183.60
109	9.20	236.20
118	19.00	192.50
119	4.10	217.70
121	2.70	230.70
137	9.80	180.00
166	7.30	182.90
172	4.60	174.10
174	2.50	175.70
175	8.20	183.60
178	2.60	183.60
192	8.80	183.60
201	4.20	178.30
212	4.40	256.30
213	2.50	253.50
214	5.70	230.10
224	4.30	224.20
247	16.40	192.10
248	9.70	248.60
253	6.30	240.90
254	22.40	230.80
295	25.70	210.10
325	5.70	183.90
342	3.90	165.40
343	7.50	163.20
344	3.40	164.20
346	0.70	165.60
356	10.40	219.10
361	12.50	243.10
375	5.60	230.50
384	11.90	183.20
385	1.30	183.60
396	1.30	221.20
398	3.50	220.50
407	6.10	226.99
408	3.20	223.30
421	5.70	184.20
424	1.40	189.90
432	17.30	184.10
468	20.90	204.20
473	1.90	178.30
474	2.30	210.70
480	8.00	219.70
481	0.20	220.90
483	1.50	214.00
492	9.50	195.50
504	7.30	192.80
505	6.50	197.20
509	10.70	200.00
510	5.90	189.60
512	7.50	184.80
513	0.80	178.80
518	3.40	182.20
526	14.30	201.80
530	3.70	220.30
536	4.80	201.90
540	1.00	202.30
543	2.40	210.90
544	1.90	216.10
552	3.60	191.50
556	4.40	206.10
565	3.20	210.80
566	1.80	204.60
568	2.60	206.30
569	7.90	178.30
573	1.60	179.00
578	1.90	280.80
579	4.10	205.50
582	5.40	212.80
584	5.50	207.60
590	6.30	208.60
597	4.20	222.20
599	6.20	592.40
601	1.60	577.30
619	2.50	559.00
620	11.10	583.00
623	2.10	588.00
628	2.70	420.40
631	3.50	382.80
632	1.00	455.20
642	2.00	304.60
649	2.10	392.70
657	9.40	331.20
661	6.20	190.90
665	8.70	174.40

2030 Fireflow - Main Zone East

668	13.60	182.30	
675	1.70	180.60	
676	3.10	206.70	
682	0.60	209.20	
683	4.20	200.30	
686	1.10	278.90	
693	7.60	197.40	
700	0.10	237.50	
704	2.60	190.10	
705	5.40	185.50	
710	16.50	197.50	
717	7.30	204.90	
718	0.10	191.20	
726	1.70	190.00	
780	9.80	195.00	
781	0.10	252.20	
784	6.20	259.80	
788	18.30	258.50	
791	5.60	256.00	
792	0.40	254.90	
797	4.70	255.30	
800	4.30	177.30	
802	1.00	178.00	
803	7.20	217.90	
807	8.60	272.60	
808	5.40	215.50	
813	5.10	244.90	
815	3.90	219.20	
817	5.00	275.20	
827	7.10	186.80	
828	3.20	192.50	
831	2.30	216.90	
842	3.90	234.00	
844	5.30	260.00	
856	3.30	194.40	
860	3.00	230.20	
865	3.10	195.90	
868	3.20	197.00	
872	1.20	199.50	
881	3.00	199.80	
885	3.40	204.20	
893	3.00	198.10	
894	1.20	206.30	
899	7.30	192.10	
901	7.10	189.00	
906	2.50	292.50	
910	1.90	294.90	
916	6.00	222.40	
922	1.20	238.30	
923	4.10	182.20	
929	0.90	181.60	
937	3.90	183.80	
944	4.30	196.50	
945	4.10	192.00	
954	3.30	193.70	
958	7.50	201.60	
961	1.70	205.40	
962	4.50	179.30	
964	0.30	179.40	
975	7.80	184.50	
979	1.70	173.70	
994	6.30	192.30	
1003	6.10	435.80	
1023	7.40	389.60	
1024	3.50	408.40	
1032	5.00	455.00	
1049	3.80	421.50	
1050	7.00	188.20	
1053	4.40	183.20	
1056	2.20	192.00	
1057	6.60	179.20	
1060	7.30	196.50	
1063	1.90	238.10	
1064	3.30	181.30	
1071	3.20	190.50	
1084	13.20	198.50	
1085	4.90	197.60	
1089	2.70	190.70	
1099	11.70	233.90	
1100	0.80	339.70	
1101	1.70	323.20	
1103	6" and 2"	6.10	346.40
1104	0.50	285.50	
1107	3.50	211.40	
1120	1.60	222.90	
1121	2.50	205.30	
1122	0.90	204.40	
1125	2.20	205.00	
1130	6.30	225.00	
1134	7.90	202.90	
1137	4.80	202.10	
1156	6.90	184.90	
1180	4.50	195.40	
1181	3.80	186.00	
1183	2.20	190.20	
1184	6.50	189.70	
1186	3.70	191.30	
1210	5.10	215.60	
1211	0.30	564.40	
1214	2.20	607.60	
1215	2.00	200.80	
1217	4.50	207.80	
1218	7.20	217.60	
1223	3.00	187.20	
1224	4.30	187.60	

2030 Fireflow - Main Zone East

1229	4.30	224.40
1232	7.60	183.90
1235	5.80	197.20
1239	2.00	265.90
1240	0.10	608.90
1244	5.80	591.00
1251	7.10	622.30
1262	0.30	349.90
1270	1.90	184.30
1277	6.80	340.00
1284	5.60	224.00
1290	7.50	207.20
1293	3.90	206.60
1295	4.60	200.40
1298	0.70	224.20
1309	7.50	185.00
1310	5.80	184.40
1314	4.60	183.00
1318	4.20	221.20
1322	3.60	194.60
1328	3.60	192.30
1333	3.40	191.30
1337	3.90	192.80
1338	9.10	257.70
1356	2.50	190.80
1359	0.80	193.30
1364	3.50	193.90
1366	5.30	190.60
1375	9.80	168.30
1387	3.30	182.40
1388	6.10	200.40
1392	5.10	220.30
1396	1.80	308.10
1409	5.90	222.20
1410	2.20	392.50
1456	3.20	183.20
1465	3.20	235.70
1483	5.90	193.40
1484	14.30	183.60
1497	2.60	167.20
1498	1.50	396.40
1502	3.90	385.30
1513	0.80	339.40
1517	5.50	205.40
1519	0.90	211.30
1524	1.20	615.60
1544	16.80	194.80
1547	13.50	208.00
1570	10.00	195.50
1575	7.90	171.60
1576	1.60	253.70
1580	6.60	245.80
1626	19.10	272.90
1627	11.20	289.00
1630	29.90	266.70
1636	186.00	245.70
1637	26.00	249.10
1647	26.40	236.20
1648	26.70	187.30
1657	7.10	176.60
1658	7.10	185.90
1674	8.20	178.00
1679	3.10	317.70
1689	3.00	323.60
1690	0.40	319.70
1698	5.20	256.80
1699	5.90	218.90
1700	2.80	216.20
1710	3.60	303.90
1711	0.80	209.80
1712	1.70	268.50
1713	1.70	571.10
1716	7.20	533.50
1719	0.60	516.50
1737	6.20	166.60
1742	9.90	183.60
1767	3.80	193.40
1773	3.50	272.20
1775	1.70	270.10
1776	5.00	269.20
1782	9.00	269.10
1788	6.20	269.00
1791	0.90	273.40
1793	1.20	270.60
1799	3.10	201.40
1800	2.70	166.10
1801	0.80	173.70
1805	2.60	179.70
1806	1.50	173.10
1808	1.40	179.80
1809	2.50	172.30
1810	4.40	179.50
1813	3.50	171.10
1814	6.50	167.10
1818	2.80	178.50
1821	5.00	169.80
1823	2.70	182.50
1826	3.80	183.30
1827	6.90	192.90
1831	2.10	234.10
1948	1.10	234.90
1960	4.60	237.60
1961	3.30	190.10
1968	0.50	164.90
1971	0.10	185.30

2030 Fireflow - Main Zone East

1973	2.90	198.40	
1974	4.80	187.50	
1975	4.60	186.60	
1980	3.80	180.20	
1981	1.30	183.10	
1984	3.80	194.10	
1985	0.20	195.20	
1986	4.30	194.50	
1987	4.00	198.50	
1988	0.20	219.50	
1989	1.70	222.30	
1991	3.60	194.20	
1994	0.70	190.70	
1996	4.20	189.80	
1997	4.20	191.50	
2003	0.20	185.20	
2007	3.10	200.60	
2009	4.10	196.90	
2010	4.80	191.70	
2012	4.20	199.00	
2013	3.60	200.10	
2014	5.90	193.20	
2016	5.40	222.30	
2021	0.80	204.20	
2023	0.60	206.90	
2025	2.30	455.60	
2028	1.30	520.90	
2029	1.20	449.00	
2030	0.70	460.10	
2031	3.00	430.90	
2032	0.90	484.00	
2033	2.10	474.20	
2047	0.70	309.00	
2050	0.20	301.10	
2051	0.10	229.60	
2052	0.10	229.90	
2053	4.50	220.60	
2061	1.20	208.20	
2063	7.70	205.00	
2065	5.70	198.90	
2066	4.20	222.20	
2067	8.40	216.20	
2072	7.90	221.90	
2073	3.10	199.80	
2074	2.50	220.90	
2076	8.40	204.40	
2078	3.90	199.20	
2079	4.30	203.10	
2080	5.00	191.60	
2081	4.40	198.70	
2083	8.50	255.40	
2084	5.60	224.10	
2086	5.60	230.30	
2088	9.00	604.50	
2090	9.70	391.30	
2091	4.90	195.30	
2092	2.40	251.60	
2093	6.30	236.00	
2094	6.90	188.50	
2095	4.80	187.60	
2096	3.30	196.50	
2097	5.10	202.50	
2098	5.10	202.10	
2100	6.80	197.30	
2101	8.10	270.60	
2103	8.80	236.90	
2104	3.80	200.50	
2105	5.70	201.90	
2106	2.60	192.10	
2107	6.30	190.50	
2109	4.70	190.80	
2110	3.50	192.70	
2111	3.00	191.00	
2112	6.60	190.20	
2113	5.50	195.50	
2115	4.60	191.90	
2117	4.10	217.50	
2119	7.10	193.60	
2120	3.90	268.60	
2121	3.50	193.00	
2122	5.80	183.70	
2123	4.30	193.20	
2125	1.30	206.20	
2126	2.70	192.50	
2127	8.50	203.70	
2129	4.70	218.10	
2130	3.60	198.00	
2132	2.10	230.10	
2133	4.20	578.00	
2137	5.60	198.20	
2138	7.50	221.50	
I-18th St	0.00	218.20	
O-18th St	0.00	218.20	
3-in or sm	0.10	185.50	
3-inch or	0.40	183.00	
3-inch or	0.20	183.10	
O-AV-1	0.00	283.80	
I-AV-2	0.00	306.00	
I-AV-3	0.00	253.40	
O-AV-4	0.00	289.30	
O-AV-5	0.00	225.30	
O-AV-6	0.00	208.10	
O-Central1	----	333.50	541.19
O-Fairview	Fairview PRV	346.50	466.50
O-High Lev	High Level P	401.60	

2030 Fireflow - Main Zone East

High Level	High Level R	----	605.00	605.00
Hillcrest		0.30	256.20	
inter-tie		3.50	174.40	
J-1		4.30	174.00	
J-100		0.90	190.60	
J-105		3.10	175.60	
J-106		3.40	206.20	
J-11		3.40	280.00	
J-110		6.00	198.00	
J-111		2.40	192.50	
J-112		6.30	167.90	
J-113		3.00	200.50	
J-114	13.60		405.70	
J-115	2.20		197.30	
J-116	2.30		207.10	
J-117	2.10		192.10	
J-120	2.90		237.50	
J-122	3.20		174.00	
J-123	0.50		224.70	
J-124	2.60		403.80	
J-125	2.50		383.00	
J-126	4.10		367.95	
J-127	34.10		225.20	
J-128	17.80		235.20	
J-129	10.20		184.80	
J-130	4.60		222.00	
J-131	0.70		418.00	
J-132	3.60		176.00	
J-133	1.10		339.60	
J-134	1.30		200.90	
J-135	2.30		288.30	
J-136	1.00		204.10	
J-138	1.20		219.60	
J-139	0.60		222.60	
J-140	0.70		218.20	
J-141	0.50		200.90	
J-142	0.30		218.20	
J-143	12.70		186.90	
J-144	2.30		186.80	
J-145	0.20		218.20	
J-146	0.00		218.20	
J-147	0.00		218.20	
J-148	9.20		498.90	
J-149	4.50		306.10	
J-150	7.30		272.40	
J-151	16.70		326.80	
J-152	7.80		272.40	
J-153	93.50		302.40	
J-154	7.50		267.60	
J-155	21.60		263.80	
J-156	24.40		261.30	
J-157	2.30		265.80	
J-158	10.50		211.40	
J-159	0.50		343.00	
J-160	5.50		172.60	
J-161	0.30		178.60	
J-162	8.50		183.00	
J-163	4.90		183.70	
J-164	15.50		177.50	
J-167	3.40		0.00	
J-168	3.70		0.00	
J-169	8.20		413.50	
J-170	2.10		174.50	
J-171	2.50		286.90	
J-173	74.70		329.80	
J-176	1.30		166.40	
J-177	2.80		179.10	
J-2	7.00		201.80	
J-20	2.70		182.90	
J-21	1.90		182.80	
J-25	6.10		311.10	
J-27	5.20		207.10	
J-3	4.10		182.20	
J-30	9.50		219.90	
J-35	10.20		222.10	
J-39	5.00		218.10	
J-4	3.10		184.40	
J-42	7.50		222.00	
J-44	7.50		208.40	
J-45	5.20		209.00	
J-53	11.70		294.30	
J-55	3.30		297.10	
J-57	1.70		229.20	
J-58	1.90		204.60	
J-6	4.70		473.40	
J-61	5.20		207.00	
J-62	1.40		191.50	
J-63	1.70		225.20	
J-64	5.10		202.30	
J-67	2.60		210.80	
J-7	4.30		214.70	
J-71	2.80		204.60	
J-73	7.90		199.60	
J-74	1.20		301.00	
J-77	0.80		296.10	
J-78	6.40		230.70	
J-79	3.30		223.40	
J-8	8.00		208.80	
J-80	6.00		190.70	
J-81	8.20		218.90	
J-82	8.00		257.90	
J-84	2.90		226.30	
J-87	5.20		194.40	
J-88	26.00		275.70	
J-90	0.10		219.10	

J-91		4.90	352.90	
J-93		2.00	187.50	
J-94		4.50	187.50	
J-95		14.70	189.50	
J-96		8.10	176.90	
J-99		1.50	205.50	
Kennicott	Kennicott Re	----	374.00	397.90
Main Reser	Main Reservo	----	383.30	401.10
physical d		0.10	222.00	
I-RV-1		0.00	186.80	
I-RV-2		0.00	200.90	
O-South En		----	287.90	495.59
O-Valley V	Valley View	0.00	308.10	
Yankis (Va	Yankis (Vall	----	631.50	635.90
Yates Rese	500,000 gal	----	376.00	401.10
O-18th St		----	218.20	389.66
I-18th St		0.00	218.20	
I-AV-1		0.00	283.80	
O-AV-2		0.00	306.00	
O-AV-3		0.00	253.40	
I-AV-4		0.00	289.30	
I-AV-5		0.00	225.30	
I-AV-6		0.00	208.10	
I-Centrali		0.00	333.50	
I-Fairview	Fairview PRV	0.00	346.50	
I-High Lev	High Level P	0.00	401.60	
O-RV-1		----	186.80	382.95
O-RV-2		----	200.90	389.67
I-South En		0.00	287.90	
I-Valley V	Valley View	0.00	308.10	

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 5
 MAXIMUM AND MINIMUM VELOCITIES = 5
 MAXIMUM AND MINIMUM HEAD LOSS/1000 = 5

SUPPLY ZONE DATA

THIS SYSTEM HAS MULTIPLE SUPPLY ZONES

- ZONE NO. 1 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@18th St PRV ~@RV-2 ~@RV-1~@Yankis (Valley V
 ~@Fairview PRV~@Kennicott Reserv~@High Level Reser ~@Main Reservoir
 ~@Yates Reservoir
- ZONE NO. 2 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@Centralia Alpha
- ZONE NO. 3 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@South End Pump S

SYSTEM CONFIGURATION

NUMBER OF PIPES(P) = 732
 NUMBER OF END NODES(J) = 575
 NUMBER OF PRIMARY LOOPS(L) = 153
 NUMBER OF SUPPLY NODES(F) = 7
 NUMBER OF SUPPLY ZONES(Z) = 3

Case: 0

RESULTS OBTAINED AFTER 27 TRIALS: ACCURACY = 0.72722E-04

SIMULATION DESCRIPTION (LABEL)

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS		FLOWRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/ 1000 ft/f	HL/ 1000 ft/f
	#1	#2						
3	6	5	31.84	0.00	0.00	0.13	0.02	0.02
5	10	9	2.80	0.00	0.00	0.03	0.00	0.00
6	12	11	0.10	0.00	0.00	0.00	0.00	0.00
7	872	13	0.10	0.00	0.00	0.00	0.00	0.00
8	15	16	19.06	0.00	0.00	0.22	0.10	0.10
10	18	19	1.50	0.04	0.00	0.15	0.08	0.08
12	22	23	32.90	0.02	0.00	0.21	0.03	0.03
13	24	1524	1.20	0.00	0.00	0.03	0.00	0.00
14	26	J-55	6.10	0.00	0.00	0.04	0.00	0.00
16	28	29	0.70	0.00	0.00	0.02	0.00	0.00
17	32	31	39.42	0.00	0.00	0.11	0.01	0.01
21	38	37	0.60	0.00	0.00	0.02	0.00	0.00
22	2014	40	13.63	0.00	0.00	0.09	0.01	0.01
23	41	1699	20.34	0.00	0.00	0.06	0.00	0.00
24	213	43	0.10	0.00	0.00	0.00	0.00	0.00
26	47	48	0.60	0.00	0.00	0.02	0.00	0.00

2030 Fireflow - Main Zone East

27	49	50	1.10	0.00	0.00	0.00	0.00	0.00
28	51	52	2.40	0.00	0.00	0.02	0.00	0.00
32	60	59	0.40	0.00	0.00	0.00	0.00	0.00
35	65	66	36.28	0.13	0.00	0.41	0.44	0.44
37	68	69	8.81	0.00	0.00	0.06	0.00	0.00
38	52	70	0.80	0.00	0.00	0.01	0.00	0.00
39	72	Hillcrest	0.30	0.00	0.00	0.01	0.00	0.00
41	76	75	2.38	0.00	0.00	0.01	0.00	0.00
45	2066	83	0.10	0.00	0.00	0.00	0.00	0.00
46	86	85	0.10	0.00	0.00	0.00	0.00	0.00
52	97	98	0.30	0.00	0.00	0.00	0.00	0.00
55	102	103	0.20	0.00	0.00	0.00	0.00	0.00
56	1810	104	4.97	0.00	0.00	0.01	0.00	0.00
59	107	108	6.64	0.00	0.00	0.02	0.00	0.00
60	J-53	109	28.19	0.00	0.00	0.04	0.00	0.00
66	J-169	118	439.52	1.07	0.00	0.92	0.52	0.52
68	121	119	187.46	0.11	0.00	0.39	0.15	0.15
70	860	121	291.69	0.01	0.00	0.61	0.34	0.34
72	118	1799	3.10	0.00	0.00	0.02	0.00	0.00
85	396	physical d	0.10	0.00	0.00	0.00	0.00	0.00
107	J-91	2067	1546.34	0.75	0.00	1.95	0.79	0.79
109	325	34	34.05	0.00	0.00	0.10	0.00	0.00
110	166	2122	77.25	0.02	0.00	0.22	0.02	0.02
112	962	166	32.19	0.00	0.00	0.09	0.00	0.00
114	569	962	36.99	0.00	0.00	0.10	0.01	0.01
115	665	569	46.49	0.01	0.00	0.13	0.01	0.01
118	J-105	172	20.36	0.00	0.00	0.06	0.00	0.00
120	178	175	84.22	0.01	0.00	0.24	0.03	0.03
123	1826	178	102.61	0.02	0.00	0.29	0.04	0.04
126	1827	1826	119.27	0.01	0.00	0.34	0.05	0.05
129	192	1827	219.61	0.25	0.00	0.62	0.15	0.15
137	201	192	211.42	0.04	0.00	0.60	0.14	0.14
139	137	201	256.48	0.08	0.00	0.73	0.20	0.20
141	137	15	113.88	0.02	0.00	0.32	0.05	0.05
142	15	J-162	91.73	0.01	0.00	0.26	0.03	0.03
145	201	J-93	40.86	0.01	0.00	0.12	0.01	0.01
155	212	213	78.68	0.02	0.00	0.22	0.02	0.02
156	214	26	128.23	0.09	0.00	0.36	0.06	0.06
163	2072	224	4.30	0.00	0.00	0.01	0.00	0.00
187	248	253	6.30	0.00	0.00	0.02	0.00	0.00
192	254	J-127	130.67	0.09	0.00	0.37	0.06	0.06
262	325	1575	25.26	0.00	0.00	0.07	0.00	0.00
279	344	343	14.60	0.00	0.00	0.04	0.00	0.00
280	342	344	20.60	0.00	0.00	0.06	0.00	0.00
282	342	346	0.70	0.00	0.00	0.00	0.00	0.00
283	86	J-130	4.60	0.00	0.00	0.01	0.00	0.00
292	361	356	38.54	0.07	0.00	0.16	0.03	0.03
298	J-7	32	68.12	0.01	0.00	0.28	0.08	0.08
302	32	480	22.80	0.01	0.00	0.09	0.01	0.01
318	384	385	53.67	0.00	0.00	0.22	0.03	0.03
319	356	J-167	7.40	0.00	0.00	0.03	0.00	0.00
320	356	41	20.74	0.00	0.00	0.08	0.01	0.01
329	396	398	449.32	0.12	0.00	1.84	3.88	3.88
331	398	1409	251.30	0.41	0.00	1.03	1.32	1.32
340	407	408	209.09	0.61	0.00	0.85	0.94	0.94
353	661	2119	30.67	0.11	0.00	0.35	0.32	0.32
355	1648	424	125.58	0.05	0.00	0.51	0.26	0.26
363	295	468	30.70	0.03	0.00	0.13	0.01	0.01
398	172	473	1.90	0.00	0.00	0.01	0.00	0.00
403	480	474	2.30	0.00	0.00	0.01	0.00	0.00
411	2129	J-45	21.92	0.02	0.00	0.14	0.03	0.03
414	1217	1121	4.00	0.00	0.00	0.05	0.01	0.01
417	1235	492	102.24	0.31	0.00	0.65	0.74	0.74
429	505	509	97.40	0.34	0.00	0.62	0.68	0.68
433	512	510	5.34	0.00	0.00	0.03	0.00	0.00
435	J-160	513	0.80	0.00	0.00	0.01	0.00	0.00
440	518	J-94	5.05	0.00	0.00	0.06	0.01	0.01
448	1184	92	29.78	0.03	0.00	0.19	0.03	0.03
451	119	530	76.01	0.02	0.00	0.49	0.43	0.43
452	119	536	107.35	0.38	0.00	0.69	0.81	0.81
458	536	2079	49.58	0.12	0.00	0.32	0.19	0.19
461	540	2079	9.14	0.00	0.00	0.06	0.01	0.01
464	544	543	37.81	0.05	0.00	0.24	0.12	0.12
472	552	J-100	78.87	0.04	0.00	0.50	0.46	0.46
476	I-AV-1	J-114	0.00	0.00	0.00	0.00	0.00	0.00
486	569	573	1.60	0.00	0.00	0.01	0.00	0.00
490	385	166	52.37	0.02	0.00	0.33	0.07	0.07
495	579	J-138	119.31	0.12	0.00	0.76	0.36	0.36
497	584	582	41.25	0.03	0.00	0.26	0.05	0.05
503	J-73	590	104.06	0.61	0.00	0.66	0.77	0.77
511	599	601	1.60	0.00	0.00	0.01	0.00	0.00
526	599	619	2.50	0.00	0.00	0.02	0.00	0.00
531	620	623	2.10	0.00	0.00	0.01	0.00	0.00
538	628	631	42.40	0.01	0.00	0.27	0.10	0.10
541	1049	632	1.00	0.00	0.00	0.01	0.00	0.00
547	631	642	2.00	0.00	0.00	0.01	0.00	0.00
552	High Level	2090	110.30	0.11	0.00	0.45	0.10	0.10
565	509	661	65.26	0.43	0.00	0.42	0.32	0.32
569	597	1284	211.10	0.35	0.00	1.35	2.02	2.02
571	46	2086	140.71	0.47	0.00	0.90	0.96	0.96
574	668	665	41.32	0.04	0.00	0.26	0.05	0.05
577	668	675	1.70	0.00	0.00	0.01	0.00	0.00
584	J-27	676	3.10	0.00	0.00	0.02	0.00	0.00
590	54	682	0.60	0.00	0.00	0.00	0.00	0.00
591	J-95	683	6.70	0.00	0.00	0.04	0.00	0.00
593	J-78	686	1.10	0.00	0.00	0.01	0.00	0.00
597	408	J-79	369.40	0.17	0.00	2.36	8.00	8.00
601	1960	361	19.50	0.03	0.00	0.12	0.02	0.02
612	710	705	20.75	0.00	0.00	0.13	0.01	0.01
617	1134	717	43.70	0.05	0.00	0.28	0.06	0.06
623	247	718	0.10	0.00	0.00	0.00	0.00	0.00
630	424	726	152.58	0.14	0.00	0.97	1.56	1.56
632	726	J-80	100.48	0.28	0.00	0.64	0.72	0.72
652	468	780	9.80	0.01	0.00	0.06	0.00	0.00
684	2092	781	0.10	0.00	0.00	0.00	0.00	0.00

2030 Fireflow - Main Zone East

686	784	1698	14.74	0.00	0.00	0.09	0.01	0.01
690	788	791	16.64	0.01	0.00	0.11	0.01	0.01
693	791	792	0.40	0.00	0.00	0.00	0.00	0.00
697	797	784	10.30	0.00	0.00	0.07	0.00	0.00
700	800	802	1.00	0.00	0.00	0.01	0.00	0.00
702	803	1465	43.51	0.17	0.00	0.49	0.62	0.62
706	2009	808	16.96	0.10	0.00	0.19	0.11	0.11
710	815	813	38.11	0.15	0.00	0.43	0.48	0.48
712	121	2093	101.53	0.14	0.00	1.15	2.97	2.97
714	2094	40	13.40	0.47	0.00	0.34	0.50	0.50
723	2096	828	11.03	0.02	0.00	0.13	0.05	0.05
726	831	544	39.71	0.04	0.00	0.45	0.52	0.52
727	530	831	64.84	0.43	0.00	0.74	1.29	1.29
735	831	1989	22.83	0.04	0.00	0.26	0.19	0.19
739	844	842	1.56	0.00	0.00	0.02	0.00	0.00
741	817	844	14.39	0.05	0.00	0.16	0.08	0.08
749	J-115	856	12.60	0.01	0.00	0.14	0.06	0.06
751	2078	14	22.34	0.05	0.00	0.25	0.18	0.18
753	860	2097	36.12	0.25	0.00	0.41	0.44	0.44
757	868	865	3.84	0.00	0.00	0.04	0.01	0.01
760	868	J-113	1.66	0.00	0.00	0.02	0.00	0.00
762	872	868	8.70	0.01	0.00	0.10	0.03	0.03
772	881	2098	2.32	0.00	0.00	0.03	0.00	0.00
776	J-111	885	11.94	0.02	0.00	0.14	0.06	0.06
784	893	J-106	4.30	0.00	0.00	0.05	0.01	0.01
785	J-110	893	26.55	0.10	0.00	0.30	0.25	0.25
789	899	66	14.50	0.00	0.00	0.16	0.08	0.08
791	901	899	30.94	0.06	0.00	0.35	0.33	0.33
793	901	1742	37.35	0.53	0.00	0.42	0.47	0.47
797	910	906	2.50	0.00	0.00	0.03	0.00	0.00
801	910	38	3.13	0.00	0.00	0.04	0.00	0.00
807	842	2084	18.59	0.04	0.00	0.21	0.13	0.13
812	916	922	1.20	0.00	0.00	0.01	0.00	0.00
814	J-20	923	3.27	0.00	0.00	0.02	0.00	0.00
817	J-21	929	0.90	0.00	0.00	0.01	0.00	0.00
823	J-2	937	8.84	0.01	0.00	0.10	0.01	0.01
825	556	J-2	14.44	0.04	0.00	0.16	0.08	0.08
831	2080	945	19.58	0.07	0.00	0.22	0.14	0.14
839	2081	954	10.54	0.02	0.00	0.12	0.04	0.04
846	962	964	0.30	0.00	0.00	0.00	0.00	0.00
858	1314	1387	23.58	0.09	0.00	0.60	1.43	1.43
861	108	104	4.54	0.00	0.00	0.05	0.01	0.01
867	J-110	958	15.93	0.10	0.00	0.18	0.10	0.10
874	994	65	22.32	0.13	0.00	0.25	0.18	0.18
876	65	1986	32.00	0.23	0.00	0.36	0.35	0.35
883	1003	1023	20.56	0.01	0.00	0.13	0.01	0.01
903	J-125	1024	48.60	0.02	0.00	0.31	0.07	0.07
905	O-High Lev	649	0.00	0.00	0.00	0.00	0.00	0.00
910	1024	628	45.10	0.04	0.00	0.29	0.06	0.06
912	1003	1032	5.44	0.01	0.00	0.06	0.01	0.01
930	1050	1053	4.40	0.01	0.00	0.05	0.01	0.01
933	384	2100	6.87	0.02	0.00	0.08	0.02	0.02
936	16	1057	17.36	0.04	0.00	0.20	0.08	0.08
938	1060	1063	3.00	0.00	0.00	0.03	0.00	0.00
941	J-129	1064	3.30	0.00	0.00	0.02	0.00	0.00
948	526	1071	42.15	0.13	0.00	0.48	0.42	0.42
949	1084	526	13.14	0.02	0.00	0.08	0.01	0.01
962	1337	1085	7.13	0.01	0.00	0.08	0.02	0.02
966	1099	J-78	171.01	0.95	0.00	1.09	0.69	0.69
975	1101	1100	0.80	0.00	0.00	0.01	0.00	0.00
976	O-Fairview	1101	18.30	0.01	0.00	0.21	0.09	0.09
982	J-81	2103	8.36	0.01	0.00	0.09	0.03	0.03
993	1121	1122	0.90	0.00	0.00	0.01	0.00	0.00
994	2076	2127	24.05	0.06	0.00	0.27	0.21	0.21
1000	1130	1125	2.20	0.00	0.00	0.02	0.00	0.00
1001	J-73	2104	56.20	0.62	0.00	0.64	0.99	0.99
1003	2104	1134	51.60	0.20	0.00	0.59	0.85	0.85
1004	509	1290	37.61	0.23	0.00	0.43	0.47	0.47
1007	2105	1137	41.23	0.18	0.00	0.47	0.56	0.56
1009	2013	1388	57.66	0.28	0.00	0.65	1.04	1.04
1012	2107	2106	77.55	1.07	0.00	0.88	1.80	1.80
1014	23	510	43.70	0.58	0.00	0.50	0.62	0.62
1017	2137	2109	34.12	0.19	0.00	0.39	0.39	0.39
1019	2109	2094	43.87	0.21	0.00	0.50	0.63	0.63
1020	2094	23	43.30	0.09	0.00	0.49	0.61	0.61
1023	23	1156	24.60	0.10	0.00	0.28	0.22	0.22
1024	2073	2096	28.56	0.07	0.00	0.32	0.28	0.28
1025	2096	2110	24.65	0.06	0.00	0.28	0.22	0.22
1026	2110	1997	7.50	0.01	0.00	0.09	0.02	0.02
1028	2111	1997	12.11	0.01	0.00	0.14	0.06	0.06
1030	2112	2111	41.15	0.15	0.00	0.47	0.56	0.56
1032	2113	1961	14.39	0.03	0.00	0.16	0.08	0.08
1035	704	1961	27.97	0.07	0.00	0.32	0.27	0.27
1036	1961	2109	39.06	0.15	0.00	0.44	0.51	0.51
1037	2010	2014	54.81	0.61	0.00	0.62	0.95	0.95
1040	2012	2013	83.98	0.69	0.00	0.95	2.09	2.09
1041	2065	2012	28.35	0.09	0.00	0.32	0.28	0.28
1042	2137	2065	22.77	0.06	0.00	0.26	0.19	0.19
1043	2137	2113	3.57	0.00	0.00	0.04	0.01	0.01
1044	1180	2113	72.56	0.43	0.00	0.82	1.59	1.59
1046	22	1181	15.47	0.01	0.00	0.18	0.09	0.09
1047	2095	22	51.87	0.15	0.00	0.59	0.86	0.86
1048	726	1184	50.40	0.00	0.00	0.32	0.07	0.07
1051	1996	1186	1.58	0.00	0.00	0.02	0.00	0.00
1053	827	1232	19.35	0.16	0.00	0.22	0.14	0.14
1058	1232	1156	21.53	0.10	0.00	0.24	0.17	0.17
1060	1156	512	39.22	0.47	0.00	0.45	0.51	0.51
1062	512	2107	26.38	0.19	0.00	0.30	0.24	0.24
1064	2115	2107	14.32	0.01	0.00	0.16	0.08	0.08
1069	2117	2065	46.28	0.40	0.00	0.53	0.69	0.69
1071	1210	2137	66.06	0.78	0.00	0.75	1.34	1.34
1074	1713	1211	0.30	0.00	0.00	0.00	0.00	0.00
1076	24	1713	34.20	0.03	0.00	0.39	0.14	0.14
1077	1215	J-58	18.81	0.04	0.00	0.21	0.13	0.13
1078	68	1217	3.50	0.00	0.00	0.04	0.00	0.00

2030 Fireflow - Main Zone East

1080	1218	2112	62.48	1.27	0.00	0.71	1.21	1.21
1083	2112	1223	37.78	0.16	0.00	0.43	0.48	0.48
1085	2111	1224	11.16	0.02	0.00	0.13	0.05	0.05
1087	1333	1085	10.04	0.02	0.00	0.11	0.04	0.04
1088	1085	808	12.27	0.03	0.00	0.14	0.06	0.06
1090	808	1229	23.83	0.04	0.00	0.27	0.20	0.20
1091	1181	1232	9.77	0.02	0.00	0.11	0.04	0.04
1094	1483	1235	35.28	0.16	0.00	0.40	0.42	0.42
1095	2120	1104	0.50	0.00	0.00	0.01	0.00	0.00
1096	2120	1239	2.00	0.00	0.00	0.02	0.00	0.00
1099	1214	1240	0.10	0.00	0.00	0.00	0.00	0.00
1100	1244	1214	79.20	0.32	0.00	0.90	0.68	0.68
1103	1251	1244	44.78	0.13	0.00	0.51	0.24	0.24
1110	Yankis (Va	1251	92.10	0.37	0.00	1.05	0.90	0.90
1116	J-25	1513	29.70	0.00	0.00	0.19	0.03	0.03
1117	J-159	1277	7.10	0.00	0.00	0.08	0.02	0.02
1118	1277	1262	0.30	0.00	0.00	0.00	0.00	0.00
1120	657	J-25	35.80	0.02	0.00	0.15	0.01	0.01
1125	1181	1270	1.90	0.00	0.00	0.02	0.00	0.00
1127	2103	1099	38.67	0.07	0.00	0.25	0.04	0.04
1132	1277	I-AV-4	0.00	0.00	0.00	0.00	0.00	0.00
1138	693	579	123.41	3.67	0.00	1.40	4.26	4.26
1140	1284	O-AV-3	0.00	0.00	0.00	0.00	0.00	0.00
1146	1290	2119	8.97	0.32	0.00	0.23	0.24	0.24
1148	1293	1295	13.24	0.18	0.00	0.34	0.49	0.49
1150	398	2016	108.03	0.02	0.00	0.69	0.30	0.30
1152	1120	1298	0.70	0.00	0.00	0.01	0.00	0.00
1154	432	1309	7.50	0.04	0.00	0.09	0.02	0.02
1165	1310	1314	6.07	0.13	0.00	0.15	0.12	0.12
1169	2127	J-61	5.59	0.10	0.00	0.14	0.10	0.10
1171	1318	2105	17.93	0.50	0.00	0.46	0.86	0.86
1173	2105	1322	12.28	0.20	0.00	0.31	0.43	0.43
1178	40	2115	21.73	0.37	0.00	0.55	1.23	1.23
1179	2115	1328	24.84	0.93	0.00	0.63	1.58	1.58
1182	803	J-81	17.30	0.52	0.00	0.44	0.81	0.81
1185	1333	1337	1.45	0.00	0.00	0.04	0.01	0.01
1189	1338	807	56.30	0.14	0.00	0.36	0.09	0.09
1193	518	192	11.93	0.03	0.00	0.30	0.41	0.41
1195	1060	192	5.05	0.05	0.00	0.13	0.08	0.08
1198	705	1060	15.35	0.85	0.00	0.39	0.65	0.65
1205	J-80	492	10.10	0.29	0.00	0.26	0.30	0.30
1208	828	1356	7.03	0.04	0.00	0.18	0.15	0.15
1210	828	1359	0.80	0.00	0.00	0.02	0.00	0.00
1211	1364	1984	1.87	0.00	0.00	0.05	0.01	0.01
1212	1364	1991	2.07	0.01	0.00	0.05	0.02	0.02
1214	2121	1364	7.44	0.05	0.00	0.19	0.17	0.17
1215	1366	36	1.15	0.00	0.00	0.01	0.00	0.00
1217	1251	1244	40.22	0.13	0.00	0.46	0.19	0.19
1226	17	1375	4.08	0.10	0.00	0.10	0.04	0.04
1236	1387	17	18.58	0.26	0.00	0.47	0.66	0.66
1239	1392	1388	19.53	0.58	0.00	0.50	1.01	1.01
1244	33	1314	22.10	0.12	0.00	0.56	0.91	0.91
1245	937	1456	4.94	0.00	0.00	0.06	0.01	0.01
1247	384	1456	3.58	0.00	0.00	0.04	0.01	0.01
1248	1396I-Valley V		0.00	0.00	0.00	0.00	0.00	0.00
1258	1409	505	14.03	0.59	0.00	0.36	0.55	0.55
1261	1410	657	2.28	0.01	0.00	0.06	0.01	0.01
1269	1023	I-AV-2	0.00	0.00	0.00	0.00	0.00	0.00
1309	1456	881	5.32	0.00	0.00	0.06	0.00	0.00
1315	885	1056	5.22	0.02	0.00	0.13	0.06	0.06
1319	1465	2103	14.22	0.36	0.00	0.36	0.56	0.56
1322	407	509	16.17	0.58	0.00	0.41	0.71	0.71
1330	492	693	21.21	1.21	0.00	0.54	1.18	1.18
1338	1295	1483	8.64	0.21	0.00	0.22	0.22	0.22
1340	899	1484	9.14	0.47	0.00	0.23	0.25	0.25
1351	344	1497	2.60	0.01	0.00	0.07	0.01	0.01
1354	1502	1498	1.50	0.00	0.00	0.01	0.00	0.00
1358	J-133	1502	20.20	0.00	0.00	0.13	0.01	0.01
1371	1517	1519	0.90	0.01	0.00	0.09	0.03	0.03
1384	J-95	1544	41.90	0.03	0.00	0.12	0.01	0.01
1388	1544	1547	22.57	0.00	0.00	0.06	0.00	0.00
1389	1547	J-96	11.60	0.00	0.00	0.03	0.00	0.00
1396	1544	1547	2.53	0.00	0.00	0.02	0.00	0.00
1401	668	1674	62.26	0.02	0.00	0.18	0.01	0.01
1404	1674	102	22.80	0.00	0.00	0.06	0.00	0.00
1406	102	J-1	17.70	0.00	0.00	0.05	0.00	0.00
1409	92	J-164	21.98	0.00	0.00	0.06	0.00	0.00
1423	421	107	52.80	0.01	0.00	0.15	0.01	0.01
1426	34	1575	7.84	0.00	0.00	0.02	0.00	0.00
1427	1576	248	74.48	0.01	0.00	0.21	0.02	0.02
1429	248	1580	58.48	0.01	0.00	0.17	0.01	0.01
1433	26	51	113.03	0.02	0.00	0.32	0.04	0.04
1435	51	109	103.43	0.05	0.00	0.29	0.04	0.04
1440	109	6	122.42	0.02	0.00	0.35	0.05	0.05
1441	6	1647	83.79	0.04	0.00	0.24	0.03	0.03
1443	1637	1647	34.31	0.03	0.00	0.10	0.00	0.00
1454	72	1637	168.97	0.17	0.00	0.48	0.09	0.09
1455	1626	72	188.27	0.42	0.00	0.53	0.12	0.12
1458	1627	1626	517.55	0.57	0.00	1.47	0.75	0.75
1460	797	212	76.04	0.01	0.00	0.22	0.02	0.02
1464	1630	788	125.98	0.22	0.00	0.36	0.05	0.05
1477	1626	1630	310.18	0.33	0.00	0.88	0.29	0.29
1479	Yates Rese	1627	864.65	2.08	0.00	2.45	1.94	1.94
1481	1630	76	154.30	0.28	0.00	0.44	0.08	0.08
1483	76	1636	167.50	0.22	0.00	0.48	0.09	0.09
1487	1637	75	108.66	0.02	0.00	0.31	0.04	0.04
1492	75	49	95.44	0.02	0.00	0.27	0.03	0.03
1493	49	254	79.64	0.08	0.00	0.23	0.02	0.02
1494	J-35	254	73.43	0.03	0.00	0.21	0.02	0.02
1497	1647	2072	91.69	0.03	0.00	0.26	0.03	0.03
1499	247	1648	177.08	0.48	0.00	0.50	0.10	0.10
1500	343	1657	7.10	0.00	0.00	0.05	0.00	0.00
1509	1658	901	75.39	0.11	0.00	0.48	0.15	0.15
1526	1674	800	31.26	0.01	0.00	0.20	0.03	0.03
1531	800	174	25.96	0.01	0.00	0.17	0.02	0.02

2030 Fireflow - Main Zone East

1534	1679	1689	3.40	0.00	0.00	0.04	0.00	0.00
1544	1689	1690	0.40	0.00	0.00	0.00	0.00	0.00
1548	1698	2092	2.50	0.00	0.00	0.02	0.00	0.00
1552	1699	1700	2.80	0.00	0.00	0.01	0.00	0.00
1553	2136	89	4.80	0.00	0.00	0.03	0.00	0.00
1560	J-53	1710	3.60	0.00	0.00	0.02	0.00	0.00
1562	683	1711	0.80	0.00	0.00	0.01	0.00	0.00
1563	683	1712	1.70	0.00	0.00	0.01	0.00	0.00
1564	1713	1716	32.20	0.02	0.00	-0.37	0.13	0.13
1567	1716	1719	0.60	0.00	0.00	0.01	0.00	0.00
1584	1742	1737	12.42	0.55	0.00	0.32	0.44	0.44
1588	1737	1375	5.72	0.04	0.00	0.15	0.10	0.10
1593	1742	1484	15.02	0.00	0.00	0.06	0.00	0.00
1596	1484	975	5.87	0.00	0.00	0.04	0.00	0.00
1611	975	1310	5.42	0.00	0.00	0.02	0.00	0.00
1612	2122	1310	6.45	0.00	0.00	0.03	0.00	0.00
1615	2123	1089	21.90	0.01	0.00	0.14	0.02	0.02
1617	1089	1186	27.80	0.07	0.00	0.32	0.27	0.27
1618	1186	1767	25.69	0.01	0.00	0.16	0.02	0.02
1621	J-135	J-171	30.00	0.01	0.00	0.19	0.03	0.03
1626	1773	1775	23.10	0.00	0.00	0.15	0.02	0.02
1628	1775	1776	10.72	0.00	0.00	0.07	0.00	0.00
1629	1776	1782	4.52	0.00	0.00	0.03	0.00	0.00
1635	1788	1782	1.92	0.00	0.00	0.01	0.00	0.00
1641	1775	1788	10.68	0.00	0.00	-0.07	0.00	0.00
1644	1773	1791	0.90	0.00	0.00	0.01	0.00	0.00
1645	1776	1793	1.20	0.00	0.00	0.01	0.00	0.00
1647	1788	1782	2.55	0.00	0.00	0.02	0.00	0.00
1654	1800	1801	0.80	0.00	0.00	0.00	0.00	0.00
1657	18053-inch	or	0.40	0.00	0.00	0.00	0.00	0.00
1658	1806	1808	1.40	0.00	0.00	0.02	0.00	0.00
1660	1809	1806	2.90	0.00	0.00	0.02	0.00	0.00
1661	1810	1821	31.78	0.01	0.00	0.13	0.01	0.01
1663	1821	1800	21.56	0.00	0.00	0.09	0.01	0.01
1664	1813	1809	8.40	0.00	0.00	0.03	0.00	0.00
1665	1814	1818	3.10	0.22	0.00	0.32	0.31	0.31
1669	1813	1814	6.16	0.00	0.00	0.04	0.00	0.00
1672	1821	J-112	5.22	0.00	0.00	0.03	0.00	0.00
1673	1826	1823	12.86	0.02	0.00	0.15	0.05	0.05
1676	1827	1071	93.44	0.00	0.00	0.27	0.03	0.03
1677	J-128	1636	18.50	0.00	0.00	0.12	0.01	0.01
1792	844	910	7.53	0.05	0.00	0.19	0.17	0.17
1793	178	1823	15.79	0.00	0.00	0.10	0.02	0.02
1796	1063	1948	1.10	0.02	0.00	0.11	0.05	0.05
1799	1032	J-114	0.44	0.00	0.00	0.00	0.00	0.00
1810	12	1960	24.20	0.00	0.00	0.15	0.04	0.04
1811	10	12	28.10	0.05	0.00	0.19	0.05	0.05
1813	1767	J-117	3.20	0.00	0.00	0.04	0.00	0.00
1818	1737	1968	0.50	0.00	0.00	0.01	0.00	0.00
1820	1823	J-168	25.96	0.08	0.00	0.29	0.24	0.24
1821	175	384	76.02	0.11	0.00	0.31	0.05	0.05
1825	566	1973	4.01	0.02	0.00	0.10	0.05	0.05
1826	1975	1974	0.72	0.00	0.00	0.01	0.00	0.00
1828	1980	J-3	6.92	0.01	0.00	0.08	0.02	0.02
1830	19813-inch	or	0.20	0.00	0.00	0.01	0.00	0.00
1831	1767	1984	18.69	0.03	0.00	0.21	0.13	0.13
1834	1986	1985	0.20	0.00	0.00	0.01	0.00	0.00
1835	894	2125	9.51	0.00	0.00	0.06	0.00	0.00
1836	1987	568	2.22	0.01	0.00	0.06	0.02	0.02
1837	1989	1988	0.20	0.00	0.00	0.01	0.00	0.00
1839	2121	1991	27.13	0.06	0.00	0.31	0.26	0.26
1840	2123	2126	162.53	0.06	0.00	0.66	0.21	0.21
1841	994	1994	0.70	0.00	0.00	0.01	0.00	0.00
1842	1997	1996	15.41	0.06	0.00	0.17	0.09	0.09
1843	1184	J-163	14.12	0.02	0.00	0.16	0.03	0.03
1852	2007	2009	31.48	0.08	0.00	0.36	0.34	0.34
1854	2065	2010	34.99	0.19	0.00	0.40	0.41	0.41
1855	J-39	2012	59.83	0.16	0.00	0.38	0.27	0.27
1856	2013	2014	22.72	0.03	0.00	0.26	0.07	0.07
1858	J-81	2016	0.74	0.00	0.00	0.02	0.00	0.00
1860	504	2127	10.85	0.32	0.00	0.28	0.34	0.34
1864	1121	2023	0.60	0.00	0.00	0.01	0.00	0.00
1865	2127	1215	20.81	0.04	0.00	0.24	0.16	0.16
1866	2025	2028	1.30	0.02	0.00	0.13	0.06	0.06
1869	2029	2030	0.70	0.00	0.00	0.07	0.02	0.02
1870	2031	2029	6.40	0.00	0.00	0.16	0.04	0.04
1871	2029	2025	4.50	0.00	0.00	0.11	0.02	0.02
1872	2025	2032	0.90	0.00	0.00	0.02	0.00	0.00
1873	2031	2033	2.10	0.00	0.00	0.05	0.01	0.01
1877	J-124	2031	11.50	0.00	0.00	0.07	0.00	0.00
1883	J-74	2047	0.70	0.00	0.00	0.01	0.00	0.00
1887	582	2053	14.71	0.29	0.00	0.39	0.43	0.43
1892	582	2129	21.14	0.29	0.00	0.54	0.83	0.83
1893	46	590	57.99	0.57	0.00	0.66	0.75	0.75
1894	J-45	2061	1.20	0.00	0.00	0.01	0.00	0.00
1895	2063	J-44	32.48	0.06	0.00	0.21	0.06	0.06
1896	5	361	31.54	0.00	0.00	0.13	0.02	0.02
1898	14	540	10.14	0.01	0.00	0.12	0.04	0.04
1900	163-in	or sm	0.10	0.00	0.00	0.00	0.00	0.00
1901	17	18	3.80	0.00	0.00	0.04	0.00	0.00
1904	2088	24	37.40	0.00	0.00	0.42	0.17	0.17
1907	2130	36	7.99	0.01	0.00	0.09	0.03	0.03
1908	2083	38	1.27	0.00	0.00	0.01	0.00	0.00
1909	2014	J-87	58.00	0.32	0.00	0.66	1.05	1.05
1917	69	J-61	0.61	0.00	0.00	0.00	0.00	0.00
1920	295	J-30	24.20	0.00	0.00	0.07	0.00	0.00
1924	2066	86	10.40	0.00	0.00	0.03	0.00	0.00
1927	104	J-112	4.52	0.01	0.00	0.05	0.01	0.01
1930	118	710	417.42	1.19	0.00	0.87	0.47	0.47
1935	2106	247	193.58	0.05	0.00	1.24	2.42	2.42
1936	2122	325	65.00	0.00	0.00	0.18	0.02	0.02
1938	1218	375	599.94	0.95	0.00	1.25	1.29	1.29
1940	1318	396	450.72	0.23	0.00	0.94	0.76	0.76
1941	480	2138	12.50	0.00	0.00	0.05	0.00	0.00
1947	530	2093	7.48	0.02	0.00	0.08	0.02	0.02

2030 Fireflow - Main Zone East

1948	536	2078	52.96	0.06	0.00	0.34	0.22	0.22
1949	565	1084	81.31	0.29	0.00	0.52	0.48	0.48
1950	556	944	5.61	0.01	0.00	0.06	0.01	0.01
1951	543	565	88.49	0.02	0.00	0.56	0.57	0.57
1954	J-84	O-AV-5	0.00	0.00	0.00	0.00	0.00	0.00
1956	584	717	109.00	0.16	0.00	0.45	0.20	0.20
1958	590	584	155.75	0.10	0.00	0.64	0.39	0.39
1960	620	2133	17.30	0.00	0.00	0.11	0.01	0.01
1962	1410	649	53.20	0.01	0.00	0.34	0.16	0.16
1964	661	424	28.39	0.00	0.00	0.12	0.02	0.02
1965	172	665	13.86	0.00	0.00	0.04	0.00	0.00
1967	710	137	380.16	0.79	0.00	0.79	0.39	0.39
1972	791	784	10.64	0.00	0.00	0.07	0.00	0.00
1975	798	797	91.04	0.01	0.00	0.26	0.03	0.03
1977	813	J-120	16.68	0.06	0.00	0.19	0.10	0.10
1978	815	803	11.77	0.03	0.00	0.13	0.05	0.05
1979	817	1338	49.06	0.35	0.00	0.56	0.77	0.77
1982	856	2121	31.79	0.10	0.00	0.36	0.35	0.35
1983	375	860	330.81	0.11	0.00	0.69	0.43	0.43
1984	865	65	53.06	0.09	0.00	0.34	0.22	0.22
1985	14	872	10.00	0.00	0.00	0.11	0.04	0.04
1986	J-3	923	2.05	0.00	0.00	0.01	0.00	0.00
1987	1987	944	13.03	0.03	0.00	0.15	0.07	0.07
1989	945	954	4.33	0.00	0.00	0.05	0.01	0.01
1990	958	J-106	9.81	0.01	0.00	0.11	0.04	0.04
1992	994	1658	140.99	0.09	0.00	0.58	0.16	0.16
1993	2101	60	26.69	0.04	0.00	0.30	0.25	0.25
1995	1049	1003	32.10	0.02	0.00	0.20	0.03	0.03
1996	631	1049	36.90	0.02	0.00	0.24	0.08	0.08
1997	1050	975	3.35	0.00	0.00	0.04	0.00	0.00
1998	1057	518	24.38	0.03	0.00	0.16	0.05	0.05
2000	1084	552	54.98	0.10	0.00	0.35	0.23	0.23
2001	1120	1099	101.07	0.06	0.00	0.65	0.26	0.26
2002	J-79	1107	78.65	0.10	0.00	0.50	0.46	0.46
2003	1130	J-63	278.95	2.18	0.00	1.78	4.76	4.76
2005	398	1137	86.49	0.33	0.00	0.55	0.54	0.54
2010	1180	704	107.43	0.38	0.00	0.69	0.81	0.81
2011	704	1183	76.86	0.07	0.00	0.87	1.77	1.77
2014	2067	1210	683.83	0.93	0.00	1.43	1.64	1.64
2020	1223	1224	9.98	0.01	0.00	0.11	0.04	0.04
2021	1224	827	16.83	0.07	0.00	0.19	0.11	0.11
2022	1229	815	53.78	0.28	0.00	0.61	0.92	0.92
2024	1517	1235	72.76	0.35	0.00	0.46	0.39	0.39
2025	J-82	1099	42.96	0.02	0.00	0.27	0.05	0.05
2027	1284	46	205.50	1.37	0.00	1.31	1.93	1.93
2031	1392	1318	472.84	0.25	0.00	0.99	0.83	0.83
2032	J-87	1322	60.57	0.30	0.00	0.69	1.14	1.14
2033	2091	1328	97.39	0.22	0.00	0.62	0.68	0.68
2035	2110	1337	9.58	0.00	0.00	0.11	0.04	0.04
2036	813	1338	16.34	0.06	0.00	0.19	0.10	0.10
2037	1356	1089	8.60	0.00	0.00	0.10	0.03	0.03
2039	945	1366	11.15	0.02	0.00	0.13	0.05	0.05
2040	1387	979	1.70	0.00	0.00	0.02	0.00	0.00
2042	J-39	1392	497.47	0.54	0.00	1.04	0.91	0.91
2045	1409	407	231.37	0.35	0.00	0.95	1.13	1.13
2048	1465	J-120	26.08	0.01	0.00	0.30	0.24	0.24
2053	1107	1517	79.16	0.20	0.00	0.51	0.46	0.46
2058	J-8	1570	84.72	0.13	0.00	0.35	0.13	0.13
2060	1575	342	25.20	0.00	0.00	0.07	0.00	0.00
2063	1627	J-135	335.90	0.15	0.00	0.95	0.42	0.42
2067	1648	432	24.80	0.04	0.00	0.10	0.01	0.01
2068	1658	421	58.50	0.02	0.00	0.24	0.03	0.03
2070	1101	1679	15.80	0.00	0.00	0.18	0.07	0.07
2071	1698	212	7.04	0.00	0.00	0.04	0.00	0.00
2078	1800	1813	18.06	0.00	0.00	0.07	0.00	0.00
2079	1809	1805	3.00	0.00	0.00	0.01	0.00	0.00
2080	107	1810	41.16	0.00	0.00	0.12	0.01	0.01
2087	1960	700	0.10	0.00	0.00	0.00	0.00	0.00
2089	1973	J-2	12.53	0.02	0.00	0.14	0.06	0.06
2090	1366	1974	4.70	0.00	0.00	0.05	0.01	0.01
2091	36	1975	4.55	0.00	0.00	0.05	0.01	0.01
2092	1981	J-4	1.27	0.00	0.00	0.01	0.00	0.00
2093	1984	994	170.31	0.09	0.00	0.70	0.23	0.23
2095	1986	552	27.50	0.14	0.00	0.31	0.26	0.26
2096	893	1987	19.25	0.01	0.00	0.22	0.14	0.14
2097	1989	842	20.93	0.03	0.00	0.24	0.16	0.16
2102	1996	827	9.62	0.01	0.00	0.11	0.04	0.04
2104	375	2007	263.54	0.34	0.00	1.08	0.52	0.52
2105	2009	2096	10.42	0.00	0.00	0.12	0.04	0.04
2111	2016	1120	103.37	0.01	0.00	0.66	0.27	0.27
2114	1293	1107	4.00	0.00	0.00	0.05	0.01	0.01
2118	2053	J-57	4.73	0.00	0.00	0.03	0.00	0.00
2120	717	2063	145.40	0.13	0.00	0.59	0.34	0.34
2127	2067	1218	669.62	0.52	0.00	1.40	1.58	1.58
2128	2067	1180	184.49	1.28	0.00	1.18	2.21	2.21
2139	2007	2073	228.95	0.02	0.00	0.94	0.40	0.40
2141	2074	483	1.50	0.00	0.00	0.01	0.00	0.00
2145	492	2076	81.62	0.17	0.00	0.52	0.49	0.49
2146	504	2076	66.23	0.26	0.00	0.42	0.33	0.33
2148	J-64	693	109.80	0.10	0.00	0.70	0.31	0.31
2149	2078	865	52.31	0.06	0.00	0.33	0.21	0.21
2150	1991	2078	25.59	0.07	0.00	0.29	0.23	0.23
2152	2079	543	53.08	0.04	0.00	0.34	0.22	0.22
2153	2080	2081	41.39	0.05	0.00	0.47	0.20	0.20
2154	2080	958	12.00	0.03	0.00	0.14	0.06	0.06
2155	2125	J-99	32.14	0.00	0.00	0.21	0.03	0.03
2156	958	2081	10.62	0.01	0.00	0.12	0.05	0.05
2159	2084	2083	12.55	0.00	0.00	0.08	0.02	0.02
2160	2083	916	2.78	0.00	0.00	0.03	0.00	0.00
2161	565	2084	3.98	0.00	0.00	0.03	0.00	0.00
2162	2084	916	4.42	0.01	0.00	0.05	0.01	0.01
2165	2086	578	1.90	0.00	0.00	0.01	0.00	0.00
2166	2086	2132	133.21	0.51	0.00	0.85	0.86	0.86
2169	2088	620	30.50	0.07	0.00	0.19	0.03	0.03
2170	1214	2088	76.90	0.10	0.00	0.87	0.64	0.64

2030 Fireflow - Main Zone East

2173	2090	1410	57.68	0.00	0.00	0.37	0.18	0.18
2174	2090	657	42.92	0.01	0.00	0.18	0.02	0.02
2175	1137	2091	122.92	0.49	0.00	0.78	1.04	1.04
2176	2091	505	89.87	0.18	0.00	0.57	0.58	0.58
2179	2093	817	68.45	0.44	0.00	0.78	1.43	1.43
2180	2093	1229	34.25	0.30	0.00	0.39	0.40	0.40
2181	2095	2094	19.74	0.09	0.00	0.22	0.14	0.14
2183	1223	2095	24.80	0.06	0.00	0.28	0.22	0.22
2184	1183	2095	51.60	0.28	0.00	0.59	0.85	0.85
2187	2097	856	22.45	0.08	0.00	0.26	0.18	0.18
2188	2073	2097	8.57	0.01	0.00	0.10	0.03	0.03
2189	885	2098	3.32	0.00	0.00	0.04	0.01	0.01
2190	2098	2100	11.67	0.01	0.00	0.13	0.05	0.05
2192	954	2130	11.57	0.01	0.00	0.13	0.05	0.05
2193	2100	1050	14.75	0.02	0.00	0.17	0.06	0.06
2194	1056	2100	3.02	0.00	0.00	0.03	0.00	0.00
2195	807	2101	87.55	0.14	0.00	0.56	0.20	0.20
2196	2101	J-82	52.76	0.12	0.00	0.34	0.08	0.08
2198	1290	1293	21.14	0.06	0.00	0.24	0.16	0.16
2199	60	2103	24.89	0.03	0.00	0.28	0.22	0.22
2202	2104	2021	0.80	0.00	0.00	0.02	0.00	0.00
2203	1388	2105	41.28	0.17	0.00	0.47	0.56	0.56
2206	1328	2106	118.63	0.15	0.00	0.76	0.98	0.98
2207	510	2107	43.14	0.19	0.00	0.49	0.61	0.61
2212	2109	2010	24.62	0.06	0.00	0.28	0.22	0.22
2214	2110	1356	4.08	0.00	0.00	0.05	0.01	0.01
2216	2111	1333	14.89	0.00	0.00	0.17	0.08	0.08
2217	1183	2112	23.06	0.06	0.00	0.26	0.19	0.19
2221	2113	803	56.24	0.63	0.00	0.64	0.99	0.99
2223	J-87	2115	22.04	0.06	0.00	0.25	0.18	0.18
2228	1210	2117	612.67	0.43	0.00	1.28	1.34	1.34
2231	2119	1483	32.54	0.14	0.00	0.37	0.36	0.36
2234	J-77	2120	6.40	0.00	0.00	0.07	0.01	0.01
2236	2126	2121	6.28	0.00	0.00	0.07	0.02	0.02
2240	2073	2123	188.73	0.12	0.00	0.77	0.28	0.28
2243	2125	961	13.14	0.00	0.00	0.08	0.01	0.01
2244	2081	2125	37.07	0.01	0.00	0.24	0.04	0.04
2246	2126	1984	153.55	0.05	0.00	0.63	0.19	0.19
2249	J-77	2050	0.20	0.00	0.00	0.00	0.00	0.00
2252	2053	2129	5.48	0.00	0.00	0.03	0.00	0.00
2253	961	2130	11.44	0.02	0.00	0.13	0.05	0.05
2254	2130	1973	11.42	0.00	0.00	0.13	0.05	0.05
2257	2132	214	133.93	0.01	0.00	0.85	0.87	0.87
2259	2133	599	10.30	0.00	0.00	0.07	0.00	0.00
2260	2133	47	2.80	0.00	0.00	0.02	0.00	0.00
2269	2138	481	0.20	0.00	0.00	0.00	0.00	0.00
F-1	J-1	97	13.10	0.00	0.00	0.04	0.00	0.00
F-100	J-112	1814	3.44	0.00	0.00	0.04	0.01	0.01
F-101	2079	J-113	1.34	0.00	0.00	0.02	0.00	0.00
F-102	1023	J-114	13.16	0.00	0.00	0.08	0.01	0.01
F-103	649	J-125	51.10	0.03	0.00	0.33	0.07	0.07
F-104	1103I-Fairview		18.30	0.00	0.00	0.21	0.09	0.09
F-105	J-116	J-115	14.80	0.04	0.00	0.17	0.08	0.08
F-106	2097	J-116	17.10	0.03	0.00	0.19	0.11	0.11
F-108	J-117	56	1.10	0.00	0.00	0.01	0.00	0.00
F-11	J-3	1975	0.77	0.00	0.00	0.01	0.00	0.00
F-111	J-120	807	39.86	0.14	0.00	0.45	0.53	0.53
F-113	2117	J-39	562.30	0.33	0.00	1.17	1.14	1.14
F-116	97	J-122	10.20	0.00	0.00	0.03	0.00	0.00
F-117	J-140	J-145	394.16	0.02	0.00	1.12	0.45	0.45
F-119	J-139	J-84	393.06	0.26	0.00	2.51	3.24	3.24
F-121	J-138	J-140	118.11	0.00	0.00	0.34	0.05	0.05
F-122	Main Reser	J-126	2003.06	0.14	0.00	2.53	1.27	1.27
F-124	O-AV-1	2083	0.00	0.00	0.00	0.00	0.00	0.00
F-125	O-AV-2	906	0.00	0.00	0.00	0.00	0.00	0.00
F-127	J-127	295	80.60	0.06	0.00	0.23	0.02	0.02
F-128	J-127	J-128	38.40	0.03	0.00	0.11	0.01	0.01
F-130	J-128	1831	2.10	0.00	0.00	0.01	0.00	0.00
F-131	1071	J-129	132.39	0.03	0.00	0.38	0.06	0.06
F-132	J-129	668	118.89	0.07	0.00	0.34	0.05	0.05
F-133	1513	J-133	21.30	0.00	0.00	0.14	0.01	0.01
F-134	J-122	J-132	7.00	0.00	0.00	0.02	0.00	0.00
F-135	1502	J-124	14.80	0.00	0.00	0.09	0.01	0.01
F-136	J-124	J-131	0.70	0.00	0.00	0.00	0.00	0.00
F-138-CV	Kennicott	J-53	43.49	0.00	0.00	0.07	0.00	0.00
F-140	O-AV-4	686	0.00	0.00	0.00	0.00	0.00	0.00
F-143	I-AV-5	J-63	0.00	0.00	0.00	0.00	0.00	0.00
F-144	O-AV-6	1134	0.00	0.00	0.00	0.00	0.00	0.00
F-146	J-73	J-134	1.30	0.00	0.00	0.01	0.00	0.00
F-147	J-64	J-141	0.50	0.00	0.00	0.00	0.00	0.00
F-148	J-134	O-RV-2	0.00	0.00	0.00	0.00	0.00	0.00
F-149	J-143	O-RV-1	0.00	0.00	0.00	0.00	0.00	0.00
F-15	J-126	J-91	1998.96	0.22	0.00	2.52	1.27	1.27
F-150-XXCV	J-141	J-134						
F-151	J-142	J-139	393.66	0.26	0.00	2.51	3.25	3.25
F-152	1570	J-144	2.30	0.00	0.00	0.01	0.00	0.00
F-153-XXCV	J-143	J-144						
F-154	I-RV-1	J-144	0.00	0.00	0.00	0.00	0.00	0.00
F-157	I-RV-2	J-141	0.00	0.00	0.00	0.00	0.00	0.00
F-1570	1716	1103	24.40	0.03	0.00	0.16	0.02	0.02
F-158	J-145I-18th St		1200.00	0.01	0.00	3.40	3.55	3.55
F-159	J-146	J-145	806.04	0.00	0.00	2.29	1.70	1.70
F-160-XXCV	J-146	J-147						
F-161	O-18th St	J-146	806.04	0.01	0.00	2.29	1.70	1.70
F-162	J-142	J-147	806.04	0.00	0.00	2.29	1.70	1.70
F-164	J-147I-18th St		806.04	0.01	0.00	2.29	1.70	1.70
F-165	J-156	J-155	40.60	0.13	0.00	0.46	0.17	0.17
F-166	66	J-110	48.48	0.24	0.00	0.55	0.76	0.76
F-167	J-156	J-153	186.60	0.67	0.00	0.53	0.14	0.14
F-168	J-152	J-150	6.81	0.00	0.00	0.04	0.00	0.00
F-169	J-88	J-154	274.20	0.14	0.00	0.78	0.29	0.29
F-170	J-155	J-151	16.70	0.16	0.00	0.19	0.03	0.03
F-171	J-155	J-157	2.30	0.12	0.00	0.23	0.18	0.18
F-172	J-154	J-156	251.60	0.38	0.00	0.71	0.25	0.25
F-173	J-6	J-148	9.20	7.05	0.00	0.94	2.65	2.65

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P-174	J-153	J-149	4.50	0.00	0.00	0.03	0.00	0.00
P-175	J-152	J-150	0.49	0.00	0.00	0.00	0.00	0.00
P-176	2076	J-64	115.40	0.94	0.00	0.74	0.93	0.93
P-177	J-160	1057	13.63	0.02	0.00	0.09	0.02	0.02
P-178	1513	J-159	7.60	0.00	0.00	0.09	0.02	0.02
P-179	J-162	J-160	19.93	0.01	0.00	0.13	0.01	0.01
P-18	J-135I-South En		303.60	0.02	0.00	0.86	0.28	0.28
P-180	J-162	J-95	63.30	0.02	0.00	0.18	0.02	0.02
P-181	1818	J-161	0.30	0.00	0.00	0.03	0.00	0.00
P-182	J-163	2003	0.20	0.00	0.00	0.00	0.00	0.00
P-183	J-164	J-143	12.70	0.00	0.00	0.04	0.00	0.00
P-184	J-163	J-177	9.02	0.00	0.00	0.06	0.00	0.00
P-188	31	J-158	32.92	0.01	0.00	0.09	0.00	0.00
P-19	34	33	22.50	0.01	0.00	0.57	0.94	0.94
P-190	J-167	2074	4.00	0.00	0.00	0.02	0.00	0.00
P-194	1580	76	51.88	0.01	0.00	0.15	0.01	0.01
P-195	J-170	J-176	1.30	0.00	0.00	0.00	0.00	0.00
P-196	J-168	J-21	11.54	0.01	0.00	0.13	0.05	0.05
P-197	J-168	1980	10.72	0.00	0.00	0.07	0.00	0.00
P-198	O-South En	J-88	303.60	1.07	0.00	0.86	0.35	0.35
P-199	J-171	1773	27.50	0.01	0.00	0.18	0.02	0.02
P-2	J-1	101	0.30	0.00	0.00	0.00	0.00	0.00
P-20	213	1576	76.08	0.00	0.00	0.22	0.02	0.02
P-200	J-91	J-169	447.72	0.02	0.00	0.56	0.08	0.08
P-201	J-153	J-173	88.60	5.43	0.00	0.57	0.26	0.26
P-203	J-177	J-164	6.22	0.00	0.00	0.04	0.00	0.00
P-25	J-30	2066	14.70	0.00	0.00	0.04	0.00	0.00
P-29	2063	J-8	105.22	0.18	0.00	0.43	0.19	0.19
P-3	O-Centrali	J-6	13.90	0.84	0.00	0.16	0.03	0.03
P-30	J-42	J-35	83.63	0.03	0.00	0.24	0.03	0.03
P-31	J-8	54	12.50	0.00	0.00	0.09	0.01	0.01
P-33	2072	J-42	79.49	0.00	0.00	0.23	0.02	0.02
P-34	1699	J-42	11.64	0.00	0.00	0.03	0.00	0.00
P-36	1322	2091	69.24	0.47	0.00	0.79	1.46	1.46
P-4	1570	J-7	72.42	0.11	0.00	0.30	0.09	0.09
P-40	J-44	10	40.50	0.09	0.00	0.26	0.10	0.10
P-42	J-45	J-44	15.52	0.01	0.00	0.10	0.02	0.02
P-43	J-132	J-170	3.40	0.00	0.00	0.01	0.00	0.00
P-44	J-55	28	2.80	0.00	0.00	0.02	0.00	0.00
P-47	J-57	2132	2.83	0.00	0.00	0.02	0.00	0.00
P-48	41	J-90	0.10	0.00	0.00	0.00	0.00	0.00
P-49	J-57	2051	0.10	0.00	0.00	0.00	0.00	0.00
P-50	J-57	2052	0.10	0.00	0.00	0.00	0.00	0.00
P-51	O-18th St	J-142	1200.00	0.03	0.00	7.66	25.61	25.61
P-53	1974	J-4	0.62	0.00	0.00	0.01	0.00	0.00
P-54	923	J-4	1.21	0.00	0.00	0.01	0.00	0.00
P-57	1217	I-AV-6	0.00	0.00	0.00	0.00	0.00	0.00
P-58	69	1217	5.00	0.00	0.00	0.03	0.00	0.00
P-6	J-88	J-11	3.40	0.00	0.00	0.02	0.00	0.00
P-61	J-58	68	16.91	0.01	0.00	0.19	0.05	0.05
P-62	J-61	J-136	1.00	0.00	0.00	0.01	0.00	0.00
P-63	J-158	J-127	22.42	0.00	0.00	0.06	0.00	0.00
P-64	54	J-27	8.30	0.00	0.00	0.05	0.01	0.01
P-65	597	J-67	174.86	0.60	0.00	1.12	1.43	1.43
P-67	J-67	J-71	172.26	0.24	0.00	1.10	0.70	0.70
P-69	J-71	J-73	169.46	0.85	0.00	1.08	1.89	1.89
P-7	J-154	J-152	15.10	0.00	0.00	0.10	0.01	0.01
P-71	J-63	J-123	277.25	0.04	0.00	1.77	1.70	1.70
P-73	1679	J-74	9.30	0.00	0.00	0.11	0.03	0.03
P-74	J-74	J-77	7.40	0.00	0.00	0.08	0.02	0.02
P-75	I-AV-3	2120	0.00	0.00	0.00	0.00	0.00	0.00
P-76	J-78	408	163.51	0.32	0.00	1.04	1.26	1.26
P-77	J-79	1130	287.45	3.72	0.00	1.83	5.03	5.03
P-78	J-80	504	84.37	0.20	0.00	0.54	0.52	0.52
P-79	J-82	1396	1.80	0.00	0.00	0.02	0.00	0.00
P-80	1388	J-87	29.80	0.07	0.00	0.34	0.11	0.11
P-81	92	J-62	1.40	0.00	0.00	0.01	0.00	0.00
P-82	J-84	597	390.16	4.00	0.00	2.49	6.32	6.32
P-83	J-123	J-140	276.75	0.02	0.00	0.79	0.23	0.23
P-84	J-93	1971	0.10	0.00	0.00	0.00	0.00	0.00
P-86	I-High Lev	J-126	0.00	0.00	0.00	0.00	0.00	0.00
P-87	J-94	526	43.31	0.15	0.00	0.28	0.15	0.15
P-88	J-93	J-94	38.76	0.00	0.00	0.44	0.36	0.36
P-89	J-96inter-tie		3.50	0.00	0.00	0.01	0.00	0.00
P-9	J-2	2098	11.12	0.02	0.00	0.13	0.05	0.05
P-90	174	J-105	23.46	0.00	0.00	0.07	0.00	0.00
P-91	J-20	1981	2.77	0.00	0.00	0.03	0.00	0.00
P-92	J-21	J-20	8.74	0.00	0.00	0.10	0.03	0.03
P-93	J-99	568	0.38	0.00	0.00	0.00	0.00	0.00
P-94	J-99	556	24.45	0.01	0.00	0.16	0.02	0.02
P-95	J-99	566	5.81	0.00	0.00	0.04	0.00	0.00
P-96	J-100	2080	77.97	0.03	0.00	0.50	0.16	0.16
P-97	J-106	894	10.71	0.02	0.00	0.12	0.05	0.05
P-98	J-173I-Centrali		13.90	0.00	0.00	0.09	0.01	0.01
P-99	944	J-111	14.34	0.03	0.00	0.16	0.08	0.08
Valley Vie	O-Valley VYankis (Va		0.00	0.00	0.00	0.00	0.00	0.00
~@18th St -RV	I-18th St O-18th St							
~@AV-1-XX	I-AV-1 O-AV-1							
~@AV-2-XX	I-AV-2 O-AV-2							
~@AV-3-XX	I-AV-3 O-AV-3							
~@AV-4-XX	I-AV-4 O-AV-4							
~@AV-5-XX	I-AV-5 O-AV-5							
~@AV-6-XX	I-AV-6 O-AV-6							
~@High Lev-RV	I-High LevO-High Lev							
~@Valley V-RV	I-Valley VO-Valley V							

NODE RESULTS

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
5		0.30	397.87	243.40	154.47	66.94

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6	6.80	397.87	244.40	153.47	66.51
9	2.80	397.95	205.80	192.15	83.27
10	9.60	397.95	213.70	184.25	79.84
11	0.10	397.90	236.90	161.00	69.77
12	3.80	397.90	236.50	161.40	69.94
13	0.10	397.80	198.90	198.90	86.19
14	2.20	397.81	201.40	196.41	85.11
15	3.10	397.65	186.10	211.55	91.67
16	1.60	397.65	186.10	211.55	91.67
17	10.70	396.62	175.70	220.92	95.73
18	2.30	396.62	171.90	224.72	97.38
19	1.50	396.58	165.30	231.28	100.22
22	3.50	397.83	186.50	211.33	91.58
23	7.90	397.81	187.70	210.11	91.05
24	2.00	634.97	604.50	30.47	13.21
26	9.10	397.97	240.30	157.67	68.32
28	2.10	397.97	322.60	75.37	32.66
29	0.70	397.97	319.00	78.97	34.22
31	6.50	397.66	216.80	180.86	78.37
32	5.90	397.66	214.70	182.96	79.28
33	0.40	397.09	183.00	214.09	92.77
34	3.70	397.10	183.50	213.60	92.56
36	4.60	397.18	194.40	202.78	87.87
37	0.60	397.72	319.00	78.72	34.11
38	3.80	397.72	290.50	107.22	46.46
40	5.30	397.42	190.80	206.62	89.54
41	0.30	397.80	219.10	178.70	77.44
43	0.10	397.87	253.50	144.37	62.56
46	6.80	399.06	229.90	169.16	73.30
47	2.20	634.90	544.40	90.50	39.22
48	0.60	634.90	543.60	91.30	39.56
49	14.70	397.81	243.00	154.81	67.09
50	1.10	397.81	244.20	153.61	66.57
51	7.20	397.95	240.00	157.95	68.45
52	1.60	397.95	261.50	136.45	59.13
54	3.60	397.91	209.30	188.61	81.73
56	1.10	397.96	193.00	204.96	88.82
59	0.40	397.16	252.50	144.66	62.69
60	1.40	397.16	252.90	144.26	62.51
65	7.10	397.71	192.40	205.31	88.97
66	2.30	397.58	191.30	206.28	89.39
68	4.60	394.35	205.20	189.15	81.96
69	3.20	394.35	208.70	185.65	80.45
70	0.80	397.95	285.20	112.75	48.86
72	19.00	398.03	255.00	143.03	61.98
75	15.60	397.84	247.70	150.14	65.06
76	36.30	397.84	256.00	141.84	61.46
83	0.10	397.59	221.90	175.69	76.13
85	0.10	397.59	222.10	175.49	76.04
86	5.70	397.59	222.40	175.19	75.91
89	4.80	397.65	225.60	172.05	74.55
92	6.40	395.21	192.40	202.81	87.89
97	2.60	397.17	173.90	223.27	96.75
98	0.30	397.17	174.00	223.17	96.71
101	0.30	397.17	174.30	222.87	96.58
102	4.90	397.18	176.00	221.18	95.84
103	0.20	397.18	175.70	221.48	95.97
104	5.00	397.72	179.70	218.02	94.47
107	5.00	397.72	183.60	214.12	92.79
108	2.10	397.72	183.60	214.12	92.79
109	9.20	397.90	236.20	161.70	70.07
118	19.00	399.65	192.50	207.15	89.76
119	4.10	398.29	217.70	180.59	78.26
121	2.70	398.40	230.70	167.70	72.67
137	9.80	397.67	180.00	217.67	94.33
166	7.30	397.13	182.90	214.23	92.83
172	4.60	397.15	174.10	223.05	96.66
174	2.50	397.15	175.70	221.45	95.96
175	8.20	397.26	183.60	213.66	92.59
178	2.60	397.27	183.60	213.67	92.59
192	8.80	397.55	183.60	213.95	92.71
201	4.20	397.59	178.30	219.29	95.03
212	4.40	397.88	256.30	141.58	61.35
213	2.50	397.87	253.50	144.37	62.56
214	5.70	398.07	230.10	167.97	72.78
224	4.30	397.80	224.20	173.60	75.23
247	16.40	395.92	192.10	203.82	88.32
248	9.70	397.86	248.60	149.26	64.68
253	6.30	397.86	240.90	156.96	68.01
254	22.40	397.74	230.80	166.94	72.34
295	25.70	397.59	210.10	187.49	81.25
325	5.70	397.11	183.90	213.21	92.39
342	3.90	397.10	165.40	231.70	100.40
343	7.50	397.10	163.20	233.90	101.36
344	3.40	397.10	164.20	232.90	100.92
346	0.70	397.10	165.60	231.50	100.32
356	10.40	397.80	219.10	178.70	77.44
361	12.50	397.87	243.10	154.77	67.07
375	5.60	398.52	230.50	168.02	72.81
384	11.90	397.15	183.20	213.95	92.71
385	1.30	397.15	183.60	213.55	92.54
396	1.30	397.28	221.20	176.08	76.30
398	3.50	397.15	220.50	176.65	76.55
407	6.10	396.40	226.99	169.41	73.41
408	3.20	395.79	223.30	172.49	74.75
421	5.70	397.73	184.20	213.53	92.53
424	1.40	395.39	189.90	205.49	89.04
432	17.30	395.40	184.10	211.30	91.56
468	20.90	397.56	204.20	193.36	83.79
473	1.90	397.15	178.30	218.85	94.84
474	2.30	397.65	210.70	186.95	81.01
480	8.00	397.65	219.70	177.95	77.11
481	0.20	397.65	220.90	176.75	76.59
483	1.50	397.80	214.00	183.80	79.65
492	9.50	394.67	195.50	199.17	86.31

2030 Fireflow - Main Zone East

504	7.30	394.76	192.80	201.96	87.52
505	6.50	396.16	197.20	198.96	86.21
509	10.70	395.82	200.00	195.82	84.85
510	5.90	397.23	189.60	207.63	89.97
512	7.50	397.23	184.80	212.43	92.05
513	0.80	397.63	178.80	218.83	94.83
518	3.40	397.58	182.20	215.38	93.33
526	14.30	397.43	201.80	195.63	84.77
530	3.70	398.28	220.30	177.98	77.12
536	4.80	397.92	201.90	196.02	84.94
540	1.00	397.79	202.30	195.49	84.71
543	2.40	397.75	210.90	186.85	80.97
544	1.90	397.80	216.10	181.70	78.74
552	3.60	397.34	191.50	205.84	89.20
556	4.40	397.20	206.10	191.10	82.81
565	3.20	397.73	210.80	186.93	81.00
566	1.80	397.21	204.60	192.61	83.46
568	2.60	397.21	206.30	190.91	82.73
569	7.90	397.14	178.30	218.84	94.83
573	1.60	397.14	178.00	218.14	94.53
578	1.90	398.58	280.80	117.78	51.04
579	4.10	389.79	205.50	184.29	79.86
582	5.40	398.36	212.80	185.56	80.41
584	5.50	398.39	207.60	190.79	82.67
590	6.30	398.49	208.60	189.89	82.29
597	4.20	400.79	222.20	178.59	77.39
599	6.20	634.90	592.40	42.50	18.42
601	1.60	634.90	577.30	57.60	24.96
619	2.50	634.90	559.00	75.90	32.89
620	11.10	634.90	593.00	51.90	22.49
623	2.10	634.90	588.00	46.90	20.33
628	2.70	604.79	420.40	184.39	79.90
631	3.50	604.77	382.80	221.97	96.19
632	1.00	604.75	455.20	149.55	64.81
642	2.00	604.77	304.60	300.17	130.07
649	2.10	604.87	392.70	212.17	91.94
657	9.40	604.88	331.20	273.68	118.59
661	6.20	395.39	190.90	204.49	88.61
665	8.70	397.15	174.40	222.75	96.53
668	13.60	397.19	182.30	214.89	93.12
675	1.70	397.19	180.60	216.59	93.86
676	3.10	397.91	206.70	191.21	82.86
682	0.60	397.91	209.20	188.71	81.77
683	4.20	397.61	200.30	197.31	85.50
686	1.10	396.11	278.90	117.21	50.79
693	7.60	393.46	197.40	196.06	84.96
700	0.10	397.90	237.50	160.40	69.51
704	2.60	398.32	190.10	208.22	90.23
705	5.40	398.45	185.50	212.95	92.28
710	16.50	398.46	197.50	200.96	87.08
717	7.30	398.23	204.90	193.33	83.78
718	0.10	395.92	191.20	204.72	88.71
726	1.70	395.24	190.00	205.24	88.94
780	9.80	397.55	195.00	202.55	87.77
781	0.10	397.88	252.20	145.68	63.13
784	6.20	397.89	259.80	138.09	59.84
788	18.30	397.90	258.50	139.40	60.41
791	5.60	397.89	256.00	141.89	61.49
792	0.40	397.89	254.90	142.99	61.96
797	4.70	397.89	255.30	142.59	61.79
800	4.30	397.16	177.30	219.86	95.27
802	1.00	397.16	178.00	219.16	94.97
803	7.20	397.65	217.90	179.75	77.89
807	8.60	397.34	272.60	124.74	54.05
808	5.40	398.00	215.50	182.50	78.08
813	5.10	397.54	244.90	152.64	66.14
815	3.90	397.68	219.20	178.48	77.34
817	5.00	397.82	275.20	122.62	53.14
827	7.10	397.96	186.80	211.16	91.50
828	3.20	398.08	192.50	205.58	89.08
831	2.30	397.84	216.90	180.94	78.41
842	3.90	397.77	234.00	163.77	70.97
844	5.30	397.77	260.00	137.77	59.70
856	3.30	398.08	194.40	203.68	88.26
860	3.00	398.41	230.20	168.21	72.89
865	3.10	397.79	195.90	201.89	87.49
868	3.20	397.79	197.00	200.79	87.01
872	1.20	397.80	199.50	198.30	85.93
881	3.00	397.15	199.80	197.35	85.52
885	3.40	397.15	204.20	192.95	83.61
893	3.00	397.23	198.10	199.13	86.29
894	1.20	397.21	206.30	190.91	82.73
899	7.30	397.58	192.10	205.48	89.04
901	7.10	397.64	189.00	208.64	90.41
906	2.50	397.72	292.50	105.22	45.60
910	1.90	397.73	294.90	102.83	44.56
916	6.00	397.72	222.40	175.32	75.97
922	1.20	397.72	238.30	159.42	69.08
923	4.10	397.18	182.20	214.98	93.16
929	0.90	397.18	181.60	215.58	93.42
937	3.90	397.15	183.80	213.35	92.45
944	4.30	397.20	196.50	200.70	86.97
945	4.10	397.20	192.00	205.20	88.92
954	3.30	397.20	193.70	203.50	88.18
958	7.50	397.24	201.60	195.64	84.78
961	1.70	397.21	205.40	191.81	83.12
962	4.50	397.14	179.30	217.84	94.40
964	0.30	397.14	179.40	217.74	94.35
975	7.80	397.11	184.50	212.61	92.13
979	1.70	396.88	173.70	223.18	96.71
994	6.30	397.84	192.30	205.54	89.07
1003	6.10	604.73	435.80	168.93	73.20
1023	7.40	604.73	389.60	215.13	93.22
1024	3.50	604.82	408.40	196.42	85.12
1032	5.00	604.73	455.00	149.73	64.88

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1049	3.80	604.75	421.50	183.25	79.41
1050	7.00	397.11	188.20	208.91	90.53
1053	4.40	397.10	183.20	213.90	92.69
1056	2.20	397.14	192.00	205.14	88.89
1057	6.60	397.62	179.20	218.42	94.65
1060	7.30	397.60	196.50	201.10	87.14
1063	1.90	397.60	238.10	159.50	69.12
1064	3.30	397.26	181.30	215.96	93.58
1071	3.20	397.30	190.50	206.80	89.61
1084	13.20	397.44	198.50	198.94	86.21
1085	4.90	398.03	197.60	200.43	86.85
1089	2.70	398.04	190.70	207.34	89.85
1099	11.70	397.06	233.90	163.16	70.70
1100	0.80	466.49	339.70	126.79	54.94
1101	1.70	466.49	323.20	143.29	62.09
1103	6.10	634.89	346.40	288.49	125.01
1104	0.50	466.48	285.50	180.98	78.43
1107	3.50	395.53	211.40	184.13	79.79
1120	1.60	397.13	222.90	174.23	75.50
1121	2.50	394.34	205.30	189.04	81.92
1122	0.90	394.34	204.40	189.94	82.31
1125	2.20	391.91	205.00	186.91	80.99
1130	6.30	391.91	225.00	166.91	72.33
1134	7.90	398.28	202.90	195.38	84.67
1137	4.80	396.83	202.10	194.73	84.38
1156	6.90	397.70	184.90	212.80	92.21
1180	4.50	398.71	195.40	203.31	88.10
1181	3.80	397.82	186.00	211.82	91.79
1183	2.20	398.25	190.20	208.05	90.16
1184	6.50	395.24	189.70	205.54	89.07
1186	3.70	397.97	191.30	206.67	89.56
1210	5.10	399.06	215.60	183.46	79.50
1211	0.30	634.94	564.40	70.54	30.57
1214	2.20	635.08	607.60	27.48	11.91
1215	2.00	394.40	200.80	193.60	83.89
1217	4.50	394.35	207.80	186.54	80.84
1218	7.20	399.47	217.60	181.87	78.81
1223	3.00	398.04	187.20	210.84	91.37
1224	4.30	398.03	187.60	210.43	91.19
1229	4.30	397.96	224.40	173.56	75.21
1232	7.60	397.80	183.90	213.90	92.69
1235	5.80	394.98	197.20	197.78	85.70
1239	2.00	466.48	265.90	200.58	86.92
1240	0.10	635.08	608.90	26.18	11.34
1244	5.80	635.40	591.00	44.40	19.24
1251	7.10	635.53	622.30	13.23	5.73
1262	0.30	604.85	349.90	254.95	110.48
1270	1.90	397.82	184.30	213.52	92.53
1277	6.80	604.85	340.00	264.85	114.77
1284	5.60	400.43	224.00	176.43	76.45
1290	7.50	395.59	207.20	188.39	81.64
1293	3.90	395.53	206.60	188.93	81.87
1295	4.60	395.35	200.40	194.95	84.48
1298	0.70	397.13	224.20	172.93	74.94
1309	7.50	395.36	185.00	210.36	91.16
1310	5.80	397.11	184.40	212.71	92.17
1314	4.60	396.98	183.00	213.98	92.72
1318	4.20	397.51	221.20	176.31	76.40
1322	3.60	396.81	194.60	202.21	87.62
1328	3.60	396.12	192.30	203.82	88.32
1333	3.40	398.04	191.30	206.74	89.59
1337	3.90	398.04	192.80	205.24	88.94
1338	9.10	397.47	257.70	139.77	60.57
1356	2.50	398.04	190.80	207.24	89.80
1359	0.80	398.08	193.30	204.78	88.74
1364	3.50	397.93	193.90	204.03	88.41
1366	5.30	397.18	190.60	206.58	89.52
1375	9.80	396.52	168.30	228.22	98.90
1387	3.30	396.88	182.40	214.48	92.94
1388	6.10	397.18	200.40	196.78	85.27
1392	5.10	397.76	220.30	177.46	76.90
1396	1.80	397.08	308.10	88.98	38.56
1409	5.90	396.75	222.20	174.55	75.64
1410	2.20	604.88	392.50	212.38	92.03
1456	3.20	397.15	183.20	213.95	92.71
1465	3.20	397.49	235.70	161.79	70.11
1483	5.90	395.14	193.40	201.74	87.42
1484	14.30	397.11	183.60	213.51	92.52
1497	2.60	397.09	167.20	229.89	99.62
1498	1.50	604.85	396.40	208.45	90.33
1502	3.90	604.85	385.30	219.55	95.14
1513	0.80	604.85	339.40	265.45	115.03
1517	5.50	395.33	205.40	189.93	82.30
1519	0.90	395.32	211.30	184.02	79.74
1524	1.20	634.97	615.60	19.37	8.40
1544	16.80	397.58	194.80	202.78	87.87
1547	13.50	397.58	208.00	189.58	82.15
1570	10.00	397.78	195.50	202.28	87.65
1575	7.90	397.10	171.60	225.50	97.72
1576	1.60	397.87	253.70	144.17	62.47
1580	6.60	397.85	245.80	152.05	65.89
1626	19.10	398.45	272.90	125.55	54.40
1627	11.20	399.02	289.00	110.02	47.67
1630	29.90	398.12	266.70	131.42	56.95
1636	186.00	397.62	245.70	151.92	65.83
1637	26.00	397.86	249.10	148.76	64.46
1647	26.40	397.84	236.20	161.64	70.04
1648	26.70	395.43	187.30	208.13	90.19
1657	7.10	397.10	176.60	220.50	95.55
1658	7.10	397.75	185.90	211.85	91.80
1674	8.20	397.18	178.00	219.18	94.98
1679	3.10	466.49	317.70	148.79	64.47
1689	3.00	466.48	323.60	142.88	61.92
1690	0.40	466.48	319.70	146.78	63.61
1698	5.20	397.88	256.80	141.08	61.14

6" and 2"

2030 Fireflow - Main Zone East

1699	5.90	397.80	218.90	178.90	77.53
1700	2.80	397.80	216.20	181.60	78.70
1710	3.60	397.90	303.90	94.00	40.73
1711	0.80	397.61	209.80	187.81	81.39
1712	1.70	397.61	268.50	129.11	55.95
1713	1.70	634.94	571.10	63.84	27.67
1716	7.20	634.92	533.50	101.42	43.95
1719	0.60	634.92	516.50	118.42	51.32
1737	6.20	396.56	166.60	229.96	99.65
1742	9.90	397.11	183.60	213.51	92.52
1767	3.80	397.96	193.40	204.56	88.64
1773	3.50	398.85	272.20	126.65	54.88
1775	1.70	398.85	270.10	128.75	55.79
1776	5.00	398.85	269.20	129.65	56.18
1782	9.00	398.85	269.10	129.75	56.22
1788	6.20	398.85	269.00	129.85	56.27
1791	0.90	398.85	273.40	125.45	54.36
1793	1.20	398.85	270.60	128.25	55.57
1799	3.10	399.64	201.40	198.24	85.91
1800	2.70	397.71	166.10	231.61	100.36
1801	0.80	397.71	173.70	224.01	97.07
1805	2.60	397.71	179.70	218.01	94.47
1806	1.50	397.71	173.10	224.61	97.33
1808	1.40	397.71	179.80	217.91	94.43
1809	2.50	397.71	172.30	225.41	97.68
1810	4.40	397.72	179.50	218.22	94.56
1813	3.50	397.71	171.10	226.61	98.20
1814	6.50	397.71	167.10	230.61	99.93
1818	2.80	397.49	178.50	218.99	94.89
1821	5.00	397.71	169.80	227.91	98.76
1823	2.70	397.27	182.50	214.77	93.07
1826	3.80	397.29	183.30	213.99	92.73
1827	6.90	397.30	192.90	204.40	88.57
1831	2.10	397.62	234.10	163.52	70.86
1948	1.10	397.59	234.90	162.69	70.50
1960	4.60	397.90	237.60	160.30	69.46
1961	3.30	398.25	190.10	208.15	90.20
1968	0.50	396.56	164.90	231.66	100.39
1971	0.10	397.58	185.30	212.28	91.99
1973	2.90	397.19	198.40	198.79	86.14
1974	4.80	397.18	187.50	209.68	90.86
1975	4.60	397.18	186.60	210.58	91.25
1980	3.80	397.19	180.20	216.99	94.03
1981	1.30	397.18	183.10	214.08	92.77
1984	3.80	397.93	194.10	203.83	88.33
1985	0.20	397.48	195.20	202.28	87.65
1986	4.30	397.48	194.50	202.98	87.96
1987	4.00	397.22	198.50	198.72	86.11
1988	0.20	397.80	219.50	178.30	77.26
1989	1.70	397.80	222.30	175.50	76.05
1991	3.60	397.92	194.20	203.72	88.28
1994	0.70	397.84	190.70	207.14	89.76
1996	4.20	397.97	189.80	208.17	90.21
1997	4.20	398.03	191.50	206.53	89.50
2003	0.20	395.22	185.20	210.02	91.01
2007	3.10	398.18	200.60	197.58	85.62
2009	4.10	398.10	196.90	201.20	87.19
2010	4.80	398.03	191.70	206.33	89.41
2012	4.20	398.14	199.00	199.14	86.29
2013	3.60	397.46	200.10	197.36	85.52
2014	5.90	397.42	193.20	204.22	88.50
2016	5.40	397.13	222.30	174.83	75.76
2021	0.80	398.48	204.20	194.28	84.19
2023	0.60	394.34	206.90	187.44	81.23
2025	2.30	604.84	455.60	149.24	64.67
2028	1.30	604.81	520.90	83.91	36.36
2029	1.20	604.84	448.00	155.84	67.53
2030	0.70	604.83	460.10	144.73	62.72
2031	3.00	604.84	430.90	173.94	75.37
2032	0.90	604.84	484.00	120.84	52.36
2033	2.10	604.84	474.20	130.64	56.61
2047	0.70	466.48	309.00	157.48	68.24
2050	0.20	466.48	301.10	165.38	71.67
2051	0.10	398.07	229.60	168.47	73.00
2052	0.10	398.07	229.90	168.17	72.87
2053	4.50	398.07	220.60	177.47	76.90
2061	1.20	398.05	208.20	189.85	82.27
2063	7.70	398.10	205.00	193.10	83.68
2065	5.70	398.23	198.90	199.33	86.38
2066	4.20	397.59	222.20	175.39	76.00
2067	8.40	399.99	216.20	183.79	79.64
2072	7.90	397.80	221.90	175.90	76.23
2073	3.10	398.17	199.80	198.37	85.96
2074	2.50	397.80	220.90	176.90	76.66
2076	8.40	394.50	204.40	190.10	82.38
2078	3.90	397.86	199.20	198.66	86.08
2079	4.30	397.79	203.10	194.69	84.37
2080	5.00	397.27	191.60	205.67	89.12
2081	4.40	397.22	198.70	198.52	86.03
2083	8.50	397.73	255.40	142.33	61.67
2084	5.60	397.73	224.10	173.63	75.24
2086	5.60	398.58	230.30	168.28	72.92
2088	9.00	634.98	604.50	30.48	13.21
2090	9.70	604.89	391.30	213.59	92.55
2091	4.90	396.34	195.30	201.04	87.12
2092	2.40	397.88	251.60	146.28	63.39
2093	6.30	398.26	236.00	162.26	70.31
2094	6.90	397.89	188.50	209.39	90.74
2095	4.80	397.98	187.60	210.38	91.16
2096	3.30	398.10	196.50	201.60	87.36
2097	5.10	398.16	202.50	195.66	84.79
2098	5.10	397.15	202.10	195.05	84.52
2100	6.80	397.13	197.30	199.83	86.59
2101	8.10	397.20	270.60	126.60	54.86
2103	8.80	397.13	236.90	160.23	69.43

2030 Fireflow - Main Zone East

2104	3.80	398.48	200.50	197.98	85.79	
2105	5.70	397.01	201.90	195.11	84.55	
2106	2.60	395.97	192.10	203.87	88.34	
2107	6.30	397.04	190.50	206.54	89.50	
2109	4.70	398.10	190.80	207.30	89.83	
2110	3.50	398.04	192.70	205.34	88.98	
2111	3.00	398.05	191.00	207.05	89.72	
2112	6.60	398.20	190.20	208.00	90.13	
2113	5.50	398.28	195.50	202.78	87.87	
2115	4.60	397.05	191.90	205.15	88.90	
2117	4.10	398.63	217.50	181.13	78.49	
2119	7.10	395.28	193.60	201.68	87.39	
2120	3.90	466.48	268.60	197.88	85.75	
2121	3.50	397.98	193.00	204.98	88.82	
2122	5.80	397.11	183.70	213.41	92.48	
2123	4.30	398.05	193.20	204.85	88.77	
2125	1.30	397.21	206.20	191.01	82.77	
2126	2.70	397.98	192.50	205.48	89.04	
2127	8.50	394.44	203.70	190.74	82.65	
2129	4.70	398.07	218.10	179.97	77.99	
2130	3.60	397.19	198.00	199.19	86.31	
2132	2.10	398.07	230.10	167.97	72.79	
2133	4.20	634.90	578.00	56.90	24.66	
2137	5.60	398.28	198.20	200.08	86.70	
2138	7.50	397.65	221.50	176.15	76.33	
I-18th St	0.00	405.29	218.20	187.09	81.07	
O-18th St	0.00	405.33	218.20	187.13	81.09	
3-in or sm	0.10	397.65	185.50	212.15	91.93	
3-inch or	0.40	397.71	183.00	214.71	93.04	
3-inch or	0.20	397.18	183.10	214.08	92.77	
O-AV-1	0.00	397.73	283.80	113.93	45.37	
I-AV-2	0.00	604.73	306.00	298.73	129.45	
I-AV-3	0.00	466.48	253.40	213.08	92.34	
O-AV-4	0.00	396.11	288.30	106.81	46.29	
O-AV-5	0.00	404.78	225.30	179.48	77.78	
O-AV-6	0.00	398.28	208.10	190.18	82.41	
O-Centrali	----	541.19	333.50	207.69	90.00	
O-Fairview	Fairview PRV	466.50	346.50	120.00	52.00	
O-High Lev	High Level F	0.00	604.87	401.60	203.27	88.09
High Level	High Level R	----	605.00	605.00	0.00	0.00
Hillcrest		0.30	398.03	256.20	141.83	61.46
inter-tie		3.50	397.58	174.40	223.18	96.71
J-1		4.30	397.17	174.00	223.17	96.71
J-100		0.90	397.30	190.60	206.70	89.57
J-105		3.10	397.15	175.60	221.55	96.01
J-106		3.40	397.23	206.20	191.03	82.78
J-11		3.40	494.52	280.00	214.52	92.96
J-110		6.00	397.33	198.00	199.33	86.38
J-111		2.40	397.17	192.50	204.67	88.69
J-112		6.30	397.71	167.90	229.81	99.58
J-113		3.00	397.79	200.50	197.29	85.49
J-114		13.60	604.73	405.70	199.03	86.24
J-115		2.20	398.10	197.30	200.80	87.01
J-116		2.30	398.13	207.10	191.03	82.78
J-117		2.10	397.96	192.10	205.86	89.21
J-120		2.90	397.48	237.50	159.98	69.32
J-122		3.20	397.17	174.00	223.17	96.71
J-123		0.50	389.70	224.70	165.00	71.50
J-124		2.60	604.84	403.80	201.04	87.12
J-125		2.50	604.85	383.00	221.85	96.13
J-126		4.10	400.96	367.95	33.01	14.30
J-127		34.10	397.65	225.20	172.45	74.73
J-128		17.80	397.62	235.20	162.42	70.38
J-129		10.20	397.27	184.80	212.47	92.07
J-130		4.60	397.59	222.00	175.59	76.09
J-131		0.70	604.84	418.00	186.84	80.97
J-132		3.60	397.17	176.00	221.17	95.84
J-133		1.10	604.85	339.60	265.25	114.94
J-134		1.30	399.10	200.90	198.20	85.89
J-135		2.30	398.87	288.30	110.57	47.91
J-136		1.00	394.35	204.10	190.25	82.44
J-138		1.20	389.67	219.60	170.07	73.70
J-139		0.60	405.04	222.60	182.44	79.06
J-140		0.70	389.67	218.20	171.47	74.30
J-141		0.50	393.56	200.90	192.66	83.49
J-142		0.30	405.30	218.20	187.10	81.08
J-143		12.70	395.21	186.90	208.31	90.27
J-144		2.30	397.78	186.80	210.98	91.42
J-145		0.20	389.65	218.20	171.45	74.30
J-146		0.00	389.66	218.20	171.46	74.30
J-147		0.00	405.30	218.20	187.10	81.08
J-148		9.20	533.30	498.90	34.40	14.91
J-149		4.50	493.32	306.10	187.22	81.13
J-150		7.30	494.38	272.40	221.98	96.19
J-151		16.70	493.71	326.80	166.91	72.33
J-152		7.80	494.38	272.40	221.98	96.19
J-153		93.50	493.32	302.40	190.92	82.73
J-154		7.50	494.38	267.60	226.78	98.27
J-155		21.60	493.87	263.80	230.07	99.70
J-156		24.40	494.00	261.30	232.70	100.84
J-157		2.30	493.76	265.80	227.96	98.78
J-158		10.50	397.65	211.40	186.25	80.71
J-159		0.50	604.85	343.00	261.85	113.47
J-160		5.50	397.63	172.60	225.03	97.51
J-161		0.30	397.48	178.60	218.88	94.85
J-162		8.50	397.64	183.00	214.64	93.01
J-163		4.90	395.22	183.70	211.52	91.66
J-164		15.50	395.21	177.50	217.71	94.34
J-167		3.40	397.80	0.00	397.80	172.38
J-168		3.70	397.19	0.00	397.19	172.12
J-169		8.20	400.72	413.50	-12.78	-5.54
J-170		2.10	397.17	174.50	222.67	96.49
J-171		2.50	398.86	286.90	111.96	48.52
J-173		74.70	487.90	329.80	158.10	68.51
J-176		1.30	397.17	166.40	230.77	100.00

2030 Fireflow - Main Zone East

J-177	2.80	395.21	179.10	216.11	93.65	
J-2	7.00	397.16	201.80	195.36	84.66	
J-20	2.70	397.18	182.90	214.28	92.85	
J-21	1.90	397.18	182.80	214.38	92.90	
J-25	6.10	604.85	311.10	293.75	127.29	
J-27	5.20	397.91	207.10	190.81	82.68	
J-3	4.10	397.18	182.20	214.98	93.16	
J-30	9.50	397.59	219.90	177.69	77.00	
J-35	10.20	397.77	222.10	175.67	76.12	
J-39	5.00	398.30	218.10	180.20	78.09	
J-4	3.10	397.18	184.40	212.78	92.20	
J-42	7.50	397.80	222.00	175.80	76.18	
J-44	7.50	398.04	208.40	189.64	82.18	
J-45	5.20	398.05	209.00	189.05	81.92	
J-53	11.70	397.90	294.30	103.60	44.89	
J-55	3.30	397.97	297.10	100.87	43.71	
J-57	1.70	398.07	229.20	168.87	73.18	
J-58	1.90	394.36	204.60	189.76	82.23	
J-6	4.70	540.35	473.40	66.95	29.01	
J-61	5.20	394.35	207.00	187.35	81.18	
J-62	1.40	395.21	191.50	203.71	88.28	
J-63	1.70	389.73	225.20	164.53	71.30	
J-64	5.10	393.56	202.30	191.26	82.88	
J-67	2.60	400.19	210.80	189.39	82.07	
J-7	4.30	397.67	214.70	182.97	79.29	
J-71	2.80	399.95	204.60	195.35	84.65	
J-73	7.90	399.10	199.60	199.50	86.45	
J-74	1.20	466.48	301.00	165.48	71.71	
J-77	0.80	466.48	296.10	170.38	73.83	
J-78	6.40	396.11	230.70	165.41	71.68	
J-79	3.30	395.62	223.40	172.22	74.63	
J-8	8.00	397.91	208.80	189.11	81.95	
J-80	6.00	394.97	190.70	204.27	88.52	
J-81	8.20	397.14	218.90	178.24	77.24	
J-82	8.00	397.08	257.90	139.18	60.31	
J-84	2.90	404.78	226.30	178.48	77.34	
J-87	5.20	397.11	194.40	202.71	87.84	
J-88	26.00	494.52	275.70	218.82	94.82	
J-90	0.10	397.80	219.10	178.70	77.44	
J-91	4.90	400.74	352.90	47.84	20.73	
J-93	2.00	397.58	187.50	210.08	91.04	
J-94	4.50	397.58	187.50	210.08	91.04	
J-95	14.70	397.62	189.50	208.12	90.18	
J-96	8.10	397.58	176.90	220.68	95.63	
J-99	1.50	397.21	205.50	191.71	83.07	
Kennicott	Kennicott Re	----	397.90	374.00	23.90	10.36
Main Reser	Main Reservo	----	401.10	383.30	17.80	7.71
physical d		0.10	397.28	222.00	175.28	75.95
I-RV-1		0.00	397.78	186.80	210.98	91.42
I-RV-2		0.00	393.56	200.90	192.66	83.49
O-South En		----	495.59	287.90	207.69	90.00
O-Valley V	Valley View	0.00	635.90	308.10	327.80	142.05
Yankis (Va	Yankis (Vall	----	635.90	631.50	4.40	1.91
Yates Rese	500,000 gal	----	401.10	376.00	25.10	10.88
O-18th St		----	389.66	218.20	171.46	74.30
I-18th St		0.00	389.64	218.20	171.44	74.29
I-AV-1		0.00	604.73	283.80	320.93	139.07
O-AV-2		0.00	397.72	306.00	91.72	39.75
O-AV-3		0.00	400.43	253.40	147.03	63.71
I-AV-4		0.00	604.85	289.30	315.55	136.74
I-AV-5		0.00	389.73	225.30	164.43	71.25
I-AV-6		0.00	394.35	208.10	186.24	80.71
I-Centrall		0.00	487.90	333.50	154.40	66.91
I-Fairview	Fairview PRV	0.00	634.89	346.50	288.39	124.97
I-High Lev	High Level P	0.00	400.96	401.60	-0.64	-0.28
O-RV-1		----	395.21	186.80	208.41	90.31
O-RV-2		----	399.10	200.90	198.20	85.89
I-South En		0.00	398.85	287.90	110.95	48.08
I-Valley V	Valley View	0.00	397.08	308.10	88.98	38.56

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
J-167	172.38	J-169	-5.54
J-168	172.12	I-High Level	-0.28
O-Valley Vie	142.05	Yankis (Vall	1.91
I-AV-1	139.07	1251	5.73
I-AV-4	136.74	Main Reservo	7.71

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-51	7.66	85	0.00
P-158	3.40	24	0.00
P-122	2.53	45	0.00
P-15	2.52	46	0.00
P-151	2.51	P-48	0.00

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
-----	-----	-----	-----

P-51	25.61	45	0.00
597	8.00	24	0.00
P-82	6.32	46	0.00
P-77	5.03	85	0.00
2003	4.76	P-48	0.00

H L / 1 0 0 0

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-51	25.61	45	0.00
597	8.00	24	0.00
P-82	6.32	46	0.00
P-77	5.03	85	0.00
2003	4.76	P-48	0.00

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
18th St PRV	PRV-1	74.30	ACTIVATED	81.07	74.30	806.04
18th St Pump	FCV-2	1200.00	BOOSTED	74.29	81.09	1200.00
Centralia Al	PRV-2	90.00	BOOSTED	66.91	90.00	13.90
Fairview PRV	PRV-1	52.00	ACTIVATED	124.97	52.00	18.30
High Level P	FCV-2	0.00	BOOSTED	-0.28	88.09	0.00
RV-1	PRV-1	85.00	CLOSED	91.42	90.31	0.00
RV-2	PRV-1	81.80	CLOSED	83.49	85.89	0.00
South End Pu	PRV-2	90.00	BOOSTED	48.08	90.00	303.60
Valley View	FCV-2	0.00	BOOSTED	38.56	142.05	0.00

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
High Level	110.30	High Level R
Kennicott R	43.49	Kennicott Re
Main Reserv	2003.06	Main Reserv
Yankis (Val	92.10	Yankis (Vall
Yates Reser	864.65	500,000 gal

NET SYSTEM INFLOW = 3113.60
 NET SYSTEM OUTFLOW = 0.00
 NET SYSTEM DEMAND = 3113.60

FireFlow/Hydrant Report
 Fireflow/Hydrant Report:

Scenario: No Title
 Global Demand Factor for this Scenario: 1.000

Specified Minimum Pressure (psi): 20.0
 Minimum Static Pressure (psi) : 21.0

Flow-1: Flowrate to maintain the specified pressure at (hydrant) node
 Node-2: Node that has a lower pressure than specified value at Flow-1
 Flow-2: Flowrate to maintain the specified pressure at Node-2

Hose Constant = 0.00

Hydrant Node	Hydrant Constant	Elevation	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2 gpm	Flow Capacity	NFPA Color
H-146	0.0	200.8	85.4	1063.3	1043.9	9	1043.9	GREEN
H-157	0.0	208.8	82.0	2598.5			2598.5	BLUE
H-154	0.0	317.9	34.7	1005.1			1005.1	GREEN
H-64	0.0	238.8	68.9	5507.3	5357.1	50	5357.1	BLUE
H-149	0.0	258.4	60.5	4251.4	3525.6	70	3525.6	BLUE
H-42	0.0	240.0	68.4	7596.1			7596.1	BLUE
H-41	0.0	239.1	68.8	7284.3			7284.3	BLUE
H-40	0.0	239.6	68.6	7033.8			7033.8	BLUE
H-39	0.0	240.2	68.3	6849.2			6849.2	BLUE
H-38	0.0	241.6	67.7	6700.7			6700.7	BLUE
H-37	0.0	245.7	65.9	6509.0			6509.0	BLUE
H-36	0.0	245.9	65.8	6506.1			6506.1	BLUE
H-35	0.0	246.3	65.7	6541.2			6541.2	BLUE
H-34	0.0	245.1	66.2	6690.6			6690.6	BLUE
H-33	0.0	247.6	65.1	6745.1	6665.3	76	6665.3	BLUE
H-150	0.0	236.6	69.9	17845.8	8428.9	28	8428.9	BLUE
H-158	0.0	231.3	72.3	6405.2	3627.7	28	3627.7	BLUE
H-156	0.0	237.3	69.6	6760.7	3392.2	28	3392.2	BLUE
H-155	0.0	234.8	70.7	7059.3	3325.8	28	3325.8	BLUE
H-113	0.0	217.1	78.3	8966.1	8695.5	224	8695.5	BLUE
H-114	0.0	216.3	78.7	7613.0	7360.2	224	7360.2	BLUE
H-115	0.0	217.7	78.0	6554.1	6374.3	224	6374.3	BLUE
H-116	0.0	220.4	76.9	5627.4	5536.0	224	5536.0	BLUE

2030 Fireflow - Main Zone East

H-60	0.0	241.0	68.0	5342.0	5188.7	1576	5188.7	BLUE
H-10	0.0	240.9	68.0	4793.7			4793.7	BLUE
H-59	0.0	240.9	68.0	4359.7			4359.7	BLUE
H-62	0.0	234.7	70.7	4048.4	3926.6	253	3926.6	BLUE
H-63	0.0	234.2	70.9	3866.3	3741.2	253	3741.2	BLUE
H-79	0.0	224.6	75.0	7807.7			7807.7	BLUE
H-83	0.0	221.1	76.5	7703.4			7703.4	BLUE
H-82	0.0	220.2	76.9	7590.9			7590.9	BLUE
H-81	0.0	219.0	77.4	7506.7	7424.3	J-127	7424.3	BLUE
H-526	0.0	212.0	80.4	2998.1	2875.8	J-130	2875.8	BLUE
H-527	0.0	213.1	79.9	2942.5	2835.0	J-130	2835.0	BLUE
H-528	0.0	214.6	79.3	2872.8	2784.8	J-130	2784.8	BLUE
H-529	0.0	215.3	79.0	2816.3	2737.9	J-130	2737.9	BLUE
H-530	0.0	214.7	79.3	2775.5	2691.7	J-130	2691.7	BLUE
H-120	0.0	214.6	79.4	5763.6			5763.6	BLUE
H-555	0.0	213.3	79.9	5267.0	4997.2	89	4997.2	BLUE
H-126	0.0	213.7	79.8	5419.3	5260.4	2074	5260.4	BLUE
H-127	0.0	212.8	80.2	3861.2	3735.6	2074	3735.6	BLUE
H-100	0.0	204.2	83.8	4197.0	4045.4	86	4045.4	BLUE
H-99	0.0	199.4	85.9	4084.9	4011.4	468	4011.4	BLUE
H-98	0.0	199.9	85.7	3643.2	3584.5	468	3584.5	BLUE
H-97	0.0	203.2	84.2	3279.6			3279.6	BLUE
H-101	0.0	203.3	84.2	3084.0			3084.0	BLUE
H-103	0.0	203.1	84.3	2779.8			2779.8	BLUE
H-102	0.0	200.1	85.6	2647.5	2607.1	468	2607.1	BLUE
H-104	0.0	202.2	84.7	2417.6	2399.4	468	2399.4	BLUE
H-134	0.0	208.1	82.1	2111.3	2090.1	474	2090.1	BLUE
H-133	0.0	210.5	81.1	2501.3			2501.3	BLUE
H-161	0.0	207.8	82.6	3791.1	3725.9	592	3725.9	BLUE
H-166	0.0	204.3	84.2	4856.8			4856.8	BLUE
H-165	0.0	226.7	74.5	3753.9	2967.7	578	2967.7	BLUE
H-143	0.0	206.2	83.1	1465.7			1465.7	GREEN
H-142	0.0	201.9	84.9	1612.2	1583.6	676	1583.6	BLUE
H-140	0.0	201.3	85.2	1769.1	1733.9	676	1733.9	BLUE
H-138	0.0	207.4	82.6	2695.9	2677.3	682	2677.3	BLUE
H-147	0.0	234.3	70.9	3407.6			3407.6	BLUE
H-170	0.0	200.1	85.9	5075.8			5075.8	BLUE
H-171	0.0	199.7	86.0	4112.0			4112.0	BLUE
H-172	0.0	203.2	84.5	3782.8			3782.8	BLUE
H-173	0.0	196.5	87.4	3472.8	3410.0	1134	3410.0	BLUE
H-105	0.0	201.5	85.0	2353.8	2332.9	468	2332.9	BLUE
H-106	0.0	202.2	84.7	2229.7			2229.7	BLUE
H-107	0.0	200.1	85.6	1899.0			1899.0	BLUE
H-108	0.0	199.5	85.8	1660.3			1660.3	BLUE
H-109	0.0	197.3	86.8	1533.4			1533.4	BLUE
H-110	0.0	199.5	85.8	1456.0			1456.0	GREEN
H-111	0.0	198.2	86.4	1378.1			1378.1	GREEN
H-17	0.0	253.9	62.4	3964.2			3964.2	BLUE
H-12	0.0	256.9	61.1	3536.4			3536.4	BLUE
H-13	0.0	250.0	64.1	3558.6	3469.9	791	3469.9	BLUE
H-15	0.0	252.9	62.8	4697.2	4662.5	784	4662.5	BLUE
H-183	0.0	198.5	86.7	2318.5			2318.5	BLUE
H-524	0.0	223.7	76.6	2451.3			2451.3	BLUE
H-57	0.0	247.9	65.0	5186.2	5081.6	1576	5081.6	BLUE
H-58	0.0	239.9	68.4	5586.7	5356.0	1576	5356.0	BLUE
H-148	0.0	235.7	70.3	12545.8	6022.7	28	6022.7	BLUE
H-119	0.0	229.4	73.0	9563.0	9492.9	1647	9492.9	BLUE
H-21	0.0	261.5	59.2	6263.5			6263.5	BLUE
H-22	0.0	258.4	60.5	6096.4			6096.4	BLUE
H-23	0.0	257.0	61.1	5940.3			5940.3	BLUE
H-24	0.0	258.1	60.6	5756.2			5756.2	BLUE
H-25	0.0	257.3	61.0	5703.0			5703.0	BLUE
H-26	0.0	256.7	61.2	5684.3			5684.3	BLUE
H-27	0.0	254.5	62.2	5767.6			5767.6	BLUE
H-28	0.0	253.3	62.7	5850.5			5850.5	BLUE
H-29	0.0	253.3	62.7	5962.4			5962.4	BLUE
H-30	0.0	251.6	63.4	6162.9			6162.9	BLUE
H-31	0.0	248.6	64.7	6436.3			6436.3	BLUE
H-32	0.0	250.5	63.9	6597.4			6597.4	BLUE
H-47	0.0	250.2	64.0	6585.4			6585.4	BLUE
H-53	0.0	244.3	66.5	6459.1			6459.1	BLUE
H-48	0.0	244.4	66.5	6169.5			6169.5	BLUE
H-52	0.0	240.4	68.2	5993.9			5993.9	BLUE
H-51	0.0	240.1	68.3	5740.5			5740.5	BLUE
H-50	0.0	239.0	68.8	5576.2	5519.9	1636	5519.9	BLUE
H-49	0.0	238.5	69.0	5480.8	5367.6	1636	5367.6	BLUE
H-46	0.0	240.6	68.0	5266.4	5134.9	1636	5134.9	BLUE
H-44	0.0	245.1	66.2	7706.4			7706.4	BLUE
H-45	0.0	243.6	66.8	7768.8			7768.8	BLUE
H-43	0.0	243.6	66.8	7782.4			7782.4	BLUE
H-65	0.0	238.2	69.2	7552.2	7481.1	50	7481.1	BLUE
H-66	0.0	237.1	69.6	7303.1	7077.8	50	7077.8	BLUE
H-77	0.0	227.9	73.6	7673.4			7673.4	BLUE
H-76	0.0	226.5	74.2	7404.3			7404.3	BLUE
H-75	0.0	227.6	73.7	7217.6			7217.6	BLUE
H-74	0.0	226.2	74.3	7162.6			7162.6	BLUE
H-73	0.0	228.1	73.5	7047.6			7047.6	BLUE
H-72	0.0	231.4	72.1	6926.8			6926.8	BLUE
H-71	0.0	231.0	72.3	6957.4			6957.4	BLUE
H-70	0.0	230.3	72.6	7025.3			7025.3	BLUE
H-69	0.0	234.3	70.9	6969.1			6969.1	BLUE
H-68	0.0	233.4	71.2	7106.4			7106.4	BLUE
H-67	0.0	238.7	68.9	7052.7			7052.7	BLUE
H-117	0.0	216.2	78.7	9293.6			9293.6	BLUE
H-118	0.0	217.9	78.0	9452.8			9452.8	BLUE
H-18	0.0	253.0	62.8	2528.5			2528.5	BLUE
H-19	0.0	253.1	62.7	3047.9			3047.9	BLUE
H-123	0.0	216.2	78.7	7156.1			7156.1	BLUE
H-125	0.0	214.8	79.3	5601.2	5569.3	1700	5569.3	BLUE
H-124	0.0	218.0	77.9	4819.7			4819.7	BLUE
H-128	0.0	216.6	78.5	2161.3	2080.1	89	2080.1	BLUE
H-130	0.0	221.3	76.4	1713.2	1681.7	89	1681.7	BLUE
H-129	0.0	220.9	76.6	1642.5	1609.5	89	1609.5	BLUE
H-153	0.0	294.8	44.7	1804.8	1642.3	1710	1642.3	BLUE
H-152	0.0	280.1	51.0	3798.2	3049.3	1710	3049.3	BLUE

2030 Fireflow - Main Zone East

H-151	0.0	288.0	47.6	13858.6	11809.0	1710	11809.0	BLUE
H-11	0.0	261.4	59.6	2037.5			2037.5	BLUE
H-9	0.0	264.5	58.2	1971.8			1971.8	BLUE
H-8	0.0	266.5	57.3	1910.7			1910.7	BLUE
H-7	0.0	264.6	58.2	1938.9			1938.9	BLUE
H-5	0.0	267.0	57.1	2093.0	2069.9	1788	2069.9	BLUE
H-3	0.0	266.9	57.2	2128.6	2036.5	1791	2036.5	BLUE
H-4	0.0	263.5	58.7	1885.5	1799.9	1793	1799.9	BLUE
H-6	0.0	264.1	58.4	2036.8	1986.4	1788	1986.4	BLUE
H-141	0.0	266.7	57.3	1962.0	1939.8	1782	1939.8	BLUE
H-56	0.0	234.2	70.8	5108.1			5108.1	BLUE
H-160	0.0	216.1	78.9	2506.8			2506.8	BLUE
H-190	0.0	224.4	75.7	3445.2			3445.2	BLUE
H-162	0.0	204.9	83.7	3470.8	3427.5	2061	3427.5	BLUE
H-144	0.0	200.4	85.7	4368.6			4368.6	BLUE
H-145	0.0	202.8	84.6	4337.5			4337.5	BLUE
H-96	0.0	202.1	84.7	4149.2	3821.2	86	3821.2	BLUE
H-95	0.0	202.8	84.4	3965.7	3662.3	86	3662.3	BLUE
H-94	0.0	204.7	83.6	3833.8	3566.4	86	3566.4	BLUE
H-93	0.0	208.0	82.2	3677.8	3465.5	86	3465.5	BLUE
H-92	0.0	209.3	81.6	3502.6	3317.4	86	3317.4	BLUE
H-91	0.0	211.3	80.7	3396.9	3243.1	86	3243.1	BLUE
H-88	0.0	213.7	79.7	3024.7	2916.1	86	2916.1	BLUE
H-132	0.0	213.9	79.6	2796.7	2662.1	89	2662.1	BLUE
H-167	0.0	203.7	84.4	5140.9			5140.9	BLUE
H-168	0.0	200.7	85.6	5341.3			5341.3	BLUE
H-169	0.0	201.5	85.3	5376.5			5376.5	BLUE
H-16	0.0	255.8	61.6	3926.0	3852.8	784	3852.8	BLUE
H-14	0.0	254.0	62.4	4802.5	4689.8	788	4689.8	BLUE
H-191	0.0	224.5	75.8	3697.6			3697.6	BLUE
H-159	0.0	217.7	78.2	4490.4			4490.4	BLUE
H-131	0.0	211.3	80.8	2616.1	2588.4	493	2588.4	BLUE
H-164	0.0	258.3	60.8	2394.5	2055.7	578	2055.7	BLUE
H-163	0.0	228.2	73.6	6293.2	3763.2	28	3763.2	BLUE
H-531	0.0	224.0	78.4	3533.1	3509.5	J-84	3509.5	BLUE
H-80	0.0	215.9	78.8	7099.5	6901.0	86	6901.0	BLUE
H-78	0.0	219.3	77.3	6485.0	6396.2	86	6396.2	BLUE
H-84	0.0	212.8	80.1	4917.2	4720.7	86	4720.7	BLUE
H-85	0.0	199.7	85.8	4936.4	4503.6	86	4503.6	BLUE
H-87	0.0	200.0	85.6	4615.3	4215.8	86	4215.8	BLUE
H-86	0.0	200.4	85.5	4493.6	4110.9	86	4110.9	BLUE
H-543	0.0	220.9	76.6	6954.4			6954.4	BLUE
H-542	0.0	224.9	74.9	6513.9			6513.9	BLUE
H-545	0.0	216.2	78.6	6543.5			6543.5	BLUE
H-544	0.0	221.1	76.5	6206.9			6206.9	BLUE
H-546	0.0	223.1	75.6	6114.3			6114.3	BLUE
H-547	0.0	224.7	74.9	5961.1			5961.1	BLUE
H-548	0.0	226.5	74.2	5760.6			5760.6	BLUE
H-549	0.0	233.5	71.1	5481.2			5481.2	BLUE
H-550	0.0	243.5	66.8	5138.4			5138.4	BLUE
H-551	0.0	242.5	67.2	5075.0			5075.0	BLUE
H-552	0.0	230.9	72.2	5295.9			5295.9	BLUE
H-553	0.0	226.6	74.1	5361.1	5298.1	J-128	5298.1	BLUE
H-554	0.0	227.7	73.6	5297.8	5156.3	J-128	5156.3	BLUE
H-555	0.0	234.0	70.9	3425.2			3425.2	BLUE
H-54	0.0	233.4	71.2	2856.1			2856.1	BLUE
H-174	0.0	200.2	85.8	1653.3			1653.3	BLUE
H-282	0.0	186.8	91.4	6332.1			6332.1	BLUE
H-279	0.0	191.3	89.5	6332.7			6332.7	BLUE
H-1	0.0	282.1	50.6	3331.1			3331.1	BLUE
H-2	0.0	271.0	55.4	2631.0	2587.0	1791	2587.0	BLUE
H-20	0.0	253.3	62.6	4965.6			4965.6	BLUE
H-90	0.0	216.9	78.3	3139.8	3067.1	86	3067.1	BLUE
H-89	0.0	216.0	78.7	3074.4	2992.1	86	2992.1	BLUE
H-137	0.0	201.9	85.0	5369.5			5369.5	BLUE
H-112	0.0	216.5	78.6	8735.8			8735.8	BLUE
H-122	0.0	213.9	79.7	7862.5	7752.5	2074	7752.5	BLUE
H-121	0.0	216.9	78.4	8598.3			8598.3	BLUE
H-136	0.0	210.6	81.1	5440.9			5440.9	BLUE
H-135	0.0	204.2	83.9	5645.7			5645.7	BLUE
H-139	0.0	205.8	83.2	2696.9	2683.6	J-27	2683.6	BLUE
H-193	0.0	207.6	83.4	3747.8			3747.8	BLUE
H-196	0.0	199.7	86.4	4846.8			4846.8	BLUE
H-195	0.0	200.5	86.4	3875.9			3875.9	BLUE
H-189	0.0	223.9	78.2	3524.9			3524.9	BLUE
H-192	0.0	220.5	78.3	3970.6			3970.6	BLUE

***** KYPIPE *****
 *
 * Pipe Network Modeling Software *
 *
 * CopyRighted by KYPIPE LLC (www.kypipe.com) *
 * Version: 10.001 05/13/2019 *
 * Company: GibbsOlson Serial #: 592186 *
 * Interface: KYnetic *
 * Licensed for Pipe2018 *
 *

Date & Time: Tue Feb 08 08:30:26 2022

Master File : p:\0155_chehalis\1078_wsp_update\rpt-planning\mdlmg\01551078 city of chehalis capital improvement program 2030.KYP\01551078 city of chehalis capital improve :

 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

REGULATING VALVE DATA

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
18th St PRV	PRV-1	389.66
18th St Pump	Const_FLOW_Pump	0.00
Centralia Al	Const_HEAD_Pump	541.19
Fairview PRV	PRV-1	466.50
High Level P	Const_FLOW_Pump	360.00
RV-1	PRV-1	382.95
RV-2	PRV-1	389.67
South End Pu	Const_HEAD_Pump	495.59
Valley View	Const_FLOW_Pump	0.00

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1	NODE NAMES #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
3	5	6	24.78	10.00	90.0000	0.00
5	9	10	824.44	6.00	90.0000	0.00
6	11	12	38.56	8.00	90.0000	0.00
7	13	872	38.38	6.00	75.0000	0.00
8	15	16	7.84	6.00	90.0000	0.00
10	18	19	437.00	2.00	140.0000	0.00
12	22	23	750.00	8.00	130.0000	0.00
13	24	1524	360.61	4.00	130.0000	0.00
14	26	J-55	539.97	8.00	115.0000	0.00
16	28	29	217.00	4.00	115.0000	0.00
17	31	32	723.00	12.00	130.0000	0.00
21	37	38	170.42	4.00	75.0000	0.00
22	2014	40	325.43	8.00	130.0000	0.00
23	41	1699	28.75	12.00	130.0000	0.00
24	43	213	42.27	12.00	130.0000	0.00
26	47	48	173.64	4.00	130.0000	0.00
27	49	50	310.00	10.00	130.0000	0.00
28	51	52	222.00	8.00	130.0000	0.00
32	59	60	108.37	6.00	75.0000	0.00
35	65	66	295.51	6.00	75.0000	0.00
37	68	69	412.00	8.00	130.0000	0.00
38	52	70	245.00	6.00	130.0000	0.00
39	Hillcrest	72	81.50	4.00	130.0000	0.00
41	75	76	3275.00	12.00	130.0000	0.00
45	83	2066	32.96	12.00	130.0000	0.00
46	85	86	33.07	12.00	130.0000	0.00
52	97	98	74.85	8.00	130.0000	0.00
55	102	103	68.31	8.00	130.0000	0.00
56	104	1810	34.98	12.00	130.0000	0.00
59	107	108	7.82	12.00	130.0000	0.00
60	109	J-53	785.00	16.00	130.0000	0.00
66	118	J-169	2076.37	14.00	90.0000	0.00
68	119	121	704.00	14.00	75.0000	0.00
70	121	860	23.71	14.00	75.0000	0.00
72	118	1799	900.00	8.00	130.0000	0.00
85	physical d	396	23.76	14.00	75.0000	0.00
107	J-91	2067	949.00	18.00	130.0000	0.00
109	325	34	484.84	12.00	130.0000	0.00
110	2122	166	948.74	12.00	130.0000	0.00
112	166	962	902.00	12.00	130.0000	0.00
114	569	962	308.00	12.00	130.0000	0.00
115	569	665	1519.00	12.00	130.0000	0.00
118	172	J-105	650.00	12.00	130.0000	0.00
120	175	178	251.61	12.00	130.0000	0.00
123	178	1826	444.69	12.00	130.0000	0.00
126	1826	1827	278.93	12.00	130.0000	0.00
129	1827	192	1658.25	12.00	130.0000	0.00

2030 Fireflow - High Level Zone

137	192	201	248.00	12.00	130.0000	0.00
139		137	409.00	12.00	130.0000	0.00
141	15	137	446.49	12.00	130.0000	0.00
142	15	J-162	456.08	12.00	130.0000	0.00
145	201	J-93	562.05	12.00	90.0000	0.00
155	212	213	677.50	12.00	130.0000	0.00
156	214	26	1649.00	12.00	130.0000	0.00
163	2072	224	1245.00	12.00	130.0000	0.00
187	248	253	1835.17	12.00	130.0000	0.00
192	254	J-127	1507.19	12.00	130.0000	0.00
262	325	1575	908.76	12.00	130.0000	0.00
279	343	344	127.52	12.00	130.0000	0.00
280	344	342	115.85	12.00	130.0000	0.00
282	342	346	192.42	12.00	130.0000	0.00
283	86	J-130	1344.24	12.00	130.0000	0.00
292	356	361	2280.98	10.00	90.0000	0.00
298	32	J-7	60.00	10.00	90.0000	0.00
302	32	480	930.34	10.00	90.0000	0.00
318	384	385	126.00	10.00	130.0000	0.00
319	356	J-167	699.21	10.00	90.0000	0.00
320	356	41	37.27	10.00	90.0000	0.00
329	396	398	31.65	10.00	75.0000	0.00
331	398	1409	306.52	10.00	75.0000	0.00
340	407	408	647.97	10.00	75.0000	0.00
353	661	2119	350.44	6.00	75.0000	0.00
355	424	1648	189.00	10.00	90.0000	0.00
363	295	468	3228.55	10.00	130.0000	0.00
398	172	473	539.00	12.00	130.0000	0.00
403	474	480	672.00	8.00	90.0000	0.00
411	J-45	2129	770.00	8.00	90.0000	0.00
414	1217	1121	284.43	6.00	90.0000	0.00
417	492	1235	414.07	8.00	75.0000	0.00
429	505	509	502.00	8.00	75.0000	0.00
433	510	512	462.00	8.00	130.0000	0.00
435	513	J-160	231.52	8.00	75.0000	0.00
440	518	J-94	278.47	8.00	75.0000	0.00
448	92	1184	943.86	8.00	130.0000	0.00
451	530	119	42.30	8.00	75.0000	0.00
452	119	536	464.52	8.00	75.0000	0.00
458	536	2079	637.02	8.00	75.0000	0.00
461	540	2079	30.24	8.00	75.0000	0.00
464	544	543	465.44	8.00	75.0000	0.00
472	552	J-100	98.00	8.00	75.0000	0.00
476	I-AV-1	J-114	1506.58	8.00	130.0000	0.00
486	569	573	476.00	8.00	130.0000	0.00
490	385	166	264.00	8.00	140.0000	0.00
495	579	J-138	330.16	8.00	130.0000	0.00
497	582	584	548.98	8.00	130.0000	0.00
503	590	J-73	801.25	8.00	75.0000	0.00
511	599	601	450.87	8.00	130.0000	0.00
526	599	619	720.36	8.00	130.0000	0.00
531	620	623	618.14	8.00	130.0000	0.00
538	628	631	136.23	8.00	90.0000	0.00
541	632	1049	299.05	8.00	90.0000	0.00
547	631	642	578.19	8.00	90.0000	0.00
552	High Level	2090	1103.00	10.00	130.0000	0.00
565	509	661	1328.00	8.00	75.0000	0.00
569	597	1284	174.94	8.00	90.0000	0.00
571	46	2086	497.00	8.00	90.0000	0.00
574	665	668	872.08	8.00	130.0000	0.00
577	668	675	492.96	8.00	130.0000	0.00
584	676	J-27	893.25	8.00	90.0000	0.00
590	54	682	182.20	8.00	90.0000	0.00
591	683	J-95	505.00	8.00	90.0000	0.00
593	686	J-78	241.00	8.00	90.0000	0.00
597	408	J-79	21.00	8.00	75.0000	0.00
601	361	1960	1287.07	8.00	90.0000	0.00
612	705	710	248.15	8.00	130.0000	0.00
617	717	1134	965.00	8.00	130.0000	0.00
623	718	247	34.04	8.00	75.0000	0.00
630	424	726	91.39	8.00	75.0000	0.00
632	726	J-80	386.08	8.00	75.0000	0.00
652	468	780	2846.84	8.00	130.0000	0.00
684	781	2092	25.00	8.00	130.0000	0.00
686	784	1698	594.45	8.00	130.0000	0.00
690	788	791	1019.18	8.00	130.0000	0.00
693	792	791	123.52	8.00	130.0000	0.00
697	797	784	720.40	8.00	130.0000	0.00
700	800	802	282.00	6.00	130.0000	0.00
702	803	1465	267.21	6.00	75.0000	0.00
706	808	2009	929.18	6.00	75.0000	0.00
710	813	815	302.18	6.00	75.0000	0.00
712	121	2093	46.99	6.00	75.0000	0.00
714	2094	40	934.76	4.00	75.0000	0.00
723	828	2096	426.19	6.00	75.0000	0.00
726	544	831	72.71	6.00	75.0000	0.00
727	831	530	335.47	6.00	75.0000	0.00
735	831	1989	226.92	6.00	75.0000	0.00
739	842	844	615.87	6.00	75.0000	0.00
741	844	817	669.95	6.00	75.0000	0.00
749	856	J-115	240.00	6.00	75.0000	0.00
751	2078	14	273.95	6.00	75.0000	0.00
753	860	2097	569.00	6.00	75.0000	0.00
757	865	868	222.76	6.00	75.0000	0.00
760	868	J-113	502.26	6.00	75.0000	0.00
762	868	872	205.21	6.00	75.0000	0.00
772	881	2098	449.61	6.00	75.0000	0.00
776	885	J-111	304.95	6.00	75.0000	0.00
784	893	J-106	418.44	6.00	75.0000	0.00
785	893	J-110	416.57	6.00	75.0000	0.00
789	66	899	48.00	6.00	75.0000	0.00
791	899	901	175.00	6.00	75.0000	0.00
793	901	1742	1127.00	6.00	75.0000	0.00
797	906	910	180.00	6.00	75.0000	0.00
801	910	38	116.53	6.00	75.0000	0.00

2030 Fireflow - High Level Zone

807	842	2084	314.93	6.00	75.0000	0.00
812	916	922	348.45	6.00	75.0000	0.00
814	923	J-20	569.59	8.00	130.0000	0.00
817	J-21	929	248.00	6.00	75.0000	0.00
823	J-2	937	870.00	6.00	130.0000	0.00
825	J-2	556	502.00	6.00	75.0000	0.00
831	945	2080	473.03	6.00	75.0000	0.00
839	954	2081	460.04	6.00	75.0000	0.00
846	962	964	82.58	6.00	130.0000	0.00
858	1387	1314	65.93	4.00	75.0000	0.00
861	108	104	599.00	6.00	90.0000	0.00
867	958	J-110	1002.00	6.00	75.0000	0.00
874	994	65	736.58	6.00	75.0000	0.00
876	65	1986	656.95	6.00	75.0000	0.00
883	1003	1023	424.00	8.00	130.0000	0.00
903	1024	J-125	363.09	8.00	130.0000	0.00
905	O-High Lev	649	101.61	6.00	75.0000	0.00
910	1024	628	642.00	8.00	130.0000	0.00
912	1032	1003	811.00	6.00	90.0000	0.00
930	1050	1053	1269.52	6.00	90.0000	0.00
933	384	2100	964.00	6.00	75.0000	0.00
936	1057	16	435.81	6.00	90.0000	0.00
938	1060	1063	225.00	6.00	130.0000	0.00
941	1064	J-129	956.67	8.00	130.0000	0.00
948	1071	526	308.78	6.00	90.0000	0.00
949	526	1084	2823.93	8.00	130.0000	0.00
962	1085	1337	588.12	6.00	75.0000	0.00
966	1099	J-78	1370.13	8.00	130.0000	0.00
975	1100	1101	228.75	6.00	90.0000	0.00
976	O-Fairview	1101	118.14	6.00	90.0000	0.00
982	2103	J-81	265.32	6.00	75.0000	0.00
993	1121	1122	255.49	6.00	90.0000	0.00
994	2076	2127	300.30	6.00	75.0000	0.00
1000	1130	1125	650.51	6.00	75.0000	0.00
1001	2104	J-73	623.72	6.00	75.0000	0.00
1003	1134	2104	238.99	6.00	75.0000	0.00
1004	509	1290	478.00	6.00	75.0000	0.00
1007	1137	2105	327.02	6.00	75.0000	0.00
1009	1388	2013	267.00	6.00	75.0000	0.00
1012	2106	2107	591.74	6.00	75.0000	0.00
1014	510	23	924.74	6.00	75.0000	0.00
1017	2137	2109	470.82	6.00	75.0000	0.00
1019	2084	2109	326.70	6.00	75.0000	0.00
1020	2094	23	140.75	6.00	75.0000	0.00
1023	1156	23	477.86	6.00	75.0000	0.00
1024	2096	2073	229.38	6.00	75.0000	0.00
1025	2110	2096	273.09	6.00	75.0000	0.00
1026	2110	1997	279.58	6.00	75.0000	0.00
1028	1997	2111	244.00	6.00	75.0000	0.00
1030	2111	2112	268.86	6.00	75.0000	0.00
1032	1961	2113	418.00	6.00	75.0000	0.00
1035	704	1961	270.90	6.00	75.0000	0.00
1036	2109	1961	297.09	6.00	75.0000	0.00
1037	2010	2014	642.00	6.00	75.0000	0.00
1040	2012	2013	328.33	6.00	75.0000	0.00
1041	2065	2012	308.00	6.00	75.0000	0.00
1042	2137	2065	296.00	6.00	75.0000	0.00
1043	2113	2137	300.18	6.00	75.0000	0.00
1044	2113	1180	266.89	6.00	75.0000	0.00
1046	1181	22	93.00	6.00	75.0000	0.00
1047	2095	22	173.00	6.00	75.0000	0.00
1048	726	1184	40.06	8.00	130.0000	0.00
1051	1186	1996	269.43	6.00	75.0000	0.00
1053	827	1232	1143.25	6.00	75.0000	0.00
1058	1232	1156	597.28	6.00	75.0000	0.00
1060	1156	512	927.21	6.00	75.0000	0.00
1062	512	2107	783.40	6.00	75.0000	0.00
1064	2115	2107	155.32	6.00	75.0000	0.00
1069	2117	2065	579.53	6.00	75.0000	0.00
1071	2137	1210	580.23	6.00	75.0000	0.00
1074	1211	1713	81.79	6.00	130.0000	0.00
1076	24	1713	223.00	6.00	130.0000	0.00
1077	1215	J-58	327.00	6.00	75.0000	0.00
1078	68	1217	692.94	6.00	130.0000	0.00
1080	1218	2112	1049.55	6.00	75.0000	0.00
1083	2112	1223	326.05	6.00	75.0000	0.00
1085	1224	2111	321.86	6.00	75.0000	0.00
1087	1085	1333	418.92	6.00	75.0000	0.00
1088	1085	808	427.58	6.00	75.0000	0.00
1090	808	1229	207.76	6.00	75.0000	0.00
1091	1232	1181	476.00	6.00	75.0000	0.00
1094	1235	1483	375.00	6.00	75.0000	0.00
1095	2120	1104	147.00	6.00	90.0000	0.00
1096	2120	1239	581.73	6.00	130.0000	0.00
1099	1240	1214	42.84	6.00	130.0000	0.00
1100	1214	1244	471.00	6.00	130.0000	0.00
1103	1244	1251	558.00	6.00	130.0000	0.00
1110	Yankis (Va	1251	416.98	6.00	130.0000	0.00
1116	1513	J-25	173.82	8.00	130.0000	0.00
1117	1277	J-159	108.25	6.00	90.0000	0.00
1118	1277	1262	90.18	6.00	90.0000	0.00
1120	657	J-25	1605.00	10.00	130.0000	0.00
1125	1181	1270	559.53	6.00	75.0000	0.00
1127	2103	1099	1495.62	8.00	130.0000	0.00
1132	1277	I-AV-4	889.11	6.00	90.0000	0.00
1138	693	579	860.83	6.00	75.0000	0.00
1140	1284	O-AV-3	362.05	6.00	90.0000	0.00
1146	1290	2119	1322.78	4.00	75.0000	0.00
1148	1293	1295	372.96	4.00	75.0000	0.00
1150	398	2016	65.54	8.00	130.0000	0.00
1152	1120	1298	198.66	6.00	75.0000	0.00
1154	432	1309	2165.00	6.00	90.0000	0.00
1165	1310	1314	1161.00	4.00	75.0000	0.00
1169	2127	J-61	967.64	4.00	75.0000	0.00
1171	1318	2105	578.38	4.00	75.0000	0.00

2030 Fireflow - High Level Zone

1173	2105	1322	469.84	4.00	75.0000	0.00
1178	2115	40	301.65	4.00	75.0000	0.00
1179	2115	1328	589.61	4.00	75.0000	0.00
1182	803	J-81	638.00	4.00	75.0000	0.00
1185	1333	1337	528.94	4.00	75.0000	0.00
1189	1338	807	1527.54	8.00	130.0000	0.00
1193	518	192	70.97	4.00	75.0000	0.00
1195	192	1060	583.00	4.00	75.0000	0.00
1198	1060	705	1317.00	4.00	75.0000	0.00
1205	492	J-80	987.90	4.00	75.0000	0.00
1208	1356	828	273.00	4.00	75.0000	0.00
1210	1359	828	233.00	4.00	75.0000	0.00
1211	1364	1984	203.81	4.00	75.0000	0.00
1212	1364	1991	514.02	4.00	75.0000	0.00
1214	1364	2121	287.23	4.00	75.0000	0.00
1215	1366	36	660.16	6.00	130.0000	0.00
1217	1244	1251	681.00	6.00	130.0000	0.00
1226	1375	17	2480.00	4.00	90.0000	0.00
1236	17	1387	400.00	4.00	90.0000	0.00
1239	1388	1392	578.80	4.00	75.0000	0.00
1244	1314	33	129.52	4.00	90.0000	0.00
1245	937	1456	272.00	6.00	75.0000	0.00
1247	384	1456	264.58	6.00	75.0000	0.00
1248	1396I-Valley V	4.38	4.00	140.0000	0.00	
1258	505	1409	1080.00	4.00	75.0000	0.00
1261	1410	657	558.39	4.00	90.0000	0.00
1269	1023	I-AV-2	712.27	4.00	90.0000	0.00
1309	1456	881	418.71	6.00	130.0000	0.00
1315	885	1056	245.12	4.00	90.0000	0.00
1319	1465	2103	636.67	4.00	75.0000	0.00
1322	509	407	820.07	4.00	75.0000	0.00
1330	693	492	1027.10	4.00	75.0000	0.00
1338	1295	1483	948.39	4.00	75.0000	0.00
1340	1484	899	1892.00	4.00	75.0000	0.00
1351	344	1497	767.00	4.00	130.0000	0.00
1354	1498	1502	449.05	8.00	130.0000	0.00
1358	1502	J-133	279.67	8.00	130.0000	0.00
1371	1517	1519	275.00	2.00	135.0000	0.00
1384	1544	J-95	2295.00	12.00	90.0000	0.00
1388	1547	1544	288.55	12.00	130.0000	0.00
1389	1547	J-96	1327.00	12.00	130.0000	0.00
1396	1544	1547	2300.00	8.00	130.0000	0.00
1401	668	1674	1132.70	12.00	130.0000	0.00
1404	1674	102	746.13	12.00	130.0000	0.00
1406	102	J-1	620.69	12.00	130.0000	0.00
1409	92	J-164	484.87	12.00	130.0000	0.00
1423	421	107	867.00	12.00	130.0000	0.00
1426	1575	34	575.28	12.00	130.0000	0.00
1427	1576	248	446.87	12.00	130.0000	0.00
1429	248	1580	540.11	12.00	130.0000	0.00
1433	51	26	448.20	12.00	130.0000	0.00
1435	51	109	1427.59	12.00	130.0000	0.00
1440	6	109	475.62	12.00	130.0000	0.00
1441	6	1647	1469.07	12.00	130.0000	0.00
1443	1637	1647	5159.69	12.00	130.0000	0.00
1454	72	1637	1761.44	12.00	130.0000	0.00
1455	72	1626	3641.41	12.00	130.0000	0.00
1458	1627	1626	763.65	12.00	130.0000	0.00
1460	797	212	356.56	12.00	130.0000	0.00
1464	788	1630	3991.15	12.00	130.0000	0.00
1477	1630	1626	1130.08	12.00	130.0000	0.00
1479	1627Yates Rese		1075.00	12.00	130.0000	0.00
1481	1630	76	3539.00	12.00	130.0000	0.00
1483	76	1636	2341.00	12.00	130.0000	0.00
1487	1637	75	595.62	12.00	130.0000	0.00
1492	75	49	651.30	12.00	130.0000	0.00
1493	254	49	3310.10	12.00	130.0000	0.00
1494	254	J-35	1688.26	12.00	130.0000	0.00
1497	2072	1647	1022.00	12.00	130.0000	0.00
1499	1648	247	4693.50	12.00	130.0000	0.00
1500	343	1657	2072.02	8.00	130.0000	0.00
1509	1658	901	754.77	8.00	130.0000	0.00
1526	1674	800	496.84	8.00	130.0000	0.00
1531	800	174	473.00	8.00	130.0000	0.00
1534	1679	1689	748.17	6.00	90.0000	0.00
1544	1690	1689	126.93	8.00	90.0000	0.00
1548	2092	1698	669.39	8.00	130.0000	0.00
1552	1699	1700	801.40	10.00	130.0000	0.00
1553	2138	89	1389.60	8.00	130.0000	0.00
1560	1710	J-53	1056.65	8.00	130.0000	0.00
1562	1711	683	220.00	8.00	90.0000	0.00
1563	683	1712	500.00	8.00	115.0000	0.00
1564	1713	1716	178.58	6.00	130.0000	0.00
1567	1716	1719	185.05	6.00	130.0000	0.00
1584	1742	1737	1268.00	4.00	75.0000	0.00
1588	1737	1375	375.00	4.00	75.0000	0.00
1593	1742	1484	452.00	10.00	130.0000	0.00
1596	1484	975	1798.00	10.00	130.0000	0.00
1611	975	1310	71.00	10.00	130.0000	0.00
1612	1310	2122	454.00	10.00	130.0000	0.00
1615	2123	1089	511.48	8.00	130.0000	0.00
1617	1089	1186	243.51	6.00	75.0000	0.00
1618	1186	1767	570.00	8.00	130.0000	0.00
1621	J-135	J-171	184.70	8.00	130.0000	0.00
1626	1773	1775	197.00	8.00	130.0000	0.00
1628	1775	1776	68.00	8.00	130.0000	0.00
1629	1776	1782	1030.00	8.00	130.0000	0.00
1635	1782	1788	996.00	8.00	130.0000	0.00
1641	1788	1775	237.00	8.00	130.0000	0.00
1644	1773	1791	251.00	8.00	130.0000	0.00
1645	1776	1793	338.00	8.00	130.0000	0.00
1647	1788	1782	591.00	8.00	130.0000	0.00
1654	1800	1801	235.53	10.00	130.0000	0.00
1657	18053-inch or		110.20	8.00	130.0000	0.00
1658	1806	1808	400.00	6.00	130.0000	0.00

2030 Fireflow - High Level Zone

1660	1809	1806	19.02	8.00	130.0000	0.00
1661	1810	1821	671.00	10.00	130.0000	0.00
1663	1800	1821	258.00	10.00	130.0000	0.00
1664	1813	1809	50.87	10.00	130.0000	0.00
1665	1814	1818	715.34	2.00	140.0000	0.00
1669	1813	1814	675.00	8.00	130.0000	0.00
1672	1821	J-112	525.00	8.00	130.0000	0.00
1673	1823	1826	385.26	6.00	90.0000	0.00
1676	1827	1071	62.38	12.00	130.0000	0.00
1677	1636	J-128	438.35	8.00	130.0000	0.00
1792	910	844	262.20	4.00	75.0000	0.00
1793	178	1823	69.34	8.00	90.0000	0.00
1796	1063	1948	325.00	2.00	135.0000	0.00
1799	1032	J-114	642.00	6.00	130.0000	0.00
1810	1960	12	21.03	8.00	90.0000	0.00
1811	12	10	1053.00	8.00	90.0000	0.00
1813	1767	J-117	290.12	6.00	75.0000	0.00
1818	1737	1968	132.00	4.00	75.0000	0.00
1820	1823	J-168	334.71	6.00	75.0000	0.00
1821	175	384	2123.70	10.00	130.0000	0.00
1825	1973	566	454.00	4.00	75.0000	0.00
1826	1974	1975	651.00	6.00	130.0000	0.00
1828	J-3	1980	517.00	6.00	75.0000	0.00
1830	3-inch or	1981	48.33	4.00	75.0000	0.00
1831	1984	1767	235.15	6.00	75.0000	0.00
1834	1985	1986	56.59	4.00	75.0000	0.00
1835	894	2125	20.33	8.00	130.0000	0.00
1836	1987	568	717.00	4.00	75.0000	0.00
1837	1988	1989	52.11	4.00	75.0000	0.00
1839	2121	1991	219.88	6.00	75.0000	0.00
1840	2126	2123	286.00	10.00	130.0000	0.00
1841	1994	994	209.00	6.00	75.0000	0.00
1842	1996	1997	691.73	6.00	75.0000	0.00
1843	1184	J-163	895.08	6.00	130.0000	0.00
1852	2007	2009	230.57	6.00	75.0000	0.00
1854	2010	2065	472.04	6.00	75.0000	0.00
1855	2012	J-39	579.11	8.00	75.0000	0.00
1856	2013	2014	469.09	6.00	130.0000	0.00
1858	2016	J-81	1482.47	4.00	75.0000	0.00
1860	2127	504	947.53	4.00	75.0000	0.00
1864	1121	2023	183.59	6.00	90.0000	0.00
1865	2127	1215	263.88	6.00	75.0000	0.00
1866	2025	2028	384.00	2.00	140.0000	0.00
1869	2029	2030	216.99	2.00	140.0000	0.00
1870	2031	2029	117.40	4.00	140.0000	0.00
1871	2029	2025	27.90	4.00	140.0000	0.00
1872	2025	2032	248.94	4.00	140.0000	0.00
1873	2033	2031	618.97	4.00	140.0000	0.00
1877	2031	J-124	145.24	8.00	130.0000	0.00
1883	2047	J-74	206.38	6.00	90.0000	0.00
1887	2053	582	671.02	4.00	90.0000	0.00
1892	2129	582	343.45	4.00	90.0000	0.00
1893	590	46	757.00	6.00	90.0000	0.00
1894	2061	J-45	335.58	6.00	90.0000	0.00
1895	2063	J-44	880.19	8.00	90.0000	0.00
1896	5	361	64.75	10.00	90.0000	0.00
1898	14	540	265.00	6.00	75.0000	0.00
1900	163-in or sm	34.44	6.00	90.0000	0.00	
1901	17	18	236.00	6.00	90.0000	0.00
1904	24	2088	5.94	6.00	130.0000	0.00
1907	36	2130	291.60	6.00	75.0000	0.00
1908	38	2083	817.68	6.00	75.0000	0.00
1909	2014	J-87	300.00	6.00	75.0000	0.00
1917	69	J-61	263.00	8.00	130.0000	0.00
1920	295	J-30	1850.87	12.00	130.0000	0.00
1924	86	2066	285.00	12.00	130.0000	0.00
1927	104	J-112	808.02	6.00	75.0000	0.00
1930	118	710	2530.00	14.00	90.0000	0.00
1935	247	2106	22.48	8.00	75.0000	0.00
1936	325	2122	272.19	12.00	130.0000	0.00
1938	375	1218	736.59	14.00	75.0000	0.00
1940	396	1318	307.00	14.00	75.0000	0.00
1941	480	2138	730.48	10.00	90.0000	0.00
1947	530	2093	691.48	6.00	75.0000	0.00
1948	536	2078	287.42	8.00	75.0000	0.00
1949	565	1084	590.00	8.00	75.0000	0.00
1950	556	944	498.75	6.00	75.0000	0.00
1951	565	543	35.00	8.00	75.0000	0.00
1954	J-84	O-AV-5	54.14	8.00	90.0000	0.00
1956	584	717	786.89	10.00	90.0000	0.00
1958	590	584	267.70	10.00	90.0000	0.00
1960	620	2133	155.65	8.00	130.0000	0.00
1962	1410	649	52.91	8.00	90.0000	0.00
1964	661	424	118.60	10.00	75.0000	0.00
1965	665	172	143.00	12.00	130.0000	0.00
1967	710	137	1990.58	14.00	90.0000	0.00
1972	784	791	500.36	8.00	130.0000	0.00
1975	797	788	291.38	12.00	130.0000	0.00
1977	813	J-120	564.60	6.00	75.0000	0.00
1978	815	803	563.97	6.00	75.0000	0.00
1979	817	1338	454.00	6.00	75.0000	0.00
1982	856	2121	290.89	6.00	75.0000	0.00
1983	860	375	259.21	14.00	75.0000	0.00
1984	865	65	387.79	8.00	75.0000	0.00
1985	872	14	110.22	6.00	75.0000	0.00
1986	923	J-3	345.89	8.00	130.0000	0.00
1987	944	1987	383.07	6.00	75.0000	0.00
1989	954	945	225.61	6.00	75.0000	0.00
1990	958	J-106	266.00	6.00	75.0000	0.00
1992	994	1658	528.00	10.00	130.0000	0.00
1993	2101	60	140.36	6.00	75.0000	0.00
1995	1003	1049	529.64	8.00	130.0000	0.00
1996	1049	631	275.61	8.00	90.0000	0.00
1997	1050	975	402.00	6.00	90.0000	0.00
1998	1057	518	652.00	8.00	75.0000	0.00

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2000	1084	552	435.20	8.00	75.0000	0.00
2001	1099	1120	246.00	8.00	130.0000	0.00
2002	1107	J-79	210.02	8.00	75.0000	0.00
2003	1130	J-63	457.60	8.00	75.0000	0.00
2005	1137	398	600.00	8.00	75.0000	0.00
2010	1180	704	473.80	8.00	75.0000	0.00
2011	1183	704	38.34	6.00	75.0000	0.00
2014	1210	2067	566.74	14.00	75.0000	0.00
2020	1223	1224	265.83	6.00	75.0000	0.00
2021	1224	827	666.42	6.00	75.0000	0.00
2022	1229	815	301.07	6.00	75.0000	0.00
2024	1235	1517	896.98	8.00	75.0000	0.00
2025	1099	J-82	293.00	8.00	130.0000	0.00
2027	1284	46	713.52	8.00	90.0000	0.00
2031	1318	1392	306.00	14.00	75.0000	0.00
2032	1322	J-87	262.00	6.00	75.0000	0.00
2033	1328	2091	322.03	8.00	75.0000	0.00
2035	1337	2110	39.43	6.00	75.0000	0.00
2036	1338	813	634.51	6.00	75.0000	0.00
2037	1356	1089	17.89	6.00	75.0000	0.00
2039	1366	945	480.02	6.00	75.0000	0.00
2040	1387	979	479.26	6.00	130.0000	0.00
2042	1392	J-39	591.86	14.00	75.0000	0.00
2045	1409	407	306.00	10.00	75.0000	0.00
2048	1465	J-120	38.32	6.00	75.0000	0.00
2053	1107	1517	423.01	8.00	75.0000	0.00
2058	1570	J-8	1066.00	10.00	90.0000	0.00
2060	1575	342	808.04	12.00	130.0000	0.00
2063	1627	J-135	354.12	12.00	115.0000	0.00
2067	1648	432	2857.00	10.00	90.0000	0.00
2068	1658	421	772.00	10.00	130.0000	0.00
2070	1679	1101	25.75	6.00	90.0000	0.00
2071	1698	212	264.80	8.00	130.0000	0.00
2078	1800	1813	297.00	10.00	130.0000	0.00
2079	1809	1805	635.00	10.00	130.0000	0.00
2080	1810	107	583.38	12.00	130.0000	0.00
2087	1960	700	19.01	8.00	90.0000	0.00
2089	1973	J-2	345.00	6.00	75.0000	0.00
2090	1974	1366	377.42	6.00	75.0000	0.00
2091	1975	36	374.90	6.00	75.0000	0.00
2092	1981	J-4	275.32	6.00	75.0000	0.00
2093	994	1984	383.00	10.00	130.0000	0.00
2095	1986	552	515.83	6.00	75.0000	0.00
2096	1987	893	54.17	6.00	75.0000	0.00
2097	1989	842	189.64	6.00	75.0000	0.00
2102	1996	827	273.45	6.00	75.0000	0.00
2104	2007	375	649.59	10.00	130.0000	0.00
2105	2009	2096	41.52	6.00	75.0000	0.00
2111	2016	1120	22.21	8.00	130.0000	0.00
2114	1107	1293	379.00	6.00	75.0000	0.00
2118	2053	J-57	404.65	8.00	90.0000	0.00
2120	2063	717	379.81	10.00	90.0000	0.00
2127	2067	1218	331.70	14.00	75.0000	0.00
2128	2067	1180	580.16	8.00	75.0000	0.00
2139	2073	2007	37.55	10.00	130.0000	0.00
2141	2074	483	444.39	8.00	130.0000	0.00
2145	2076	492	344.58	8.00	75.0000	0.00
2146	2076	504	784.60	8.00	75.0000	0.00
2148	693	J-64	330.00	8.00	130.0000	0.00
2149	2078	865	288.23	8.00	75.0000	0.00
2150	2078	1991	297.24	6.00	75.0000	0.00
2152	2079	543	202.12	8.00	75.0000	0.00
2153	2080	2081	236.10	6.00	130.0000	0.00
2154	2080	958	585.00	6.00	75.0000	0.00
2155	2125	J-99	48.00	8.00	130.0000	0.00
2156	2081	958	325.04	6.00	75.0000	0.00
2159	2083	2084	265.54	8.00	75.0000	0.00
2160	2083	916	678.90	6.00	75.0000	0.00
2161	2084	565	310.77	8.00	75.0000	0.00
2162	2084	916	736.88	6.00	75.0000	0.00
2165	2086	578	560.00	8.00	130.0000	0.00
2166	2086	2132	593.29	8.00	90.0000	0.00
2169	2088	620	2465.45	8.00	130.0000	0.00
2170	2088	1214	158.00	6.00	130.0000	0.00
2173	2090	1410	14.60	8.00	90.0000	0.00
2174	2090	657	565.72	10.00	130.0000	0.00
2175	2091	1137	468.76	8.00	75.0000	0.00
2176	2091	505	311.20	8.00	75.0000	0.00
2179	2093	817	304.87	6.00	75.0000	0.00
2180	2093	1229	758.42	6.00	75.0000	0.00
2181	2094	2095	604.36	6.00	75.0000	0.00
2183	2095	1223	294.47	6.00	75.0000	0.00
2184	2095	1183	324.33	6.00	75.0000	0.00
2187	2097	856	426.07	6.00	75.0000	0.00
2188	2097	2073	206.00	6.00	75.0000	0.00
2189	2098	885	448.98	6.00	75.0000	0.00
2190	2098	2100	273.62	6.00	75.0000	0.00
2192	954	2130	268.01	6.00	75.0000	0.00
2193	2100	1050	360.00	6.00	90.0000	0.00
2194	2100	1056	405.41	6.00	75.0000	0.00
2195	2101	807	693.00	8.00	130.0000	0.00
2196	2101	J-82	1519.00	8.00	130.0000	0.00
2198	1290	1293	372.41	6.00	75.0000	0.00
2199	2103	60	154.27	6.00	75.0000	0.00
2202	2104	2021	244.00	4.00	75.0000	0.00
2203	2105	1388	298.00	6.00	75.0000	0.00
2206	2106	1328	152.76	8.00	75.0000	0.00
2207	2107	510	314.14	6.00	75.0000	0.00
2212	2109	2010	299.72	6.00	75.0000	0.00
2214	2110	1356	429.11	6.00	75.0000	0.00
2216	2111	1333	54.05	6.00	75.0000	0.00
2217	2112	1183	291.22	6.00	75.0000	0.00
2221	803	2113	632.05	6.00	75.0000	0.00
2223	2115	J-87	328.38	6.00	75.0000	0.00
2228	2117	1210	322.00	14.00	75.0000	0.00

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2231	2119	1483	385.00	6.00	75.0000	0.00
2234	2120	J-77	147.00	6.00	90.0000	0.00
2236	2121	2126	209.47	6.00	75.0000	0.00
2240	2123	2073	427.00	10.00	130.0000	0.00
2243	2125	961	36.45	8.00	130.0000	0.00
2244	2125	2081	266.99	8.00	130.0000	0.00
2246	2126	1984	286.12	10.00	130.0000	0.00
2249	2050	J-77	44.67	6.00	90.0000	0.00
2252	2129	2053	226.85	8.00	90.0000	0.00
2253	2130	961	455.00	6.00	75.0000	0.00
2254	2130	1973	40.73	6.00	75.0000	0.00
2257	2132	214	7.31	8.00	90.0000	0.00
2259	2133	599	622.41	8.00	130.0000	0.00
2260	2133	47	462.96	8.00	130.0000	0.00
2269	2138	481	66.26	10.00	90.0000	0.00
P-1	J-1	97	547.15	12.00	130.0000	0.00
P-100	J-112	1814	500.93	6.00	75.0000	0.00
P-101	J-113	2079	368.16	6.00	75.0000	0.00
P-102	J-114	1023	302.00	8.00	130.0000	0.00
P-103	J-125	649	346.91	8.00	130.0000	0.00
P-104	I-Fairview	1103	20.94	6.00	90.0000	0.00
P-105	J-115	J-116	419.54	6.00	75.0000	0.00
P-106	J-116	2097	250.67	6.00	75.0000	0.00
P-108	J-117	56	305.00	6.00	75.0000	0.00
P-11	J-3	1975	323.06	6.00	75.0000	0.00
P-111	J-120	807	266.76	6.00	75.0000	0.00
P-113	J-39	2117	288.00	14.00	75.0000	0.00
P-116	97	J-122	121.15	12.00	130.0000	0.00
P-117	J-140	J-145	46.63	12.00	130.0000	0.00
P-119	J-139	J-84	78.98	8.00	130.0000	0.00
P-121	J-140	J-138	42.92	12.00	130.0000	0.00
P-122	J-126Main Reser		111.73	18.00	130.0000	0.00
P-124	O-AV-1	2083	364.42	8.00	75.0000	0.00
P-125	O-AV-2	906	282.73	4.00	75.0000	0.00
P-127	J-127	295	2367.21	12.00	130.0000	0.00
P-128	J-127	J-128	4129.32	12.00	130.0000	0.00
P-130	J-128	1831	615.85	8.00	130.0000	0.00
P-131	J-129	1071	558.33	12.00	130.0000	0.00
P-132	668	J-129	1448.22	12.00	130.0000	0.00
P-133	J-133	1513	25.35	8.00	130.0000	0.00
P-134	J-122	J-132	800.00	12.00	130.0000	0.00
P-135	J-124	1502	393.57	8.00	130.0000	0.00
P-136	J-124	J-131	198.84	8.00	130.0000	0.00
P-138-CV	Kennicott	J-53	790.00	16.00	130.0000	0.00
P-140	O-AV-4	686	40.89	6.00	90.0000	0.00
P-143	I-AV-5	J-63	2.85	8.00	130.0000	0.00
P-144	O-AV-6	1134	545.75	4.00	75.0000	0.00
P-146	J-73	J-134	384.83	8.00	130.0000	0.00
P-147	J-64	J-141	135.51	8.00	130.0000	0.00
P-148	J-134	O-RV-2	6.27	8.00	130.0000	0.00
P-149	J-143	O-RV-1	5.82	12.00	130.0000	0.00
P-15	J-91	J-126	172.27	18.00	130.0000	0.00
P-150-CV	J-141	J-134	13.00	8.00	130.0000	0.00
P-151	J-142	J-139	80.78	8.00	130.0000	0.00
P-152	J-144	1570	631.51	12.00	130.0000	0.00
P-153-CV	J-143	J-144	24.87	12.00	130.0000	0.00
P-154	I-RV-1	J-144	5.63	12.00	130.0000	0.00
P-157	I-RV-2	J-141	7.13	8.00	130.0000	0.00
P-1570	1716	1103	1729.25	8.00	130.0000	0.00
P-158	J-145I-18th St		2.66	12.00	130.0000	0.00
P-159	J-145	J-146	2.68	12.00	130.0000	0.00
P-160-CV	J-146	J-147	9.25	12.00	130.0000	0.00
P-161	J-146O-18th St		3.23	12.00	130.0000	0.00
P-162	J-147	J-142	2.67	12.00	130.0000	0.00
P-164	I-18th St	J-147	3.12	12.00	130.0000	0.00
P-165	J-155	J-156	739.67	6.00	140.0000	0.00
P-166	66	J-110	322.75	6.00	75.0000	0.00
P-167	J-153	J-156	4747.12	12.00	115.0000	0.00
P-168	J-152	J-150	15.74	8.00	115.0000	0.00
P-169	J-154	J-88	471.34	12.00	115.0000	0.00
P-170	J-155	J-151	4833.50	6.00	140.0000	0.00
P-171	J-155	J-157	658.63	2.00	140.0000	0.00
P-172	J-156	J-154	1552.65	12.00	115.0000	0.00
P-173	J-148	J-6	2664.56	2.00	130.0000	0.00
P-174	J-149	J-153	1314.60	8.00	130.0000	0.00
P-175	J-150	J-152	2094.17	8.00	115.0000	0.00
P-176	J-64	2076	1014.00	8.00	75.0000	0.00
P-177	J-160	1057	847.45	8.00	75.0000	0.00
P-178	J-159	1513	18.67	6.00	90.0000	0.00
P-179	J-160	J-162	533.75	8.00	130.0000	0.00
P-18	J-135I-South En		77.91	12.00	130.0000	0.00
P-180	J-162	J-95	1493.70	12.00	130.0000	0.00
P-181	1818	J-161	94.69	2.00	140.0000	0.00
P-182	J-163	2003	50.56	6.00	130.0000	0.00
P-183	J-164	J-143	3640.74	12.00	130.0000	0.00
P-184	J-163	J-177	465.62	8.00	130.0000	0.00
P-188	31	J-158	1171.71	12.00	130.0000	0.00
P-19	33	34	11.57	4.00	90.0000	0.00
P-190	J-167	2074	284.73	10.00	90.0000	0.00
P-194	76	1580	1373.43	12.00	130.0000	0.00
P-195	J-170	J-176	367.83	12.00	130.0000	0.00
P-196	J-168	J-21	156.89	6.00	75.0000	0.00
P-197	J-168	1980	565.74	8.00	130.0000	0.00
P-198	J-880-South En		3066.47	12.00	115.0000	0.00
P-199	J-171	1773	557.30	8.00	130.0000	0.00
P-2	101	J-1	84.14	8.00	130.0000	0.00
P-20	1576	213	32.42	12.00	130.0000	0.00
P-200	J-169	J-91	282.63	18.00	130.0000	0.00
P-201	J-173	J-153	21062.56	8.00	115.0000	0.00
P-203	J-177	J-164	335.35	8.00	130.0000	0.00
P-25	J-30	2066	908.00	12.00	130.0000	0.00
P-29	J-8	2063	977.55	10.00	90.0000	0.00
P-3	J-60-Central1		24935.52	6.00	115.0000	0.00
P-30	J-35	J-42	1262.05	12.00	130.0000	0.00
P-31	54	J-8	271.99	8.00	90.0000	0.00

2030 Fireflow - High Level Zone

P-33	J-42	2072	33.95	12.00	130.0000	0.00
P-34	1699	J-42	861.64	12.00	130.0000	0.00
P-36	2091	1322	322.00	6.00	75.0000	0.00
P-4	J-7	1570	1181.00	10.00	90.0000	0.00
P-40	J-44	10	918.28	8.00	90.0000	0.00
P-42	J-45	J-44	388.00	8.00	90.0000	0.00
P-43	J-132	J-170	232.78	12.00	130.0000	0.00
P-44	J-55	28	392.03	8.00	115.0000	0.00
P-47	J-57	2132	26.83	8.00	90.0000	0.00
P-48	41	J-90	18.53	10.00	90.0000	0.00
P-49	2051	J-57	16.66	8.00	90.0000	0.00
P-50	2052	J-57	17.24	8.00	90.0000	0.00
P-51	O-18th St	J-142	1.13	8.00	130.0000	0.00
P-53	J-4	1974	369.00	6.00	75.0000	0.00
P-54	923	J-4	253.57	6.00	75.0000	0.00
P-57	1217	I-AV-6	27.22	4.00	75.0000	0.00
P-58	1217	69	273.00	8.00	130.0000	0.00
P-6	J-11	J-88	987.96	8.00	115.0000	0.00
P-61	J-58	68	222.00	6.00	115.0000	0.00
P-62	J-61	J-136	302.00	8.00	130.0000	0.00
P-63	J-127	J-158	1896.96	12.00	130.0000	0.00
P-64	54	J-27	596.19	8.00	90.0000	0.00
P-65	J-67	597	417.00	8.00	90.0000	0.00
P-67	J-71	J-67	339.00	8.00	130.0000	0.00
P-69	J-73	J-71	449.75	8.00	75.0000	0.00
P-7	J-152	J-154	148.62	8.00	115.0000	0.00
P-71	J-63	J-123	21.02	8.00	130.0000	0.00
P-73	J-74	1679	128.71	6.00	90.0000	0.00
P-74	J-77	J-74	27.47	6.00	90.0000	0.00
P-75	I-AV-3	2120	128.95	6.00	90.0000	0.00
P-76	J-78	408	254.81	8.00	90.0000	0.00
P-77	J-79	1130	739.00	8.00	75.0000	0.00
P-78	J-80	504	390.06	8.00	75.0000	0.00
P-79	1396	J-82	521.89	6.00	90.0000	0.00
P-80	1388	J-87	625.00	6.00	130.0000	0.00
P-81	92	J-62	399.00	8.00	130.0000	0.00
P-82	J-84	597	632.70	8.00	90.0000	0.00
P-83	J-123	J-140	102.57	12.00	130.0000	0.00
P-84	J-93	1971	33.88	6.00	90.0000	0.00
P-86	I-High Lev	J-126	388.44	6.00	75.0000	0.00
P-87	J-94	526	1018.53	8.00	75.0000	0.00
P-88	J-93	J-94	3.82	6.00	90.0000	0.00
P-89	J-96inter-tie	1009.00	12.00	130.0000	0.00	
P-9	J-2	2098	329.00	6.00	75.0000	0.00
P-90	J-105	174	266.00	12.00	130.0000	0.00
P-91	J-20	1981	59.00	6.00	75.0000	0.00
P-92	J-21	J-20	140.66	6.00	75.0000	0.00
P-93	568	J-99	19.30	8.00	130.0000	0.00
P-94	J-99	556	294.00	8.00	130.0000	0.00
P-95	566	J-99	49.52	8.00	130.0000	0.00
P-96	J-100	2080	161.00	8.00	130.0000	0.00
P-97	J-106	894	329.00	6.00	75.0000	0.00
P-98	I-Centrali	J-173	305.94	8.00	115.0000	0.00
P-99	J-111	944	378.41	6.00	75.0000	0.00
Valley Vie	O-Valley VYankis (Va	2734.85	4.00	140.0000	0.00	

N O D E D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
5		0.30	243.40	
6		6.80	244.40	
9		2.80	205.80	
10		9.60	213.70	
11		0.10	236.90	
12		3.80	236.50	
13		0.10	198.90	
14		2.20	201.40	
15		3.10	186.10	
16		1.60	186.10	
17		10.70	175.70	
18		2.30	171.90	
19		1.50	165.30	
22		3.50	186.50	
23		7.90	187.70	
24		2.00	604.50	
26		9.10	240.30	
28		2.10	322.60	
29		0.70	319.00	
31		6.50	216.80	
32		5.90	214.70	
33		0.40	183.00	
34		3.70	183.50	
36		4.60	194.40	
37		0.60	319.00	
38		3.80	290.50	
40		5.30	190.80	
41		0.30	219.10	
43		0.10	253.50	
46		6.80	229.90	
47		2.20	544.40	
48		0.60	543.60	
49		14.70	243.00	
50		1.10	244.20	
51		7.20	240.00	
52		1.60	261.50	
54		3.60	209.30	
56		1.10	193.00	
59		0.40	252.50	
60		1.40	252.90	

2030 Fireflow - High Level Zone

65	7.10	192.40
66	2.30	191.30
68	4.60	205.20
69	3.20	208.70
70	0.80	285.20
72	19.00	255.00
75	15.60	247.70
76	36.30	256.00
83	0.10	221.90
85	0.10	222.10
86	5.70	222.40
89	4.80	225.60
92	6.40	192.40
97	2.60	173.90
98	0.30	174.00
101	0.30	174.30
102	4.90	176.00
103	0.20	175.70
104	5.00	179.70
107	5.00	183.60
108	2.10	183.60
109	9.20	236.20
118	19.00	192.50
119	4.10	217.70
121	2.70	230.70
137	9.80	180.00
166	7.30	182.90
172	4.60	174.10
174	2.50	175.70
175	8.20	183.60
178	2.60	183.60
192	8.80	183.60
201	4.20	178.30
212	4.40	256.30
213	2.50	253.50
214	5.70	230.10
224	4.30	224.20
247	16.40	192.10
248	9.70	248.60
253	6.30	240.90
254	22.40	230.80
295	25.70	210.10
325	5.70	183.90
342	3.90	165.40
343	7.50	163.20
344	3.40	164.20
346	0.70	165.60
356	10.40	219.10
361	12.50	243.10
375	5.60	230.50
384	11.90	183.20
385	1.30	183.60
396	1.30	221.20
398	3.50	220.50
407	6.10	226.99
408	3.20	223.30
421	5.70	184.20
424	1.40	189.90
432	17.30	184.10
468	20.90	204.20
473	1.90	178.30
474	2.30	210.70
480	8.00	219.70
481	0.20	220.90
483	1.50	214.00
492	9.50	195.50
504	7.30	192.80
505	6.50	197.20
509	10.70	200.00
510	5.90	189.60
512	7.50	184.80
513	0.80	178.80
518	3.40	182.20
526	14.30	201.80
530	3.70	220.30
536	4.80	201.90
540	1.00	202.30
543	2.40	210.90
544	1.90	216.10
552	3.60	191.50
556	4.40	206.10
565	3.20	210.80
566	1.80	204.60
568	2.60	206.30
569	7.90	178.30
573	1.60	179.00
578	1.90	280.80
579	4.10	205.50
582	5.40	212.80
584	5.50	207.60
590	6.30	208.60
597	4.20	222.20
599	6.20	592.40
601	1.60	577.30
619	2.50	559.00
620	11.10	583.00
623	2.10	588.00
628	2.70	420.40
631	3.50	382.80
632	1.00	455.20
642	2.00	304.60
649	2.10	392.70
657	9.40	331.20
661	6.20	190.90
665	8.70	174.40

2030 Fireflow - High Level Zone

668	13.60	182.30	
675	1.70	180.60	
676	3.10	206.70	
682	0.60	209.20	
683	4.20	200.30	
686	1.10	278.90	
693	7.60	197.40	
700	0.10	237.50	
704	2.60	190.10	
705	5.40	185.50	
710	16.50	197.50	
717	7.30	204.90	
718	0.10	191.20	
726	1.70	190.00	
780	9.80	195.00	
781	0.10	252.20	
784	6.20	259.80	
788	18.30	258.50	
791	5.60	256.00	
792	0.40	254.90	
797	4.70	255.30	
800	4.30	177.30	
802	1.00	178.00	
803	7.20	217.90	
807	8.60	272.60	
808	5.40	215.50	
813	5.10	244.90	
815	3.90	219.20	
817	5.00	275.20	
827	7.10	186.80	
828	3.20	192.50	
831	2.30	216.90	
842	3.90	234.00	
844	5.30	260.00	
856	3.30	194.40	
860	3.00	230.20	
865	3.10	195.90	
868	3.20	197.00	
872	1.20	199.50	
881	3.00	199.80	
885	3.40	204.20	
893	3.00	198.10	
894	1.20	206.30	
899	7.30	192.10	
901	7.10	189.00	
906	2.50	292.50	
910	1.90	294.90	
916	6.00	222.40	
922	1.20	238.30	
923	4.10	182.20	
929	0.90	181.60	
937	3.90	183.80	
944	4.30	196.50	
945	4.10	192.00	
954	3.30	193.70	
958	7.50	201.60	
961	1.70	205.40	
962	4.50	179.30	
964	0.30	179.40	
975	7.80	184.50	
979	1.70	173.70	
994	6.30	192.30	
1003	6.10	435.80	
1023	7.40	389.60	
1024	3.50	408.40	
1032	5.00	455.00	
1049	3.80	421.50	
1050	7.00	188.20	
1053	4.40	183.20	
1056	2.20	192.00	
1057	6.60	179.20	
1060	7.30	196.50	
1063	1.90	238.10	
1064	3.30	181.30	
1071	3.20	190.50	
1084	13.20	198.50	
1085	4.90	197.60	
1089	2.70	190.70	
1099	11.70	233.90	
1100	0.80	339.70	
1101	1.70	323.20	
1103	6" and 2"	6.10	346.40
1104	0.50	285.50	
1107	3.50	211.40	
1120	1.60	222.90	
1121	2.50	205.30	
1122	0.90	204.40	
1125	2.20	205.00	
1130	6.30	225.00	
1134	7.90	202.90	
1137	4.80	202.10	
1156	6.90	184.90	
1180	4.50	195.40	
1181	3.80	186.00	
1183	2.20	190.20	
1184	6.50	189.70	
1186	3.70	191.30	
1210	5.10	215.60	
1211	0.30	564.40	
1214	2.20	607.60	
1215	2.00	200.80	
1217	4.50	207.80	
1218	7.20	217.60	
1223	3.00	187.20	
1224	4.30	187.60	

2030 Fireflow - High Level Zone

1229	4.30	224.40
1232	7.60	183.90
1235	5.80	197.20
1239	2.00	265.90
1240	0.10	608.90
1244	5.80	591.00
1251	7.10	622.30
1262	0.30	349.90
1270	1.90	184.30
1277	6.80	340.00
1284	5.60	224.00
1290	7.50	207.20
1293	3.90	206.60
1295	4.60	200.40
1298	0.70	224.20
1309	7.50	185.00
1310	5.80	184.40
1314	4.60	183.00
1318	4.20	221.20
1322	3.60	194.60
1328	3.60	192.30
1333	3.40	191.30
1337	3.90	192.80
1338	9.10	257.70
1356	2.50	190.80
1359	0.80	193.30
1364	3.50	193.90
1366	5.30	190.60
1375	9.80	168.30
1387	3.30	182.40
1388	6.10	200.40
1392	5.10	220.30
1396	1.80	308.10
1409	5.90	222.20
1410	2.20	392.50
1456	3.20	183.20
1465	3.20	235.70
1483	5.90	193.40
1484	14.30	183.60
1497	2.60	167.20
1498	1.50	396.40
1502	3.90	385.30
1513	0.80	339.40
1517	5.50	205.40
1519	0.90	211.30
1524	1.20	615.60
1544	16.80	194.80
1547	13.50	208.00
1570	10.00	195.50
1575	7.90	171.60
1576	1.60	253.70
1580	6.60	245.80
1626	19.10	272.90
1627	11.20	289.00
1630	29.90	266.70
1636	186.00	245.70
1637	26.00	249.10
1647	26.40	236.20
1648	26.70	187.30
1657	7.10	176.60
1658	7.10	185.90
1674	8.20	178.00
1679	3.10	317.70
1689	3.00	323.60
1690	0.40	319.70
1698	5.20	256.80
1699	5.90	218.90
1700	2.80	216.20
1710	3.60	303.90
1711	0.80	209.80
1712	1.70	268.50
1713	1.70	571.10
1716	7.20	533.50
1719	0.60	516.50
1737	6.20	166.60
1742	9.90	183.60
1767	3.80	193.40
1773	3.50	272.20
1775	1.70	270.10
1776	5.00	269.20
1782	9.00	269.10
1788	6.20	269.00
1791	0.90	273.40
1793	1.20	270.60
1799	3.10	201.40
1800	2.70	166.10
1801	0.80	173.70
1805	2.60	179.70
1806	1.50	173.10
1808	1.40	179.80
1809	2.50	172.30
1810	4.40	179.50
1813	3.50	171.10
1814	6.50	167.10
1818	2.80	178.50
1821	5.00	169.80
1823	2.70	182.50
1826	3.80	183.30
1827	6.90	192.90
1831	2.10	234.10
1948	1.10	234.90
1960	4.60	237.60
1961	3.30	190.10
1968	0.50	164.90
1971	0.10	185.30

2030 Fireflow - High Level Zone

1973	2.90	198.40	
1974	4.80	187.50	
1975	4.60	186.60	
1980	3.80	180.20	
1981	1.30	183.10	
1984	3.80	194.10	
1985	0.20	195.20	
1986	4.30	194.50	
1987	4.00	198.50	
1988	0.20	219.50	
1989	1.70	222.30	
1991	3.60	194.20	
1994	0.70	190.70	
1996	4.20	189.80	
1997	4.20	191.50	
2003	0.20	185.20	
2007	3.10	200.60	
2009	4.10	196.90	
2010	4.80	191.70	
2012	4.20	199.00	
2013	3.60	200.10	
2014	5.90	193.20	
2016	5.40	222.30	
2021	0.80	204.20	
2023	0.60	206.90	
2025	2.30	455.60	
2028	1.30	520.90	
2029	1.20	449.00	
2030	0.70	460.10	
2031	3.00	430.90	
2032	0.90	484.00	
2033	2.10	474.20	
2047	0.70	309.00	
2050	0.20	301.10	
2051	0.10	229.60	
2052	0.10	229.90	
2053	4.50	220.60	
2061	1.20	208.20	
2063	7.70	205.00	
2065	5.70	198.90	
2066	4.20	222.20	
2067	8.40	216.20	
2072	7.90	221.90	
2073	3.10	199.80	
2074	2.50	220.90	
2076	8.40	204.40	
2078	3.90	199.20	
2079	4.30	203.10	
2080	5.00	191.60	
2081	4.40	198.70	
2083	8.50	255.40	
2084	5.60	224.10	
2086	5.60	230.30	
2088	9.00	604.50	
2090	9.70	391.30	
2091	4.90	195.30	
2092	2.40	251.60	
2093	6.30	236.00	
2094	6.90	188.50	
2095	4.80	187.60	
2096	3.30	196.50	
2097	5.10	202.50	
2098	5.10	202.10	
2100	6.80	197.30	
2101	8.10	270.60	
2103	8.80	236.90	
2104	3.80	200.50	
2105	5.70	201.90	
2106	2.60	192.10	
2107	6.30	190.50	
2109	4.70	190.80	
2110	3.50	192.70	
2111	3.00	191.00	
2112	6.60	190.20	
2113	5.50	195.50	
2115	4.60	191.90	
2117	4.10	217.50	
2119	7.10	193.60	
2120	3.90	268.60	
2121	3.50	193.00	
2122	5.80	183.70	
2123	4.30	193.20	
2125	1.30	206.20	
2126	2.70	192.50	
2127	8.50	203.70	
2129	4.70	218.10	
2130	3.60	198.00	
2132	2.10	230.10	
2133	4.20	578.00	
2137	5.60	198.20	
2138	7.50	221.50	
I-18th St	0.00	218.20	
O-18th St	0.00	218.20	
3-in or sm	0.10	185.50	
3-inch or	0.40	183.00	
3-inch or	0.20	183.10	
O-AV-1	0.00	283.80	
I-AV-2	0.00	306.00	
I-AV-3	0.00	253.40	
O-AV-4	0.00	289.30	
O-AV-5	0.00	225.30	
O-AV-6	0.00	208.10	
O-Central I	----	333.50	541.19
O-Fairview	Fairview PRV	346.50	466.50
O-High Lev	High Level P	401.60	

2030 Fireflow - High Level Zone

High Level	High Level R	----	605.00	605.00
Hillcrest		0.30	256.20	
inter-tie		3.50	174.40	
J-1		4.30	174.00	
J-100		0.90	190.60	
J-105		3.10	175.60	
J-106		3.40	206.20	
J-11		3.40	280.00	
J-110		6.00	198.00	
J-111		2.40	192.50	
J-112		6.30	167.90	
J-113		3.00	200.50	
J-114	13.60		405.70	
J-115	2.20		197.30	
J-116	2.30		207.10	
J-117	2.10		192.10	
J-120	2.90		237.50	
J-122	3.20		174.00	
J-123	0.50		224.70	
J-124	2.60		403.80	
J-125	2.50		383.00	
J-126	4.10		367.95	
J-127	34.10		225.20	
J-128	17.80		235.20	
J-129	10.20		184.80	
J-130	4.60		222.00	
J-131	0.70		418.00	
J-132	3.60		176.00	
J-133	1.10		339.60	
J-134	1.30		200.90	
J-135	2.30		288.30	
J-136	1.00		204.10	
J-138	1.20		219.60	
J-139	0.60		222.60	
J-140	0.70		218.20	
J-141	0.50		200.90	
J-142	0.30		218.20	
J-143	12.70		186.90	
J-144	2.30		186.80	
J-145	0.20		218.20	
J-146	0.00		218.20	
J-147	0.00		218.20	
J-148	9.20		498.90	
J-149	4.50		306.10	
J-150	7.30		272.40	
J-151	16.70		326.80	
J-152	7.80		272.40	
J-153	93.50		302.40	
J-154	7.50		267.60	
J-155	21.60		263.80	
J-156	24.40		261.30	
J-157	2.30		265.80	
J-158	10.50		211.40	
J-159	0.50		343.00	
J-160	5.50		172.60	
J-161	0.30		178.60	
J-162	8.50		183.00	
J-163	4.90		183.70	
J-164	15.50		177.50	
J-167	3.40		0.00	
J-168	3.70		0.00	
J-169	8.20		413.50	
J-170	2.10		174.50	
J-171	2.50		286.90	
J-173	74.70		329.80	
J-176	1.30		166.40	
J-177	2.80		179.10	
J-2	7.00		201.80	
J-20	2.70		182.90	
J-21	1.90		182.80	
J-25	6.10		311.10	
J-27	5.20		207.10	
J-3	4.10		182.20	
J-30	9.50		219.90	
J-35	10.20		222.10	
J-39	5.00		218.10	
J-4	3.10		184.40	
J-42	7.50		222.00	
J-44	7.50		208.40	
J-45	5.20		209.00	
J-53	11.70		294.30	
J-55	3.30		297.10	
J-57	1.70		229.20	
J-58	1.90		204.60	
J-6	4.70		473.40	
J-61	5.20		207.00	
J-62	1.40		191.50	
J-63	1.70		225.20	
J-64	5.10		202.30	
J-67	2.60		210.80	
J-7	4.30		214.70	
J-71	2.80		204.60	
J-73	7.90		199.60	
J-74	1.20		301.00	
J-77	0.80		296.10	
J-78	6.40		230.70	
J-79	3.30		223.40	
J-8	8.00		208.80	
J-80	6.00		190.70	
J-81	8.20		218.90	
J-82	8.00		257.90	
J-84	2.90		226.30	
J-87	5.20		194.40	
J-88	26.00		275.70	
J-90	0.10		219.10	

J-91		4.90	352.90	
J-93		2.00	187.50	
J-94		4.50	187.50	
J-95		14.70	189.50	
J-96		8.10	176.90	
J-99		1.50	205.50	
Kennicott	Kennicott Re	----	374.00	397.90
Main Reser	Main Reservo	----	383.30	401.10
physical d		0.10	222.00	
I-RV-1		0.00	186.80	
I-RV-2		0.00	200.90	
O-South En		----	287.90	495.59
O-Valley V	Valley View	0.00	308.10	
Yankis (Va	Yankis (Vall	----	631.50	635.90
Yates Rese	500,000 gal	----	376.00	401.10
O-18th St		----	218.20	389.66
I-18th St		0.00	218.20	
I-AV-1		0.00	283.80	
O-AV-2		0.00	306.00	
O-AV-3		0.00	253.40	
I-AV-4		0.00	289.30	
I-AV-5		0.00	225.30	
I-AV-6		0.00	208.10	
I-Centrali		0.00	333.50	
I-Fairview	Fairview PRV	0.00	346.50	
I-High Lev	High Level P	0.00	401.60	
O-RV-1		----	186.80	382.95
O-RV-2		----	200.90	389.67
I-South En		0.00	287.90	
I-Valley V	Valley View	0.00	308.10	

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 5
 MAXIMUM AND MINIMUM VELOCITIES = 5
 MAXIMUM AND MINIMUM HEAD LOSS/1000 = 5

SUPPLY ZONE DATA

THIS SYSTEM HAS MULTIPLE SUPPLY ZONES

- ZONE NO. 1 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@18th St PRV ~@RV-2 ~@RV-1~@Yankis (Valley V
 ~@Fairview PRV~@Kennicott Reserv~@High Level Reser ~@Main Reservoir
 ~@Yates Reservoir
- ZONE NO. 2 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@Centralia Alpha
- ZONE NO. 3 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@South End Pump S

SYSTEM CONFIGURATION

NUMBER OF PIPES(P) = 732
 NUMBER OF END NODES(J) = 575
 NUMBER OF PRIMARY LOOPS(L) = 153
 NUMBER OF SUPPLY NODES(F) = 7
 NUMBER OF SUPPLY ZONES(Z) = 3

Case: 0

RESULTS OBTAINED AFTER 26 TRIALS: ACCURACY = 0.33224E-03

SIMULATION DESCRIPTION (LABEL)

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS		FLOWRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/ 1000 ft/f	HL/ 1000 ft/f
	#1	#2						
3	6	5	88.42	0.00	0.00	0.36	0.14	0.14
5	10	9	2.80	0.00	0.00	0.03	0.00	0.00
6	12	11	0.10	0.00	0.00	0.00	0.00	0.00
7	872	13	0.10	0.00	0.00	0.00	0.00	0.00
8	15	16	17.59	0.00	0.00	0.20	0.08	0.08
10	18	19	1.50	0.04	0.00	0.15	0.08	0.08
12	22	23	15.97	0.01	0.00	0.10	0.01	0.01
13	24	1524	1.20	0.00	0.00	0.03	0.00	0.00
14	26	J-55	6.10	0.00	0.00	0.04	0.00	0.00
16	28	29	0.70	0.00	0.00	0.02	0.00	0.00
17	32	31	9.60	0.00	0.00	0.03	0.00	0.00
21	38	37	0.60	0.00	0.00	0.02	0.00	0.00
22	2014	40	14.69	0.00	0.00	0.09	0.01	0.01
23	41	1699	21.86	0.00	0.00	0.06	0.00	0.00
24	213	43	0.10	0.00	0.00	0.00	0.00	0.00
26	47	48	0.60	0.00	0.00	0.02	0.00	0.00

2030 Fireflow - High Level Zone

27	49	50	1.10	0.00	0.00	0.00	0.00	0.00
28	51	52	2.40	0.00	0.00	0.02	0.00	0.00
32	60	59	0.40	0.00	0.00	0.00	0.00	0.00
35	65	66	38.62	0.15	0.00	0.44	0.50	0.50
37	68	69	8.81	0.00	0.00	0.06	0.00	0.00
38	52	70	0.80	0.00	0.00	0.01	0.00	0.00
39	72	Hillcrest	0.30	0.00	0.00	0.01	0.00	0.00
41	76	75	2.22	0.00	0.00	0.01	0.00	0.00
45	2066	83	0.10	0.00	0.00	0.00	0.00	0.00
46	86	85	0.10	0.00	0.00	0.00	0.00	0.00
52	97	98	0.30	0.00	0.00	0.00	0.00	0.00
55	102	103	0.20	0.00	0.00	0.00	0.00	0.00
56	1810	104	4.97	0.00	0.00	0.01	0.00	0.00
59	107	108	6.64	0.00	0.00	0.02	0.00	0.00
60	J-53	109	308.67	0.06	0.00	0.49	0.07	0.07
66	J-169	118	412.43	0.95	0.00	0.86	0.46	0.46
68	121	119	172.79	0.09	0.00	0.36	0.13	0.13
70	860	121	258.45	0.01	0.00	0.54	0.27	0.27
72	118	1799	3.10	0.00	0.00	0.02	0.00	0.00
85	396	physical d	0.10	0.00	0.00	0.00	0.00	0.00
107	J-91	2067	1275.28	0.52	0.00	1.61	0.55	0.55
109	325	34	34.03	0.00	0.00	0.10	0.00	0.00
110	166	2122	71.85	0.02	0.00	0.20	0.02	0.02
112	962	166	26.57	0.00	0.00	0.08	0.00	0.00
114	569	962	31.37	0.00	0.00	0.09	0.00	0.00
115	665	569	40.87	0.01	0.00	0.12	0.01	0.01
118	J-105	172	17.76	0.00	0.00	0.05	0.00	0.00
120	178	175	78.73	0.01	0.00	0.22	0.02	0.02
123	1826	178	94.64	0.01	0.00	0.27	0.03	0.03
126	1827	1826	110.24	0.01	0.00	0.31	0.04	0.04
129	192	1827	201.97	0.22	0.00	0.57	0.13	0.13
137	201	192	195.53	0.03	0.00	0.55	0.12	0.12
139	137	201	233.75	0.07	0.00	0.66	0.17	0.17
141	137	15	110.51	0.02	0.00	0.31	0.04	0.04
142	15	J-162	89.81	0.01	0.00	0.25	0.03	0.03
145	201	J-93	34.02	0.01	0.00	0.10	0.01	0.01
155	212	213	83.17	0.02	0.00	0.24	0.03	0.03
156	26	214	85.04	0.04	0.00	0.24	0.03	0.03
163	2072	224	4.30	0.00	0.00	0.01	0.00	0.00
187	248	253	6.30	0.00	0.00	0.02	0.00	0.00
192	254	J-127	149.37	0.11	0.00	0.42	0.07	0.07
262	325	1575	25.25	0.00	0.00	0.07	0.00	0.00
279	344	343	14.60	0.00	0.00	0.04	0.00	0.00
280	342	344	20.60	0.00	0.00	0.06	0.00	0.00
282	342	346	0.70	0.00	0.00	0.00	0.00	0.00
283	86	J-130	4.60	0.00	0.00	0.01	0.00	0.00
292	361	356	40.06	0.07	0.00	0.16	0.03	0.03
298	J-7	32	38.30	0.00	0.00	0.16	0.03	0.03
302	32	480	22.80	0.01	0.00	0.09	0.01	0.01
318	384	385	53.88	0.00	0.00	0.22	0.03	0.03
319	356	J-167	7.40	0.00	0.00	0.03	0.00	0.00
320	356	41	22.26	0.00	0.00	0.09	0.01	0.01
329	396	398	312.40	0.06	0.00	1.28	1.98	1.98
331	398	1409	139.48	0.14	0.00	0.57	0.44	0.44
340	407	408	102.49	0.16	0.00	0.42	0.25	0.25
353	2119	661	2.50	0.00	0.00	0.03	0.00	0.00
355	1648	424	64.98	0.01	0.00	0.27	0.08	0.08
363	295	468	30.70	0.03	0.00	0.13	0.01	0.01
398	172	473	1.90	0.00	0.00	0.01	0.00	0.00
403	480	474	2.30	0.00	0.00	0.01	0.00	0.00
411	2129	J-45	23.13	0.03	0.00	0.15	0.03	0.03
414	1217	1121	4.00	0.00	0.00	0.05	0.01	0.01
417	1235	492	52.38	0.09	0.00	0.33	0.21	0.21
429	505	509	56.17	0.12	0.00	0.36	0.24	0.24
433	512	510	1.47	0.00	0.00	0.01	0.00	0.00
435	J-160	513	0.80	0.00	0.00	0.01	0.00	0.00
440	518	J-94	6.43	0.00	0.00	0.04	0.00	0.00
448	1184	92	54.69	0.08	0.00	0.35	0.08	0.08
451	119	530	62.55	0.01	0.00	0.40	0.30	0.30
452	119	536	106.15	0.37	0.00	0.68	0.79	0.79
458	536	2079	49.52	0.12	0.00	0.32	0.19	0.19
461	540	2079	9.19	0.00	0.00	0.06	0.01	0.01
464	544	543	40.42	0.06	0.00	0.26	0.13	0.13
472	552	J-100	83.13	0.05	0.00	0.53	0.51	0.51
476	I-AV-1	J-114	0.00	0.00	0.00	0.00	0.00	0.00
486	569	573	1.60	0.00	0.00	0.01	0.00	0.00
490	385	166	52.58	0.02	0.00	0.34	0.07	0.07
495	J-138	579	22.21	0.01	0.00	0.14	0.02	0.02
497	582	584	8.54	0.00	0.00	0.05	0.00	0.00
503	J-73	590	16.41	0.02	0.00	0.10	0.03	0.03
511	599	601	1.60	0.00	0.00	0.01	0.00	0.00
526	599	619	2.50	0.00	0.00	0.02	0.00	0.00
531	620	623	2.10	0.00	0.00	0.01	0.00	0.00
538	628	631	42.40	0.01	0.00	0.27	0.10	0.10
541	1049	632	1.00	0.00	0.00	0.01	0.00	0.00
547	631	642	2.00	0.00	0.00	0.01	0.00	0.00
552	2090	High Level	249.70	0.52	0.00	1.02	0.47	0.47
565	509	661	52.38	0.29	0.00	0.33	0.21	0.21
569	597	1284	8.76	0.00	0.00	0.06	0.01	0.01
571	2086	46	21.57	0.01	0.00	0.14	0.03	0.03
574	668	665	38.31	0.04	0.00	0.24	0.04	0.04
577	668	675	1.70	0.00	0.00	0.01	0.00	0.00
584	J-27	676	3.10	0.00	0.00	0.02	0.00	0.00
590	54	682	0.60	0.00	0.00	0.00	0.00	0.00
591	J-95	683	6.70	0.00	0.00	0.04	0.00	0.00
593	J-78	686	1.10	0.00	0.00	0.01	0.00	0.00
597	408	J-79	175.70	0.04	0.00	1.12	2.02	2.02
601	361	1960	35.56	0.10	0.00	0.23	0.07	0.07
612	710	705	19.77	0.00	0.00	0.13	0.01	0.01
617	717	1134	0.67	0.00	0.00	0.00	0.00	0.00
623	247	718	0.10	0.00	0.00	0.00	0.00	0.00
630	424	726	112.26	0.08	0.00	0.72	0.88	0.88
632	726	J-80	23.96	0.02	0.00	0.15	0.05	0.05
652	468	780	9.80	0.01	0.00	0.06	0.00	0.00
684	2092	781	0.10	0.00	0.00	0.00	0.00	0.00

2030 Fireflow - High Level Zone

686	784	1698	15.56	0.00	0.00	0.10	0.01	0.01
690	788	791	17.22	0.01	0.00	0.11	0.01	0.01
693	791	792	0.40	0.00	0.00	0.00	0.00	0.00
697	797	784	10.54	0.00	0.00	0.07	0.00	0.00
700	800	802	1.00	0.00	0.00	0.01	0.00	0.00
702	803	1465	25.12	0.06	0.00	0.29	0.22	0.22
706	2009	808	7.09	0.02	0.00	0.08	0.02	0.02
710	815	813	21.59	0.05	0.00	0.24	0.17	0.17
712	121	2093	82.96	0.10	0.00	-0.94	2.04	2.04
714	2094	40	6.77	0.13	0.00	0.17	0.14	0.14
723	2096	828	11.58	0.02	0.00	0.13	0.05	0.05
726	831	544	42.32	0.04	0.00	0.48	0.59	0.59
727	530	831	63.56	0.42	0.00	0.72	1.25	1.25
735	831	1989	18.94	0.03	0.00	0.21	0.13	0.13
739	844	842	12.42	0.04	0.00	0.14	0.06	0.06
741	817	844	29.61	0.20	0.00	0.34	0.30	0.30
749	J-115	856	12.16	0.01	0.00	0.14	0.06	0.06
751	2078	14	22.85	0.05	0.00	0.26	0.19	0.19
753	860	2097	32.52	0.21	0.00	0.37	0.36	0.36
757	868	865	5.03	0.00	0.00	0.06	0.01	0.01
760	868	J-113	0.93	0.00	0.00	0.01	0.00	0.00
762	872	868	9.16	0.01	0.00	0.10	0.03	0.03
772	2098	881	0.52	0.00	0.00	0.01	0.00	0.00
776	J-111	885	13.96	0.02	0.00	0.16	0.08	0.08
784	893	J-106	5.30	0.01	0.00	0.06	0.01	0.01
785	J-110	893	29.71	0.13	0.00	0.34	0.31	0.31
789	899	66	17.38	0.01	0.00	0.20	0.11	0.11
791	901	899	34.83	0.07	0.00	0.40	0.41	0.41
793	901	1742	41.51	0.64	0.00	0.47	0.57	0.57
797	910	906	2.50	0.00	0.00	0.03	0.00	0.00
801	910	38	7.48	0.00	0.00	0.08	0.02	0.02
807	842	2084	25.56	0.07	0.00	0.29	0.23	0.23
812	916	922	1.20	0.00	0.00	0.01	0.00	0.00
814	J-20	923	1.94	0.00	0.00	0.01	0.00	0.00
817	J-21	929	0.90	0.00	0.00	0.01	0.00	0.00
823	J-2	937	10.98	0.02	0.00	0.12	0.02	0.02
825	556	J-2	16.60	0.05	0.00	0.19	0.10	0.10
831	2080	945	21.21	0.08	0.00	0.24	0.16	0.16
839	2081	954	11.91	0.03	0.00	0.14	0.06	0.06
846	962	964	0.30	0.00	0.00	0.00	0.00	0.00
858	1314	1387	23.56	0.09	0.00	0.60	1.43	1.43
861	108	104	4.54	0.00	0.00	0.05	0.01	0.01
867	J-110	958	17.98	0.12	0.00	0.20	0.12	0.12
874	994	65	25.15	0.17	0.00	0.29	0.22	0.22
876	65	1986	35.51	0.28	0.00	0.40	0.42	0.42
883	1003	1023	20.56	0.01	0.00	0.13	0.01	0.01
903	J-125	1024	48.60	0.02	0.00	0.31	0.07	0.07
905	O-High Lev	649	360.00	3.15	0.00	4.08	30.96	30.96
910	1024	628	45.10	0.04	0.00	0.29	0.06	0.06
912	1003	1032	5.44	0.01	0.00	0.06	0.01	0.01
930	1050	1053	4.40	0.01	0.00	0.05	0.01	0.01
933	384	2100	6.15	0.02	0.00	0.07	0.02	0.02
936	16	1057	15.89	0.03	0.00	0.18	0.07	0.07
938	1060	1063	3.00	0.00	0.00	0.03	0.00	0.00
941	J-129	1064	3.30	0.00	0.00	0.02	0.00	0.00
948	526	1071	45.14	0.15	0.00	0.51	0.47	0.47
949	1084	526	25.59	0.06	0.00	0.16	0.02	0.02
962	1085	1337	4.94	0.01	0.00	0.06	0.01	0.01
966	1099	J-78	83.91	0.25	0.00	0.54	0.19	0.19
975	1101	1100	0.80	0.00	0.00	0.01	0.00	0.00
976	O-Fairview	1101	18.30	0.01	0.00	0.21	0.09	0.09
982	J-81	2103	2.88	0.00	0.00	0.03	0.00	0.00
993	1121	1122	0.90	0.00	0.00	0.01	0.00	0.00
994	2076	2127	29.32	0.09	0.00	0.33	0.30	0.30
1000	1130	1125	2.20	0.00	0.00	0.02	0.00	0.00
1001	J-73	2104	11.83	0.03	0.00	0.13	0.06	0.06
1003	2104	1134	7.23	0.01	0.00	0.08	0.02	0.02
1004	509	1290	6.64	0.01	0.00	0.08	0.02	0.02
1007	2105	1137	22.50	0.06	0.00	0.26	0.18	0.18
1009	2013	1388	38.71	0.13	0.00	0.44	0.50	0.50
1012	2107	2106	49.05	0.46	0.00	0.56	0.77	0.77
1014	23	510	27.22	0.24	0.00	0.31	0.26	0.26
1017	2137	2109	30.43	0.15	0.00	0.35	0.32	0.32
1019	2109	2094	42.55	0.19	0.00	0.48	0.59	0.59
1020	2094	23	38.42	0.07	0.00	0.44	0.49	0.49
1023	23	1156	19.27	0.07	0.00	0.22	0.14	0.14
1024	2073	2096	19.10	0.03	0.00	0.22	0.13	0.13
1025	2096	2110	15.37	0.02	0.00	0.17	0.09	0.09
1026	1997	2110	0.15	0.00	0.00	0.00	0.00	0.00
1028	2111	1997	19.15	0.03	0.00	0.22	0.14	0.14
1030	2112	2111	42.21	0.16	0.00	0.48	0.58	0.58
1032	2113	1961	17.79	0.05	0.00	0.20	0.12	0.12
1035	704	1961	13.79	0.02	0.00	0.16	0.07	0.07
1036	1961	2109	28.27	0.08	0.00	0.32	0.28	0.28
1037	2010	2014	37.98	0.31	0.00	0.43	0.48	0.48
1040	2012	2013	64.56	0.42	0.00	0.73	1.28	1.28
1041	2065	2012	11.30	0.02	0.00	0.13	0.05	0.05
1042	2137	2065	7.38	0.01	0.00	0.08	0.02	0.02
1043	2137	2113	12.38	0.02	0.00	0.14	0.06	0.06
1044	1180	2113	55.40	0.26	0.00	0.63	0.97	0.97
1046	22	1181	19.01	0.01	0.00	0.22	0.13	0.13
1047	2095	22	38.48	0.09	0.00	0.44	0.49	0.49
1048	726	1184	86.61	0.01	0.00	0.55	0.20	0.20
1051	1996	1186	17.28	0.03	0.00	0.20	0.11	0.11
1053	827	1232	4.80	0.01	0.00	0.05	0.01	0.01
1058	1232	1156	10.51	0.03	0.00	0.12	0.04	0.04
1060	1156	512	22.88	0.17	0.00	0.26	0.19	0.19
1062	512	2107	13.92	0.06	0.00	0.16	0.07	0.07
1064	2115	2107	18.65	0.02	0.00	0.21	0.13	0.13
1069	2117	2065	40.96	0.32	0.00	0.46	0.55	0.55
1071	1210	2137	55.78	0.57	0.00	0.63	0.98	0.98
1074	1713	1211	0.30	0.00	0.00	0.00	0.00	0.00
1076	24	1713	34.20	0.03	0.00	0.39	0.14	0.14
1077	1215	J-58	18.81	0.04	0.00	0.21	0.13	0.13
1078	68	1217	3.50	0.00	0.00	0.04	0.00	0.00

2030 Fireflow - High Level Zone

1080	1218	2112	52.28	0.91	0.00	0.59	0.87	0.87
1083	2112	1223	32.26	0.12	0.00	0.37	0.36	0.36
1085	2111	1224	2.04	0.00	0.00	0.02	0.00	0.00
1087	1333	1085	10.79	0.02	0.00	0.12	0.05	0.05
1088	1085	808	0.95	0.00	0.00	0.01	0.00	0.00
1090	808	1229	2.65	0.00	0.00	0.03	0.00	0.00
1091	1181	1232	13.31	0.03	0.00	0.15	0.07	0.07
1094	1235	1483	0.17	0.00	0.00	0.00	0.00	0.00
1095	2120	1104	0.50	0.00	0.00	0.01	0.00	0.00
1096	2120	1239	2.00	0.00	0.00	0.02	0.00	0.00
1099	1214	1240	0.10	0.00	0.00	0.00	0.00	0.00
1100	1244	1214	79.20	0.32	0.00	0.90	0.68	0.68
1103	1251	1244	44.78	0.13	0.00	0.51	0.24	0.24
1110	Yankis (Va	1251	92.10	0.37	0.00	1.05	0.90	0.90
1116	J-25	1513	29.70	0.00	0.00	0.19	0.03	0.03
1117	J-159	1277	7.10	0.00	0.00	0.08	0.02	0.02
1118	1277	1262	0.30	0.00	0.00	0.00	0.00	0.00
1120	657	J-25	35.80	0.02	0.00	0.15	0.01	0.01
1125	1181	1270	1.90	0.00	0.00	0.02	0.00	0.00
1127	2103	1099	5.14	0.00	0.00	0.03	0.00	0.00
1132	1277	I-AV-4	0.00	0.00	0.00	0.00	0.00	0.00
1138	579	693	18.11	0.10	0.00	0.21	0.12	0.12
1140	1284	O-AV-3	0.00	0.00	0.00	0.00	0.00	0.00
1146	1290	2119	8.32	0.28	0.00	0.21	0.21	0.21
1148	1293	1295	11.61	0.14	0.00	0.30	0.39	0.39
1150	398	2016	99.84	0.02	0.00	0.64	0.26	0.26
1152	1120	1298	0.70	0.00	0.00	0.01	0.00	0.00
1154	432	1309	7.50	0.04	0.00	0.09	0.02	0.02
1165	1310	1314	6.07	0.13	0.00	0.16	0.12	0.12
1169	2127	J-61	5.59	0.10	0.00	0.14	0.10	0.10
1171	1318	2105	14.58	0.34	0.00	0.37	0.59	0.59
1173	2105	1322	9.33	0.12	0.00	0.24	0.26	0.26
1178	40	2115	16.16	0.21	0.00	0.41	0.71	0.71
1179	2115	1328	15.62	0.39	0.00	0.40	0.67	0.67
1182	803	J-81	7.86	0.12	0.00	0.20	0.19	0.19
1185	1333	1337	3.82	0.03	0.00	0.10	0.05	0.05
1189	1338	807	16.30	0.01	0.00	0.10	0.01	0.01
1193	518	192	11.18	0.03	0.00	0.29	0.36	0.36
1195	1060	192	4.07	0.03	0.00	0.10	0.06	0.06
1198	705	1060	14.37	0.75	0.00	0.37	0.57	0.57
1205	492	J-80	2.36	0.02	0.00	0.06	0.02	0.02
1208	828	1356	7.58	0.05	0.00	0.19	0.18	0.18
1210	828	1359	0.80	0.00	0.00	0.02	0.00	0.00
1211	1364	1984	0.75	0.00	0.00	0.02	0.00	0.00
1212	1364	1991	3.17	0.02	0.00	0.08	0.03	0.03
1214	2121	1364	7.42	0.05	0.00	0.19	0.17	0.17
1215	1366	36	1.08	0.00	0.00	0.01	0.00	0.00
1217	1251	1244	40.22	0.13	0.00	0.46	0.19	0.19
1226	17	1375	4.06	0.10	0.00	0.10	0.04	0.04
1236	1387	17	18.56	0.26	0.00	0.47	0.66	0.66
1239	1392	1388	16.24	0.42	0.00	0.41	0.72	0.72
1244	33	1314	22.09	0.12	0.00	0.56	0.91	0.91
1245	937	1456	7.08	0.01	0.00	0.08	0.02	0.02
1247	1456	384	1.40	0.00	0.00	0.02	0.00	0.00
1248	1396I-Valley V		0.00	0.00	0.00	0.00	0.00	0.00
1258	1409	505	11.44	0.41	0.00	0.29	0.38	0.38
1261	1410	657	7.23	0.06	0.00	0.18	0.11	0.11
1269	1023	I-AV-2	0.00	0.00	0.00	0.00	0.00	0.00
1309	1456	881	2.48	0.00	0.00	0.03	0.00	0.00
1315	885	1056	5.72	0.02	0.00	0.15	0.07	0.07
1319	1465	2103	5.47	0.06	0.00	0.14	0.10	0.10
1322	407	509	13.56	0.42	0.00	0.35	0.51	0.51
1330	492	693	3.45	0.04	0.00	0.09	0.04	0.04
1338	1295	1483	7.01	0.14	0.00	0.18	0.15	0.15
1340	899	1484	10.15	0.57	0.00	0.26	0.30	0.30
1351	344	1497	2.60	0.01	0.00	0.07	0.01	0.01
1354	1502	1498	1.50	0.00	0.00	0.01	0.00	0.00
1358	J-133	1502	20.20	0.00	0.00	0.13	0.01	0.01
1371	1517	1519	0.90	0.01	0.00	0.09	0.03	0.03
1384	J-95	1544	41.90	0.03	0.00	0.12	0.01	0.01
1388	1544	1547	22.57	0.00	0.00	0.06	0.00	0.00
1389	1547	J-96	11.60	0.00	0.00	0.03	0.00	0.00
1396	1544	1547	2.53	0.00	0.00	0.02	0.00	0.00
1401	668	1674	59.66	0.02	0.00	0.17	0.01	0.01
1404	1674	102	22.80	0.00	0.00	0.06	0.00	0.00
1406	102	J-1	17.70	0.00	0.00	0.05	0.00	0.00
1409	92	J-164	46.89	0.00	0.00	0.13	0.01	0.01
1423	421	107	52.80	0.01	0.00	0.15	0.01	0.01
1426	34	1575	7.85	0.00	0.00	0.02	0.00	0.00
1427	1576	248	78.97	0.01	0.00	0.22	0.02	0.02
1429	248	1580	62.97	0.01	0.00	0.18	0.02	0.02
1433	51	26	100.24	0.02	0.00	0.28	0.04	0.04
1435	109	51	109.84	0.06	0.00	0.31	0.04	0.04
1440	109	6	189.63	0.06	0.00	0.54	0.12	0.12
1441	6	1647	94.41	0.05	0.00	0.27	0.03	0.03
1443	1637	1647	32.86	0.02	0.00	0.09	0.00	0.00
1454	72	1637	175.68	0.18	0.00	0.50	0.10	0.10
1455	1626	72	194.98	0.45	0.00	0.55	0.12	0.12
1458	1627	1626	535.23	0.61	0.00	1.52	0.80	0.80
1460	797	212	79.71	0.01	0.00	0.23	0.02	0.02
1464	1630	788	130.47	0.23	0.00	0.37	0.06	0.06
1477	1626	1630	321.15	0.35	0.00	0.91	0.31	0.31
1479	Yates Rese	1627	882.33	2.16	0.00	2.50	2.01	2.01
1481	1630	76	160.78	0.30	0.00	0.46	0.09	0.09
1483	76	1636	178.63	0.24	0.00	0.51	0.10	0.10
1487	1637	75	116.82	0.03	0.00	0.33	0.05	0.05
1492	75	49	103.44	0.02	0.00	0.29	0.04	0.04
1493	49	254	87.64	0.09	0.00	0.25	0.03	0.03
1494	J-35	254	84.12	0.04	0.00	0.24	0.03	0.03
1497	1647	2072	100.86	0.04	0.00	0.29	0.04	0.04
1499	247	1648	116.48	0.22	0.00	0.33	0.05	0.05
1500	343	1657	7.10	0.00	0.00	0.05	0.00	0.00
1509	1658	901	83.44	0.14	0.00	0.53	0.18	0.18
1526	1674	800	28.66	0.01	0.00	0.18	0.03	0.03
1531	800	174	23.36	0.01	0.00	0.15	0.02	0.02

2030 Fireflow - High Level Zone

1534	1679	1689	3.40	0.00	0.00	0.04	0.00	0.00
1544	1689	1690	0.40	0.00	0.00	0.00	0.00	0.00
1548	1698	2092	2.50	0.00	0.00	0.02	0.00	0.00
1552	1699	1700	2.80	0.00	0.00	0.01	0.00	0.00
1553	2136	89	4.80	0.00	0.00	0.03	0.00	0.00
1560	J-53	1710	3.60	0.00	0.00	0.02	0.00	0.00
1562	683	1711	0.80	0.00	0.00	0.01	0.00	0.00
1563	683	1712	1.70	0.00	0.00	0.01	0.00	0.00
1564	1713	1716	32.20	0.02	0.00	-0.37	0.13	0.13
1567	1716	1719	0.60	0.00	0.00	0.01	0.00	0.00
1584	1742	1737	12.44	0.56	0.00	0.32	0.44	0.44
1588	1737	1375	5.74	0.04	0.00	0.15	0.10	0.10
1593	1742	1484	19.17	0.00	0.00	0.08	0.00	0.00
1596	1484	975	15.02	0.00	0.00	0.06	0.00	0.00
1611	975	1310	10.80	0.00	0.00	0.04	0.00	0.00
1612	2122	1310	1.07	0.00	0.00	0.00	0.00	0.00
1615	2123	1089	1.77	0.00	0.00	0.01	0.00	0.00
1617	1089	1186	21.03	0.04	0.00	0.24	0.16	0.16
1618	1186	1767	34.61	0.02	0.00	0.22	0.04	0.04
1621	J-135	J-171	30.00	0.01	0.00	0.19	0.03	0.03
1626	1773	1775	23.10	0.00	0.00	0.15	0.02	0.02
1628	1775	1776	10.72	0.00	0.00	0.07	0.00	0.00
1629	1776	1782	4.52	0.00	0.00	0.03	0.00	0.00
1635	1788	1782	1.92	0.00	0.00	0.01	0.00	0.00
1641	1775	1788	10.68	0.00	0.00	0.07	0.00	0.00
1644	1773	1791	0.90	0.00	0.00	0.01	0.00	0.00
1645	1776	1793	1.20	0.00	0.00	0.01	0.00	0.00
1647	1788	1782	2.55	0.00	0.00	0.02	0.00	0.00
1654	1800	1801	0.80	0.00	0.00	0.00	0.00	0.00
1657	18053-inch	or	0.40	0.00	0.00	0.00	0.00	0.00
1658	1806	1808	1.40	0.00	0.00	0.02	0.00	0.00
1660	1809	1806	2.90	0.00	0.00	0.02	0.00	0.00
1661	1810	1821	31.78	0.01	0.00	0.13	0.01	0.01
1663	1821	1800	21.56	0.00	0.00	0.09	0.01	0.01
1664	1813	1809	8.40	0.00	0.00	0.03	0.00	0.00
1665	1814	1818	3.10	0.22	0.00	0.32	0.31	0.31
1669	1813	1814	6.16	0.00	0.00	0.04	0.00	0.00
1672	1821	J-112	5.22	0.00	0.00	0.03	0.00	0.00
1673	1826	1823	11.80	0.02	0.00	0.13	0.04	0.04
1676	1827	1071	84.83	0.00	0.00	0.24	0.03	0.03
1677	J-128	1636	7.37	0.00	0.00	0.05	0.00	0.00
1792	844	910	11.88	0.11	0.00	0.30	0.40	0.40
1793	178	1823	13.31	0.00	0.00	0.08	0.01	0.01
1796	1063	1948	1.10	0.02	0.00	0.11	0.05	0.05
1799	1032	J-114	0.44	0.00	0.00	0.00	0.00	0.00
1810	1960	12	30.86	0.00	0.00	0.20	0.06	0.06
1811	12	10	26.96	0.05	0.00	0.17	0.04	0.04
1813	1767	J-117	3.20	0.00	0.00	0.04	0.00	0.00
1818	1737	1968	0.50	0.00	0.00	0.01	0.00	0.00
1820	1823	J-168	22.41	0.06	0.00	0.25	0.18	0.18
1821	175	384	70.53	0.10	0.00	0.29	0.05	0.05
1825	566	1973	4.61	0.03	0.00	0.12	0.07	0.07
1826	1975	1974	0.18	0.00	0.00	0.00	0.00	0.00
1828	1980	J-3	5.41	0.01	0.00	0.06	0.01	0.01
1830	19813-inch	or	0.20	0.00	0.00	0.01	0.00	0.00
1831	1767	1984	27.61	0.06	0.00	0.31	0.27	0.27
1834	1986	1985	0.20	0.00	0.00	0.01	0.00	0.00
1835	894	2125	11.15	0.00	0.00	0.07	0.00	0.00
1836	1987	568	2.64	0.02	0.00	0.07	0.02	0.02
1837	1989	1988	0.20	0.00	0.00	0.01	0.00	0.00
1839	2121	1991	29.50	0.07	0.00	0.33	0.30	0.30
1840	2123	2126	169.04	0.07	0.00	0.69	0.23	0.23
1841	994	1994	0.70	0.00	0.00	0.01	0.00	0.00
1842	1997	1996	14.81	0.06	0.00	0.17	0.08	0.08
1843	1184	J-163	25.42	0.07	0.00	0.29	0.08	0.08
1852	2007	2009	22.34	0.04	0.00	0.25	0.18	0.18
1854	2065	2010	31.33	0.16	0.00	0.36	0.34	0.34
1855	J-39	2012	57.46	0.15	0.00	0.37	0.25	0.25
1856	2013	2014	22.25	0.03	0.00	0.25	0.06	0.06
1858	2016	J-81	3.21	0.05	0.00	0.08	0.04	0.04
1860	504	2127	5.58	0.09	0.00	0.14	0.10	0.10
1864	1121	2023	0.60	0.00	0.00	0.01	0.00	0.00
1865	2127	1215	20.81	0.04	0.00	0.24	0.16	0.16
1866	2025	2028	1.30	0.02	0.00	0.13	0.06	0.06
1869	2029	2030	0.70	0.00	0.00	0.07	0.02	0.02
1870	2031	2029	6.40	0.00	0.00	0.16	0.04	0.04
1871	2029	2025	4.50	0.00	0.00	0.11	0.02	0.02
1872	2025	2032	0.90	0.00	0.00	0.02	0.00	0.00
1873	2031	2033	2.10	0.00	0.00	0.05	0.01	0.01
1877	J-124	2031	11.50	0.00	0.00	0.07	0.00	0.00
1883	J-74	2047	0.70	0.00	0.00	0.01	0.00	0.00
1887	2053	582	6.33	0.06	0.00	0.16	0.09	0.09
1892	2129	582	7.61	0.04	0.00	0.19	0.13	0.13
1893	46	590	17.93	0.06	0.00	0.20	0.09	0.09
1894	J-45	2061	1.20	0.00	0.00	0.01	0.00	0.00
1895	J-44	2063	23.79	0.03	0.00	0.15	0.04	0.04
1896	5	361	88.12	0.01	0.00	0.36	0.14	0.14
1898	14	540	10.19	0.01	0.00	0.12	0.04	0.04
1900	163-in	or sm	0.10	0.00	0.00	0.00	0.00	0.00
1901	17	18	3.80	0.00	0.00	0.04	0.00	0.00
1904	2088	24	37.40	0.00	0.00	0.42	0.17	0.17
1907	2130	36	9.88	0.01	0.00	0.11	0.04	0.04
1908	38	2083	3.08	0.00	0.00	0.03	0.00	0.00
1909	2014	J-87	39.64	0.16	0.00	0.45	0.52	0.52
1917	69	J-61	0.61	0.00	0.00	0.00	0.00	0.00
1920	295	J-30	24.20	0.00	0.00	0.07	0.00	0.00
1924	2066	86	10.40	0.00	0.00	0.03	0.00	0.00
1927	104	J-112	4.52	0.01	0.00	0.05	0.01	0.01
1930	118	710	390.33	1.05	0.00	0.81	0.41	0.41
1935	2106	247	132.98	0.03	0.00	0.85	1.21	1.21
1936	2122	325	64.99	0.00	0.00	0.18	0.02	0.02
1938	1218	375	533.41	0.76	0.00	1.11	1.04	1.04
1940	1318	396	313.80	0.12	0.00	0.65	0.39	0.39
1941	480	2138	12.50	0.00	0.00	0.05	0.00	0.00
1947	2093	530	4.71	0.01	0.00	0.05	0.01	0.01

2030 Fireflow - High Level Zone

1948	536	2078	51.83	0.06	0.00	0.33	0.21	0.21
1949	565	1084	94.50	0.38	0.00	0.60	0.64	0.64
1950	556	944	5.88	0.01	0.00	0.07	0.02	0.02
1951	543	565	90.36	0.02	0.00	0.58	0.59	0.59
1954	J-84	O-AV-5	0.00	0.00	0.00	0.00	0.00	0.00
1956	584	717	31.08	0.02	0.00	0.13	0.02	0.02
1958	590	584	28.04	0.00	0.00	0.11	0.02	0.02
1960	620	2133	17.30	0.00	0.00	0.11	0.01	0.01
1962	649	1410	306.80	0.21	0.00	1.96	4.05	4.05
1964	661	424	48.68	0.01	0.00	0.20	0.06	0.06
1965	172	665	11.26	0.00	0.00	0.03	0.00	0.00
1967	710	137	354.06	0.69	0.00	0.74	0.35	0.35
1972	791	784	11.22	0.00	0.00	0.07	0.00	0.00
1975	788	797	94.95	0.01	0.00	0.27	0.03	0.03
1977	813	J-120	5.59	0.01	0.00	0.06	0.01	0.01
1978	803	815	4.31	0.00	0.00	0.05	0.01	0.01
1979	817	1338	14.50	0.04	0.00	0.16	0.08	0.08
1982	856	2121	30.71	0.09	0.00	0.35	0.32	0.32
1983	375	860	293.97	0.09	0.00	0.61	0.34	0.34
1984	865	65	56.08	0.09	0.00	0.36	0.24	0.24
1985	14	872	10.46	0.00	0.00	0.12	0.04	0.04
1986	J-3	923	2.89	0.00	0.00	0.02	0.00	0.00
1987	1987	944	14.77	0.03	0.00	0.17	0.08	0.08
1989	945	954	4.30	0.00	0.00	0.05	0.01	0.01
1990	958	J-106	10.45	0.01	0.00	0.12	0.04	0.04
1992	994	1658	149.04	0.10	0.00	0.61	0.18	0.18
1993	2101	60	7.39	0.00	0.00	0.08	0.02	0.02
1995	1049	1003	32.10	0.02	0.00	0.20	0.03	0.03
1996	631	1049	36.90	0.02	0.00	0.24	0.08	0.08
1997	1050	975	3.58	0.00	0.00	0.04	0.00	0.00
1998	1057	518	21.01	0.03	0.00	0.13	0.04	0.04
2000	1084	552	55.72	0.10	0.00	0.36	0.24	0.24
2001	1120	1099	88.92	0.05	0.00	0.57	0.21	0.21
2002	J-79	1107	92.93	0.13	0.00	0.59	0.62	0.62
2003	1130	J-63	70.97	0.17	0.00	0.45	0.38	0.38
2005	398	1137	69.57	0.22	0.00	0.44	0.36	0.36
2010	1180	704	91.77	0.29	0.00	0.59	0.61	0.61
2011	704	1183	75.39	0.07	0.00	0.86	1.71	1.71
2014	2067	1210	522.31	0.56	0.00	1.09	1.00	1.00
2020	1223	1224	20.83	0.04	0.00	0.24	0.16	0.16
2021	1224	827	18.57	0.09	0.00	0.21	0.13	0.13
2022	1229	815	21.19	0.05	0.00	0.24	0.16	0.16
2024	1517	1235	58.34	0.24	0.00	0.37	0.26	0.26
2025	J-82	1099	1.55	0.00	0.00	0.01	0.00	0.00
2027	1284	46	3.16	0.00	0.00	0.02	0.00	0.00
2031	1392	1318	332.57	0.13	0.00	0.69	0.43	0.43
2032	J-87	1322	37.64	0.12	0.00	0.43	0.47	0.47
2033	2091	1328	74.51	0.13	0.00	0.48	0.41	0.41
2035	1337	2110	4.86	0.00	0.00	0.06	0.01	0.01
2036	813	1338	10.90	0.03	0.00	0.12	0.05	0.05
2037	1356	1089	21.96	0.00	0.00	0.25	0.17	0.17
2039	945	1366	12.81	0.03	0.00	0.15	0.06	0.06
2040	1387	979	1.70	0.00	0.00	0.02	0.00	0.00
2042	J-39	1392	353.91	0.29	0.00	0.74	0.48	0.48
2045	1409	407	122.15	0.11	0.00	0.50	0.35	0.35
2048	1465	J-120	16.45	0.00	0.00	0.19	0.10	0.10
2053	1107	1517	64.74	0.13	0.00	0.41	0.32	0.32
2058	J-8	1570	18.70	0.01	0.00	0.08	0.01	0.01
2060	1575	342	25.20	0.00	0.00	0.07	0.00	0.00
2063	1627	J-135	335.90	0.15	0.00	0.95	0.42	0.42
2067	1648	432	24.80	0.04	0.00	0.10	0.01	0.01
2068	1658	421	58.50	0.02	0.00	0.24	0.03	0.03
2070	1101	1679	15.80	0.00	0.00	0.18	0.07	0.07
2071	1698	212	7.86	0.00	0.00	0.05	0.00	0.00
2078	1800	1813	18.06	0.00	0.00	0.07	0.00	0.00
2079	1809	1805	3.00	0.00	0.00	0.01	0.00	0.00
2080	107	1810	41.16	0.00	0.00	0.12	0.01	0.01
2087	1960	700	0.10	0.00	0.00	0.00	0.00	0.00
2089	1973	J-2	14.27	0.03	0.00	0.16	0.08	0.08
2090	1366	1974	6.43	0.01	0.00	0.07	0.02	0.02
2091	36	1975	6.36	0.01	0.00	0.07	0.02	0.02
2092	1981	J-4	0.56	0.00	0.00	0.01	0.00	0.00
2093	1984	994	181.19	0.10	0.00	0.74	0.26	0.26
2095	1986	552	31.01	0.17	0.00	0.35	0.33	0.33
2096	893	1987	21.41	0.01	0.00	0.24	0.17	0.17
2097	1989	842	17.04	0.02	0.00	0.19	0.11	0.11
2102	827	1996	6.67	0.01	0.00	0.08	0.02	0.02
2104	375	2007	233.84	0.27	0.00	0.96	0.42	0.42
2105	2009	2096	11.15	0.00	0.00	0.13	0.05	0.05
2111	2016	1120	91.22	0.00	0.00	0.58	0.22	0.22
2114	1107	1293	24.69	0.08	0.00	0.28	0.22	0.22
2118	J-57	2053	46.27	0.05	0.00	0.30	0.12	0.12
2120	717	2063	23.11	0.00	0.00	0.09	0.01	0.01
2127	2067	1218	592.90	0.42	0.00	1.24	1.26	1.26
2128	2067	1180	151.67	0.89	0.00	0.97	1.54	1.54
2139	2007	2073	208.40	0.01	0.00	0.85	0.34	0.34
2141	2074	483	1.50	0.00	0.00	0.01	0.00	0.00
2145	492	2076	37.07	0.04	0.00	0.24	0.11	0.11
2146	504	2076	7.44	0.00	0.00	0.05	0.01	0.01
2148	693	J-64	13.95	0.00	0.00	0.09	0.01	0.01
2149	2078	865	54.15	0.07	0.00	0.35	0.23	0.23
2150	1991	2078	29.07	0.09	0.00	0.33	0.29	0.29
2152	2079	543	52.34	0.04	0.00	0.33	0.21	0.21
2153	2080	2081	43.82	0.05	0.00	0.50	0.23	0.23
2154	2080	958	12.19	0.03	0.00	0.14	0.06	0.06
2155	2125	J-99	34.75	0.00	0.00	0.22	0.04	0.04
2156	958	2081	12.22	0.02	0.00	0.14	0.06	0.06
2159	2084	2083	8.64	0.00	0.00	0.06	0.01	0.01
2160	2083	916	3.23	0.00	0.00	0.04	0.00	0.00
2161	2084	565	7.35	0.00	0.00	0.05	0.01	0.01
2162	2084	916	3.97	0.01	0.00	0.05	0.01	0.01
2165	2086	578	1.90	0.00	0.00	0.01	0.00	0.00
2166	2132	2086	29.07	0.03	0.00	0.19	0.05	0.05
2169	2088	620	30.50	0.07	0.00	0.19	0.03	0.03
2170	1214	2088	76.90	0.10	0.00	0.87	0.64	0.64

2030 Fireflow - High Level Zone

2173	1410	2090	297.37	0.06	0.00	1.90	3.82	3.82
2174	2090	657	37.97	0.01	0.00	0.16	0.01	0.01
2175	1137	2091	87.27	0.26	0.00	0.56	0.55	0.55
2176	2091	505	51.23	0.06	0.00	0.33	0.21	0.21
2179	2093	817	49.10	0.24	0.00	0.56	0.77	0.77
2180	2093	1229	22.84	0.14	0.00	0.26	0.19	0.19
2181	2095	2094	9.55	0.02	0.00	0.11	0.04	0.04
2183	1223	2095	8.42	0.01	0.00	0.10	0.03	0.03
2184	1183	2095	44.41	0.21	0.00	0.50	0.64	0.64
2187	2097	856	21.84	0.07	0.00	0.25	0.17	0.17
2188	2073	2097	11.09	0.01	0.00	0.13	0.05	0.05
2189	885	2098	4.83	0.00	0.00	0.05	0.01	0.01
2190	2098	2100	12.10	0.02	0.00	0.14	0.06	0.06
2192	954	2130	12.91	0.02	0.00	0.15	0.07	0.07
2193	2100	1050	14.98	0.02	0.00	0.17	0.06	0.06
2194	1056	2100	3.52	0.00	0.00	0.04	0.01	0.01
2195	807	2101	26.84	0.02	0.00	0.17	0.02	0.02
2196	2101	J-82	11.35	0.01	0.00	0.07	0.00	0.00
2198	1293	1290	9.17	0.01	0.00	0.10	0.03	0.03
2199	60	2103	5.59	0.00	0.00	0.06	0.01	0.01
2202	2104	2021	0.80	0.00	0.00	0.02	0.00	0.00
2203	1388	2105	22.95	0.06	0.00	0.26	0.19	0.19
2206	1328	2106	86.53	0.08	0.00	0.55	0.54	0.54
2207	510	2107	22.78	0.06	0.00	0.26	0.19	0.19
2212	2109	2010	11.45	0.02	0.00	0.13	0.05	0.05
2214	2110	1356	16.88	0.05	0.00	0.19	0.11	0.11
2216	2111	1333	18.02	0.01	0.00	0.20	0.12	0.12
2217	1183	2112	28.78	0.08	0.00	0.33	0.29	0.29
2221	2113	803	44.49	0.41	0.00	0.50	0.64	0.64
2223	J-87	2115	22.71	0.06	0.00	0.26	0.19	0.19
2228	1210	2117	461.43	0.25	0.00	0.96	0.79	0.79
2231	1483	2119	1.28	0.00	0.00	0.01	0.00	0.00
2234	J-77	2120	6.40	0.00	0.00	0.07	0.01	0.01
2236	2126	2121	9.71	0.01	0.00	0.11	0.04	0.04
2240	2073	2123	175.11	0.10	0.00	0.72	0.24	0.24
2243	2125	961	14.84	0.00	0.00	0.09	0.01	0.01
2244	2081	2125	39.74	0.01	0.00	0.25	0.05	0.05
2246	2126	1984	156.62	0.06	0.00	0.64	0.20	0.20
2249	J-77	2050	0.20	0.00	0.00	0.00	0.00	0.00
2252	2053	2129	35.44	0.02	0.00	0.23	0.07	0.07
2253	961	2130	13.14	0.03	0.00	0.15	0.07	0.07
2254	2130	1973	12.57	0.00	0.00	0.14	0.06	0.06
2257	214	2132	79.34	0.00	0.00	0.51	0.33	0.33
2259	2133	599	10.30	0.00	0.00	0.07	0.00	0.00
2260	2133	47	2.80	0.00	0.00	0.02	0.00	0.00
2269	2138	481	0.20	0.00	0.00	0.00	0.00	0.00
F-1	J-1	97	13.10	0.00	0.00	0.04	0.00	0.00
F-100	J-112	1814	3.44	0.00	0.00	0.04	0.01	0.01
F-101	2079	J-113	2.07	0.00	0.00	0.02	0.00	0.00
F-102	1023	J-114	13.16	0.00	0.00	0.08	0.01	0.01
F-103	649	J-125	51.10	0.03	0.00	0.33	0.07	0.07
F-104	1103I-Fairview		18.30	0.00	0.00	0.21	0.09	0.09
F-105	J-116	J-115	14.36	0.03	0.00	0.16	0.08	0.08
F-106	2097	J-116	16.66	0.03	0.00	0.19	0.10	0.10
F-108	J-117	56	1.10	0.00	0.00	0.01	0.00	0.00
F-11	1975	J-3	1.58	0.00	0.00	0.02	0.00	0.00
F-111	J-120	807	19.14	0.04	0.00	0.22	0.14	0.14
F-113	2117	J-39	416.37	0.19	0.00	0.87	0.65	0.65
F-116	97	J-122	10.20	0.00	0.00	0.03	0.00	0.00
F-117	J-140	J-145	44.66	0.00	0.00	0.13	0.01	0.01
F-119	J-139	J-84	43.56	0.00	0.00	0.28	0.06	0.06
F-121	J-140	J-138	23.41	0.00	0.00	0.07	0.00	0.00
F-122	Main Reser	J-126	2064.91	0.15	0.00	2.60	1.35	1.35
F-124	O-AV-1	2083	0.00	0.00	0.00	0.00	0.00	0.00
F-125	O-AV-2	906	0.00	0.00	0.00	0.00	0.00	0.00
F-127	J-127	295	80.60	0.06	0.00	0.23	0.02	0.02
F-128	J-127	J-128	27.27	0.01	0.00	0.08	0.00	0.00
F-130	J-128	1831	2.10	0.00	0.00	0.01	0.00	0.00
F-131	1071	J-129	126.77	0.03	0.00	0.36	0.06	0.06
F-132	J-129	668	113.27	0.07	0.00	0.32	0.04	0.04
F-133	1513	J-133	21.30	0.00	0.00	0.14	0.01	0.01
F-134	J-122	J-132	7.00	0.00	0.00	0.02	0.00	0.00
F-135	1502	J-124	14.80	0.00	0.00	0.09	0.01	0.01
F-136	J-124	J-131	0.70	0.00	0.00	0.00	0.00	0.00
F-138-CV	Kenniscott	J-53	323.97	0.06	0.00	0.52	0.08	0.08
F-140	O-AV-4	686	0.00	0.00	0.00	0.00	0.00	0.00
F-143	I-AV-5	J-63	0.00	0.00	0.00	0.00	0.00	0.00
F-144	O-AV-6	1134	0.00	0.00	0.00	0.00	0.00	0.00
F-146	J-134	J-73	13.84	0.00	0.00	0.09	0.01	0.01
F-147	J-64	J-141	15.64	0.00	0.00	0.10	0.01	0.01
F-148	J-134	O-RV-2	0.00	0.00	0.00	0.00	0.00	0.00
F-149	J-143	O-RV-1	0.00	0.00	0.00	0.00	0.00	0.00
F-15	J-126	J-91	1700.81	0.16	0.00	2.14	0.94	0.94
F-150-CV	J-141	J-134	15.14	0.00	0.00	0.10	0.01	0.01
F-151	J-142	J-139	44.16	0.00	0.00	0.28	0.06	0.06
F-152	J-144	1570	33.91	0.00	0.00	0.10	0.00	0.00
F-153-CV	J-143	J-144	36.21	0.00	0.00	0.10	0.01	0.01
F-154	I-RV-1	J-144	0.00	0.00	0.00	0.00	0.00	0.00
F-157	I-RV-2	J-141	0.00	0.00	0.00	0.00	0.00	0.00
F-1570	1716	1103	24.40	0.03	0.00	0.16	0.02	0.02
F-158	J-145I-18th St		0.00	0.00	0.00	0.00	0.00	0.00
F-159	J-145	J-146	44.46	0.00	0.00	0.13	0.01	0.01
F-160-CV	J-146	J-147	44.46	0.00	0.00	0.13	0.01	0.01
F-161	J-146O-18th St		0.00	0.00	0.00	0.00	0.00	0.00
F-162	J-147	J-142	44.46	0.00	0.00	0.13	0.01	0.01
F-164	I-18th St	J-147	0.00	0.00	0.00	0.00	0.00	0.00
F-165	J-156	J-155	40.60	0.13	0.00	0.46	0.17	0.17
F-166	66	J-110	53.69	0.29	0.00	0.61	0.91	0.91
F-167	J-156	J-153	186.60	0.67	0.00	0.53	0.14	0.14
F-168	J-152	J-150	6.81	0.00	0.00	0.04	0.00	0.00
F-169	J-98	J-154	274.20	0.14	0.00	0.78	0.29	0.29
F-170	J-155	J-151	16.70	0.16	0.00	0.19	0.03	0.03
F-171	J-155	J-157	2.30	0.12	0.00	0.23	0.18	0.18
F-172	J-154	J-156	251.60	0.38	0.00	0.71	0.25	0.25
F-173	J-6	J-148	9.20	7.05	0.00	0.94	2.65	2.65

2030 Fireflow - High Level Zone

P-174	J-153	J-149	4.50	0.00	0.00	0.03	0.00	0.00
P-175	J-152	J-150	0.49	0.00	0.00	0.00	0.00	0.00
P-176	2076	J-64	6.79	0.00	0.00	0.04	0.00	0.00
P-177	J-160	1057	11.71	0.01	0.00	0.07	0.01	0.01
P-178	1513	J-159	7.60	0.00	0.00	0.09	0.02	0.02
P-179	J-162	J-160	18.01	0.01	0.00	0.11	0.01	0.01
P-18	J-135I-South En		303.60	0.02	0.00	0.86	0.28	0.28
P-180	J-162	J-95	63.30	0.02	0.00	0.18	0.02	0.02
P-181	1818	J-161	0.30	0.00	0.00	0.03	0.00	0.00
P-182	J-163	2003	0.20	0.00	0.00	0.00	0.00	0.00
P-183	J-164	J-143	48.91	0.03	0.00	0.14	0.01	0.01
P-184	J-163	J-177	20.32	0.01	0.00	0.13	0.01	0.01
P-188	31	J-158	3.10	0.00	0.00	0.01	0.00	0.00
P-19	34	33	22.49	0.01	0.00	0.57	0.94	0.94
P-190	J-167	2074	4.00	0.00	0.00	0.02	0.00	0.00
P-194	1580	76	56.37	0.02	0.00	0.16	0.01	0.01
P-195	J-170	J-176	1.30	0.00	0.00	0.00	0.00	0.00
P-196	J-168	J-21	9.50	0.01	0.00	0.11	0.04	0.04
P-197	J-168	1980	9.21	0.00	0.00	0.06	0.00	0.00
P-198	O-South En	J-88	303.60	1.07	0.00	0.86	0.35	0.35
P-199	J-171	1773	27.50	0.01	0.00	0.18	0.02	0.02
P-2	J-1	101	0.30	0.00	0.00	0.00	0.00	0.00
P-20	213	1576	80.57	0.00	0.00	0.23	0.02	0.02
P-200	J-91	J-169	420.63	0.02	0.00	0.53	0.07	0.07
P-201	J-153	J-173	88.60	5.43	0.00	0.57	0.26	0.26
P-203	J-177	J-164	17.52	0.00	0.00	0.11	0.01	0.01
P-25	J-30	2066	14.70	0.00	0.00	0.04	0.00	0.00
P-29	2063	J-8	39.20	0.03	0.00	0.16	0.03	0.03
P-3	O-Centrali	J-6	13.90	0.84	0.00	0.16	0.03	0.03
P-30	J-42	J-35	94.32	0.04	0.00	0.27	0.03	0.03
P-31	J-8	54	12.50	0.00	0.00	0.09	0.01	0.01
P-33	2072	J-42	88.66	0.00	0.00	0.25	0.03	0.03
P-34	1699	J-42	13.16	0.00	0.00	0.04	0.00	0.00
P-36	1322	2091	43.37	0.20	0.00	0.49	0.61	0.61
P-4	1570	J-7	42.60	0.04	0.00	0.17	0.04	0.04
P-40	10	J-44	14.56	0.01	0.00	0.09	0.01	0.01
P-42	J-45	J-44	16.73	0.01	0.00	0.11	0.02	0.02
P-43	J-132	J-170	3.40	0.00	0.00	0.01	0.00	0.00
P-44	J-55	28	2.80	0.00	0.00	0.02	0.00	0.00
P-47	2132	J-57	48.17	0.00	0.00	0.31	0.13	0.13
P-48	41	J-90	0.10	0.00	0.00	0.00	0.00	0.00
P-49	J-57	2051	0.10	0.00	0.00	0.00	0.00	0.00
P-50	J-57	2052	0.10	0.00	0.00	0.00	0.00	0.00
P-51	O-18th St	J-142	0.00	0.00	0.00	0.00	0.00	0.00
P-53	1974	J-4	1.81	0.00	0.00	0.02	0.00	0.00
P-54	923	J-4	0.73	0.00	0.00	0.01	0.00	0.00
P-57	1217	I-AV-6	0.00	0.00	0.00	0.00	0.00	0.00
P-58	69	1217	5.00	0.00	0.00	0.03	0.00	0.00
P-6	J-88	J-11	3.40	0.00	0.00	0.02	0.00	0.00
P-61	J-58	68	16.91	0.01	0.00	0.19	0.05	0.05
P-62	J-61	J-136	1.00	0.00	0.00	0.01	0.00	0.00
P-63	J-127	J-158	7.40	0.00	0.00	0.02	0.00	0.00
P-64	54	J-27	8.30	0.00	0.00	0.05	0.01	0.01
P-65	597	J-67	27.70	0.02	0.00	0.18	0.05	0.05
P-67	J-67	J-71	25.10	0.01	0.00	0.16	0.02	0.02
P-69	J-71	J-73	22.30	0.02	0.00	0.14	0.04	0.04
P-7	J-154	J-152	15.10	0.00	0.00	0.10	0.01	0.01
P-71	J-63	J-123	69.27	0.00	0.00	0.44	0.13	0.13
P-73	1679	J-74	9.30	0.00	0.00	0.11	0.03	0.03
P-74	J-74	J-77	7.40	0.00	0.00	0.08	0.02	0.02
P-75	I-AV-3	2120	0.00	0.00	0.00	0.00	0.00	0.00
P-76	J-78	408	76.41	0.08	0.00	0.49	0.31	0.31
P-77	J-79	1130	79.47	0.34	0.00	0.51	0.46	0.46
P-78	J-80	504	20.32	0.01	0.00	0.13	0.04	0.04
P-79	J-82	1396	1.80	0.00	0.00	0.02	0.00	0.00
P-80	1388	J-87	25.90	0.05	0.00	0.29	0.09	0.09
P-81	92	J-62	1.40	0.00	0.00	0.01	0.00	0.00
P-82	J-84	597	40.66	0.06	0.00	0.26	0.10	0.10
P-83	J-123	J-140	68.77	0.00	0.00	0.20	0.02	0.02
P-84	J-93	1971	0.10	0.00	0.00	0.00	0.00	0.00
P-86	J-126I-High Lev		360.00	12.03	0.00	4.08	30.96	30.96
P-87	J-94	526	33.85	0.10	0.00	0.22	0.10	0.10
P-88	J-93	J-94	31.92	0.00	0.00	0.36	0.25	0.25
P-89	J-96inter-tie		3.50	0.00	0.00	0.01	0.00	0.00
P-9	J-2	2098	12.89	0.02	0.00	0.15	0.06	0.06
P-90	174	J-105	20.86	0.00	0.00	0.06	0.00	0.00
P-91	J-20	1981	2.06	0.00	0.00	0.02	0.00	0.00
P-92	J-21	J-20	6.70	0.00	0.00	0.08	0.02	0.02
P-93	568	J-99	0.04	0.00	0.00	0.00	0.00	0.00
P-94	J-99	556	26.89	0.01	0.00	0.17	0.02	0.02
P-95	J-99	566	6.41	0.00	0.00	0.04	0.00	0.00
P-96	J-100	2080	82.23	0.03	0.00	0.52	0.18	0.18
P-97	J-106	894	12.35	0.02	0.00	0.14	0.06	0.06
P-98	J-173I-Centrali		13.90	0.00	0.00	0.09	0.01	0.01
P-99	944	J-111	16.36	0.04	0.00	0.19	0.10	0.10
Valley Vie	O-Valley VYankis (Va		0.00	0.00	0.00	0.00	0.00	0.00
~@18th St -RV	I-18th St O-18th St							
~@AV-1-XX	I-AV-1 O-AV-1							
~@AV-2-XX	I-AV-2 O-AV-2							
~@AV-3-XX	I-AV-3 O-AV-3							
~@AV-4-XX	I-AV-4 O-AV-4							
~@AV-5-XX	I-AV-5 O-AV-5							
~@AV-6-XX	I-AV-6 O-AV-6							
~@High Lev-RV	I-High LevO-High Lev							
~@Valley V-RV	I-Valley VO-Valley V							

NODE RESULTS

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
5		0.30	397.72	243.40	154.32	66.87

2030 Fireflow - High Level Zone

6	6.80	397.73	244.40	153.33	66.44
9	2.80	397.57	205.80	191.77	83.10
10	9.60	397.57	213.70	183.87	79.68
11	0.10	397.62	236.90	160.72	69.64
12	3.80	397.62	236.50	161.12	69.82
13	0.10	398.41	198.90	199.51	86.45
14	2.20	398.42	201.40	197.02	85.37
15	3.10	398.06	186.10	211.96	91.85
16	1.60	398.06	186.10	211.96	91.85
17	10.70	397.10	175.70	221.40	95.94
18	2.30	397.10	171.90	225.20	97.59
19	1.50	397.06	165.30	231.76	100.43
22	3.50	398.72	186.50	212.22	91.96
23	7.90	398.72	187.70	211.02	91.44
24	2.00	634.97	604.50	30.47	13.21
26	9.10	397.71	240.30	157.41	68.21
28	2.10	397.71	322.60	75.11	32.55
29	0.70	397.71	319.00	78.71	34.11
31	6.50	397.45	216.80	180.65	78.28
32	5.90	397.45	214.70	182.75	79.19
33	0.40	397.57	183.00	214.57	92.98
34	3.70	397.59	183.50	214.09	92.77
36	4.60	397.67	194.40	203.27	88.08
37	0.60	398.34	319.00	79.34	34.38
38	3.80	398.34	290.50	107.84	46.73
40	5.30	398.65	190.80	207.85	90.07
41	0.30	397.64	219.10	178.54	77.37
43	0.10	397.71	253.50	144.21	62.49
46	6.80	397.62	229.90	167.72	72.68
47	2.20	634.90	544.40	90.50	39.22
48	0.60	634.90	543.60	91.30	39.56
49	14.70	397.65	243.00	154.65	67.02
50	1.10	397.65	244.20	153.45	66.50
51	7.20	397.72	240.00	157.72	68.35
52	1.60	397.72	261.50	136.22	59.03
54	3.60	397.49	209.30	188.19	81.55
56	1.10	398.63	193.00	205.63	89.11
59	0.40	398.59	252.50	146.09	63.30
60	1.40	398.59	252.90	145.69	63.13
65	7.10	398.31	192.40	205.91	89.23
66	2.30	398.16	191.30	206.86	89.64
68	4.60	397.39	205.20	192.19	83.28
69	3.20	397.39	208.70	188.69	81.77
70	0.80	397.72	285.20	112.52	48.76
72	19.00	397.88	255.00	142.88	61.92
75	15.60	397.68	247.70	149.98	64.99
76	36.30	397.68	256.00	141.68	61.39
83	0.10	397.38	221.90	175.48	76.04
85	0.10	397.38	222.10	175.28	75.96
86	5.70	397.38	222.40	174.98	75.83
89	4.80	397.43	225.60	171.83	74.46
92	6.40	397.53	192.40	205.13	88.89
97	2.60	397.64	173.90	223.74	96.96
98	0.30	397.64	174.00	223.64	96.91
101	0.30	397.64	174.30	223.34	96.78
102	4.90	397.65	176.00	221.65	96.05
103	0.20	397.65	175.70	221.95	96.18
104	5.00	398.34	179.70	218.64	94.74
107	5.00	398.34	183.60	214.74	93.05
108	2.10	398.34	183.60	214.74	93.05
109	9.20	397.78	236.20	161.58	70.02
118	19.00	399.81	192.50	207.31	89.84
119	4.10	398.90	217.70	181.20	78.52
121	2.70	398.99	230.70	168.29	72.92
137	9.80	398.08	180.00	218.08	94.50
166	7.30	397.61	182.90	214.71	93.04
172	4.60	397.63	174.10	223.53	96.86
174	2.50	397.63	175.70	221.93	96.17
175	8.20	397.73	183.60	214.13	92.79
178	2.60	397.73	183.60	214.13	92.79
192	8.80	397.98	183.60	214.38	92.90
201	4.20	398.01	178.30	219.71	95.21
212	4.40	397.73	256.30	141.43	61.29
213	2.50	397.71	253.50	144.21	62.49
214	5.70	397.66	230.10	167.56	72.61
224	4.30	397.64	224.20	173.44	75.16
247	16.40	397.93	192.10	205.83	89.20
248	9.70	397.70	248.60	149.10	64.61
253	6.30	397.70	240.90	156.80	67.95
254	22.40	397.56	230.80	166.76	72.26
295	25.70	397.39	210.10	187.29	81.16
325	5.70	397.59	183.90	213.69	92.60
342	3.90	397.58	165.40	232.18	100.61
343	7.50	397.58	163.20	234.38	101.57
344	3.40	397.58	164.20	233.38	101.13
346	0.70	397.58	165.60	231.98	100.53
356	10.40	397.64	219.10	178.54	77.37
361	12.50	397.72	243.10	154.62	67.00
375	5.60	399.08	230.50	168.58	73.05
384	11.90	397.63	183.20	214.43	92.92
385	1.30	397.63	183.60	214.03	92.75
396	1.30	398.72	221.20	177.52	76.92
398	3.50	398.66	220.50	178.16	77.20
407	6.10	398.41	226.99	171.42	74.28
408	3.20	398.25	223.30	174.95	75.81
421	5.70	398.35	184.20	214.15	92.80
424	1.40	397.70	189.90	207.80	90.05
432	17.30	397.68	184.10	213.58	92.55
468	20.90	397.36	204.20	193.16	83.70
473	1.90	397.63	178.30	219.33	95.04
474	2.30	397.43	210.70	186.73	80.92
480	8.00	397.44	219.70	177.74	77.02
481	0.20	397.43	220.90	176.53	76.50
483	1.50	397.64	214.00	183.64	79.58
492	9.50	397.62	195.50	202.12	87.58

2030 Fireflow - High Level Zone

504	7.30	397.58	192.80	204.78	88.74
505	6.50	398.11	197.20	200.91	87.06
509	10.70	397.99	200.00	197.99	85.80
510	5.90	398.48	189.60	208.88	90.51
512	7.50	398.48	184.80	213.68	92.59
513	0.80	398.04	178.80	219.24	95.00
518	3.40	398.00	182.20	215.80	93.51
526	14.30	397.90	201.80	196.10	84.98
530	3.70	398.88	220.30	178.58	77.39
536	4.80	398.53	201.90	196.63	85.21
540	1.00	398.41	202.30	196.11	84.98
543	2.40	398.36	210.90	187.46	81.23
544	1.90	398.42	216.10	182.32	79.01
552	3.60	397.86	191.50	206.36	89.42
556	4.40	397.71	206.10	191.61	83.03
565	3.20	398.34	210.80	187.54	81.27
566	1.80	397.71	204.60	193.11	83.68
568	2.60	397.71	206.30	191.41	82.95
569	7.90	397.61	178.30	219.31	95.04
573	1.60	397.61	179.00	218.61	94.73
578	1.90	397.63	280.80	116.83	50.63
579	4.10	397.68	205.50	192.18	83.28
582	5.40	397.55	212.80	184.75	80.06
584	5.50	397.55	207.60	189.95	82.31
590	6.30	397.55	208.60	188.95	81.88
597	4.20	397.62	222.20	175.42	76.01
599	6.20	634.90	592.40	42.50	18.42
601	1.60	634.90	577.30	57.60	24.96
619	2.50	634.90	559.00	75.90	32.89
620	11.10	634.90	593.00	51.90	22.49
623	2.10	634.90	588.00	46.90	20.33
628	2.70	605.70	420.40	185.30	80.30
631	3.50	605.69	382.80	222.89	96.58
632	1.00	605.67	455.20	150.47	65.20
642	2.00	605.69	304.60	301.09	130.47
649	2.10	605.79	392.70	213.09	92.34
657	9.40	605.51	331.20	274.31	118.87
661	6.20	397.71	190.90	206.81	89.62
665	8.70	397.63	174.40	223.23	96.73
668	13.60	397.66	182.30	215.36	93.32
675	1.70	397.66	180.60	217.06	94.06
676	3.10	397.49	206.70	190.79	82.68
682	0.60	397.49	209.20	188.29	81.59
683	4.20	398.02	200.30	197.72	85.68
686	1.10	398.33	278.90	119.43	51.75
693	7.60	397.58	197.40	200.18	86.74
700	0.10	397.62	237.50	160.12	69.39
704	2.60	399.08	190.10	208.98	90.56
705	5.40	398.76	185.50	213.26	92.41
710	16.50	398.77	197.50	201.27	87.22
717	7.30	397.53	204.90	192.63	83.47
718	0.10	397.93	191.20	206.73	89.59
726	1.70	397.62	190.00	207.62	89.97
780	9.80	397.35	195.00	202.35	87.68
781	0.10	397.73	252.20	145.53	63.06
784	6.20	397.73	259.80	137.93	59.77
788	18.30	397.75	258.50	139.25	60.34
791	5.60	397.74	256.00	141.74	61.42
792	0.40	397.74	254.90	142.84	61.90
797	4.70	397.74	255.30	142.44	61.72
800	4.30	397.63	177.30	220.33	95.48
802	1.00	397.63	178.00	219.63	95.18
803	7.20	398.71	217.90	180.81	78.35
807	8.60	398.61	272.60	126.01	54.60
808	5.40	398.75	215.50	183.25	79.41
813	5.10	398.65	244.90	153.75	66.62
815	3.90	398.70	219.20	179.50	77.78
817	5.00	398.66	275.20	123.46	53.50
827	7.10	398.69	186.80	211.89	91.82
828	3.20	398.75	192.50	206.25	89.37
831	2.30	398.47	216.90	181.57	78.68
842	3.90	398.42	234.00	164.42	71.25
844	5.30	398.45	260.00	138.45	60.00
856	3.30	398.72	194.40	204.32	88.54
860	3.00	398.99	230.20	168.79	73.14
865	3.10	398.40	195.90	202.50	87.75
868	3.20	398.40	197.00	201.40	87.28
872	1.20	398.41	199.50	198.91	86.19
881	3.00	397.63	199.80	197.83	85.73
885	3.40	397.64	204.20	193.44	83.82
893	3.00	397.74	198.10	199.64	86.51
894	1.20	397.71	206.30	191.41	82.95
899	7.30	398.17	192.10	206.07	89.30
901	7.10	398.24	189.00	209.24	90.67
906	2.50	398.35	292.50	105.85	45.87
910	1.90	398.35	294.90	103.45	44.83
916	6.00	398.34	222.40	175.94	76.24
922	1.20	398.34	238.30	160.04	69.35
923	4.10	397.66	182.20	215.46	93.37
929	0.90	397.67	181.60	216.07	93.63
937	3.90	397.64	183.80	213.84	92.66
944	4.30	397.70	196.50	201.20	87.19
945	4.10	397.70	192.00	205.70	89.14
954	3.30	397.70	193.70	204.00	88.40
958	7.50	397.75	201.60	196.15	85.00
961	1.70	397.71	205.40	192.31	83.34
962	4.50	397.61	179.30	218.31	94.60
964	0.30	397.61	179.40	218.21	94.56
975	7.80	397.59	184.50	213.09	92.34
979	1.70	397.36	173.70	223.66	96.92
994	6.30	398.47	192.30	206.17	89.34
1003	6.10	605.65	435.80	169.85	73.60
1023	7.40	605.64	389.60	216.04	93.62
1024	3.50	605.74	408.40	197.34	85.51
1032	5.00	605.64	455.00	150.64	65.28

2030 Fireflow - High Level Zone

1049	3.80	605.67	421.50	184.17	79.81
1050	7.00	397.59	188.20	209.39	90.74
1053	4.40	397.59	183.20	214.39	92.90
1056	2.20	397.62	192.00	205.62	89.10
1057	6.60	398.03	179.20	218.83	94.83
1060	7.30	398.01	196.50	201.51	87.32
1063	1.90	398.01	238.10	159.91	69.29
1064	3.30	397.73	181.30	216.43	93.79
1071	3.20	397.76	190.50	207.26	89.81
1084	13.20	397.96	198.50	199.46	86.43
1085	4.90	398.75	197.60	201.15	87.17
1089	2.70	398.69	190.70	207.99	90.13
1099	11.70	398.58	233.90	164.68	71.36
1100	0.80	466.49	339.70	126.79	54.94
1101	1.70	466.49	323.20	143.29	62.09
1103	6.10	634.89	346.40	288.49	125.01
1104	0.50	466.48	285.50	180.98	78.43
1107	3.50	398.08	211.40	186.68	80.89
1120	1.60	398.63	222.90	175.73	76.15
1121	2.50	397.39	205.30	192.09	83.24
1122	0.90	397.39	204.40	192.99	83.63
1125	2.20	397.86	205.00	192.86	83.57
1130	6.30	397.86	225.00	172.86	74.91
1134	7.90	397.53	202.90	194.63	84.34
1137	4.80	398.44	202.10	196.34	85.08
1156	6.90	398.65	184.90	213.75	92.63
1180	4.50	399.37	195.40	203.97	88.39
1181	3.80	398.71	186.00	212.71	92.17
1183	2.20	399.02	190.20	208.82	90.49
1184	6.50	397.61	189.70	207.91	90.09
1186	3.70	398.66	191.30	207.36	89.85
1210	5.10	399.70	215.60	184.10	79.78
1211	0.30	634.94	564.40	70.54	30.57
1214	2.20	635.08	607.60	27.48	11.91
1215	2.00	397.45	200.80	196.65	85.21
1217	4.50	397.39	207.80	189.59	82.16
1218	7.20	399.85	217.60	182.25	78.97
1223	3.00	398.82	187.20	211.62	91.70
1224	4.30	398.78	187.60	211.18	91.51
1229	4.30	398.75	224.40	174.35	75.55
1232	7.60	398.68	183.90	214.78	93.07
1235	5.80	397.71	197.20	200.51	86.89
1239	2.00	466.48	265.90	200.58	86.92
1240	0.10	635.08	608.90	26.18	11.34
1244	5.80	635.40	591.00	44.40	19.24
1251	7.10	635.53	622.30	13.23	5.73
1262	0.30	605.48	349.90	255.58	110.75
1270	1.90	398.71	184.30	214.41	92.91
1277	6.80	605.48	340.00	265.48	115.04
1284	5.60	397.62	224.00	173.62	75.23
1290	7.50	397.98	207.20	190.78	82.67
1293	3.90	398.00	206.60	181.40	82.94
1295	4.60	397.85	200.40	197.45	85.56
1298	0.70	398.63	224.20	174.43	75.59
1309	7.50	397.64	185.00	212.64	92.14
1310	5.80	397.59	184.40	213.19	92.38
1314	4.60	397.46	183.00	214.46	92.93
1318	4.20	398.84	221.20	177.64	76.98
1322	3.60	398.38	194.60	203.78	88.30
1328	3.60	398.05	192.30	205.75	89.16
1333	3.40	398.77	191.30	207.47	89.90
1337	3.90	398.74	192.80	205.94	89.24
1338	9.10	398.62	257.70	140.92	61.06
1356	2.50	398.70	190.80	207.90	90.09
1359	0.80	398.74	193.30	205.44	89.03
1364	3.50	398.57	193.90	204.67	88.69
1366	5.30	397.67	190.60	207.07	89.73
1375	9.80	397.00	168.30	228.70	99.10
1387	3.30	397.36	182.40	214.96	93.15
1388	6.10	398.55	200.40	198.15	85.87
1392	5.10	398.97	220.30	178.67	77.42
1396	1.80	398.58	308.10	90.48	39.21
1409	5.90	398.52	222.20	176.32	76.40
1410	2.20	605.58	392.50	213.08	92.33
1456	3.20	397.63	183.20	214.43	92.92
1465	3.20	398.65	235.70	162.95	70.61
1483	5.90	397.71	193.40	204.31	88.53
1484	14.30	397.60	183.60	214.00	92.73
1497	2.60	397.58	167.20	230.38	99.83
1498	1.50	605.48	396.40	209.08	90.60
1502	3.90	605.48	385.30	220.18	95.41
1513	0.80	605.49	339.40	266.09	115.30
1517	5.50	397.94	205.40	192.54	83.44
1519	0.90	397.93	211.30	186.63	80.87
1524	1.20	634.97	615.60	19.37	8.40
1544	16.80	397.99	194.80	203.19	88.05
1547	13.50	397.99	208.00	189.99	82.33
1570	10.00	397.49	195.50	201.99	87.53
1575	7.90	397.59	171.60	225.99	97.93
1576	1.60	397.71	253.70	144.01	62.40
1580	6.60	397.69	245.80	151.89	65.82
1626	19.10	398.33	272.90	125.43	54.35
1627	11.20	398.94	289.00	109.94	47.64
1630	29.90	397.98	266.70	131.28	56.89
1636	186.00	397.43	245.70	151.73	65.75
1637	26.00	397.70	249.10	148.60	64.40
1647	26.40	397.68	236.20	161.48	69.97
1648	26.70	397.71	187.30	210.41	91.18
1657	7.10	397.58	176.60	220.98	95.76
1658	7.10	398.38	185.90	212.48	92.07
1674	8.20	397.65	178.00	215.65	95.18
1679	3.10	466.49	317.70	148.79	64.47
1689	3.00	466.48	323.60	142.88	61.92
1690	0.40	466.48	319.70	146.78	63.61
1698	5.20	397.73	256.80	140.93	61.07

6" and 2"

2030 Fireflow - High Level Zone

1699	5.90	397.64	218.90	178.74	77.46
1700	2.80	397.64	216.20	181.44	78.63
1710	3.60	397.84	303.90	93.94	40.71
1711	0.80	398.02	209.80	188.22	81.56
1712	1.70	398.02	268.50	129.52	56.13
1713	1.70	634.94	571.10	63.84	27.66
1716	7.20	634.92	533.50	101.42	43.95
1719	0.60	634.92	516.50	118.42	51.32
1737	6.20	397.04	166.60	230.44	99.86
1742	9.90	397.60	183.60	214.00	92.73
1767	3.80	398.63	193.40	205.23	88.93
1773	3.50	398.77	272.20	126.57	54.85
1775	1.70	398.77	270.10	128.67	55.76
1776	5.00	398.77	269.20	129.57	56.15
1782	9.00	398.77	269.10	129.67	56.19
1788	6.20	398.77	269.00	129.77	56.23
1791	0.90	398.77	273.40	125.37	54.33
1793	1.20	398.77	270.60	128.17	55.54
1799	3.10	399.81	201.40	198.41	85.98
1800	2.70	398.33	166.10	232.23	100.63
1801	0.80	398.33	173.70	224.63	97.34
1805	2.60	398.33	179.70	218.63	94.74
1806	1.50	398.33	173.10	225.23	97.60
1808	1.40	398.33	178.80	218.53	94.70
1809	2.50	398.33	172.30	226.03	97.95
1810	4.40	398.34	179.50	218.84	94.83
1813	3.50	398.33	171.10	227.23	98.47
1814	6.50	398.33	167.10	231.23	100.20
1818	2.80	398.11	178.50	219.61	95.16
1821	5.00	398.33	168.80	228.53	99.03
1823	2.70	397.73	182.50	215.23	93.27
1826	3.80	397.75	183.30	214.45	92.93
1827	6.90	397.76	192.90	204.86	98.77
1831	2.10	397.43	234.10	163.33	70.78
1948	1.10	397.99	234.90	163.09	70.67
1960	4.60	397.62	237.60	160.02	69.34
1961	3.30	399.06	190.10	208.96	90.55
1968	0.50	397.04	164.90	232.14	100.60
1971	0.10	398.00	185.30	212.70	92.17
1973	2.90	397.68	198.40	199.28	86.35
1974	4.80	397.66	187.50	210.16	91.07
1975	4.60	397.66	186.60	211.06	91.46
1980	3.80	397.67	180.20	217.47	94.24
1981	1.30	397.66	183.10	214.56	92.98
1984	3.80	398.57	194.10	204.47	88.60
1985	0.20	398.03	195.20	202.83	87.89
1986	4.30	398.03	194.50	203.53	88.20
1987	4.00	397.73	198.50	199.23	86.33
1988	0.20	398.44	218.50	178.94	77.54
1989	1.70	398.44	222.30	176.14	76.33
1991	3.60	398.55	194.20	204.35	88.55
1994	0.70	398.47	190.70	207.77	90.03
1996	4.20	398.69	189.80	208.89	90.52
1997	4.20	398.74	191.50	207.24	89.81
2003	0.20	397.54	185.20	212.34	92.01
2007	3.10	398.81	200.60	198.21	85.89
2009	4.10	398.77	196.90	201.87	87.48
2010	4.80	398.96	191.70	207.26	89.81
2012	4.20	399.11	199.00	200.11	86.71
2013	3.60	398.69	200.10	198.59	86.05
2014	5.90	398.66	193.20	205.46	89.03
2016	5.40	398.64	222.30	176.34	76.41
2021	0.80	397.54	204.20	193.34	83.78
2023	0.60	397.39	206.90	190.49	82.55
2025	2.30	605.47	455.60	149.87	64.95
2028	1.30	605.45	520.90	84.55	36.64
2029	1.20	605.47	448.00	156.47	67.81
2030	0.70	605.47	460.10	145.37	62.99
2031	3.00	605.48	430.90	174.98	75.65
2032	0.90	605.47	484.00	121.47	52.64
2033	2.10	605.48	474.20	131.28	56.89
2047	0.70	466.48	309.00	157.48	68.24
2050	0.20	466.48	301.10	165.38	71.67
2051	0.10	397.66	229.60	168.06	72.82
2052	0.10	397.66	229.90	167.76	72.69
2053	4.50	397.61	220.60	177.01	76.70
2061	1.20	397.56	208.20	189.36	82.06
2063	7.70	397.53	205.00	192.53	83.43
2065	5.70	399.12	198.90	200.22	86.76
2066	4.20	397.38	222.20	175.18	75.91
2067	8.40	400.26	216.20	184.06	79.76
2072	7.90	397.64	221.90	175.74	76.16
2073	3.10	398.80	199.80	199.00	86.23
2074	2.50	397.64	220.90	176.74	76.59
2076	8.40	397.58	204.40	193.18	83.71
2078	3.90	398.47	199.20	199.27	86.35
2079	4.30	398.40	203.10	195.30	84.63
2080	5.00	397.78	191.60	206.18	89.34
2081	4.40	397.73	198.70	199.03	86.24
2083	8.50	398.34	255.40	142.94	61.94
2084	5.60	398.34	224.10	174.24	75.51
2086	5.60	397.63	230.30	167.33	72.51
2088	9.00	634.98	604.50	30.48	13.21
2090	9.70	605.52	391.30	214.22	92.83
2091	4.90	398.18	195.30	202.88	87.91
2092	2.40	397.73	251.60	146.13	63.32
2093	6.30	398.89	236.00	162.89	70.59
2094	6.90	398.79	188.50	210.29	91.12
2095	4.80	398.81	187.60	211.21	91.52
2096	3.30	398.77	196.50	202.27	87.65
2097	5.10	398.79	202.50	196.29	85.06
2098	5.10	397.63	202.10	195.53	84.73
2100	6.80	397.62	197.30	200.32	86.80
2101	8.10	398.59	270.60	127.99	55.46
2103	8.80	398.58	236.90	161.68	70.06

2030 Fireflow - High Level Zone

2104	3.80	397.54	200.50	197.04	85.38	
2105	5.70	398.50	201.90	196.60	85.19	
2106	2.60	397.96	192.10	205.86	89.21	
2107	6.30	398.42	190.50	207.92	90.10	
2109	4.70	398.98	190.80	208.18	90.21	
2110	3.50	398.74	192.70	206.04	89.29	
2111	3.00	398.78	191.00	207.78	90.04	
2112	6.60	398.93	190.20	208.73	90.45	
2113	5.50	399.11	195.50	203.61	88.23	
2115	4.60	398.44	191.90	206.54	89.50	
2117	4.10	399.44	217.50	181.94	78.84	
2119	7.10	397.71	193.60	204.11	88.45	
2120	3.90	466.48	268.60	197.88	85.75	
2121	3.50	398.62	193.00	205.62	89.10	
2122	5.80	397.59	183.70	213.89	92.69	
2123	4.30	398.69	193.20	205.49	89.05	
2125	1.30	397.71	206.20	191.51	82.99	
2126	2.70	398.63	192.50	206.13	89.32	
2127	8.50	397.49	203.70	193.79	83.98	
2129	4.70	397.59	218.10	179.49	77.78	
2130	3.60	397.68	198.00	199.68	86.53	
2132	2.10	397.66	230.10	167.56	72.61	
2133	4.20	634.90	578.00	56.90	24.66	
2137	5.60	399.13	198.20	200.93	87.07	
2138	7.50	397.43	221.50	175.93	76.24	
I-18th St	0.00	397.69	218.20	179.49	77.78	
O-18th St	0.00	397.69	218.20	179.49	77.78	
3-in or sm	0.10	398.06	185.50	212.56	92.11	
3-inch or	0.40	398.33	183.00	215.33	93.31	
3-inch or	0.20	397.66	183.10	214.56	92.98	
O-AV-1	0.00	398.34	283.80	114.54	49.63	
I-AV-2	0.00	605.64	306.00	299.64	129.85	
I-AV-3	0.00	466.48	253.40	213.08	92.34	
O-AV-4	0.00	398.33	289.30	109.03	47.25	
O-AV-5	0.00	397.68	225.30	172.38	74.70	
O-AV-6	0.00	397.53	208.10	189.43	82.09	
O-Centrali	----	541.19	333.50	207.69	90.00	
O-Fairview	Fairview PRV	466.50	346.50	120.00	52.00	
O-High Lev	High Level F	0.00	608.94	401.60	207.34	89.85
High Level	High Level R	----	605.00	605.00	0.00	0.00
Hillcrest		0.30	397.88	256.20	141.68	61.40
inter-tie		3.50	397.99	174.40	223.59	96.89
J-1		4.30	397.64	174.00	223.64	96.91
J-100		0.90	397.81	190.60	207.21	89.79
J-105		3.10	397.63	175.60	222.03	96.21
J-106		3.40	397.73	206.20	191.53	83.00
J-11		3.40	494.52	280.00	214.52	92.96
J-110		6.00	397.87	198.00	199.87	86.61
J-111		2.40	397.66	192.50	205.16	88.90
J-112		6.30	398.33	167.90	230.43	99.85
J-113		3.00	398.40	200.50	197.90	85.76
J-114		13.60	605.64	405.70	199.94	86.64
J-115		2.20	398.73	197.30	201.43	87.29
J-116		2.30	398.76	207.10	191.66	83.05
J-117		2.10	398.63	192.10	206.53	89.50
J-120		2.90	398.64	237.50	161.14	69.83
J-122		3.20	397.64	174.00	223.64	96.91
J-123		0.50	397.69	224.70	172.99	74.96
J-124		2.60	605.48	403.80	201.68	87.39
J-125		2.50	605.76	383.00	222.76	96.53
J-126		4.10	400.85	367.95	33.00	14.30
J-127		34.10	397.45	225.20	172.25	74.64
J-128		17.80	397.43	235.20	162.23	70.30
J-129		10.20	397.73	184.80	212.93	92.27
J-130		4.60	397.38	222.00	175.38	76.00
J-131		0.70	605.48	418.00	187.48	81.24
J-132		3.60	397.64	176.00	221.64	96.05
J-133		1.10	605.49	339.60	265.89	115.22
J-134		1.30	397.57	200.90	196.67	85.23
J-135		2.30	398.79	288.30	110.49	47.88
J-136		1.00	397.39	204.10	193.29	83.76
J-138		1.20	397.69	219.60	178.09	77.17
J-139		0.60	397.68	222.60	175.08	75.87
J-140		0.70	397.69	218.20	179.49	77.78
J-141		0.50	397.57	200.90	196.67	85.23
J-142		0.30	397.69	218.20	179.49	77.78
J-143		12.70	397.49	186.90	210.59	91.26
J-144		2.30	397.49	186.80	210.69	91.30
J-145		0.20	397.69	218.20	179.49	77.78
J-146		0.00	397.69	218.20	179.49	77.78
J-147		0.00	397.69	218.20	179.49	77.78
J-148		9.20	533.30	498.90	34.40	14.91
J-149		4.50	493.32	306.10	187.22	81.13
J-150		7.30	494.38	272.40	221.98	96.19
J-151		16.70	493.71	326.80	166.91	72.33
J-152		7.80	494.38	272.40	221.98	96.19
J-153		93.50	493.32	302.40	190.92	82.73
J-154		7.50	494.38	267.60	226.78	98.27
J-155		21.60	493.87	263.80	230.07	99.70
J-156		24.40	494.00	261.30	232.70	100.84
J-157		2.30	493.76	265.80	227.96	98.78
J-158		10.50	397.45	211.40	186.05	80.62
J-159		0.50	605.49	343.00	262.49	113.74
J-160		5.50	398.04	172.60	225.44	97.69
J-161		0.30	398.11	178.60	219.51	95.12
J-162		8.50	398.05	183.00	215.05	93.19
J-163		4.90	397.54	183.70	213.84	92.66
J-164		15.50	397.53	177.50	220.03	95.34
J-167		3.40	397.64	0.00	397.64	172.31
J-168		3.70	397.67	0.00	397.67	172.32
J-169		8.20	400.77	413.50	-12.73	-5.52
J-170		2.10	397.64	174.50	223.14	96.70
J-171		2.50	398.78	286.90	111.88	48.48
J-173		74.70	487.90	329.80	158.10	68.51
J-176		1.30	397.64	166.40	231.24	100.21

2030 Fireflow - High Level Zone

J-177	2.80	397.53	179.10	218.43	94.65	
J-2	7.00	397.65	201.80	195.85	84.87	
J-20	2.70	397.66	182.90	214.76	93.06	
J-21	1.90	397.67	182.80	214.87	93.11	
J-25	6.10	605.49	311.10	294.39	127.57	
J-27	5.20	397.49	207.10	190.39	82.50	
J-3	4.10	397.66	182.20	215.46	93.37	
J-30	9.50	397.38	219.90	177.48	76.91	
J-35	10.20	397.60	222.10	175.50	76.05	
J-39	5.00	399.26	218.10	181.16	78.50	
J-4	3.10	397.66	184.40	213.26	92.41	
J-42	7.50	397.64	222.00	175.64	76.11	
J-44	7.50	397.56	208.40	189.16	81.97	
J-45	5.20	397.56	209.00	188.56	81.71	
J-53	11.70	397.84	294.30	103.54	44.87	
J-55	3.30	397.71	297.10	100.61	43.60	
J-57	1.70	397.66	229.20	168.46	73.00	
J-58	1.90	397.41	204.60	192.81	83.55	
J-6	4.70	540.35	473.40	66.95	29.01	
J-61	5.20	397.39	207.00	190.39	82.50	
J-62	1.40	397.53	191.50	206.03	89.28	
J-63	1.70	397.69	225.20	172.49	74.75	
J-64	5.10	397.57	202.30	195.27	84.62	
J-67	2.60	397.60	210.80	186.80	80.95	
J-7	4.30	397.45	214.70	182.75	79.19	
J-71	2.80	397.59	204.60	192.99	83.63	
J-73	7.90	397.57	199.60	197.97	85.79	
J-74	1.20	466.48	301.00	165.48	71.71	
J-77	0.80	466.48	296.10	170.38	73.83	
J-78	6.40	398.33	230.70	167.63	72.64	
J-79	3.30	398.21	223.40	174.81	75.75	
J-8	8.00	397.50	208.80	188.70	81.77	
J-80	6.00	397.60	190.70	206.90	89.66	
J-81	8.20	398.59	218.90	179.69	77.86	
J-82	8.00	398.58	257.90	140.68	60.96	
J-84	2.90	397.68	226.30	171.38	74.26	
J-87	5.20	398.50	194.40	204.10	88.44	
J-88	26.00	494.52	275.70	218.82	94.82	
J-90	0.10	397.64	219.10	178.54	77.37	
J-91	4.90	400.79	352.90	47.89	20.75	
J-93	2.00	398.00	187.50	210.50	91.22	
J-94	4.50	398.00	187.50	210.50	91.22	
J-95	14.70	398.02	189.50	208.52	90.36	
J-96	8.10	397.99	176.90	221.09	95.81	
J-99	1.50	397.71	205.50	192.21	83.29	
Kennicott	Kennicott Re	----	397.90	374.00	23.90	10.36
Main Reser	Main Reservo	----	401.10	383.30	17.80	7.71
physical d		0.10	398.72	222.00	176.72	76.58
I-RV-1		0.00	397.49	186.80	210.69	91.30
I-RV-2		0.00	397.57	200.90	196.67	85.23
O-South En		----	495.59	287.90	207.69	90.00
O-Valley V	Valley View	0.00	635.90	308.10	327.80	142.05
Yankis (Va	Yankis (Vall	----	635.90	631.50	4.40	1.91
Yates Rese	500,000 gal	----	401.10	376.00	25.10	10.88
O-18th St		----	397.69	218.20	179.49	77.78
I-18th St		0.00	397.69	218.20	179.49	77.78
I-AV-1		0.00	605.64	283.80	321.84	139.46
O-AV-2		0.00	398.35	306.00	92.35	40.02
O-AV-3		0.00	397.62	253.40	144.22	62.49
I-AV-4		0.00	605.48	289.30	316.18	137.01
I-AV-5		0.00	397.69	225.30	172.39	74.70
I-AV-6		0.00	397.39	208.10	189.29	82.03
I-Centrall		0.00	487.90	333.50	154.40	66.91
I-Fairview	Fairview PRV	0.00	634.89	346.50	288.39	124.97
I-High Lev	High Level P	0.00	398.92	401.60	-12.68	-5.49
O-RV-1		----	397.49	186.80	210.69	91.30
O-RV-2		----	397.57	200.90	196.67	85.23
I-South En		0.00	398.77	287.90	110.87	48.04
I-Valley V	Valley View	0.00	398.58	308.10	90.48	39.21

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
J-168	172.32	J-169	-5.52
J-167	172.31	I-High Level	-5.49
O-Valley Vie	142.05	Yankis (Vall	1.91
I-AV-1	139.46	1251	5.73
I-AV-4	137.01	Main Reservo	7.71

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
905	4.08	85	0.00
P-86	4.08	P-93	0.00
P-122	2.60	24	0.00
1479	2.50	45	0.00
P-15	2.14	46	0.00

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
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905	30.96	45	0.00
P-86	30.96	24	0.00
1962	4.05	46	0.00
2173	3.82	85	0.00
P-173	2.65	P-93	0.00

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PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
905	30.96	45	0.00
P-86	30.96	24	0.00
1962	4.05	46	0.00
2173	3.82	85	0.00
P-173	2.65	P-93	0.00

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
18th St PRV	PRV-1	74.30	CLOSED	77.78	77.78	0.00
18th St Pump	FCV-2	0.00	ACTIVATED	77.78	77.78	0.00
Centralia Al	PRV-2	90.00	BOOSTED	66.91	90.00	13.90
Fairview PRV	PRV-1	52.00	ACTIVATED	124.97	52.00	18.30
High Level P	FCV-2	360.00	BOOSTED	-5.49	89.85	360.00
RV-1	PRV-1	85.00	CLOSED	91.30	91.30	0.00
RV-2	PRV-1	81.80	CLOSED	85.23	85.23	0.00
South End Pu	PRV-2	90.00	BOOSTED	48.04	90.00	303.60
Valley View	FCV-2	0.00	BOOSTED	39.21	142.05	0.00

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
High Level	-249.70	High Level R
Kennicott R	323.97	Kennicott Re
Main Reserv	2064.91	Main Reservo
Yankis (Val	92.10	Yankis (Vall
Yates Reser	882.33	500,000 gal

NET SYSTEM INFLOW = 3363.30
 NET SYSTEM OUTFLOW = -249.70
 NET SYSTEM DEMAND = 3113.60

FireFlow/Hydrant Report
 Fireflow/Hydrant Report:

Scenario: No Title
 Global Demand Factor for this Scenario: 1.000

Specified Minimum Pressure (psi): 20.0
 Minimum Static Pressure (psi) : 21.0

Flow-1: Flowrate to maintain the specified pressure at (hydrant) node
 Node-2: Node that has a lower pressure than specified value at Flow-1
 Flow-2: Flowrate to maintain the specified pressure at Node-2

Hose Constant = 0.00

Hydrant Node	Hydrant Constant	Elevation	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2 gpm	Flow Capacity	NFPA Color
H-451	0.0	346.6	112.3	1706.1	1290.7	1032	1290.7	GREEN
H-462	0.0	436.4	73.3	1615.7	1477.1	632	1477.1	GREEN
H-461	0.0	345.7	112.7	2222.2	1721.7	632	1721.7	BLUE
H-401	0.0	456.0	64.8	1130.0			1130.0	GREEN
H-354	0.0	435.8	73.6	1280.6	1265.3	1032	1265.3	GREEN
H-297	0.0	321.7	123.0	4981.3	1918.7	2028	1918.7	BLUE
H-294	0.0	311.5	127.4	4005.0	1489.4	2028	1489.4	GREEN
H-246	0.0	330.5	119.2	1879.9	1353.1	2028	1353.1	GREEN
H-245	0.0	319.7	123.8	1447.0	1353.1	2028	1353.1	GREEN
H-296	0.0	392.5	92.3	3004.1	2750.5	2028	2750.5	BLUE
H-458	0.0	413.0	83.5	1506.5	1281.3	1032	1281.3	GREEN
H-460	0.0	437.6	72.8	1492.3	1372.4	1032	1372.4	GREEN
H-295	0.0	338.9	115.5	5585.6	2258.1	2028	2258.1	BLUE
H-201	0.0	386.9	94.7	2423.8	1082.4	2028	1082.4	GREEN

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 * Company: GibbsOlson Serial #: 592186 *
 * Interface: KYnetic *
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Date & Time: Fri Sep 10 13:47:45 2021

Master File : p:\0155_chehalis\1078 wsp_update\rpt-planning\mdlmg\01551078 city of chehalis water system model - calibrated.KYP\01551078 city of chehalis water system model

 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

REGULATING VALVE DATA

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
18th St PRV	PRV-1	389.66
18th St Pump	Const_FLOW_Pump	0.00
Centralia Al	Const_HEAD_Pump	541.19
Fairview PRV	PRV-1	466.50
High Level P	Const_FLOW_Pump	0.00
RV-1	PRV-1	389.55
RV-2	PRV-1	389.67
South End Pu	Const_HEAD_Pump	495.59
Valley View	Const_FLOW_Pump	0.00

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1	NODE NAMES #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
3	5	6	24.78	10.00	90.0000	0.00
5	9	10	824.44	6.00	90.0000	0.00
6	11	12	38.56	8.00	90.0000	0.00
7	13	872	38.38	6.00	75.0000	0.00
8	15	16	7.84	6.00	90.0000	0.00
10	18	19	437.00	2.00	140.0000	0.00
12	22	23	750.00	8.00	115.0000	0.00
13	24	1524	360.61	4.00	115.0000	0.00
14	26	J-55	539.97	8.00	115.0000	0.00
16	28	29	217.00	4.00	115.0000	0.00
17	31	32	723.00	2.00	113.0723	0.00
21	37	38	170.42	4.00	75.0000	0.00
22	2014	40	325.43	8.00	115.0000	0.00
23	41	1699	28.75	12.00	115.0000	0.00
24	43	213	42.27	12.00	115.0000	0.00
26	47	48	173.64	4.00	115.0000	0.00
27	49	50	310.00	10.00	115.0000	0.00
28	51	52	222.00	8.00	115.0000	0.00
32	59	60	108.37	6.00	75.0000	0.00
35	65	66	295.51	6.00	75.0000	0.00
37	68	69	412.00	8.00	115.0000	0.00
38	52	70	245.00	6.00	115.0000	0.00
39	Hillcrest	72	81.50	4.00	115.0000	0.00
41	75	76	3275.00	12.00	130.0000	0.00
45	83	2066	32.96	12.00	130.0000	0.00
46	85	86	33.07	12.00	130.0000	0.00
52	97	98	74.85	8.00	130.0000	0.00
55	102	103	68.31	8.00	130.0000	0.00
56	104	1810	34.98	12.00	130.0000	0.00
59	107	108	7.82	12.00	130.0000	0.00
60	109	J-53	785.00	16.00	115.0000	0.00
66	118	J-91	2359.00	14.00	90.0000	0.00
68	119	121	704.00	14.00	75.0000	0.00
70	121	860	23.71	14.00	75.0000	0.00
72	118	1799	900.00	8.00	130.0000	0.00
85	physical d	396	23.76	14.00	75.0000	0.00
107	J-91	2067	949.00	14.00	75.0000	0.00
109	325	34	484.84	12.00	115.0000	0.00
110	2122	166	948.74	12.00	115.0000	0.00
112	166	962	902.00	12.00	115.0000	0.00
114	569	962	308.00	12.00	115.0000	0.00
115	569	665	1519.00	12.00	115.0000	0.00
118	172	J-105	650.00	12.00	115.0000	0.00
120	175	178	251.61	12.00	115.0000	0.00
123	178	1826	444.69	12.00	115.0000	0.00
126	1826	1827	278.93	12.00	115.0000	0.00
129	1827	192	1658.25	12.00	115.0000	0.00

2030 Peak Hour Demand

137	192	201	248.00	12.00	115.0000	0.00
139		137	409.00	12.00	115.0000	0.00
141	15	137	446.49	12.00	115.0000	0.00
142	15	J-95	1949.78	12.00	115.0000	0.00
145	201	J-93	562.05	12.00	90.0000	0.00
155	212	213	677.50	12.00	115.0000	0.00
156	214	26	1649.00	12.00	115.0000	0.00
163	2072	224	1245.00	12.00	115.0000	0.00
187	248	253	1835.17	12.00	130.0000	0.00
192	254	J-127	1507.19	12.00	130.0000	0.00
262	325	1575	908.76	12.00	115.0000	0.00
279	343	344	127.52	12.00	130.0000	0.00
280	344	342	115.85	12.00	130.0000	0.00
282	342	346	192.42	12.00	130.0000	0.00
283	86	J-130	1344.24	12.00	130.0000	0.00
292	356	361	2280.98	10.00	90.0000	0.00
298	32	J-7	60.00	10.00	90.0000	0.00
302	32	480	930.34	10.00	90.0000	0.00
318	384	385	126.00	10.00	115.0000	0.00
319	356	2074	983.94	10.00	90.0000	0.00
320	356	41	37.27	10.00	90.0000	0.00
329	396	398	31.65	10.00	75.0000	0.00
331	398	1409	306.52	10.00	75.0000	0.00
340	407	408	647.97	10.00	75.0000	0.00
353	661	2119	350.44	6.00	75.0000	0.00
355	424	1648	189.00	10.00	90.0000	0.00
363	295	468	3228.55	10.00	130.0000	0.00
398	172	473	539.00	12.00	115.0000	0.00
403	474	480	672.00	8.00	90.0000	0.00
411	J-45	2129	770.00	8.00	90.0000	0.00
414	1217	1121	284.43	6.00	90.0000	0.00
417	492	1235	414.07	8.00	75.0000	0.00
429	505	509	502.00	8.00	75.0000	0.00
433	510	512	462.00	8.00	115.0000	0.00
435	513	1057	1078.98	8.00	75.0000	0.00
440	518	J-94	278.47	8.00	75.0000	0.00
448	92	1184	943.86	8.00	115.0000	0.00
451	530	119	42.30	8.00	75.0000	0.00
452	119	536	464.52	8.00	75.0000	0.00
458	536	2079	637.02	8.00	75.0000	0.00
461	540	2079	30.24	8.00	75.0000	0.00
464	544	543	465.44	8.00	75.0000	0.00
472	552	J-100	98.00	8.00	75.0000	0.00
476	I-AV-1	J-114	1506.58	4.00	90.0000	0.00
486	569	573	476.00	8.00	115.0000	0.00
490	385	166	264.00	8.00	140.0000	0.00
495	579	J-138	330.16	8.00	115.0000	0.00
497	582	584	548.98	8.00	115.0000	0.00
503	590	J-73	801.25	8.00	75.0000	0.00
511	599	601	450.87	8.00	115.0000	0.00
526	599	619	720.36	8.00	115.0000	0.00
531	620	623	618.14	8.00	115.0000	0.00
538	628	631	136.23	8.00	90.0000	0.00
541	632	1049	299.05	8.00	90.0000	0.00
547	631	642	578.19	8.00	90.0000	0.00
552	High Level	2090	1103.00	8.00	90.0000	0.00
565	509	661	1328.00	8.00	75.0000	0.00
569	597	1284	174.94	8.00	90.0000	0.00
571	46	2086	497.00	8.00	90.0000	0.00
574	665	668	872.08	8.00	115.0000	0.00
577	668	675	492.96	8.00	115.0000	0.00
584	676	J-27	893.25	8.00	90.0000	0.00
590	54	682	182.20	8.00	90.0000	0.00
591	683	J-95	505.00	8.00	90.0000	0.00
593	686	J-78	241.00	8.00	90.0000	0.00
597	408	J-79	21.00	8.00	75.0000	0.00
601	361	1960	1287.07	8.00	90.0000	0.00
612	705	710	248.15	8.00	115.0000	0.00
617	717	1134	965.00	8.00	115.0000	0.00
623	718	247	34.04	8.00	75.0000	0.00
630	424	726	91.39	8.00	75.0000	0.00
632	726	J-80	386.08	8.00	75.0000	0.00
652	468	780	2846.84	8.00	130.0000	0.00
684	781	2092	25.00	8.00	115.0000	0.00
686	784	1698	594.45	8.00	115.0000	0.00
690	788	791	1019.18	8.00	115.0000	0.00
693	792	791	123.52	8.00	115.0000	0.00
697	797	784	720.40	8.00	115.0000	0.00
700	800	802	282.00	6.00	130.0000	0.00
702	803	1465	267.21	6.00	75.0000	0.00
706	808	2009	929.18	6.00	75.0000	0.00
710	813	815	302.18	6.00	75.0000	0.00
712	121	2093	46.99	6.00	75.0000	0.00
714	2094	40	934.76	4.00	75.0000	0.00
723	828	2096	426.19	6.00	75.0000	0.00
726	544	831	72.71	6.00	75.0000	0.00
727	831	530	335.47	6.00	75.0000	0.00
735	831	1989	226.92	6.00	75.0000	0.00
739	842	844	615.87	6.00	75.0000	0.00
741	844	817	669.95	6.00	75.0000	0.00
749	856	J-115	240.00	6.00	75.0000	0.00
751	2078	14	273.95	6.00	75.0000	0.00
753	860	2097	569.00	6.00	75.0000	0.00
757	865	868	222.76	6.00	75.0000	0.00
760	868	J-113	502.26	6.00	75.0000	0.00
762	868	872	205.21	6.00	75.0000	0.00
772	881	2098	449.61	6.00	75.0000	0.00
776	885	J-111	304.95	6.00	75.0000	0.00
784	893	J-106	418.44	6.00	75.0000	0.00
785	893	J-110	416.57	6.00	75.0000	0.00
789	66	899	48.00	6.00	75.0000	0.00
791	899	901	175.00	6.00	75.0000	0.00
793	901	1742	1127.00	6.00	75.0000	0.00
797	906	910	180.00	6.00	75.0000	0.00
801	910	38	116.53	6.00	75.0000	0.00

2030 Peak Hour Demand

807	842	2084	314.93	6.00	75.0000	0.00
812	916	922	348.45	6.00	75.0000	0.00
814	923	J-20	569.59	6.00	75.0000	0.00
817	J-21	929	248.00	6.00	75.0000	0.00
823	J-2	937	870.00	6.00	75.0000	0.00
825	J-2	556	502.00	6.00	75.0000	0.00
831	945	2080	473.03	6.00	75.0000	0.00
839	954	2081	460.04	6.00	75.0000	0.00
846	962	964	82.58	6.00	115.0000	0.00
858	1387	1314	65.93	4.00	75.0000	0.00
861	108	104	599.00	6.00	90.0000	0.00
867	958	J-110	1002.00	6.00	75.0000	0.00
874	994	65	736.58	6.00	75.0000	0.00
876	65	1986	656.95	6.00	75.0000	0.00
883	1003	1023	424.00	6.00	90.0000	0.00
903	1024	J-125	363.09	6.00	90.0000	0.00
905	O-High Lev	649	101.61	6.00	75.0000	0.00
910	1024	628	642.00	6.00	90.0000	0.00
912	1032	1003	811.00	6.00	90.0000	0.00
930	1050	1053	1269.52	6.00	90.0000	0.00
933	384	2100	964.00	6.00	75.0000	0.00
936	1057	16	435.81	6.00	90.0000	0.00
938	1060	1063	225.00	6.00	115.0000	0.00
941	1064	J-129	956.67	6.00	90.0000	0.00
948	1071	526	308.78	6.00	90.0000	0.00
949	526	1084	2823.47	6.00	75.0000	0.00
962	1085	1337	588.12	6.00	75.0000	0.00
966	1099	J-78	1370.13	6.00	90.0000	0.00
975	1100	1101	228.75	6.00	90.0000	0.00
976	O-Fairview	1101	118.14	6.00	90.0000	0.00
982	2103	J-81	265.32	6.00	75.0000	0.00
993	1121	1122	255.49	6.00	90.0000	0.00
994	2076	2127	300.30	6.00	75.0000	0.00
1000	1130	1125	650.51	6.00	75.0000	0.00
1001	2104	J-73	623.72	6.00	75.0000	0.00
1003	1134	2104	238.99	6.00	75.0000	0.00
1004	509	1290	478.00	6.00	75.0000	0.00
1007	1137	2105	327.02	6.00	75.0000	0.00
1009	1388	2013	267.00	6.00	75.0000	0.00
1012	2106	2107	591.74	6.00	75.0000	0.00
1014	510	23	924.74	6.00	75.0000	0.00
1017	2137	2109	470.82	6.00	75.0000	0.00
1019	2084	2109	326.70	6.00	75.0000	0.00
1020	2094	23	140.75	6.00	75.0000	0.00
1023	1156	23	477.86	6.00	75.0000	0.00
1024	2096	2073	229.38	6.00	75.0000	0.00
1025	2110	2096	273.09	6.00	75.0000	0.00
1026	2110	1997	279.58	6.00	75.0000	0.00
1028	1997	2111	244.00	6.00	75.0000	0.00
1030	2111	2112	268.86	6.00	75.0000	0.00
1032	1961	2113	418.00	6.00	75.0000	0.00
1035	704	1961	270.90	6.00	75.0000	0.00
1036	2109	1961	297.09	6.00	75.0000	0.00
1037	2010	2014	642.00	6.00	75.0000	0.00
1040	2012	2013	328.33	6.00	75.0000	0.00
1041	2065	2012	308.00	6.00	75.0000	0.00
1042	2137	2065	296.00	6.00	75.0000	0.00
1043	2113	2137	300.18	6.00	75.0000	0.00
1044	2113	1180	266.89	6.00	75.0000	0.00
1046	1181	22	93.00	6.00	75.0000	0.00
1047	2095	22	173.00	6.00	75.0000	0.00
1048	726	1184	40.06	8.00	115.0000	0.00
1051	1186	1996	269.43	6.00	75.0000	0.00
1053	827	1232	1143.25	6.00	75.0000	0.00
1058	1232	1156	597.28	6.00	75.0000	0.00
1060	1156	512	927.21	6.00	75.0000	0.00
1062	512	2107	783.40	6.00	75.0000	0.00
1064	2115	2107	155.32	6.00	75.0000	0.00
1069	2117	2065	579.53	6.00	75.0000	0.00
1071	2137	1210	580.23	6.00	75.0000	0.00
1074	1211	1713	81.79	6.00	115.0000	0.00
1076	24	1713	223.00	6.00	115.0000	0.00
1077	1215	J-58	327.00	6.00	75.0000	0.00
1078	68	1217	692.94	6.00	115.0000	0.00
1080	1218	2112	1049.55	6.00	75.0000	0.00
1083	2112	1223	326.05	6.00	75.0000	0.00
1085	1224	2111	321.86	6.00	75.0000	0.00
1087	1085	1333	418.92	6.00	75.0000	0.00
1088	1085	808	427.58	6.00	75.0000	0.00
1090	808	1229	207.76	6.00	75.0000	0.00
1091	1232	1181	476.00	6.00	75.0000	0.00
1094	1235	1483	375.00	6.00	75.0000	0.00
1095	2120	1104	147.00	6.00	90.0000	0.00
1096	2120	1239	581.73	6.00	115.0000	0.00
1099	1240	1214	42.84	6.00	115.0000	0.00
1100	1214	1244	471.00	6.00	115.0000	0.00
1103	1244	1251	558.00	6.00	115.0000	0.00
1110	Yankis (Va	1251	413.91	6.00	115.0000	0.00
1116	1513	J-25	173.82	8.00	130.0000	0.00
1117	1277	1396	339.91	6.00	90.0000	0.00
1118	1277	1262	90.18	6.00	90.0000	0.00
1120	657	J-25	1605.00	10.00	130.0000	0.00
1125	1181	1270	559.53	6.00	75.0000	0.00
1127	2103	1099	1495.62	6.00	75.0000	0.00
1132	1277	I-AV-4	889.11	6.00	90.0000	0.00
1138	693	579	860.83	6.00	75.0000	0.00
1140	1284	O-AV-3	362.05	6.00	90.0000	0.00
1146	1290	2119	1322.78	4.00	75.0000	0.00
1148	1293	1295	372.96	4.00	75.0000	0.00
1150	398	2016	65.54	6.00	75.0000	0.00
1152	1120	1298	198.66	6.00	75.0000	0.00
1154	432	1309	2165.00	6.00	90.0000	0.00
1165	1310	1314	1161.00	4.00	75.0000	0.00
1169	2127	J-61	967.64	4.00	75.0000	0.00
1171	1318	2105	578.38	4.00	75.0000	0.00

2030 Peak Hour Demand

1173	2105	1322	469.84	4.00	75.0000	0.00
1178	2115	40	301.65	4.00	75.0000	0.00
1179	2115	1328	589.61	4.00	75.0000	0.00
1182	803	J-81	638.00	4.00	75.0000	0.00
1185	1333	1337	528.94	4.00	75.0000	0.00
1189	1338	807	1527.54	4.00	75.0000	0.00
1193	518	192	70.97	4.00	75.0000	0.00
1195	192	1060	583.00	4.00	75.0000	0.00
1198	1060	705	1317.00	4.00	75.0000	0.00
1205	492	J-80	987.90	4.00	75.0000	0.00
1208	1356	828	273.00	4.00	75.0000	0.00
1210	1359	828	233.00	4.00	75.0000	0.00
1211	1364	1984	203.81	4.00	75.0000	0.00
1212	1364	1991	514.02	4.00	75.0000	0.00
1214	1364	2121	287.23	4.00	75.0000	0.00
1215	1366	36	660.16	4.00	75.0000	0.00
1217	1244	1251	681.00	6.00	115.0000	0.00
1226	1375	17	2480.00	4.00	90.0000	0.00
1236	17	1387	400.00	4.00	90.0000	0.00
1239	1388	1392	578.80	4.00	75.0000	0.00
1244	1314	33	129.52	4.00	90.0000	0.00
1245	937	1456	272.00	4.00	75.0000	0.00
1247	384	1456	264.58	4.00	75.0000	0.00
1248	1396I-Valley V		4.38	4.00	140.0000	0.00
1258	505	1409	1080.00	4.00	75.0000	0.00
1261	1410	657	558.39	4.00	90.0000	0.00
1269	1023	I-AV-2	712.27	4.00	90.0000	0.00
1309	1456	881	418.71	4.00	75.0000	0.00
1315	885	1056	245.12	4.00	90.0000	0.00
1319	1465	2103	636.67	4.00	75.0000	0.00
1322	509	407	820.07	4.00	75.0000	0.00
1330	693	492	1027.10	4.00	75.0000	0.00
1338	1295	1483	948.39	4.00	75.0000	0.00
1340	1484	899	1892.00	4.00	75.0000	0.00
1351	344	1497	767.00	4.00	130.0000	0.00
1354	1498	1502	449.05	8.00	130.0000	0.00
1358	1502	J-133	279.67	8.00	130.0000	0.00
1371	1517	1519	275.00	2.00	114.3142	0.00
1384	1544	J-95	2295.00	12.00	90.0000	0.00
1388	1547	1544	288.55	12.00	115.0000	0.00
1389	1547	J-96	1327.00	12.00	115.0000	0.00
1396	1544	1547	2300.00	8.00	115.0000	0.00
1401	668	1674	1132.70	12.00	130.0000	0.00
1404	1674	102	746.13	12.00	130.0000	0.00
1406	102	J-1	620.69	12.00	130.0000	0.00
1409	92	J-143	4125.62	12.00	115.0000	0.00
1423	421	107	867.00	12.00	130.0000	0.00
1426	1575	34	575.28	12.00	115.0000	0.00
1427	1576	248	446.87	12.00	130.0000	0.00
1429	248	1580	540.11	12.00	130.0000	0.00
1433	51	26	448.20	12.00	115.0000	0.00
1435	51	109	1427.59	12.00	115.0000	0.00
1440	6	109	475.62	12.00	115.0000	0.00
1441	6	1647	1469.07	12.00	115.0000	0.00
1443	1637	1647	5159.69	12.00	115.0000	0.00
1454	72	1637	1761.44	12.00	115.0000	0.00
1455	72	1626	3641.41	12.00	115.0000	0.00
1458	1627	1626	763.65	12.00	115.0000	0.00
1460	797	212	356.56	12.00	115.0000	0.00
1464	788	1630	3991.15	12.00	115.0000	0.00
1477	1630	1626	1130.08	12.00	115.0000	0.00
1479	1627Yates Rese		1075.00	12.00	130.0000	0.00
1481	1630	76	3539.00	12.00	130.0000	0.00
1483	76	1636	2341.00	12.00	130.0000	0.00
1487	1637	75	595.62	12.00	115.0000	0.00
1492	75	49	651.30	12.00	115.0000	0.00
1493	254	49	3310.10	12.00	115.0000	0.00
1494	254	J-35	1688.26	12.00	115.0000	0.00
1497	2072	1647	1022.00	12.00	115.0000	0.00
1499	1648	247	4693.50	12.00	115.0000	0.00
1500	343	1657	2072.02	8.00	130.0000	0.00
1509	1658	901	754.77	8.00	130.0000	0.00
1526	1674	800	496.84	8.00	130.0000	0.00
1531	800	174	473.00	8.00	130.0000	0.00
1534	1679	1689	748.17	6.00	90.0000	0.00
1544	1690	1689	126.93	8.00	90.0000	0.00
1548	2092	1698	669.39	8.00	115.0000	0.00
1552	1699	1700	801.40	10.00	130.0000	0.00
1553	2138	89	1389.60	8.00	115.0000	0.00
1560	1710	J-53	1056.65	8.00	115.0000	0.00
1562	1711	683	220.00	8.00	90.0000	0.00
1563	683	1712	500.00	8.00	115.0000	0.00
1564	1713	1716	178.58	6.00	115.0000	0.00
1567	1716	1719	185.05	6.00	115.0000	0.00
1584	1742	1737	1268.00	4.00	75.0000	0.00
1588	1737	1375	375.00	4.00	75.0000	0.00
1593	1742	1484	452.00	10.00	130.0000	0.00
1596	1484	975	1798.00	10.00	130.0000	0.00
1611	975	1310	71.00	10.00	130.0000	0.00
1612	1310	2122	454.00	10.00	130.0000	0.00
1615	2123	1089	511.48	8.00	115.0000	0.00
1617	1089	1186	243.51	6.00	75.0000	0.00
1618	1186	1767	570.00	8.00	115.0000	0.00
1621	J-135	1773	742.00	8.00	130.0000	0.00
1626	1773	1775	197.00	8.00	130.0000	0.00
1628	1775	1776	68.00	8.00	130.0000	0.00
1629	1776	1782	1030.00	8.00	130.0000	0.00
1635	1782	1788	996.00	8.00	130.0000	0.00
1641	1788	1775	237.00	8.00	130.0000	0.00
1644	1773	1791	251.00	8.00	130.0000	0.00
1645	1776	1793	338.00	8.00	130.0000	0.00
1647	1788	1782	591.00	8.00	130.0000	0.00
1654	1800	1801	235.53	10.00	130.0000	0.00
1657	18053-inch or		110.20	8.00	130.0000	0.00
1658	1806	1808	400.00	6.00	115.0000	0.00

2030 Peak Hour Demand

1660	1809	1806	19.02	8.00	130.0000	0.00
1661		1810	671.00	10.00	130.0000	0.00
1663	1800	1821	258.00	10.00	130.0000	0.00
1664	1813	1809	50.87	10.00	130.0000	0.00
1665	1814	1818	535.81	2.00	140.0000	0.00
1669	1813	1814	675.00	8.00	130.0000	0.00
1672	1821	J-112	525.00	8.00	130.0000	0.00
1673	1823	1826	385.26	6.00	90.0000	0.00
1676	1827	1071	62.38	8.00	90.0000	0.00
1677	1636	J-128	438.35	8.00	130.0000	0.00
1792	910	844	262.20	4.00	75.0000	0.00
1793	178	1823	69.34	8.00	90.0000	0.00
1796	1063	1948	325.00	2.00	106.5232	0.00
1799	1032	J-114	642.00	4.00	90.0000	0.00
1810	1960	12	21.03	8.00	90.0000	0.00
1811	12	10	1053.00	8.00	90.0000	0.00
1813	1767	J-117	290.12	6.00	75.0000	0.00
1818	1737	1968	132.00	4.00	75.0000	0.00
1820	1823	J-21	491.61	6.00	75.0000	0.00
1821	175	384	2123.70	10.00	115.0000	0.00
1825	1973	566	454.00	4.00	75.0000	0.00
1826	1974	1975	651.00	4.00	75.0000	0.00
1828	J-3	1980	517.00	6.00	75.0000	0.00
1830	3-inch or	1981	48.33	4.00	75.0000	0.00
1831	1984	1767	235.15	6.00	75.0000	0.00
1834	1985	1986	56.59	4.00	75.0000	0.00
1835	894	2125	20.33	8.00	115.0000	0.00
1836	1987	568	717.00	4.00	75.0000	0.00
1837	1988	1989	52.11	4.00	75.0000	0.00
1839	2121	1991	219.88	6.00	75.0000	0.00
1840	2126	2123	286.00	10.00	115.0000	0.00
1841	1994	994	209.00	6.00	75.0000	0.00
1842	1996	1997	691.73	6.00	75.0000	0.00
1843	1184	2003	971.73	6.00	115.0000	0.00
1852	2007	2009	230.57	6.00	75.0000	0.00
1854	2010	2065	472.04	6.00	75.0000	0.00
1855	2012	J-39	579.11	8.00	75.0000	0.00
1856	2013	2014	469.09	6.00	115.0000	0.00
1858	2016	J-81	1482.47	4.00	75.0000	0.00
1860	2127	504	947.53	4.00	75.0000	0.00
1864	1121	2023	183.59	6.00	90.0000	0.00
1865	2127	1215	263.88	6.00	75.0000	0.00
1866	2025	2028	384.00	2.00	140.0000	0.00
1869	2029	2030	216.99	2.00	140.0000	0.00
1870	2031	2029	117.40	4.00	140.0000	0.00
1871	2029	2025	27.90	4.00	140.0000	0.00
1872	2025	2032	248.94	4.00	140.0000	0.00
1873	2033	2031	618.97	4.00	140.0000	0.00
1877	2031	J-124	145.24	8.00	115.0000	0.00
1883	2047	J-74	206.38	6.00	90.0000	0.00
1887	2053	582	671.02	4.00	90.0000	0.00
1892	2129	582	343.45	4.00	90.0000	0.00
1893	590	46	757.00	6.00	90.0000	0.00
1894	2061	J-45	335.58	6.00	90.0000	0.00
1895	2063	J-44	880.19	8.00	90.0000	0.00
1896	5	361	64.75	10.00	90.0000	0.00
1898	14	540	265.00	6.00	75.0000	0.00
1900	163-in or sm		34.44	6.00	90.0000	0.00
1901	17	18	236.00	6.00	90.0000	0.00
1904	24	2088	5.94	6.00	115.0000	0.00
1907	36	2130	291.60	6.00	75.0000	0.00
1908	38	2083	817.68	6.00	75.0000	0.00
1909	2014	J-87	300.00	6.00	75.0000	0.00
1917	69	J-61	263.00	8.00	115.0000	0.00
1920	295	J-30	1850.87	12.00	130.0000	0.00
1924	86	2066	285.00	12.00	130.0000	0.00
1927	104	J-112	808.02	6.00	75.0000	0.00
1930	118	710	2530.00	14.00	90.0000	0.00
1935	247	2106	22.48	8.00	75.0000	0.00
1936	325	2122	272.19	12.00	115.0000	0.00
1938	375	1218	736.59	14.00	75.0000	0.00
1940	396	1318	307.00	14.00	75.0000	0.00
1941	480	2138	730.48	10.00	90.0000	0.00
1947	530	2093	691.48	6.00	75.0000	0.00
1948	536	2078	287.42	8.00	75.0000	0.00
1949	565	1084	590.00	8.00	75.0000	0.00
1950	556	944	498.75	6.00	75.0000	0.00
1951	565	543	35.00	8.00	75.0000	0.00
1954	J-84	O-AV-5	54.14	8.00	90.0000	0.00
1956	584	717	786.89	10.00	90.0000	0.00
1958	590	584	267.70	10.00	90.0000	0.00
1960	620	2133	155.65	8.00	115.0000	0.00
1962	1410	649	52.91	8.00	90.0000	0.00
1964	661	424	118.60	10.00	75.0000	0.00
1965	665	172	143.00	12.00	115.0000	0.00
1967	710	137	1990.58	14.00	90.0000	0.00
1972	784	791	500.36	8.00	115.0000	0.00
1975	797	788	291.38	12.00	115.0000	0.00
1977	813	J-120	564.60	6.00	75.0000	0.00
1978	815	803	563.97	6.00	75.0000	0.00
1979	817	1338	454.00	6.00	75.0000	0.00
1982	856	2121	290.89	6.00	75.0000	0.00
1983	860	375	259.21	14.00	75.0000	0.00
1984	865	65	387.79	8.00	75.0000	0.00
1985	872	14	110.22	6.00	75.0000	0.00
1986	923	J-3	345.89	6.00	75.0000	0.00
1987	944	1987	383.07	6.00	75.0000	0.00
1989	954	945	225.61	6.00	75.0000	0.00
1990	958	J-106	266.00	6.00	75.0000	0.00
1992	994	1658	528.00	10.00	115.0000	0.00
1993	2101	60	140.36	6.00	75.0000	0.00
1995	1003	1049	529.64	6.00	90.0000	0.00
1996	1049	631	275.61	8.00	90.0000	0.00
1997	1050	975	402.00	6.00	90.0000	0.00
1998	1057	518	652.00	8.00	75.0000	0.00

2030 Peak Hour Demand

2000	1084	552	435.20	8.00	75.0000	0.00
2001	1099	1120	246.00	6.00	75.0000	0.00
2002	1107	J-79	210.02	8.00	75.0000	0.00
2003	1130	J-63	457.60	8.00	75.0000	0.00
2005	1137	398	600.00	8.00	75.0000	0.00
2010	1180	704	473.80	8.00	75.0000	0.00
2011	1183	704	38.34	6.00	75.0000	0.00
2014	1210	2067	566.74	14.00	75.0000	0.00
2020	1223	1224	265.83	6.00	75.0000	0.00
2021	1224	827	666.42	6.00	75.0000	0.00
2022	1229	815	301.07	6.00	75.0000	0.00
2024	1235	1517	896.98	8.00	75.0000	0.00
2025	1099	J-82	293.00	6.00	75.0000	0.00
2027	1284	46	713.52	8.00	90.0000	0.00
2031	1318	1392	306.00	14.00	75.0000	0.00
2032	1322	J-87	262.00	6.00	75.0000	0.00
2033	1328	2091	322.03	8.00	75.0000	0.00
2035	1337	2110	39.43	6.00	75.0000	0.00
2036	1338	813	634.51	6.00	75.0000	0.00
2037	1356	1089	17.89	6.00	75.0000	0.00
2039	1366	945	480.02	6.00	75.0000	0.00
2040	1387	979	479.26	6.00	115.0000	0.00
2042	1392	J-39	591.86	14.00	75.0000	0.00
2045	1409	407	306.00	10.00	75.0000	0.00
2048	1465	J-120	38.32	6.00	75.0000	0.00
2053	1107	1517	423.01	8.00	75.0000	0.00
2058	1570	J-8	1066.00	10.00	90.0000	0.00
2060	1575	342	808.04	12.00	130.0000	0.00
2063	1627	J-135	354.12	12.00	115.0000	0.00
2067	1648	432	2857.00	10.00	90.0000	0.00
2068	1658	421	772.00	10.00	115.0000	0.00
2070	1679	1101	25.75	6.00	90.0000	0.00
2071	1698	212	264.80	8.00	115.0000	0.00
2078	1800	1813	297.00	10.00	130.0000	0.00
2079	1809	1805	635.00	10.00	130.0000	0.00
2080	1810	107	583.38	12.00	130.0000	0.00
2087	1960	700	19.01	8.00	90.0000	0.00
2089	1973	J-2	345.00	6.00	75.0000	0.00
2090	1974	1366	377.42	6.00	75.0000	0.00
2091	1975	36	374.90	6.00	75.0000	0.00
2092	1981	J-4	275.32	6.00	75.0000	0.00
2093	994	1984	383.00	10.00	115.0000	0.00
2095	1986	552	515.83	6.00	75.0000	0.00
2096	1987	893	54.17	6.00	75.0000	0.00
2097	1989	842	189.64	6.00	75.0000	0.00
2102	1996	827	273.45	6.00	75.0000	0.00
2104	2007	375	649.59	10.00	115.0000	0.00
2105	2009	2096	41.52	6.00	75.0000	0.00
2111	2016	1120	22.21	6.00	75.0000	0.00
2114	1107	1293	379.00	6.00	75.0000	0.00
2118	2053	J-57	404.65	8.00	90.0000	0.00
2120	2063	717	379.81	10.00	90.0000	0.00
2127	2067	1218	331.70	14.00	75.0000	0.00
2128	2067	1180	580.16	8.00	75.0000	0.00
2139	2073	2007	37.55	10.00	115.0000	0.00
2141	2074	483	444.39	8.00	115.0000	0.00
2145	2076	492	344.58	8.00	75.0000	0.00
2146	2076	504	784.60	8.00	75.0000	0.00
2148	693	J-64	330.00	8.00	115.0000	0.00
2149	2078	865	288.23	8.00	75.0000	0.00
2150	2078	1991	297.24	6.00	75.0000	0.00
2152	2079	543	202.12	8.00	75.0000	0.00
2153	2080	2081	236.10	6.00	115.0000	0.00
2154	2080	958	585.00	6.00	75.0000	0.00
2155	2125	J-99	48.00	8.00	115.0000	0.00
2156	2081	958	325.04	6.00	75.0000	0.00
2159	2083	2084	265.54	8.00	75.0000	0.00
2160	2083	916	678.90	6.00	75.0000	0.00
2161	2084	565	310.77	8.00	75.0000	0.00
2162	2084	916	736.88	6.00	75.0000	0.00
2165	2086	578	560.00	8.00	115.0000	0.00
2166	2086	2132	593.29	8.00	90.0000	0.00
2169	2088	620	2465.45	8.00	115.0000	0.00
2170	2088	1214	158.00	6.00	115.0000	0.00
2173	2090	1410	14.60	8.00	90.0000	0.00
2174	2090	657	565.72	8.00	115.0000	0.00
2175	2091	1137	468.76	8.00	75.0000	0.00
2176	2091	505	311.20	8.00	75.0000	0.00
2179	2093	817	304.87	6.00	75.0000	0.00
2180	2093	1229	758.42	6.00	75.0000	0.00
2181	2094	2095	604.36	6.00	75.0000	0.00
2183	2095	1223	294.47	6.00	75.0000	0.00
2184	2095	1183	324.33	6.00	75.0000	0.00
2187	2097	856	426.07	6.00	75.0000	0.00
2188	2097	2073	206.00	6.00	75.0000	0.00
2189	2098	885	448.98	6.00	75.0000	0.00
2190	2098	2100	273.62	6.00	75.0000	0.00
2192	954	2130	268.01	6.00	75.0000	0.00
2193	2100	1050	360.00	6.00	90.0000	0.00
2194	2100	1056	405.41	6.00	75.0000	0.00
2195	2101	807	693.00	6.00	115.0000	0.00
2196	2101	J-82	1519.00	6.00	75.0000	0.00
2198	1290	1293	372.41	6.00	75.0000	0.00
2199	2103	60	154.27	6.00	75.0000	0.00
2202	2104	2021	244.00	4.00	75.0000	0.00
2203	2105	1388	298.00	6.00	75.0000	0.00
2206	2106	1328	152.76	8.00	75.0000	0.00
2207	2107	510	314.14	6.00	75.0000	0.00
2212	2109	2010	299.72	6.00	75.0000	0.00
2214	2110	1356	429.11	6.00	75.0000	0.00
2216	2111	1333	54.05	6.00	75.0000	0.00
2217	2112	1183	291.22	6.00	75.0000	0.00
2221	803	2113	632.05	6.00	75.0000	0.00
2223	2115	J-87	328.38	6.00	75.0000	0.00
2228	2117	1210	322.00	14.00	75.0000	0.00

2030 Peak Hour Demand

2231	2119	1483	385.00	6.00	75.0000	0.00
2234	2120	J-77	147.00	6.00	90.0000	0.00
2236	2121	2126	209.47	6.00	75.0000	0.00
2240	2123	2073	427.00	10.00	115.0000	0.00
2243	2125	961	36.45	8.00	115.0000	0.00
2244	2125	2081	266.99	8.00	115.0000	0.00
2246	2126	1984	286.12	10.00	115.0000	0.00
2249	2050	J-77	44.67	6.00	90.0000	0.00
2252	2129	2053	226.85	8.00	90.0000	0.00
2253	2130	961	455.00	6.00	75.0000	0.00
2254	2130	1973	40.73	6.00	75.0000	0.00
2257	2132	214	7.31	8.00	90.0000	0.00
2259	2133	599	622.41	8.00	115.0000	0.00
2260	2133	47	462.96	8.00	115.0000	0.00
2269	2138	481	66.26	10.00	90.0000	0.00
P-1	J-1	97	547.15	12.00	130.0000	0.00
P-100	J-112	1814	500.93	6.00	75.0000	0.00
P-101	J-113	2079	368.16	6.00	75.0000	0.00
P-102	J-114	1023	302.00	4.00	90.0000	0.00
P-103	J-125	649	346.91	6.00	90.0000	0.00
P-104	I-Fairview	1103	20.94	6.00	90.0000	0.00
P-105	J-115	J-116	419.54	6.00	75.0000	0.00
P-106	J-116	2097	250.67	6.00	75.0000	0.00
P-108	J-117	56	305.00	6.00	75.0000	0.00
P-11	J-3	1975	323.06	6.00	75.0000	0.00
P-111	J-120	807	266.76	6.00	75.0000	0.00
P-113	J-39	2117	288.00	14.00	75.0000	0.00
P-116	97	J-122	121.15	12.00	130.0000	0.00
P-117	J-140	J-145	46.63	12.00	130.0000	0.00
P-119	J-139	J-84	78.98	8.00	130.0000	0.00
P-121	J-140	J-138	42.92	12.00	130.0000	0.00
P-122	J-126Main Reser		111.73	14.00	90.0000	0.00
P-124	O-AV-1	2083	364.42	8.00	75.0000	0.00
P-125	O-AV-2	906	282.73	4.00	75.0000	0.00
P-127	J-127	295	2367.21	12.00	130.0000	0.00
P-128	J-127	J-128	4129.32	12.00	130.0000	0.00
P-130	J-128	1831	615.85	8.00	130.0000	0.00
P-131	J-129	1071	558.33	6.00	90.0000	0.00
P-132	668	J-129	1448.22	12.00	130.0000	0.00
P-133	J-133	1513	25.35	8.00	130.0000	0.00
P-134	J-122	J-132	800.00	12.00	130.0000	0.00
P-135	J-124	1502	393.57	8.00	130.0000	0.00
P-136	J-124	J-131	198.84	8.00	130.0000	0.00
P-138-CV	Kennicott	J-53	790.00	16.00	115.0000	0.00
P-140	O-AV-4	686	40.89	6.00	90.0000	0.00
P-143	I-AV-5	J-63	2.85	8.00	130.0000	0.00
P-144	O-AV-6	1134	545.75	4.00	75.0000	0.00
P-146	J-73	J-134	384.83	8.00	115.0000	0.00
P-147	J-64	J-141	135.51	8.00	115.0000	0.00
P-148	J-134	O-RV-2	6.27	8.00	130.0000	0.00
P-149	J-143	O-RV-1	5.82	12.00	130.0000	0.00
P-15	J-91	J-126	172.27	14.00	90.0000	0.00
P-150-CV	J-141	J-134	13.00	8.00	130.0000	0.00
P-151	J-142	J-139	80.78	8.00	130.0000	0.00
P-152	J-144	1570	631.51	12.00	115.0000	0.00
P-153-CV	J-143	J-144	24.87	12.00	130.0000	0.00
P-154	I-RV-1	J-144	5.63	12.00	130.0000	0.00
P-157	I-RV-2	J-141	7.13	8.00	130.0000	0.00
P-1570	1716	1103	1729.25	8.00	115.0000	0.00
P-158	J-145I-18th St		2.66	12.00	115.0000	0.00
P-159	J-145	J-146	2.68	12.00	115.0000	0.00
P-160-CV	J-146	J-147	9.25	12.00	115.0000	0.00
P-161	J-146O-18th St		3.23	12.00	130.0000	0.00
P-162	J-147	J-142	2.67	12.00	115.0000	0.00
P-164	I-18th St	J-147	3.12	12.00	130.0000	0.00
P-165	J-155	J-156	739.67	6.00	140.0000	0.00
P-166	66	J-110	322.75	6.00	75.0000	0.00
P-167	J-153	J-156	4747.12	12.00	115.0000	0.00
P-168	J-152	J-150	15.74	8.00	115.0000	0.00
P-169	J-154	J-88	471.34	12.00	115.0000	0.00
P-170	J-155	J-151	4833.50	6.00	140.0000	0.00
P-171	J-155	J-157	658.63	2.00	140.0000	0.00
P-172	J-156	J-154	1552.65	12.00	115.0000	0.00
P-173	J-148	J-6	2664.56	2.00	130.0000	0.00
P-174	J-149	J-153	1314.60	8.00	130.0000	0.00
P-175	J-150	J-152	2094.17	8.00	115.0000	0.00
P-18	J-135I-South En		77.91	12.00	130.0000	0.00
P-19	33	34	11.57	4.00	90.0000	0.00
P-2	101	J-1	84.14	8.00	130.0000	0.00
P-20	1576	213	32.42	12.00	130.0000	0.00
P-25	J-30	2066	908.00	12.00	130.0000	0.00
P-29	J-8	2063	977.55	10.00	90.0000	0.00
P-3	J-60-Centrali		24935.52	6.00	115.0000	0.00
P-30	J-35	J-42	1262.05	12.00	115.0000	0.00
P-31	54	J-8	271.99	8.00	90.0000	0.00
P-33	J-42	2072	33.95	12.00	115.0000	0.00
P-34	1699	J-42	861.64	12.00	115.0000	0.00
P-36	2091	1322	322.00	6.00	75.0000	0.00
P-4	J-7	1570	1181.00	10.00	90.0000	0.00
P-40	J-44	10	918.28	8.00	90.0000	0.00
P-42	J-45	J-44	388.00	8.00	90.0000	0.00
P-43	J-880-South En		3066.47	12.00	115.0000	0.00
P-44	J-55	28	392.03	8.00	115.0000	0.00
P-47	J-57	2132	26.83	8.00	90.0000	0.00
P-48	41	J-90	18.53	10.00	90.0000	0.00
P-49	2051	J-57	16.66	8.00	90.0000	0.00
P-50	2052	J-57	17.24	8.00	90.0000	0.00
P-51	O-18th St	J-142	1.13	8.00	115.0000	0.00
P-53	J-4	1974	369.00	6.00	75.0000	0.00
P-54	923	J-4	253.57	6.00	75.0000	0.00
P-57	1217	I-AV-6	27.22	4.00	75.0000	0.00
P-58	1217	69	273.00	8.00	115.0000	0.00
P-6	J-11	J-88	987.96	8.00	115.0000	0.00
P-61	J-58	68	222.00	6.00	115.0000	0.00
P-62	J-61	J-136	302.00	8.00	115.0000	0.00

2030 Peak Hour Demand

P-63	2076	J-64	1014.00	8.00	75.0000	0.00
P-64	54	J-27	596.19	8.00	90.0000	0.00
P-65	J-67	597	417.00	8.00	90.0000	0.00
P-67	J-71	J-67	339.00	8.00	115.0000	0.00
P-69	J-73	J-71	449.75	8.00	75.0000	0.00
P-7	J-152	J-154	148.62	8.00	115.0000	0.00
P-71	J-63	J-123	21.02	8.00	130.0000	0.00
P-73	J-74	1679	128.71	6.00	90.0000	0.00
P-74	J-77	J-74	27.47	6.00	90.0000	0.00
P-75	I-AV-3	2120	128.95	6.00	90.0000	0.00
P-76	J-78	408	254.81	8.00	90.0000	0.00
P-77	J-79	1130	739.00	8.00	75.0000	0.00
P-78	J-80	504	390.06	8.00	75.0000	0.00
P-79	1396	J-82	521.89	6.00	90.0000	0.00
P-80	1388	J-87	625.00	6.00	115.0000	0.00
P-81	92	J-62	399.00	8.00	115.0000	0.00
P-82	J-84	597	632.70	8.00	90.0000	0.00
P-83	J-123	J-140	102.57	12.00	130.0000	0.00
P-84	J-93	1971	33.88	6.00	90.0000	0.00
P-86	I-High Lev	J-126	388.44	6.00	75.0000	0.00
P-87	J-94	526	1018.53	8.00	75.0000	0.00
P-88	J-93	J-94	3.82	6.00	90.0000	0.00
P-89	J-96inter-tie	1009.00	12.00	115.0000	0.00	
P-9	J-2	2098	329.00	6.00	75.0000	0.00
P-90	J-105	174	266.00	12.00	130.0000	0.00
P-91	J-20	1981	59.00	6.00	75.0000	0.00
P-92	J-21	J-20	140.66	6.00	75.0000	0.00
P-93	568	J-99	19.30	8.00	115.0000	0.00
P-94	J-99	556	294.00	8.00	115.0000	0.00
P-95	566	J-99	49.52	8.00	115.0000	0.00
P-96	J-100	2080	161.00	8.00	115.0000	0.00
P-97	J-106	894	329.00	6.00	75.0000	0.00
P-98	I-Central	J-153	21368.49	8.00	115.0000	0.00
P-99	J-111	944	378.41	6.00	75.0000	0.00
Valley Vie	O-Valley VYankis (Va	2731.89	4.00	140.0000	0.00	

N O D E D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
5		0.50	243.40	
6		11.10	244.40	
9		4.70	205.80	
10		15.90	213.70	
11		0.20	236.90	
12		6.30	236.50	
13		0.20	198.90	
14		3.70	201.40	
15		13.60	186.10	
16		2.70	186.10	
17		17.70	175.70	
18		3.80	171.90	
19		2.50	165.30	
22		5.80	186.50	
23		13.10	187.70	
24		3.30	604.50	
26		15.00	240.30	
28		3.40	322.60	
29		1.20	323.60	
31		4.10	216.80	
32		9.70	214.70	
33		0.80	183.00	
34		6.20	183.50	
36		7.50	194.40	
37		1.00	333.40	
38		6.30	290.50	
40		8.80	190.80	
41		0.50	219.10	
43		0.20	253.50	
46		11.20	229.90	
47		3.60	544.40	
48		1.00	543.60	
49		24.30	243.00	
50		1.80	244.20	
51		11.90	240.00	
52		2.70	261.50	
54		5.90	209.30	
56		1.70	193.00	
59		0.60	252.50	
60		2.30	252.90	
65		11.80	192.40	
66		3.80	191.30	
68		7.50	205.20	
69		5.40	208.70	
70		1.40	285.20	
72		31.20	255.00	
75		25.70	247.70	
76		52.00	256.00	
83		0.20	221.90	
85		0.20	222.10	
86		9.40	222.40	
89		7.90	225.60	
92		31.10	192.40	
97		4.20	173.90	
98		0.40	174.00	
101		0.50	174.30	
102		8.10	176.00	
103		0.40	175.70	
104		8.20	179.70	
107		8.20	183.60	

2030 Peak Hour Demand

108	3.40	183.60
109	15.30	236.20
118	32.90	192.50
119	6.80	217.70
121	4.40	230.70
137	16.10	180.00
166	12.00	182.90
172	7.60	174.10
174	4.20	175.70
175	13.50	183.60
178	4.30	183.60
192	14.50	183.60
201	6.90	178.30
212	7.30	256.30
213	4.20	253.50
214	9.40	230.10
224	7.10	224.20
247	26.90	192.10
248	16.00	248.60
253	10.40	240.90
254	37.00	230.80
295	42.20	210.10
325	9.50	183.90
342	6.40	165.40
343	12.50	163.20
344	5.80	164.20
346	1.10	165.60
356	18.80	219.10
361	20.70	243.10
375	9.40	230.50
384	19.80	183.20
385	2.20	183.60
396	2.00	221.20
398	5.70	220.50
407	10.10	226.99
408	5.20	223.30
421	9.30	184.20
424	2.30	189.90
432	28.50	184.10
468	34.50	204.20
473	3.10	178.30
474	3.80	210.70
480	13.20	219.70
481	0.40	220.90
483	2.50	214.00
492	15.80	195.50
504	12.10	192.80
505	10.80	197.20
509	17.80	200.00
510	9.70	189.60
512	12.30	184.80
513	6.10	178.80
518	5.70	182.20
526	23.60	201.80
530	6.00	220.30
536	7.80	201.90
540	1.70	202.30
543	3.90	210.90
544	3.00	216.10
552	6.00	191.50
556	7.40	206.10
565	5.30	210.80
566	2.90	204.60
568	4.20	206.30
569	13.00	178.30
573	2.70	179.00
578	3.20	280.80
579	6.80	205.50
582	8.90	212.80
584	9.10	207.60
590	10.30	208.60
597	7.00	222.20
599	10.20	592.40
601	2.60	577.30
619	4.10	559.00
620	18.40	583.00
623	3.50	588.00
628	4.40	420.40
631	5.70	382.80
632	1.70	455.20
642	3.30	304.60
649	3.50	392.70
657	15.50	331.20
661	10.20	190.90
665	14.40	174.40
668	22.40	182.30
675	2.80	180.60
676	5.10	206.70
682	1.00	209.20
683	6.90	200.30
686	1.90	278.90
693	12.60	197.40
700	0.10	237.50
704	4.40	190.10
705	8.90	185.50
710	27.10	197.50
717	12.20	204.90
718	0.20	191.20
726	2.90	190.00
780	16.20	195.00
781	0.10	252.20
784	10.30	259.80
788	30.20	258.50
791	9.30	256.00
792	0.70	254.90

2030 Peak Hour Demand

797	7.80	255.30
800	7.10	177.30
802	1.60	178.00
803	11.90	217.90
807	14.10	272.60
808	8.90	215.50
813	8.50	244.90
815	6.60	219.20
817	8.10	275.20
827	11.90	186.80
828	5.30	192.50
831	3.60	216.90
842	6.40	234.00
844	8.80	260.00
856	5.50	194.40
860	4.80	230.20
865	5.10	195.90
868	5.40	197.00
872	2.00	199.50
881	5.00	199.80
885	5.60	204.20
893	5.10	198.10
894	2.00	206.30
899	12.00	192.10
901	11.70	189.00
906	4.20	292.50
910	3.20	294.90
916	10.10	222.40
922	2.00	238.30
923	6.60	182.20
929	1.40	181.60
937	6.40	183.80
944	7.10	196.50
945	6.70	192.00
954	5.40	193.70
958	12.30	201.60
961	2.80	205.40
962	7.30	179.30
964	0.50	179.40
975	12.90	184.50
979	2.70	173.70
994	10.60	192.30
1003	10.00	435.80
1023	12.20	389.60
1024	5.70	408.40
1032	8.20	455.00
1049	6.30	421.50
1050	11.50	188.20
1053	7.20	183.20
1056	3.70	192.00
1057	12.30	179.20
1060	12.10	196.50
1063	3.10	238.10
1064	5.40	181.30
1071	5.40	190.50
1084	21.80	198.50
1085	8.10	197.60
1089	4.40	190.70
1099	19.40	233.90
1100	1.30	339.70
1101	2.70	323.20
1103	6" and 2"	346.40
1104	0.80	285.50
1107	5.80	211.40
1120	2.60	222.90
1121	4.10	205.30
1122	1.50	204.40
1125	3.70	205.00
1130	10.50	225.00
1134	13.10	202.90
1137	8.00	202.10
1156	11.40	184.90
1180	7.50	195.40
1181	6.40	186.00
1183	3.70	190.20
1184	11.10	189.70
1186	6.10	191.30
1210	8.30	215.60
1211	0.50	564.40
1214	3.80	607.60
1215	3.40	200.80
1217	7.40	207.80
1218	12.10	217.60
1223	5.10	187.20
1224	7.10	187.60
1229	7.20	224.40
1232	12.60	183.90
1235	9.60	197.20
1239	3.30	265.90
1240	0.20	608.90
1244	9.80	591.00
1251	11.80	622.30
1262	0.50	349.90
1270	3.20	184.30
1277	12.50	340.00
1284	9.20	224.00
1290	12.30	207.20
1293	6.40	206.60
1295	7.50	200.40
1298	1.10	224.20
1309	12.30	185.00
1310	9.60	184.40
1314	7.70	183.00
1318	6.70	221.20
1322	6.00	194.60

2030 Peak Hour Demand

1328	6.00	192.30
1333	5.70	191.30
1337	6.50	192.80
1338	14.90	257.70
1356	4.10	190.80
1359	1.30	193.30
1364	5.70	193.90
1366	8.50	190.60
1375	16.20	168.30
1387	5.40	182.40
1388	10.00	200.40
1392	8.40	220.30
1396	4.90	308.10
1409	9.50	222.20
1410	3.60	392.50
1456	5.40	183.20
1465	5.30	235.70
1483	9.70	193.40
1484	23.50	183.60
1497	4.40	167.20
1498	2.50	396.40
1502	6.30	385.30
1513	1.10	339.40
1517	9.10	205.40
1519	1.60	211.30
1524	2.00	615.60
1544	27.70	194.80
1547	22.20	208.00
1570	16.40	200.80
1575	13.10	171.60
1576	2.70	253.70
1580	3.10	245.80
1626	31.40	272.90
1627	18.50	289.00
1630	49.20	266.70
1636	277.20	245.70
1637	42.70	249.10
1647	43.40	236.20
1648	43.90	187.30
1657	11.80	163.30
1658	11.70	185.90
1674	13.40	178.00
1679	5.00	317.70
1689	4.90	323.60
1690	0.70	319.70
1698	8.70	256.80
1699	9.70	218.90
1700	4.60	216.20
1710	6.00	303.90
1711	1.20	209.80
1712	2.80	268.50
1713	2.80	571.10
1716	11.90	533.50
1719	1.10	516.50
1737	10.00	166.60
1742	16.20	183.60
1767	6.10	193.40
1773	6.70	272.20
1775	2.80	270.10
1776	8.10	269.20
1782	14.90	269.10
1788	10.40	269.00
1791	1.40	273.40
1793	1.90	270.60
1799	5.10	201.40
1800	4.50	166.10
1801	1.30	173.70
1805	4.20	179.70
1806	2.40	173.10
1808	2.30	179.80
1809	4.00	172.30
1810	7.30	179.50
1813	5.80	171.10
1814	9.60	167.10
1818	3.00	160.70
1821	8.30	169.80
1823	5.40	182.50
1826	6.30	183.30
1827	11.40	192.90
1831	3.50	234.10
1948	1.80	234.90
1960	7.50	237.60
1961	5.60	190.10
1968	0.70	164.80
1971	0.20	185.30
1973	4.80	198.40
1974	7.90	187.50
1975	7.60	186.60
1980	2.90	180.20
1981	2.20	183.10
1984	6.30	194.10
1985	0.30	195.20
1986	6.90	194.50
1987	6.60	198.50
1988	0.30	219.50
1989	2.70	222.30
1991	5.80	194.20
1994	1.20	190.70
1996	7.00	189.80
1997	6.90	191.50
2003	5.50	185.20
2007	5.20	200.60
2009	6.80	196.90
2010	8.00	191.70
2012	6.90	199.00

2030 Peak Hour Demand

2013	6.10	200.10	
2014	9.80	193.20	
2016	8.90	222.30	
2021	1.40	204.20	
2023	1.00	206.90	
2025	3.80	455.60	
2028	2.20	520.90	
2029	2.10	449.00	
2030	1.20	460.10	
2031	5.00	430.90	
2032	1.40	484.00	
2033	3.50	474.20	
2047	1.20	309.00	
2050	0.30	301.10	
2051	0.10	229.60	
2052	0.10	229.90	
2053	7.40	220.60	
2061	1.90	208.20	
2063	12.80	205.00	
2065	9.40	198.90	
2066	7.00	222.20	
2067	13.80	216.20	
2072	13.10	221.90	
2073	5.10	199.80	
2074	8.10	220.90	
2076	14.00	204.40	
2078	6.50	199.20	
2079	7.00	203.10	
2080	8.20	191.60	
2081	7.20	198.70	
2083	14.10	255.40	
2084	9.30	224.10	
2086	9.40	230.30	
2088	14.90	604.50	
2090	15.80	391.30	
2091	8.10	195.30	
2092	3.90	251.60	
2093	10.20	236.00	
2094	11.40	188.50	
2095	7.90	187.60	
2096	5.50	196.50	
2097	8.20	202.50	
2098	8.60	202.10	
2100	11.40	197.30	
2101	13.30	270.60	
2103	14.50	236.90	
2104	6.30	200.50	
2105	9.60	201.90	
2106	4.40	192.10	
2107	10.50	190.50	
2109	8.00	190.80	
2110	5.80	192.70	
2111	5.00	191.00	
2112	11.10	190.20	
2113	9.20	195.50	
2115	7.80	191.90	
2117	6.70	217.50	
2119	11.70	193.60	
2120	6.40	268.60	
2121	5.70	193.00	
2122	9.50	183.70	
2123	6.90	193.20	
2125	2.10	206.20	
2126	4.40	192.50	
2127	14.10	203.70	
2129	7.70	218.10	
2130	6.00	198.00	
2132	3.60	230.10	
2133	7.00	578.00	
2137	9.40	198.20	
2138	12.40	221.50	
I-18th St	0.00	218.20	
O-18th St	0.00	218.20	
3-in or sm	0.20	185.50	
3-inch or	0.60	183.00	
3-inch or	0.30	183.10	
O-AV-1	0.00	283.80	
I-AV-2	0.00	306.00	
I-AV-3	0.00	253.40	
O-AV-4	0.00	289.30	
O-AV-5	0.00	225.30	
O-AV-6	0.00	208.10	
O-Centrali	----	333.50	541.19
O-Fairview	Fairview PRV	346.50	466.50
O-High Lev	High Level F	401.60	
High Level	High Level R	605.00	614.00
Hillcrest		256.20	
inter-tie		5.70	174.40
J-1		7.10	174.00
J-100		1.50	190.60
J-105		5.20	175.60
J-106		5.80	206.20
J-11		5.60	280.00
J-110		9.90	198.00
J-111		3.80	192.50
J-112		10.40	167.90
J-113		5.00	200.50
J-114		22.40	405.70
J-115		3.80	197.30
J-116		3.80	207.10
J-117		3.30	192.10
J-120		4.90	237.50
J-122		5.20	174.00
J-123		0.70	224.70
J-124		4.10	403.80

2030 Peak Hour Demand

J-125		4.10	383.00	
J-126		6.70	367.95	
J-127		45.40	225.20	
J-128		29.40	235.20	
J-129		16.80	184.80	
J-130		7.60	222.00	
J-131		1.10	418.00	
J-132		4.50	176.00	
J-133		1.70	339.60	
J-134		2.40	200.90	
J-135		7.10	288.30	
J-136		1.70	204.10	
J-138		2.10	219.60	
J-139		0.90	222.60	
J-140		1.10	218.20	
J-141		1.00	200.90	
J-142		0.50	218.20	
J-143		23.60	193.40	
J-144		3.80	193.40	
J-145		0.30	218.20	
J-146		0.10	218.20	
J-147		0.10	218.20	
J-148		15.10	498.90	
J-149		7.50	306.10	
J-150		12.00	272.40	
J-151		27.40	326.80	
J-152		12.80	272.40	
J-153		277.10	302.40	
J-154		12.30	267.60	
J-155		35.30	263.80	
J-156		40.00	261.30	
J-157		3.70	265.80	
J-2		11.70	201.80	
J-20		4.30	182.90	
J-21		5.00	182.80	
J-25		10.10	311.10	
J-27		8.50	207.10	
J-3		6.70	182.20	
J-30		15.70	219.90	
J-35		16.80	222.10	
J-39		8.30	218.10	
J-4		5.10	184.40	
J-42		12.30	222.00	
J-44		12.40	208.40	
J-45		8.50	209.00	
J-53		19.50	294.30	
J-55		5.30	297.10	
J-57		2.70	229.20	
J-58		3.20	204.60	
J-6		36.90	473.40	
J-61		8.70	207.00	
J-62		2.30	191.50	
J-63		2.70	225.20	
J-64		8.50	202.30	
J-67		4.30	210.80	
J-7		7.00	214.70	
J-71		4.50	204.60	
J-73		12.80	199.60	
J-74		2.10	301.00	
J-77		1.30	296.10	
J-78		10.60	230.70	
J-79		5.50	223.40	
J-8		13.20	208.80	
J-80		10.00	190.70	
J-81		13.50	218.90	
J-82		13.30	257.90	
J-84		4.60	226.30	
J-87		8.60	194.40	
J-88		43.10	275.70	
J-90		0.10	219.10	
J-91		19.80	352.90	
J-93		3.40	187.50	
J-94		7.40	187.50	
J-95		27.00	189.50	
J-96		13.20	176.90	
J-99		2.40	205.50	
Kennicott	Kennicott Re	----	374.00	397.90
Main Reser	Main Reservo	----	383.30	402.00
physical d		0.10	222.00	
I-RV-1		0.00	193.40	
I-RV-2		0.00	200.90	
O-South En		----	287.90	495.59
O-Valley V	Valley View	0.00	308.10	
Yankis (Va	Yankis (Vall	----	631.50	699.50
Yates Rese	500,000 gal	----	376.00	402.00
O-18th St		----	218.20	389.66
I-18th St		0.00	218.20	
I-AV-1		0.00	283.80	
O-AV-2		0.00	306.00	
O-AV-3		0.00	253.40	
I-AV-4		0.00	289.30	
I-AV-5		0.00	225.30	
I-AV-6		0.00	208.10	
I-Centrali		0.00	333.50	
I-Fairview	Fairview PRV	0.00	346.50	
I-High Lev	High Level P	0.00	401.60	
O-RV-1		----	193.40	389.55
O-RV-2		----	200.90	389.67
I-South En		0.00	287.90	
I-Valley V	Valley View	0.00	308.10	

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 5
 MAXIMUM AND MINIMUM VELOCITIES = 5
 MAXIMUM AND MINIMUM HEAD LOSS/1000 = 5

S U P P L Y Z O N E D A T A

THIS SYSTEM HAS MULTIPLE SUPPLY ZONES

ZONE NO. 1 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@18th St PRV ~@RV-2 ~@RV-1-@Yankis (Valley V
 ~@Fairview PRV-@Kennicott Reserv ~@Main Reservoir ~@Yates Reservoir
 ~@High Level Reser

ZONE NO. 2 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@Centralia Alpha

ZONE NO. 3 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@South End Pump S

S Y S T E M C O N F I G U R A T I O N

NUMBER OF PIPES(P) = 712
 NUMBER OF END NODES(J) = 560
 NUMBER OF PRIMARY LOOPS(L) = 148
 NUMBER OF SUPPLY NODES(F) = 7
 NUMBER OF SUPPLY ZONES(Z) = 3

Case: 0

RESULTS OBTAINED AFTER 17 TRIALS: ACCURACY = 0.95132E-04

S I M U L A T I O N D E S C R I P T I O N (L A B E L)

P I P E L I N E R E S U L T S

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

P I P E N A M E	N O D E N U M B E R S		F L O W R A T E gpm	H E A D L O S S ft	M I N O R L O S S ft	L I N E V E L O . ft/s	H L + M L / 1000 ft/f	H L / 1000 ft/f
	#1	#2						
3	6	5	286.99	0.03	0.00	1.17	1.21	1.21
5	10	9	4.70	0.01	0.00	0.05	0.01	0.01
6	12	11	0.20	0.00	0.00	0.00	0.00	0.00
7	872	13	0.20	0.00	0.00	0.00	0.00	0.00
8	15	16	54.62	0.01	0.00	0.62	0.67	0.67
10	18	19	2.50	0.09	0.00	0.26	0.21	0.21
12	22	23	6.25	0.00	0.00	0.04	0.00	0.00
13	24	1524	2.00	0.00	0.00	0.05	0.01	0.01
14	26	J-55	9.90	0.00	0.00	0.06	0.00	0.00
16	28	29	1.20	0.00	0.00	0.03	0.00	0.00
17	32	31	4.10	0.55	0.00	0.42	0.77	0.77
21	38	37	1.00	0.00	0.00	0.03	0.00	0.00
22	2014	40	28.04	0.01	0.00	0.19	0.03	0.03
23	41	1699	68.80	0.00	0.00	0.20	0.02	0.02
24	213	43	0.20	0.00	0.00	0.00	0.00	0.00
26	47	48	1.00	0.00	0.00	0.03	0.00	0.00
27	49	50	1.80	0.00	0.00	0.01	0.00	0.00
28	51	52	4.10	0.00	0.00	0.03	0.00	0.00
32	60	59	0.60	0.00	0.00	0.01	0.00	0.00
35	65	66	58.57	0.32	0.00	0.66	1.07	1.07
37	68	69	14.69	0.00	0.00	0.09	0.01	0.01
38	52	70	1.40	0.00	0.00	0.02	0.00	0.00
39	72	Hillcrest	0.50	0.00	0.00	0.01	0.00	0.00
41	75	76	69.12	0.06	0.00	0.20	0.02	0.02
45	2066	83	0.20	0.00	0.00	0.00	0.00	0.00
46	86	85	0.20	0.00	0.00	0.00	0.00	0.00
52	97	98	0.40	0.00	0.00	0.00	0.00	0.00
55	102	103	0.40	0.00	0.00	0.00	0.00	0.00
56	1810	104	8.08	0.00	0.00	0.02	0.00	0.00
59	107	108	10.54	0.00	0.00	0.03	0.00	0.00
60	J-53	109	1064.59	0.69	0.00	1.70	0.88	0.88
66	J-91	118	773.92	3.47	0.00	1.61	1.47	1.47
68	121	119	233.75	0.16	0.00	0.49	0.22	0.22
70	860	121	343.07	0.01	0.00	0.71	0.46	0.46
72	118	1799	5.10	0.00	0.00	0.03	0.00	0.00
85	396	physical d	0.10	0.00	0.00	0.00	0.00	0.00
107	J-91	2067	1571.48	7.27	0.00	3.28	7.66	7.66
109	325	34	56.47	0.01	0.00	0.16	0.02	0.02
110	166	2122	118.99	0.06	0.00	0.34	0.06	0.06
112	166	962	45.56	0.01	0.00	0.13	0.01	0.01
114	962	569	37.76	0.00	0.00	0.11	0.01	0.01
115	569	665	22.06	0.00	0.00	0.06	0.00	0.00
118	172	J-105	13.16	0.00	0.00	0.04	0.00	0.00
120	178	175	232.84	0.05	0.00	0.66	0.21	0.21
123	1826	178	266.78	0.12	0.00	0.76	0.28	0.28
126	1827	1826	310.13	0.10	0.00	0.88	0.36	0.36
129	192	1827	383.92	0.90	0.00	1.09	0.54	0.54
137	201	192	368.13	0.12	0.00	1.04	0.50	0.50
139	137	201	481.36	0.34	0.00	1.37	0.82	0.82
141	137	15	174.92	0.06	0.00	0.50	0.13	0.13
142	15	J-95	106.70	0.10	0.00	0.30	0.05	0.05

2030 Peak Hour Demand

145	201	J-93	106.33	0.04	0.00	0.30	0.08	0.08
155	212	213	36.60	0.00	0.00	0.10	0.01	0.01
156	26	214	445.40	1.17	0.00	1.26	0.71	0.71
163	2072	224	7.10	0.00	0.00	0.02	0.00	0.00
187	248	253	10.40	0.00	0.00	0.03	0.00	0.00
192	254	J-127	232.71	0.26	0.00	0.66	0.17	0.17
262	325	1575	41.93	0.01	0.00	0.12	0.01	0.01
279	344	343	24.30	0.00	0.00	0.07	0.00	0.00
280	342	344	34.50	0.00	0.00	-0.10	0.00	0.00
282	342	346	1.10	0.00	0.00	0.00	0.00	0.00
283	86	J-130	7.60	0.00	0.00	0.02	0.00	0.00
292	361	356	98.80	0.38	0.00	0.40	0.17	0.17
298	J-7	32	51.50	0.00	0.00	0.21	0.05	0.05
302	32	480	37.70	0.03	0.00	0.15	0.03	0.03
318	384	385	178.75	0.04	0.00	0.73	0.32	0.32
319	356	2074	10.60	0.00	0.00	0.04	0.00	0.00
320	356	41	69.40	0.00	0.00	0.28	0.09	0.09
329	396	398	305.31	0.06	0.00	1.25	1.90	1.90
331	398	1409	129.75	0.12	0.00	0.53	0.39	0.39
340	407	408	83.37	0.11	0.00	0.34	0.17	0.17
353	661	2119	6.33	0.01	0.00	0.07	0.02	0.02
355	424	1648	24.07	0.00	0.00	0.10	0.01	0.01
363	295	468	50.70	0.08	0.00	0.21	0.02	0.02
398	172	473	3.10	0.00	0.00	0.01	0.00	0.00
403	480	474	3.80	0.00	0.00	0.02	0.00	0.00
411	2129	J-45	89.52	0.32	0.00	0.57	0.41	0.41
414	1217	1121	6.60	0.00	0.00	0.07	0.01	0.01
417	1235	492	38.20	0.05	0.00	0.24	0.12	0.12
429	505	509	40.90	0.07	0.00	0.26	0.14	0.14
433	510	512	6.03	0.00	0.00	0.04	0.00	0.00
435	1057	513	6.10	0.00	0.00	0.04	0.00	0.00
440	518	J-94	7.88	0.00	0.00	0.05	0.01	0.01
448	92	1184	64.79	0.14	0.00	0.41	0.14	0.14
451	119	530	80.49	0.02	0.00	0.51	0.48	0.48
452	119	536	146.45	0.67	0.00	0.93	1.44	1.44
458	536	2079	64.17	0.20	0.00	0.41	0.31	0.31
461	540	2079	5.92	0.00	0.00	0.04	0.00	0.00
464	544	543	53.82	0.11	0.00	0.34	0.23	0.23
472	552	J-100	129.26	0.11	0.00	0.82	1.14	1.14
476	I-AV-1	J-114	0.00	0.00	0.00	0.00	0.00	0.00
486	569	573	2.70	0.00	0.00	0.02	0.00	0.00
490	385	166	176.55	0.17	0.00	1.13	0.64	0.64
495	J-138	579	62.54	0.04	0.00	0.40	0.14	0.14
497	582	584	90.24	0.15	0.00	0.58	0.27	0.27
503	590	J-73	46.74	0.14	0.00	0.30	0.17	0.17
511	599	601	2.60	0.00	0.00	0.02	0.00	0.00
526	599	619	4.10	0.00	0.00	0.03	0.00	0.00
531	620	623	3.50	0.00	0.00	0.02	0.00	0.00
538	628	631	69.80	0.04	0.00	0.45	0.26	0.26
541	1049	632	1.70	0.00	0.00	0.01	0.00	0.00
547	631	642	3.30	0.00	0.00	0.02	0.00	0.00
552	High Level	2090	168.50	1.47	0.00	1.08	1.33	1.33
565	509	661	35.67	0.14	0.00	0.23	0.11	0.11
569	1284	597	132.05	0.15	0.00	0.84	0.85	0.85
571	2086	46	213.14	1.02	0.00	1.36	2.06	2.06
574	668	665	16.20	0.01	0.00	0.10	0.01	0.01
577	668	675	2.80	0.00	0.00	0.02	0.00	0.00
584	J-27	676	5.10	0.00	0.00	0.03	0.00	0.00
590	54	682	1.00	0.00	0.00	0.01	0.00	0.00
591	J-95	683	10.90	0.00	0.00	0.07	0.01	0.01
593	J-78	686	1.90	0.00	0.00	0.01	0.00	0.00
597	408	J-79	47.62	0.00	0.00	0.30	0.18	0.18
601	361	1960	166.99	1.69	0.00	1.07	1.31	1.31
612	710	705	36.45	0.01	0.00	0.23	0.05	0.05
617	717	1134	24.61	0.02	0.00	0.16	0.02	0.02
623	247	718	0.20	0.00	0.00	0.00	0.00	0.00
630	726	424	7.24	0.00	0.00	0.05	0.01	0.01
632	726	J-80	38.06	0.05	0.00	0.24	0.12	0.12
652	468	780	16.20	0.03	0.00	0.10	0.01	0.01
684	2092	781	0.10	0.00	0.00	0.00	0.00	0.00
686	784	1698	6.05	0.00	0.00	0.04	0.00	0.00
690	788	791	15.17	0.01	0.00	0.10	0.01	0.01
693	791	792	0.70	0.00	0.00	0.00	0.00	0.00
697	797	784	11.18	0.00	0.00	0.07	0.01	0.01
700	800	802	1.60	0.00	0.00	0.02	0.00	0.00
702	803	1465	27.79	0.07	0.00	0.32	0.27	0.27
706	808	2009	3.75	0.01	0.00	0.04	0.01	0.01
710	815	813	16.80	0.03	0.00	0.19	0.11	0.11
712	121	2093	104.92	0.15	0.00	1.19	3.16	3.16
714	40	2094	4.02	0.05	0.00	0.10	0.05	0.05
723	2096	828	18.44	0.05	0.00	0.21	0.13	0.13
726	831	544	56.82	0.07	0.00	0.64	1.01	1.01
727	530	831	84.84	0.71	0.00	0.96	2.13	2.13
735	831	1989	24.42	0.05	0.00	0.28	0.21	0.21
739	844	842	19.27	0.08	0.00	0.22	0.14	0.14
741	817	844	45.27	0.45	0.00	0.51	0.67	0.67
749	J-115	856	17.13	0.03	0.00	0.19	0.11	0.11
751	2078	14	27.85	0.07	0.00	0.32	0.27	0.27
753	860	2097	46.94	0.40	0.00	0.53	0.71	0.71
757	868	865	13.99	0.02	0.00	0.16	0.08	0.08
760	J-113	868	5.07	0.01	0.00	0.06	0.01	0.01
762	872	868	14.32	0.02	0.00	0.16	0.08	0.08
772	2098	881	0.99	0.00	0.00	0.01	0.00	0.00
776	J-111	885	23.32	0.06	0.00	0.26	0.19	0.19
784	893	J-106	0.38	0.00	0.00	0.00	0.00	0.00
785	J-110	893	35.48	0.18	0.00	0.40	0.42	0.42
789	899	66	10.30	0.00	0.00	0.12	0.04	0.04
791	901	899	36.60	0.08	0.00	0.42	0.45	0.45
793	901	1742	57.00	1.15	0.00	0.65	1.02	1.02
797	910	906	4.20	0.00	0.00	0.05	0.01	0.01
801	910	38	9.80	0.00	0.00	0.11	0.04	0.04
807	842	2084	34.29	0.13	0.00	0.39	0.40	0.40
812	916	922	2.00	0.00	0.00	0.02	0.00	0.00
814	J-20	923	21.07	0.09	0.00	0.24	0.16	0.16
817	J-21	929	1.40	0.00	0.00	0.02	0.00	0.00

2030 Peak Hour Demand

823	J-2	937	11.70	0.05	0.00	0.13	0.05	0.05
825	J-2	556	24.01	0.10	0.00	0.27	0.21	0.21
831	2080	945	29.70	0.14	0.00	0.34	0.30	0.30
839	2081	954	10.41	0.02	0.00	0.12	0.04	0.04
846	962	964	0.50	0.00	0.00	0.01	0.00	0.00
858	1314	1387	38.67	0.24	0.00	0.99	3.58	3.58
861	108	104	7.14	0.01	0.00	0.08	0.02	0.02
867	J-110	958	19.69	0.14	0.00	0.22	0.14	0.14
874	994	65	28.16	0.20	0.00	0.32	0.28	0.28
876	65	1986	41.06	0.36	0.00	0.47	0.56	0.56
883	1003	1023	25.52	0.07	0.00	0.29	0.16	0.16
903	J-125	1024	79.90	0.49	0.00	0.91	1.36	1.36
905	O-High Lev	649	0.00	0.00	0.00	0.00	0.00	0.00
910	1024	628	74.20	0.76	0.00	0.84	1.19	1.19
912	1003	1032	17.28	0.06	0.00	0.20	0.08	0.08
930	1050	1053	7.20	0.02	0.00	0.08	0.02	0.02
933	384	2100	16.68	0.10	0.00	0.19	0.10	0.10
936	16	1057	51.72	0.26	0.00	0.59	0.61	0.61
938	1060	1063	4.90	0.00	0.00	0.06	0.00	0.00
941	J-129	1064	5.40	0.01	0.00	0.06	0.01	0.01
948	526	1071	55.34	0.21	0.00	0.63	0.69	0.69
949	526	1084	24.26	0.59	0.00	0.28	0.21	0.21
962	1085	1337	11.73	0.03	0.00	0.13	0.05	0.05
966	J-78	1099	18.05	0.12	0.00	0.20	0.09	0.09
975	1101	1100	1.30	0.00	0.00	0.01	0.00	0.00
976	O-Fairview	1101	30.00	0.03	0.00	0.34	0.22	0.22
982	J-81	2103	3.75	0.00	0.00	0.04	0.01	0.01
993	1121	1122	1.50	0.00	0.00	0.02	0.00	0.00
994	2076	2127	48.89	0.23	0.00	0.55	0.77	0.77
1000	1130	1125	3.70	0.00	0.00	0.04	0.01	0.01
1001	2104	J-73	3.81	0.00	0.00	0.04	0.01	0.01
1003	1134	2104	11.51	0.01	0.00	0.13	0.05	0.05
1004	509	1290	1.69	0.00	0.00	0.02	0.00	0.00
1007	2105	1137	5.71	0.00	0.00	0.06	0.01	0.01
1009	2013	1388	30.91	0.09	0.00	0.35	0.33	0.33
1012	2107	2106	24.65	0.13	0.00	0.28	0.22	0.22
1014	23	510	18.12	0.11	0.00	0.21	0.12	0.12
1017	2137	2109	41.81	0.27	0.00	0.47	0.57	0.57
1019	2109	2094	59.17	0.36	0.00	0.67	1.09	1.09
1020	2094	23	48.66	0.11	0.00	0.55	0.76	0.76
1023	23	1156	23.70	0.10	0.00	0.27	0.20	0.20
1024	2073	2096	18.01	0.03	0.00	0.20	0.12	0.12
1025	2096	2110	14.55	0.02	0.00	0.17	0.08	0.08
1026	1997	2110	9.53	0.01	0.00	0.11	0.04	0.04
1028	2111	1997	34.75	0.10	0.00	0.39	0.41	0.41
1030	2112	2111	61.49	0.32	0.00	0.70	1.17	1.17
1032	2113	1961	25.65	0.10	0.00	0.29	0.23	0.23
1035	704	1961	7.39	0.01	0.00	0.08	0.02	0.02
1036	1961	2109	27.44	0.08	0.00	0.31	0.26	0.26
1037	2010	2014	37.07	0.30	0.00	0.42	0.46	0.46
1040	2012	2013	71.24	0.51	0.00	0.81	1.54	1.54
1041	2012	2065	8.64	0.01	0.00	0.10	0.03	0.03
1042	2065	2137	11.02	0.01	0.00	0.12	0.05	0.05
1043	2137	2113	30.33	0.10	0.00	0.34	0.32	0.32
1044	1180	2113	65.51	0.35	0.00	0.74	1.32	1.32
1046	22	1181	30.53	0.03	0.00	0.35	0.32	0.32
1047	2095	22	42.59	0.10	0.00	0.48	0.59	0.59
1048	1184	726	48.19	0.00	0.00	0.31	0.08	0.08
1051	1996	1186	37.21	0.12	0.00	0.42	0.46	0.46
1053	1232	827	13.97	0.09	0.00	0.16	0.08	0.08
1058	1156	1232	5.64	0.01	0.00	0.06	0.01	0.01
1060	1156	512	6.67	0.02	0.00	0.08	0.02	0.02
1062	512	2107	0.40	0.00	0.00	0.00	0.00	0.00
1064	2115	2107	32.37	0.06	0.00	0.37	0.36	0.36
1069	2117	2065	54.77	0.55	0.00	0.62	0.95	0.95
1071	1210	2137	70.53	0.88	0.00	0.80	1.51	1.51
1074	1713	1211	0.50	0.00	0.00	0.01	0.00	0.00
1076	24	1713	56.30	0.10	0.00	0.64	0.45	0.45
1077	1215	J-58	31.20	0.11	0.00	0.35	0.33	0.33
1078	68	1217	5.81	0.00	0.00	0.07	0.01	0.01
1080	1218	2112	65.99	1.40	0.00	0.75	1.34	1.34
1083	2112	1223	37.33	0.15	0.00	0.42	0.47	0.47
1085	1224	2111	10.42	0.01	0.00	0.12	0.04	0.04
1087	1333	1085	19.08	0.06	0.00	0.22	0.13	0.13
1088	808	1085	0.75	0.00	0.00	0.01	0.00	0.00
1090	1229	808	13.39	0.01	0.00	0.15	0.07	0.07
1091	1181	1232	20.93	0.08	0.00	0.24	0.16	0.16
1094	1235	1483	5.36	0.00	0.00	0.06	0.01	0.01
1095	2120	1104	0.80	0.00	0.00	0.01	0.00	0.00
1096	2120	1239	3.30	0.00	0.00	0.04	0.00	0.00
1099	1214	1240	0.20	0.00	0.00	0.00	0.00	0.00
1100	1244	1214	130.90	1.01	0.00	1.49	2.15	2.15
1103	1251	1244	74.13	0.42	0.00	0.84	0.75	0.75
1110	Yankis (Va	1251	152.50	1.18	0.00	1.73	2.86	2.86
1116	J-25	1513	36.00	0.01	0.00	0.23	0.04	0.04
1117	1396	1277	13.00	0.02	0.00	0.15	0.05	0.05
1118	1277	1262	0.50	0.00	0.00	0.01	0.00	0.00
1120	657	J-25	46.10	0.03	0.00	0.19	0.02	0.02
1125	1181	1270	3.20	0.00	0.00	0.04	0.00	0.00
1127	1099	2103	19.00	0.20	0.00	0.22	0.13	0.13
1132	1277	I-AV-4	0.00	0.00	0.00	0.00	0.00	0.00
1138	579	693	55.74	0.84	0.00	0.63	0.98	0.98
1140	1284	O-AV-3	0.00	0.00	0.00	0.00	0.00	0.00
1146	1290	2119	5.89	0.15	0.00	0.15	0.11	0.11
1148	1293	1295	11.32	0.14	0.00	0.29	0.37	0.37
1150	398	2016	84.15	0.14	0.00	0.95	2.10	2.10
1152	1120	1298	1.10	0.00	0.00	0.01	0.00	0.00
1154	432	1309	12.30	0.09	0.00	0.14	0.04	0.04
1165	1310	1314	10.06	0.34	0.00	0.26	0.30	0.30
1169	2127	J-61	9.30	0.25	0.00	0.24	0.26	0.26
1171	1318	2105	17.77	0.49	0.00	0.45	0.85	0.85
1173	2105	1322	10.52	0.15	0.00	0.27	0.32	0.32
1178	40	2115	16.21	0.22	0.00	0.41	0.72	0.72
1179	2115	1328	8.61	0.13	0.00	0.22	0.22	0.22
1182	803	J-81	6.37	0.08	0.00	0.16	0.13	0.13

2030 Peak Hour Demand

1185	1333	1337	7.39	0.09	0.00	0.19	0.17	0.17
1189	807	1338	1.75	0.02	0.00	0.04	0.01	0.01
1193	518	192	19.74	0.07	0.00	0.50	1.03	1.03
1195	1060	192	10.55	0.19	0.00	0.27	0.32	0.32
1198	705	1060	27.55	2.52	0.00	0.70	1.91	1.91
1205	J-80	492	1.07	0.00	0.00	0.03	0.00	0.00
1208	828	1356	11.84	0.11	0.00	0.30	0.40	0.40
1210	828	1359	1.30	0.00	0.00	0.03	0.01	0.01
1211	1364	1984	3.57	0.01	0.00	-0.09	0.04	0.04
1212	1364	1991	1.78	0.01	0.00	0.05	0.01	0.01
1214	2121	1364	11.05	0.10	0.00	0.28	0.35	0.35
1215	1366	36	4.23	0.04	0.00	0.11	0.06	0.06
1217	1251	1244	66.57	0.42	0.00	0.76	0.62	0.62
1226	17	1375	6.57	0.24	0.00	0.17	0.10	0.10
1236	1387	17	30.57	0.66	0.00	0.78	1.65	1.65
1239	1392	1388	20.05	0.61	0.00	0.51	1.06	1.06
1244	33	1314	36.31	0.29	0.00	0.93	2.27	2.27
1245	937	1456	5.30	0.02	0.00	0.14	0.09	0.09
1247	384	1456	4.11	0.01	0.00	0.10	0.06	0.06
1248	1396I-Valley V		0.00	0.00	0.00	0.00	0.00	0.00
1258	1409	505	12.52	0.48	0.00	0.32	0.44	0.44
1261	1410	657	6.55	0.05	0.00	0.17	0.10	0.10
1269	1023	I-AV-2	0.00	0.00	0.00	0.00	0.00	0.00
1309	1456	881	4.01	0.02	0.00	0.10	0.05	0.05
1315	885	1056	11.15	0.06	0.00	0.28	0.26	0.26
1319	1465	2103	2.13	0.01	0.00	0.05	0.02	0.02
1322	407	509	14.26	0.46	0.00	0.36	0.56	0.56
1330	693	492	4.50	0.07	0.00	0.11	0.07	0.07
1338	1295	1483	3.82	0.05	0.00	0.10	0.05	0.05
1340	899	1484	14.30	1.07	0.00	0.36	0.57	0.57
1351	344	1497	4.40	0.02	0.00	0.11	0.02	0.02
1354	1502	1498	2.50	0.00	0.00	0.02	0.00	0.00
1358	J-133	1502	33.20	0.01	0.00	0.21	0.03	0.03
1371	1517	1519	1.60	0.04	0.00	0.16	0.13	0.13
1384	J-95	1544	68.80	0.08	0.00	0.20	0.04	0.04
1388	1544	1547	36.95	0.00	0.00	0.10	0.01	0.01
1389	1547	J-96	18.90	0.00	0.00	0.05	0.00	0.00
1396	1544	1547	4.15	0.00	0.00	0.03	0.00	0.00
1401	668	1674	48.74	0.01	0.00	0.14	0.01	0.01
1404	1674	102	30.40	0.00	0.00	0.09	0.00	0.00
1406	102	J-1	21.90	0.00	0.00	0.06	0.00	0.00
1409	J-143	92	98.19	0.18	0.00	0.28	0.04	0.04
1423	421	107	83.50	0.02	0.00	0.24	0.03	0.03
1426	34	1575	13.17	0.00	0.00	0.04	0.00	0.00
1427	1576	248	29.50	0.00	0.00	0.08	0.00	0.00
1429	248	1580	3.10	0.00	0.00	0.01	0.00	0.00
1433	51	26	470.30	0.35	0.00	1.33	0.79	0.79
1435	109	51	486.30	1.20	0.00	1.38	0.84	0.84
1440	109	6	562.99	0.52	0.00	1.60	1.10	1.10
1441	6	1647	264.89	0.40	0.00	0.75	0.27	0.27
1443	1647	1637	65.63	0.11	0.00	0.19	0.02	0.02
1454	72	1637	206.64	0.30	0.00	0.59	0.17	0.17
1455	1626	72	238.34	0.81	0.00	0.68	0.22	0.22
1458	1627	1626	672.51	1.17	0.00	1.91	1.53	1.53
1460	797	212	50.55	0.00	0.00	0.14	0.01	0.01
1464	1630	788	114.90	0.23	0.00	0.33	0.06	0.06
1477	1626	1630	402.76	0.67	0.00	1.14	0.59	0.59
1479	Yates Rese	1627	1273.11	4.26	0.00	3.61	3.97	3.97
1481	1630	76	238.66	0.63	0.00	0.68	0.18	0.18
1483	76	1636	255.79	0.48	0.00	0.73	0.20	0.20
1487	1637	75	229.57	0.12	0.00	0.65	0.21	0.21
1492	75	49	134.75	0.05	0.00	0.38	0.08	0.08
1493	49	254	108.65	0.17	0.00	0.31	0.05	0.05
1494	J-35	254	161.06	0.18	0.00	0.46	0.11	0.11
1497	1647	2072	155.87	0.10	0.00	0.44	0.10	0.10
1499	247	1648	60.63	0.08	0.00	0.17	0.02	0.02
1500	343	1657	11.80	0.01	0.00	0.08	0.00	0.00
1509	1658	901	105.30	0.21	0.00	0.67	0.28	0.28
1526	1674	800	4.94	0.00	0.00	0.03	0.00	0.00
1531	174	800	3.76	0.00	0.00	0.02	0.00	0.00
1534	1679	1689	5.60	0.01	0.00	0.06	0.01	0.01
1544	1689	1690	0.70	0.00	0.00	0.00	0.00	0.00
1548	1698	2092	4.00	0.00	0.00	0.03	0.00	0.00
1552	1699	1700	4.60	0.00	0.00	0.02	0.00	0.00
1553	2138	89	7.90	0.00	0.00	0.05	0.00	0.00
1560	J-53	1710	6.00	0.00	0.00	0.04	0.00	0.00
1562	683	1711	1.20	0.00	0.00	0.01	0.00	0.00
1563	683	1712	2.80	0.00	0.00	0.02	0.00	0.00
1564	1713	1716	53.00	0.07	0.00	0.60	0.40	0.40
1567	1716	1719	1.10	0.00	0.00	0.01	0.00	0.00
1584	1742	1737	20.33	1.38	0.00	0.52	1.09	1.09
1588	1737	1375	9.63	0.10	0.00	0.25	0.27	0.27
1593	1742	1484	20.47	0.00	0.00	0.08	0.00	0.00
1596	1484	975	11.27	0.00	0.00	0.05	0.00	0.00
1611	975	1310	18.08	0.00	0.00	0.07	0.00	0.00
1612	2122	1310	1.58	0.00	0.00	0.01	0.00	0.00
1615	1089	2123	10.02	0.00	0.00	0.06	0.00	0.00
1617	1089	1186	24.21	0.05	0.00	0.27	0.21	0.21
1618	1186	1767	55.32	0.06	0.00	0.35	0.11	0.11
1621	J-135	1773	46.20	0.05	0.00	0.29	0.06	0.06
1626	1773	1775	38.10	0.01	0.00	0.24	0.04	0.04
1628	1775	1776	17.55	0.00	0.00	0.11	0.01	0.01
1629	1776	1782	7.55	0.00	0.00	0.05	0.00	0.00
1635	1788	1782	3.16	0.00	0.00	0.02	0.00	0.00
1641	1775	1788	17.75	0.00	0.00	0.11	0.01	0.01
1644	1773	1791	1.40	0.00	0.00	0.01	0.00	0.00
1645	1776	1793	1.90	0.00	0.00	0.01	0.00	0.00
1647	1788	1782	4.19	0.00	0.00	0.03	0.00	0.00
1654	1800	1801	1.30	0.00	0.00	0.01	0.00	0.00
1657	18053-inch or		0.60	0.00	0.00	0.00	0.00	0.00
1658	1806	1808	2.30	0.00	0.00	0.03	0.00	0.00
1660	1809	1806	4.70	0.00	0.00	0.03	0.00	0.00
1661	1810	1821	49.38	0.02	0.00	0.20	0.02	0.02
1663	1821	1800	32.85	0.00	0.00	0.13	0.01	0.01
1664	1813	1809	13.50	0.00	0.00	0.06	0.00	0.00

2030 Peak Hour Demand

1665	1814	1818	3.00	0.16	0.00	0.31	0.29	0.29
1669	1813	1814	7.75	0.00	0.00	0.05	0.00	0.00
1672	1821	J-112	8.23	0.00	0.00	0.05	0.00	0.00
1673	1826	1823	37.05	0.13	0.00	0.42	0.33	0.33
1676	1827	1071	62.39	0.01	0.00	0.40	0.21	0.21
1677	J-128	1636	21.41	0.01	0.00	0.14	0.01	0.01
1792	844	910	17.20	0.21	0.00	0.44	0.80	0.80
1793	178	1823	29.64	0.00	0.00	0.19	0.05	0.05
1796	1063	1948	1.80	0.06	0.00	0.18	0.19	0.19
1799	1032	J-114	9.08	0.11	0.00	0.23	0.17	0.17
1810	1960	12	159.39	0.03	0.00	1.02	1.20	1.20
1811	12	10	152.89	1.17	0.00	0.98	1.11	1.11
1813	1767	J-117	5.00	0.00	0.00	0.06	0.01	0.01
1818	1737	1968	0.70	0.00	0.00	0.02	0.00	0.00
1820	1823	J-21	61.29	0.57	0.00	0.70	1.17	1.17
1821	175	384	219.34	0.99	0.00	0.90	0.47	0.47
1825	566	1973	4.41	0.03	0.00	0.11	0.06	0.06
1826	1974	1975	3.97	0.03	0.00	0.10	0.05	0.05
1828	J-3	1980	2.90	0.00	0.00	0.03	0.00	0.00
1830	19813-inch	or	0.30	0.00	0.00	0.01	0.00	0.00
1831	1767	1984	44.22	0.15	0.00	0.50	0.64	0.64
1834	1986	1985	0.30	0.00	0.00	0.01	0.00	0.00
1835	894	2125	11.09	0.00	0.00	0.07	0.01	0.01
1836	1987	568	2.00	0.01	0.00	0.05	0.01	0.01
1837	1989	1988	0.30	0.00	0.00	0.01	0.00	0.00
1839	2121	1991	38.27	0.11	0.00	0.43	0.49	0.49
1840	2123	2126	224.22	0.14	0.00	0.92	0.49	0.49
1841	994	1994	1.20	0.00	0.00	0.01	0.00	0.00
1842	1997	1996	18.32	0.09	0.00	0.21	0.12	0.12
1843	1184	2003	5.50	0.01	0.00	0.06	0.01	0.01
1852	2007	2009	23.53	0.05	0.00	0.27	0.20	0.20
1854	2065	2010	42.99	0.29	0.00	0.49	0.60	0.60
1855	J-39	2012	86.78	0.32	0.00	0.55	0.55	0.55
1856	2013	2014	34.22	0.08	0.00	0.39	0.18	0.18
1858	2016	J-81	10.89	0.51	0.00	0.28	0.34	0.34
1860	504	2127	9.11	0.23	0.00	0.23	0.25	0.25
1864	1121	2023	1.00	0.00	0.00	0.01	0.00	0.00
1865	2127	1215	34.60	0.11	0.00	0.39	0.40	0.40
1866	2025	2028	2.20	0.06	0.00	0.22	0.16	0.16
1869	2029	2030	1.20	0.01	0.00	0.12	0.05	0.05
1870	2031	2029	10.70	0.01	0.00	0.27	0.10	0.10
1871	2029	2025	7.40	0.00	0.00	0.19	0.05	0.05
1872	2025	2032	1.40	0.00	0.00	0.04	0.00	0.00
1873	2031	2033	3.50	0.01	0.00	0.09	0.01	0.01
1877	J-124	2031	19.20	0.00	0.00	0.12	0.02	0.02
1883	J-74	2047	1.20	0.00	0.00	0.01	0.00	0.00
1887	2053	582	42.45	2.04	0.00	1.09	3.04	3.04
1892	2129	582	56.69	1.78	0.00	1.45	5.19	5.19
1893	46	590	60.69	0.62	0.00	0.69	0.82	0.82
1894	J-45	2061	1.90	0.00	0.00	0.02	0.00	0.00
1895	J-44	2063	199.01	1.60	0.00	1.27	1.82	1.82
1896	5	361	286.49	0.08	0.00	1.17	1.20	1.20
1898	14	540	7.62	0.01	0.00	0.09	0.02	0.02
1900	163-in	or sm	0.20	0.00	0.00	0.00	0.00	0.00
1901	17	18	6.30	0.00	0.00	0.07	0.01	0.01
1904	2088	24	61.60	0.00	0.00	0.70	0.53	0.53
1907	36	2130	3.79	0.00	0.00	0.04	0.01	0.01
1908	38	2083	2.50	0.00	0.00	0.03	0.00	0.00
1909	2014	J-87	32.46	0.11	0.00	0.37	0.36	0.36
1917	69	J-61	1.10	0.00	0.00	0.01	0.00	0.00
1920	295	J-30	40.10	0.01	0.00	0.11	0.01	0.01
1924	2066	86	17.20	0.00	0.00	0.05	0.00	0.00
1927	104	J-112	7.02	0.02	0.00	0.08	0.02	0.02
1930	118	710	735.92	3.39	0.00	1.53	1.34	1.34
1935	2106	247	87.73	0.01	0.00	0.56	0.56	0.56
1936	2122	325	107.91	0.01	0.00	0.31	0.05	0.05
1938	1218	375	694.97	1.24	0.00	1.45	1.69	1.69
1940	1318	396	307.41	0.11	0.00	0.64	0.37	0.37
1941	480	2138	20.70	0.01	0.00	0.08	0.01	0.01
1947	2093	530	10.35	0.03	0.00	0.12	0.04	0.04
1948	536	2078	74.49	0.12	0.00	0.48	0.41	0.41
1949	565	1084	98.94	0.41	0.00	0.63	0.70	0.70
1950	556	944	12.82	0.03	0.00	0.15	0.06	0.06
1951	543	565	102.94	0.03	0.00	0.66	0.75	0.75
1954	J-84	O-RV-5	0.00	0.00	0.00	0.00	0.00	0.00
1956	584	717	84.79	0.10	0.00	0.35	0.13	0.13
1958	590	584	3.65	0.00	0.00	0.01	0.00	0.00
1960	620	2133	28.50	0.00	0.00	0.18	0.03	0.03
1962	1410	649	87.50	0.02	0.00	0.56	0.40	0.40
1964	661	424	19.14	0.00	0.00	0.08	0.01	0.01
1965	665	172	23.86	0.00	0.00	0.07	0.00	0.00
1967	710	137	672.37	2.26	0.00	1.40	1.13	1.13
1972	791	784	5.17	0.00	0.00	0.03	0.00	0.00
1975	788	797	69.53	0.01	0.00	0.20	0.02	0.02
1977	J-120	813	2.91	0.00	0.00	0.03	0.00	0.00
1978	803	815	14.93	0.05	0.00	0.17	0.09	0.09
1979	817	1338	1.94	0.00	0.00	0.02	0.00	0.00
1982	856	2121	43.47	0.18	0.00	0.49	0.62	0.62
1983	375	860	394.81	0.15	0.00	0.82	0.59	0.59
1984	865	65	83.28	0.20	0.00	0.53	0.51	0.51
1985	14	872	16.52	0.01	0.00	0.19	0.10	0.10
1986	923	J-3	20.29	0.05	0.00	0.23	0.15	0.15
1987	1987	944	21.40	0.06	0.00	0.24	0.17	0.17
1989	945	954	14.49	0.02	0.00	0.16	0.08	0.08
1990	958	J-106	18.52	0.03	0.00	0.21	0.13	0.13
1992	994	1658	209.80	0.23	0.00	0.86	0.43	0.43
1993	60	2101	7.48	0.00	0.00	0.08	0.02	0.02
1995	1049	1003	52.80	0.33	0.00	0.60	0.63	0.63
1996	631	1049	60.80	0.06	0.00	0.39	0.20	0.20
1997	1050	975	19.71	0.04	0.00	0.22	0.10	0.10
1998	1057	518	33.32	0.06	0.00	0.21	0.09	0.09
2000	1084	552	101.40	0.32	0.00	0.65	0.73	0.73
2001	1120	1099	60.66	0.28	0.00	0.69	1.14	1.14
2002	J-79	1107	103.89	0.16	0.00	0.66	0.76	0.76
2003	J-63	1130	75.97	0.20	0.00	0.48	0.43	0.43

2030 Peak Hour Demand

2005	398	1137	85.71	0.32	0.00	0.55	0.53	0.53
2010	1180	704	115.90	0.44	0.00	0.74	0.93	0.93
2011	704	1183	104.11	0.12	0.00	1.18	3.11	3.11
2014	2067	1210	595.71	0.72	0.00	1.24	1.27	1.27
2020	1223	1224	41.35	0.15	0.00	0.47	0.56	0.56
2021	1224	827	23.83	0.14	0.00	0.27	0.20	0.20
2022	1229	815	8.47	0.01	0.00	0.10	0.03	0.03
2024	1517	1235	53.16	0.20	0.00	0.34	0.22	0.22
2025	1099	J-82	40.32	0.16	0.00	0.46	0.54	0.54
2027	46	1284	141.25	0.69	0.00	0.90	0.96	0.96
2031	1392	1318	331.88	0.13	0.00	0.69	0.43	0.43
2032	J-87	1322	24.19	0.05	0.00	0.27	0.21	0.21
2033	2091	1328	64.86	0.10	0.00	0.41	0.32	0.32
2035	1337	2110	12.61	0.00	0.00	0.14	0.06	0.06
2036	813	1338	11.21	0.03	0.00	0.13	0.05	0.05
2037	1356	1089	38.63	0.01	0.00	0.44	0.50	0.50
2039	945	1366	8.50	0.01	0.00	0.10	0.03	0.03
2040	1387	979	2.70	0.00	0.00	0.03	0.00	0.00
2042	J-39	1392	360.33	0.30	0.00	0.75	0.50	0.50
2045	1409	407	107.73	0.08	0.00	0.44	0.28	0.28
2048	1465	J-120	20.36	0.01	0.00	0.23	0.15	0.15
2053	1107	1517	63.86	0.13	0.00	0.41	0.31	0.31
2058	J-8	1570	200.49	0.66	0.00	0.82	0.62	0.62
2060	1575	342	42.00	0.01	0.00	0.12	0.01	0.01
2063	1627	J-135	582.10	0.41	0.00	1.65	1.17	1.17
2067	1648	432	40.80	0.09	0.00	0.17	0.03	0.03
2068	1658	421	92.80	0.07	0.00	0.38	0.09	0.09
2070	1101	1679	26.00	0.00	0.00	0.30	0.17	0.17
2071	212	1698	6.65	0.00	0.00	0.04	0.00	0.00
2078	1800	1813	27.05	0.00	0.00	0.11	0.01	0.01
2079	1805	1805	4.80	0.00	0.00	0.02	0.00	0.00
2080	107	1810	64.76	0.01	0.00	0.18	0.02	0.02
2087	1960	700	0.10	0.00	0.00	0.00	0.00	0.00
2089	1973	J-2	28.09	0.09	0.00	0.32	0.28	0.28
2090	1974	1366	4.23	0.00	0.00	0.05	0.01	0.01
2091	1975	36	7.06	0.01	0.00	0.08	0.02	0.02
2092	1981	J-4	27.02	0.07	0.00	0.31	0.26	0.26
2093	1984	994	249.76	0.23	0.00	1.02	0.59	0.59
2095	1986	552	33.86	0.20	0.00	0.38	0.39	0.39
2096	893	1987	30.00	0.02	0.00	0.34	0.31	0.31
2097	1989	842	21.42	0.03	0.00	0.24	0.17	0.17
2102	827	1996	25.89	0.06	0.00	0.29	0.24	0.24
2104	375	2007	290.76	0.51	0.00	1.19	0.78	0.78
2105	2009	2096	20.47	0.01	0.00	0.23	0.15	0.15
2111	2016	1120	64.36	0.03	0.00	0.73	1.28	1.28
2114	1107	1293	34.22	0.15	0.00	0.39	0.40	0.40
2118	J-57	2053	203.76	0.77	0.00	1.30	1.90	1.90
2120	717	2063	47.98	0.02	0.00	0.20	0.04	0.04
2127	2067	1218	773.06	0.68	0.00	1.61	2.06	2.06
2128	2067	1180	188.91	1.34	0.00	1.21	2.31	2.31
2139	2007	2073	262.04	0.02	0.00	1.07	0.65	0.65
2141	2074	483	2.50	0.00	0.00	0.02	0.00	0.00
2145	492	2076	27.98	0.02	0.00	0.18	0.07	0.07
2146	504	2076	5.78	0.00	0.00	0.04	0.00	0.00
2148	693	J-64	38.63	0.02	0.00	0.25	0.06	0.06
2149	2078	865	74.39	0.12	0.00	0.47	0.41	0.41
2150	1991	2078	34.25	0.12	0.00	0.39	0.40	0.40
2152	2079	543	53.02	0.04	0.00	0.34	0.22	0.22
2153	2080	2081	65.79	0.14	0.00	0.75	0.60	0.60
2154	2080	958	24.08	0.12	0.00	0.27	0.21	0.21
2155	2125	J-99	56.13	0.01	0.00	0.36	0.11	0.11
2156	958	2081	12.96	0.02	0.00	0.15	0.07	0.07
2159	2084	2083	16.79	0.01	0.00	0.11	0.03	0.03
2160	2083	916	5.19	0.01	0.00	0.06	0.01	0.01
2161	2084	565	1.30	0.00	0.00	0.01	0.00	0.00
2162	2084	916	6.91	0.02	0.00	0.09	0.02	0.02
2165	2086	578	3.20	0.00	0.00	0.02	0.00	0.00
2166	2132	2086	225.74	1.36	0.00	1.44	2.29	2.29
2169	2088	620	50.40	0.22	0.00	0.32	0.09	0.09
2170	1214	2088	126.90	0.32	0.00	1.44	2.03	2.03
2173	2090	1410	97.65	0.01	0.00	0.62	0.49	0.49
2174	2090	657	55.05	0.06	0.00	0.35	0.11	0.11
2175	1137	2091	83.42	0.24	0.00	0.53	0.51	0.51
2176	2091	505	39.17	0.04	0.00	0.25	0.13	0.13
2179	2093	817	55.31	0.29	0.00	0.63	0.96	0.96
2180	2093	1229	29.06	0.22	0.00	0.33	0.29	0.29
2181	2094	2095	3.13	0.00	0.00	0.04	0.00	0.00
2183	2095	1223	9.12	0.01	0.00	0.10	0.03	0.03
2184	1183	2095	56.47	0.33	0.00	0.64	1.00	1.00
2187	2097	856	31.84	0.15	0.00	0.36	0.35	0.35
2188	2073	2097	17.83	0.02	0.00	0.20	0.12	0.12
2189	885	2098	6.57	0.01	0.00	0.07	0.02	0.02
2190	2098	2100	25.68	0.06	0.00	0.29	0.23	0.23
2192	954	2130	19.51	0.04	0.00	0.22	0.14	0.14
2193	2100	1050	38.41	0.13	0.00	0.44	0.35	0.35
2194	1056	2100	7.45	0.01	0.00	0.08	0.02	0.02
2195	2101	807	3.30	0.00	0.00	0.04	0.00	0.00
2196	J-82	2101	9.12	0.05	0.00	0.10	0.03	0.03
2198	1293	1290	16.51	0.04	0.00	0.19	0.10	0.10
2199	2103	60	10.38	0.01	0.00	0.12	0.04	0.04
2202	2104	2021	1.40	0.00	0.00	0.04	0.01	0.01
2203	1388	2105	8.06	0.01	0.00	0.09	0.03	0.03
2206	1328	2106	67.47	0.05	0.00	0.43	0.34	0.34
2207	510	2107	2.38	0.00	0.00	0.03	0.00	0.00
2212	2109	2010	2.08	0.00	0.00	0.02	0.00	0.00
2214	2110	1356	30.89	0.14	0.00	0.35	0.33	0.33
2216	2111	1333	32.16	0.02	0.00	0.36	0.35	0.35
2217	1183	2112	43.93	0.18	0.00	0.50	0.63	0.63
2221	2113	803	60.99	0.73	0.00	0.69	1.16	1.16
2223	J-87	2115	32.57	0.12	0.00	0.37	0.36	0.36
2228	1210	2117	516.88	0.31	0.00	1.08	0.98	0.98
2231	2119	1483	0.53	0.00	0.00	0.01	0.00	0.00
2234	J-77	2120	10.50	0.00	0.00	0.12	0.03	0.03
2236	2126	2121	11.55	0.01	0.00	0.13	0.05	0.05
2240	2073	2123	221.10	0.20	0.00	0.90	0.47	0.47

2030 Peak Hour Demand

2243	2125	961	13.99	0.00	0.00	0.09	0.01	0.01
2244	2081	2125	61.13	0.03	0.00	0.39	0.13	0.13
2246	2126	1984	208.26	0.12	0.00	0.85	0.42	0.42
2249	J-77	2050	0.30	0.00	0.00	0.00	0.00	0.00
2252	2053	2129	153.91	0.26	0.00	0.98	1.13	1.13
2253	961	2130	11.19	0.02	0.00	0.13	0.05	0.05
2254	2130	1973	28.49	0.01	0.00	0.32	0.28	0.28
2257	214	2132	436.00	0.06	0.00	2.78	7.76	7.76
2259	2133	599	16.90	0.01	0.00	0.11	0.01	0.01
2260	2133	47	4.60	0.00	0.00	0.03	0.00	0.00
2269	2138	481	0.40	0.00	0.00	0.00	0.00	0.00
P-1	J-1	97	14.30	0.00	0.00	0.04	0.00	0.00
P-100	J-112	1814	4.85	0.01	0.00	0.06	0.01	0.01
F-101	2075	J-113	10.07	0.02	0.00	0.11	0.04	0.04
F-102	1023	J-114	13.32	0.11	0.00	0.34	0.35	0.35
F-103	649	J-125	84.00	0.52	0.00	0.95	1.49	1.49
F-104	1103I-Fairview		30.00	0.00	0.00	0.34	0.22	0.22
F-105	J-116	J-115	20.93	0.07	0.00	0.24	0.16	0.16
F-106	2097	J-116	24.73	0.05	0.00	0.28	0.22	0.22
P-108	J-117	56	1.70	0.00	0.00	0.02	0.00	0.00
P-11	J-3	1975	10.69	0.01	0.00	0.12	0.05	0.05
F-111	J-120	807	12.55	0.02	0.00	0.14	0.06	0.06
F-113	2117	J-39	455.41	0.22	0.00	0.95	0.77	0.77
P-116	97	J-122	9.70	0.00	0.00	0.03	0.00	0.00
P-117	J-145	J-140	145.10	0.00	0.00	0.41	0.07	0.07
F-119	J-84	J-139	147.00	0.04	0.00	0.94	0.52	0.52
F-121	J-140	J-138	64.64	0.00	0.00	0.18	0.02	0.02
F-122	Main Reser	J-126	2371.90	1.31	0.00	4.94	11.71	11.71
F-124	O-AV-1	2083	0.00	0.00	0.00	0.00	0.00	0.00
F-125	O-AV-2	906	0.00	0.00	0.00	0.00	0.00	0.00
F-127	J-127	295	133.00	0.14	0.00	0.38	0.06	0.06
F-128	J-127	J-128	54.31	0.05	0.00	0.15	0.01	0.01
F-130	J-128	1831	3.50	0.00	0.00	0.02	0.00	0.00
P-131	1071	J-129	112.34	1.43	0.00	1.27	2.56	2.56
P-132	J-129	668	90.14	0.04	0.00	0.26	0.03	0.03
P-133	1513	J-133	34.90	0.00	0.00	0.22	0.04	0.04
P-134	J-122	J-132	4.50	0.00	0.00	0.01	0.00	0.00
P-135	1502	J-124	24.40	0.01	0.00	0.16	0.02	0.02
P-136	J-124	J-131	1.10	0.00	0.00	0.01	0.00	0.00
F-138-CV	Kennicott	J-53	1090.09	0.73	0.00	1.74	0.92	0.92
P-140	O-AV-4	686	0.00	0.00	0.00	0.00	0.00	0.00
P-143	I-AV-5	J-63	0.00	0.00	0.00	0.00	0.00	0.00
P-144	O-AV-6	1134	0.00	0.00	0.00	0.00	0.00	0.00
P-146	J-73	J-134	2.40	0.00	0.00	0.02	0.00	0.00
P-147	J-64	J-141	1.00	0.00	0.00	0.01	0.00	0.00
P-148	J-134	O-RV-2	0.00	0.00	0.00	0.00	0.00	0.00
P-149	O-RV-1	J-143	121.75	0.00	0.00	0.35	0.05	0.05
P-15	J-126	J-91	2365.20	2.01	0.00	4.93	11.65	11.65
F-150-XXCV	J-141	J-134						
F-151	J-139	J-142	146.10	0.04	0.00	0.93	0.52	0.52
F-152	1570	J-144	125.59	0.04	0.00	0.36	0.07	0.07
F-153-XXCV	J-143	J-144						
P-154	J-144	I-RV-1	121.79	0.00	0.00	0.35	0.05	0.05
P-157	I-RV-2	J-141	0.00	0.00	0.00	0.00	0.00	0.00
F-1570	1716	1103	40.00	0.10	0.00	0.26	0.06	0.06
P-158	J-145I-18th St		0.00	0.00	0.00	0.00	0.00	0.00
P-159	J-146	J-145	145.40	0.00	0.00	0.41	0.09	0.09
F-160-XXCV	J-146	J-147						
P-161	O-18th St	J-146	145.50	0.00	0.00	0.41	0.07	0.07
P-162	J-142	J-147	145.60	0.00	0.00	0.41	0.09	0.09
F-164	J-147I-18th St		145.50	0.00	0.00	0.41	0.07	0.07
F-165	J-156	J-155	66.40	0.31	0.00	0.75	0.43	0.43
P-166	66	J-110	65.07	0.42	0.00	0.74	1.30	1.30
P-167	J-156	J-153	336.60	2.01	0.00	0.95	0.42	0.42
P-168	J-152	J-150	11.20	0.00	0.00	0.07	0.01	0.01
P-169	J-88	J-154	480.10	0.39	0.00	1.36	0.82	0.82
F-170	J-155	J-151	27.40	0.40	0.00	0.31	0.08	0.08
F-171	J-155	J-157	3.70	0.28	0.00	0.38	0.43	0.43
P-172	J-154	J-156	443.00	1.09	0.00	1.26	0.70	0.70
P-173	J-6	J-148	15.10	17.65	0.00	1.54	6.63	6.63
P-174	J-153	J-149	7.50	0.00	0.00	0.05	0.00	0.00
P-175	J-152	J-150	0.80	0.00	0.00	0.01	0.00	0.00
P-18	J-135I-South En		528.80	0.06	0.00	1.50	0.78	0.78
P-19	34	33	37.11	0.03	0.00	0.95	2.37	2.37
P-2	J-1	101	0.50	0.00	0.00	0.00	0.00	0.00
P-20	213	1576	32.20	0.00	0.00	0.09	0.00	0.00
P-25	J-30	2066	24.40	0.00	0.00	0.07	0.00	0.00
P-29	2063	J-8	234.19	0.81	0.00	0.96	0.83	0.83
P-3	O-Centrali	J-6	52.00	9.72	0.00	0.59	0.39	0.39
P-30	J-42	J-35	177.86	0.16	0.00	0.50	0.13	0.13
P-31	J-8	54	20.50	0.01	0.00	0.13	0.03	0.03
P-33	2072	J-42	135.67	0.00	0.00	0.38	0.08	0.08
P-34	1699	J-42	54.50	0.01	0.00	0.15	0.01	0.01
P-36	1322	2091	28.71	0.09	0.00	0.33	0.29	0.29
P-4	1570	J-7	58.50	0.07	0.00	0.24	0.06	0.06
P-40	10	J-44	132.29	0.78	0.00	0.84	0.85	0.85
P-42	J-45	J-44	79.12	0.13	0.00	0.50	0.33	0.33
P-43	O-South En	J-88	528.80	3.00	0.00	1.50	0.98	0.98
P-44	J-55	28	4.60	0.00	0.00	0.03	0.00	0.00
P-47	2132	J-57	206.66	0.05	0.00	1.32	1.95	1.95
P-48	41	J-90	0.10	0.00	0.00	0.00	0.00	0.00
P-49	J-57	2051	0.10	0.00	0.00	0.00	0.00	0.00
P-50	J-57	2052	0.10	0.00	0.00	0.00	0.00	0.00
P-51	O-18th St	J-142	0.00	0.00	0.00	0.00	0.00	0.00
P-53	J-4	1974	16.10	0.04	0.00	0.18	0.10	0.10
P-54	J-4	923	5.81	0.00	0.00	0.07	0.01	0.01
P-57	1217	I-AV-6	0.00	0.00	0.00	0.00	0.00	0.00
P-58	69	1217	8.19	0.00	0.00	0.05	0.00	0.00
P-6	J-88	J-11	5.60	0.00	0.00	0.04	0.00	0.00
P-61	J-58	68	28.00	0.03	0.00	0.32	0.12	0.12
P-62	J-61	J-136	1.70	0.00	0.00	0.01	0.00	0.00
P-63	J-64	2076	29.13	0.07	0.00	0.19	0.07	0.07
P-64	54	J-27	13.60	0.01	0.00	0.09	0.01	0.01
P-65	J-67	597	26.55	0.02	0.00	0.17	0.04	0.04
P-67	J-71	J-67	30.85	0.01	0.00	0.20	0.04	0.04

2030 Peak Hour Demand

P-69	J-73	J-71	35.35	0.05	0.00	0.23	0.10	0.10
P-7	J-154	J-152	24.80	0.00	0.00	0.16	0.02	0.02
P-71	J-123	J-63	78.67	0.00	0.00	0.50	0.16	0.16
P-73	1679	J-74	15.40	0.01	0.00	0.17	0.06	0.06
P-74	J-74	J-77	12.10	0.00	0.00	0.14	0.04	0.04
P-75	I-AV-3	2120	0.00	0.00	0.00	0.00	0.00	0.00
P-76	408	J-78	30.55	0.01	0.00	0.19	0.06	0.06
P-77	1130	J-79	61.77	0.22	0.00	0.39	0.29	0.29
P-78	J-80	504	26.99	0.02	0.00	0.17	0.06	0.06
P-79	J-82	1396	17.90	0.04	0.00	0.20	0.09	0.09
P-80	1388	J-87	32.90	0.10	0.00	0.37	0.17	0.17
P-81	92	J-62	2.30	0.00	0.00	0.01	0.00	0.00
P-82	597	J-84	151.60	0.69	0.00	0.97	1.10	1.10
P-83	J-140	J-123	78.37	0.00	0.00	0.23	0.02	0.02
P-84	J-93	1971	0.20	0.00	0.00	0.00	0.00	0.00
P-86	I-High Lev	J-126	0.00	0.00	0.00	0.00	0.00	0.00
P-87	J-94	526	103.20	0.77	0.00	0.66	0.75	0.75
P-88	J-93	J-94	102.73	0.01	0.00	1.17	2.17	2.17
P-89	J-96inter-tie		5.70	0.00	0.00	0.02	0.00	0.00
P-9	J-2	2098	28.70	0.09	0.00	0.33	0.29	0.29
P-90	J-105	174	7.96	0.00	0.00	0.02	0.00	0.00
P-91	J-20	1981	29.52	0.02	0.00	0.33	0.30	0.30
P-92	J-21	J-20	54.89	0.13	0.00	0.62	0.95	0.95
P-93	J-99	568	2.20	0.00	0.00	0.01	0.00	0.00
P-94	J-99	556	44.23	0.02	0.00	0.28	0.07	0.07
P-95	J-99	566	7.31	0.00	0.00	0.05	0.00	0.00
P-96	J-100	2080	127.76	0.08	0.00	0.82	0.51	0.51
P-97	J-106	894	13.09	0.02	0.00	0.15	0.07	0.07
P-98	J-153I-Centrali		52.00	2.05	0.00	0.33	0.10	0.10
P-99	944	J-111	27.12	0.10	0.00	0.31	0.26	0.26
Valley Vie	O-Valley VYankis (Va		0.00	0.00	0.00	0.00	0.00	0.00
~@18th St -RV	I-18th St O-18th St							
~@AV-1-XX	I-AV-1 O-AV-1							
~@AV-2-XX	I-AV-2 O-AV-2							
~@AV-3-XX	I-AV-3 O-AV-3							
~@AV-4-XX	I-AV-4 O-AV-4							
~@AV-5-XX	I-AV-5 O-AV-5							
~@AV-6-XX	I-AV-6 O-AV-6							
~@High Lev-RV	I-High LevO-High Lev							
~@Valley V-RV	I-Valley VO-Valley V							

N O D E R E S U L T S

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
5		0.50	395.93	243.40	152.53	66.10
6		11.10	395.96	244.40	151.56	65.68
9		4.70	392.96	205.80	187.16	81.10
10		15.90	392.97	213.70	179.27	77.68
11		0.20	394.14	236.90	157.24	68.14
12		6.30	394.14	236.50	157.64	68.31
13		0.20	388.29	198.90	189.39	82.07
14		3.70	388.31	201.40	186.91	80.99
15		13.60	389.51	186.10	203.41	88.14
16		2.70	389.50	186.10	203.40	88.14
17		17.70	385.43	175.70	209.73	90.88
18		3.80	385.43	171.90	213.53	92.53
19		2.50	385.34	165.30	220.04	95.35
22		5.80	389.09	186.50	202.59	87.79
23		13.10	389.09	187.70	201.39	87.27
24		3.30	696.56	604.50	92.06	39.89
26		15.00	394.93	240.30	154.63	67.01
28		3.40	394.93	322.60	72.33	31.34
29		1.20	394.93	323.60	71.33	30.91
31		4.10	388.48	216.80	171.68	74.40
32		9.70	389.04	214.70	174.34	75.55
33		0.80	386.63	183.00	203.63	88.24
34		6.20	386.65	183.50	203.15	88.03
36		7.50	387.11	194.40	192.71	83.51
37		1.00	388.22	333.40	54.82	23.76
38		6.30	388.22	290.50	97.72	42.35
40		8.80	389.24	190.80	198.44	85.99
41		0.50	395.47	219.10	176.37	76.43
43		0.20	395.66	253.50	142.16	61.60
46		11.20	391.32	229.90	161.42	69.95
47		3.60	696.33	544.40	151.93	65.84
48		1.00	696.33	543.60	152.73	66.18
49		24.30	395.28	243.00	152.28	65.99
50		1.80	395.28	244.20	151.08	65.47
51		11.90	395.29	240.00	155.29	67.29
52		2.70	395.29	261.50	133.79	57.97
54		5.90	389.77	209.30	180.47	78.20
56		1.70	388.64	193.00	195.64	84.78
59		0.60	388.91	252.50	136.41	59.11
60		2.30	388.91	252.90	136.01	58.94
65		11.80	388.06	192.40	195.66	84.79
66		3.80	387.75	191.30	196.45	85.13
68		7.50	388.20	205.20	183.00	79.30
69		5.40	388.20	208.70	179.50	77.78
70		1.40	395.29	285.20	110.09	47.70
72		31.20	395.76	255.00	140.76	60.99
75		25.70	395.33	247.70	147.63	63.97
76		52.00	395.27	256.00	139.27	60.35
83		0.20	394.69	221.90	172.79	74.88
85		0.20	394.69	222.10	172.59	74.79
86		9.40	394.69	222.40	172.29	74.66
89		7.90	389.00	225.60	163.40	70.81
92		31.10	388.89	192.40	196.49	85.15
97		4.20	386.71	173.90	212.81	92.22
98		0.40	386.71	174.00	212.71	92.17
101		0.50	386.71	174.30	212.41	92.05

2030 Peak Hour Demand

102	8.10	386.71	176.00	210.71	91.31
103	0.40	386.71	175.70	211.01	91.44
104	8.20	387.94	179.70	208.24	90.24
107	8.20	387.95	183.60	204.35	88.55
108	3.40	387.95	183.60	204.35	88.55
109	15.30	396.48	236.20	160.28	69.46
118	32.90	395.21	192.50	202.71	87.84
119	6.80	389.17	217.70	171.47	74.30
121	4.40	389.33	230.70	158.63	68.74
137	16.10	389.57	180.00	209.57	90.81
166	12.00	386.73	182.90	203.83	88.33
172	7.60	386.72	174.10	212.62	92.13
174	4.20	386.72	175.70	211.02	91.44
175	13.50	387.93	183.60	204.33	88.54
178	4.30	387.99	183.60	204.39	88.57
192	14.50	389.11	183.60	205.51	89.05
201	6.90	389.23	178.30	210.93	91.40
212	7.30	395.66	256.30	139.36	60.39
213	4.20	395.66	253.50	142.16	61.60
214	9.40	393.76	230.10	163.66	70.92
224	7.10	395.46	224.20	171.26	74.21
247	26.90	388.83	192.10	196.73	85.25
248	16.00	395.66	248.60	147.06	63.72
253	10.40	395.65	240.90	154.75	67.06
254	37.00	395.11	230.80	164.31	71.20
295	42.20	394.71	210.10	184.61	80.00
325	9.50	386.66	183.90	202.76	87.86
342	6.40	386.65	165.40	221.25	95.87
343	12.50	386.65	163.20	223.45	96.83
344	5.80	386.65	164.20	222.45	96.39
346	1.10	386.65	165.60	221.05	95.79
356	18.80	395.47	219.10	176.37	76.43
361	20.70	395.85	243.10	152.75	66.19
375	9.40	389.49	230.50	158.99	68.90
384	19.80	386.94	183.20	203.74	88.29
385	2.20	386.90	183.60	203.30	88.10
396	2.00	389.62	221.20	168.42	72.98
398	5.70	389.56	220.50	169.06	73.26
407	10.10	389.36	226.99	162.37	70.36
408	5.20	389.24	223.30	165.94	71.91
421	9.30	387.97	184.20	203.77	88.30
424	2.30	388.75	189.90	198.85	86.17
432	28.50	388.66	184.10	204.56	88.64
468	34.50	394.63	204.20	190.43	82.52
473	3.10	386.72	178.30	208.42	90.31
474	3.80	389.01	210.70	178.31	77.27
480	13.20	389.01	218.70	169.31	73.37
481	0.40	389.00	220.90	168.10	72.84
493	2.50	395.47	214.00	181.47	78.64
492	15.80	388.70	195.50	193.20	83.72
504	12.10	388.68	192.80	195.88	84.88
505	10.80	388.96	197.20	191.76	83.10
509	17.80	388.89	200.00	188.89	81.85
510	9.70	388.97	189.60	199.37	86.40
512	12.30	388.97	184.80	204.17	88.47
513	6.10	389.23	178.80	210.43	91.19
518	5.70	389.18	182.20	206.98	89.69
526	23.60	388.41	201.80	186.61	80.86
530	6.00	389.15	220.30	168.85	73.17
536	7.80	388.50	201.90	186.60	80.86
540	1.70	388.30	202.30	186.00	80.60
543	3.90	388.25	210.90	177.35	76.85
544	3.00	388.36	216.10	172.26	74.65
552	6.00	387.50	191.50	196.00	84.93
556	7.40	387.10	206.10	181.00	78.43
565	5.30	388.23	210.80	177.43	76.89
566	2.90	387.12	204.60	182.52	79.09
568	4.20	387.12	206.30	180.82	78.36
569	13.00	386.72	178.30	208.42	90.32
573	2.70	386.72	179.00	207.72	90.01
578	3.20	392.34	280.80	111.54	48.34
579	6.80	389.61	205.50	184.11	79.78
582	8.90	390.85	212.80	178.05	77.15
584	9.10	390.70	207.60	183.10	79.34
590	10.30	390.70	208.60	182.10	78.91
597	7.00	390.48	222.20	168.28	72.92
599	10.20	696.33	592.40	103.93	45.03
601	2.60	696.33	577.30	119.03	51.58
619	4.10	696.32	559.00	137.32	59.51
620	18.40	696.34	583.00	113.34	49.11
623	3.50	696.34	588.00	108.34	46.95
628	4.40	610.73	420.40	190.33	82.48
631	5.70	610.69	382.80	227.89	98.75
632	1.70	610.64	455.20	155.44	67.36
642	3.30	610.69	304.60	306.09	132.64
649	3.50	612.50	392.70	219.80	95.25
657	15.50	612.47	331.20	281.27	121.88
661	10.20	388.75	190.90	197.85	85.74
665	14.40	386.72	174.40	212.32	92.00
668	22.40	386.73	182.30	204.43	88.58
675	2.80	386.73	180.60	206.13	89.32
676	5.10	389.76	206.70	183.06	79.33
682	1.00	389.77	209.20	180.57	78.25
683	6.90	389.41	200.30	189.11	81.95
686	1.90	389.23	278.90	110.33	47.81
693	12.60	388.77	197.40	191.37	82.93
700	0.10	394.16	237.50	156.66	67.89
704	4.40	389.63	190.10	199.53	86.47
705	8.90	391.81	185.50	206.31	89.40
710	27.10	391.82	197.50	194.32	84.21
717	12.20	390.60	204.90	185.70	80.47
718	0.20	388.83	191.20	197.63	85.64
726	2.90	388.75	190.00	198.75	86.13
780	16.20	394.60	195.00	199.60	86.49
781	0.10	395.66	252.20	143.46	62.17

2030 Peak Hour Demand

784	10.30	395.66	259.80	135.86	58.87
788	30.20	395.67	258.50	137.17	59.44
791	9.30	395.66	256.00	139.66	60.52
792	0.70	395.66	254.90	140.76	61.00
797	7.80	395.67	255.30	140.37	60.83
800	7.10	386.72	177.30	209.42	90.75
802	1.60	386.72	178.00	208.72	90.44
803	11.90	389.00	217.90	171.10	74.14
807	14.10	388.90	272.60	116.30	50.40
808	8.90	388.94	215.50	173.44	75.16
813	8.50	388.91	244.90	144.01	62.41
815	6.60	388.95	218.20	169.75	73.56
817	8.10	388.88	275.20	113.68	49.26
827	11.90	388.90	186.80	202.10	87.57
828	5.30	388.88	192.50	196.38	85.10
831	3.60	388.43	216.90	171.53	74.33
842	6.40	388.35	234.00	154.35	66.89
844	8.80	388.44	260.00	128.44	55.66
856	5.50	388.78	194.40	194.38	84.23
860	4.80	389.34	230.20	159.14	68.96
865	5.10	388.26	195.90	192.36	83.36
868	5.40	388.28	197.00	191.28	82.89
872	2.00	388.29	199.50	188.79	81.81
881	5.00	386.90	199.80	187.10	81.08
885	5.60	386.91	204.20	182.71	79.18
893	5.10	387.15	198.10	189.05	81.92
894	2.00	387.13	206.30	180.83	78.36
899	12.00	387.75	192.10	195.65	84.78
901	11.70	387.83	189.00	198.83	86.16
906	4.20	388.23	292.50	95.73	41.48
910	3.20	388.23	294.90	93.33	40.44
916	10.10	388.21	222.40	165.81	71.85
922	2.00	388.21	238.30	149.91	64.96
923	6.60	387.18	182.20	204.98	88.83
929	1.40	387.41	181.60	205.81	89.18
937	6.40	386.95	183.80	203.15	88.03
944	7.10	387.07	196.50	190.57	82.58
945	6.70	387.16	192.00	195.16	84.57
954	5.40	387.14	193.70	193.44	83.83
958	12.30	387.18	201.60	185.58	80.42
961	2.80	387.13	205.40	181.73	78.75
962	7.30	386.72	179.30	207.42	89.88
964	0.50	386.72	179.40	207.32	89.84
975	12.90	386.67	184.50	202.17	87.61
979	2.70	386.09	173.70	212.39	92.04
994	10.60	388.27	192.30	195.97	84.92
1003	10.00	610.30	435.80	174.50	75.62
1023	12.20	610.23	389.60	220.63	95.61
1024	5.70	611.49	408.40	203.09	88.01
1032	8.20	610.24	455.00	155.24	67.27
1049	6.30	610.64	421.50	189.14	81.96
1050	11.50	386.72	188.20	198.52	86.02
1053	7.20	386.70	183.20	203.50	88.18
1056	3.70	386.85	192.00	194.85	84.44
1057	12.30	389.24	179.20	210.04	91.02
1060	12.10	389.29	196.50	192.79	83.54
1063	3.10	389.29	238.10	151.19	65.52
1064	5.40	386.76	181.30	205.46	89.03
1071	5.40	388.20	190.50	197.70	85.67
1084	21.80	387.82	198.50	189.32	82.04
1085	8.10	388.94	197.60	191.34	82.91
1089	4.40	388.76	190.70	198.06	85.82
1099	19.40	389.11	233.90	155.21	67.26
1100	1.30	466.47	339.70	126.77	54.94
1101	2.70	466.47	323.20	143.27	62.09
1103	6" and 2"	696.28	346.40	349.88	151.62
1104	0.80	466.46	285.50	180.96	78.41
1107	5.80	389.08	211.40	177.68	76.99
1120	2.60	389.39	222.90	166.49	72.15
1121	4.10	388.20	205.30	182.90	79.26
1122	1.50	388.20	204.40	183.80	79.64
1125	3.70	389.45	205.00	184.45	79.93
1130	10.50	389.46	225.00	164.46	71.26
1134	13.10	390.58	202.90	187.68	81.33
1137	8.00	389.24	202.10	187.14	81.09
1156	11.40	388.99	184.90	204.09	88.44
1180	7.50	390.08	195.40	194.68	84.36
1181	6.40	389.06	186.00	203.06	87.99
1183	3.70	389.52	190.20	199.32	86.37
1184	11.10	388.76	189.70	199.06	86.26
1186	6.10	388.71	191.30	197.41	85.54
1210	8.30	390.70	215.60	175.10	75.88
1211	0.50	696.46	564.40	132.06	57.22
1214	3.80	696.88	607.60	89.28	38.69
1215	3.40	388.34	200.80	187.54	81.27
1217	7.40	388.20	207.80	180.40	78.17
1218	12.10	390.74	217.60	173.14	75.03
1223	5.10	389.18	187.20	201.98	87.52
1224	7.10	389.03	187.60	201.43	87.29
1229	7.20	388.96	224.40	164.56	71.31
1232	12.60	388.98	183.90	205.08	88.87
1235	9.60	388.75	197.20	191.55	83.01
1239	3.30	466.45	265.90	200.55	86.91
1240	0.20	696.88	608.90	87.98	38.13
1244	9.80	697.90	591.00	106.90	46.32
1251	11.80	698.32	622.30	76.02	32.94
1262	0.50	388.89	349.90	38.99	16.90
1270	3.20	389.06	184.30	204.76	88.73
1277	12.50	388.89	340.00	48.89	21.19
1284	9.20	390.63	224.00	166.63	72.21
1290	12.30	388.89	207.20	181.69	78.73
1293	6.40	388.93	206.60	182.33	79.01
1295	7.50	388.79	200.40	188.39	81.64
1298	1.10	389.39	224.20	165.19	71.58
1309	12.30	388.56	185.00	203.56	88.21

2030 Peak Hour Demand

1310	9.60	386.67	184.40	202.27	87.65
1314	7.70	386.33	183.00	203.33	88.11
1318	6.70	389.73	221.20	168.53	73.03
1322	6.00	389.09	194.60	194.49	84.28
1328	6.00	388.90	192.30	196.60	85.19
1333	5.70	389.00	191.30	197.70	85.67
1337	6.50	388.91	192.80	196.11	84.98
1338	14.90	388.88	257.70	131.18	56.85
1356	4.10	388.77	190.80	197.97	85.79
1359	1.30	388.87	193.30	195.57	84.75
1364	5.70	388.50	193.90	194.60	84.33
1366	8.50	387.15	190.60	196.55	85.17
1375	16.20	385.20	168.30	216.90	93.99
1387	5.40	386.09	182.40	203.69	88.27
1388	10.00	389.25	200.40	188.85	81.84
1392	8.40	389.87	220.30	169.57	73.48
1396	4.90	388.91	308.10	80.81	35.02
1409	9.50	389.44	222.20	167.24	72.47
1410	3.60	612.52	392.50	220.02	95.34
1456	5.40	386.93	183.20	203.73	88.28
1465	5.30	388.92	235.70	153.22	66.40
1483	9.70	388.75	193.40	195.35	84.65
1484	23.50	386.68	183.60	203.08	88.00
1497	4.40	386.63	167.20	219.43	95.09
1498	2.50	612.42	396.40	216.02	93.61
1502	6.30	612.42	385.30	227.12	98.42
1513	1.10	612.43	339.40	273.03	118.31
1517	9.10	388.95	205.40	183.55	79.54
1519	1.60	388.91	211.30	177.61	76.97
1524	2.00	696.56	615.60	80.96	35.08
1544	27.70	389.33	194.80	194.53	84.30
1547	22.20	389.33	208.00	181.33	78.58
1570	16.40	389.11	200.80	188.31	81.60
1575	13.10	386.65	171.60	215.05	93.19
1576	2.70	395.66	253.70	141.96	61.51
1580	3.10	395.66	245.80	149.86	64.94
1626	31.40	396.57	272.90	123.67	53.59
1627	18.50	397.74	289.00	108.74	47.12
1630	49.20	395.90	266.70	129.20	55.99
1636	277.20	394.80	245.70	149.10	64.61
1637	42.70	395.45	249.10	146.35	63.42
1647	43.40	395.56	236.20	159.36	69.06
1648	43.90	388.75	187.30	201.45	87.29
1657	11.80	386.64	163.30	223.34	96.78
1658	11.70	388.04	185.90	202.14	87.59
1674	13.40	386.72	178.00	208.72	90.44
1679	5.00	466.47	317.70	148.77	64.47
1689	4.90	466.46	323.60	142.86	61.91
1690	0.70	466.46	319.70	146.76	63.60
1698	8.70	395.66	256.80	138.86	60.17
1699	9.70	395.47	218.90	176.57	76.51
1700	4.60	395.47	216.20	179.27	77.68
1710	6.00	397.17	303.90	93.27	40.42
1711	1.20	389.41	208.80	179.61	77.83
1712	2.80	389.41	268.50	120.91	52.39
1713	2.80	696.46	571.10	125.36	54.32
1716	11.90	696.39	533.50	162.89	70.58
1719	1.10	696.39	516.50	179.89	77.95
1737	10.00	385.30	166.60	218.70	94.77
1742	16.20	386.68	183.60	203.08	88.00
1767	6.10	388.65	193.40	195.25	84.61
1773	6.70	397.28	272.20	125.08	54.20
1775	2.80	397.27	270.10	127.17	55.11
1776	8.10	397.27	269.20	128.07	55.50
1782	14.90	397.27	269.10	128.17	55.54
1788	10.40	397.27	269.00	128.27	55.58
1791	1.40	397.28	273.40	123.88	53.68
1793	1.90	397.27	270.60	126.67	54.89
1799	5.10	395.21	201.40	193.81	83.99
1800	4.50	387.92	166.10	221.82	96.12
1801	1.30	387.92	173.70	214.22	92.83
1805	4.20	387.92	179.70	208.22	90.23
1806	2.40	387.92	173.10	214.82	93.09
1808	2.30	387.92	179.80	208.12	90.18
1809	4.00	387.92	172.30	215.62	93.43
1810	7.30	387.94	179.50	208.44	90.32
1813	5.80	387.92	171.10	216.82	93.95
1814	9.60	387.91	167.10	220.81	95.69
1818	3.00	387.76	160.70	227.06	98.39
1821	8.30	387.92	169.80	218.12	94.52
1823	5.40	387.98	182.50	205.48	89.04
1826	6.30	388.11	183.30	204.81	88.75
1827	11.40	388.21	192.90	195.31	84.63
1831	3.50	394.80	234.10	160.70	69.64
1948	1.80	389.23	234.90	154.33	66.88
1960	7.50	394.16	237.60	156.56	67.84
1961	5.60	389.63	190.10	199.53	86.46
1968	0.70	385.30	164.90	220.40	95.51
1971	0.20	389.19	185.30	203.89	88.35
1973	4.80	387.09	198.40	188.69	81.77
1974	7.90	387.15	187.50	199.65	86.52
1975	7.60	387.12	186.60	200.52	86.89
1980	2.90	387.13	180.20	206.93	89.67
1981	2.20	387.26	183.10	204.16	88.47
1984	6.30	388.50	194.10	194.40	84.24
1985	0.30	387.70	195.20	192.50	83.42
1986	6.90	387.70	194.50	193.20	83.72
1987	6.60	387.13	198.50	188.63	81.74
1988	0.30	388.39	219.50	168.89	73.18
1989	2.70	388.39	222.30	166.09	71.97
1991	5.80	388.50	194.20	194.30	84.20
1994	1.20	388.27	190.70	197.57	85.61
1996	7.00	388.83	189.80	199.03	86.25
1997	6.90	388.92	191.50	197.42	85.55
2003	5.50	388.75	185.20	203.55	88.20

2030 Peak Hour Demand

2007	5.20	388.98	200.60	188.38	81.63
2009	6.80	388.94	196.90	192.04	83.22
2010	8.00	389.55	191.70	197.85	85.73
2012	6.90	389.84	199.00	190.84	82.70
2013	6.10	389.34	200.10	189.24	82.00
2014	9.80	389.25	193.20	196.05	84.96
2016	8.90	389.42	222.30	167.12	72.42
2021	1.40	390.56	204.20	186.36	80.76
2023	1.00	388.20	206.90	181.30	78.56
2025	3.80	612.39	455.60	156.79	67.94
2028	2.20	612.33	520.90	91.43	39.62
2029	2.10	612.40	449.00	163.40	70.81
2030	1.20	612.38	460.10	152.28	65.99
2031	5.00	612.41	430.90	181.51	78.65
2032	1.40	612.39	484.00	128.39	55.64
2033	3.50	612.40	474.20	138.20	59.89
2047	1.20	466.46	309.00	157.46	68.23
2050	0.30	466.46	301.10	165.36	71.66
2051	0.10	393.65	229.60	164.05	71.09
2052	0.10	393.65	229.90	163.75	70.96
2053	7.40	392.88	220.60	172.28	74.66
2061	1.90	392.31	208.20	184.11	79.78
2063	12.80	390.58	205.00	185.58	80.42
2065	9.40	389.84	198.90	190.94	82.74
2066	7.00	394.69	222.20	172.49	74.75
2067	13.80	391.42	216.20	175.22	75.93
2072	13.10	395.46	221.90	173.56	75.21
2073	5.10	388.96	199.80	189.16	81.97
2074	8.10	395.47	220.90	174.57	75.65
2076	14.00	388.68	204.40	184.28	79.85
2078	6.50	388.38	199.20	189.18	81.98
2079	7.00	388.30	203.10	185.20	80.25
2080	8.20	387.31	191.60	195.71	84.81
2081	7.20	387.16	198.70	188.46	81.67
2083	14.10	388.22	255.40	132.82	57.56
2084	9.30	388.23	224.10	164.13	71.12
2086	9.40	392.34	230.30	162.04	70.22
2088	14.90	696.56	604.50	92.06	39.89
2090	15.80	612.53	391.30	221.23	95.87
2091	8.10	389.00	195.30	193.70	83.94
2092	3.90	395.66	251.60	144.06	62.43
2093	10.20	389.18	236.00	153.18	66.38
2094	11.40	389.19	188.50	200.69	86.97
2095	7.90	389.19	187.60	201.59	87.36
2096	5.50	388.93	196.50	192.43	83.39
2097	8.20	388.93	202.50	186.43	80.79
2098	8.60	386.91	202.10	184.81	80.08
2100	11.40	386.84	197.30	189.54	82.13
2101	13.30	388.90	270.60	118.30	51.26
2103	14.50	388.91	236.90	152.01	65.87
2104	6.30	390.57	200.50	190.07	82.36
2105	9.60	389.24	201.90	187.34	81.18
2106	4.40	388.84	192.10	196.74	85.26
2107	10.50	388.97	190.50	198.47	86.00
2109	8.00	389.55	190.80	198.75	86.13
2110	5.80	388.91	192.70	196.21	85.02
2111	5.00	389.02	191.00	198.02	85.81
2112	11.10	389.33	190.20	199.13	86.29
2113	9.20	389.73	195.50	194.23	84.16
2115	7.80	389.03	191.90	197.13	85.42
2117	6.70	390.38	217.50	172.88	74.92
2119	11.70	388.75	193.60	195.15	84.56
2120	6.40	466.46	268.60	197.86	85.74
2121	5.70	388.61	193.00	195.61	84.76
2122	9.50	386.67	183.70	202.97	87.96
2123	6.90	388.75	193.20	195.55	84.74
2125	2.10	387.13	206.20	180.93	78.40
2126	4.40	388.62	192.50	196.12	84.98
2127	14.10	388.45	203.70	184.75	80.06
2129	7.70	392.63	218.10	174.53	75.63
2130	6.00	387.11	198.00	189.11	81.95
2132	3.60	393.70	230.10	163.60	70.90
2133	7.00	696.33	578.00	118.33	51.28
2137	9.40	389.82	198.20	191.62	83.04
2138	12.40	389.00	221.50	167.50	72.58
I-18th St	0.00	389.71	218.20	171.51	74.32
O-18th St	0.00	389.71	218.20	171.51	74.32
3-in or sm	0.20	389.50	185.50	204.00	88.40
3-inch or	0.60	387.92	183.00	204.92	88.80
3-inch or	0.30	387.26	183.10	204.16	88.47
O-AV-1	0.00	388.22	283.80	104.42	45.25
I-AV-2	0.00	610.23	306.00	304.23	131.83
I-AV-3	0.00	466.46	253.40	213.06	92.32
O-AV-4	0.00	389.23	289.30	99.93	43.30
O-AV-5	0.00	389.79	225.30	164.49	71.28
O-AV-6	0.00	390.58	208.10	182.48	79.07
O-Centrall	----	541.19	333.50	207.69	90.00
O-Fairview	Fairview PRV	466.50	346.50	120.00	52.00
O-High Lev	High Level P	612.50	401.60	210.90	91.39
High Level	High Level R	614.00	605.00	9.00	3.90
Hillcrest		395.76	256.20	139.56	60.47
inter-tie		389.32	174.40	214.92	93.13
J-1		386.71	174.00	212.71	92.18
J-100		387.39	190.60	196.79	85.27
J-105		386.72	175.60	211.12	91.48
J-106		387.15	206.20	180.95	78.41
J-11		492.59	280.00	212.59	92.12
J-110		387.33	198.00	189.33	82.04
J-111		386.97	192.50	194.47	84.27
J-112		387.92	167.90	220.02	95.34
J-113		388.28	200.50	187.78	81.37
J-114		610.13	405.70	204.43	88.58
J-115		388.81	197.30	191.51	82.99
J-116		388.88	207.10	181.78	78.77
J-117		388.64	192.10	196.54	85.17

2030 Peak Hour Demand

J-120	4.90	388.92	237.50	151.42	65.61	
J-122	5.20	386.71	174.00	212.71	92.17	
J-123	0.70	389.66	224.70	164.96	71.48	
J-124	4.10	612.41	403.80	208.61	90.40	
J-125	4.10	611.98	383.00	228.98	99.23	
J-126	6.70	400.69	367.95	32.74	14.19	
J-127	45.40	394.85	225.20	169.65	73.52	
J-128	29.40	394.80	235.20	159.60	69.16	
J-129	16.80	386.77	184.80	201.97	87.52	
J-130	7.60	394.69	222.00	172.69	74.83	
J-131	1.10	612.41	418.00	194.41	84.24	
J-132	4.50	386.71	176.00	210.71	91.31	
J-133	1.70	612.43	339.60	272.83	118.23	
J-134	2.40	390.56	200.90	189.66	82.19	
J-135	7.10	397.32	288.30	109.02	47.24	
J-136	1.70	388.20	204.10	184.10	79.78	
J-138	2.10	389.66	219.60	170.06	73.69	
J-139	0.90	389.75	222.60	167.15	72.43	
J-140	1.10	389.66	218.20	171.46	74.30	
J-141	1.00	388.75	200.90	187.85	81.40	
J-142	0.50	389.71	218.20	171.51	74.32	
J-143	23.60	389.07	193.40	195.67	84.79	
J-144	3.80	389.07	193.40	195.67	84.79	
J-145	0.30	389.66	218.20	171.46	74.30	
J-146	0.10	389.66	218.20	171.46	74.30	
J-147	0.10	389.71	218.20	171.51	74.32	
J-148	15.10	513.82	498.90	14.92	6.47	
J-149	7.50	489.10	306.10	183.00	79.30	
J-150	12.00	492.20	272.40	219.80	95.25	
J-151	27.40	480.40	326.80	163.60	70.89	
J-152	12.80	492.20	272.40	219.80	95.25	
J-153	277.10	489.10	302.40	186.70	80.90	
J-154	12.30	492.21	267.60	224.61	97.33	
J-155	35.30	490.80	263.80	227.00	98.37	
J-156	40.00	491.11	261.30	229.81	99.59	
J-157	3.70	490.52	265.80	224.72	97.38	
J-2	11.70	387.00	201.80	185.20	80.25	
J-20	4.30	387.27	182.90	204.37	88.56	
J-21	5.00	387.41	182.80	204.61	88.66	
J-25	10.10	612.44	311.10	301.34	130.58	
J-27	8.50	389.76	207.10	182.66	79.15	
J-3	6.70	387.13	182.20	204.93	88.80	
J-30	15.70	394.70	219.90	174.80	75.74	
J-35	16.80	395.29	222.10	173.19	75.05	
J-39	8.30	390.16	218.10	172.06	74.56	
J-4	5.10	387.19	184.40	202.79	87.87	
J-42	12.30	395.45	222.00	173.45	75.16	
J-44	12.40	392.18	208.40	183.78	79.64	
J-45	8.50	392.31	209.00	183.31	79.43	
J-53	19.50	397.17	294.30	102.87	44.58	
J-55	5.30	394.93	297.10	97.83	42.39	
J-57	2.70	393.65	229.20	164.45	71.26	
J-58	3.20	388.23	204.60	183.63	79.57	
J-6	36.90	531.47	473.40	58.07	25.17	
J-61	8.70	388.20	207.00	181.20	78.52	
J-62	2.30	388.89	191.50	197.39	85.54	
J-63	2.70	389.65	225.20	164.45	71.26	
J-64	8.50	388.75	202.30	186.45	80.80	
J-67	4.30	390.50	210.80	179.70	77.87	
J-7	7.00	389.04	214.70	174.34	75.55	
J-71	4.50	390.51	204.60	185.91	80.56	
J-73	12.80	390.56	199.60	190.96	82.75	
J-74	2.10	466.46	301.00	165.46	71.70	
J-77	1.30	466.46	296.10	170.36	73.82	
J-78	10.60	385.23	230.70	158.53	68.70	
J-79	5.50	389.24	223.40	165.84	71.86	
J-8	13.20	389.78	208.80	180.98	78.42	
J-80	10.00	388.71	190.70	198.01	85.80	
J-81	13.50	388.91	218.90	170.01	73.67	
J-82	13.30	388.95	257.90	131.05	56.79	
J-84	4.60	389.79	226.30	163.49	70.85	
J-87	8.60	389.15	194.40	194.75	84.39	
J-88	43.10	492.59	275.70	216.89	93.99	
J-90	0.10	395.47	219.10	176.37	76.43	
J-91	19.80	398.68	352.90	45.79	19.84	
J-93	3.40	389.19	187.50	201.69	87.40	
J-94	7.40	389.18	187.50	201.68	87.39	
J-95	27.00	389.41	189.50	199.91	86.63	
J-96	13.20	389.33	176.90	212.43	92.05	
J-99	2.40	387.12	205.50	181.62	78.70	
Kennicott	Kennicott Re	----	397.90	374.00	23.90	10.36
Main Reser	Main Reservo	----	402.00	383.30	18.70	8.10
physical d		0.10	389.62	222.00	167.62	72.63
I-RV-1		0.00	389.07	193.40	195.67	84.79
I-RV-2		0.00	388.75	200.90	187.85	81.40
O-South En		----	495.59	287.90	207.69	90.00
O-Valley V	Valley View	0.00	699.50	308.10	391.40	169.61
Yankis (Va	Yankis (Vall	----	699.50	631.50	68.00	29.47
Yates Rese	500,000 gal	----	402.00	376.00	26.00	11.27
O-18th St		----	389.66	218.20	171.46	74.30
I-18th St		0.00	389.66	218.20	171.46	74.30
I-AV-1		0.00	610.13	283.80	326.33	141.41
O-AV-2		0.00	388.23	306.00	82.23	35.63
O-AV-3		0.00	390.63	253.40	137.23	59.47
I-AV-4		0.00	388.89	289.30	99.59	43.16
I-AV-5		0.00	389.65	225.30	164.35	71.22
I-AV-6		0.00	388.20	208.10	180.10	78.04
I-Centrall		0.00	487.05	333.50	153.55	66.54
I-Fairview	Fairview PRV	0.00	696.28	346.50	349.78	151.57
I-High Lev	High Level P	0.00	400.69	401.60	-0.91	-0.39
O-RV-1		----	389.07	193.40	195.67	84.79
O-RV-2		----	390.56	200.90	189.66	82.19
I-South En		0.00	397.26	287.90	109.36	47.39
I-Valley V	Valley View	0.00	388.91	308.10	80.81	35.02

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
O-Valley Vie	169.61	I-High Level	-0.39
1103	151.62	High Level R	3.90
I-Fairview P	151.57	J-148	6.47
I-AV-1	141.41	Main Reservo	8.10
642	132.64	Kennicott Re	10.36

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-122	4.94	85	0.00
P-15	4.93	P-48	0.00
1479	3.61	24	0.00
107	3.28	45	0.00
2257	2.78	46	0.00

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-122	11.71	85	0.00
P-15	11.65	45	0.00
2257	7.76	46	0.00
107	7.66	24	0.00
P-173	6.63	P-48	0.00

HL / 1000

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-122	11.71	85	0.00
P-15	11.65	45	0.00
2257	7.76	46	0.00
107	7.66	24	0.00
P-173	6.63	P-48	0.00

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
18th St PRV	PRV-1	74.30	ACTIVATED	74.32	74.30	145.50
18th St Pump	FCV-2	0.00	BOOSTED	74.30	74.32	0.00
Centralia Al	PRV-2	90.00	BOOSTED	66.54	90.00	52.00
Fairview PRV	PRV-1	52.00	ACTIVATED	151.57	52.00	30.00
High Level P	FCV-2	0.00	BOOSTED	-0.39	91.39	0.00
RV-1	PRV-1	85.00	WIDE OPEN	84.79	84.79	121.79
RV-2	PRV-1	81.80	CLOSED	81.40	82.19	0.00
South End Pu	PRV-2	90.00	BOOSTED	47.39	90.00	528.80
Valley View	FCV-2	0.00	BOOSTED	35.02	169.61	0.00

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
High Level	168.50	High Level R
Kennicott R	1090.09	Kennicott Re
Main Reserv	2371.90	Main Reservo
Yankis (Val	152.50	Yankis (Vall
Yates Reser	1273.11	500,000 gal

NET SYSTEM INFLOW = 5056.10
 NET SYSTEM OUTFLOW = 0.00
 NET SYSTEM DEMAND = 5056.10

***** HYDRAULIC ANALYSIS COMPLETED *****

***** KYPIPE *****
 *
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Date & Time: Tue Feb 08 09:31:13 2022

Master File : p:\0155_chehalis\1078_wsp_update\rpt-planning\mdlmg\01551078 city of chehalis capital improvement program 2040.KYP\01551078 city of chehalis capital improve :

 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

REGULATING VALVE DATA

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
18th St PRV	PRV-1	389.66
18th St Pump	Const_FLOW_Pump	0.00
Centralia Al	Const_HEAD_Pump	541.19
Fairview PRV	PRV-1	466.50
High Level P	Const_FLOW_Pump	0.00
RV-1	PRV-1	382.95
RV-2	PRV-1	389.67
South End Pu	Const_HEAD_Pump	495.59
Valley View	Const_FLOW_Pump	0.00

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1	NODE NAMES #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
3	5	6	24.78	10.00	90.0000	0.00
5	9	10	824.44	8.00	130.0000	0.00
6	11	12	38.56	8.00	90.0000	0.00
7	13	872	38.38	6.00	75.0000	0.00
8	15	16	7.84	6.00	90.0000	0.00
10	18	19	437.00	2.00	140.0000	0.00
12	22	23	750.00	8.00	130.0000	0.00
13	24	1524	360.61	4.00	130.0000	0.00
14	26	J-55	539.97	10.00	130.0000	0.00
16	28	29	217.00	10.00	130.0000	0.00
17	31	32	723.00	12.00	130.0000	0.00
21	37	38	170.42	4.00	75.0000	0.00
22	2014	40	325.43	8.00	130.0000	0.00
23	41	1699	28.75	12.00	130.0000	0.00
24	43	213	42.27	12.00	130.0000	0.00
26	47	48	173.64	4.00	130.0000	0.00
27	49	50	310.00	10.00	130.0000	0.00
28	51	52	222.00	8.00	130.0000	0.00
32	59	60	108.37	6.00	75.0000	0.00
35	65	66	295.51	6.00	75.0000	0.00
37	68	69	412.00	8.00	130.0000	0.00
38	52	70	245.00	6.00	130.0000	0.00
39	Hillcrest	72	81.50	4.00	130.0000	0.00
41	75	76	3275.00	12.00	130.0000	0.00
45	83	2066	32.96	12.00	130.0000	0.00
46	85	86	33.07	12.00	130.0000	0.00
52	97	98	74.85	8.00	130.0000	0.00
55	102	103	68.31	8.00	130.0000	0.00
56	104	1810	34.98	12.00	130.0000	0.00
59	107	108	7.82	12.00	130.0000	0.00
60	109	J-53	785.00	16.00	130.0000	0.00
66	118	J-169	2076.37	14.00	90.0000	0.00
68	119	121	704.00	14.00	75.0000	0.00
70	121	860	23.71	14.00	75.0000	0.00
72	118	1799	900.00	8.00	130.0000	0.00
85	physical d	396	23.76	14.00	75.0000	0.00
107	J-91	2067	949.00	18.00	130.0000	0.00
109	325	34	484.84	12.00	130.0000	0.00
110	2122	166	948.74	12.00	130.0000	0.00
112	166	962	902.00	12.00	130.0000	0.00
114	569	962	308.00	12.00	130.0000	0.00
115	569	665	1519.00	12.00	130.0000	0.00
118	172	J-105	650.00	12.00	130.0000	0.00
120	175	178	251.61	12.00	130.0000	0.00
123	178	1826	444.69	12.00	130.0000	0.00
126	1826	1827	278.93	12.00	130.0000	0.00
129	1827	192	1658.25	12.00	130.0000	0.00

2040 Fireflow - Main Zone West

137	192	201	248.00	12.00	130.0000	0.00
139	201	137	409.00	12.00	130.0000	0.00
141	15	137	446.49	12.00	130.0000	0.00
142	15	J-162	456.08	12.00	130.0000	0.00
145	201	J-93	562.05	12.00	90.0000	0.00
155	212	213	677.50	12.00	130.0000	0.00
156	214	26	1649.00	12.00	130.0000	0.00
163	2072	224	1245.00	12.00	130.0000	0.00
187	248	253	1835.17	12.00	130.0000	0.00
192	254	J-127	1507.19	12.00	130.0000	0.00
262	325	1575	908.76	12.00	130.0000	0.00
279	343	344	127.52	12.00	130.0000	0.00
280	344	342	115.85	12.00	130.0000	0.00
282	342	346	192.42	12.00	130.0000	0.00
283	86	J-130	1344.24	12.00	130.0000	0.00
292	356	361	2280.98	10.00	90.0000	0.00
298	32	J-7	60.00	10.00	90.0000	0.00
302	32	480	930.34	10.00	90.0000	0.00
318	384	385	126.00	10.00	130.0000	0.00
319	356	J-167	699.21	10.00	90.0000	0.00
320	356	41	37.27	10.00	90.0000	0.00
329	396	398	31.65	10.00	75.0000	0.00
331	398	1409	306.52	10.00	75.0000	0.00
340	407	408	647.97	10.00	75.0000	0.00
353	661	2119	350.44	6.00	75.0000	0.00
355	424	1648	189.00	10.00	90.0000	0.00
363	295	468	3228.55	10.00	130.0000	0.00
398	172	473	539.00	12.00	130.0000	0.00
403	474	480	672.00	8.00	90.0000	0.00
411	J-45	2129	770.00	8.00	90.0000	0.00
414	1217	1121	284.43	8.00	130.0000	0.00
417	492	1235	414.07	8.00	75.0000	0.00
429	505	509	502.00	8.00	75.0000	0.00
433	510	512	462.00	8.00	130.0000	0.00
435	513	J-160	231.52	8.00	75.0000	0.00
440	518	J-94	278.47	8.00	75.0000	0.00
448	92	1184	943.86	8.00	130.0000	0.00
451	530	119	42.30	8.00	75.0000	0.00
452	119	536	464.52	8.00	75.0000	0.00
458	536	2079	637.02	8.00	75.0000	0.00
461	540	2079	30.24	8.00	75.0000	0.00
464	544	543	465.44	8.00	75.0000	0.00
472	552	J-100	98.00	8.00	75.0000	0.00
476	I-AV-1	J-114	1506.58	8.00	130.0000	0.00
486	569	573	476.00	8.00	130.0000	0.00
490	385	166	264.00	8.00	140.0000	0.00
495	579	J-138	330.16	8.00	130.0000	0.00
497	582	584	548.98	8.00	130.0000	0.00
503	590	J-73	801.25	8.00	75.0000	0.00
511	599	601	450.87	8.00	130.0000	0.00
526	599	619	720.36	8.00	130.0000	0.00
531	620	623	618.14	8.00	130.0000	0.00
538	628	631	136.23	8.00	90.0000	0.00
541	632	1049	299.05	8.00	90.0000	0.00
547	631	642	578.19	8.00	90.0000	0.00
552	High Level	2090	1103.00	10.00	130.0000	0.00
565	509	661	1328.00	8.00	75.0000	0.00
569	597	1284	174.94	8.00	90.0000	0.00
571	46	2086	497.00	8.00	90.0000	0.00
574	665	668	872.08	8.00	130.0000	0.00
577	668	675	492.96	8.00	130.0000	0.00
584	676	J-27	893.25	10.00	130.0000	0.00
590	54	682	182.20	8.00	90.0000	0.00
591	683	J-95	505.00	8.00	90.0000	0.00
593	686	J-78	241.00	8.00	90.0000	0.00
597	408	J-79	21.00	8.00	75.0000	0.00
601	361	1960	1287.07	8.00	90.0000	0.00
612	705	710	248.15	8.00	130.0000	0.00
617	717	1134	965.00	8.00	130.0000	0.00
623	718	247	34.04	8.00	75.0000	0.00
630	424	726	91.39	8.00	75.0000	0.00
632	726	J-80	386.08	8.00	75.0000	0.00
652	468	780	2846.84	8.00	130.0000	0.00
684	781	2092	25.00	8.00	130.0000	0.00
686	784	1698	594.45	8.00	130.0000	0.00
690	788	791	1019.18	8.00	130.0000	0.00
693	792	791	123.52	8.00	130.0000	0.00
697	797	784	720.40	8.00	130.0000	0.00
700	800	802	282.00	6.00	130.0000	0.00
702	803	1465	267.21	6.00	75.0000	0.00
706	808	2009	929.18	6.00	75.0000	0.00
710	813	815	302.18	6.00	75.0000	0.00
712	121	2093	46.99	6.00	75.0000	0.00
714	2094	40	934.76	6.00	130.0000	0.00
723	828	2096	426.19	6.00	75.0000	0.00
726	544	831	72.71	6.00	75.0000	0.00
727	831	530	335.47	6.00	75.0000	0.00
735	831	1989	226.92	6.00	75.0000	0.00
739	842	844	615.87	6.00	75.0000	0.00
741	844	817	669.95	10.00	130.0000	0.00
749	856	J-115	240.00	6.00	75.0000	0.00
751	2078	14	273.95	6.00	75.0000	0.00
753	860	2097	569.00	6.00	75.0000	0.00
757	865	868	222.76	6.00	75.0000	0.00
760	868	J-113	502.26	6.00	75.0000	0.00
762	868	872	205.21	6.00	75.0000	0.00
772	881	2098	449.61	6.00	75.0000	0.00
776	885	J-111	304.95	6.00	75.0000	0.00
784	893	J-106	418.44	6.00	75.0000	0.00
785	893	J-110	416.57	6.00	75.0000	0.00
789	66	899	48.00	6.00	75.0000	0.00
791	899	901	175.00	6.00	75.0000	0.00
793	901	1742	1127.00	6.00	75.0000	0.00
797	906	910	180.00	8.00	130.0000	0.00
801	910	38	116.53	10.00	130.0000	0.00

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807	842	2084	314.93	6.00	75.0000	0.00
812	916	922	348.45	8.00	130.0000	0.00
814	923	J-20	569.59	8.00	130.0000	0.00
817	J-21	929	248.00	6.00	75.0000	0.00
823	J-2	937	870.00	6.00	130.0000	0.00
825	J-2	556	502.00	6.00	75.0000	0.00
831	945	2080	473.03	6.00	75.0000	0.00
839	954	2081	460.04	6.00	75.0000	0.00
846	962	964	82.58	6.00	130.0000	0.00
858	1387	1314	65.93	4.00	75.0000	0.00
861	108	104	599.00	6.00	90.0000	0.00
867	958	J-110	1002.00	8.00	130.0000	0.00
874	994	65	736.58	6.00	75.0000	0.00
876	65	1986	656.95	6.00	75.0000	0.00
883	1003	1023	424.00	8.00	130.0000	0.00
903	1024	J-125	363.09	8.00	130.0000	0.00
905	O-High Lev	649	101.61	6.00	75.0000	0.00
910	1024	628	642.00	8.00	130.0000	0.00
912	1032	1003	811.00	6.00	90.0000	0.00
930	1050	1053	1269.52	6.00	90.0000	0.00
933	384	2100	964.00	6.00	75.0000	0.00
936	1057	16	435.81	6.00	90.0000	0.00
938	1060	1063	225.00	6.00	130.0000	0.00
941	1064	J-129	956.67	8.00	130.0000	0.00
948	1071	526	308.78	6.00	90.0000	0.00
949	526	1084	2823.93	8.00	130.0000	0.00
962	1085	1337	588.12	6.00	75.0000	0.00
966	1099	J-78	1370.13	8.00	130.0000	0.00
975	1100	1101	228.75	6.00	90.0000	0.00
976	O-Fairview	1101	118.14	6.00	90.0000	0.00
982	2103	J-81	265.32	6.00	75.0000	0.00
993	1121	1122	255.49	8.00	130.0000	0.00
994	2076	2127	300.30	8.00	130.0000	0.00
1000	1130	1125	650.51	8.00	130.0000	0.00
1001	2104	J-73	623.72	6.00	75.0000	0.00
1003	1134	2104	238.99	6.00	75.0000	0.00
1004	509	1290	478.00	6.00	75.0000	0.00
1007	1137	2105	327.02	6.00	75.0000	0.00
1009	1388	2013	267.00	6.00	75.0000	0.00
1012	2106	2107	591.74	6.00	75.0000	0.00
1014	510	23	924.74	6.00	75.0000	0.00
1017	2137	2109	470.82	6.00	75.0000	0.00
1019	2084	2109	326.70	6.00	75.0000	0.00
1020	2094	23	140.75	6.00	75.0000	0.00
1023	1156	23	477.86	6.00	75.0000	0.00
1024	2096	2073	229.38	6.00	75.0000	0.00
1025	2110	2096	273.09	6.00	75.0000	0.00
1026	2110	1997	279.58	6.00	75.0000	0.00
1028	1997	2111	244.00	6.00	75.0000	0.00
1030	2111	2112	268.86	6.00	75.0000	0.00
1032	1961	2113	418.00	6.00	75.0000	0.00
1035	704	1961	270.90	6.00	75.0000	0.00
1036	2109	1961	297.09	6.00	75.0000	0.00
1037	2010	2014	642.00	6.00	75.0000	0.00
1040	2012	2013	328.33	6.00	75.0000	0.00
1041	2065	2012	308.00	6.00	75.0000	0.00
1042	2137	2065	296.00	6.00	75.0000	0.00
1043	2113	2137	300.18	6.00	75.0000	0.00
1044	2113	1180	266.89	6.00	75.0000	0.00
1046	1181	22	93.00	6.00	75.0000	0.00
1047	2095	22	173.00	6.00	75.0000	0.00
1048	726	1184	40.06	8.00	130.0000	0.00
1051	1186	1996	269.43	6.00	75.0000	0.00
1053	827	1232	1143.25	6.00	75.0000	0.00
1058	1232	1156	597.28	6.00	75.0000	0.00
1060	1156	512	927.21	6.00	75.0000	0.00
1062	512	2107	783.40	6.00	75.0000	0.00
1064	2115	2107	155.32	6.00	75.0000	0.00
1069	2117	2065	579.53	6.00	75.0000	0.00
1071	2137	1210	580.23	6.00	75.0000	0.00
1074	1211	1713	81.79	6.00	130.0000	0.00
1076	24	1713	223.00	6.00	130.0000	0.00
1077	1215	J-58	327.00	8.00	130.0000	0.00
1078	68	1217	692.94	6.00	130.0000	0.00
1080	1218	2112	1049.55	6.00	75.0000	0.00
1083	2112	1223	326.05	6.00	75.0000	0.00
1085	1224	2111	321.86	6.00	75.0000	0.00
1087	1085	1333	418.92	6.00	75.0000	0.00
1088	1085	808	427.58	6.00	75.0000	0.00
1090	808	1229	207.76	6.00	75.0000	0.00
1091	1232	1181	476.00	6.00	75.0000	0.00
1094	1235	1483	375.00	6.00	75.0000	0.00
1095	2120	1104	147.00	6.00	90.0000	0.00
1096	2120	1239	581.73	6.00	130.0000	0.00
1099	1240	1214	42.84	6.00	130.0000	0.00
1100	1214	1244	471.00	6.00	130.0000	0.00
1103	1244	1251	558.00	6.00	130.0000	0.00
1110	Yankis (Va	1251	416.98	6.00	130.0000	0.00
1116	1513	J-25	173.82	10.00	130.0000	0.00
1117	1277	J-159	108.25	6.00	90.0000	0.00
1118	1277	1262	90.18	6.00	90.0000	0.00
1120	657	J-25	1605.00	10.00	130.0000	0.00
1125	1181	1270	559.53	8.00	130.0000	0.00
1127	2103	1099	1495.62	8.00	130.0000	0.00
1132	1277	I-AV-4	889.11	6.00	90.0000	0.00
1138	693	579	860.83	6.00	75.0000	0.00
1140	1284	O-AV-3	362.05	6.00	90.0000	0.00
1146	1290	2119	1322.78	6.00	130.0000	0.00
1148	1293	1295	372.96	6.00	130.0000	0.00
1150	398	2016	65.54	8.00	130.0000	0.00
1152	1120	1298	198.66	6.00	75.0000	0.00
1154	432	1309	2165.00	6.00	90.0000	0.00
1165	1310	1314	1161.00	4.00	75.0000	0.00
1169	2127	J-61	967.64	6.00	130.0000	0.00
1171	1318	2105	578.38	4.00	75.0000	0.00

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1173	2105	1322	469.84	4.00	75.0000	0.00
1178	2115	40	301.65	4.00	75.0000	0.00
1179	2115	1328	589.61	4.00	75.0000	0.00
1182	803	J-81	638.00	4.00	75.0000	0.00
1185	1333	1337	528.94	4.00	75.0000	0.00
1189	1338	807	1527.54	8.00	130.0000	0.00
1193	518	192	70.97	4.00	75.0000	0.00
1195	192	1060	583.00	4.00	75.0000	0.00
1198	1060	705	1317.00	4.00	75.0000	0.00
1205	492	J-80	987.90	6.00	130.0000	0.00
1208	1356	828	273.00	4.00	75.0000	0.00
1210	1359	828	233.00	4.00	75.0000	0.00
1211	1364	1984	203.81	6.00	130.0000	0.00
1212	1364	1991	514.02	6.00	130.0000	0.00
1214	1364	2121	287.23	4.00	75.0000	0.00
1215	1366	36	660.16	6.00	130.0000	0.00
1217	1244	1251	681.00	6.00	130.0000	0.00
1226	1375	17	2480.00	4.00	90.0000	0.00
1236	17	1387	400.00	4.00	90.0000	0.00
1239	1388	1392	578.80	4.00	75.0000	0.00
1244	1314	33	129.52	4.00	90.0000	0.00
1245	937	1456	272.00	6.00	75.0000	0.00
1247	384	1456	264.58	6.00	75.0000	0.00
1248	1396I-Valley V	4.38	4.00	140.0000	0.00	
1258	505	1409	1080.00	4.00	75.0000	0.00
1261	1410	657	558.39	4.00	90.0000	0.00
1269	1023	I-AV-2	712.27	4.00	90.0000	0.00
1309	1456	881	418.71	6.00	130.0000	0.00
1315	885	1056	245.12	4.00	90.0000	0.00
1319	1465	2103	636.67	4.00	75.0000	0.00
1322	509	407	820.07	6.00	130.0000	0.00
1330	693	492	1027.10	6.00	130.0000	0.00
1338	1295	1483	948.39	6.00	130.0000	0.00
1340	1484	899	1892.00	4.00	75.0000	0.00
1351	344	1497	767.00	4.00	130.0000	0.00
1354	1498	1502	449.05	8.00	130.0000	0.00
1358	1502	J-133	279.67	10.00	130.0000	0.00
1371	1517	1519	275.00	2.00	135.0000	0.00
1384	1544	J-95	2295.00	12.00	90.0000	0.00
1388	1547	1544	288.55	12.00	130.0000	0.00
1389	1547	J-96	1327.00	12.00	130.0000	0.00
1396	1544	1547	2300.00	8.00	130.0000	0.00
1401	668	1674	1132.70	12.00	130.0000	0.00
1404	1674	102	746.13	12.00	130.0000	0.00
1406	102	J-1	620.69	12.00	130.0000	0.00
1409	92	J-164	484.87	12.00	130.0000	0.00
1423	421	107	867.00	12.00	130.0000	0.00
1426	1575	34	575.28	12.00	130.0000	0.00
1427	1576	248	446.87	12.00	130.0000	0.00
1429	248	1580	540.11	12.00	130.0000	0.00
1433	51	26	448.20	12.00	130.0000	0.00
1435	51	109	1427.59	12.00	130.0000	0.00
1440	6	109	475.62	12.00	130.0000	0.00
1441	6	1647	1469.07	12.00	130.0000	0.00
1443	1637	1647	5159.69	12.00	130.0000	0.00
1454	72	1637	1761.44	12.00	130.0000	0.00
1455	72	1626	3641.41	12.00	130.0000	0.00
1458	1627	1626	763.65	12.00	130.0000	0.00
1460	797	212	356.56	12.00	130.0000	0.00
1464	788	1630	3991.15	12.00	130.0000	0.00
1477	1630	1626	1130.08	12.00	130.0000	0.00
1479	1627Yates Rese		1075.00	12.00	130.0000	0.00
1481	1630	76	3539.00	12.00	130.0000	0.00
1483	76	1636	2341.00	12.00	130.0000	0.00
1487	1637	75	595.62	12.00	130.0000	0.00
1492	75	49	651.30	12.00	130.0000	0.00
1493	254	49	3310.10	12.00	130.0000	0.00
1494	254	J-35	1688.26	12.00	130.0000	0.00
1497	2072	1647	1022.00	12.00	130.0000	0.00
1499	1648	247	4693.50	12.00	130.0000	0.00
1500	343	1657	2072.02	8.00	130.0000	0.00
1509	1658	901	754.77	8.00	130.0000	0.00
1526	1674	800	496.84	8.00	130.0000	0.00
1531	800	174	473.00	8.00	130.0000	0.00
1534	1679	1689	748.17	6.00	90.0000	0.00
1544	1690	1689	126.93	8.00	90.0000	0.00
1548	2092	1698	669.39	8.00	130.0000	0.00
1552	1699	1700	801.40	10.00	130.0000	0.00
1553	2138	89	1389.60	8.00	130.0000	0.00
1560	1710	J-53	1056.65	8.00	130.0000	0.00
1562	1711	683	220.00	8.00	90.0000	0.00
1563	683	1712	500.00	8.00	115.0000	0.00
1564	1713	1716	178.58	6.00	130.0000	0.00
1567	1716	1719	185.05	6.00	130.0000	0.00
1584	1742	1737	1268.00	4.00	75.0000	0.00
1588	1737	1375	375.00	4.00	75.0000	0.00
1593	1742	1484	452.00	10.00	130.0000	0.00
1596	1484	975	1798.00	10.00	130.0000	0.00
1611	975	1310	71.00	10.00	130.0000	0.00
1612	1310	2122	454.00	10.00	130.0000	0.00
1615	2123	1089	511.48	8.00	130.0000	0.00
1617	1089	1186	243.51	6.00	75.0000	0.00
1618	1186	1767	570.00	8.00	130.0000	0.00
1621	J-135	J-171	184.70	8.00	130.0000	0.00
1626	1773	1775	197.00	8.00	130.0000	0.00
1628	1775	1776	68.00	8.00	130.0000	0.00
1629	1776	1782	1030.00	8.00	130.0000	0.00
1635	1782	1788	996.00	8.00	130.0000	0.00
1641	1788	1775	237.00	8.00	130.0000	0.00
1644	1773	1791	251.00	8.00	130.0000	0.00
1645	1776	1793	338.00	8.00	130.0000	0.00
1647	1788	1782	591.00	8.00	130.0000	0.00
1654	1800	1801	235.53	10.00	130.0000	0.00
1657	18053-inch or		110.20	8.00	130.0000	0.00
1658	1806	1808	400.00	6.00	130.0000	0.00

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1660	1809	1806	19.02	8.00	130.0000	0.00
1661		1810	671.00	10.00	130.0000	0.00
1663	1800	1821	258.00	10.00	130.0000	0.00
1664	1813	1809	50.87	10.00	130.0000	0.00
1665	1814	1818	715.34	2.00	140.0000	0.00
1669	1813	1814	675.00	8.00	130.0000	0.00
1672	1821	J-112	525.00	8.00	130.0000	0.00
1673	1823	1826	385.26	6.00	90.0000	0.00
1676	1827	1071	62.38	12.00	130.0000	0.00
1677	1636	J-128	438.35	8.00	130.0000	0.00
1792	910	844	262.20	10.00	130.0000	0.00
1793	178	1823	69.34	8.00	90.0000	0.00
1796	1063	1948	325.00	2.00	135.0000	0.00
1799	1032	J-114	642.00	6.00	130.0000	0.00
1810	1960	12	21.03	8.00	90.0000	0.00
1811	12	10	1053.00	8.00	90.0000	0.00
1813	1767	J-117	290.12	6.00	75.0000	0.00
1818	1737	1968	132.00	4.00	75.0000	0.00
1820	1823	J-168	334.71	6.00	75.0000	0.00
1821	175	384	2123.70	10.00	130.0000	0.00
1825	1973	566	454.00	4.00	75.0000	0.00
1826	1974	1975	651.00	6.00	130.0000	0.00
1828	J-3	1980	517.00	6.00	75.0000	0.00
1830	3-inch or	1981	48.33	4.00	75.0000	0.00
1831	1984	1767	235.15	6.00	75.0000	0.00
1834	1985	1986	56.59	4.00	75.0000	0.00
1835	894	2125	20.33	8.00	130.0000	0.00
1836	1987	568	717.00	4.00	75.0000	0.00
1837	1988	1989	52.11	4.00	75.0000	0.00
1839	2121	1991	219.88	6.00	75.0000	0.00
1840	2126	2123	286.00	10.00	130.0000	0.00
1841	1994	994	209.00	6.00	75.0000	0.00
1842	1996	1997	691.73	6.00	75.0000	0.00
1843	1184	J-163	895.08	6.00	130.0000	0.00
1852	2007	2009	230.57	6.00	75.0000	0.00
1854	2010	2065	472.04	6.00	75.0000	0.00
1855	2012	J-39	579.11	8.00	75.0000	0.00
1856	2013	2014	469.09	6.00	130.0000	0.00
1858	2016	J-81	1482.47	4.00	75.0000	0.00
1860	2127	504	947.53	6.00	130.0000	0.00
1864	1121	2023	183.59	6.00	90.0000	0.00
1865	2127	1215	263.88	8.00	130.0000	0.00
1866	2025	2028	384.00	2.00	140.0000	0.00
1869	2029	2030	216.99	2.00	140.0000	0.00
1870	2031	2029	117.40	4.00	140.0000	0.00
1871	2029	2025	27.90	4.00	140.0000	0.00
1872	2025	2032	248.94	4.00	140.0000	0.00
1873	2033	2031	618.97	4.00	140.0000	0.00
1877	2031	J-124	145.24	8.00	130.0000	0.00
1883	2047	J-74	206.38	6.00	90.0000	0.00
1887	2053	582	671.02	4.00	90.0000	0.00
1892	2129	582	343.45	4.00	90.0000	0.00
1893	590	46	757.00	6.00	90.0000	0.00
1894	2061	J-45	335.58	6.00	90.0000	0.00
1895	2063	J-44	880.19	8.00	90.0000	0.00
1896	5	361	64.75	10.00	90.0000	0.00
1898	14	540	265.00	6.00	75.0000	0.00
1900	163-in or sm		34.44	6.00	90.0000	0.00
1901	17	18	236.00	6.00	90.0000	0.00
1904	24	2088	5.94	6.00	130.0000	0.00
1907	36	2130	291.60	6.00	75.0000	0.00
1908	38	2083	817.68	10.00	130.0000	0.00
1909	2014	J-87	300.00	6.00	75.0000	0.00
1917	69	J-61	263.00	8.00	130.0000	0.00
1920	295	J-30	1850.87	12.00	130.0000	0.00
1924	86	2066	285.00	12.00	130.0000	0.00
1927	104	J-112	808.02	6.00	75.0000	0.00
1930	118	710	2530.00	14.00	90.0000	0.00
1935	247	2106	22.48	8.00	75.0000	0.00
1936	325	2122	272.19	12.00	130.0000	0.00
1938	375	1218	736.59	14.00	75.0000	0.00
1940	396	1318	307.00	14.00	75.0000	0.00
1941	480	2138	730.48	10.00	90.0000	0.00
1947	530	2093	691.48	6.00	75.0000	0.00
1948	536	2078	287.42	8.00	75.0000	0.00
1949	565	1084	590.00	8.00	75.0000	0.00
1950	556	944	498.75	6.00	75.0000	0.00
1951	565	543	35.00	8.00	75.0000	0.00
1954	J-84	O-AV-5	54.14	8.00	90.0000	0.00
1956	584	717	786.89	10.00	90.0000	0.00
1958	590	584	267.70	10.00	90.0000	0.00
1960	620	2133	155.65	8.00	130.0000	0.00
1962	1410	649	52.91	8.00	90.0000	0.00
1964	661	424	118.60	10.00	75.0000	0.00
1965	665	172	143.00	12.00	130.0000	0.00
1967	710	137	1990.58	14.00	90.0000	0.00
1972	784	791	500.36	8.00	130.0000	0.00
1975	797	788	291.38	12.00	130.0000	0.00
1977	813	J-120	564.60	6.00	75.0000	0.00
1978	815	803	563.97	6.00	75.0000	0.00
1979	817	1338	454.00	10.00	130.0000	0.00
1982	856	2121	290.89	6.00	75.0000	0.00
1983	860	375	259.21	14.00	75.0000	0.00
1984	865	65	387.79	8.00	75.0000	0.00
1985	872	14	110.22	6.00	75.0000	0.00
1986	923	J-3	345.89	8.00	130.0000	0.00
1987	944	1987	383.07	6.00	75.0000	0.00
1989	954	945	225.61	6.00	75.0000	0.00
1990	958	J-106	266.00	6.00	75.0000	0.00
1992	994	1658	528.00	10.00	130.0000	0.00
1993	2101	60	140.36	6.00	75.0000	0.00
1995	1003	1049	529.64	8.00	130.0000	0.00
1996	1049	631	275.61	8.00	90.0000	0.00
1997	1050	975	402.00	6.00	90.0000	0.00
1998	1057	518	652.00	8.00	75.0000	0.00

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2000	1084	552	435.20	8.00	75.0000	0.00
2001	1099	1120	246.00	8.00	130.0000	0.00
2002	1107	J-79	210.02	8.00	75.0000	0.00
2003	1130	J-63	457.60	8.00	75.0000	0.00
2005	1137	398	600.00	8.00	75.0000	0.00
2010	1180	704	473.80	8.00	75.0000	0.00
2011	1183	704	38.34	6.00	75.0000	0.00
2014	1210	2067	566.74	14.00	75.0000	0.00
2020	1223	1224	265.83	6.00	75.0000	0.00
2021	1224	827	666.42	6.00	75.0000	0.00
2022	1229	815	301.07	6.00	75.0000	0.00
2024	1235	1517	896.98	8.00	75.0000	0.00
2025	1099	J-82	293.00	8.00	130.0000	0.00
2027	1284	46	713.52	8.00	90.0000	0.00
2031	1318	1392	306.00	14.00	75.0000	0.00
2032	1322	J-87	262.00	6.00	75.0000	0.00
2033	1328	2091	322.03	8.00	75.0000	0.00
2035	1337	2110	39.43	6.00	75.0000	0.00
2036	1338	813	634.51	6.00	75.0000	0.00
2037	1356	1089	17.89	6.00	75.0000	0.00
2039	1366	945	480.02	6.00	75.0000	0.00
2040	1387	979	479.26	6.00	130.0000	0.00
2042	1392	J-39	591.86	14.00	75.0000	0.00
2045	1409	407	306.00	10.00	75.0000	0.00
2048	1465	J-120	38.32	6.00	75.0000	0.00
2053	1107	1517	423.01	8.00	75.0000	0.00
2058	1570	J-8	1066.00	10.00	90.0000	0.00
2060	1575	342	808.04	12.00	130.0000	0.00
2063	1627	J-135	354.12	12.00	115.0000	0.00
2067	1648	432	2857.00	10.00	90.0000	0.00
2068	1658	421	772.00	10.00	130.0000	0.00
2070	1679	1101	25.75	6.00	90.0000	0.00
2071	1698	212	264.80	8.00	130.0000	0.00
2078	1800	1813	297.00	10.00	130.0000	0.00
2079	1809	1805	635.00	10.00	130.0000	0.00
2080	1810	107	583.38	12.00	130.0000	0.00
2087	1960	700	19.01	8.00	90.0000	0.00
2089	1973	J-2	345.00	6.00	75.0000	0.00
2090	1974	1366	377.42	6.00	75.0000	0.00
2091	1975	36	374.90	6.00	75.0000	0.00
2092	1981	J-4	275.32	6.00	75.0000	0.00
2093	994	1984	383.00	10.00	130.0000	0.00
2095	1986	552	515.83	6.00	75.0000	0.00
2096	1987	893	54.17	6.00	75.0000	0.00
2097	1989	842	189.64	6.00	75.0000	0.00
2102	1996	827	273.45	6.00	75.0000	0.00
2104	2007	375	649.59	10.00	130.0000	0.00
2105	2009	2096	41.52	6.00	75.0000	0.00
2111	2016	1120	22.21	8.00	130.0000	0.00
2114	1107	1293	379.00	6.00	75.0000	0.00
2118	2053	J-57	404.65	8.00	90.0000	0.00
2120	2063	717	379.81	10.00	90.0000	0.00
2127	2067	1218	331.70	14.00	75.0000	0.00
2128	2067	1180	580.16	8.00	75.0000	0.00
2139	2073	2007	37.55	10.00	130.0000	0.00
2141	2074	483	444.39	8.00	130.0000	0.00
2145	2076	492	344.58	8.00	75.0000	0.00
2146	2076	504	784.60	8.00	75.0000	0.00
2148	693	J-64	330.00	8.00	130.0000	0.00
2149	2078	865	288.23	8.00	75.0000	0.00
2150	2078	1991	297.24	6.00	75.0000	0.00
2152	2079	543	202.12	8.00	75.0000	0.00
2153	2080	2081	236.10	6.00	130.0000	0.00
2154	2080	958	585.00	6.00	75.0000	0.00
2155	2125	J-99	48.00	8.00	130.0000	0.00
2156	2081	958	325.04	6.00	75.0000	0.00
2159	2083	2084	265.54	8.00	75.0000	0.00
2160	2083	916	678.90	8.00	130.0000	0.00
2161	2084	565	310.77	8.00	75.0000	0.00
2162	2084	916	736.88	8.00	130.0000	0.00
2165	2086	578	560.00	8.00	130.0000	0.00
2166	2086	2132	593.29	8.00	90.0000	0.00
2169	2088	620	2465.45	8.00	130.0000	0.00
2170	2088	1214	158.00	6.00	130.0000	0.00
2173	2090	1410	14.60	8.00	90.0000	0.00
2174	2090	657	565.72	10.00	130.0000	0.00
2175	2091	1137	468.76	8.00	75.0000	0.00
2176	2091	505	311.20	8.00	75.0000	0.00
2179	2093	817	304.87	6.00	75.0000	0.00
2180	2093	1229	758.42	6.00	75.0000	0.00
2181	2094	2095	604.36	6.00	75.0000	0.00
2183	2095	1223	294.47	6.00	75.0000	0.00
2184	2095	1183	324.33	6.00	75.0000	0.00
2187	2097	856	426.07	6.00	75.0000	0.00
2188	2097	2073	206.00	6.00	75.0000	0.00
2189	2098	885	448.98	6.00	75.0000	0.00
2190	2098	2100	273.62	6.00	75.0000	0.00
2192	954	2130	268.01	6.00	75.0000	0.00
2193	2100	1050	360.00	6.00	90.0000	0.00
2194	2100	1056	405.41	6.00	75.0000	0.00
2195	2101	807	693.00	8.00	130.0000	0.00
2196	2101	J-82	1519.00	8.00	130.0000	0.00
2198	1290	1293	372.41	6.00	75.0000	0.00
2199	2103	60	154.27	6.00	75.0000	0.00
2202	2104	2021	244.00	4.00	75.0000	0.00
2203	2105	1388	298.00	6.00	75.0000	0.00
2206	2106	1328	152.76	8.00	75.0000	0.00
2207	2107	510	314.14	6.00	75.0000	0.00
2212	2109	2010	299.72	6.00	75.0000	0.00
2214	2110	1356	429.11	6.00	75.0000	0.00
2216	2111	1333	54.05	6.00	75.0000	0.00
2217	2112	1183	291.22	6.00	75.0000	0.00
2221	803	2113	632.05	6.00	75.0000	0.00
2223	2115	J-87	328.38	6.00	75.0000	0.00
2228	2117	1210	322.00	14.00	75.0000	0.00

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2231	2119	1483	385.00	6.00	75.0000	0.00
2234	2120	J-77	147.00	6.00	90.0000	0.00
2236	2121	2126	209.47	6.00	75.0000	0.00
2240	2123	2073	427.00	10.00	130.0000	0.00
2243	2125	961	36.45	8.00	130.0000	0.00
2244	2125	2081	266.99	8.00	130.0000	0.00
2246	2126	1984	286.12	10.00	130.0000	0.00
2249	2050	J-77	44.67	6.00	90.0000	0.00
2252	2129	2053	226.85	8.00	90.0000	0.00
2253	2130	961	455.00	6.00	75.0000	0.00
2254	2130	1973	40.73	6.00	75.0000	0.00
2257	2132	214	7.31	8.00	90.0000	0.00
2259	2133	599	622.41	8.00	130.0000	0.00
2260	2133	47	462.96	8.00	130.0000	0.00
2269	2138	481	66.26	10.00	90.0000	0.00
P-1	J-1	97	547.15	12.00	130.0000	0.00
P-100	J-112	1814	500.93	6.00	75.0000	0.00
P-101	J-113	2079	368.16	6.00	75.0000	0.00
P-102	J-114	1023	302.00	8.00	130.0000	0.00
P-103	J-125	649	346.91	8.00	130.0000	0.00
P-104	I-Fairview	1103	20.94	6.00	90.0000	0.00
P-105	J-115	J-116	419.54	6.00	75.0000	0.00
P-106	J-116	2097	250.67	6.00	75.0000	0.00
P-108	J-117	56	305.00	6.00	75.0000	0.00
P-11	J-3	1975	323.06	6.00	75.0000	0.00
P-111	J-120	807	266.76	6.00	75.0000	0.00
P-113	J-39	2117	288.00	14.00	75.0000	0.00
P-116	97	J-122	121.15	12.00	130.0000	0.00
P-117	J-140	J-145	46.63	12.00	130.0000	0.00
P-119	J-139	J-84	78.98	8.00	130.0000	0.00
P-121	J-140	J-138	42.92	12.00	130.0000	0.00
P-122	J-126Main Reser		111.73	18.00	130.0000	0.00
P-124	O-AV-1	2083	364.42	10.00	130.0000	0.00
P-125	O-AV-2	906	282.73	8.00	130.0000	0.00
P-127	J-127	295	2367.21	12.00	130.0000	0.00
P-128	J-127	J-128	4129.32	12.00	130.0000	0.00
P-130	J-128	1831	615.85	8.00	130.0000	0.00
P-131	J-129	1071	558.33	12.00	130.0000	0.00
P-132	668	J-129	1448.22	12.00	130.0000	0.00
P-133	J-133	1513	25.35	10.00	130.0000	0.00
P-134	J-122	J-132	800.00	12.00	130.0000	0.00
P-135	J-124	1502	393.57	10.00	130.0000	0.00
P-136	J-124	J-131	198.84	8.00	130.0000	0.00
P-138-CV	Kennicott	J-53	790.00	16.00	130.0000	0.00
P-140	O-AV-4	686	40.89	6.00	90.0000	0.00
P-143	I-AV-5	J-63	2.85	8.00	130.0000	0.00
P-144	O-AV-6	1134	545.75	4.00	75.0000	0.00
P-146	J-73	J-134	384.83	8.00	130.0000	0.00
P-147	J-64	J-141	135.51	8.00	130.0000	0.00
P-148	J-134	O-RV-2	6.27	8.00	130.0000	0.00
P-149	J-143	O-RV-1	5.82	12.00	130.0000	0.00
P-15	J-91	J-126	172.27	18.00	130.0000	0.00
P-150-CV	J-141	J-134	13.00	8.00	130.0000	0.00
P-151	J-142	J-139	80.78	8.00	130.0000	0.00
P-152	J-144	1570	631.51	12.00	130.0000	0.00
P-153-CV	J-143	J-144	24.87	12.00	130.0000	0.00
P-154	I-RV-1	J-144	5.63	12.00	130.0000	0.00
P-157	I-RV-2	J-141	7.13	8.00	130.0000	0.00
P-1570	1716	1103	1729.25	8.00	130.0000	0.00
P-158	J-145I-18th St		2.66	12.00	130.0000	0.00
P-159	J-145	J-146	2.68	12.00	130.0000	0.00
P-160-CV	J-146	J-147	9.25	12.00	130.0000	0.00
P-161	J-146O-18th St		3.23	12.00	130.0000	0.00
P-162	J-147	J-142	2.67	12.00	130.0000	0.00
P-164	I-18th St	J-147	3.12	12.00	130.0000	0.00
P-165	J-155	J-156	739.67	6.00	140.0000	0.00
P-166	66	J-110	322.75	6.00	75.0000	0.00
P-167	J-153	J-156	4747.12	12.00	115.0000	0.00
P-168	J-152	J-150	15.74	8.00	115.0000	0.00
P-169	J-154	J-88	471.34	12.00	115.0000	0.00
P-170	J-155	J-151	4833.50	6.00	140.0000	0.00
P-171	J-155	J-157	658.63	2.00	140.0000	0.00
P-172	J-156	J-154	1552.65	12.00	115.0000	0.00
P-173	J-148	J-6	2664.56	2.00	130.0000	0.00
P-174	J-149	J-153	1314.60	8.00	130.0000	0.00
P-175	J-150	J-152	2094.17	8.00	115.0000	0.00
P-176	J-64	2076	1014.00	8.00	75.0000	0.00
P-177	J-160	1057	847.45	8.00	75.0000	0.00
P-178	J-159	1513	18.67	6.00	90.0000	0.00
P-179	J-160	J-162	533.75	8.00	130.0000	0.00
P-18	J-135I-South En		77.91	12.00	130.0000	0.00
P-180	J-162	J-95	1493.70	12.00	130.0000	0.00
P-181	1818	J-161	94.69	2.00	140.0000	0.00
P-182	J-163	2003	50.56	6.00	130.0000	0.00
P-183	J-164	J-143	3640.74	12.00	130.0000	0.00
P-184	J-163	J-177	465.62	8.00	130.0000	0.00
P-186	1710	J-55	952.80	8.00	130.0000	0.00
P-188	31	J-158	1171.71	12.00	130.0000	0.00
P-19	33	34	11.57	4.00	90.0000	0.00
P-190	J-167	2074	284.73	10.00	90.0000	0.00
P-193-XX	432	780	9082.35	8.00	130.0000	0.00
P-194	76	1580	1373.43	12.00	130.0000	0.00
P-195	J-170	J-176	367.83	12.00	130.0000	0.00
P-196	J-168	J-21	156.89	6.00	75.0000	0.00
P-197	J-168	1980	565.74	8.00	130.0000	0.00
P-198	J-880-South En		3066.47	12.00	115.0000	0.00
P-199	J-171	1773	557.30	8.00	130.0000	0.00
P-2	101	J-1	84.14	8.00	130.0000	0.00
P-20	1576	213	32.42	12.00	130.0000	0.00
P-200	J-169	J-91	282.63	18.00	130.0000	0.00
P-201	J-173	J-153	21062.56	8.00	115.0000	0.00
P-203	J-177	J-164	335.35	8.00	130.0000	0.00
P-25	J-30	2066	908.00	12.00	130.0000	0.00
P-29	J-8	2063	977.55	10.00	90.0000	0.00
P-3	J-60-Central1		24935.52	6.00	115.0000	0.00

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P-30	J-35	J-42	1262.05	12.00	130.0000	0.00
P-31	54	J-8	271.99	10.00	130.0000	0.00
P-33	J-42	2072	33.95	12.00	130.0000	0.00
P-34	1699	J-42	861.64	12.00	130.0000	0.00
P-36	2091	1322	322.00	6.00	75.0000	0.00
P-4	J-7	1570	1181.00	10.00	90.0000	0.00
P-40	J-44	10	918.28	8.00	90.0000	0.00
P-42	J-45	J-44	388.00	8.00	90.0000	0.00
P-43	J-132	J-170	233.32	12.00	130.0000	0.00
P-44	J-55	28	392.03	10.00	130.0000	0.00
P-47	J-57	2132	26.83	8.00	90.0000	0.00
P-48	41	J-90	18.53	10.00	90.0000	0.00
P-49	2051	J-57	16.66	8.00	90.0000	0.00
P-50	2052	J-57	17.24	8.00	90.0000	0.00
P-51	O-18th St	J-142	1.13	8.00	130.0000	0.00
P-53	J-4	1974	369.00	6.00	75.0000	0.00
P-54	923	J-4	253.57	6.00	75.0000	0.00
P-57	1217	I-AV-6	27.22	4.00	75.0000	0.00
P-58	1217	69	273.00	8.00	130.0000	0.00
P-6	J-11	J-88	987.96	8.00	115.0000	0.00
P-61	J-58	68	222.00	8.00	130.0000	0.00
P-62	J-61	J-136	302.00	8.00	130.0000	0.00
P-63	J-127	J-158	1896.96	12.00	130.0000	0.00
P-64	54	J-27	596.19	10.00	130.0000	0.00
P-65	J-67	597	417.00	8.00	90.0000	0.00
P-67	J-71	J-67	339.00	8.00	130.0000	0.00
P-69	J-73	J-71	449.75	8.00	75.0000	0.00
P-7	J-152	J-154	148.62	8.00	115.0000	0.00
P-71	J-63	J-123	21.02	8.00	130.0000	0.00
P-73	J-74	1679	128.71	6.00	90.0000	0.00
P-74	J-77	J-74	27.47	6.00	90.0000	0.00
P-75	I-AV-3	2120	128.95	6.00	90.0000	0.00
P-76	J-78	408	254.81	8.00	90.0000	0.00
P-77	J-79	1130	739.00	8.00	75.0000	0.00
P-78	J-80	504	390.06	8.00	75.0000	0.00
P-79	1396	J-82	521.89	6.00	90.0000	0.00
P-80	1388	J-87	625.00	6.00	130.0000	0.00
P-81	92	J-62	399.00	8.00	130.0000	0.00
P-82	J-84	597	632.70	8.00	90.0000	0.00
P-83	J-123	J-140	102.57	12.00	130.0000	0.00
P-84	J-93	1971	33.88	6.00	90.0000	0.00
P-86	I-High Lev	J-126	388.44	6.00	75.0000	0.00
P-87	J-94	526	1018.53	8.00	75.0000	0.00
P-88	J-93	J-94	3.82	6.00	90.0000	0.00
P-89	J-96inter-tie	1009.00	12.00	130.0000	0.00	
P-9	J-2	2098	329.00	6.00	75.0000	0.00
P-90	J-105	174	266.00	12.00	130.0000	0.00
P-91	J-20	1981	59.00	6.00	75.0000	0.00
P-92	J-21	J-20	140.66	6.00	75.0000	0.00
P-93	568	J-99	19.30	8.00	130.0000	0.00
P-94	J-99	556	294.00	8.00	130.0000	0.00
P-95	566	J-99	49.52	8.00	130.0000	0.00
P-96	J-100	2080	161.00	8.00	130.0000	0.00
P-97	J-106	894	329.00	6.00	75.0000	0.00
P-98	I-Centrali	J-173	305.94	8.00	115.0000	0.00
P-99	J-111	944	378.41	6.00	75.0000	0.00
Valley Vie	O-Valley VYankis (Va	2734.85	4.00	140.0000	0.00	

N O D E D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
5		0.40	243.40	
6		9.10	244.40	
9		3.80	205.80	
10		12.90	213.70	
11		0.20	236.90	
12		5.20	236.50	
13		0.20	198.90	
14		3.00	201.40	
15		4.20	186.10	
16		2.20	186.10	
17		14.50	175.70	
18		3.10	171.90	
19		2.00	165.30	
22		4.70	186.50	
23		10.70	187.70	
24		2.70	604.50	
26		12.20	240.30	
28		2.80	322.60	
29		1.00	319.00	
31		8.70	216.80	
32		7.90	214.70	
33		0.70	183.00	
34		5.00	183.50	
36		6.10	194.40	
37		0.80	319.00	
38		5.10	290.50	
40		7.20	190.80	
41		0.40	219.10	
43		0.20	253.50	
46		9.10	229.90	
47		2.90	544.40	
48		0.80	543.60	
49		19.70	243.00	
50		1.40	244.20	
51		9.70	240.00	
52		2.10	261.50	
54		4.90	209.30	
56		1.40	193.00	

2040 Fireflow - Main Zone West

59	0.50	252.50
60	1.80	252.90
65	9.60	192.40
66	3.10	191.30
68	6.10	205.20
69	4.40	208.70
70	1.10	285.20
72	25.40	255.00
75	21.00	247.70
76	48.80	256.00
83	0.20	221.90
85	0.20	222.10
86	7.70	222.40
89	6.40	225.60
92	8.40	192.40
97	3.40	173.90
98	0.30	174.00
101	0.40	174.30
102	6.70	176.00
103	0.30	175.70
104	6.70	179.70
107	6.70	183.60
108	2.80	183.60
109	12.40	236.20
118	25.50	192.50
119	5.60	217.70
121	3.60	230.70
137	13.20	180.00
166	9.80	182.90
172	6.20	174.10
174	3.40	175.70
175	11.00	183.60
178	3.60	183.60
192	11.80	183.60
201	5.60	178.30
212	5.90	256.30
213	3.50	253.50
214	7.60	230.10
224	5.80	224.20
247	22.00	192.10
248	13.10	248.60
253	8.50	240.90
254	30.10	230.80
295	34.50	210.10
325	7.70	183.90
342	5.10	165.40
343	10.20	163.20
344	4.60	164.20
346	0.90	165.60
356	14.00	219.10
361	16.90	243.10
375	7.60	230.50
384	16.10	183.20
385	1.80	183.60
396	1.60	221.20
398	4.60	220.50
407	8.20	226.99
408	4.30	223.30
421	7.60	184.20
424	1.80	189.90
432	65.20	184.10
468	28.10	204.20
473	2.50	178.30
474	3.10	210.70
480	10.80	219.70
481	0.30	220.90
493	2.10	214.00
492	12.90	195.50
504	9.80	192.80
505	8.70	197.20
509	14.40	200.00
510	7.90	189.60
512	10.00	184.80
513	1.10	178.80
518	4.60	182.20
526	19.20	201.80
530	5.00	220.30
536	6.30	201.90
540	1.30	202.30
543	3.30	210.90
544	2.50	216.10
552	4.90	191.50
556	6.00	206.10
565	4.30	210.80
566	2.30	204.60
568	3.40	206.30
569	10.60	178.30
573	2.20	179.00
578	2.60	280.80
579	5.50	205.50
582	7.20	212.80
584	7.30	207.60
590	8.40	208.60
597	5.60	222.20
599	8.30	592.40
601	2.10	577.30
619	3.30	559.00
620	15.00	583.00
623	2.90	588.00
628	3.60	420.40
631	4.60	382.80
632	1.40	455.20
642	2.70	304.60
649	2.70	392.70
657	12.60	331.20

2040 Fireflow - Main Zone West

661	8.20	190.90	
665	11.70	174.40	
668	18.20	182.30	
675	2.30	180.60	
676	4.10	206.70	
682	0.80	209.20	
683	5.60	200.30	
686	1.50	278.90	
693	10.30	197.40	
700	0.10	237.50	
704	3.70	190.10	
705	7.20	185.50	
710	22.00	197.50	
717	9.90	204.90	
718	0.20	191.20	
726	2.40	190.00	
780	55.20	195.00	
781	0.10	252.20	
784	8.40	259.80	
788	24.50	258.50	
791	7.60	256.00	
792	0.60	254.90	
797	6.20	255.30	
800	5.80	177.30	
802	1.30	178.00	
803	9.70	217.90	
807	11.50	272.60	
808	7.30	215.50	
813	6.90	244.90	
815	5.40	219.20	
817	6.60	275.20	
827	9.70	186.80	
828	4.40	192.50	
831	2.90	216.90	
842	5.20	234.00	
844	7.10	260.00	
856	4.40	194.40	
860	3.90	230.20	
865	4.10	195.90	
868	4.20	197.00	
872	1.60	199.50	
881	4.00	199.80	
885	4.60	204.20	
893	4.10	198.10	
894	1.60	206.30	
899	9.80	192.10	
901	9.50	189.00	
906	3.40	292.50	
910	2.50	294.90	
916	8.10	222.40	
922	1.60	238.30	
923	5.40	182.20	
929	1.10	181.60	
937	5.30	183.80	
944	5.90	196.50	
945	5.40	192.00	
954	4.30	193.70	
958	10.00	201.60	
961	2.30	205.40	
962	6.00	179.30	
964	0.40	179.40	
975	10.50	184.50	
979	2.20	173.70	
994	8.60	192.30	
1003	8.30	435.80	
1023	10.00	389.60	
1024	4.70	408.40	
1032	6.80	455.00	
1049	5.20	421.50	
1050	9.50	188.20	
1053	5.90	183.20	
1056	3.00	192.00	
1057	8.90	179.20	
1060	9.80	196.50	
1063	2.50	238.10	
1064	4.40	181.30	
1071	4.30	190.50	
1084	17.80	198.50	
1085	6.60	197.60	
1089	3.60	190.70	
1099	15.70	233.90	
1100	1.10	339.70	
1101	2.30	323.20	
1103	6" and 2"	8.20	346.40
1104		0.70	285.50
1107		4.80	211.40
1120		2.10	222.90
1121		3.30	205.30
1122		1.20	204.40
1125		3.00	205.00
1130		8.50	225.00
1134		10.70	202.90
1137		6.50	202.10
1156		9.30	184.90
1180		6.10	195.40
1181		5.20	186.00
1183		3.00	190.20
1184		8.70	189.70
1186		4.90	191.30
1210		6.80	215.60
1211		0.40	564.40
1214		3.10	607.60
1215		2.70	200.80
1217		6.10	207.80
1218		9.80	217.60

2040 Fireflow - Main Zone West

1223	4.10	187.20
1224	5.80	187.60
1229	5.90	224.40
1232	10.30	183.90
1235	7.80	197.20
1239	2.70	265.90
1240	0.20	608.90
1244	8.00	591.00
1251	9.70	622.30
1262	0.40	349.90
1270	2.60	184.30
1277	9.10	340.00
1284	7.50	224.00
1290	10.00	207.20
1293	5.20	206.60
1295	6.10	200.40
1298	0.90	224.20
1309	10.00	185.00
1310	7.80	184.40
1314	6.30	183.00
1318	5.50	221.20
1322	4.90	194.60
1328	4.90	192.30
1333	4.60	191.30
1337	5.30	192.80
1338	12.10	257.70
1356	3.40	190.80
1359	1.10	193.30
1364	4.60	193.90
1366	7.00	190.60
1375	13.20	168.30
1387	4.40	182.40
1388	8.20	200.40
1392	6.80	220.30
1396	2.40	308.10
1409	7.80	222.20
1410	2.90	392.50
1456	4.40	183.20
1465	4.30	235.70
1483	7.90	193.40
1484	19.20	183.60
1497	3.50	167.20
1498	2.10	396.40
1502	5.20	385.30
1513	1.00	339.40
1517	7.50	205.40
1519	1.30	211.30
1524	1.70	615.60
1544	22.50	194.80
1547	18.00	208.00
1570	13.30	195.50
1575	10.60	171.60
1576	2.30	253.70
1580	8.90	245.80
1626	25.50	272.90
1627	15.00	289.00
1630	40.10	266.70
1636	242.01	245.70
1637	34.90	249.10
1647	35.40	236.20
1648	35.80	187.30
1657	9.60	176.60
1658	9.50	185.90
1674	11.00	178.00
1679	4.20	317.70
1689	4.10	323.60
1690	0.60	319.70
1698	7.10	256.80
1699	7.80	218.90
1700	3.70	216.20
1710	9.30	303.90
1711	1.00	209.80
1712	2.30	268.50
1713	2.20	571.10
1716	9.70	533.50
1719	0.90	516.50
1737	8.20	166.60
1742	13.20	183.60
1767	5.00	193.40
1773	4.70	272.20
1775	2.30	270.10
1776	6.70	269.20
1782	12.10	269.10
1788	8.40	269.00
1791	1.20	273.40
1793	1.60	270.60
1799	4.20	201.40
1800	3.70	166.10
1801	1.10	173.70
1805	3.40	179.70
1806	2.00	173.10
1808	1.90	179.80
1809	3.20	172.30
1810	6.00	179.50
1813	4.70	171.10
1814	8.70	167.10
1818	3.70	178.50
1821	6.70	169.80
1823	3.60	182.50
1826	5.20	183.30
1827	9.30	192.90
1831	2.80	234.10
1948	1.50	234.90
1960	6.20	237.60
1961	4.60	190.10

2040 Fireflow - Main Zone West

1968	0.60	164.90
1971	0.20	185.30
1973	3.90	198.40
1974	6.40	187.50
1975	6.20	186.60
1980	5.00	180.20
1981	1.80	183.10
1984	5.10	194.10
1985	0.30	195.20
1986	5.70	194.50
1987	5.40	198.50
1988	0.20	219.50
1989	2.10	222.30
1991	4.80	194.20
1994	1.00	190.70
1996	5.70	189.80
1997	5.60	191.50
2003	0.20	185.20
2007	4.30	200.60
2009	5.60	196.90
2010	6.60	191.70
2012	5.60	199.00
2013	4.90	200.10
2014	8.10	193.20
2016	7.30	222.30
2021	1.10	204.20
2023	0.80	206.90
2025	3.10	455.60
2028	1.80	520.90
2029	1.60	449.00
2030	1.00	460.10
2031	4.10	430.90
2032	1.20	484.00
2033	2.90	474.20
2047	1.00	309.00
2050	0.20	301.10
2051	0.10	229.60
2052	0.10	229.90
2053	6.00	220.60
2061	1.60	208.20
2063	10.40	205.00
2065	7.70	198.90
2066	5.70	222.20
2067	11.20	216.20
2072	10.70	221.90
2073	4.30	199.80
2074	3.40	220.90
2076	11.30	204.40
2078	5.30	199.20
2079	5.60	203.10
2080	6.70	191.60
2081	5.90	198.70
2083	11.50	255.40
2084	7.50	224.10
2086	7.60	230.30
2088	12.10	604.50
2090	12.90	391.30
2091	6.60	195.30
2092	3.20	251.60
2093	8.30	236.00
2094	9.30	188.50
2095	6.50	187.60
2096	4.60	196.50
2097	6.80	202.50
2098	7.00	202.10
2100	9.40	197.30
2101	10.80	270.60
2103	11.70	236.90
2104	5.10	200.50
2105	7.80	201.90
2106	3.50	192.10
2107	8.50	190.50
2109	6.50	190.80
2110	4.80	192.70
2111	4.10	191.00
2112	8.90	190.20
2113	7.40	195.50
2115	6.30	191.90
2117	5.50	217.50
2119	9.50	193.60
2120	5.30	268.60
2121	4.60	193.00
2122	7.80	183.70
2123	5.70	193.20
2125	1.70	206.20
2126	3.60	192.50
2127	11.50	203.70
2129	6.20	218.10
2130	4.80	198.00
2132	2.80	230.10
2133	5.70	578.00
2137	7.70	198.20
2138	10.10	221.50
I-18th St	0.00	218.20
O-18th St	0.00	218.20
3-in or sm	0.20	185.50
3-inch or	0.50	183.00
3-inch or	0.20	183.10
O-AV-1	0.00	283.80
I-AV-2	0.00	306.00
I-AV-3	0.00	253.40
O-AV-4	0.00	289.30
O-AV-5	0.00	225.30
O-AV-6	0.00	208.10
O-Centrall	----	333.50

541.19

2040 Fireflow - Main Zone West

O-Fairview	Fairview PRV	----	346.50	466.50
O-High Lev	High Level P	0.00	401.60	
High Level	High Level R	----	605.00	605.00
Hillcrest		0.40	256.20	
inter-tie		4.70	174.40	
J-1		5.80	174.00	
J-100		1.20	190.60	
J-105		4.20	175.60	
J-106		4.60	206.20	
J-11		4.60	280.00	
J-110		8.00	198.00	
J-111		3.20	192.50	
J-112		8.40	167.90	
J-113		4.00	200.50	
J-114		18.30	405.70	
J-115		3.00	197.30	
J-116		3.10	207.10	
J-117		2.70	192.10	
J-120		4.00	237.50	
J-122		4.30	174.00	
J-123		0.60	224.70	
J-124		3.40	403.80	
J-125		3.30	383.00	
J-126		5.40	367.95	
J-127		45.90	225.20	
J-128		23.90	235.20	
J-129		13.70	184.80	
J-130		6.20	222.00	
J-131		0.90	418.00	
J-132		4.80	176.00	
J-133		1.40	339.60	
J-134		2.00	200.90	
J-135		3.20	288.30	
J-136		1.40	204.10	
J-138		1.70	219.60	
J-139		0.80	222.60	
J-140		0.90	218.20	
J-141		0.80	200.90	
J-142		0.40	218.20	
J-143		17.00	186.90	
J-144		3.10	186.80	
J-145		0.20	218.20	
J-146		0.00	218.20	
J-147		0.00	218.20	
J-148		12.30	498.90	
J-149		6.10	306.10	
J-150		9.80	272.40	
J-151		22.40	326.80	
J-152		10.50	272.40	
J-153		125.60	302.40	
J-154		10.10	267.60	
J-155		28.80	263.80	
J-156		32.60	261.30	
J-157		3.00	265.80	
J-158		14.20	211.40	
J-159		0.60	343.00	
J-160		7.50	172.60	
J-161		0.40	178.60	
J-162		11.50	183.00	
J-163		6.50	183.70	
J-164		20.60	177.50	
J-167		4.50	0.00	
J-168		4.80	0.00	
J-169		10.90	413.50	
J-170		2.80	174.50	
J-171		3.50	286.90	
J-173		100.30	329.80	
J-176		1.70	166.40	
J-177		3.80	179.10	
J-2		9.40	201.80	
J-20		3.60	182.90	
J-21		2.50	182.80	
J-25		8.20	311.10	
J-27		6.90	207.10	
J-3		5.50	182.20	
J-30		12.80	219.90	
J-35		13.60	222.10	
J-39		6.70	218.10	
J-4		4.20	184.40	
J-42		10.00	222.00	
J-44		10.10	208.40	
J-45		7.00	209.00	
J-53		15.80	294.30	
J-55		8.70	297.10	
J-57		2.20	229.20	
J-58		2.50	204.60	
J-6		13.89	473.40	
J-61		7.10	207.00	
J-62		1.80	191.50	
J-63		2.20	225.20	
J-64		6.80	202.30	
J-67		3.50	210.80	
J-7		5.80	214.70	
J-71		3.70	204.60	
J-73		10.50	199.60	
J-74		1.70	301.00	
J-77		1.00	296.10	
J-78		8.60	230.70	
J-79		4.50	223.40	
J-8		10.70	208.80	
J-80		8.20	190.70	
J-81		11.10	218.90	
J-82		10.80	257.90	
J-84		3.80	226.30	
J-87		7.00	194.40	

J-88		35.00	275.70	
J-90		0.10	219.10	
J-91		6.50	352.90	
J-93		2.80	187.50	
J-94		6.00	187.50	
J-95		19.80	189.50	
J-96		10.80	176.90	
J-99		1.90	205.50	
Kennicott	Kennicott Re	----	374.00	397.90
Main Reser	Main Reservo	----	383.30	400.20
physical d		0.10	222.00	
I-RV-1		0.00	186.80	
I-RV-2		0.00	200.90	
O-South En		----	287.90	495.59
O-Valley V	Valley View	0.00	308.10	
Yankis (Va	Yankis (Vall	----	631.50	635.90
Yates Rese	500,000 gal	----	376.00	400.20
O-18th St		----	218.20	389.66
I-18th St		0.00	218.20	
I-AV-1		0.00	283.80	
O-AV-2		0.00	306.00	
O-AV-3		0.00	253.40	
I-AV-4		0.00	289.30	
I-AV-5		0.00	225.30	
I-AV-6		0.00	208.10	
I-Centrali		0.00	333.50	
I-Fairview	Fairview PRV	0.00	346.50	
I-High Lev	High Level P	0.00	401.60	
O-RV-1		----	186.80	382.95
O-RV-2		----	200.90	389.67
I-South En		0.00	287.90	
I-Valley V	Valley View	0.00	308.10	

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 5
 MAXIMUM AND MINIMUM VELOCITIES = 5
 MAXIMUM AND MINIMUM HEAD LOSS/1000 = 5

SUPPLY ZONE DATA

THIS SYSTEM HAS MULTIPLE SUPPLY ZONES

ZONE NO. 1 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@18th St FRV ~@RV-2 ~@RV-1~@Yankis (Valley V
 ~@Fairview PRV~@Kennicott Reserv~@High Level Reser ~@Main Reservoir
 ~@Yates Reservoir

ZONE NO. 2 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@Centralia Alpha

ZONE NO. 3 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@South End Pump S

SYSTEM CONFIGURATION

NUMBER OF PIPES(P) = 734
 NUMBER OF END NODES(J) = 575
 NUMBER OF PRIMARY LOOPS(L) = 155
 NUMBER OF SUPPLY NODES(F) = 7
 NUMBER OF SUPPLY ZONES(Z) = 3

Case: 0

RESULTS OBTAINED AFTER 26 TRIALS: ACCURACY = 0.69736E-03

SIMULATION DESCRIPTION (LABEL)

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS		FLOWRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/ 1000 ft/f	HL/ 1000 ft/f
	#1	#2						
3	6	5	188.40	0.01	0.00	0.77	0.55	0.55
5	10	9	3.80	0.00	0.00	0.02	0.00	0.00
6	12	11	0.20	0.00	0.00	0.00	0.00	0.00
7	872	13	0.20	0.00	0.00	0.00	0.00	0.00
8	15	16	22.91	0.00	0.00	0.26	0.13	0.13
10	18	19	2.00	0.06	0.00	0.20	0.14	0.14
12	22	23	18.47	0.01	0.00	0.12	0.01	0.01
13	24	1524	1.70	0.00	0.00	0.04	0.00	0.00
14	J-55	26	70.00	0.02	0.00	0.29	0.04	0.04
16	28	29	1.00	0.00	0.00	0.00	0.00	0.00
17	32	31	7.97	0.00	0.00	0.02	0.00	0.00
21	38	37	0.80	0.00	0.00	0.02	0.00	0.00
22	2014	40	8.76	0.00	0.00	0.06	0.00	0.00
23	41	1699	80.60	0.00	0.00	0.23	0.02	0.02

2040 Fireflow - Main Zone West

24	213	43	0.20	0.00	0.00	0.00	0.00	0.00
26	47	48	0.80	0.00	0.00	0.02	0.00	0.00
27	49	50	1.40	0.00	0.00	0.01	0.00	0.00
28	51	52	3.20	0.00	0.00	0.02	0.00	0.00
32	60	59	0.50	0.00	0.00	0.01	0.00	0.00
35	65	66	57.13	0.30	0.00	0.65	1.02	1.02
37	68	69	9.85	0.00	0.00	0.06	0.00	0.00
38	52	70	1.10	0.00	0.00	0.01	0.00	0.00
39	72Hillcrest		0.40	0.00	0.00	0.01	0.00	0.00
41	75	76	84.58	0.09	0.00	0.24	0.03	0.03
45	2066	83	0.20	0.00	0.00	0.00	0.00	0.00
46	86	85	0.20	0.00	0.00	0.00	0.00	0.00
52	97	98	0.30	0.00	0.00	0.00	0.00	0.00
55	102	103	0.30	0.00	0.00	0.00	0.00	0.00
56	1810	104	6.65	0.00	0.00	0.02	0.00	0.00
59	107	108	8.87	0.00	0.00	0.03	0.00	0.00
60	J-53	109	688.11	0.25	0.00	1.10	0.31	0.31
66	J-169	118	538.54	1.56	0.00	1.12	0.75	0.75
68	121	119	216.94	0.14	0.00	0.45	0.20	0.20
70	860	121	330.71	0.01	0.00	0.69	0.43	0.43
72	118	1799	4.20	0.00	0.00	0.03	0.00	0.00
85	396physical d		0.10	0.00	0.00	0.00	0.00	0.00
107	J-91	2067	1642.36	0.84	0.00	2.07	0.88	0.88
109	325	34	45.87	0.00	0.00	0.13	0.01	0.01
110	166	2122	96.67	0.03	0.00	0.27	0.03	0.03
112	962	166	34.01	0.00	0.00	0.10	0.00	0.00
114	569	962	40.41	0.00	0.00	0.11	0.01	0.01
115	665	569	53.21	0.02	0.00	0.15	0.01	0.01
118	J-105	172	23.04	0.00	0.00	0.07	0.00	0.00
120	178	175	103.85	0.01	0.00	0.29	0.04	0.04
123	1826	178	122.77	0.02	0.00	0.35	0.05	0.05
126	1827	1826	143.18	0.02	0.00	0.41	0.07	0.07
129	192	1827	262.31	0.35	0.00	0.74	0.21	0.21
137	201	192	254.48	0.05	0.00	0.72	0.20	0.20
139	137	201	301.19	0.11	0.00	0.85	0.27	0.27
141	137	15	146.50	0.03	0.00	0.42	0.07	0.07
142	15	J-162	119.39	0.02	0.00	0.34	0.05	0.05
145	201	J-93	41.11	0.01	0.00	0.12	0.01	0.01
155	212	213	70.66	0.01	0.00	0.20	0.02	0.02
156	26	214	219.46	0.25	0.00	0.62	0.15	0.15
163	2072	224	5.80	0.00	0.00	0.02	0.00	0.00
187	248	253	8.50	0.00	0.00	0.02	0.00	0.00
192	254	J-127	252.65	0.30	0.00	0.72	0.20	0.20
262	325	1575	34.01	0.00	0.00	0.10	0.00	0.00
279	344	343	19.80	0.00	0.00	0.06	0.00	0.00
280	342	344	27.90	0.00	0.00	0.08	0.00	0.00
282	342	346	0.90	0.00	0.00	0.00	0.00	0.00
283	86	J-130	6.20	0.00	0.00	0.02	0.00	0.00
292	361	356	105.10	0.43	0.00	0.43	0.19	0.19
298	J-7	32	46.57	0.00	0.00	0.19	0.04	0.04
302	32	480	30.70	0.02	0.00	0.13	0.02	0.02
318	384	385	74.26	0.01	0.00	0.30	0.05	0.05
319	356	J-167	10.00	0.00	0.00	0.04	0.00	0.00
320	356	41	81.10	0.00	0.00	0.33	0.12	0.12
329	396	398	403.32	0.10	0.00	1.65	3.18	3.18
331	398	1409	176.16	0.21	0.00	0.72	0.68	0.68
340	407	408	91.09	0.13	0.00	0.37	0.20	0.20
353	2119	661	21.85	0.06	0.00	0.25	0.17	0.17
355	1648	424	14.06	0.00	0.00	0.06	0.00	0.00
363	295	468	83.30	0.20	0.00	0.34	0.06	0.06
398	172	473	2.50	0.00	0.00	0.01	0.00	0.00
403	480	474	3.10	0.00	0.00	0.02	0.00	0.00
411	2129	J-45	52.97	0.12	0.00	0.34	0.16	0.16
414	1217	1121	5.30	0.00	0.00	0.03	0.00	0.00
417	1235	492	56.92	0.10	0.00	0.36	0.25	0.25
429	505	509	52.05	0.11	0.00	0.33	0.21	0.21
433	512	510	0.43	0.00	0.00	0.00	0.00	0.00
435	J-160	513	1.10	0.00	0.00	0.01	0.00	0.00
440	518	J-94	6.91	0.00	0.00	0.04	0.01	0.01
448	1184	92	39.55	0.04	0.00	0.25	0.05	0.05
451	119	530	81.66	0.02	0.00	0.52	0.49	0.49
452	119	536	129.68	0.53	0.00	0.83	1.15	1.15
458	536	2079	55.56	0.15	0.00	0.35	0.24	0.24
461	540	2079	1.94	0.00	0.00	0.01	0.00	0.00
464	544	543	49.18	0.09	0.00	0.31	0.19	0.19
472	552	J-100	113.49	0.09	0.00	0.72	0.90	0.90
476	I-AV-1	J-114	0.00	0.00	0.00	0.00	0.00	0.00
486	569	573	2.20	0.00	0.00	0.01	0.00	0.00
490	385	166	72.46	0.03	0.00	0.46	0.12	0.12
495	J-138	579	38.42	0.01	0.00	0.25	0.04	0.04
497	582	584	34.18	0.02	0.00	0.22	0.04	0.04
503	J-73	590	0.02	0.00	0.00	0.00	0.00	0.00
511	599	601	2.10	0.00	0.00	0.01	0.00	0.00
526	599	619	3.30	0.00	0.00	0.02	0.00	0.00
531	620	623	2.90	0.00	0.00	0.02	0.00	0.00
538	628	631	57.30	0.02	0.00	0.37	0.18	0.18
541	1049	632	1.40	0.00	0.00	0.01	0.00	0.00
547	631	642	2.70	0.00	0.00	0.02	0.00	0.00
552	High Level	2090	148.00	0.20	0.00	0.60	0.18	0.18
565	509	661	60.85	0.38	0.00	0.39	0.28	0.28
569	1284	597	42.49	0.02	0.00	0.27	0.10	0.10
571	2086	46	89.92	0.21	0.00	0.57	0.42	0.42
574	668	665	50.57	0.06	0.00	0.32	0.07	0.07
577	668	675	2.30	0.00	0.00	0.01	0.00	0.00
584	J-27	676	4.10	0.00	0.00	0.02	0.00	0.00
590	54	682	0.80	0.00	0.00	0.01	0.00	0.00
591	J-95	683	8.90	0.00	0.00	0.06	0.01	0.01
593	J-78	686	1.50	0.00	0.00	0.01	0.00	0.00
597	408	J-79	164.01	0.04	0.00	1.05	1.78	1.78
601	361	1960	66.00	0.30	0.00	0.42	0.24	0.24
612	710	705	25.94	0.01	0.00	0.17	0.02	0.02
617	717	1134	4.73	0.00	0.00	0.03	0.00	0.00
623	247	718	0.20	0.00	0.00	0.00	0.00	0.00
630	424	726	86.76	0.05	0.00	0.55	0.55	0.55
632	726	J-80	17.36	0.01	0.00	0.11	0.03	0.03

2040 Fireflow - Main Zone West

652	468	780	55.20	0.24	0.00	0.35	0.09	0.09
684	2092	781	0.10	0.00	0.00	0.00	0.00	0.00
686	784	1698	13.16	0.00	0.00	0.08	0.01	0.01
690	788	791	17.86	0.01	0.00	0.11	0.01	0.01
693	791	792	0.60	0.00	0.00	0.00	0.00	0.00
697	797	784	11.89	0.00	0.00	0.08	0.00	0.00
700	800	802	1.30	0.00	0.00	0.01	0.00	0.00
702	803	1465	34.19	0.11	0.00	0.39	0.40	0.40
706	2009	808	10.03	0.04	0.00	0.11	0.04	0.04
710	815	813	30.71	0.10	0.00	0.35	0.32	0.32
712	121	2093	110.17	0.16	0.00	1.25	3.45	3.45
714	2094	40	18.99	0.04	0.00	0.22	0.05	0.05
723	2096	828	15.06	0.04	0.00	0.17	0.09	0.09
726	831	544	51.68	0.06	0.00	0.59	0.85	0.85
727	530	831	73.19	0.54	0.00	0.83	1.62	1.62
735	831	1989	18.61	0.03	0.00	0.21	0.13	0.13
739	844	842	8.12	0.02	0.00	0.10	0.03	0.03
741	817	844	92.14	0.05	0.00	0.38	0.07	0.07
749	J-115	856	15.45	0.02	0.00	0.18	0.09	0.09
751	2078	14	22.91	0.05	0.00	0.26	0.19	0.19
753	860	2097	42.53	0.34	0.00	0.48	0.59	0.59
757	868	865	17.53	0.03	0.00	0.20	0.11	0.11
760	J-113	868	6.86	0.01	0.00	0.08	0.02	0.02
762	872	868	14.87	0.02	0.00	0.17	0.08	0.08
772	2098	881	2.50	0.00	0.00	0.03	0.00	0.00
776	J-111	885	20.11	0.05	0.00	0.23	0.15	0.15
784	J-106	893	3.82	0.00	0.00	0.04	0.01	0.01
785	J-110	893	27.36	0.11	0.00	0.31	0.26	0.26
789	899	66	23.50	0.01	0.00	0.27	0.20	0.20
791	901	899	46.78	0.12	0.00	0.53	0.71	0.71
793	901	1742	55.21	1.08	0.00	0.63	0.96	0.96
797	910	906	3.40	0.00	0.00	0.02	0.00	0.00
801	910	38	70.02	0.01	0.00	0.29	0.04	0.04
807	842	2084	20.23	0.05	0.00	0.23	0.15	0.15
812	916	922	1.60	0.00	0.00	0.01	0.00	0.00
814	J-20	923	1.78	0.00	0.00	0.01	0.00	0.00
817	J-21	929	1.10	0.00	0.00	0.01	0.00	0.00
823	J-2	937	16.65	0.03	0.00	0.19	0.04	0.04
825	556	J-2	24.12	0.10	0.00	0.27	0.21	0.21
831	2080	945	30.11	0.15	0.00	0.34	0.31	0.31
839	2081	954	17.20	0.05	0.00	0.20	0.11	0.11
846	962	964	0.40	0.00	0.00	0.00	0.00	0.00
858	1314	1387	31.55	0.16	0.00	0.81	2.46	2.46
861	108	104	6.07	0.01	0.00	0.07	0.01	0.01
867	J-110	958	42.17	0.05	0.00	0.27	0.05	0.05
874	994	65	30.21	0.23	0.00	0.34	0.31	0.31
876	65	1986	46.98	0.47	0.00	0.53	0.71	0.71
883	1003	1023	27.76	0.01	0.00	0.18	0.02	0.02
903	J-125	1024	65.60	0.04	0.00	0.42	0.12	0.12
905	O-High Lev	649	0.00	0.00	0.00	0.00	0.00	0.00
910	1024	628	60.90	0.07	0.00	0.39	0.10	0.10
912	1003	1032	7.34	0.01	0.00	0.08	0.02	0.02
930	1050	1053	5.90	0.01	0.00	0.07	0.01	0.01
933	384	2100	7.94	0.03	0.00	0.09	0.03	0.03
936	16	1057	20.51	0.05	0.00	0.23	0.11	0.11
938	1060	1063	4.00	0.00	0.00	0.05	0.00	0.00
941	J-129	1064	4.40	0.00	0.00	0.03	0.00	0.00
948	526	1071	62.88	0.27	0.00	0.71	0.87	0.87
949	1084	526	43.06	0.15	0.00	0.27	0.05	0.05
962	1085	1337	5.28	0.01	0.00	0.06	0.01	0.01
966	1099	J-78	87.33	0.27	0.00	0.56	0.20	0.20
975	1101	1100	1.10	0.00	0.00	0.01	0.00	0.00
976	O-Fairview	1101	24.90	0.02	0.00	0.28	0.16	0.16
982	J-81	2103	3.45	0.00	0.00	0.04	0.01	0.01
993	1121	1122	1.20	0.00	0.00	0.01	0.00	0.00
994	2076	2127	37.59	0.01	0.00	0.24	0.04	0.04
1000	1130	1125	3.00	0.00	0.00	0.02	0.00	0.00
1001	J-73	2104	12.17	0.04	0.00	0.14	0.06	0.06
1003	2104	1134	5.97	0.00	0.00	0.07	0.02	0.02
1004	509	1290	34.88	0.20	0.00	0.40	0.41	0.41
1007	2105	1137	27.83	0.09	0.00	0.32	0.27	0.27
1009	2013	1388	48.29	0.20	0.00	0.55	0.75	0.75
1012	2107	2106	53.36	0.53	0.00	0.61	0.90	0.90
1014	23	510	29.30	0.28	0.00	0.33	0.30	0.30
1017	2137	2109	39.46	0.24	0.00	0.45	0.52	0.52
1019	2109	2094	58.42	0.35	0.00	0.66	1.07	1.07
1020	2094	23	44.15	0.09	0.00	0.50	0.64	0.64
1023	23	1156	22.61	0.09	0.00	0.26	0.18	0.18
1024	2073	2096	25.68	0.05	0.00	0.29	0.23	0.23
1025	2096	2110	20.20	0.04	0.00	0.23	0.15	0.15
1026	1997	2110	0.79	0.00	0.00	0.01	0.00	0.00
1028	2111	1997	24.93	0.05	0.00	0.28	0.22	0.22
1030	2112	2111	55.06	0.26	0.00	0.62	0.96	0.96
1032	2113	1961	23.31	0.08	0.00	0.26	0.19	0.19
1035	704	1961	15.98	0.03	0.00	0.18	0.10	0.10
1036	1961	2109	34.69	0.12	0.00	0.39	0.41	0.41
1037	2010	2014	42.62	0.38	0.00	0.48	0.60	0.60
1040	2012	2013	76.99	0.58	0.00	0.87	1.78	1.78
1041	2065	2012	10.32	0.01	0.00	0.12	0.04	0.04
1042	2137	2065	5.41	0.00	0.00	0.06	0.01	0.01
1043	2137	2113	19.23	0.04	0.00	0.22	0.14	0.14
1044	1180	2113	70.93	0.41	0.00	0.80	1.53	1.53
1046	22	1181	24.54	0.02	0.00	0.28	0.21	0.21
1047	2095	22	47.71	0.13	0.00	0.54	0.73	0.73
1048	726	1184	67.00	0.00	0.00	0.43	0.12	0.12
1051	1996	1186	22.54	0.05	0.00	0.26	0.18	0.18
1053	827	1232	4.02	0.01	0.00	0.05	0.01	0.01
1058	1232	1156	10.45	0.03	0.00	0.12	0.04	0.04
1060	1156	512	23.77	0.19	0.00	0.27	0.20	0.20
1062	512	2107	13.33	0.05	0.00	0.15	0.07	0.07
1064	2115	2107	26.69	0.04	0.00	0.30	0.25	0.25
1069	2117	2065	52.60	0.51	0.00	0.60	0.88	0.88
1071	1210	2137	71.80	0.91	0.00	0.91	1.56	1.56
1074	1713	1211	0.40	0.00	0.00	0.00	0.00	0.00
1076	24	1713	46.30	0.06	0.00	0.53	0.25	0.25

2040 Fireflow - Main Zone West

1077	1215	J-58	22.60	0.01	0.00	0.14	0.02	0.02
1078	68	1217	4.15	0.00	0.00	0.05	0.00	0.00
1080	1218	2112	67.71	1.47	0.00	0.77	1.40	1.40
1083	2112	1223	41.84	0.19	0.00	0.47	0.58	0.58
1085	2111	1224	1.76	0.00	0.00	0.02	0.00	0.00
1087	1333	1085	14.72	0.03	0.00	0.17	0.08	0.08
1088	1085	808	2.84	0.00	0.00	0.03	0.00	0.00
1090	808	1229	5.56	0.00	0.00	0.06	0.01	0.01
1091	1181	1232	16.74	0.05	0.00	0.19	0.11	0.11
1094	1483	1235	12.00	0.02	0.00	0.14	0.06	0.06
1095	2120	1104	0.70	0.00	0.00	0.01	0.00	0.00
1096	2120	1239	2.70	0.00	0.00	0.03	0.00	0.00
1099	1214	1240	0.20	0.00	0.00	0.00	0.00	0.00
1100	1244	1214	107.10	0.56	0.00	1.22	1.18	1.18
1103	1251	1244	60.64	0.23	0.00	0.69	0.41	0.41
1110	Yankis (Va	1251	124.80	0.66	0.00	1.42	1.57	1.57
1116	J-25	1513	39.80	0.00	0.00	0.16	0.02	0.02
1117	J-159	1277	9.50	0.00	0.00	0.11	0.03	0.03
1118	1277	1262	0.40	0.00	0.00	0.00	0.00	0.00
1120	657	J-25	48.00	0.04	0.00	0.20	0.02	0.02
1125	1181	1270	2.60	0.00	0.00	0.02	0.00	0.00
1127	1099	2103	9.64	0.01	0.00	0.06	0.00	0.00
1132	1277	I-AV-4	0.00	0.00	0.00	0.00	0.00	0.00
1138	579	693	32.92	0.32	0.00	0.37	0.37	0.37
1140	1284	O-AV-3	0.00	0.00	0.00	0.00	0.00	0.00
1146	1290	2119	26.72	0.12	0.00	0.30	0.09	0.09
1148	1293	1295	30.62	0.04	0.00	0.35	0.12	0.12
1150	398	2016	150.61	0.04	0.00	0.96	0.55	0.55
1152	1120	1298	0.90	0.00	0.00	0.01	0.00	0.00
1154	432	1309	10.00	0.06	0.00	0.11	0.03	0.03
1165	1310	1314	8.17	0.23	0.00	0.21	0.20	0.20
1169	2127	J-61	10.30	0.01	0.00	0.12	0.02	0.02
1171	1318	2105	16.65	0.44	0.00	0.43	0.75	0.75
1173	2105	1322	10.14	0.14	0.00	0.26	0.30	0.30
1178	40	2115	20.55	0.33	0.00	0.52	1.11	1.11
1179	2115	1328	17.17	0.47	0.00	0.44	0.80	0.80
1182	803	J-81	9.45	0.17	0.00	0.24	0.26	0.26
1185	1333	1337	4.95	0.04	0.00	0.13	0.08	0.08
1189	807	1338	17.12	0.01	0.00	0.11	0.01	0.01
1193	518	192	14.69	0.04	0.00	0.38	0.60	0.60
1195	1060	192	4.94	0.05	0.00	0.13	0.08	0.08
1198	705	1060	18.74	1.23	0.00	0.48	0.94	0.94
1205	492	J-80	10.69	0.02	0.00	0.12	0.02	0.02
1208	828	1356	9.56	0.07	0.00	0.24	0.27	0.27
1210	828	1359	1.10	0.00	0.00	0.03	0.00	0.00
1211	1364	1984	4.02	0.00	0.00	0.05	0.00	0.00
1212	1364	1991	1.45	0.00	0.00	0.02	0.00	0.00
1214	1212	1364	10.07	0.09	0.00	0.26	0.30	0.30
1215	1366	36	1.70	0.00	0.00	0.02	0.00	0.00
1217	1251	1244	54.46	0.23	0.00	0.62	0.34	0.34
1226	17	1375	5.35	0.16	0.00	0.14	0.07	0.07
1236	1387	17	24.95	0.45	0.00	0.64	1.13	1.13
1239	1392	1388	19.03	0.56	0.00	0.49	0.96	0.96
1244	33	1314	29.69	0.20	0.00	0.76	1.57	1.57
1245	937	1456	11.35	0.01	0.00	0.13	0.05	0.05
1247	1456	384	5.45	0.00	0.00	0.06	0.01	0.01
1248	1396I-Valley V		0.00	0.00	0.00	0.00	0.00	0.00
1258	1409	505	10.99	0.38	0.00	0.28	0.35	0.35
1261	1410	657	3.06	0.01	0.00	0.08	0.02	0.02
1269	1023	I-AV-2	0.00	0.00	0.00	0.00	0.00	0.00
1309	1456	881	1.50	0.00	0.00	0.02	0.00	0.00
1315	895	1056	8.21	0.04	0.00	0.21	0.14	0.14
1319	1465	2103	5.61	0.06	0.00	0.14	0.10	0.10
1322	407	509	58.08	0.31	0.00	0.66	0.38	0.38
1330	492	693	0.99	0.00	0.00	0.01	0.00	0.00
1338	1295	1483	24.52	0.07	0.00	0.28	0.08	0.08
1340	899	1484	13.48	0.96	0.00	0.34	0.51	0.51
1351	344	1497	3.50	0.01	0.00	0.09	0.02	0.02
1354	1502	1498	2.10	0.00	0.00	0.01	0.00	0.00
1358	J-133	1502	27.30	0.00	0.00	0.11	0.01	0.01
1371	1517	1519	1.30	0.02	0.00	0.13	0.07	0.07
1384	J-95	1544	56.00	0.06	0.00	0.16	0.02	0.02
1388	1544	1547	30.12	0.00	0.00	0.09	0.00	0.00
1389	1547	J-96	15.50	0.00	0.00	0.04	0.00	0.00
1396	1544	1547	3.38	0.00	0.00	0.02	0.00	0.00
1401	668	1674	79.24	0.03	0.00	0.22	0.02	0.02
1404	1674	102	30.50	0.00	0.00	0.09	0.00	0.00
1406	102	J-1	23.50	0.00	0.00	0.07	0.00	0.00
1409	92	J-164	29.35	0.00	0.00	0.08	0.00	0.00
1423	421	107	70.60	0.02	0.00	0.20	0.02	0.02
1426	34	1575	10.49	0.00	0.00	0.03	0.00	0.00
1427	1576	248	64.66	0.01	0.00	0.18	0.02	0.02
1429	248	1580	43.06	0.00	0.00	0.12	0.01	0.01
1433	51	26	161.67	0.04	0.00	0.46	0.09	0.09
1435	109	51	174.57	0.14	0.00	0.50	0.10	0.10
1440	109	6	501.14	0.34	0.00	1.42	0.71	0.71
1441	6	1647	303.64	0.41	0.00	0.86	0.28	0.28
1443	1647	1637	109.28	0.22	0.00	0.31	0.04	0.04
1454	72	1637	147.10	0.13	0.00	0.42	0.07	0.07
1455	1626	72	172.90	0.36	0.00	0.49	0.10	0.10
1458	1627	1626	530.30	0.60	0.00	1.50	0.78	0.78
1460	797	212	73.81	0.01	0.00	0.21	0.02	0.02
1464	1630	788	134.26	0.25	0.00	0.38	0.06	0.06
1477	1626	1630	331.91	0.37	0.00	0.94	0.33	0.33
1479	Yates Reese	1627	1003.99	2.75	0.00	2.85	2.55	2.55
1481	1630	76	157.55	0.29	0.00	0.45	0.08	0.08
1483	76	1636	227.49	0.38	0.00	0.65	0.16	0.16
1487	1637	75	221.47	0.09	0.00	0.63	0.16	0.16
1492	75	49	115.89	0.03	0.00	0.33	0.05	0.05
1493	49	254	94.79	0.11	0.00	0.27	0.03	0.03
1494	J-35	254	187.96	0.19	0.00	0.53	0.11	0.11
1497	1647	2072	158.97	0.09	0.00	0.45	0.08	0.08
1499	247	1648	125.06	0.25	0.00	0.35	0.05	0.05
1500	343	1657	9.60	0.01	0.00	0.06	0.00	0.00
1509	1658	901	111.49	0.24	0.00	0.71	0.31	0.31

2040 Fireflow - Main Zone West

1526	1674	800	37.74	0.02	0.00	0.24	0.04	0.04
1531	800	174	30.64	0.01	0.00	0.20	0.03	0.03
1534	1679	1689	4.70	0.01	0.00	0.05	0.01	0.01
1544	1689	1690	0.60	0.00	0.00	0.00	0.00	0.00
1548	1698	2092	3.30	0.00	0.00	0.02	0.00	0.00
1552	1699	1700	3.70	0.00	0.00	0.02	0.00	0.00
1553	2138	89	6.40	0.00	0.00	0.04	0.00	0.00
1560	J-53	1710	91.80	0.23	0.00	0.59	0.22	0.22
1562	683	1711	1.00	0.00	0.00	-0.01	0.00	0.00
1563	683	1712	2.30	0.00	0.00	0.01	0.00	0.00
1564	1713	1716	43.70	0.04	0.00	0.50	0.23	0.23
1567	1716	1719	0.90	0.00	0.00	0.01	0.00	0.00
1584	1742	1737	16.65	0.95	0.00	0.42	0.75	0.75
1588	1737	1375	7.85	0.07	0.00	0.20	0.19	0.19
1593	1742	1484	25.36	0.00	0.00	0.10	0.01	0.01
1596	1484	975	19.64	0.01	0.00	0.08	0.00	0.00
1611	975	1310	14.68	0.00	0.00	0.06	0.00	0.00
1612	2122	1310	1.28	0.00	0.00	0.01	0.00	0.00
1615	2123	1089	3.51	0.00	0.00	0.02	0.00	0.00
1617	1089	1186	27.19	0.06	0.00	0.31	0.26	0.26
1618	1186	1767	44.84	0.03	0.00	0.29	0.06	0.06
1621	J-135	J-171	40.50	0.01	0.00	0.26	0.05	0.05
1626	1773	1775	31.10	0.01	0.00	0.20	0.03	0.03
1628	1775	1776	14.40	0.00	0.00	0.09	0.01	0.01
1629	1776	1782	6.10	0.00	0.00	0.04	0.00	0.00
1635	1788	1782	2.58	0.00	0.00	0.02	0.00	0.00
1641	1775	1788	14.40	0.00	0.00	0.09	0.01	0.01
1644	1773	1791	1.20	0.00	0.00	0.01	0.00	0.00
1645	1776	1793	1.60	0.00	0.00	0.01	0.00	0.00
1647	1788	1782	3.42	0.00	0.00	0.02	0.00	0.00
1654	1800	1801	1.10	0.00	0.00	0.00	0.00	0.00
1657	18053-inch or		0.50	0.00	0.00	0.00	0.00	0.00
1658	1806	1808	1.90	0.00	0.00	0.02	0.00	0.00
1660	1809	1806	3.90	0.00	0.00	0.02	0.00	0.00
1661	1810	1821	42.38	0.01	0.00	0.17	0.02	0.02
1663	1821	1800	28.73	0.00	0.00	0.12	0.01	0.01
1664	1813	1809	11.00	0.00	0.00	0.04	0.00	0.00
1665	1814	1818	4.10	0.37	0.00	0.42	0.52	0.52
1669	1813	1814	8.23	0.00	0.00	0.05	0.00	0.00
1672	1821	J-112	6.95	0.00	0.00	0.04	0.00	0.00
1673	1826	1823	15.21	0.02	0.00	0.17	0.06	0.06
1676	1827	1071	109.83	0.00	0.00	0.31	0.04	0.04
1677	J-128	1636	14.52	0.00	0.00	0.09	0.01	0.01
1792	844	910	75.92	0.01	0.00	0.31	0.05	0.05
1793	178	1823	15.32	0.00	0.00	0.10	0.02	0.02
1796	1063	1948	1.50	0.03	0.00	0.15	0.09	0.09
1799	1032	J-114	0.54	0.00	0.00	0.01	0.00	0.00
1810	1960	12	59.70	0.00	0.00	0.38	0.20	0.20
1811	12	10	54.30	0.17	0.00	0.35	0.16	0.16
1813	1767	J-117	4.10	0.00	0.00	0.05	0.01	0.01
1818	1737	1968	0.60	0.00	0.00	0.02	0.00	0.00
1820	1823	J-168	26.93	0.09	0.00	0.31	0.25	0.25
1821	175	384	92.85	0.16	0.00	0.38	0.08	0.08
1825	566	1973	6.57	0.06	0.00	0.17	0.13	0.13
1826	1975	1974	0.06	0.00	0.00	0.00	0.00	0.00
1828	1980	J-3	6.08	0.01	0.00	0.07	0.02	0.02
1830	19813-inch or		0.20	0.00	0.00	0.01	0.00	0.00
1831	1767	1984	35.74	0.10	0.00	0.41	0.43	0.43
1834	1986	1985	0.30	0.00	0.00	0.01	0.00	0.00
1835	894	2125	13.88	0.00	0.00	0.09	0.01	0.01
1836	1987	568	2.58	0.02	0.00	0.07	0.02	0.02
1837	1989	1988	0.20	0.00	0.00	0.01	0.00	0.00
1839	2121	1991	33.82	0.09	0.00	0.38	0.39	0.39
1840	2123	2126	217.30	0.10	0.00	0.89	0.36	0.36
1841	994	1994	1.00	0.00	0.00	0.01	0.00	0.00
1842	1997	1996	18.54	0.09	0.00	0.21	0.13	0.13
1843	1184	J-163	18.75	0.04	0.00	0.21	0.05	0.05
1852	2007	2009	29.80	0.07	0.00	0.34	0.31	0.31
1854	2065	2010	39.99	0.25	0.00	0.45	0.53	0.53
1855	J-39	2012	72.27	0.23	0.00	0.46	0.39	0.39
1856	2013	2014	23.80	0.03	0.00	0.27	0.07	0.07
1858	2016	J-81	5.10	0.12	0.00	0.13	0.08	0.08
1860	504	2127	9.51	0.01	0.00	0.11	0.01	0.01
1864	1121	2023	0.80	0.00	0.00	0.01	0.00	0.00
1865	2127	1215	25.30	0.01	0.00	0.16	0.02	0.02
1866	2025	2028	1.80	0.04	0.00	0.18	0.11	0.11
1869	2029	2030	1.00	0.01	0.00	0.10	0.04	0.04
1870	2031	2029	8.70	0.01	0.00	0.22	0.07	0.07
1871	2029	2025	6.10	0.00	0.00	0.16	0.04	0.04
1872	2025	2032	1.20	0.00	0.00	0.03	0.00	0.00
1873	2031	2033	2.90	0.01	0.00	0.07	0.01	0.01
1877	J-124	2031	15.70	0.00	0.00	0.10	0.01	0.01
1883	J-74	2047	1.00	0.00	0.00	0.01	0.00	0.00
1887	2053	582	18.14	0.42	0.00	0.46	0.63	0.63
1892	2129	582	23.24	0.34	0.00	0.59	0.99	0.99
1893	46	590	30.83	0.18	0.00	0.35	0.23	0.23
1894	J-45	2061	1.60	0.00	0.00	0.02	0.00	0.00
1895	J-44	2063	71.87	0.24	0.00	0.46	0.28	0.28
1896	5	361	188.00	0.04	0.00	0.77	0.55	0.55
1898	14	540	3.24	0.00	0.00	0.04	0.01	0.01
1900	163-in or sm		0.20	0.00	0.00	0.00	0.00	0.00
1901	17	18	5.10	0.00	0.00	0.06	0.01	0.01
1904	2088	24	50.70	0.00	0.00	0.58	0.30	0.30
1907	2130	36	14.24	0.02	0.00	0.16	0.08	0.08
1908	38	2083	64.12	0.03	0.00	0.26	0.04	0.04
1909	2014	J-87	49.57	0.24	0.00	0.56	0.79	0.79
1917	J-61	69	1.80	0.00	0.00	0.01	0.00	0.00
1920	295	J-30	32.80	0.01	0.00	0.09	0.00	0.00
1924	2066	86	14.10	0.00	0.00	0.04	0.00	0.00
1927	104	J-112	6.02	0.01	0.00	0.07	0.02	0.02
1930	118	710	508.84	1.71	0.00	1.06	0.68	0.68
1935	2106	247	147.26	0.03	0.00	0.94	1.46	1.46
1936	2122	325	87.59	0.01	0.00	0.25	0.03	0.03
1938	1218	375	689.23	1.23	0.00	1.44	1.66	1.66
1940	1318	396	405.02	0.19	0.00	0.84	0.62	0.62

2040 Fireflow - Main Zone West

1941	480	2138	16.80	0.00	0.00	0.07	0.01	0.01
1947	530	2093	3.47	0.00	0.00	0.04	0.01	0.01
1948	536	2078	67.82	0.10	0.00	0.43	0.35	0.35
1949	565	1084	138.27	0.76	0.00	0.88	1.30	1.30
1950	556	944	10.10	0.02	0.00	0.11	0.04	0.04
1951	543	565	86.92	0.02	0.00	0.55	0.55	0.55
1954	J-84	O-AV-5	0.00	0.00	0.00	0.00	0.00	0.00
1956	584	717	49.33	0.04	0.00	0.20	0.05	0.05
1958	590	584	22.45	0.00	0.00	-0.09	0.01	0.01
1960	620	2133	23.10	0.00	0.00	0.15	0.02	0.02
1962	1410	649	71.60	0.01	0.00	0.46	0.27	0.27
1964	661	424	74.50	0.02	0.00	0.30	0.14	0.14
1965	172	665	14.34	0.00	0.00	0.04	0.00	0.00
1967	710	137	460.90	1.12	0.00	0.96	0.56	0.56
1972	791	784	9.66	0.00	0.00	0.06	0.00	0.00
1975	788	797	91.90	0.01	0.00	0.26	0.03	0.03
1977	813	J-120	5.09	0.01	0.00	0.06	0.01	0.01
1978	803	815	6.11	0.01	0.00	0.07	0.02	0.02
1979	1338	817	23.73	0.00	0.00	0.10	0.01	0.01
1982	856	2121	39.12	0.15	0.00	0.44	0.51	0.51
1983	375	860	377.13	0.14	0.00	0.79	0.54	0.54
1984	865	65	83.50	0.20	0.00	0.53	0.51	0.51
1985	14	872	16.67	0.01	0.00	0.19	0.10	0.10
1986	J-3	923	4.16	0.00	0.00	0.03	0.00	0.00
1987	1987	944	19.11	0.05	0.00	0.22	0.13	0.13
1989	945	954	6.08	0.00	0.00	0.07	0.02	0.02
1990	958	J-106	23.91	0.05	0.00	0.27	0.20	0.20
1992	994	1658	199.19	0.16	0.00	0.81	0.31	0.31
1993	60	2101	4.70	0.00	0.00	0.05	0.01	0.01
1995	1049	1003	43.40	0.03	0.00	0.28	0.05	0.05
1996	631	1049	50.00	0.04	0.00	0.32	0.14	0.14
1997	1050	975	5.54	0.00	0.00	0.06	0.01	0.01
1998	1057	518	26.20	0.04	0.00	0.17	0.06	0.06
2000	1084	552	77.41	0.19	0.00	0.49	0.44	0.44
2001	1120	1099	135.21	0.11	0.00	0.86	0.45	0.45
2002	J-79	1107	103.99	0.16	0.00	0.66	0.76	0.76
2003	1130	J-63	44.02	0.07	0.00	0.28	0.16	0.16
2005	398	1137	71.96	0.23	0.00	0.46	0.39	0.39
2010	1180	704	118.72	0.46	0.00	0.76	0.98	0.98
2011	704	1183	99.04	0.11	0.00	1.12	2.84	2.84
2014	2067	1210	668.68	0.89	0.00	1.39	1.57	1.57
2020	1223	1224	27.46	0.07	0.00	0.31	0.26	0.26
2021	1224	827	23.42	0.13	0.00	0.27	0.20	0.20
2022	1229	815	30.00	0.09	0.00	0.34	0.31	0.31
2024	1517	1235	52.73	0.20	0.00	0.34	0.22	0.22
2025	1099	J-82	22.54	0.00	0.00	0.14	0.02	0.02
2027	46	1284	49.99	0.10	0.00	0.32	0.14	0.14
2031	1392	1318	427.18	0.21	0.00	0.89	0.69	0.69
2032	J-87	1322	42.96	0.16	0.00	0.49	0.60	0.60
2033	2091	1328	85.13	0.17	0.00	0.54	0.53	0.53
2035	1337	2110	4.93	0.00	0.00	0.06	0.01	0.01
2036	813	1338	18.71	0.08	0.00	0.21	0.13	0.13
2037	1356	1089	27.28	0.00	0.00	0.31	0.26	0.26
2039	945	1366	18.63	0.06	0.00	0.21	0.13	0.13
2040	1387	979	2.20	0.00	0.00	0.02	0.00	0.00
2042	J-39	1392	453.01	0.45	0.00	0.94	0.76	0.76
2045	1409	407	157.37	0.17	0.00	0.64	0.56	0.56
2048	1465	J-120	24.27	0.01	0.00	0.28	0.21	0.21
2053	1107	1517	61.53	0.12	0.00	0.39	0.29	0.29
2058	J-8	1570	68.77	0.09	0.00	0.28	0.09	0.09
2060	1575	342	33.90	0.00	0.00	0.10	0.00	0.00
2063	1627	J-135	458.69	0.27	0.00	1.30	0.75	0.75
2067	1648	432	75.20	0.29	0.00	0.31	0.10	0.10
2068	1658	421	78.20	0.04	0.00	0.32	0.05	0.05
2070	1101	1679	21.50	0.00	0.00	0.24	0.12	0.12
2071	1698	212	2.76	0.00	0.00	0.02	0.00	0.00
2078	1800	1813	23.93	0.00	0.00	0.10	0.01	0.01
2079	1805	1805	3.90	0.00	0.00	0.02	0.00	0.00
2080	107	1810	55.03	0.01	0.00	0.16	0.01	0.01
2087	1960	700	0.10	0.00	0.00	0.00	0.00	0.00
2089	1973	J-2	21.32	0.06	0.00	0.24	0.17	0.17
2090	1366	1974	9.93	0.02	0.00	0.11	0.04	0.04
2091	36	1975	9.84	0.01	0.00	0.11	0.04	0.04
2092	1981	J-4	0.07	0.00	0.00	0.00	0.00	0.00
2093	1984	994	238.99	0.17	0.00	0.98	0.44	0.44
2095	1986	552	40.98	0.29	0.00	0.46	0.55	0.55
2096	893	1987	27.09	0.01	0.00	0.31	0.26	0.26
2097	1989	842	16.31	0.02	0.00	0.19	0.10	0.10
2102	827	1996	9.70	0.01	0.00	0.11	0.04	0.04
2104	375	2007	304.49	0.44	0.00	1.24	0.68	0.68
2105	2009	2096	14.18	0.00	0.00	0.16	0.08	0.08
2111	2016	1120	138.21	0.01	0.00	0.88	0.47	0.47
2114	1107	1293	37.67	0.18	0.00	0.43	0.47	0.47
2118	J-57	2053	106.55	0.23	0.00	0.68	0.57	0.57
2120	717	2063	34.70	0.01	0.00	0.14	0.02	0.02
2127	2067	1218	766.74	0.67	0.00	1.60	2.03	2.03
2128	2067	1180	195.75	1.43	0.00	1.25	2.47	2.47
2139	2007	2073	270.39	0.02	0.00	1.10	0.55	0.55
2141	2074	483	2.10	0.00	0.00	0.01	0.00	0.00
2145	492	2076	32.34	0.03	0.00	0.21	0.09	0.09
2146	504	2076	0.54	0.00	0.00	0.00	0.00	0.00
2148	693	J-64	23.61	0.01	0.00	0.15	0.02	0.02
2149	2078	865	70.07	0.11	0.00	0.45	0.37	0.37
2150	1991	2078	30.46	0.09	0.00	0.35	0.32	0.32
2152	2079	543	41.04	0.03	0.00	0.26	0.14	0.14
2153	2080	2081	61.66	0.10	0.00	0.70	0.43	0.43
2154	2080	958	13.82	0.04	0.00	0.16	0.07	0.07
2155	2125	J-99	51.81	0.00	0.00	0.33	0.08	0.08
2156	958	2081	22.09	0.06	0.00	0.25	0.18	0.18
2159	2083	2084	28.25	0.02	0.00	0.18	0.07	0.07
2160	2083	916	24.37	0.01	0.00	0.16	0.02	0.02
2161	2084	565	55.65	0.07	0.00	0.36	0.24	0.24
2162	916	2084	14.67	0.01	0.00	0.09	0.01	0.01
2165	2086	578	2.60	0.00	0.00	0.02	0.00	0.00
2166	2132	2086	100.12	0.30	0.00	0.64	0.51	0.51

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2169	2088	620	41.00	0.12	0.00	0.26	0.05	0.05
2170	1214	2088	103.80	0.18	0.00	1.18	1.12	1.12
2173	2090	1410	77.56	0.00	0.00	0.50	0.32	0.32
2174	2090	657	57.54	0.02	0.00	0.24	0.03	0.03
2175	1137	2091	93.29	0.29	0.00	0.60	0.63	0.63
2176	2091	505	49.76	0.06	0.00	0.32	0.20	0.20
2179	2093	817	75.01	0.52	0.00	0.85	1.70	1.70
2180	2093	1229	30.33	0.24	0.00	0.34	0.32	0.32
2181	2095	2094	14.02	0.05	0.00	0.16	0.08	0.08
2183	1223	2095	10.28	0.01	0.00	0.12	0.04	0.04
2184	1183	2095	57.94	0.34	0.00	0.66	1.05	1.05
2187	2097	856	28.07	0.12	0.00	0.32	0.27	0.27
2188	2073	2097	13.89	0.02	0.00	0.16	0.07	0.07
2189	895	2098	7.30	0.01	0.00	0.08	0.02	0.02
2190	2098	2100	17.18	0.03	0.00	0.19	0.11	0.11
2192	954	2130	18.98	0.04	0.00	0.22	0.13	0.13
2193	2100	1050	20.94	0.04	0.00	0.24	0.11	0.11
2194	1056	2100	5.21	0.00	0.00	0.06	0.01	0.01
2195	2101	807	3.25	0.00	0.00	0.02	0.00	0.00
2196	J-82	2101	9.34	0.00	0.00	0.06	0.00	0.00
2198	1293	1290	1.85	0.00	0.00	0.02	0.00	0.00
2199	2103	60	7.00	0.00	0.00	0.08	0.02	0.02
2202	2104	2021	1.10	0.00	0.00	0.03	0.00	0.00
2203	1388	2105	29.11	0.09	0.00	0.33	0.29	0.29
2206	1328	2106	97.40	0.10	0.00	0.62	0.68	0.68
2207	510	2107	21.84	0.05	0.00	0.25	0.17	0.17
2212	2109	2010	9.24	0.01	0.00	0.10	0.04	0.04
2214	2110	1356	21.12	0.07	0.00	0.24	0.16	0.16
2216	2111	1333	24.27	0.01	0.00	0.28	0.21	0.21
2217	1183	2112	38.09	0.14	0.00	0.43	0.48	0.48
2221	2113	803	58.45	0.70	0.00	0.67	1.10	1.10
2223	J-87	2115	29.62	0.10	0.00	0.34	0.30	0.30
2228	1210	2117	590.08	0.40	0.00	1.23	1.25	1.25
2231	1483	2119	4.63	0.00	0.00	0.05	0.01	0.01
2234	J-77	2120	8.70	0.00	0.00	0.10	0.02	0.02
2236	2126	2121	9.36	0.01	0.00	0.11	0.04	0.04
2240	2073	2123	226.52	0.17	0.00	0.93	0.39	0.39
2243	2125	961	21.02	0.00	0.00	0.13	0.01	0.01
2244	2081	2125	60.64	0.03	0.00	0.39	0.10	0.10
2246	2126	1984	204.34	0.09	0.00	0.83	0.33	0.33
2249	J-77	2050	0.20	0.00	0.00	0.00	0.00	0.00
2252	2053	2129	82.40	0.08	0.00	0.53	0.35	0.35
2253	961	2130	18.72	0.06	0.00	0.21	0.13	0.13
2254	2130	1973	18.66	0.01	0.00	0.21	0.13	0.13
2257	214	2132	211.86	0.01	0.00	1.35	2.04	2.04
2259	2133	599	13.70	0.00	0.00	0.09	0.01	0.01
2260	2133	47	3.70	0.00	0.00	0.02	0.00	0.00
2269	2138	481	0.30	0.00	0.00	0.00	0.00	0.00
F-1	J-1	97	17.30	0.00	0.00	0.05	0.00	0.00
F-100	J-112	1814	4.57	0.00	0.00	0.05	0.01	0.01
F-101	2079	J-113	10.86	0.02	0.00	0.12	0.05	0.05
F-102	1023	J-114	17.76	0.00	0.00	0.11	0.01	0.01
F-103	649	J-125	68.90	0.04	0.00	0.44	0.13	0.13
F-104	1103I-Fairview		24.90	0.00	0.00	0.28	0.16	0.16
F-105	J-116	J-115	18.45	0.05	0.00	0.21	0.13	0.13
F-106	2097	J-116	21.55	0.04	0.00	0.24	0.17	0.17
F-108	J-117	56	1.40	0.00	0.00	0.02	0.00	0.00
F-11	1975	J-3	3.58	0.00	0.00	0.04	0.01	0.01
F-111	J-120	807	25.37	0.06	0.00	0.29	0.23	0.23
F-113	2117	J-39	531.98	0.30	0.00	1.11	1.03	1.03
F-116	97	J-122	13.60	0.00	0.00	0.04	0.00	0.00
F-117	J-140	J-145	0.20	0.00	0.00	0.00	0.00	0.00
F-119	J-84	J-139	1.20	0.00	0.00	0.01	0.00	0.00
F-121	J-140	J-138	40.12	0.00	0.00	0.11	0.01	0.01
F-122	Main Reser	J-126	2203.70	0.17	0.00	2.78	1.52	1.52
F-124	O-AV-1	2083	0.00	0.00	0.00	0.00	0.00	0.00
F-125	O-AV-2	906	0.00	0.00	0.00	0.00	0.00	0.00
F-127	J-127	295	150.60	0.18	0.00	0.43	0.08	0.08
F-128	J-127	J-128	41.22	0.03	0.00	0.12	0.01	0.01
F-130	J-128	1831	2.80	0.00	0.00	0.02	0.00	0.00
F-131	1071	J-129	168.41	0.05	0.00	0.48	0.09	0.09
F-132	J-129	668	150.31	0.11	0.00	0.43	0.08	0.08
F-133	1513	J-133	28.70	0.00	0.00	0.12	0.01	0.01
F-134	J-122	J-132	9.30	0.00	0.00	0.03	0.00	0.00
F-135	1502	J-124	20.00	0.00	0.00	0.08	0.00	0.00
F-136	J-124	J-131	0.90	0.00	0.00	0.01	0.00	0.00
F-138-CV	Kennicott	J-53	795.70	0.32	0.00	1.27	0.41	0.41
F-140	O-AV-4	686	0.00	0.00	0.00	0.00	0.00	0.00
F-143	I-AV-5	J-63	0.00	0.00	0.00	0.00	0.00	0.00
F-144	O-AV-6	1134	0.00	0.00	0.00	0.00	0.00	0.00
F-146	J-73	J-134	2.00	0.00	0.00	0.01	0.00	0.00
F-147	J-64	J-141	0.80	0.00	0.00	0.01	0.00	0.00
F-148	J-134	O-RV-2	0.00	0.00	0.00	0.00	0.00	0.00
F-149	J-143	O-RV-1	0.00	0.00	0.00	0.00	0.00	0.00
F-15	J-126	J-91	2198.30	0.26	0.00	2.77	1.51	1.51
F-150-XXCV	J-141	J-134						
F-151	J-139	J-142	0.40	0.00	0.00	0.00	0.00	0.00
F-152	1570	J-144	3.10	0.00	0.00	0.01	0.00	0.00
F-153-XXCV	J-143	J-144						
F-154	I-RV-1	J-144	0.00	0.00	0.00	0.00	0.00	0.00
F-157	I-RV-2	J-141	0.00	0.00	0.00	0.00	0.00	0.00
F-1570	1716	1103	33.10	0.06	0.00	0.21	0.03	0.03
F-158	J-145I-18th St		0.00	0.00	0.00	0.00	0.00	0.00
F-159	J-145	J-146	0.00	0.00	0.00	0.00	0.00	0.00
F-160-XXCV	J-146	J-147						
F-161	J-146O-18th St		0.00	0.00	0.00	0.00	0.00	0.00
F-162	J-147	J-142	0.00	0.00	0.00	0.00	0.00	0.00
F-164	I-18th St	J-147	0.00	0.00	0.00	0.00	0.00	0.00
F-165	J-156	J-155	54.20	0.22	0.00	0.61	0.29	0.29
F-166	66	J-110	77.53	0.58	0.00	0.88	1.80	1.80
F-167	J-156	J-153	258.19	1.23	0.00	0.73	0.26	0.26
F-168	J-152	J-150	9.15	0.00	0.00	0.06	0.00	0.00
F-169	J-88	J-154	375.39	0.24	0.00	1.06	0.52	0.52
F-170	J-155	J-151	22.40	0.28	0.00	0.25	0.06	0.06
F-171	J-155	J-157	3.00	0.19	0.00	0.31	0.29	0.29

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P-172	J-154	J-156	344.99	0.69	0.00	0.98	0.44	0.44
P-173	J-6	J-148	12.30	12.07	0.00	1.26	4.53	4.53
P-174	J-153	J-149	6.10	0.00	0.00	0.04	0.00	0.00
P-175	J-152	J-150	0.65	0.00	0.00	0.00	0.00	0.00
P-176	J-64	2076	16.01	0.02	0.00	0.10	0.02	0.02
P-177	J-160	1057	14.59	0.02	0.00	0.09	0.02	0.02
P-178	1513	J-159	10.10	0.00	0.00	0.11	0.03	0.03
P-179	J-162	J-160	23.19	0.01	0.00	0.15	0.02	0.02
P-18	J-135I-South En		414.99	0.04	0.00	1.18	0.50	0.50
P-180	J-162	J-95	84.70	0.04	0.00	0.24	0.03	0.03
P-181	1818	J-161	0.40	0.00	0.00	0.04	0.01	0.01
P-182	J-163	2003	0.20	0.00	0.00	0.00	0.00	0.00
P-183	J-164	J-143	17.00	0.00	0.00	0.05	0.00	0.00
P-184	J-163	J-177	12.05	0.00	0.00	0.08	0.01	0.01
P-186	1710	J-55	82.50	0.17	0.00	0.53	0.18	0.18
P-188	J-158	31	0.73	0.00	0.00	0.00	0.00	0.00
P-19	34	33	30.39	0.02	0.00	0.78	1.63	1.63
P-190	J-167	2074	5.50	0.00	0.00	0.02	0.00	0.00
P-193-XX	432	780						
P-194	1580	76	34.16	0.01	0.00	0.10	0.00	0.00
P-195	J-170	J-176	1.70	0.00	0.00	0.00	0.00	0.00
P-196	J-168	J-21	11.05	0.01	0.00	0.13	0.05	0.05
P-197	J-168	1980	11.08	0.00	0.00	0.07	0.00	0.00
P-198	O-South En	J-88	414.99	1.91	0.00	1.18	0.62	0.62
P-199	J-171	1773	37.00	0.02	0.00	0.24	0.04	0.04
P-2	J-1	101	0.40	0.00	0.00	0.00	0.00	0.00
P-20	213	1576	66.96	0.00	0.00	0.19	0.02	0.02
P-200	J-91	J-169	549.44	0.03	0.00	0.69	0.12	0.12
P-201	J-153	J-173	126.49	10.49	0.00	0.81	0.50	0.50
P-203	J-177	J-164	8.25	0.00	0.00	0.05	0.00	0.00
P-25	J-30	2066	20.00	0.00	0.00	0.06	0.00	0.00
P-29	2063	J-8	96.17	0.16	0.00	0.39	0.16	0.16
P-3	O-Central	J-6	26.19	2.73	0.00	0.30	0.11	0.11
P-30	J-42	J-35	201.56	0.16	0.00	0.57	0.13	0.13
P-31	J-8	54	16.70	0.00	0.00	0.07	0.00	0.00
P-33	2072	J-42	142.47	0.00	0.00	0.40	0.07	0.07
P-34	1699	J-42	69.10	0.02	0.00	0.20	0.02	0.02
P-36	1322	2091	48.20	0.24	0.00	0.55	0.75	0.75
P-4	1570	J-7	52.37	0.06	0.00	0.21	0.05	0.05
P-40	10	J-44	37.60	0.08	0.00	0.24	0.08	0.08
P-42	J-45	J-44	44.37	0.04	0.00	0.28	0.11	0.11
P-43	J-132	J-170	4.50	0.00	0.00	0.01	0.00	0.00
P-44	J-55	28	3.80	0.00	0.00	0.02	0.00	0.00
P-47	2132	J-57	108.95	0.02	0.00	0.70	0.59	0.59
P-48	41	J-90	0.10	0.00	0.00	0.00	0.00	0.00
P-49	J-57	2051	0.10	0.00	0.00	0.00	0.00	0.00
P-50	J-57	2052	0.10	0.00	0.00	0.00	0.00	0.00
P-51	O-18th St	J-142	0.00	0.00	0.00	0.00	0.00	0.00
P-53	1974	J-4	3.59	0.00	0.00	0.04	0.01	0.01
P-54	923	J-4	0.54	0.00	0.00	0.01	0.00	0.00
P-57	1217	I-AV-6	0.00	0.00	0.00	0.00	0.00	0.00
P-58	69	1217	7.25	0.00	0.00	0.05	0.00	0.00
P-6	J-88	J-11	4.60	0.00	0.00	0.03	0.00	0.00
P-61	J-58	68	20.10	0.00	0.00	0.13	0.01	0.01
P-62	J-61	J-136	1.40	0.00	0.00	0.01	0.00	0.00
P-63	J-127	J-158	14.93	0.00	0.00	0.04	0.00	0.00
P-64	54	J-27	11.00	0.00	0.00	0.04	0.00	0.00
P-65	597	J-67	31.89	0.03	0.00	0.20	0.06	0.06
P-67	J-67	J-71	28.39	0.01	0.00	0.18	0.02	0.02
P-69	J-71	J-73	24.69	0.02	0.00	0.16	0.05	0.05
P-7	J-154	J-152	20.30	0.00	0.00	0.13	0.02	0.02
P-71	J-63	J-123	41.82	0.00	0.00	0.27	0.05	0.05
P-73	1679	J-74	12.60	0.01	0.00	0.14	0.04	0.04
P-74	J-74	J-77	9.90	0.00	0.00	0.11	0.03	0.03
P-75	I-AV-3	2120	0.00	0.00	0.00	0.00	0.00	0.00
P-76	J-78	408	77.23	0.08	0.00	0.49	0.31	0.31
P-77	J-79	1130	55.52	0.18	0.00	0.35	0.24	0.24
P-78	J-80	504	19.85	0.01	0.00	0.13	0.04	0.04
P-79	J-82	1396	2.40	0.00	0.00	0.03	0.00	0.00
P-80	1388	J-87	30.01	0.07	0.00	0.34	0.11	0.11
P-81	92	J-62	1.80	0.00	0.00	0.01	0.00	0.00
P-82	597	J-84	5.00	0.00	0.00	0.03	0.00	0.00
P-83	J-123	J-140	41.22	0.00	0.00	0.12	0.01	0.01
P-84	J-93	1971	0.20	0.00	0.00	0.00	0.00	0.00
P-86	I-High Lev	J-126	0.00	0.00	0.00	0.00	0.00	0.00
P-87	J-94	526	39.03	0.13	0.00	0.25	0.12	0.12
P-88	J-93	J-94	38.11	0.00	0.00	0.43	0.35	0.35
P-89	J-96inter-tie		4.70	0.00	0.00	0.01	0.00	0.00
P-9	J-2	2098	19.39	0.05	0.00	0.22	0.14	0.14
P-90	174	J-105	27.24	0.00	0.00	0.08	0.00	0.00
P-91	J-20	1981	2.07	0.00	0.00	0.02	0.00	0.00
P-92	J-21	J-20	7.45	0.00	0.00	0.08	0.02	0.02
P-93	J-99	568	0.82	0.00	0.00	0.01	0.00	0.00
P-94	J-99	556	40.22	0.01	0.00	0.26	0.05	0.05
P-95	J-99	566	8.87	0.00	0.00	0.06	0.00	0.00
P-96	J-100	2080	112.29	0.05	0.00	0.72	0.32	0.32
P-97	J-106	894	15.48	0.03	0.00	0.18	0.09	0.09
P-98	J-173I-Central		26.19	0.01	0.00	0.17	0.03	0.03
P-99	944	J-111	23.31	0.07	0.00	0.26	0.19	0.19
Valley Vie	O-Valley VYankis (Va		0.00	0.00	0.00	0.00	0.00	0.00
~@18th St -RV	I-18th St O-18th St							
~@AV-1-XX	I-AV-1 O-AV-1							
~@AV-2-XX	I-AV-2 O-AV-2							
~@AV-3-XX	I-AV-3 O-AV-3							
~@AV-4-XX	I-AV-4 O-AV-4							
~@AV-5-XX	I-AV-5 O-AV-5							
~@AV-6-XX	I-AV-6 O-AV-6							
~@High Lev-RV	I-High LevO-High Lev							
~@Valley V-RV	I-Valley VO-Valley V							

NODE RESULTS

NODE NODE EXTERNAL HYDRAULIC NODE PRESSURE NODE

2040 Fireflow - Main Zone West

NAME	TITLE	DEMAND gpm	GRADE ft	ELEVATION ft	HEAD ft	PRESSURE psi
5		0.40	396.98	243.40	153.58	66.55
6		9.10	397.00	244.40	152.60	66.12
9		3.80	396.47	205.80	190.67	82.62
10		12.90	396.47	213.70	182.77	79.20
11		0.20	396.64	236.90	159.74	69.22
12		5.20	396.64	236.50	160.14	69.39
13		0.20	396.05	198.90	197.15	85.43
14		3.00	396.06	201.40	194.66	84.35
15		4.20	395.31	186.10	209.21	90.66
16		2.20	395.31	186.10	209.21	90.66
17		14.50	393.69	175.70	217.99	94.46
18		3.10	393.69	171.90	221.79	96.11
19		2.00	393.63	165.30	228.33	98.94
22		4.70	396.46	186.50	209.96	90.98
23		10.70	396.45	187.70	208.75	90.46
24		2.70	634.28	604.50	29.78	12.90
26		12.20	397.15	240.30	156.85	67.97
28		2.80	397.17	322.60	74.57	32.32
29		1.00	397.17	319.00	78.17	33.88
31		8.70	395.84	216.80	179.04	77.58
32		7.90	395.84	214.70	181.14	78.49
33		0.70	394.51	183.00	211.51	91.66
34		5.00	394.53	183.50	211.03	91.45
36		6.10	394.70	194.40	200.30	86.80
37		0.80	396.13	319.00	77.13	33.42
38		5.10	396.13	290.50	105.63	45.77
40		7.20	396.50	190.80	205.70	89.14
41		0.40	396.51	219.10	177.41	76.88
43		0.20	396.21	253.50	142.71	61.84
46		9.10	396.37	229.90	166.47	72.14
47		2.90	634.16	544.40	89.76	38.89
48		0.80	634.16	543.60	90.56	39.24
49		19.70	396.25	243.00	153.25	66.41
50		1.40	396.25	244.20	152.05	65.89
51		9.70	397.19	240.00	157.19	68.12
52		2.10	397.19	261.50	135.69	58.80
54		4.90	395.99	209.30	186.69	80.90
56		1.40	396.30	193.00	203.30	88.10
59		0.50	396.22	252.50	143.72	62.28
60		1.80	396.22	252.90	143.32	62.11
65		9.60	395.81	192.40	203.41	88.14
66		3.10	395.50	191.30	204.20	88.49
68		6.10	395.20	205.20	190.00	82.33
69		4.40	395.20	208.70	186.50	80.82
70		1.10	397.19	285.20	111.99	48.53
72		25.40	396.50	255.00	141.50	61.32
75		21.00	396.28	247.70	148.58	64.38
76		48.80	396.19	256.00	140.19	60.75
83		0.20	395.65	221.90	173.75	75.29
85		0.20	395.65	222.10	173.55	75.20
86		7.70	395.65	222.40	173.25	75.07
89		6.40	395.81	225.60	170.21	73.76
92		8.40	395.20	192.40	202.80	87.88
97		3.40	394.63	173.90	220.73	95.65
98		0.30	394.63	174.00	220.63	95.61
101		0.40	394.63	174.30	220.33	95.48
102		6.70	394.63	176.00	218.63	94.74
103		0.30	394.63	175.70	218.93	94.87
104		6.70	395.81	179.70	216.11	93.65
107		6.70	395.82	183.60	212.22	91.96
108		2.80	395.82	183.60	212.22	91.96
109		12.40	397.33	236.20	161.13	69.82
118		25.50	398.18	192.50	205.68	89.13
119		5.60	396.74	217.70	179.04	77.59
121		3.60	396.88	230.70	166.18	72.01
137		13.20	395.34	180.00	215.34	93.31
166		9.80	394.58	182.90	211.68	91.73
172		6.20	394.60	174.10	220.50	95.55
174		3.40	394.60	175.70	218.90	94.86
175		11.00	394.77	183.60	211.17	91.51
178		3.60	394.78	183.60	211.18	91.51
192		11.80	395.18	183.60	211.58	91.68
201		5.60	395.23	178.30	216.93	94.00
212		5.90	396.22	256.30	139.92	60.63
213		3.50	396.21	253.50	142.71	61.84
214		7.60	396.90	230.10	166.80	72.28
224		5.80	396.50	224.20	172.30	74.66
247		22.00	395.56	192.10	203.46	88.16
248		13.10	396.20	248.60	147.60	63.96
253		8.50	396.20	240.90	155.30	67.30
254		30.10	396.14	230.80	165.34	71.65
295		34.50	395.66	210.10	185.56	80.41
325		7.70	394.54	183.90	210.64	91.28
342		5.10	394.53	165.40	229.13	99.29
343		10.20	394.53	163.20	231.33	100.24
344		4.60	394.53	164.20	230.33	99.81
346		0.90	394.53	165.60	228.93	99.20
356		14.00	396.52	219.10	177.42	76.88
361		16.90	396.95	243.10	153.85	66.67
375		7.60	397.03	230.50	166.53	72.16
384		16.10	394.61	183.20	211.41	91.61
385		1.80	394.61	183.60	211.01	91.44
396		1.60	396.49	221.20	175.29	75.96
398		4.60	396.39	220.50	175.89	76.22
407		8.20	396.01	226.99	169.02	73.24
408		4.30	395.88	223.30	172.58	74.78
421		7.60	395.83	184.20	211.63	91.71
424		1.80	395.30	189.90	205.40	89.01
432		65.20	395.01	184.10	210.91	91.40
468		29.10	395.46	204.20	191.26	82.88
473		2.50	394.60	178.30	216.30	93.73
474		3.10	395.82	210.70	185.12	80.22

2040 Fireflow - Main Zone West

480	10.80	395.82	219.70	176.12	76.32
481	0.30	395.82	220.90	174.92	75.80
483	2.10	396.52	214.00	182.52	79.09
492	12.90	395.26	195.50	199.76	86.56
504	9.80	395.23	192.80	202.43	87.72
505	8.70	395.80	197.20	198.60	86.06
509	14.40	395.70	200.00	195.70	84.80
510	7.90	396.18	189.60	206.58	89.52
512	10.00	396.18	184.80	211.38	91.60
513	1.10	395.28	178.80	216.48	93.81
518	4.60	395.22	182.20	213.02	92.31
526	19.20	395.09	201.80	193.29	83.76
530	5.00	396.72	220.30	176.42	76.45
536	6.30	396.21	201.90	194.31	84.20
540	1.30	396.06	202.30	193.76	83.96
543	3.30	396.03	210.90	185.13	80.22
544	2.50	396.12	216.10	180.02	78.01
552	4.90	395.05	191.50	203.55	88.21
556	6.00	394.77	206.10	188.67	81.76
565	4.30	396.01	210.80	185.21	80.26
566	2.30	394.78	204.60	190.18	82.41
568	3.40	394.78	206.30	188.48	81.68
569	10.60	394.58	178.30	216.28	93.72
573	2.20	394.58	179.00	215.58	93.42
578	2.60	396.58	280.80	115.78	50.17
579	5.50	395.58	205.50	190.08	82.37
582	7.20	396.21	212.80	183.41	79.48
584	7.30	396.19	207.60	188.59	81.72
590	8.40	396.20	208.60	187.60	81.29
597	5.60	396.26	222.20	174.06	75.42
599	8.30	634.15	592.40	41.75	18.09
601	2.10	634.15	577.30	56.85	24.64
619	3.30	634.15	559.00	75.15	32.57
620	15.00	634.16	583.00	51.16	22.17
623	2.90	634.16	588.00	46.16	20.00
628	3.60	604.63	420.40	184.23	79.83
631	4.60	604.61	382.80	221.81	96.12
632	1.40	604.57	455.20	149.37	64.73
642	2.70	604.61	304.60	300.01	130.00
649	2.70	604.78	392.70	212.08	91.90
657	12.60	604.78	331.20	273.58	118.55
661	8.20	395.32	190.90	204.42	88.58
665	11.70	394.60	174.40	220.20	95.42
668	18.20	394.66	182.30	212.36	92.02
675	2.30	394.66	180.60	214.06	92.76
676	4.10	395.99	206.70	189.29	82.03
682	0.80	395.99	208.20	186.79	80.94
683	5.60	395.24	200.30	194.94	84.48
686	1.50	395.96	278.90	117.06	50.72
693	10.30	395.26	197.40	197.86	85.74
700	0.10	396.64	237.50	159.14	68.96
704	3.70	397.04	190.10	206.94	89.67
705	7.20	396.46	185.50	210.96	91.42
710	22.00	396.46	197.50	198.96	86.22
717	9.90	396.16	204.90	191.26	82.88
718	0.20	395.56	191.20	204.36	88.55
726	2.40	395.25	190.00	205.25	88.94
780	55.20	395.22	195.00	200.22	86.76
781	0.10	396.22	252.20	144.02	62.41
784	8.40	396.23	259.80	136.43	59.12
788	24.50	396.24	258.50	137.74	59.69
791	7.60	396.23	256.00	140.23	60.77
792	0.60	396.23	254.90	141.33	61.24
797	6.20	396.23	255.30	140.93	61.07
800	5.80	394.61	177.30	217.31	94.17
802	1.30	394.61	178.00	216.61	93.87
803	9.70	396.40	217.90	178.50	77.35
807	11.50	396.22	272.60	123.62	53.57
808	7.30	396.48	215.50	180.98	78.43
813	6.90	396.29	244.90	151.39	65.60
815	5.40	396.39	219.20	177.19	76.78
817	6.60	396.20	275.20	121.00	52.43
827	9.70	396.40	186.80	209.60	90.83
828	4.40	396.48	192.50	203.98	88.39
831	2.90	396.18	216.90	179.28	77.69
842	5.20	396.13	234.00	162.13	70.26
844	7.10	396.15	260.00	136.15	59.00
856	4.40	396.44	194.40	202.04	87.55
860	3.90	396.89	230.20	166.69	72.23
865	4.10	396.00	195.90	200.10	86.71
868	4.20	396.03	197.00	199.03	86.25
872	1.60	396.05	199.50	196.55	85.17
881	4.00	394.62	199.80	194.82	84.42
885	4.60	394.63	204.20	180.43	82.52
893	4.10	394.81	198.10	196.71	85.24
894	1.60	394.79	206.30	188.49	81.68
899	9.80	395.51	192.10	203.41	88.15
901	9.50	395.64	189.00	206.64	89.54
906	3.40	396.14	292.50	103.64	44.91
910	2.50	396.14	294.90	101.24	43.87
916	8.10	396.09	222.40	173.69	75.27
922	1.60	396.09	238.30	157.79	68.38
923	5.40	394.69	182.20	212.49	92.08
929	1.10	394.69	181.60	213.09	92.34
937	5.30	394.63	183.80	210.83	91.36
944	5.90	394.75	196.50	198.25	85.91
945	5.40	394.77	192.00	202.77	87.87
954	4.30	394.76	193.70	201.06	87.13
958	10.00	394.87	201.60	193.27	83.75
961	2.30	394.79	205.40	189.39	82.07
962	6.00	394.58	178.30	215.28	93.29
964	0.40	394.58	179.40	215.18	93.24
975	10.50	394.54	184.50	210.04	91.02
979	2.20	394.15	173.70	220.45	95.53
994	8.60	396.04	192.30	203.74	88.29

2040 Fireflow - Main Zone West

1003	8.30	604.54	435.80	168.74	73.12
1023	10.00	604.53	389.60	214.93	93.14
1024	4.70	604.70	408.40	196.30	85.06
1032	6.80	604.52	455.00	149.52	64.79
1049	5.20	604.57	421.50	183.07	79.33
1050	9.50	394.55	188.20	206.35	89.42
1053	5.90	394.53	183.20	211.33	91.58
1056	3.00	394.59	192.00	202.59	87.79
1057	8.90	395.26	179.20	216.06	93.63
1060	9.80	395.23	196.50	198.73	86.11
1063	2.50	395.23	238.10	157.12	68.09
1064	4.40	394.77	181.30	213.47	92.50
1071	4.30	394.82	190.50	204.32	88.54
1084	17.80	395.25	198.50	196.75	85.26
1085	6.60	396.48	197.60	198.88	86.18
1089	3.60	396.40	190.70	205.70	89.14
1099	15.70	396.23	233.90	162.33	70.34
1100	1.10	466.48	339.70	126.78	54.94
1101	2.30	466.48	323.20	143.28	62.09
1103	8.20	634.13	346.40	287.73	124.68
1104	0.70	466.47	285.50	180.97	78.42
1107	4.80	395.68	211.40	184.28	79.85
1120	2.10	396.34	222.90	173.44	75.16
1121	3.30	395.20	205.30	189.90	82.29
1122	1.20	395.20	204.40	190.80	82.68
1125	3.00	395.66	205.00	190.66	82.62
1130	8.50	395.66	225.00	170.66	73.95
1134	10.70	396.16	202.90	193.26	83.74
1137	6.50	396.16	202.10	194.06	84.09
1156	9.30	396.36	184.90	211.46	91.63
1180	6.10	397.50	195.40	202.10	87.58
1181	5.20	396.44	186.00	210.44	91.19
1183	3.00	396.93	190.20	206.73	89.58
1184	8.70	395.25	189.70	205.55	89.07
1186	4.90	396.34	191.30	205.04	88.85
1210	6.80	398.04	215.60	182.44	79.06
1211	0.40	634.22	564.40	69.82	30.26
1214	3.10	634.46	607.60	26.86	11.64
1215	2.70	395.21	200.80	194.41	84.24
1217	6.10	395.20	207.80	187.40	81.21
1218	9.80	398.26	217.60	180.66	78.29
1223	4.10	396.60	187.20	209.40	90.74
1224	5.80	396.53	187.60	208.93	90.54
1229	5.90	396.48	224.40	172.08	74.57
1232	10.30	396.39	183.90	212.49	92.08
1235	7.80	395.36	197.20	198.16	85.87
1239	2.70	466.47	265.90	200.57	86.91
1240	0.20	634.46	608.90	25.56	11.07
1244	8.00	635.01	591.00	44.01	19.07
1251	9.70	635.24	622.30	12.94	5.61
1262	0.40	604.74	349.90	254.84	110.43
1270	2.60	396.44	184.30	212.14	91.93
1277	9.10	604.74	340.00	264.74	114.72
1284	7.50	396.27	224.00	172.27	74.65
1290	10.00	395.50	207.20	188.30	81.60
1293	5.20	395.50	206.60	188.90	81.86
1295	6.10	395.46	200.40	195.06	84.52
1298	0.90	396.34	224.20	172.14	74.59
1309	10.00	394.95	185.00	209.95	90.98
1310	7.80	394.54	184.40	210.14	91.06
1314	6.30	394.31	183.00	211.31	91.57
1318	5.50	396.68	221.20	175.48	76.04
1322	4.90	396.10	194.60	201.50	87.32
1328	4.90	395.69	192.30	203.39	88.14
1333	4.60	396.52	191.30	205.22	88.93
1337	5.30	396.48	192.80	203.68	88.26
1338	12.10	396.21	257.70	138.51	60.02
1356	3.40	396.41	190.80	205.61	89.10
1359	1.10	396.48	193.30	203.18	88.04
1364	4.60	396.21	193.90	202.31	87.67
1366	7.00	394.70	190.60	204.10	88.45
1375	13.20	393.53	168.30	225.23	97.60
1387	4.40	394.15	182.40	211.75	91.76
1388	8.20	396.33	200.40	195.93	84.90
1392	6.80	396.89	220.30	176.59	76.52
1396	2.40	396.23	308.10	88.13	38.19
1409	7.80	396.18	222.20	173.98	75.39
1410	2.90	604.80	392.50	212.30	92.00
1456	4.40	394.62	183.20	211.42	91.61
1465	4.30	396.29	235.70	160.59	69.59
1483	7.90	395.38	193.40	201.98	87.53
1484	19.20	394.55	183.60	210.95	91.41
1497	3.50	394.52	167.20	227.32	98.50
1498	2.10	604.74	396.40	208.34	90.28
1502	5.20	604.74	385.30	219.44	95.09
1513	1.00	604.75	339.40	265.35	114.98
1517	7.50	395.56	205.40	190.16	82.40
1519	1.30	395.54	211.30	184.24	79.84
1524	1.70	634.28	615.60	18.68	8.09
1544	22.50	395.19	194.80	200.39	86.84
1547	18.00	395.19	208.00	187.19	81.12
1570	13.30	395.90	195.50	200.40	86.84
1575	10.60	394.53	171.60	222.93	96.60
1576	2.30	396.21	253.70	142.51	61.75
1580	8.90	396.20	245.80	150.40	65.17
1626	25.50	396.86	272.90	123.96	53.71
1627	15.00	397.45	289.00	108.45	47.00
1630	40.10	396.48	266.70	129.78	56.24
1636	242.01	395.81	245.70	150.11	65.05
1637	34.90	396.37	249.10	147.27	63.82
1647	35.40	396.59	236.20	160.39	69.50
1648	35.80	395.30	187.30	208.00	90.13
1657	9.60	394.52	176.60	217.92	94.43
1658	9.50	395.87	185.90	209.97	90.99
1674	11.00	394.64	178.00	216.64	93.88

6" and 2"

2040 Fireflow - Main Zone West

1679	4.20	466.48	317.70	148.78	64.47
1689	4.10	466.47	323.60	142.87	61.91
1690	0.60	466.47	319.70	146.77	63.60
1698	7.10	396.22	256.80	139.42	60.42
1699	7.80	396.51	218.90	177.61	76.97
1700	3.70	396.51	216.20	180.31	78.14
1710	9.30	397.35	303.90	93.45	40.49
1711	1.00	395.24	209.80	185.44	80.36
1712	2.30	395.24	268.50	126.74	54.92
1713	2.20	634.22	571.10	63.12	27.35
1716	9.70	634.18	533.50	100.68	43.63
1719	0.90	634.18	516.50	117.68	51.00
1737	8.20	393.60	166.60	227.00	98.37
1742	13.20	394.55	183.60	210.95	91.41
1767	5.00	396.31	193.40	202.91	87.93
1773	4.70	397.16	272.20	124.96	54.15
1775	2.30	397.15	270.10	127.05	55.06
1776	6.70	397.15	269.20	127.95	55.44
1782	12.10	397.15	269.10	128.05	55.49
1788	8.40	397.15	269.00	128.15	55.53
1791	1.20	397.16	273.40	123.76	53.63
1793	1.60	397.15	270.60	126.55	54.84
1799	4.20	398.17	201.40	196.77	85.27
1800	3.70	395.79	166.10	229.69	99.53
1801	1.10	395.79	173.70	222.09	96.24
1805	3.40	395.79	179.70	216.09	93.64
1806	2.00	395.79	173.10	222.69	96.50
1808	1.90	395.79	178.80	215.99	93.60
1809	3.20	395.79	172.30	223.49	96.85
1810	6.00	395.81	178.50	216.31	93.73
1813	4.70	395.79	171.10	224.69	97.37
1814	8.70	395.79	167.10	228.69	99.10
1818	3.70	395.42	178.50	216.92	94.00
1821	6.70	395.80	169.80	226.00	97.93
1823	3.60	394.78	182.50	212.28	91.99
1826	5.20	394.81	183.30	211.51	91.65
1827	9.30	394.83	192.90	201.93	87.50
1831	2.80	395.81	234.10	161.71	70.07
1948	1.50	395.20	234.90	160.30	69.46
1960	6.20	396.64	237.60	159.04	68.92
1961	4.60	397.01	190.10	206.91	89.66
1968	0.60	393.60	164.90	228.70	99.10
1971	0.20	395.22	185.30	209.92	90.97
1973	3.90	394.72	198.40	196.32	85.07
1974	6.40	394.69	187.50	207.19	89.78
1975	6.20	394.69	186.60	208.09	90.17
1980	5.00	394.70	180.20	214.50	92.95
1981	1.80	394.69	183.10	211.59	91.69
1984	5.10	396.21	194.10	202.11	87.58
1985	0.30	395.34	195.20	200.14	86.73
1986	5.70	395.34	194.50	200.84	87.03
1987	5.40	394.80	198.50	196.30	85.06
1988	0.20	396.15	219.50	176.65	76.55
1989	2.10	396.15	222.30	173.85	75.34
1991	4.80	396.21	194.20	202.01	87.54
1994	1.00	396.04	190.70	205.34	88.98
1996	5.70	396.39	189.80	206.59	89.52
1997	5.60	396.48	191.50	204.98	88.82
2003	0.20	395.21	185.20	210.01	91.00
2007	4.30	396.59	200.60	195.99	84.93
2009	5.60	396.52	196.90	199.62	86.50
2010	6.60	396.88	191.70	205.18	88.91
2012	5.60	397.12	199.00	198.12	85.85
2013	4.90	396.53	200.10	196.43	85.12
2014	8.10	396.50	193.20	203.30	88.10
2016	7.30	396.35	222.30	174.05	75.42
2021	1.10	396.16	204.20	191.96	83.18
2023	0.80	395.20	206.90	188.30	81.60
2025	3.10	604.73	455.60	149.13	64.62
2028	1.80	604.69	520.90	83.79	36.31
2029	1.60	604.73	449.00	155.73	67.48
2030	1.00	604.72	460.10	144.62	62.67
2031	4.10	604.74	430.90	173.84	75.33
2032	1.20	604.73	484.00	120.73	52.32
2033	2.90	604.74	474.20	130.54	56.57
2047	1.00	466.47	309.00	157.47	68.24
2050	0.20	466.47	301.10	165.37	71.66
2051	0.10	396.87	229.60	167.27	72.48
2052	0.10	396.87	229.90	166.97	72.35
2053	6.00	396.64	220.60	176.04	76.28
2061	1.60	396.43	208.20	188.23	81.57
2063	10.40	396.15	205.00	191.15	82.83
2065	7.70	397.13	198.90	198.23	85.90
2066	5.70	395.65	222.20	173.45	75.16
2067	11.20	398.93	216.20	182.73	79.18
2072	10.70	396.50	221.90	174.60	75.66
2073	4.30	396.57	199.80	196.77	85.27
2074	3.40	396.52	220.90	175.62	76.10
2076	11.30	395.23	204.40	190.83	82.69
2078	5.30	396.11	199.20	196.91	85.33
2079	5.60	396.06	203.10	192.96	83.61
2080	6.70	394.91	191.60	203.31	88.10
2081	5.90	394.81	198.70	196.11	84.98
2083	11.50	396.10	255.40	140.70	60.97
2084	7.50	396.09	224.10	171.99	74.53
2086	7.60	396.58	230.30	166.28	72.06
2088	12.10	634.28	604.50	29.78	12.90
2090	12.90	604.80	391.30	213.50	92.52
2091	6.60	395.86	195.30	200.56	86.91
2092	3.20	396.22	251.60	144.62	62.67
2093	8.30	396.72	236.00	160.72	69.65
2094	9.30	396.54	188.50	208.04	90.15
2095	6.50	396.59	187.60	208.99	90.56
2096	4.60	396.52	196.50	200.02	86.67
2097	6.80	396.56	202.50	194.06	84.09

2040 Fireflow - Main Zone West

2098	7.00	394.62	202.10	192.52	83.42	
2100	9.40	394.59	197.30	197.29	85.49	
2101	10.80	396.22	270.60	125.62	54.44	
2103	11.70	396.23	236.90	159.33	69.04	
2104	5.10	396.16	200.50	195.66	84.79	
2105	7.80	396.24	201.90	194.34	84.22	
2106	3.50	395.59	192.10	203.49	88.18	
2107	8.50	396.12	190.50	205.62	89.10	
2109	6.50	396.89	190.80	206.09	89.31	
2110	4.80	396.48	192.70	203.78	88.30	
2111	4.10	396.53	191.00	205.53	89.06	
2112	8.90	396.79	190.20	206.59	89.52	
2113	7.40	397.09	195.50	201.59	87.36	
2115	6.30	396.16	191.90	204.26	88.51	
2117	5.50	397.64	217.50	180.14	78.06	
2119	9.50	395.38	193.60	201.78	87.44	
2120	5.30	466.47	268.60	197.87	85.74	
2121	4.60	396.29	193.00	203.29	88.09	
2122	7.80	394.54	183.70	210.84	91.37	
2123	5.70	396.40	193.20	203.20	88.05	
2125	1.70	394.79	206.20	188.59	81.72	
2126	3.60	396.30	192.50	203.80	88.31	
2127	11.50	395.21	203.70	191.51	82.99	
2129	6.20	396.56	218.10	178.46	77.33	
2130	4.80	394.73	198.00	196.73	85.25	
2132	2.80	396.88	230.10	166.78	72.27	
2133	5.70	634.16	578.00	56.16	24.33	
2137	7.70	397.13	198.20	198.93	86.20	
2138	10.10	395.82	221.50	174.32	75.54	
I-18th St	0.00	396.25	218.20	178.05	77.16	
O-18th St	0.00	396.25	218.20	178.05	77.16	
3-in or sm	0.20	395.31	185.50	209.81	90.92	
3-inch or	0.50	395.79	183.00	212.79	92.21	
3-inch or	0.20	394.69	183.10	211.59	91.69	
O-AV-1	0.00	396.10	283.80	112.30	48.66	
I-AV-2	0.00	604.53	306.00	298.53	129.36	
I-AV-3	0.00	466.47	253.40	213.07	92.33	
O-AV-4	0.00	395.96	289.30	106.66	46.22	
O-AV-5	0.00	396.25	225.30	170.95	74.08	
O-AV-6	0.00	396.16	208.10	188.06	81.49	
O-Centrali	----	541.19	333.50	207.69	90.00	
O-Fairview	Fairview PRV	466.50	346.50	120.00	52.00	
O-High Lev	High Level P	0.00	604.78	401.60	203.18	88.05
High Level	High Level R	----	605.00	605.00	0.00	0.00
Hillcrest		0.40	396.50	256.20	140.30	60.80
inter-tie		4.70	395.19	174.40	220.79	95.68
J-1		5.80	394.63	174.00	220.63	95.61
J-100		1.20	394.97	190.60	204.37	88.56
J-105		4.20	394.60	175.60	219.00	94.90
J-106		4.60	394.82	206.20	188.62	81.73
J-11		4.60	493.68	280.00	213.68	92.59
J-110		8.00	394.92	198.00	196.92	85.33
J-111		3.20	394.67	192.50	202.17	87.61
J-112		8.40	395.80	167.90	227.90	98.76
J-113		4.00	396.04	200.50	195.54	84.73
J-114		18.30	604.52	405.70	198.82	86.16
J-115		3.00	396.46	197.30	199.16	86.30
J-116		3.10	396.51	207.10	189.41	82.08
J-117		2.70	396.30	192.10	204.20	88.49
J-120		4.00	396.28	237.50	158.78	68.81
J-122		4.30	394.63	174.00	220.63	95.61
J-123		0.60	395.59	224.70	170.89	74.05
J-124		3.40	604.74	403.80	200.94	87.07
J-125		3.30	604.74	383.00	221.74	96.09
J-126		5.40	400.03	367.95	32.08	13.90
J-127		45.90	395.84	225.20	170.64	73.94
J-128		23.90	395.81	235.20	160.61	69.60
J-129		13.70	394.77	184.80	209.97	90.99
J-130		6.20	395.65	222.00	173.65	75.25
J-131		0.90	604.74	418.00	186.74	80.92
J-132		4.80	394.63	176.00	218.63	94.74
J-133		1.40	604.75	339.60	265.15	114.90
J-134		2.00	396.20	200.90	195.30	84.63
J-135		3.20	397.19	288.30	108.89	47.18
J-136		1.40	395.20	204.10	191.10	82.81
J-138		1.70	395.59	219.60	175.99	76.26
J-139		0.80	396.25	222.60	173.65	75.25
J-140		0.90	395.59	218.20	177.39	76.87
J-141		0.80	395.25	200.90	194.35	84.22
J-142		0.40	396.25	218.20	178.05	77.16
J-143		17.00	395.20	186.90	208.30	90.26
J-144		3.10	395.90	186.80	209.10	90.61
J-145		0.20	395.59	218.20	177.39	76.87
J-146		0.00	395.59	218.20	177.39	76.87
J-147		0.00	396.25	218.20	178.05	77.16
J-148		12.30	526.39	498.90	27.49	11.91
J-149		6.10	491.51	306.10	185.41	80.35
J-150		9.80	493.43	272.40	221.03	95.78
J-151		22.40	492.25	326.80	165.45	71.70
J-152		10.50	493.43	272.40	221.03	95.78
J-153		125.60	491.51	302.40	189.11	81.95
J-154		10.10	493.43	267.60	225.83	97.86
J-155		28.80	492.53	263.80	228.73	99.12
J-156		32.60	492.75	261.30	231.45	100.29
J-157		3.00	492.34	265.80	226.54	98.17
J-158		14.20	395.84	211.40	184.44	79.92
J-159		0.60	604.75	343.00	261.75	113.42
J-160		7.50	395.28	172.60	222.68	96.49
J-161		0.40	395.42	178.60	216.82	93.96
J-162		11.50	395.29	183.00	212.29	91.99
J-163		6.50	395.21	183.70	211.51	91.65
J-164		20.60	395.20	177.50	217.70	94.34
J-167		4.50	396.52	0.00	396.52	171.82
J-168		4.80	394.70	0.00	394.70	171.04
J-169		10.90	399.74	413.50	-13.76	-5.96

2040 Fireflow - Main Zone West

J-170		2.80	394.63	174.50	220.13	95.39
J-171		3.50	397.18	286.90	110.28	47.79
J-173		100.30	481.02	329.80	151.22	65.53
J-176		1.70	394.63	166.40	228.23	98.90
J-177		3.80	395.20	179.10	216.10	93.64
J-2		9.40	394.66	201.80	192.86	83.57
J-20		3.60	394.69	182.90	211.79	91.77
J-21		2.50	394.69	182.80	211.89	91.82
J-25		8.20	604.75	311.10	293.65	127.25
J-27		6.90	395.99	207.10	188.89	81.85
J-3		5.50	394.69	182.20	212.49	92.08
J-30		12.80	395.65	218.90	175.75	76.16
J-35		13.60	396.33	222.10	174.23	75.50
J-39		6.70	397.34	218.10	179.24	77.67
J-4		4.20	394.69	184.40	210.29	91.12
J-42		10.00	396.50	222.00	174.50	75.62
J-44		10.10	396.39	208.40	187.99	81.46
J-45		7.00	396.43	209.00	187.43	81.22
J-53		15.80	397.58	294.30	103.28	44.75
J-55		8.70	397.17	297.10	100.07	43.37
J-57		2.20	396.87	228.20	167.67	72.66
J-58		2.50	395.20	204.60	190.60	82.60
J-6		13.89	538.46	473.40	65.06	28.19
J-61		7.10	395.20	207.00	188.20	81.55
J-62		1.80	395.20	191.50	203.70	88.27
J-63		2.20	395.59	225.20	170.39	73.84
J-64		6.80	395.25	202.30	192.95	83.61
J-67		3.50	396.23	210.80	185.43	80.35
J-7		5.80	395.84	214.70	181.14	78.49
J-71		3.70	396.22	204.60	191.62	83.04
J-73		10.50	396.20	199.60	196.60	85.19
J-74		1.70	466.47	301.00	165.47	71.70
J-77		1.00	466.47	296.10	170.37	73.83
J-78		8.60	395.96	230.70	165.26	71.61
J-79		4.50	395.84	223.40	172.44	74.72
J-8		10.70	395.99	208.80	187.19	81.12
J-80		8.20	395.24	190.70	204.54	88.63
J-81		11.10	396.23	218.90	177.33	76.84
J-82		10.80	396.23	257.90	138.33	59.94
J-84		3.80	396.25	226.30	169.95	73.65
J-87		7.00	396.26	194.40	201.86	87.47
J-88		35.00	493.68	275.70	217.98	94.46
J-90		0.10	396.51	219.10	177.41	76.88
J-91		6.50	399.77	352.90	46.87	20.31
J-93		2.80	395.22	187.50	207.72	90.01
J-94		6.00	395.22	187.50	207.72	90.01
J-95		19.80	395.25	189.50	205.75	89.16
J-96		10.80	395.19	176.90	218.29	94.59
J-99		1.90	394.78	205.50	189.28	82.02
Kennicott	Kennicott Re		397.90	374.00	23.90	10.36
Main Reser	Main Reservo	----	400.20	383.30	16.90	7.32
physical d		0.10	396.49	222.00	174.49	75.61
I-RV-1		0.00	395.90	186.80	209.10	90.61
I-RV-2		0.00	395.25	200.90	194.35	84.22
O-South En		----	495.59	287.90	207.69	90.00
O-Valley V	Valley View	0.00	635.90	308.10	327.80	142.05
Yankis (Va	Yankis (Vall	----	635.90	631.50	4.40	1.91
Yates Rese	500,000 gal	----	400.20	376.00	24.20	10.49
O-18th St		----	395.59	218.20	177.39	76.87
I-18th St		0.00	395.59	218.20	177.39	76.87
I-AV-1		0.00	604.52	283.80	320.72	138.98
O-AV-2		0.00	396.14	306.00	90.14	39.06
O-AV-3		0.00	396.27	253.40	142.87	61.91
I-AV-4		0.00	604.74	289.30	315.44	136.69
I-AV-5		0.00	395.59	225.30	170.29	73.79
I-AV-6		0.00	395.20	208.10	187.10	81.08
I-Centrall		0.00	481.02	333.50	147.52	63.92
I-Fairview	Fairview PRV	0.00	634.12	346.50	287.62	124.64
I-High Lev	High Level P	0.00	400.03	401.60	-1.57	-0.68
O-RV-1		----	395.20	186.80	208.40	90.31
O-RV-2		----	396.20	200.90	195.30	84.63
I-South En		0.00	397.15	287.90	109.25	47.34
I-Valley V	Valley View	0.00	396.23	308.10	88.13	38.19

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
J-167	171.82	J-169	-5.96
J-168	171.04	I-High Level	-0.68
O-Valley Vie	142.05	Yankis (Vall	1.91
I-AV-1	138.98	1251	5.61
I-AV-4	136.69	Main Reservo	7.32

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
1479	2.85	503	0.00
P-122	2.78	85	0.00
P-15	2.77	P-48	0.00
107	2.07	24	0.00
329	1.65	45	0.00

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-173	4.53	85	0.00
712	3.45	503	0.00
329	3.18	24	0.00
2011	2.84	45	0.00
1479	2.55	46	0.00

H L / 1 0 0 0

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-173	4.53	85	0.00
712	3.45	503	0.00
329	3.18	24	0.00
2011	2.84	45	0.00
1479	2.55	46	0.00

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
18th St PRV	PRV-1	74.30	CLOSED	77.16	76.87	0.00
18th St Pump	FCV-2	0.00	BOOSTED	76.87	77.16	0.00
Centralia Al	PRV-2	90.00	BOOSTED	63.92	90.00	26.19
Fairview PRV	PRV-1	52.00	ACTIVATED	124.64	52.00	24.90
High Level P	FCV-2	0.00	BOOSTED	-0.68	88.05	0.00
RV-1	PRV-1	85.00	CLOSED	90.61	90.31	0.00
RV-2	PRV-1	81.80	CLOSED	84.22	84.63	0.00
South End Pu	PRV-2	90.00	BOOSTED	47.34	90.00	414.99
Valley View	FCV-2	0.00	BOOSTED	38.19	142.05	0.00

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
High Level	148.00	High Level R
Kennicott R	795.70	Kennicott Re
Main Reserv	2203.70	Main Reserv
Yankis (Val	124.80	Yankis (Vall
Yates Reser	1003.99	500,000 gal

NET SYSTEM INFLOW = 4276.20
 NET SYSTEM OUTFLOW = 0.00
 NET SYSTEM DEMAND = 4276.20

FireFlow/Hydrant Report

Fireflow/Hydrant Report:

Scenario: No Title
 Global Demand Factor for this Scenario: 1.000

Specified Minimum Pressure (psi): 20.0
 Minimum Static Pressure (psi) : 21.0

Flow-1: Flowrate to maintain the specified pressure at (hydrant) node
 Node-2: Node that has a lower pressure than specified value at Flow-1
 Flow-2: Flowrate to maintain the specified pressure at Node-2

Hose Constant = 0.00

Hydrant Node	Hydrant Constant	Elevation	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2 gpm	Flow Capacity	NFPA Color
H-433	0.0	199.3	85.3	2695.3			2695.3	BLUE
H-370	0.0	165.3	98.9	146.4			146.4	RED
H-514	0.0	193.3	88.1	4880.3			4880.3	BLUE
H-513	0.0	191.2	89.0	4558.2			4558.2	BLUE
H-178	0.0	205.2	82.3	2509.9			2509.9	BLUE
H-359	0.0	174.0	95.6	3481.9			3481.9	BLUE
H-321	0.0	175.7	94.9	3917.8			3917.8	BLUE
H-441	0.0	217.5	77.7	7606.1	4137.2	37	4137.2	BLUE
H-298	0.0	203.6	84.3	2949.9			2949.9	BLUE
H-505	0.0	218.2	78.3	24963.2	10975.6	37	10975.6	BLUE
H-363	0.0	183.5	91.4	4197.8			4197.8	BLUE
H-334	0.0	178.3	93.7	4706.0	4378.2	1712	4378.2	BLUE
H-335	0.0	178.6	93.6	4711.7	4382.8	1712	4382.8	BLUE
H-344	0.0	174.9	95.2	4523.9	4305.5	1712	4305.5	BLUE
H-330	0.0	183.6	91.5	5136.2	4238.0	1712	4238.0	BLUE
H-329	0.0	182.6	91.9	5284.7	4228.3	1712	4228.3	BLUE
H-324	0.0	195.5	86.5	5421.4	3987.9	1712	3987.9	BLUE
H-308	0.0	185.5	90.9	5350.7	3478.4	1712	3478.4	BLUE
H-365	0.0	165.8	99.1	3944.7	3871.2	1657	3871.2	BLUE

2040 Fireflow - Main Zone West

H-247	0.0	221.7	75.6	6427.7	4977.7	1396	4977.7	BLUE
H-248	0.0	227.8	72.9	5687.5	5163.4	1396	5163.4	BLUE
H-231	0.0	191.1	88.5	4743.1			4743.1	BLUE
H-341	0.0	174.8	95.2	4606.2	4312.6	1712	4312.6	BLUE
H-342	0.0	178.0	93.9	4371.6	4312.6	1712	4312.6	BLUE
H-343	0.0	178.1	93.8	4276.8			4276.8	BLUE
H-302	0.0	179.5	93.5	3808.1	3378.0	1712	3378.0	BLUE
H-304	0.0	182.2	92.3	4285.5	3813.5	1712	3813.5	BLUE
H-268	0.0	191.5	88.3	5212.3			5212.3	BLUE
H-269	0.0	189.9	89.0	5465.4			5465.4	BLUE
H-440	0.0	207.1	82.1	5190.6	3968.5	37	3968.5	BLUE
H-439	0.0	201.9	84.2	5287.3	3952.6	37	3952.6	BLUE
H-438	0.0	207.3	81.8	4306.4	3796.3	37	3796.3	BLUE
H-443	0.0	213.1	79.3	4114.2	3104.8	37	3104.8	BLUE
H-397	0.0	191.3	88.3	4358.0			4358.0	BLUE
H-336	0.0	178.6	93.6	4203.7			4203.7	BLUE
H-337	0.0	179.0	93.4	3365.5			3365.5	BLUE
H-239	0.0	195.4	86.8	3774.8			3774.8	BLUE
H-238	0.0	192.6	87.9	3745.3			3745.3	BLUE
H-338	0.0	175.3	95.0	4549.6	4303.3	1712	4303.3	BLUE
H-339	0.0	181.9	92.2	4514.1	4248.8	1712	4248.8	BLUE
H-340	0.0	180.7	92.7	3302.3			3302.3	BLUE
H-310	0.0	191.7	88.2	3561.5	2388.8	1712	2388.8	BLUE
H-348	0.0	177.9	93.9	2487.6			2487.6	BLUE
H-500	0.0	209.1	81.2	2144.8			2144.8	BLUE
H-475	0.0	197.3	86.3	3973.3			3973.3	BLUE
H-512	0.0	189.7	89.6	3534.3			3534.3	BLUE
H-442	0.0	216.1	78.0	3612.4	3124.9	37	3124.9	BLUE
H-454	0.0	243.2	66.3	2142.2			2142.2	BLUE
H-455	0.0	259.6	59.2	4014.5	2158.0	37	2158.0	BLUE
H-469	0.0	197.3	86.3	2218.4			2218.4	BLUE
H-434	0.0	200.8	84.6	3415.5			3415.5	BLUE
H-376	0.0	199.8	84.4	2331.5			2331.5	BLUE
H-405	0.0	197.6	85.5	3252.8			3252.8	BLUE
H-407	0.0	183.2	91.9	2213.8			2213.8	BLUE
H-453	0.0	232.3	71.0	2778.0	2539.8	37	2539.8	BLUE
H-446	0.0	219.6	76.5	3633.6	2272.7	37	2272.7	BLUE
H-447	0.0	238.3	68.4	2753.8	2272.7	37	2272.7	BLUE
H-388	0.0	182.1	92.1	2378.1			2378.1	BLUE
H-377	0.0	195.7	86.2	2447.7			2447.7	BLUE
H-393	0.0	206.1	81.8	3202.9			3202.9	BLUE
H-333	0.0	179.3	93.3	3707.5			3707.5	BLUE
H-408	0.0	183.6	92.0	2759.0			2759.0	BLUE
H-404	0.0	193.7	87.2	3457.2			3457.2	BLUE
H-424	0.0	193.2	87.8	3630.1			3630.1	BLUE
H-61	0.0	194.7	87.0	2138.3			2138.3	BLUE
H-332	0.0	183.2	91.6	855.5			855.5	ORANGE
H-375	0.0	183.2	91.6	3717.3			3717.3	BLUE
H-325	0.0	195.5	86.3	2075.2			2075.2	BLUE
H-534	0.0	166.1	99.1	2989.5	2843.5	1064	2843.5	BLUE
H-533	0.0	182.6	91.9	3111.0			3111.0	BLUE
H-459	0.0	203.8	82.9	3396.2			3396.2	BLUE
H-457	0.0	210.9	79.9	3359.3			3359.3	BLUE
H-327	0.0	197.2	85.8	3749.2			3749.2	BLUE
H-328	0.0	197.5	85.7	3999.7			3999.7	BLUE
H-499	0.0	197.8	86.1	2542.7			2542.7	BLUE
H-243	0.0	234.2	70.2	6124.7	3581.2	1396	3581.2	BLUE
H-244	0.0	248.8	63.8	4093.9			4093.9	BLUE
H-176	0.0	205.2	82.3	2113.7			2113.7	BLUE
H-216	0.0	225.0	74.0	3163.2			3163.2	BLUE
H-217	0.0	209.1	80.8	2632.4			2632.4	BLUE
H-240	0.0	200.9	84.4	4282.3			4282.3	BLUE
H-252	0.0	191.4	88.5	4190.2			4190.2	BLUE
H-497	0.0	188.7	90.0	2239.8			2239.8	BLUE
H-515	0.0	191.5	89.0	3495.0			3495.0	BLUE
H-496	0.0	187.4	90.6	4075.9			4075.9	BLUE
H-494	0.0	193.1	88.1	3874.4			3874.4	BLUE
H-493	0.0	191.5	88.8	3503.8			3503.8	BLUE
H-516	0.0	190.8	89.4	3515.3			3515.3	BLUE
H-520	0.0	198.9	85.9	4356.5			4356.5	BLUE
H-517	0.0	198.4	86.1	4028.0			4028.0	BLUE
H-511	0.0	195.3	87.6	4938.1			4938.1	BLUE
H-477	0.0	191.0	89.0	3672.5			3672.5	BLUE
H-481	0.0	184.9	91.6	2046.6			2046.6	BLUE
H-482	0.0	184.8	91.7	2032.7			2032.7	BLUE
H-483	0.0	184.5	91.8	2022.2			2022.2	BLUE
H-484	0.0	183.2	92.4	1991.5			1991.5	BLUE
H-485	0.0	183.6	92.2	2558.8			2558.8	BLUE
H-487	0.0	184.9	91.6	2510.1			2510.1	BLUE
H-488	0.0	185.2	91.4	2243.9			2243.9	BLUE
H-489	0.0	185.2	91.4	2266.3			2266.3	BLUE
H-518	0.0	214.5	79.5	6215.2			6215.2	BLUE
H-180	0.0	201.3	84.0	2849.1	2807.0	69	2807.0	BLUE
H-177	0.0	204.6	82.6	2196.4			2196.4	BLUE
H-504	0.0	215.4	79.2	5954.2			5954.2	BLUE
H-503	0.0	196.0	87.3	2301.3			2301.3	BLUE
H-502	0.0	191.3	89.1	3030.1			3030.1	BLUE
H-501	0.0	213.8	79.2	2807.5			2807.5	BLUE
H-486	0.0	184.8	91.7	2479.1			2479.1	BLUE
H-490	0.0	185.2	91.5	2587.9			2587.9	BLUE
H-491	0.0	184.5	91.8	2467.7			2467.7	BLUE
H-291	0.0	236.9	69.0	3535.4			3535.4	BLUE
H-292	0.0	232.8	70.8	4006.8	3753.7	1396	3753.7	BLUE
H-185	0.0	197.4	85.8	2602.0			2602.0	BLUE
H-188	0.0	199.3	85.0	2208.0			2208.0	BLUE
H-187	0.0	205.0	82.6	2872.1			2872.1	BLUE
H-237	0.0	199.1	85.1	2609.5			2609.5	BLUE
H-230	0.0	193.6	87.4	3155.3			3155.3	BLUE
H-234	0.0	200.4	84.5	2607.8			2607.8	BLUE
H-242	0.0	224.2	74.6	1865.8			1865.8	BLUE
H-287	0.0	183.9	91.5	1062.6			1062.6	GREEN
H-288	0.0	187.1	90.1	696.6			696.6	ORANGE
H-182	0.0	207.5	81.3	2253.1			2253.1	BLUE
H-181	0.0	206.8	81.6	2340.9			2340.9	BLUE
H-463	0.0	257.7	60.0	4127.1	2550.0	37	2550.0	BLUE

2040 Fireflow - Main Zone West

H-464	0.0	284.4	48.5	2865.5			2865.5	BLUE
H-300	0.0	195.2	86.7	600.2	552.4	1063	552.4	ORANGE
H-299	0.0	183.7	92.1	821.6			821.6	ORANGE
H-222	0.0	195.4	86.6	3815.5			3815.5	BLUE
H-229	0.0	197.2	85.8	2982.8			2982.8	BLUE
H-228	0.0	191.9	88.1	3494.8			3494.8	BLUE
H-495	0.0	192.4	88.4	1691.6			1691.6	BLUE
H-430	0.0	194.2	87.5	4122.9			4122.9	BLUE
H-381	0.0	190.9	88.3	2526.9			2526.9	BLUE
H-382	0.0	192.0	87.8	2428.1			2428.1	BLUE
H-372	0.0	166.7	98.3	424.5			424.5	RED
H-371	0.0	169.4	97.2	440.1			440.1	RED
H-519	0.0	200.8	84.7	2716.7			2716.7	BLUE
H-241	0.0	205.5	82.4	3876.3			3876.3	BLUE
H-186	0.0	195.3	86.6	2758.0			2758.0	BLUE
H-233	0.0	197.7	85.7	2571.0			2571.0	BLUE
H-232	0.0	193.8	87.4	3025.3			3025.3	BLUE
H-366	0.0	164.4	99.7	1980.9	1963.7	1497	1963.7	BLUE
H-367	0.0	167.0	98.6	634.9			634.9	ORANGE
H-314	0.0	185.3	91.0	3361.1	2618.3	1712	2618.3	BLUE
H-319	0.0	208.0	81.1	2455.3			2455.3	BLUE
H-347	0.0	195.7	86.4	2533.2	2475.3	1547	2475.3	BLUE
H-175	0.0	182.5	92.2	2605.4	2475.3	1547	2475.3	BLUE
H-322	0.0	177.3	94.4	2587.7	2475.3	1547	2475.3	BLUE
H-318	0.0	181.8	92.5	2617.1	2506.6	1547	2506.6	BLUE
H-317	0.0	176.3	94.9	2516.6	2500.6	1547	2500.6	BLUE
H-316	0.0	175.0	95.4	2515.9	2496.4	1547	2496.4	BLUE
H-315	0.0	181.0	92.8	2547.9	2488.7	1547	2488.7	BLUE
H-349	0.0	182.9	91.8	4662.2	4251.2	1712	4251.2	BLUE
H-350	0.0	182.5	91.9	4584.2	4254.1	1712	4254.1	BLUE
H-351	0.0	180.5	92.8	4485.1	4258.6	1712	4258.6	BLUE
H-352	0.0	179.0	93.4	4453.8	4260.4	1712	4260.4	BLUE
H-220	0.0	177.7	94.0	4363.8	4261.6	1712	4261.6	BLUE
H-320	0.0	176.1	94.7	4212.8			4212.8	BLUE
H-356	0.0	175.1	95.1	3933.1			3933.1	BLUE
H-271	0.0	187.8	89.9	5604.5	5555.9	92	5555.9	BLUE
H-364	0.0	169.2	97.6	4371.8	4237.7	34	4237.7	BLUE
H-267	0.0	188.8	89.5	5817.8			5817.8	BLUE
H-266	0.0	185.3	91.0	5688.4			5688.4	BLUE
H-265	0.0	183.6	91.8	5623.4			5623.4	BLUE
H-264	0.0	183.6	91.8	5563.3			5563.3	BLUE
H-263	0.0	183.6	91.8	5530.8			5530.8	BLUE
H-262	0.0	183.6	91.8	5488.5			5488.5	BLUE
H-259	0.0	183.6	91.8	5470.0			5470.0	BLUE
H-260	0.0	183.6	91.8	5456.9			5456.9	BLUE
H-261	0.0	183.6	91.8	5453.1			5453.1	BLUE
H-256	0.0	184.9	91.3	5429.9			5429.9	BLUE
H-257	0.0	186.8	90.4	5398.2			5398.2	BLUE
H-258	0.0	185.5	89.3	5354.4			5354.4	BLUE
H-535	0.0	176.4	94.5	3282.5			3282.5	BLUE
H-536	0.0	175.9	94.7	2822.9			2822.9	BLUE
H-537	0.0	175.1	95.1	2556.0	2543.2	1657	2543.2	BLUE
H-538	0.0	175.5	94.9	2279.1			2279.1	BLUE
H-539	0.0	177.2	94.2	2112.7			2112.7	BLUE
H-540	0.0	173.0	96.0	1987.6	1964.3	1657	1964.3	BLUE
H-541	0.0	177.2	94.2	1843.3			1843.3	BLUE
H-402	0.0	186.0	90.8	4571.6			4571.6	BLUE
H-423	0.0	176.7	94.4	4130.8			4130.8	BLUE
H-346	0.0	176.0	94.7	4295.9			4295.9	BLUE
H-311	0.0	209.8	80.4	1949.9	1599.1	1712	1599.1	BLUE
H-312	0.0	200.3	84.5	2254.9	1599.1	1712	1599.1	BLUE
H-313	0.0	266.1	56.0	1384.3	1361.0	1712	1361.0	GREEN
H-374	0.0	183.7	91.3	1170.4			1170.4	GREEN
H-373	0.0	168.3	97.6	423.8			423.8	RED
H-368	0.0	184.4	91.1	4243.9			4243.9	BLUE
H-361	0.0	183.8	91.3	4434.2			4434.2	BLUE
H-495b	0.0	192.4	88.4	6248.2	4686.9	37	4686.9	BLUE
H-478	0.0	190.6	89.2	4904.0	4754.3	37	4754.3	BLUE
H-476	0.0	192.8	88.2	3920.0			3920.0	BLUE
H-413	0.0	172.5	96.8	3120.0	3108.0	1801	3108.0	BLUE
H-419	0.0	181.7	92.8	2621.6	2610.03-inch or		2610.0	BLUE
H-410	0.0	178.3	94.3	3567.5	3512.63-inch or		3512.6	BLUE
H-411	0.0	176.1	95.2	3472.5	3395.03-inch or		3395.0	BLUE
H-416	0.0	167.1	99.1	2747.9	2647.5 J-161		2647.5	BLUE
H-412	0.0	168.9	98.3	3338.7	3237.03-inch or		3237.0	BLUE
H-414	0.0	167.4	99.0	3070.1			3070.1	BLUE
H-331	0.0	182.1	92.1	4904.4	4255.1	1712	4255.1	BLUE
H-387	0.0	180.3	92.9	4706.8	4332.7	1712	4332.7	BLUE
H-384	0.0	186.3	90.3	2344.7			2344.7	BLUE
H-385	0.0	186.4	90.3	2371.4			2371.4	BLUE
H-386	0.0	181.5	92.4	2049.8			2049.8	BLUE
H-420	0.0	191.0	88.8	2090.7			2090.7	BLUE
H-480	0.0	189.0	89.9	2551.8			2551.8	BLUE
H-471	0.0	200.0	85.2	6648.4	4675.2	37	4675.2	BLUE
H-293	0.0	218.7	76.9	1301.3			1301.3	GREEN
H-225	0.0	203.7	83.0	3057.7			3057.7	BLUE
H-226	0.0	193.5	87.4	2768.9			2768.9	BLUE
H-307	0.0	187.1	90.2	3987.2	3513.3	1712	3513.3	BLUE
H-369	0.0	175.2	94.7	611.5			611.5	ORANGE
H-379	0.0	197.4	85.5	3010.5			3010.5	BLUE
H-452	0.0	273.4	53.2	3389.5	2106.1	37	2106.1	BLUE
H-362	0.0	183.8	91.3	4322.0			4322.0	BLUE
H-250	0.0	221.2	76.0	8618.5	5118.0	1396	5118.0	BLUE
H-467	0.0	234.4	70.3	2940.9			2940.9	BLUE
H-437	0.0	199.9	85.0	5218.2	3967.2	37	3967.2	BLUE
H-399	0.0	210.0	80.6	5430.7	3155.1	37	3155.1	BLUE
H-400	0.0	205.6	82.3	4365.9	3636.5	37	3636.5	BLUE
H-398	0.0	199.0	85.1	4498.1	4081.7	37	4081.7	BLUE
H-431	0.0	192.9	88.1	3824.4			3824.4	BLUE
H-428	0.0	194.5	87.3	4531.5	4062.7	37	4062.7	BLUE
H-391	0.0	182.0	92.2	2417.2			2417.2	BLUE
H-406	0.0	199.0	84.8	2559.0			2559.0	BLUE
H-421	0.0	187.4	90.4	6062.1	4547.8	37	4547.8	BLUE
H-303	0.0	178.9	93.8	3830.4	3618.6	1712	3618.6	BLUE
H-251	0.0	202.8	83.8	4912.8			4912.8	BLUE

2040 Fireflow - Main Zone West

H-510	0.0	214.8	79.6	15462.6	9998.4	1396	9998.4	BLUE
H-492	0.0	187.6	90.5	3434.4			3434.4	BLUE
H-479	0.0	187.2	90.7	2484.5			2484.5	BLUE
H-221	0.0	197.4	85.8	3786.0			3786.0	BLUE
H-425	0.0	208.0	81.2	3173.2			3173.2	BLUE
H-255	0.0	221.2	76.0	8762.2	5436.7	1396	5436.7	BLUE
H-254	0.0	194.6	87.3	3196.2			3196.2	BLUE
H-253	0.0	193.2	87.8	5068.7			5068.7	BLUE
H-465	0.0	245.4	65.4	2400.4			2400.4	BLUE
H-380	0.0	190.4	88.5	2378.9			2378.9	BLUE
H-523	0.0	220.3	76.5	9078.7	5806.9	1396	5806.9	BLUE
H-522	0.0	218.8	77.3	9586.5	6217.4	1396	6217.4	BLUE
H-219	0.0	205.6	82.3	3420.8			3420.8	BLUE
H-426	0.0	185.0	91.4	5363.9	4551.0	37	4551.0	BLUE
H-427	0.0	166.1	99.5	3270.5	3097.43-inch or		3097.4	BLUE
H-415	0.0	171.1	97.4	3126.8	3006.63-inch or		3006.6	BLUE
H-417	0.0	176.2	95.2	2962.7	2896.13-inch or		2896.1	BLUE
H-418	0.0	179.4	93.8	2776.8	2743.33-inch or		2743.3	BLUE
H-409	0.0	180.8	93.2	3679.6	3652.43-inch or		3652.4	BLUE
H-383	0.0	194.1	86.9	2430.4			2430.4	BLUE
H-422	0.0	192.8	88.1	6660.7	4546.0	37	4546.0	BLUE
H-355	0.0	194.5	87.0	2069.8			2069.8	BLUE
H-472	0.0	217.7	77.7	8879.8	4641.4	37	4641.4	BLUE
H-218	0.0	211.0	80.0	3884.1			3884.1	BLUE
H-236	0.0	207.2	81.6	2864.4			2864.4	BLUE
H-223	0.0	204.0	82.9	3490.2			3490.2	BLUE
H-227	0.0	204.2	82.8	2994.9			2994.9	BLUE
H-436	0.0	203.1	83.6	5298.8	3508.7	37	3508.7	BLUE
H-396	0.0	191.6	88.1	4263.2			4263.2	BLUE
H-395	0.0	197.6	85.5	4032.5			4032.5	BLUE
H-403	0.0	200.7	84.1	3290.2			3290.2	BLUE
H-444	0.0	226.7	73.4	4376.9	2321.0	37	2321.0	BLUE
H-448	0.0	247.5	64.4	3443.3	2248.7	37	2248.7	BLUE
H-445	0.0	217.1	77.6	4056.1	2288.6	37	2288.6	BLUE
H-249	0.0	197.3	86.0	4546.6			4546.6	BLUE
H-466	0.0	270.6	54.4	3457.8	2511.1	37	2511.1	BLUE
H-468	0.0	231.6	71.5	2164.1			2164.1	BLUE
H-498	0.0	187.9	90.4	4166.3			4166.3	BLUE
H-392	0.0	205.3	82.0	2161.5			2161.5	BLUE
H-378	0.0	202.1	83.4	2854.9			2854.9	BLUE
H-326	0.0	197.4	85.4	2545.6			2545.6	BLUE
H-508	0.0	271.9	53.9	3432.7			3432.7	BLUE
H-507	0.0	278.1	51.2	3201.3			3201.3	BLUE
H-290	0.0	259.7	59.2	3442.8	3230.2	1396	3230.2	BLUE
H-289	0.0	266.5	56.2	3460.3	2829.4	1396	2829.4	BLUE
H-235	0.0	207.3	81.6	2764.1			2764.1	BLUE
H-432	0.0	192.8	88.2	4515.0			4515.0	BLUE
H-474	0.0	193.5	87.9	8138.9	4647.9	37	4647.9	BLUE
H-473	0.0	196.1	86.8	8206.9	4656.8	37	4656.8	BLUE
H-429	0.0	194.1	87.6	7424.7	4574.9	37	4574.9	BLUE
H-358	0.0	173.7	95.7	3706.8	3678.0	J-132	3678.0	BLUE
H-435	0.0	202.3	84.0	2397.7			2397.7	BLUE
H-470	0.0	207.1	82.1	2141.3			2141.3	BLUE
H-509	0.0	241.0	67.3	2957.3			2957.3	BLUE
H-506	0.0	267.8	55.7	3219.5			3219.5	BLUE
H-521	0.0	218.0	77.7	10334.5	6677.7	1396	6677.7	BLUE
H-360	0.0	173.9	95.6	3600.8	3575.3	J-132	3575.3	BLUE
H-561	0.0	173.8	95.7	3588.2	3561.7	J-132	3561.7	BLUE
H-450	0.0	274.6	52.7	3008.5	2184.7	37	2184.7	BLUE
H-449	0.0	260.6	58.7	3525.9	2184.7	37	2184.7	BLUE
H-456	0.0	295.7	43.5	2190.3	2057.4	37	2057.4	BLUE
H-562	0.0	174.4	95.4	3463.3	3444.6	J-132	3444.6	BLUE
H-563	0.0	175.8	94.8	3373.0			3373.0	BLUE
H-564	0.0	176.3	94.6	3319.4			3319.4	BLUE
H-353	0.0	191.3	88.5	3692.5			3692.5	BLUE
H-184	0.0	205.5	82.2	2768.0			2768.0	BLUE
H-224	0.0	205.4	82.3	2801.3			2801.3	BLUE
H-301	0.0	180.4	93.1	3474.8			3474.8	BLUE
H-309	0.0	189.9	89.0	4060.7	2696.1	1712	2696.1	BLUE
H-270	0.0	185.4	90.9	3578.1			3578.1	BLUE
H-558	0.0	177.1	94.5	5888.9	5675.8	92	5675.8	BLUE
H-274	0.0	178.4	93.9	5866.5	5750.1	92	5750.1	BLUE
H-273	0.0	179.1	93.6	5861.2			5861.2	BLUE
H-275	0.0	179.8	93.3	5857.5			5857.5	BLUE
H-276	0.0	179.8	93.3	5875.7			5875.7	BLUE
H-277	0.0	181.0	92.8	5891.1			5891.1	BLUE
H-278	0.0	178.2	94.0	5983.2			5983.2	BLUE
H-285	0.0	179.7	93.4	5997.5			5997.5	BLUE
H-283	0.0	181.3	92.7	6017.5			6017.5	BLUE
H-284	0.0	182.7	92.1	6049.9			6049.9	BLUE
H-286	0.0	185.9	90.7	6042.6			6042.6	BLUE
H-281	0.0	185.3	91.0	6116.4			6116.4	BLUE
H-280	0.0	187.8	89.9	6195.7			6195.7	BLUE
H-565	0.0	168.1	98.2	3259.1			3259.1	BLUE
H-357	0.0	174.1	95.6	3672.6			3672.6	BLUE
H-566	0.0	178.8	93.8	4720.3			4720.3	BLUE
H-272	0.0	175.4	95.0	3270.8			3270.8	BLUE
H-390	0.0	182.2	92.1	2331.5			2331.5	BLUE
H-532	0.0	208.4	80.9	2311.3			2311.3	BLUE
H-179	0.0	209.3	80.6	2398.1			2398.1	BLUE
H-214	0.0	223.0	74.9	5035.2	3834.8	686	3834.8	BLUE
H-215	0.0	223.0	74.8	3363.3			3363.3	BLUE
H-305	0.0	187.0	90.2	4118.6	3996.6	1712	3996.6	BLUE
H-306	0.0	194.1	87.1	3566.7			3566.7	BLUE
H-323	0.0	173.1	96.2	2575.1	2475.3	1547	2475.3	BLUE
H-345	0.0	175.7	94.9	4438.6	4301.1	1712	4301.1	BLUE
H-389	0.0	182.9	91.8	2224.5			2224.5	BLUE
H-394	0.0	206.3	81.7	3841.9			3841.9	BLUE

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Date & Time: Tue Feb 08 09:33:12 2022

Master File : p:\0155_chehalis\1078 wsp_update\rpt-planning\mdlmg\01551078 city of chehalis capital improvement program 2040.KYP\01551078 city of chehalis capital improve :

 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

REGULATING VALVE DATA

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
18th St PRV	PRV-1	389.66
18th St Pump	Const_FLOW_Pump	1200.00
Centralia Al	Const_HEAD_Pump	541.19
Fairview PRV	PRV-1	466.50
High Level P	Const_FLOW_Pump	0.00
RV-1	PRV-1	382.95
RV-2	PRV-1	389.67
South End Pu	Const_HEAD_Pump	495.59
Valley View	Const_FLOW_Pump	0.00

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1	NODE NAMES #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
3	5	6	24.78	10.00	90.0000	0.00
5	9	10	824.44	8.00	130.0000	0.00
6	11	12	38.56	8.00	90.0000	0.00
7	13	872	38.38	6.00	75.0000	0.00
8	15	16	7.84	6.00	90.0000	0.00
10	18	19	437.00	2.00	140.0000	0.00
12	22	23	750.00	8.00	130.0000	0.00
13	24	1524	360.61	4.00	130.0000	0.00
14	26	J-55	539.97	10.00	130.0000	0.00
16	28	29	217.00	10.00	130.0000	0.00
17	31	32	723.00	12.00	130.0000	0.00
21	37	38	170.42	4.00	75.0000	0.00
22	2014	40	325.43	8.00	130.0000	0.00
23	41	1699	28.75	12.00	130.0000	0.00
24	43	213	42.27	12.00	130.0000	0.00
26	47	48	173.64	4.00	130.0000	0.00
27	49	50	310.00	10.00	130.0000	0.00
28	51	52	222.00	8.00	130.0000	0.00
32	59	60	108.37	6.00	75.0000	0.00
35	65	66	295.51	6.00	75.0000	0.00
37	68	69	412.00	8.00	130.0000	0.00
38	52	70	245.00	6.00	130.0000	0.00
39	Hillcrest	72	81.50	4.00	130.0000	0.00
41	75	76	3275.00	12.00	130.0000	0.00
45	83	2066	32.96	12.00	130.0000	0.00
46	85	86	33.07	12.00	130.0000	0.00
52	97	98	74.85	8.00	130.0000	0.00
55	102	103	68.31	8.00	130.0000	0.00
56	104	1810	34.98	12.00	130.0000	0.00
59	107	108	7.82	12.00	130.0000	0.00
60	109	J-53	785.00	16.00	130.0000	0.00
66	118	J-169	2076.37	14.00	90.0000	0.00
68	119	121	704.00	14.00	75.0000	0.00
70	121	860	23.71	14.00	75.0000	0.00
72	118	1799	900.00	8.00	130.0000	0.00
85	physical d	396	23.76	14.00	75.0000	0.00
107	J-91	2067	949.00	18.00	130.0000	0.00
109	325	34	484.84	12.00	130.0000	0.00
110	2122	166	948.74	12.00	130.0000	0.00
112	166	962	902.00	12.00	130.0000	0.00
114	569	962	308.00	12.00	130.0000	0.00
115	569	665	1519.00	12.00	130.0000	0.00
118	172	J-105	650.00	12.00	130.0000	0.00
120	175	178	251.61	12.00	130.0000	0.00
123	178	1826	444.69	12.00	130.0000	0.00
126	1826	1827	278.93	12.00	130.0000	0.00
129	1827	192	1658.25	12.00	130.0000	0.00

2040 Fireflow - Main Zone East

137	192	201	248.00	12.00	130.0000	0.00
139		137	409.00	12.00	130.0000	0.00
141	15	137	446.49	12.00	130.0000	0.00
142	15	J-162	456.08	12.00	130.0000	0.00
145	201	J-93	562.05	12.00	90.0000	0.00
155	212	213	677.50	12.00	130.0000	0.00
156	214	26	1649.00	12.00	130.0000	0.00
163	2072	224	1245.00	12.00	130.0000	0.00
187	248	253	1835.17	12.00	130.0000	0.00
192	254	J-127	1507.19	12.00	130.0000	0.00
262	325	1575	908.76	12.00	130.0000	0.00
279	343	344	127.52	12.00	130.0000	0.00
280	344	342	115.85	12.00	130.0000	0.00
282	342	346	192.42	12.00	130.0000	0.00
283	86	J-130	1344.24	12.00	130.0000	0.00
292	356	361	2280.98	10.00	90.0000	0.00
298	32	J-7	60.00	10.00	90.0000	0.00
302	32	480	930.34	10.00	90.0000	0.00
318	384	385	126.00	10.00	130.0000	0.00
319	356	J-167	699.21	10.00	90.0000	0.00
320	356	41	37.27	10.00	90.0000	0.00
329	396	398	31.65	10.00	75.0000	0.00
331	398	1409	306.52	10.00	75.0000	0.00
340	407	408	647.97	10.00	75.0000	0.00
353	661	2119	350.44	6.00	75.0000	0.00
355	424	1648	189.00	10.00	90.0000	0.00
363	295	468	3228.55	10.00	130.0000	0.00
398	172	473	539.00	12.00	130.0000	0.00
403	474	480	672.00	8.00	90.0000	0.00
411	J-45	2129	770.00	8.00	90.0000	0.00
414	1217	1121	284.43	8.00	130.0000	0.00
417	492	1235	414.07	8.00	75.0000	0.00
429	505	509	502.00	8.00	75.0000	0.00
433	510	512	462.00	8.00	130.0000	0.00
435	513	J-160	231.52	8.00	75.0000	0.00
440	518	J-94	278.47	8.00	75.0000	0.00
448	92	1184	943.86	8.00	130.0000	0.00
451	530	119	42.30	8.00	75.0000	0.00
452	119	536	464.52	8.00	75.0000	0.00
458	536	2079	637.02	8.00	75.0000	0.00
461	540	2079	30.24	8.00	75.0000	0.00
464	544	543	465.44	8.00	75.0000	0.00
472	552	J-100	98.00	8.00	75.0000	0.00
476	I-AV-1	J-114	1506.58	8.00	130.0000	0.00
486	569	573	476.00	8.00	130.0000	0.00
490	385	166	264.00	8.00	140.0000	0.00
495	579	J-138	330.16	8.00	130.0000	0.00
497	582	584	548.98	8.00	130.0000	0.00
503	590	J-73	801.25	8.00	75.0000	0.00
511	599	601	450.87	8.00	130.0000	0.00
526	599	619	720.36	8.00	130.0000	0.00
531	620	623	618.14	8.00	130.0000	0.00
538	628	631	136.23	8.00	90.0000	0.00
541	632	1049	299.05	8.00	90.0000	0.00
547	631	642	578.19	8.00	90.0000	0.00
552	High Level	2090	1103.00	10.00	130.0000	0.00
565	509	661	1328.00	8.00	75.0000	0.00
569	597	1284	174.94	8.00	90.0000	0.00
571	46	2086	497.00	8.00	90.0000	0.00
574	665	668	872.08	8.00	130.0000	0.00
577	668	675	492.96	8.00	130.0000	0.00
584	676	J-27	893.25	10.00	130.0000	0.00
590	54	682	182.20	8.00	90.0000	0.00
591	683	J-95	505.00	8.00	90.0000	0.00
593	686	J-78	241.00	8.00	90.0000	0.00
597	408	J-79	21.00	8.00	75.0000	0.00
601	361	1960	1287.07	8.00	90.0000	0.00
612	705	710	248.15	8.00	130.0000	0.00
617	717	1134	965.00	8.00	130.0000	0.00
623	718	247	34.04	8.00	75.0000	0.00
630	424	726	91.39	8.00	75.0000	0.00
632	726	J-80	386.08	8.00	75.0000	0.00
652	468	780	2846.84	8.00	130.0000	0.00
684	781	2092	25.00	8.00	130.0000	0.00
686	784	1698	594.45	8.00	130.0000	0.00
690	788	791	1019.18	8.00	130.0000	0.00
693	792	791	123.52	8.00	130.0000	0.00
697	797	784	720.40	8.00	130.0000	0.00
700	800	802	282.00	6.00	130.0000	0.00
702	803	1465	267.21	6.00	75.0000	0.00
706	808	2009	929.18	6.00	75.0000	0.00
710	813	815	302.18	6.00	75.0000	0.00
712	121	2093	46.99	6.00	75.0000	0.00
714	2094	40	934.76	6.00	130.0000	0.00
723	828	2096	426.19	6.00	75.0000	0.00
726	544	831	72.71	6.00	75.0000	0.00
727	831	530	335.47	6.00	75.0000	0.00
735	831	1989	226.92	6.00	75.0000	0.00
739	842	844	615.87	6.00	75.0000	0.00
741	844	817	669.95	10.00	130.0000	0.00
749	856	J-115	240.00	6.00	75.0000	0.00
751	2078	14	273.95	6.00	75.0000	0.00
753	860	2097	569.00	6.00	75.0000	0.00
757	865	868	222.76	6.00	75.0000	0.00
760	868	J-113	502.26	6.00	75.0000	0.00
762	868	872	205.21	6.00	75.0000	0.00
772	881	2098	449.61	6.00	75.0000	0.00
776	885	J-111	304.95	6.00	75.0000	0.00
784	893	J-106	418.44	6.00	75.0000	0.00
785	893	J-110	416.57	6.00	75.0000	0.00
789	66	899	48.00	6.00	75.0000	0.00
791	899	901	175.00	6.00	75.0000	0.00
793	901	1742	1127.00	6.00	75.0000	0.00
797	906	910	180.00	8.00	130.0000	0.00
801	910	38	116.53	10.00	130.0000	0.00

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807	842	2084	314.93	6.00	75.0000	0.00
812	916	922	348.45	8.00	130.0000	0.00
814	923	J-20	569.59	8.00	130.0000	0.00
817	J-21	929	248.00	6.00	75.0000	0.00
823	J-2	937	870.00	6.00	130.0000	0.00
825	J-2	556	502.00	6.00	75.0000	0.00
831	945	2080	473.03	6.00	75.0000	0.00
839	954	2081	460.04	6.00	75.0000	0.00
846	962	964	82.58	6.00	130.0000	0.00
858	1387	1314	65.93	4.00	75.0000	0.00
861	108	104	599.00	6.00	90.0000	0.00
867	958	J-110	1002.00	8.00	130.0000	0.00
874	994	65	736.58	6.00	75.0000	0.00
876	65	1986	656.95	6.00	75.0000	0.00
883	1003	1023	424.00	8.00	130.0000	0.00
903	1024	J-125	363.09	8.00	130.0000	0.00
905	O-High Lev	649	101.61	6.00	75.0000	0.00
910	1024	628	642.00	8.00	130.0000	0.00
912	1032	1003	811.00	6.00	90.0000	0.00
930	1050	1053	1269.52	6.00	90.0000	0.00
933	384	2100	964.00	6.00	75.0000	0.00
936	1057	16	435.81	6.00	90.0000	0.00
938	1060	1063	225.00	6.00	130.0000	0.00
941	1064	J-129	956.67	8.00	130.0000	0.00
948	1071	526	308.78	6.00	90.0000	0.00
949	526	1084	2823.93	8.00	130.0000	0.00
962	1085	1337	588.12	6.00	75.0000	0.00
966	1099	J-78	1370.13	8.00	130.0000	0.00
975	1100	1101	228.75	6.00	90.0000	0.00
976	O-Fairview	1101	118.14	6.00	90.0000	0.00
982	2103	J-81	265.32	6.00	75.0000	0.00
993	1121	1122	255.49	8.00	130.0000	0.00
994	2076	2127	300.30	8.00	130.0000	0.00
1000	1130	1125	650.51	8.00	130.0000	0.00
1001	2104	J-73	623.72	6.00	75.0000	0.00
1003	1134	2104	238.99	6.00	75.0000	0.00
1004	509	1290	478.00	6.00	75.0000	0.00
1007	1137	2105	327.02	6.00	75.0000	0.00
1009	1388	2013	267.00	6.00	75.0000	0.00
1012	2106	2107	591.74	6.00	75.0000	0.00
1014	510	23	924.74	6.00	75.0000	0.00
1017	2137	2109	470.82	6.00	75.0000	0.00
1019	2084	2109	326.70	6.00	75.0000	0.00
1020	2094	23	140.75	6.00	75.0000	0.00
1023	1156	23	477.86	6.00	75.0000	0.00
1024	2096	2073	229.38	6.00	75.0000	0.00
1025	2110	2096	273.09	6.00	75.0000	0.00
1026	2110	1997	279.58	6.00	75.0000	0.00
1028	1997	2111	244.00	6.00	75.0000	0.00
1030	2111	2112	268.86	6.00	75.0000	0.00
1032	1961	2113	418.00	6.00	75.0000	0.00
1035	704	1961	270.90	6.00	75.0000	0.00
1036	2109	1961	297.09	6.00	75.0000	0.00
1037	2010	2014	642.00	6.00	75.0000	0.00
1040	2012	2013	328.33	6.00	75.0000	0.00
1041	2065	2012	308.00	6.00	75.0000	0.00
1042	2137	2065	296.00	6.00	75.0000	0.00
1043	2113	2137	300.18	6.00	75.0000	0.00
1044	2113	1180	266.89	6.00	75.0000	0.00
1046	1181	22	93.00	6.00	75.0000	0.00
1047	2095	22	173.00	6.00	75.0000	0.00
1048	726	1184	40.06	8.00	130.0000	0.00
1051	1186	1996	269.43	6.00	75.0000	0.00
1053	827	1232	1143.25	6.00	75.0000	0.00
1058	1232	1156	597.28	6.00	75.0000	0.00
1060	1156	512	927.21	6.00	75.0000	0.00
1062	512	2107	783.40	6.00	75.0000	0.00
1064	2115	2107	155.32	6.00	75.0000	0.00
1069	2117	2065	579.53	6.00	75.0000	0.00
1071	2137	1210	580.23	6.00	75.0000	0.00
1074	1211	1713	81.79	6.00	130.0000	0.00
1076	24	1713	223.00	6.00	130.0000	0.00
1077	1215	J-58	327.00	8.00	130.0000	0.00
1078	68	1217	692.94	6.00	130.0000	0.00
1080	1218	2112	1049.55	6.00	75.0000	0.00
1083	2112	1223	326.05	6.00	75.0000	0.00
1085	1224	2111	321.86	6.00	75.0000	0.00
1087	1085	1333	418.92	6.00	75.0000	0.00
1088	1085	808	427.58	6.00	75.0000	0.00
1090	808	1229	207.76	6.00	75.0000	0.00
1091	1232	1181	476.00	6.00	75.0000	0.00
1094	1235	1483	375.00	6.00	75.0000	0.00
1095	2120	1104	147.00	6.00	90.0000	0.00
1096	2120	1239	581.73	6.00	130.0000	0.00
1099	1240	1214	42.84	6.00	130.0000	0.00
1100	1214	1244	471.00	6.00	130.0000	0.00
1103	1244	1251	558.00	6.00	130.0000	0.00
1110	Yankis (Va	1251	416.98	6.00	130.0000	0.00
1116	1513	J-25	173.82	10.00	130.0000	0.00
1117	1277	J-159	108.25	6.00	90.0000	0.00
1118	1277	1262	90.18	6.00	90.0000	0.00
1120	657	J-25	1605.00	10.00	130.0000	0.00
1125	1181	1270	559.53	8.00	130.0000	0.00
1127	2103	1099	1495.62	8.00	130.0000	0.00
1132	1277	I-AV-4	889.11	6.00	90.0000	0.00
1138	693	579	860.83	6.00	75.0000	0.00
1140	1284	O-AV-3	362.05	6.00	90.0000	0.00
1146	1290	2119	1322.78	6.00	130.0000	0.00
1148	1293	1295	372.96	6.00	130.0000	0.00
1150	398	2016	65.54	8.00	130.0000	0.00
1152	1120	1298	198.66	6.00	75.0000	0.00
1154	432	1309	2165.00	6.00	90.0000	0.00
1165	1310	1314	1161.00	4.00	75.0000	0.00
1169	2127	J-61	967.64	6.00	130.0000	0.00
1171	1318	2105	578.38	4.00	75.0000	0.00

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1173	2105	1322	469.84	4.00	75.0000	0.00
1178	2115	40	301.65	4.00	75.0000	0.00
1179	2115	1328	589.61	4.00	75.0000	0.00
1182	803	J-81	638.00	4.00	75.0000	0.00
1185	1333	1337	528.94	4.00	75.0000	0.00
1189	1338	807	1527.54	8.00	130.0000	0.00
1193	518	192	70.97	4.00	75.0000	0.00
1195	192	1060	583.00	4.00	75.0000	0.00
1198	1060	705	1317.00	4.00	75.0000	0.00
1205	492	J-80	987.90	6.00	130.0000	0.00
1208	1356	828	273.00	4.00	75.0000	0.00
1210	1359	828	233.00	4.00	75.0000	0.00
1211	1364	1984	203.81	6.00	130.0000	0.00
1212	1364	1991	514.02	6.00	130.0000	0.00
1214	1364	2121	287.23	4.00	75.0000	0.00
1215	1366	36	660.16	6.00	130.0000	0.00
1217	1244	1251	681.00	6.00	130.0000	0.00
1226	1375	17	2480.00	4.00	90.0000	0.00
1236	17	1387	400.00	4.00	90.0000	0.00
1239	1388	1392	578.80	4.00	75.0000	0.00
1244	1314	33	129.52	4.00	90.0000	0.00
1245	937	1456	272.00	6.00	75.0000	0.00
1247	384	1456	264.58	6.00	75.0000	0.00
1248	1396I-Valley V	4.38	4.00	140.0000	0.00	
1258	505	1409	1080.00	4.00	75.0000	0.00
1261	1410	657	558.39	4.00	90.0000	0.00
1269	1023	I-AV-2	712.27	4.00	90.0000	0.00
1309	1456	881	418.71	6.00	130.0000	0.00
1315	885	1056	245.12	4.00	90.0000	0.00
1319	1465	2103	636.67	4.00	75.0000	0.00
1322	509	407	820.07	6.00	130.0000	0.00
1330	693	492	1027.10	6.00	130.0000	0.00
1338	1295	1483	948.39	6.00	130.0000	0.00
1340	1484	899	1892.00	4.00	75.0000	0.00
1351	344	1497	767.00	4.00	130.0000	0.00
1354	1498	1502	449.05	8.00	130.0000	0.00
1358	1502	J-133	279.67	10.00	130.0000	0.00
1371	1517	1519	275.00	2.00	135.0000	0.00
1384	1544	J-95	2295.00	12.00	90.0000	0.00
1388	1547	1544	288.55	12.00	130.0000	0.00
1389	1547	J-96	1327.00	12.00	130.0000	0.00
1396	1544	1547	2300.00	8.00	130.0000	0.00
1401	668	1674	1132.70	12.00	130.0000	0.00
1404	1674	102	746.13	12.00	130.0000	0.00
1406	102	J-1	620.69	12.00	130.0000	0.00
1409	92	J-164	484.87	12.00	130.0000	0.00
1423	421	107	867.00	12.00	130.0000	0.00
1426	1575	34	575.28	12.00	130.0000	0.00
1427	1576	248	446.87	12.00	130.0000	0.00
1429	248	1580	540.11	12.00	130.0000	0.00
1433	51	26	448.20	12.00	130.0000	0.00
1435	51	109	1427.59	12.00	130.0000	0.00
1440	6	109	475.62	12.00	130.0000	0.00
1441	6	1647	1469.07	12.00	130.0000	0.00
1443	1637	1647	5159.69	12.00	130.0000	0.00
1454	72	1637	1761.44	12.00	130.0000	0.00
1455	72	1626	3641.41	12.00	130.0000	0.00
1458	1627	1626	763.65	12.00	130.0000	0.00
1460	797	212	356.56	12.00	130.0000	0.00
1464	788	1630	3991.15	12.00	130.0000	0.00
1477	1630	1626	1130.08	12.00	130.0000	0.00
1479	1627Yates Rese		1075.00	12.00	130.0000	0.00
1481	1630	76	3539.00	12.00	130.0000	0.00
1483	76	1636	2341.00	12.00	130.0000	0.00
1487	1637	75	595.62	12.00	130.0000	0.00
1492	75	49	651.30	12.00	130.0000	0.00
1493	254	49	3310.10	12.00	130.0000	0.00
1494	254	J-35	1688.26	12.00	130.0000	0.00
1497	2072	1647	1022.00	12.00	130.0000	0.00
1499	1648	247	4693.50	12.00	130.0000	0.00
1500	343	1657	2072.02	8.00	130.0000	0.00
1509	1658	901	754.77	8.00	130.0000	0.00
1526	1674	800	496.84	8.00	130.0000	0.00
1531	800	174	473.00	8.00	130.0000	0.00
1534	1679	1689	748.17	6.00	90.0000	0.00
1544	1690	1689	126.93	8.00	90.0000	0.00
1548	2092	1698	669.39	8.00	130.0000	0.00
1552	1699	1700	801.40	10.00	130.0000	0.00
1553	2138	89	1389.60	8.00	130.0000	0.00
1560	1710	J-53	1056.65	8.00	130.0000	0.00
1562	1711	683	220.00	8.00	90.0000	0.00
1563	683	1712	500.00	8.00	115.0000	0.00
1564	1713	1716	178.58	6.00	130.0000	0.00
1567	1716	1719	185.05	6.00	130.0000	0.00
1584	1742	1737	1268.00	4.00	75.0000	0.00
1588	1737	1375	375.00	4.00	75.0000	0.00
1593	1742	1484	452.00	10.00	130.0000	0.00
1596	1484	975	1798.00	10.00	130.0000	0.00
1611	975	1310	71.00	10.00	130.0000	0.00
1612	1310	2122	454.00	10.00	130.0000	0.00
1615	2123	1089	511.48	8.00	130.0000	0.00
1617	1089	1186	243.51	6.00	75.0000	0.00
1618	1186	1767	570.00	8.00	130.0000	0.00
1621	J-135	J-171	184.70	8.00	130.0000	0.00
1626	1773	1775	197.00	8.00	130.0000	0.00
1628	1775	1776	68.00	8.00	130.0000	0.00
1629	1776	1782	1030.00	8.00	130.0000	0.00
1635	1782	1788	996.00	8.00	130.0000	0.00
1641	1788	1775	237.00	8.00	130.0000	0.00
1644	1773	1791	251.00	8.00	130.0000	0.00
1645	1776	1793	338.00	8.00	130.0000	0.00
1647	1788	1782	591.00	8.00	130.0000	0.00
1654	1800	1801	235.53	10.00	130.0000	0.00
1657	18053-inch or		110.20	8.00	130.0000	0.00
1658	1806	1808	400.00	6.00	130.0000	0.00

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1660	1809	1806	19.02	8.00	130.0000	0.00	
1661		1810	671.00	10.00	130.0000	0.00	
1663	1800	1821	258.00	10.00	130.0000	0.00	
1664	1813	1809	50.87	10.00	130.0000	0.00	
1665	1814	1818	715.34	2.00	140.0000	0.00	
1669	1813	1814	675.00	8.00	130.0000	0.00	
1672	1821	J-112	525.00	8.00	130.0000	0.00	
1673	1823	1826	385.26	6.00	90.0000	0.00	
1676	1827	1071	62.38	12.00	130.0000	0.00	
1677	1636	J-128	438.35	8.00	130.0000	0.00	
1792	910	844	262.20	10.00	130.0000	0.00	
1793	178	1823	69.34	8.00	90.0000	0.00	
1796	1063	1948	325.00	2.00	135.0000	0.00	
1799	1032	J-114	642.00	6.00	130.0000	0.00	
1810	1960	12	21.03	8.00	90.0000	0.00	
1811	12	10	1053.00	8.00	90.0000	0.00	
1813	1767	J-117	290.12	6.00	75.0000	0.00	
1818	1737	1968	132.00	4.00	75.0000	0.00	
1820	1823	J-168	334.71	6.00	75.0000	0.00	
1821	175	384	2123.70	10.00	130.0000	0.00	
1825	1973	566	454.00	4.00	75.0000	0.00	
1826	1974	1975	651.00	6.00	130.0000	0.00	
1828	J-3	1980	517.00	6.00	75.0000	0.00	
1830	3-inch or	1981	48.33	4.00	75.0000	0.00	
1831		1984	1767	235.15	6.00	75.0000	0.00
1834		1985	1986	56.59	4.00	75.0000	0.00
1835		894	2125	20.33	8.00	130.0000	0.00
1836		1987	568	717.00	4.00	75.0000	0.00
1837		1988	1989	52.11	4.00	75.0000	0.00
1839		2121	1991	219.88	6.00	75.0000	0.00
1840		2126	2123	286.00	10.00	130.0000	0.00
1841		1994	994	209.00	6.00	75.0000	0.00
1842		1996	1997	691.73	6.00	75.0000	0.00
1843		1184	J-163	895.08	6.00	130.0000	0.00
1852		2007	2009	230.57	6.00	75.0000	0.00
1854		2010	2065	472.04	6.00	75.0000	0.00
1855		2012	J-39	579.11	8.00	75.0000	0.00
1856		2013	2014	469.09	6.00	130.0000	0.00
1858		2016	J-81	1482.47	4.00	75.0000	0.00
1860		2127	504	947.53	6.00	130.0000	0.00
1864		1121	2023	183.59	6.00	90.0000	0.00
1865		2127	1215	263.88	8.00	130.0000	0.00
1866		2025	2028	384.00	2.00	140.0000	0.00
1869		2029	2030	216.99	2.00	140.0000	0.00
1870		2031	2029	117.40	4.00	140.0000	0.00
1871		2029	2025	27.90	4.00	140.0000	0.00
1872		2025	2032	248.94	4.00	140.0000	0.00
1873		2033	2031	618.97	4.00	140.0000	0.00
1877		2031	J-124	145.24	8.00	130.0000	0.00
1883		2047	J-74	206.38	6.00	90.0000	0.00
1887		2053	582	671.02	4.00	90.0000	0.00
1892		2129	582	343.45	4.00	90.0000	0.00
1893		590	46	757.00	6.00	90.0000	0.00
1894		2061	J-45	335.58	6.00	90.0000	0.00
1895		2063	J-44	880.19	8.00	90.0000	0.00
1896		5	361	64.75	10.00	90.0000	0.00
1898		14	540	265.00	6.00	75.0000	0.00
1900		163-in or sm		34.44	6.00	90.0000	0.00
1901		17	18	236.00	6.00	90.0000	0.00
1904		24	2088	5.94	6.00	130.0000	0.00
1907		36	2130	291.60	6.00	75.0000	0.00
1908		38	2083	817.68	10.00	130.0000	0.00
1909		2014	J-87	300.00	6.00	75.0000	0.00
1917		69	J-61	263.00	8.00	130.0000	0.00
1920		295	J-30	1850.87	12.00	130.0000	0.00
1924		86	2066	285.00	12.00	130.0000	0.00
1927		104	J-112	808.02	6.00	75.0000	0.00
1930		118	710	2530.00	14.00	90.0000	0.00
1935		247	2106	22.48	8.00	75.0000	0.00
1936		325	2122	272.19	12.00	130.0000	0.00
1938		375	1218	736.59	14.00	75.0000	0.00
1940		396	1318	307.00	14.00	75.0000	0.00
1941		480	2138	730.48	10.00	90.0000	0.00
1947		530	2093	691.48	6.00	75.0000	0.00
1948		536	2078	287.42	8.00	75.0000	0.00
1949		565	1084	590.00	8.00	75.0000	0.00
1950		556	944	498.75	6.00	75.0000	0.00
1951		565	543	35.00	8.00	75.0000	0.00
1954		J-84	O-AV-5	54.14	8.00	90.0000	0.00
1956		584	717	786.89	10.00	90.0000	0.00
1958		590	584	267.70	10.00	90.0000	0.00
1960		620	2133	155.65	8.00	130.0000	0.00
1962		1410	649	52.91	8.00	90.0000	0.00
1964		661	424	118.60	10.00	75.0000	0.00
1965		665	172	143.00	12.00	130.0000	0.00
1967		710	137	1990.58	14.00	90.0000	0.00
1972		784	791	500.36	8.00	130.0000	0.00
1975		797	788	291.38	12.00	130.0000	0.00
1977		813	J-120	564.60	6.00	75.0000	0.00
1978		815	803	563.97	6.00	75.0000	0.00
1979		817	1338	454.00	10.00	130.0000	0.00
1982		856	2121	290.89	6.00	75.0000	0.00
1983		860	375	259.21	14.00	75.0000	0.00
1984		865	65	387.79	8.00	75.0000	0.00
1985		872	14	110.22	6.00	75.0000	0.00
1986		923	J-3	345.89	8.00	130.0000	0.00
1987		944	1987	383.07	6.00	75.0000	0.00
1989		954	945	225.61	6.00	75.0000	0.00
1990		958	J-106	266.00	6.00	75.0000	0.00
1992		994	1658	528.00	10.00	130.0000	0.00
1993		2101	60	140.36	6.00	75.0000	0.00
1995		1003	1049	529.64	8.00	130.0000	0.00
1996		1049	631	275.61	8.00	90.0000	0.00
1997		1050	975	402.00	6.00	90.0000	0.00
1998		1057	518	652.00	8.00	75.0000	0.00

2040 Fireflow - Main Zone East

2000	1084	552	435.20	8.00	75.0000	0.00
2001	1099	1120	246.00	8.00	130.0000	0.00
2002	1107	J-79	210.02	8.00	75.0000	0.00
2003	1130	J-63	457.60	8.00	75.0000	0.00
2005	1137	398	600.00	8.00	75.0000	0.00
2010	1180	704	473.80	8.00	75.0000	0.00
2011	1183	704	38.34	6.00	75.0000	0.00
2014	1210	2067	566.74	14.00	75.0000	0.00
2020	1223	1224	265.83	6.00	75.0000	0.00
2021	1224	827	666.42	6.00	75.0000	0.00
2022	1229	815	301.07	6.00	75.0000	0.00
2024	1235	1517	896.98	8.00	75.0000	0.00
2025	1099	J-82	293.00	8.00	130.0000	0.00
2027	1284	46	713.52	8.00	90.0000	0.00
2031	1318	1392	306.00	14.00	75.0000	0.00
2032	1322	J-87	262.00	6.00	75.0000	0.00
2033	1328	2091	322.03	8.00	75.0000	0.00
2035	1337	2110	39.43	6.00	75.0000	0.00
2036	1338	813	634.51	6.00	75.0000	0.00
2037	1356	1089	17.89	6.00	75.0000	0.00
2039	1366	945	480.02	6.00	75.0000	0.00
2040	1387	979	479.26	6.00	130.0000	0.00
2042	1392	J-39	591.86	14.00	75.0000	0.00
2045	1409	407	306.00	10.00	75.0000	0.00
2048	1465	J-120	38.32	6.00	75.0000	0.00
2053	1107	1517	423.01	8.00	75.0000	0.00
2058	1570	J-8	1066.00	10.00	90.0000	0.00
2060	1575	342	808.04	12.00	130.0000	0.00
2063	1627	J-135	354.12	12.00	115.0000	0.00
2067	1648	432	2857.00	10.00	90.0000	0.00
2068	1658	421	772.00	10.00	130.0000	0.00
2070	1679	1101	25.75	6.00	90.0000	0.00
2071	1698	212	264.80	8.00	130.0000	0.00
2078	1800	1813	297.00	10.00	130.0000	0.00
2079	1809	1805	635.00	10.00	130.0000	0.00
2080	1810	107	583.38	12.00	130.0000	0.00
2087	1960	700	19.01	8.00	90.0000	0.00
2089	1973	J-2	345.00	6.00	75.0000	0.00
2090	1974	1366	377.42	6.00	75.0000	0.00
2091	1975	36	374.90	6.00	75.0000	0.00
2092	1981	J-4	275.32	6.00	75.0000	0.00
2093	994	1984	383.00	10.00	130.0000	0.00
2095	1986	552	515.83	6.00	75.0000	0.00
2096	1987	893	54.17	6.00	75.0000	0.00
2097	1989	842	189.64	6.00	75.0000	0.00
2102	1996	827	273.45	6.00	75.0000	0.00
2104	2007	375	649.59	10.00	130.0000	0.00
2105	2009	2096	41.52	6.00	75.0000	0.00
2111	2016	1120	22.21	8.00	130.0000	0.00
2114	1107	1293	379.00	6.00	75.0000	0.00
2118	2053	J-57	404.65	8.00	90.0000	0.00
2120	2063	717	379.81	10.00	90.0000	0.00
2127	2067	1218	331.70	14.00	75.0000	0.00
2128	2067	1180	580.16	8.00	75.0000	0.00
2139	2073	2007	37.55	10.00	130.0000	0.00
2141	2074	483	444.39	8.00	130.0000	0.00
2145	2076	492	344.58	8.00	75.0000	0.00
2146	2076	504	784.60	8.00	75.0000	0.00
2148	693	J-64	330.00	8.00	130.0000	0.00
2149	2078	865	288.23	8.00	75.0000	0.00
2150	2078	1991	297.24	6.00	75.0000	0.00
2152	2079	543	202.12	8.00	75.0000	0.00
2153	2080	2081	236.10	6.00	130.0000	0.00
2154	2080	958	585.00	6.00	75.0000	0.00
2155	2125	J-99	48.00	8.00	130.0000	0.00
2156	2081	958	325.04	6.00	75.0000	0.00
2159	2083	2084	265.54	8.00	75.0000	0.00
2160	2083	916	678.90	8.00	130.0000	0.00
2161	2084	565	310.77	8.00	75.0000	0.00
2162	2084	916	736.88	8.00	130.0000	0.00
2165	2086	578	560.00	8.00	130.0000	0.00
2166	2086	2132	593.29	8.00	90.0000	0.00
2169	2088	620	2465.45	8.00	130.0000	0.00
2170	2088	1214	158.00	6.00	130.0000	0.00
2173	2090	1410	14.60	8.00	90.0000	0.00
2174	2090	657	565.72	10.00	130.0000	0.00
2175	2091	1137	468.76	8.00	75.0000	0.00
2176	2091	505	311.20	8.00	75.0000	0.00
2179	2093	817	304.87	6.00	75.0000	0.00
2180	2093	1229	758.42	6.00	75.0000	0.00
2181	2094	2095	604.36	6.00	75.0000	0.00
2183	2095	1223	294.47	6.00	75.0000	0.00
2184	2095	1183	324.33	6.00	75.0000	0.00
2187	2097	856	426.07	6.00	75.0000	0.00
2188	2097	2073	206.00	6.00	75.0000	0.00
2189	2098	885	448.98	6.00	75.0000	0.00
2190	2098	2100	273.62	6.00	75.0000	0.00
2192	954	2130	268.01	6.00	75.0000	0.00
2193	2100	1050	360.00	6.00	90.0000	0.00
2194	2100	1056	405.41	6.00	75.0000	0.00
2195	2101	807	693.00	8.00	130.0000	0.00
2196	2101	J-82	1519.00	8.00	130.0000	0.00
2198	1290	1293	372.41	6.00	75.0000	0.00
2199	2103	60	154.27	6.00	75.0000	0.00
2202	2104	2021	244.00	4.00	75.0000	0.00
2203	2105	1388	298.00	6.00	75.0000	0.00
2206	2106	1328	152.76	8.00	75.0000	0.00
2207	2107	510	314.14	6.00	75.0000	0.00
2212	2109	2010	299.72	6.00	75.0000	0.00
2214	2110	1356	429.11	6.00	75.0000	0.00
2216	2111	1333	54.05	6.00	75.0000	0.00
2217	2112	1183	291.22	6.00	75.0000	0.00
2221	803	2113	632.05	6.00	75.0000	0.00
2223	2115	J-87	328.38	6.00	75.0000	0.00
2228	2117	1210	322.00	14.00	75.0000	0.00

2040 Fireflow - Main Zone East

2231	2119	1483	385.00	6.00	75.0000	0.00
2234	2120	J-77	147.00	6.00	90.0000	0.00
2236	2121	2126	209.47	6.00	75.0000	0.00
2240	2123	2073	427.00	10.00	130.0000	0.00
2243	2125	961	36.45	8.00	130.0000	0.00
2244	2125	2081	266.99	8.00	130.0000	0.00
2246	2126	1984	286.12	10.00	130.0000	0.00
2249	2050	J-77	44.67	6.00	90.0000	0.00
2252	2129	2053	226.85	8.00	90.0000	0.00
2253	2130	961	455.00	6.00	75.0000	0.00
2254	2130	1973	40.73	6.00	75.0000	0.00
2257	2132	214	7.31	8.00	90.0000	0.00
2259	2133	599	622.41	8.00	130.0000	0.00
2260	2133	47	462.96	8.00	130.0000	0.00
2269	2138	481	66.26	10.00	90.0000	0.00
P-1	J-1	97	547.15	12.00	130.0000	0.00
P-100	J-112	1814	500.93	6.00	75.0000	0.00
P-101	J-113	2079	368.16	6.00	75.0000	0.00
P-102	J-114	1023	302.00	8.00	130.0000	0.00
P-103	J-125	649	346.91	8.00	130.0000	0.00
P-104	I-Fairview	1103	20.94	6.00	90.0000	0.00
P-105	J-115	J-116	419.54	6.00	75.0000	0.00
P-106	J-116	2097	250.67	6.00	75.0000	0.00
P-108	J-117	56	305.00	6.00	75.0000	0.00
P-11	J-3	1975	323.06	6.00	75.0000	0.00
P-111	J-120	807	266.76	6.00	75.0000	0.00
P-113	J-39	2117	288.00	14.00	75.0000	0.00
P-116	97	J-122	121.15	12.00	130.0000	0.00
P-117	J-140	J-145	46.63	12.00	130.0000	0.00
P-119	J-139	J-84	78.98	8.00	130.0000	0.00
P-121	J-140	J-138	42.92	12.00	130.0000	0.00
P-122	J-126Main Reser		111.73	18.00	130.0000	0.00
P-124	O-AV-1	2083	364.42	10.00	130.0000	0.00
P-125	O-AV-2	906	282.73	8.00	130.0000	0.00
P-127	J-127	295	2367.21	12.00	130.0000	0.00
P-128	J-127	J-128	4129.32	12.00	130.0000	0.00
P-130	J-128	1831	615.85	8.00	130.0000	0.00
P-131	J-129	1071	558.33	12.00	130.0000	0.00
P-132	668	J-129	1448.22	12.00	130.0000	0.00
P-133	J-133	1513	25.35	10.00	130.0000	0.00
P-134	J-122	J-132	800.00	12.00	130.0000	0.00
P-135	J-124	1502	393.57	10.00	130.0000	0.00
P-136	J-124	J-131	198.84	8.00	130.0000	0.00
P-138-CV	Kennicott	J-53	790.00	16.00	130.0000	0.00
P-140	O-AV-4	686	40.89	6.00	90.0000	0.00
P-143	I-AV-5	J-63	2.85	8.00	130.0000	0.00
P-144	O-AV-6	1134	545.75	4.00	75.0000	0.00
P-146	J-73	J-134	384.83	8.00	130.0000	0.00
P-147	J-64	J-141	135.51	8.00	130.0000	0.00
P-148	J-134	O-RV-2	6.27	8.00	130.0000	0.00
P-149	J-143	O-RV-1	5.82	12.00	130.0000	0.00
P-15	J-91	J-126	172.27	18.00	130.0000	0.00
P-150-CV	J-141	J-134	13.00	8.00	130.0000	0.00
P-151	J-142	J-139	80.78	8.00	130.0000	0.00
P-152	J-144	1570	631.51	12.00	130.0000	0.00
P-153-CV	J-143	J-144	24.87	12.00	130.0000	0.00
P-154	I-RV-1	J-144	5.63	12.00	130.0000	0.00
P-157	I-RV-2	J-141	7.13	8.00	130.0000	0.00
P-1570	1716	1103	1729.25	8.00	130.0000	0.00
P-158	J-145I-18th St		2.66	12.00	130.0000	0.00
P-159	J-145	J-146	2.68	12.00	130.0000	0.00
P-160-CV	J-146	J-147	9.25	12.00	130.0000	0.00
P-161	J-146O-18th St		3.23	12.00	130.0000	0.00
P-162	J-147	J-142	2.67	12.00	130.0000	0.00
P-164	I-18th St	J-147	3.12	12.00	130.0000	0.00
P-165	J-155	J-156	739.67	6.00	140.0000	0.00
P-166	66	J-110	322.75	6.00	75.0000	0.00
P-167	J-153	J-156	4747.12	12.00	115.0000	0.00
P-168	J-152	J-150	15.74	8.00	115.0000	0.00
P-169	J-154	J-88	471.34	12.00	115.0000	0.00
P-170	J-155	J-151	4833.50	6.00	140.0000	0.00
P-171	J-155	J-157	658.63	2.00	140.0000	0.00
P-172	J-156	J-154	1552.65	12.00	115.0000	0.00
P-173	J-148	J-6	2664.56	2.00	130.0000	0.00
P-174	J-149	J-153	1314.60	8.00	130.0000	0.00
P-175	J-150	J-152	2094.17	8.00	115.0000	0.00
P-176	J-64	2076	1014.00	8.00	75.0000	0.00
P-177	J-160	1057	847.45	8.00	75.0000	0.00
P-178	J-159	1513	18.67	6.00	90.0000	0.00
P-179	J-160	J-162	533.75	8.00	130.0000	0.00
P-18	J-135I-South En		77.91	12.00	130.0000	0.00
P-180	J-162	J-95	1493.70	12.00	130.0000	0.00
P-181	1818	J-161	94.69	2.00	140.0000	0.00
P-182	J-163	2003	50.56	6.00	130.0000	0.00
P-183	J-164	J-143	3640.74	12.00	130.0000	0.00
P-184	J-163	J-177	465.62	8.00	130.0000	0.00
P-186	1710	J-55	952.80	8.00	130.0000	0.00
P-188	31	J-158	1171.71	12.00	130.0000	0.00
P-19	33	34	11.57	4.00	90.0000	0.00
P-190	J-167	2074	284.73	10.00	90.0000	0.00
P-193-XX	432	780	9082.35	8.00	130.0000	0.00
P-194	76	1580	1373.43	12.00	130.0000	0.00
P-195	J-170	J-176	367.83	12.00	130.0000	0.00
P-196	J-168	J-21	156.89	6.00	75.0000	0.00
P-197	J-168	1980	565.74	8.00	130.0000	0.00
P-198	J-880-South En		3066.47	12.00	115.0000	0.00
P-199	J-171	1773	557.30	8.00	130.0000	0.00
P-2	101	J-1	84.14	8.00	130.0000	0.00
P-20	1576	213	32.42	12.00	130.0000	0.00
P-200	J-169	J-91	282.63	18.00	130.0000	0.00
P-201	J-173	J-153	21062.56	8.00	115.0000	0.00
P-203	J-177	J-164	335.35	8.00	130.0000	0.00
P-25	J-30	2066	908.00	12.00	130.0000	0.00
P-29	J-8	2063	977.55	10.00	90.0000	0.00
P-3	J-60-Central1		24935.52	6.00	115.0000	0.00

2040 Fireflow - Main Zone East

P-30	J-35	J-42	1262.05	12.00	130.0000	0.00
P-31	54	J-8	271.99	10.00	130.0000	0.00
P-33	J-42	2072	33.95	12.00	130.0000	0.00
P-34	1699	J-42	861.64	12.00	130.0000	0.00
P-36	2091	1322	322.00	6.00	75.0000	0.00
P-4	J-7	1570	1181.00	10.00	90.0000	0.00
P-40	J-44	10	918.28	8.00	90.0000	0.00
P-42	J-45	J-44	388.00	8.00	90.0000	0.00
P-43	J-132	J-170	233.32	12.00	130.0000	0.00
P-44	J-55	28	392.03	10.00	130.0000	0.00
P-47	J-57	2132	26.83	8.00	90.0000	0.00
P-48	41	J-90	18.53	10.00	90.0000	0.00
P-49	2051	J-57	16.66	8.00	90.0000	0.00
P-50	2052	J-57	17.24	8.00	90.0000	0.00
P-51	O-18th St	J-142	1.13	8.00	130.0000	0.00
P-53	J-4	1974	369.00	6.00	75.0000	0.00
P-54	923	J-4	253.57	6.00	75.0000	0.00
P-57	1217	I-AV-6	27.22	4.00	75.0000	0.00
P-58	1217	69	273.00	8.00	130.0000	0.00
P-6	J-11	J-88	987.96	8.00	115.0000	0.00
P-61	J-58	68	222.00	8.00	130.0000	0.00
P-62	J-61	J-136	302.00	8.00	130.0000	0.00
P-63	J-127	J-158	1896.96	12.00	130.0000	0.00
P-64	54	J-27	596.19	10.00	130.0000	0.00
P-65	J-67	597	417.00	8.00	90.0000	0.00
P-67	J-71	J-67	339.00	8.00	130.0000	0.00
P-69	J-73	J-71	449.75	8.00	75.0000	0.00
P-7	J-152	J-154	148.62	8.00	115.0000	0.00
P-71	J-63	J-123	21.02	8.00	130.0000	0.00
P-73	J-74	1679	128.71	6.00	90.0000	0.00
P-74	J-77	J-74	27.47	6.00	90.0000	0.00
P-75	I-AV-3	2120	128.95	6.00	90.0000	0.00
P-76	J-78	408	254.81	8.00	90.0000	0.00
P-77	J-79	1130	739.00	8.00	75.0000	0.00
P-78	J-80	504	390.06	8.00	75.0000	0.00
P-79	1396	J-82	521.89	6.00	90.0000	0.00
P-80	1388	J-87	625.00	6.00	130.0000	0.00
P-81	92	J-62	399.00	8.00	130.0000	0.00
P-82	J-84	597	632.70	8.00	90.0000	0.00
P-83	J-123	J-140	102.57	12.00	130.0000	0.00
P-84	J-93	1971	33.88	6.00	90.0000	0.00
P-86	I-High Lev	J-126	388.44	6.00	75.0000	0.00
P-87	J-94	526	1018.53	8.00	75.0000	0.00
P-88	J-93	J-94	3.82	6.00	90.0000	0.00
P-89	J-96inter-tie	1009.00	12.00	130.0000	0.00	
P-9	J-2	2098	329.00	6.00	75.0000	0.00
P-90	J-105	174	266.00	12.00	130.0000	0.00
P-91	J-20	1981	59.00	6.00	75.0000	0.00
P-92	J-21	J-20	140.66	6.00	75.0000	0.00
P-93	568	J-99	19.30	8.00	130.0000	0.00
P-94	J-99	556	294.00	8.00	130.0000	0.00
P-95	566	J-99	49.52	8.00	130.0000	0.00
P-96	J-100	2080	161.00	8.00	130.0000	0.00
P-97	J-106	894	329.00	6.00	75.0000	0.00
P-98	I-Centrali	J-173	305.94	8.00	115.0000	0.00
P-99	J-111	944	378.41	6.00	75.0000	0.00
Valley Vie	O-Valley VYankis (Va	2734.85	4.00	140.0000	0.00	

N O D E D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
5		0.40	243.40	
6		9.10	244.40	
9		3.80	205.80	
10		12.90	213.70	
11		0.20	236.90	
12		5.20	236.50	
13		0.20	198.90	
14		3.00	201.40	
15		4.20	186.10	
16		2.20	186.10	
17		14.50	175.70	
18		3.10	171.90	
19		2.00	165.30	
22		4.70	186.50	
23		10.70	187.70	
24		2.70	604.50	
26		12.20	240.30	
28		2.80	322.60	
29		1.00	319.00	
31		8.70	216.80	
32		7.90	214.70	
33		0.70	183.00	
34		5.00	183.50	
36		6.10	194.40	
37		0.80	319.00	
38		5.10	290.50	
40		7.20	190.80	
41		0.40	219.10	
43		0.20	253.50	
46		9.10	229.90	
47		2.90	544.40	
48		0.80	543.60	
49		19.70	243.00	
50		1.40	244.20	
51		9.70	240.00	
52		2.10	261.50	
54		4.90	209.30	
56		1.40	193.00	

2040 Fireflow - Main Zone East

59	0.50	252.50
60	1.80	252.90
65	9.60	192.40
66	3.10	191.30
68	6.10	205.20
69	4.40	208.70
70	1.10	285.20
72	25.40	255.00
75	21.00	247.70
76	48.80	256.00
83	0.20	221.90
85	0.20	222.10
86	7.70	222.40
89	6.40	225.60
92	8.40	192.40
97	3.40	173.90
98	0.30	174.00
101	0.40	174.30
102	6.70	176.00
103	0.30	175.70
104	6.70	179.70
107	6.70	183.60
108	2.80	183.60
109	12.40	236.20
118	25.50	192.50
119	5.60	217.70
121	3.60	230.70
137	13.20	180.00
166	9.80	182.90
172	6.20	174.10
174	3.40	175.70
175	11.00	183.60
178	3.60	183.60
192	11.80	183.60
201	5.60	178.30
212	5.90	256.30
213	3.50	253.50
214	7.60	230.10
224	5.80	224.20
247	22.00	192.10
248	13.10	248.60
253	8.50	240.90
254	30.10	230.80
295	34.50	210.10
325	7.70	183.90
342	5.10	165.40
343	10.20	163.20
344	4.60	164.20
346	0.90	165.60
356	14.00	219.10
361	16.90	243.10
375	7.60	230.50
384	16.10	183.20
385	1.80	183.60
396	1.60	221.20
398	4.60	220.50
407	8.20	226.99
408	4.30	223.30
421	7.60	184.20
424	1.80	189.90
432	65.20	184.10
468	28.10	204.20
473	2.50	178.30
474	3.10	210.70
480	10.80	219.70
481	0.30	220.90
493	2.10	214.00
492	12.90	195.50
504	9.80	192.80
505	8.70	197.20
509	14.40	200.00
510	7.90	189.60
512	10.00	184.80
513	1.10	178.80
518	4.60	182.20
526	19.20	201.80
530	5.00	220.30
536	6.30	201.90
540	1.30	202.30
543	3.30	210.90
544	2.50	216.10
552	4.90	191.50
556	6.00	206.10
565	4.30	210.80
566	2.30	204.60
568	3.40	206.30
569	10.60	178.30
573	2.20	179.00
578	2.60	280.80
579	5.50	205.50
582	7.20	212.80
584	7.30	207.60
590	8.40	208.60
597	5.60	222.20
599	8.30	592.40
601	2.10	577.30
619	3.30	559.00
620	15.00	583.00
623	2.90	588.00
628	3.60	420.40
631	4.60	382.80
632	1.40	455.20
642	2.70	304.60
649	2.70	392.70
657	12.60	331.20

2040 Fireflow - Main Zone East

661	8.20	190.90	
665	11.70	174.40	
668	18.20	182.30	
675	2.30	180.60	
676	4.10	206.70	
682	0.80	209.20	
683	5.60	200.30	
686	1.50	278.90	
693	10.30	197.40	
700	0.10	237.50	
704	3.70	190.10	
705	7.20	185.50	
710	22.00	197.50	
717	9.90	204.90	
718	0.20	191.20	
726	2.40	190.00	
780	55.20	195.00	
781	0.10	252.20	
784	8.40	259.80	
788	24.50	258.50	
791	7.60	256.00	
792	0.60	254.90	
797	6.20	255.30	
800	5.80	177.30	
802	1.30	178.00	
803	9.70	217.90	
807	11.50	272.60	
808	7.30	215.50	
813	6.90	244.90	
815	5.40	219.20	
817	6.60	275.20	
827	9.70	186.80	
828	4.40	192.50	
831	2.90	216.90	
842	5.20	234.00	
844	7.10	260.00	
856	4.40	194.40	
860	3.90	230.20	
865	4.10	195.90	
868	4.20	197.00	
872	1.60	199.50	
881	4.00	199.80	
885	4.60	204.20	
893	4.10	198.10	
894	1.60	206.30	
899	9.80	192.10	
901	9.50	189.00	
906	3.40	292.50	
910	2.50	294.90	
916	8.10	222.40	
922	1.60	238.30	
923	5.40	182.20	
929	1.10	181.60	
937	5.30	183.80	
944	5.90	196.50	
945	5.40	192.00	
954	4.30	193.70	
958	10.00	201.60	
961	2.30	205.40	
962	6.00	179.30	
964	0.40	179.40	
975	10.50	184.50	
979	2.20	173.70	
994	8.60	192.30	
1003	8.30	435.80	
1023	10.00	389.60	
1024	4.70	408.40	
1032	6.80	455.00	
1049	5.20	421.50	
1050	9.50	188.20	
1053	5.90	183.20	
1056	3.00	192.00	
1057	8.90	179.20	
1060	9.80	196.50	
1063	2.50	238.10	
1064	4.40	181.30	
1071	4.30	190.50	
1084	17.80	198.50	
1085	6.60	197.60	
1089	3.60	190.70	
1099	15.70	233.90	
1100	1.10	339.70	
1101	2.30	323.20	
1103	6" and 2"	8.20	346.40
1104		0.70	285.50
1107		4.80	211.40
1120		2.10	222.90
1121		3.30	205.30
1122		1.20	204.40
1125		3.00	205.00
1130		8.50	225.00
1134		10.70	202.90
1137		6.50	202.10
1156		9.30	184.90
1180		6.10	195.40
1181		5.20	186.00
1183		3.00	190.20
1184		8.70	189.70
1186		4.90	191.30
1210		6.80	215.60
1211		0.40	564.40
1214		3.10	607.60
1215		2.70	200.80
1217		6.10	207.80
1218		9.80	217.60

2040 Fireflow - Main Zone East

1223	4.10	187.20
1224	5.80	187.60
1229	5.90	224.40
1232	10.30	183.90
1235	7.80	197.20
1239	2.70	265.90
1240	0.20	608.90
1244	8.00	591.00
1251	9.70	622.30
1262	0.40	349.90
1270	2.60	184.30
1277	9.10	340.00
1284	7.50	224.00
1290	10.00	207.20
1293	5.20	206.60
1295	6.10	200.40
1298	0.90	224.20
1309	10.00	185.00
1310	7.80	184.40
1314	6.30	183.00
1318	5.50	221.20
1322	4.90	194.60
1328	4.90	192.30
1333	4.60	191.30
1337	5.30	192.80
1338	12.10	257.70
1356	3.40	190.80
1359	1.10	193.30
1364	4.60	193.90
1366	7.00	190.60
1375	13.20	168.30
1387	4.40	182.40
1388	8.20	200.40
1392	6.80	220.30
1396	2.40	308.10
1409	7.80	222.20
1410	2.90	392.50
1456	4.40	183.20
1465	4.30	235.70
1483	7.90	193.40
1484	19.20	183.60
1497	3.50	167.20
1498	2.10	396.40
1502	5.20	385.30
1513	1.00	339.40
1517	7.50	205.40
1519	1.30	211.30
1524	1.70	615.60
1544	22.50	194.80
1547	18.00	208.00
1570	13.30	195.50
1575	10.60	171.60
1576	2.30	253.70
1580	8.90	245.80
1626	25.50	272.90
1627	15.00	289.00
1630	40.10	266.70
1636	242.01	245.70
1637	34.90	249.10
1647	35.40	236.20
1648	35.80	187.30
1657	9.60	176.60
1658	9.50	185.90
1674	11.00	178.00
1679	4.20	317.70
1689	4.10	323.60
1690	0.60	319.70
1698	7.10	256.80
1699	7.80	218.90
1700	3.70	216.20
1710	9.30	303.90
1711	1.00	209.80
1712	2.30	268.50
1713	2.20	571.10
1716	9.70	533.50
1719	0.90	516.50
1737	8.20	166.60
1742	13.20	183.60
1767	5.00	193.40
1773	4.70	272.20
1775	2.30	270.10
1776	6.70	269.20
1782	12.10	269.10
1788	8.40	269.00
1791	1.20	273.40
1793	1.60	270.60
1799	4.20	201.40
1800	3.70	166.10
1801	1.10	173.70
1805	3.40	179.70
1806	2.00	173.10
1808	1.90	179.80
1809	3.20	172.30
1810	6.00	179.50
1813	4.70	171.10
1814	8.70	167.10
1818	3.70	178.50
1821	6.70	169.80
1823	3.60	182.50
1826	5.20	183.30
1827	9.30	192.90
1831	2.80	234.10
1948	1.50	234.90
1960	6.20	237.60
1961	4.60	190.10

2040 Fireflow - Main Zone East

1968	0.60	164.90
1971	0.20	185.30
1973	3.90	198.40
1974	6.40	187.50
1975	6.20	186.60
1980	5.00	180.20
1981	1.80	183.10
1984	5.10	194.10
1985	0.30	195.20
1986	5.70	194.50
1987	5.40	198.50
1988	0.20	219.50
1989	2.10	222.30
1991	4.80	194.20
1994	1.00	190.70
1996	5.70	189.80
1997	5.60	191.50
2003	0.20	185.20
2007	4.30	200.60
2009	5.60	196.90
2010	6.60	191.70
2012	5.60	199.00
2013	4.90	200.10
2014	8.10	193.20
2016	7.30	222.30
2021	1.10	204.20
2023	0.80	206.90
2025	3.10	455.60
2028	1.80	520.90
2029	1.60	449.00
2030	1.00	460.10
2031	4.10	430.90
2032	1.20	484.00
2033	2.90	474.20
2047	1.00	309.00
2050	0.20	301.10
2051	0.10	229.60
2052	0.10	229.90
2053	6.00	220.60
2061	1.60	208.20
2063	10.40	205.00
2065	7.70	198.90
2066	5.70	222.20
2067	11.20	216.20
2072	10.70	221.90
2073	4.30	199.80
2074	3.40	220.90
2076	11.30	204.40
2078	5.30	199.20
2079	5.60	203.10
2080	6.70	191.60
2081	5.90	198.70
2083	11.50	255.40
2084	7.50	224.10
2086	7.60	230.30
2088	12.10	604.50
2090	12.90	391.30
2091	6.60	195.30
2092	3.20	251.60
2093	8.30	236.00
2094	9.30	188.50
2095	6.50	187.60
2096	4.60	196.50
2097	6.80	202.50
2098	7.00	202.10
2100	9.40	197.30
2101	10.80	270.60
2103	11.70	236.90
2104	5.10	200.50
2105	7.80	201.90
2106	3.50	192.10
2107	8.50	190.50
2109	6.50	190.80
2110	4.80	192.70
2111	4.10	191.00
2112	8.90	190.20
2113	7.40	195.50
2115	6.30	191.90
2117	5.50	217.50
2119	9.50	193.60
2120	5.30	268.60
2121	4.60	193.00
2122	7.80	183.70
2123	5.70	193.20
2125	1.70	206.20
2126	3.60	192.50
2127	11.50	203.70
2129	6.20	218.10
2130	4.80	198.00
2132	2.80	230.10
2133	5.70	578.00
2137	7.70	198.20
2138	10.10	221.50
I-18th St	0.00	218.20
O-18th St	0.00	218.20
3-in or sm	0.20	185.50
3-inch or	0.50	183.00
3-inch or	0.20	183.10
O-AV-1	0.00	283.80
I-AV-2	0.00	306.00
I-AV-3	0.00	253.40
O-AV-4	0.00	289.30
O-AV-5	0.00	225.30
O-AV-6	0.00	208.10
O-Centrall	----	333.50

541.19

2040 Fireflow - Main Zone East

O-Fairview	Fairview PRV	----	346.50	466.50
O-High Lev	High Level P	0.00	401.60	
High Level	High Level R	----	605.00	605.00
Hillcrest		0.40	256.20	
inter-tie		4.70	174.40	
J-1		5.80	174.00	
J-100		1.20	190.60	
J-105		4.20	175.60	
J-106		4.60	206.20	
J-11		4.60	280.00	
J-110		8.00	198.00	
J-111		3.20	192.50	
J-112		8.40	167.90	
J-113		4.00	200.50	
J-114		18.30	405.70	
J-115		3.00	197.30	
J-116		3.10	207.10	
J-117		2.70	192.10	
J-120		4.00	237.50	
J-122		4.30	174.00	
J-123		0.60	224.70	
J-124		3.40	403.80	
J-125		3.30	383.00	
J-126		5.40	367.95	
J-127		45.90	225.20	
J-128		23.90	235.20	
J-129		13.70	184.80	
J-130		6.20	222.00	
J-131		0.90	418.00	
J-132		4.80	176.00	
J-133		1.40	339.60	
J-134		2.00	200.90	
J-135		3.20	288.30	
J-136		1.40	204.10	
J-138		1.70	219.60	
J-139		0.80	222.60	
J-140		0.90	218.20	
J-141		0.80	200.90	
J-142		0.40	218.20	
J-143		17.00	186.90	
J-144		3.10	186.80	
J-145		0.20	218.20	
J-146		0.00	218.20	
J-147		0.00	218.20	
J-148		12.30	498.90	
J-149		6.10	306.10	
J-150		9.80	272.40	
J-151		22.40	326.80	
J-152		10.50	272.40	
J-153		125.60	302.40	
J-154		10.10	267.60	
J-155		28.80	263.80	
J-156		32.60	261.30	
J-157		3.00	265.80	
J-158		14.20	211.40	
J-159		0.60	343.00	
J-160		7.50	172.60	
J-161		0.40	178.60	
J-162		11.50	183.00	
J-163		6.50	183.70	
J-164		20.60	177.50	
J-167		4.50	0.00	
J-168		4.80	0.00	
J-169		10.90	413.50	
J-170		2.80	174.50	
J-171		3.50	286.90	
J-173		100.30	329.80	
J-176		1.70	166.40	
J-177		3.80	179.10	
J-2		9.40	201.80	
J-20		3.60	182.90	
J-21		2.50	182.80	
J-25		8.20	311.10	
J-27		6.90	207.10	
J-3		5.50	182.20	
J-30		12.80	219.90	
J-35		13.60	222.10	
J-39		6.70	218.10	
J-4		4.20	184.40	
J-42		10.00	222.00	
J-44		10.10	208.40	
J-45		7.00	209.00	
J-53		15.80	294.30	
J-55		8.70	297.10	
J-57		2.20	229.20	
J-58		2.50	204.60	
J-6		13.89	473.40	
J-61		7.10	207.00	
J-62		1.80	191.50	
J-63		2.20	225.20	
J-64		6.80	202.30	
J-67		3.50	210.80	
J-7		5.80	214.70	
J-71		3.70	204.60	
J-73		10.50	199.60	
J-74		1.70	301.00	
J-77		1.00	296.10	
J-78		8.60	230.70	
J-79		4.50	223.40	
J-8		10.70	208.80	
J-80		8.20	190.70	
J-81		11.10	218.90	
J-82		10.80	257.90	
J-84		3.80	226.30	
J-87		7.00	194.40	

J-88		35.00	275.70	
J-90		0.10	219.10	
J-91		6.50	352.90	
J-93		2.80	187.50	
J-94		6.00	187.50	
J-95		19.80	189.50	
J-96		10.80	176.90	
J-99		1.90	205.50	
Kennicott	Kennicott Re	----	374.00	397.90
Main Reser	Main Reservo	----	383.30	400.20
physical d		0.10	222.00	
I-RV-1		0.00	186.80	
I-RV-2		0.00	200.90	
O-South En		----	287.90	495.59
O-Valley V	Valley View	0.00	308.10	
Yankis (Va	Yankis (Vall	----	631.50	635.90
Yates Rese	500,000 gal	----	376.00	400.20
O-18th St		----	218.20	389.66
I-18th St		0.00	218.20	
I-AV-1		0.00	283.80	
O-AV-2		0.00	306.00	
O-AV-3		0.00	253.40	
I-AV-4		0.00	289.30	
I-AV-5		0.00	225.30	
I-AV-6		0.00	208.10	
I-Centrali		0.00	333.50	
I-Fairview	Fairview PRV	0.00	346.50	
I-High Lev	High Level P	0.00	401.60	
O-RV-1		----	186.80	382.95
O-RV-2		----	200.90	389.67
I-South En		0.00	287.90	
I-Valley V	Valley View	0.00	308.10	

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 5
 MAXIMUM AND MINIMUM VELOCITIES = 5
 MAXIMUM AND MINIMUM HEAD LOSS/1000 = 5

SUPPLY ZONE DATA

THIS SYSTEM HAS MULTIPLE SUPPLY ZONES

ZONE NO. 1 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@18th St FRV ~@RV-2 ~@RV-1~@Yankis (Valley V
 ~@Fairview PRV~@Kennicott Reserv~@High Level Reser ~@Main Reservoir
 ~@Yates Reservoir

ZONE NO. 2 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@Centralia Alpha

ZONE NO. 3 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@South End Pump S

SYSTEM CONFIGURATION

NUMBER OF PIPES(P) = 734
 NUMBER OF END NODES(J) = 575
 NUMBER OF PRIMARY LOOPS(L) = 155
 NUMBER OF SUPPLY NODES(F) = 7
 NUMBER OF SUPPLY ZONES(Z) = 3

Case: 0

RESULTS OBTAINED AFTER 22 TRIALS: ACCURACY = 0.17376E-03

SIMULATION DESCRIPTION (LABEL)

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS		FLOWRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/ 1000 ft/f	HL/ 1000 ft/f
	#1	#2						
3	6	5	146.42	0.01	0.00	0.60	0.35	0.35
5	10	9	3.80	0.00	0.00	0.02	0.00	0.00
6	12	11	0.20	0.00	0.00	0.00	0.00	0.00
7	872	13	0.20	0.00	0.00	0.00	0.00	0.00
8	15	16	24.67	0.00	0.00	0.28	0.15	0.15
10	18	19	2.00	0.06	0.00	0.20	0.14	0.14
12	22	23	35.13	0.03	0.00	0.22	0.04	0.04
13	24	1524	1.70	0.00	0.00	0.04	0.00	0.00
14	J-55	26	28.44	0.00	0.00	0.12	0.01	0.01
16	28	29	1.00	0.00	0.00	0.00	0.00	0.00
17	32	31	55.12	0.01	0.00	0.17	0.01	0.01
21	38	37	0.80	0.00	0.00	0.02	0.00	0.00
22	40	2014	4.40	0.00	0.00	0.03	0.00	0.00
23	41	1699	78.70	0.00	0.00	0.22	0.02	0.02

2040 Fireflow - Main Zone East

24	213	43	0.20	0.00	0.00	0.00	0.00	0.00
26	47	48	0.80	0.00	0.00	0.02	0.00	0.00
27	49	50	1.40	0.00	0.00	0.01	0.00	0.00
28	51	52	3.20	0.00	0.00	0.02	0.00	0.00
32	60	59	0.50	0.00	0.00	0.01	0.00	0.00
35	65	66	52.88	0.26	0.00	0.60	0.89	0.89
37	68	69	9.85	0.00	0.00	0.06	0.00	0.00
38	52	70	1.10	0.00	0.00	0.01	0.00	0.00
39	72	Hillcrest	0.40	0.00	0.00	0.01	0.00	0.00
41	75	76	86.96	0.09	0.00	0.25	0.03	0.03
45	2066	83	0.20	0.00	0.00	0.00	0.00	0.00
46	86	85	0.20	0.00	0.00	0.00	0.00	0.00
52	97	98	0.30	0.00	0.00	0.00	0.00	0.00
55	102	103	0.30	0.00	0.00	0.00	0.00	0.00
56	1810	104	6.65	0.00	0.00	0.02	0.00	0.00
59	107	108	8.87	0.00	0.00	0.03	0.00	0.00
60	J-53	109	478.78	0.13	0.00	0.76	0.16	0.16
66	J-169	118	570.71	1.74	0.00	1.19	0.84	0.84
68	121	119	242.23	0.17	0.00	0.50	0.24	0.24
70	860	121	376.59	0.01	0.00	0.78	0.54	0.54
72	118	1799	4.20	0.00	0.00	0.03	0.00	0.00
85	396	physical d	0.10	0.00	0.00	0.00	0.00	0.00
107	J-91	2067	1900.90	1.10	0.00	2.40	1.16	1.16
109	325	34	45.88	0.00	0.00	0.13	0.01	0.01
110	166	2122	101.71	0.03	0.00	0.29	0.04	0.04
112	962	166	40.01	0.01	0.00	0.11	0.01	0.01
114	569	962	46.41	0.00	0.00	0.13	0.01	0.01
115	665	569	59.21	0.02	0.00	0.17	0.01	0.01
118	J-105	172	25.83	0.00	0.00	0.07	0.00	0.00
120	178	175	109.79	0.01	0.00	0.31	0.04	0.04
123	1826	178	131.98	0.03	0.00	0.37	0.06	0.06
126	1827	1826	153.64	0.02	0.00	0.44	0.08	0.08
129	192	1827	282.35	0.40	0.00	0.80	0.24	0.24
137	201	192	272.55	0.06	0.00	0.77	0.23	0.23
139	137	201	328.09	0.13	0.00	0.93	0.32	0.32
141	137	15	150.61	0.03	0.00	0.43	0.08	0.08
142	15	J-162	121.73	0.02	0.00	0.35	0.05	0.05
145	201	J-93	49.94	0.01	0.00	0.14	0.02	0.02
155	212	213	60.78	0.01	0.00	0.17	0.01	0.01
156	26	214	19.99	0.00	0.00	0.06	0.00	0.00
163	2072	224	5.80	0.00	0.00	0.02	0.00	0.00
187	248	253	8.50	0.00	0.00	0.02	0.00	0.00
192	254	J-127	222.61	0.24	0.00	0.63	0.16	0.16
262	325	1575	34.02	0.00	0.00	0.10	0.00	0.00
279	344	343	19.80	0.00	0.00	0.06	0.00	0.00
280	342	344	27.90	0.00	0.00	0.08	0.00	0.00
282	342	346	0.90	0.00	0.00	0.00	0.00	0.00
283	86	J-130	6.20	0.00	0.00	0.02	0.00	0.00
292	361	356	103.20	0.41	0.00	0.42	0.18	0.18
298	J-7	32	97.72	0.01	0.00	0.40	0.16	0.16
302	32	480	30.70	0.02	0.00	0.13	0.02	0.02
318	384	385	73.30	0.01	0.00	0.30	0.05	0.05
319	356	J-167	10.00	0.00	0.00	0.04	0.00	0.00
320	356	41	79.20	0.00	0.00	0.32	0.11	0.11
329	396	398	514.98	0.16	0.00	2.10	4.99	4.99
331	398	1409	281.36	0.50	0.00	1.15	1.63	1.63
340	407	408	182.98	0.48	0.00	0.75	0.73	0.73
353	2119	661	9.52	0.01	0.00	0.11	0.04	0.04
355	1648	424	82.29	0.02	0.00	0.34	0.12	0.12
363	295	468	83.30	0.20	0.00	0.34	0.06	0.06
398	172	473	2.50	0.00	0.00	0.01	0.00	0.00
403	480	474	3.10	0.00	0.00	0.02	0.00	0.00
411	2129	J-45	56.28	0.13	0.00	0.36	0.18	0.18
414	1217	1121	5.30	0.00	0.00	0.03	0.00	0.00
417	1235	492	102.62	0.31	0.00	0.65	0.75	0.75
429	505	509	87.63	0.28	0.00	0.56	0.56	0.56
433	512	510	3.91	0.00	0.00	0.02	0.00	0.00
435	J-160	513	1.10	0.00	0.00	0.01	0.00	0.00
440	518	J-94	10.22	0.00	0.00	0.07	0.01	0.01
448	1184	92	39.55	0.04	0.00	0.25	0.05	0.05
451	119	530	97.85	0.03	0.00	0.62	0.68	0.68
452	119	536	138.78	0.61	0.00	0.89	1.31	1.31
458	536	2079	63.39	0.19	0.00	0.40	0.31	0.31
461	540	2079	10.20	0.00	0.00	0.07	0.01	0.01
464	544	543	47.09	0.08	0.00	0.30	0.18	0.18
472	552	J-100	106.50	0.08	0.00	0.68	0.80	0.80
476	I-AV-1	J-114	0.00	0.00	0.00	0.00	0.00	0.00
486	569	573	2.20	0.00	0.00	0.01	0.00	0.00
490	385	166	71.50	0.03	0.00	0.46	0.12	0.12
495	579	J-138	86.88	0.07	0.00	0.55	0.20	0.20
497	582	584	0.60	0.00	0.00	0.00	0.00	0.00
503	J-73	590	70.64	0.30	0.00	0.45	0.37	0.37
511	599	601	2.10	0.00	0.00	0.01	0.00	0.00
526	599	619	3.30	0.00	0.00	0.02	0.00	0.00
531	620	623	2.90	0.00	0.00	0.02	0.00	0.00
538	628	631	57.30	0.02	0.00	0.37	0.18	0.18
541	1049	632	1.40	0.00	0.00	0.01	0.00	0.00
547	631	642	2.70	0.00	0.00	0.02	0.00	0.00
552	High Level	2090	148.00	0.20	0.00	0.60	0.18	0.18
565	509	661	84.55	0.69	0.00	0.54	0.52	0.52
569	597	1284	146.70	0.18	0.00	0.94	1.03	1.03
571	46	2086	79.28	0.16	0.00	0.51	0.33	0.33
574	668	665	53.78	0.07	0.00	0.34	0.08	0.08
577	668	675	2.30	0.00	0.00	0.01	0.00	0.00
584	J-27	676	4.10	0.00	0.00	0.02	0.00	0.00
590	54	682	0.80	0.00	0.00	0.01	0.00	0.00
591	J-95	683	8.90	0.00	0.00	0.06	0.01	0.01
593	J-78	686	1.50	0.00	0.00	0.01	0.00	0.00
597	408	J-79	340.44	0.14	0.00	2.17	6.88	6.88
601	361	1960	25.92	0.05	0.00	0.17	0.04	0.04
612	710	705	27.11	0.01	0.00	0.17	0.02	0.02
617	1134	717	26.17	0.02	0.00	0.17	0.02	0.02
623	247	718	0.20	0.00	0.00	0.00	0.00	0.00
630	424	726	166.36	0.17	0.00	1.06	1.83	1.83
632	726	J-80	96.96	0.26	0.00	0.62	0.67	0.67

2040 Fireflow - Main Zone East

652	468	780	55.20	0.24	0.00	0.35	0.09	0.09
684	2092	781	0.10	0.00	0.00	0.00	0.00	0.00
686	784	1698	11.17	0.00	0.00	0.07	0.00	0.00
690	788	791	16.54	0.01	0.00	0.11	0.01	0.01
693	791	792	0.60	0.00	0.00	0.00	0.00	0.00
697	797	784	11.23	0.00	0.00	0.07	0.00	0.00
700	800	802	1.30	0.00	0.00	0.01	0.00	0.00
702	803	1465	46.14	0.18	0.00	0.52	0.69	0.69
706	2009	808	16.80	0.10	0.00	-0.19	0.11	0.11
710	815	813	39.09	0.15	0.00	0.44	0.51	0.51
712	121	2093	130.76	0.22	0.00	1.48	4.75	4.75
714	2094	40	39.12	0.17	0.00	0.44	0.18	0.18
723	2096	828	14.93	0.04	0.00	0.17	0.09	0.09
726	831	544	49.59	0.06	0.00	0.56	0.79	0.79
727	530	831	83.43	0.69	0.00	0.95	2.06	2.06
735	831	1989	30.93	0.07	0.00	0.35	0.33	0.33
739	842	844	7.51	0.01	0.00	0.09	0.02	0.02
741	817	844	41.10	0.01	0.00	0.17	0.02	0.02
749	J-115	856	16.33	0.02	0.00	0.19	0.10	0.10
751	2078	14	28.51	0.08	0.00	0.32	0.28	0.28
753	860	2097	45.81	0.39	0.00	0.52	0.68	0.68
757	868	865	9.75	0.01	0.00	0.11	0.04	0.04
760	J-113	868	1.74	0.00	0.00	0.02	0.00	0.00
762	872	868	12.21	0.01	0.00	0.14	0.06	0.06
772	881	2098	1.15	0.00	0.00	0.01	0.00	0.00
776	J-111	885	17.63	0.04	0.00	0.20	0.12	0.12
784	J-106	893	3.67	0.00	0.00	0.04	0.01	0.01
785	J-110	893	25.45	0.10	0.00	0.29	0.23	0.23
789	899	66	22.82	0.01	0.00	0.26	0.19	0.19
791	901	899	45.17	0.12	0.00	0.51	0.66	0.66
793	901	1742	51.60	0.96	0.00	0.59	0.85	0.85
797	910	906	3.40	0.00	0.00	0.02	0.00	0.00
801	910	38	35.61	0.00	0.00	0.15	0.01	0.01
807	842	2084	15.93	0.03	0.00	0.18	0.10	0.10
812	916	922	1.60	0.00	0.00	0.01	0.00	0.00
814	J-20	923	3.27	0.00	0.00	0.02	0.00	0.00
817	J-21	929	1.10	0.00	0.00	0.01	0.00	0.00
823	J-2	937	14.19	0.02	0.00	0.16	0.03	0.03
825	556	J-2	21.45	0.08	0.00	0.24	0.17	0.17
831	2080	945	27.77	0.13	0.00	0.32	0.27	0.27
839	2081	954	15.53	0.04	0.00	0.18	0.09	0.09
846	962	964	0.40	0.00	0.00	0.00	0.00	0.00
858	1314	1387	31.57	0.16	0.00	0.81	2.46	2.46
861	108	104	6.07	0.01	0.00	0.07	0.01	0.01
867	J-110	958	39.16	0.05	0.00	0.25	0.05	0.05
874	994	65	30.49	0.24	0.00	0.35	0.32	0.32
876	65	1986	43.86	0.41	0.00	0.50	0.63	0.63
883	1003	1023	27.76	0.01	0.00	0.18	0.02	0.02
903	J-125	1024	65.60	0.04	0.00	0.42	0.12	0.12
905	O-High Lev	649	0.00	0.00	0.00	0.00	0.00	0.00
910	1024	628	60.90	0.07	0.00	0.39	0.10	0.10
912	1003	1032	7.34	0.01	0.00	0.08	0.02	0.02
930	1050	1053	5.90	0.01	0.00	0.07	0.01	0.01
933	384	2100	8.73	0.03	0.00	0.10	0.03	0.03
936	16	1057	22.27	0.06	0.00	0.25	0.13	0.13
938	1060	1063	4.00	0.00	0.00	0.05	0.00	0.00
941	J-129	1064	4.40	0.00	0.00	0.03	0.00	0.00
948	526	1071	59.30	0.24	0.00	0.67	0.78	0.78
949	1084	526	27.34	0.07	0.00	0.17	0.02	0.02
962	1337	1085	2.88	0.00	0.00	0.03	0.00	0.00
966	1099	J-78	171.85	0.96	0.00	1.10	0.70	0.70
975	1101	1100	1.10	0.00	0.00	0.01	0.00	0.00
976	O-Fairview	1101	24.90	0.02	0.00	0.28	0.16	0.16
982	J-81	2103	8.86	0.01	0.00	0.10	0.03	0.03
993	1121	1122	1.20	0.00	0.00	0.01	0.00	0.00
994	2076	2127	23.92	0.01	0.00	0.15	0.02	0.02
1000	1130	1125	3.00	0.00	0.00	0.02	0.00	0.00
1001	J-73	2104	43.07	0.38	0.00	0.49	0.61	0.61
1003	2104	1134	36.87	0.11	0.00	0.42	0.46	0.46
1004	509	1290	57.24	0.49	0.00	0.65	1.03	1.03
1007	2105	1137	44.72	0.21	0.00	0.51	0.65	0.65
1009	2013	1388	67.69	0.37	0.00	0.77	1.40	1.40
1012	2107	2106	82.19	1.19	0.00	0.93	2.01	2.01
1014	23	510	42.49	0.55	0.00	0.48	0.59	0.59
1017	2137	2109	44.60	0.30	0.00	0.51	0.65	0.65
1019	2109	2094	67.07	0.45	0.00	0.76	1.38	1.38
1020	2094	23	43.96	0.09	0.00	0.50	0.63	0.63
1023	23	1156	25.89	0.11	0.00	0.29	0.24	0.24
1024	2073	2096	33.23	0.09	0.00	0.38	0.38	0.38
1025	2096	2110	28.48	0.08	0.00	0.32	0.28	0.28
1026	2110	1997	5.67	0.00	0.00	0.06	0.01	0.01
1028	2111	1997	20.76	0.04	0.00	0.24	0.16	0.16
1030	2112	2111	56.73	0.27	0.00	0.64	1.01	1.01
1032	2113	1961	24.10	0.09	0.00	0.27	0.21	0.21
1035	704	1961	25.54	0.06	0.00	0.29	0.23	0.23
1036	1961	2109	45.04	0.20	0.00	0.51	0.66	0.66
1037	2010	2014	54.02	0.59	0.00	0.61	0.92	0.92
1040	2012	2013	92.28	0.82	0.00	1.05	2.49	2.49
1041	2065	2012	22.52	0.06	0.00	0.26	0.18	0.18
1042	2137	2065	16.18	0.03	0.00	0.18	0.10	0.10
1043	2137	2113	13.87	0.02	0.00	0.16	0.07	0.07
1044	1180	2113	85.00	0.57	0.00	0.96	2.14	2.14
1046	22	1181	20.83	0.01	0.00	0.24	0.16	0.16
1047	2095	22	60.66	0.20	0.00	0.69	1.14	1.14
1048	726	1184	67.00	0.00	0.00	0.43	0.12	0.12
1051	1996	1186	11.19	0.01	0.00	0.13	0.05	0.05
1053	827	1232	18.11	0.14	0.00	0.21	0.12	0.12
1058	1232	1156	20.84	0.09	0.00	0.24	0.16	0.16
1060	1156	512	37.44	0.43	0.00	0.42	0.47	0.47
1062	512	2107	23.53	0.16	0.00	0.27	0.20	0.20
1064	2115	2107	28.66	0.04	0.00	0.33	0.29	0.29
1069	2117	2065	58.58	0.62	0.00	0.66	1.07	1.07
1071	1210	2137	82.35	1.17	0.00	0.93	2.02	2.02
1074	1713	1211	0.40	0.00	0.00	0.00	0.00	0.00
1076	24	1713	46.30	0.06	0.00	0.53	0.25	0.25

2040 Fireflow - Main Zone East

1077	1215	J-58	22.60	0.01	0.00	0.14	0.02	0.02
1078	68	1217	4.15	0.00	0.00	0.05	0.00	0.00
1080	1218	2112	77.88	1.91	0.00	0.88	1.82	1.82
1083	2112	1223	48.80	0.25	0.00	0.55	0.76	0.76
1085	2111	1224	10.38	0.01	0.00	0.12	0.04	0.04
1087	1333	1085	13.10	0.03	0.00	0.15	0.07	0.07
1088	1085	808	9.37	0.02	0.00	0.11	0.04	0.04
1090	808	1229	18.88	0.03	0.00	0.21	0.13	0.13
1091	1181	1232	13.03	0.03	0.00	0.15	0.07	0.07
1094	1483	1235	40.30	0.20	0.00	0.46	0.54	0.54
1095	2120	1104	0.70	0.00	0.00	0.01	0.00	0.00
1096	2120	1239	2.70	0.00	0.00	0.03	0.00	0.00
1099	1214	1240	0.20	0.00	0.00	0.00	0.00	0.00
1100	1244	1214	107.10	0.56	0.00	1.22	1.18	1.18
1103	1251	1244	60.64	0.23	0.00	0.69	0.41	0.41
1110	Yanks (Va	1251	124.80	0.66	0.00	1.42	1.57	1.57
1116	J-25	1513	39.80	0.00	0.00	0.16	0.02	0.02
1117	J-159	1277	9.50	0.00	0.00	0.11	0.03	0.03
1118	1277	1262	0.40	0.00	0.00	0.00	0.00	0.00
1120	657	J-25	48.00	0.04	0.00	0.20	0.02	0.02
1125	1181	1270	2.60	0.00	0.00	0.02	0.00	0.00
1127	2103	1099	32.05	0.05	0.00	0.20	0.03	0.03
1132	1277	I-AV-4	0.00	0.00	0.00	0.00	0.00	0.00
1138	693	579	92.38	2.15	0.00	1.05	2.49	2.49
1140	1284	O-AV-3	0.00	0.00	0.00	0.00	0.00	0.00
1146	1290	2119	34.10	0.19	0.00	0.39	0.14	0.14
1148	1293	1295	39.22	0.07	0.00	0.45	0.18	0.18
1150	398	2016	136.32	0.03	0.00	0.87	0.46	0.46
1152	1120	1298	0.90	0.00	0.00	0.01	0.00	0.00
1154	432	1309	10.00	0.06	0.00	0.11	0.03	0.03
1165	1310	1314	8.17	0.23	0.00	0.21	0.20	0.20
1169	2127	J-61	10.30	0.01	0.00	0.12	0.02	0.02
1171	1318	2105	20.09	0.62	0.00	0.51	1.06	1.06
1173	2105	1322	13.38	0.24	0.00	0.34	0.50	0.50
1178	40	2115	27.52	0.58	0.00	0.70	1.91	1.91
1179	2115	1328	26.36	1.04	0.00	0.67	1.76	1.76
1182	803	J-81	16.97	0.50	0.00	0.43	0.78	0.78
1185	1333	1337	3.79	0.03	0.00	0.10	0.05	0.05
1189	1338	807	52.22	0.12	0.00	0.33	0.08	0.08
1193	518	192	15.48	0.05	0.00	0.40	0.66	0.66
1195	1060	192	6.11	0.07	0.00	0.16	0.12	0.12
1198	705	1060	19.91	1.38	0.00	0.51	1.05	1.05
1205	J-80	492	25.66	0.08	0.00	0.29	0.08	0.08
1208	828	1356	9.43	0.07	0.00	0.24	0.26	0.26
1210	828	1359	1.10	0.00	0.00	0.03	0.00	0.00
1211	1364	1984	1.03	0.00	0.00	0.01	0.00	0.00
1212	1364	1991	4.70	0.00	0.00	0.05	0.00	0.00
1214	1212	1364	10.32	0.09	0.00	0.26	0.31	0.31
1215	1366	36	1.74	0.00	0.00	0.02	0.00	0.00
1217	1251	1244	54.46	0.23	0.00	0.62	0.34	0.34
1226	17	1375	5.37	0.16	0.00	0.14	0.07	0.07
1236	1387	17	24.97	0.45	0.00	0.64	1.14	1.14
1239	1392	1388	22.17	0.74	0.00	0.57	1.28	1.28
1244	33	1314	29.70	0.20	0.00	0.76	1.57	1.57
1245	937	1456	8.89	0.01	0.00	0.10	0.03	0.03
1247	384	1456	0.66	0.00	0.00	0.01	0.00	0.00
1248	1396I-Valley V		0.00	0.00	0.00	0.00	0.00	0.00
1258	1409	505	13.82	0.58	0.00	0.35	0.53	0.53
1261	1410	657	3.06	0.01	0.00	0.08	0.02	0.02
1269	1023	I-AV-2	0.00	0.00	0.00	0.00	0.00	0.00
1309	1456	881	5.15	0.00	0.00	0.06	0.00	0.00
1315	885	1056	7.55	0.03	0.00	0.19	0.12	0.12
1319	1465	2103	13.42	0.32	0.00	0.34	0.50	0.50
1322	407	509	68.56	0.42	0.00	0.78	0.52	0.52
1330	492	693	55.19	0.36	0.00	0.63	0.35	0.35
1338	1295	1483	33.12	0.13	0.00	0.38	0.13	0.13
1340	899	1484	12.54	0.84	0.00	0.32	0.45	0.45
1351	344	1497	3.50	0.01	0.00	0.09	0.02	0.02
1354	1502	1498	2.10	0.00	0.00	0.01	0.00	0.00
1358	J-133	1502	27.30	0.00	0.00	0.11	0.01	0.01
1371	1517	1519	1.30	0.02	0.00	0.13	0.07	0.07
1384	J-95	1544	56.00	0.06	0.00	0.16	0.02	0.02
1388	1544	1547	30.12	0.00	0.00	0.09	0.00	0.00
1389	1547	J-96	15.50	0.00	0.00	0.04	0.00	0.00
1396	1544	1547	3.38	0.00	0.00	0.02	0.00	0.00
1401	668	1674	82.03	0.03	0.00	0.23	0.02	0.02
1404	1674	102	30.50	0.00	0.00	0.09	0.00	0.00
1406	102	J-1	23.50	0.00	0.00	0.07	0.00	0.00
1409	92	J-164	29.35	0.00	0.00	0.08	0.00	0.00
1423	421	107	70.60	0.02	0.00	0.20	0.02	0.02
1426	34	1575	10.48	0.00	0.00	0.03	0.00	0.00
1427	1576	248	54.78	0.01	0.00	0.16	0.01	0.01
1429	248	1580	33.18	0.00	0.00	0.09	0.00	0.00
1433	51	26	3.75	0.00	0.00	0.01	0.00	0.00
1435	109	51	16.65	0.00	0.00	0.05	0.00	0.00
1440	109	6	449.73	0.27	0.00	1.28	0.58	0.58
1441	6	1647	294.20	0.39	0.00	0.83	0.26	0.26
1443	1647	1637	110.13	0.22	0.00	0.31	0.04	0.04
1454	72	1637	130.76	0.10	0.00	0.37	0.06	0.06
1455	1626	72	156.56	0.30	0.00	0.44	0.08	0.08
1458	1627	1626	490.48	0.52	0.00	1.39	0.68	0.68
1460	797	212	65.90	0.01	0.00	0.19	0.02	0.02
1464	1630	788	124.38	0.21	0.00	0.35	0.05	0.05
1477	1626	1630	308.42	0.32	0.00	0.87	0.29	0.29
1479	Yates Reese	1627	964.17	2.55	0.00	2.73	2.37	2.37
1481	1630	76	143.94	0.25	0.00	0.41	0.07	0.07
1483	76	1636	206.38	0.32	0.00	0.59	0.14	0.14
1487	1637	75	205.99	0.08	0.00	0.58	0.14	0.14
1492	75	49	98.03	0.02	0.00	0.28	0.03	0.03
1493	49	254	76.93	0.07	0.00	0.22	0.02	0.02
1494	J-35	254	175.78	0.17	0.00	0.50	0.10	0.10
1497	1647	2072	148.68	0.08	0.00	0.42	0.07	0.07
1499	247	1648	193.29	0.57	0.00	0.55	0.12	0.12
1500	343	1657	9.60	0.01	0.00	0.06	0.00	0.00
1509	1658	901	106.27	0.22	0.00	0.68	0.29	0.29

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1526	1674	800	40.53	0.02	0.00	0.26	0.05	0.05
1531	800	174	33.43	0.02	0.00	0.21	0.03	0.03
1534	1679	1689	4.70	0.01	0.00	0.05	0.01	0.01
1544	1689	1690	0.60	0.00	0.00	0.00	0.00	0.00
1548	1698	2092	3.30	0.00	0.00	0.02	0.00	0.00
1552	1699	1700	3.70	0.00	0.00	0.02	0.00	0.00
1553	2138	89	6.40	0.00	0.00	0.04	0.00	0.00
1560	J-53	1710	50.24	0.08	0.00	0.32	0.07	0.07
1562	683	1711	1.00	0.00	0.00	-0.01	0.00	0.00
1563	683	1712	2.30	0.00	0.00	0.01	0.00	0.00
1564	1713	1716	43.70	0.04	0.00	0.50	0.23	0.23
1567	1716	1719	0.90	0.00	0.00	0.01	0.00	0.00
1584	1742	1737	16.63	0.95	0.00	0.42	0.75	0.75
1588	1737	1375	7.83	0.07	0.00	0.20	0.19	0.19
1593	1742	1484	21.77	0.00	0.00	0.09	0.01	0.01
1596	1484	975	15.12	0.00	0.00	0.06	0.00	0.00
1611	975	1310	9.66	0.00	0.00	0.04	0.00	0.00
1612	2122	1310	6.30	0.00	0.00	0.03	0.00	0.00
1615	2123	1089	17.56	0.01	0.00	0.11	0.01	0.01
1617	1089	1186	33.61	0.09	0.00	0.38	0.38	0.38
1618	1186	1767	39.90	0.03	0.00	0.25	0.05	0.05
1621	J-135	J-171	40.50	0.01	0.00	0.26	0.05	0.05
1626	1773	1775	31.10	0.01	0.00	0.20	0.03	0.03
1628	1775	1776	14.40	0.00	0.00	0.09	0.01	0.01
1629	1776	1782	6.10	0.00	0.00	0.04	0.00	0.00
1635	1788	1782	2.58	0.00	0.00	0.02	0.00	0.00
1641	1775	1788	14.40	0.00	0.00	0.09	0.01	0.01
1644	1773	1791	1.20	0.00	0.00	0.01	0.00	0.00
1645	1776	1793	1.60	0.00	0.00	0.01	0.00	0.00
1647	1788	1782	3.42	0.00	0.00	0.02	0.00	0.00
1654	1800	1801	1.10	0.00	0.00	0.00	0.00	0.00
1657	18053-inch or		0.50	0.00	0.00	0.00	0.00	0.00
1658	1806	1808	1.90	0.00	0.00	0.02	0.00	0.00
1660	1809	1806	3.90	0.00	0.00	0.02	0.00	0.00
1661	1810	1821	42.38	0.01	0.00	0.17	0.02	0.02
1663	1821	1800	28.73	0.00	0.00	0.12	0.01	0.01
1664	1813	1809	11.00	0.00	0.00	0.04	0.00	0.00
1665	1814	1818	4.10	0.37	0.00	0.42	0.52	0.52
1669	1813	1814	8.23	0.00	0.00	0.05	0.00	0.00
1672	1821	J-112	6.95	0.00	0.00	0.04	0.00	0.00
1673	1826	1823	16.45	0.03	0.00	0.19	0.07	0.07
1676	1827	1071	119.41	0.00	0.00	0.34	0.05	0.05
1677	J-128	1636	35.63	0.02	0.00	0.23	0.04	0.04
1792	844	910	41.51	0.00	0.00	0.17	0.02	0.02
1793	178	1823	18.59	0.00	0.00	0.12	0.02	0.02
1796	1063	1948	1.50	0.03	0.00	0.15	0.09	0.09
1799	1032	J-114	0.54	0.00	0.00	0.01	0.00	0.00
1810	1960	12	19.62	0.00	0.00	0.13	0.02	0.02
1811	12	10	14.22	0.01	0.00	0.09	0.01	0.01
1813	1767	J-117	4.10	0.00	0.00	0.05	0.01	0.01
1818	1737	1968	0.60	0.00	0.00	0.02	0.00	0.00
1820	1823	J-168	31.45	0.11	0.00	0.36	0.34	0.34
1821	175	384	98.79	0.18	0.00	0.40	0.08	0.08
1825	566	1973	5.85	0.05	0.00	0.15	0.11	0.11
1826	1975	1974	0.39	0.00	0.00	0.00	0.00	0.00
1828	1980	J-3	7.99	0.01	0.00	0.09	0.03	0.03
1830	19813-inch or		0.20	0.00	0.00	0.01	0.00	0.00
1831	1767	1984	30.80	0.08	0.00	0.35	0.33	0.33
1834	1986	1985	0.30	0.00	0.00	0.01	0.00	0.00
1835	894	2125	12.35	0.00	0.00	0.08	0.01	0.01
1836	1987	568	2.26	0.01	0.00	0.06	0.02	0.02
1837	1989	1988	0.20	0.00	0.00	0.01	0.00	0.00
1839	2121	1991	35.03	0.09	0.00	0.40	0.41	0.41
1840	2123	2126	219.56	0.11	0.00	0.90	0.37	0.37
1841	994	1994	1.00	0.00	0.00	0.01	0.00	0.00
1842	1997	1996	20.83	0.11	0.00	0.24	0.16	0.16
1843	1184	J-163	18.75	0.04	0.00	0.21	0.05	0.05
1852	2007	2009	37.17	0.11	0.00	0.42	0.46	0.46
1854	2065	2010	44.54	0.30	0.00	0.51	0.65	0.65
1855	J-39	2012	75.35	0.24	0.00	0.48	0.42	0.42
1856	2013	2014	19.69	0.02	0.00	0.22	0.05	0.05
1858	2016	J-81	2.99	0.05	0.00	0.08	0.03	0.03
1860	504	2127	23.18	0.07	0.00	0.26	0.07	0.07
1864	1121	2023	0.80	0.00	0.00	0.01	0.00	0.00
1865	2127	1215	25.30	0.01	0.00	0.16	0.02	0.02
1866	2025	2028	1.80	0.04	0.00	0.18	0.11	0.11
1869	2029	2030	1.00	0.01	0.00	0.10	0.04	0.04
1870	2031	2029	8.70	0.01	0.00	0.22	0.07	0.07
1871	2029	2025	6.10	0.00	0.00	0.16	0.04	0.04
1872	2025	2032	1.20	0.00	0.00	0.03	0.00	0.00
1873	2031	2033	2.90	0.01	0.00	0.07	0.01	0.01
1877	J-124	2031	15.70	0.00	0.00	0.10	0.01	0.01
1883	J-74	2047	1.00	0.00	0.00	0.01	0.00	0.00
1887	2053	582	5.97	0.05	0.00	0.15	0.08	0.08
1892	2129	582	1.82	0.00	0.00	0.05	0.01	0.01
1893	46	590	50.82	0.45	0.00	0.58	0.59	0.59
1894	J-45	2061	1.60	0.00	0.00	0.02	0.00	0.00
1895	J-44	2063	35.10	0.06	0.00	0.22	0.07	0.07
1896	5	361	146.02	0.02	0.00	0.60	0.35	0.35
1898	14	540	11.50	0.01	0.00	0.13	0.05	0.05
1900	163-in or sm		0.20	0.00	0.00	0.00	0.00	0.00
1901	17	18	5.10	0.00	0.00	0.06	0.01	0.01
1904	2088	24	50.70	0.00	0.00	0.58	0.30	0.30
1907	2130	36	11.91	0.02	0.00	0.14	0.06	0.06
1908	38	2083	29.71	0.01	0.00	0.12	0.01	0.01
1909	2014	J-87	70.01	0.45	0.00	0.79	1.49	1.49
1917	J-61	69	1.80	0.00	0.00	0.01	0.00	0.00
1920	295	J-30	32.80	0.01	0.00	0.09	0.00	0.00
1924	2066	86	14.10	0.00	0.00	0.04	0.00	0.00
1927	104	J-112	6.02	0.01	0.00	0.07	0.02	0.02
1930	118	710	541.01	1.92	0.00	1.13	0.76	0.76
1935	2106	247	215.49	0.07	0.00	1.38	2.95	2.95
1936	2122	325	87.60	0.01	0.00	0.25	0.03	0.03
1938	1218	375	768.54	1.50	0.00	1.60	2.04	2.04
1940	1318	396	516.68	0.30	0.00	1.08	0.98	0.98

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1941	480	2138	16.80	0.00	0.00	0.07	0.01	0.01
1947	530	2093	9.43	0.03	0.00	0.11	0.04	0.04
1948	536	2078	69.09	0.10	0.00	0.44	0.36	0.36
1949	565	1084	118.68	0.58	0.00	0.76	0.98	0.98
1950	556	944	9.38	0.02	0.00	0.11	0.04	0.04
1951	543	565	106.04	0.03	0.00	0.68	0.79	0.79
1954	J-84	O-AV-5	0.00	0.00	0.00	0.00	0.00	0.00
1956	584	717	106.36	0.15	0.00	0.43	0.19	0.19
1958	590	584	113.06	0.06	0.00	0.46	0.21	0.21
1960	620	2133	23.10	0.00	0.00	0.15	0.02	0.02
1962	1410	649	71.60	0.01	0.00	0.46	0.27	0.27
1964	661	424	85.87	0.02	0.00	0.35	0.18	0.18
1965	172	665	17.13	0.00	0.00	0.05	0.00	0.00
1967	710	137	491.89	1.27	0.00	1.03	0.64	0.64
1972	791	784	8.34	0.00	0.00	0.05	0.00	0.00
1975	788	797	83.33	0.01	0.00	0.24	0.03	0.03
1977	813	J-120	15.10	0.05	0.00	0.17	0.09	0.09
1978	815	803	5.44	0.01	0.00	0.06	0.01	0.01
1979	817	1338	47.23	0.01	0.00	0.19	0.02	0.02
1982	856	2121	41.32	0.16	0.00	0.47	0.56	0.56
1983	375	860	426.30	0.18	0.00	0.89	0.68	0.68
1984	865	65	75.86	0.17	0.00	0.48	0.43	0.43
1985	14	872	14.01	0.01	0.00	0.16	0.08	0.08
1986	J-3	923	3.45	0.00	0.00	0.02	0.00	0.00
1987	1987	944	17.36	0.04	0.00	0.20	0.11	0.11
1989	945	954	5.92	0.00	0.00	0.07	0.02	0.02
1990	958	J-106	22.22	0.05	0.00	0.25	0.18	0.18
1992	994	1658	193.97	0.16	0.00	0.79	0.30	0.30
1993	2101	60	23.76	0.03	0.00	0.27	0.20	0.20
1995	1049	1003	43.40	0.03	0.00	0.28	0.05	0.05
1996	631	1049	50.00	0.04	0.00	0.32	0.14	0.14
1997	1050	975	5.05	0.00	0.00	0.06	0.01	0.01
1998	1057	518	30.31	0.05	0.00	0.19	0.08	0.08
2000	1084	552	73.54	0.18	0.00	0.47	0.40	0.40
2001	1120	1099	123.04	0.09	0.00	0.79	0.38	0.38
2002	J-79	1107	115.01	0.19	0.00	0.73	0.92	0.92
2003	1130	J-63	209.43	1.28	0.00	1.34	2.80	2.80
2005	398	1137	92.69	0.37	0.00	0.59	0.62	0.62
2010	1180	704	135.85	0.59	0.00	0.87	1.25	1.25
2011	704	1183	106.61	0.12	0.00	1.21	3.25	3.25
2014	2067	1210	806.53	1.26	0.00	1.68	2.23	2.23
2020	1223	1224	19.29	0.04	0.00	0.22	0.14	0.14
2021	1224	827	23.87	0.14	0.00	0.27	0.20	0.20
2022	1229	815	49.93	0.24	0.00	0.57	0.80	0.80
2024	1517	1235	70.12	0.33	0.00	0.45	0.37	0.37
2025	J-82	1099	32.47	0.01	0.00	0.21	0.03	0.03
2027	1284	46	139.20	0.67	0.00	0.89	0.94	0.94
2031	1392	1318	542.27	0.33	0.00	1.13	1.07	1.07
2032	J-87	1322	65.04	0.34	0.00	0.74	1.30	1.30
2033	2091	1328	115.34	0.30	0.00	0.74	0.93	0.93
2035	2110	1337	4.39	0.00	0.00	0.05	0.01	0.01
2036	813	1338	17.08	0.07	0.00	0.19	0.11	0.11
2037	1356	1089	19.65	0.00	0.00	0.22	0.14	0.14
2039	945	1366	16.45	0.05	0.00	0.19	0.10	0.10
2040	1387	979	2.20	0.00	0.00	0.02	0.00	0.00
2042	J-39	1392	571.24	0.70	0.00	1.19	1.18	1.18
2045	1409	407	259.74	0.43	0.00	1.06	1.41	1.41
2048	1465	J-120	28.42	0.01	0.00	0.32	0.28	0.28
2053	1107	1517	78.92	0.19	0.00	0.50	0.46	0.46
2058	J-8	1570	119.92	0.26	0.00	0.49	0.24	0.24
2060	1575	342	33.90	0.00	0.00	0.10	0.00	0.00
2063	1627	J-135	458.69	0.27	0.00	1.30	0.75	0.75
2067	1648	432	75.20	0.29	0.00	0.31	0.10	0.10
2068	1658	421	78.20	0.04	0.00	0.32	0.05	0.05
2070	1101	1679	21.50	0.00	0.00	0.24	0.12	0.12
2071	1698	212	0.77	0.00	0.00	0.00	0.00	0.00
2078	1800	1813	23.93	0.00	0.00	0.10	0.01	0.01
2079	1805	1805	3.90	0.00	0.00	0.02	0.00	0.00
2080	107	1810	55.03	0.01	0.00	0.16	0.01	0.01
2087	1960	700	0.10	0.00	0.00	0.00	0.00	0.00
2089	1973	J-2	19.07	0.05	0.00	0.22	0.13	0.13
2090	1366	1974	7.70	0.01	0.00	0.09	0.03	0.03
2091	36	1975	7.55	0.01	0.00	0.09	0.02	0.02
2092	1981	J-4	1.18	0.00	0.00	0.01	0.00	0.00
2093	1984	994	234.06	0.16	0.00	0.96	0.42	0.42
2095	1986	552	37.86	0.25	0.00	0.43	0.48	0.48
2096	893	1987	25.02	0.01	0.00	0.28	0.22	0.22
2097	1989	842	28.63	0.05	0.00	0.32	0.28	0.28
2102	1996	827	3.93	0.00	0.00	0.04	0.01	0.01
2104	375	2007	334.64	0.53	0.00	1.37	0.81	0.81
2105	2009	2096	14.77	0.00	0.00	0.17	0.08	0.08
2111	2016	1120	126.04	0.01	0.00	0.80	0.39	0.39
2114	1107	1293	31.28	0.13	0.00	0.35	0.34	0.34
2118	J-57	2053	76.27	0.12	0.00	0.49	0.31	0.31
2120	717	2063	122.63	0.09	0.00	0.50	0.25	0.25
2127	2067	1218	856.22	0.82	0.00	1.78	2.49	2.49
2128	2067	1180	226.96	1.88	0.00	1.45	3.25	3.25
2139	2007	2073	293.17	0.02	0.00	1.20	0.64	0.64
2141	2074	483	2.10	0.00	0.00	0.01	0.00	0.00
2145	492	2076	60.20	0.10	0.00	0.38	0.28	0.28
2146	504	2076	30.11	0.06	0.00	0.19	0.08	0.08
2148	J-64	693	47.49	0.02	0.00	0.30	0.06	0.06
2149	2078	865	70.21	0.11	0.00	0.45	0.37	0.37
2150	1991	2078	34.93	0.12	0.00	0.40	0.41	0.41
2152	2079	543	62.25	0.06	0.00	0.40	0.30	0.30
2153	2080	2081	57.58	0.09	0.00	0.65	0.38	0.38
2154	2080	958	13.26	0.04	0.00	0.15	0.07	0.07
2155	2125	J-99	48.02	0.00	0.00	0.31	0.07	0.07
2156	958	2081	20.20	0.05	0.00	0.23	0.15	0.15
2159	2083	2084	8.90	0.00	0.00	0.06	0.01	0.01
2160	2083	916	9.31	0.00	0.00	0.06	0.00	0.00
2161	2084	565	16.93	0.01	0.00	0.11	0.03	0.03
2162	2084	916	0.39	0.00	0.00	0.00	0.00	0.00
2165	2086	578	2.60	0.00	0.00	0.02	0.00	0.00
2166	2086	2132	69.08	0.15	0.00	0.44	0.26	0.26

2040 Fireflow - Main Zone East

2169	2088	620	41.00	0.12	0.00	0.26	0.05	0.05
2170	1214	2088	103.80	0.18	0.00	1.18	1.12	1.12
2173	2090	1410	77.56	0.00	0.00	0.50	0.32	0.32
2174	2090	657	57.54	0.02	0.00	0.24	0.03	0.03
2175	1137	2091	130.91	0.55	0.00	0.84	1.17	1.17
2176	2091	505	82.51	0.16	0.00	0.53	0.50	0.50
2179	2093	817	94.93	0.80	0.00	1.08	2.62	2.62
2180	2093	1229	36.95	0.35	0.00	0.42	0.46	0.46
2181	2095	2094	25.31	0.14	0.00	0.29	0.23	0.23
2183	1223	2095	25.41	0.07	0.00	0.29	0.23	0.23
2184	1183	2095	67.06	0.45	0.00	0.76	1.38	1.38
2187	2097	856	29.39	0.13	0.00	0.33	0.30	0.30
2188	2073	2097	12.81	0.01	0.00	0.15	0.06	0.06
2189	895	2098	5.48	0.01	0.00	0.06	0.01	0.01
2190	2098	2100	16.56	0.03	0.00	0.19	0.10	0.10
2192	954	2130	17.15	0.03	0.00	0.19	0.11	0.11
2193	2100	1050	20.45	0.04	0.00	0.23	0.11	0.11
2194	1056	2100	4.55	0.00	0.00	0.05	0.01	0.01
2195	807	2101	80.24	0.12	0.00	0.51	0.17	0.17
2196	2101	J-82	45.67	0.09	0.00	0.29	0.06	0.06
2198	1290	1293	13.14	0.03	0.00	0.15	0.07	0.07
2199	60	2103	21.46	0.03	0.00	0.24	0.17	0.17
2202	2104	2021	1.10	0.00	0.00	0.03	0.00	0.00
2203	1388	2105	45.82	0.20	0.00	0.52	0.68	0.68
2206	1328	2106	136.80	0.19	0.00	0.87	1.27	1.27
2207	510	2107	38.50	0.15	0.00	0.44	0.49	0.49
2212	2109	2010	16.08	0.03	0.00	0.18	0.10	0.10
2214	2110	1356	13.62	0.03	0.00	0.15	0.07	0.07
2216	2111	1333	21.49	0.01	0.00	0.24	0.17	0.17
2217	1183	2112	36.55	0.13	0.00	0.41	0.45	0.45
2221	2113	803	67.37	0.88	0.00	0.76	1.39	1.39
2223	J-87	2115	33.81	0.13	0.00	0.38	0.39	0.39
2228	1210	2117	717.37	0.58	0.00	1.50	1.79	1.79
2231	2119	1483	15.08	0.03	0.00	0.17	0.09	0.09
2234	J-77	2120	8.70	0.00	0.00	0.10	0.02	0.02
2236	2126	2121	8.63	0.01	0.00	0.10	0.03	0.03
2240	2073	2123	242.82	0.19	0.00	0.99	0.45	0.45
2243	2125	961	18.97	0.00	0.00	0.12	0.01	0.01
2244	2081	2125	56.35	0.02	0.00	0.36	0.09	0.09
2246	2126	1984	207.33	0.10	0.00	0.85	0.33	0.33
2249	J-77	2050	0.20	0.00	0.00	0.00	0.00	0.00
2252	2053	2129	64.30	0.05	0.00	0.41	0.22	0.22
2253	961	2130	16.67	0.05	0.00	0.19	0.10	0.10
2254	2130	1973	17.12	0.00	0.00	0.19	0.11	0.11
2257	214	2132	12.39	0.00	0.00	0.09	0.01	0.01
2259	2133	599	13.70	0.00	0.00	0.09	0.01	0.01
2260	2133	47	3.70	0.00	0.00	0.02	0.00	0.00
2269	2138	481	0.30	0.00	0.00	0.00	0.00	0.00
F-1	J-1	97	17.30	0.00	0.00	0.05	0.00	0.00
F-100	J-112	1814	4.57	0.00	0.00	0.05	0.01	0.01
F-101	2079	J-113	5.74	0.01	0.00	0.07	0.01	0.01
F-102	1023	J-114	17.76	0.00	0.00	0.11	0.01	0.01
F-103	649	J-125	68.90	0.04	0.00	0.44	0.13	0.13
F-104	1103I-Fairview		24.90	0.00	0.00	0.28	0.16	0.16
F-105	J-116	J-115	19.33	0.06	0.00	0.22	0.14	0.14
F-106	2097	J-116	22.43	0.05	0.00	0.25	0.18	0.18
F-108	J-117	56	1.40	0.00	0.00	0.02	0.00	0.00
F-11	1975	J-3	0.96	0.00	0.00	0.01	0.00	0.00
F-111	J-120	807	39.52	0.14	0.00	0.45	0.52	0.52
F-113	2117	J-39	653.29	0.43	0.00	1.36	1.51	1.51
F-116	97	J-122	13.60	0.00	0.00	0.04	0.00	0.00
F-117	J-140	J-145	290.91	0.01	0.00	0.83	0.26	0.26
F-119	J-139	J-84	289.51	0.15	0.00	1.85	1.84	1.84
F-121	J-138	J-140	85.18	0.00	0.00	0.24	0.03	0.03
F-122	Main Reser	J-126	2494.41	0.21	0.00	3.14	1.91	1.91
F-124	O-AV-1	2083	0.00	0.00	0.00	0.00	0.00	0.00
F-125	O-AV-2	906	0.00	0.00	0.00	0.00	0.00	0.00
F-127	J-127	295	150.60	0.18	0.00	0.43	0.08	0.08
F-128	J-127	J-128	62.33	0.06	0.00	0.18	0.01	0.01
F-130	J-128	1831	2.80	0.00	0.00	0.02	0.00	0.00
F-131	1071	J-129	174.41	0.06	0.00	0.49	0.10	0.10
F-132	J-129	668	156.31	0.12	0.00	0.44	0.08	0.08
F-133	1513	J-133	28.70	0.00	0.00	0.12	0.01	0.01
F-134	J-122	J-132	9.30	0.00	0.00	0.03	0.00	0.00
F-135	1502	J-124	20.00	0.00	0.00	0.08	0.00	0.00
F-136	J-124	J-131	0.90	0.00	0.00	0.01	0.00	0.00
F-138-CV	Kennicott	J-53	544.82	0.16	0.00	0.87	0.20	0.20
F-140	O-AV-4	686	0.00	0.00	0.00	0.00	0.00	0.00
F-143	I-AV-5	J-63	0.00	0.00	0.00	0.00	0.00	0.00
F-144	O-AV-6	1134	0.00	0.00	0.00	0.00	0.00	0.00
F-146	J-73	J-134	2.00	0.00	0.00	0.01	0.00	0.00
F-147	J-64	J-141	0.80	0.00	0.00	0.01	0.00	0.00
F-148	J-134	O-RV-2	0.00	0.00	0.00	0.00	0.00	0.00
F-149	J-143	O-RV-1	0.00	0.00	0.00	0.00	0.00	0.00
F-15	J-126	J-91	2489.01	0.33	0.00	3.14	1.91	1.91
F-150-XXCV	J-141	J-134						
F-151	J-142	J-139	290.31	0.15	0.00	1.85	1.85	1.85
F-152	1570	J-144	3.10	0.00	0.00	0.01	0.00	0.00
F-153-XXCV	J-143	J-144						
F-154	I-RV-1	J-144	0.00	0.00	0.00	0.00	0.00	0.00
F-157	I-RV-2	J-141	0.00	0.00	0.00	0.00	0.00	0.00
F-1570	1716	1103	33.10	0.06	0.00	0.21	0.03	0.03
F-158	J-145I-18th St		1200.00	0.01	0.00	3.40	3.55	3.55
F-159	J-146	J-145	909.29	0.01	0.00	2.58	2.13	2.13
F-160-XXCV	J-146	J-147						
F-161	O-18th St	J-146	909.29	0.01	0.00	2.58	2.13	2.13
F-162	J-142	J-147	909.29	0.01	0.00	2.58	2.13	2.13
F-164	J-147I-18th St		909.29	0.01	0.00	2.58	2.13	2.13
F-165	J-156	J-155	54.20	0.22	0.00	0.61	0.29	0.29
F-166	66	J-110	72.61	0.52	0.00	0.82	1.60	1.60
F-167	J-156	J-153	258.19	1.23	0.00	0.73	0.26	0.26
F-168	J-152	J-150	9.15	0.00	0.00	0.06	0.00	0.00
F-169	J-88	J-154	375.39	0.24	0.00	1.06	0.52	0.52
F-170	J-155	J-151	22.40	0.28	0.00	0.25	0.06	0.06
F-171	J-155	J-157	3.00	0.19	0.00	0.31	0.29	0.29

2040 Fireflow - Main Zone East

P-172	J-154	J-156	344.99	0.69	0.00	0.98	0.44	0.44
P-173	J-6	J-148	12.30	12.07	0.00	1.26	4.53	4.53
P-174	J-153	J-149	6.10	0.00	0.00	0.04	0.00	0.00
P-175	J-152	J-150	0.65	0.00	0.00	0.00	0.00	0.00
P-176	2076	J-64	55.09	0.24	0.00	0.35	0.24	0.24
P-177	J-160	1057	16.93	0.02	0.00	0.11	0.03	0.03
P-178	1513	J-159	10.10	0.00	0.00	0.11	0.03	0.03
P-179	J-162	J-160	25.53	0.01	0.00	0.16	0.02	0.02
P-18	J-135I-South En		414.99	0.04	0.00	1.18	0.50	0.50
P-180	J-162	J-95	84.70	0.04	0.00	0.24	0.03	0.03
P-181	1818	J-161	0.40	0.00	0.00	0.04	0.01	0.01
P-182	J-163	2003	0.20	0.00	0.00	0.00	0.00	0.00
P-183	J-164	J-143	17.00	0.00	0.00	0.05	0.00	0.00
P-184	J-163	J-177	12.05	0.00	0.00	0.08	0.01	0.01
P-186	1710	J-55	40.94	0.05	0.00	0.26	0.05	0.05
P-188	31	J-158	50.42	0.01	0.00	0.14	0.01	0.01
P-19	34	33	30.40	0.02	0.00	0.78	1.64	1.64
P-190	J-167	2074	5.50	0.00	0.00	0.02	0.00	0.00
P-193-XX	432	780						
P-194	1580	76	24.28	0.00	0.00	0.07	0.00	0.00
P-195	J-170	J-176	1.70	0.00	0.00	0.00	0.00	0.00
P-196	J-168	J-21	13.65	0.01	0.00	0.15	0.07	0.07
P-197	J-168	1980	12.99	0.00	0.00	0.08	0.01	0.01
P-198	O-South En	J-88	414.99	1.91	0.00	1.18	0.62	0.62
P-199	J-171	1773	37.00	0.02	0.00	0.24	0.04	0.04
P-2	J-1	101	0.40	0.00	0.00	0.00	0.00	0.00
P-20	213	1576	57.08	0.00	0.00	0.16	0.01	0.01
P-200	J-91	J-169	581.61	0.04	0.00	0.73	0.13	0.13
P-201	J-153	J-173	126.49	10.49	0.00	0.81	0.50	0.50
P-203	J-177	J-164	8.25	0.00	0.00	0.05	0.00	0.00
P-25	J-30	2066	20.00	0.00	0.00	0.06	0.00	0.00
P-29	2063	J-8	147.32	0.34	0.00	0.60	0.35	0.35
P-3	O-Central1	J-6	26.19	2.73	0.00	0.30	0.11	0.11
P-30	J-42	J-35	189.38	0.15	0.00	0.54	0.12	0.12
P-31	J-8	54	16.70	0.00	0.00	0.07	0.00	0.00
P-33	2072	J-42	132.18	0.00	0.00	0.37	0.06	0.06
P-34	1699	J-42	67.20	0.01	0.00	0.19	0.02	0.02
P-36	1322	2091	73.53	0.53	0.00	0.83	1.63	1.63
P-4	1570	J-7	103.52	0.22	0.00	0.42	0.18	0.18
P-40	J-44	10	2.48	0.00	0.00	0.02	0.00	0.00
P-42	J-45	J-44	47.68	0.05	0.00	0.30	0.13	0.13
P-43	J-132	J-170	4.50	0.00	0.00	0.01	0.00	0.00
P-44	J-55	28	3.80	0.00	0.00	0.02	0.00	0.00
P-47	2132	J-57	78.67	0.01	0.00	0.50	0.33	0.33
P-48	41	J-90	0.10	0.00	0.00	0.00	0.00	0.00
P-49	J-57	2051	0.10	0.00	0.00	0.00	0.00	0.00
P-50	J-57	2052	0.10	0.00	0.00	0.00	0.00	0.00
P-51	O-18th St	J-142	1200.00	0.03	0.00	7.66	25.61	25.61
P-53	1974	J-4	1.70	0.00	0.00	0.02	0.00	0.00
P-54	923	J-4	1.32	0.00	0.00	0.01	0.00	0.00
P-57	1217	I-AV-6	0.00	0.00	0.00	0.00	0.00	0.00
P-58	69	1217	7.25	0.00	0.00	0.05	0.00	0.00
P-6	J-88	J-11	4.60	0.00	0.00	0.03	0.00	0.00
P-61	J-58	68	20.10	0.00	0.00	0.13	0.01	0.01
P-62	J-61	J-136	1.40	0.00	0.00	0.01	0.00	0.00
P-63	J-158	J-127	36.22	0.01	0.00	0.10	0.01	0.01
P-64	54	J-27	11.00	0.00	0.00	0.04	0.00	0.00
P-65	597	J-67	133.41	0.36	0.00	0.85	0.87	0.87
P-67	J-67	J-71	129.91	0.14	0.00	0.83	0.42	0.42
P-69	J-71	J-73	126.21	0.49	0.00	0.81	1.09	1.09
P-7	J-154	J-152	20.30	0.00	0.00	0.13	0.02	0.02
P-71	J-63	J-123	207.23	0.02	0.00	1.32	0.99	0.99
P-73	1679	J-74	12.60	0.01	0.00	0.14	0.04	0.04
P-74	J-74	J-77	9.90	0.00	0.00	0.11	0.03	0.03
P-75	I-AV-3	2120	0.00	0.00	0.00	0.00	0.00	0.00
P-76	J-78	408	161.75	0.32	0.00	1.03	1.24	1.24
P-77	J-79	1130	220.93	2.28	0.00	1.41	3.09	3.09
P-78	J-80	504	63.09	0.12	0.00	0.40	0.30	0.30
P-79	J-82	1396	2.40	0.00	0.00	0.03	0.00	0.00
P-80	1388	J-87	35.84	0.10	0.00	0.41	0.16	0.16
P-81	92	J-62	1.80	0.00	0.00	0.01	0.00	0.00
P-82	J-84	597	285.71	2.24	0.00	1.82	3.55	3.55
P-83	J-123	J-140	206.63	0.01	0.00	0.59	0.14	0.14
P-84	J-93	1971	0.20	0.00	0.00	0.00	0.00	0.00
P-86	I-High Lev	J-126	0.00	0.00	0.00	0.00	0.00	0.00
P-87	J-94	526	51.16	0.21	0.00	0.33	0.21	0.21
P-88	J-93	J-94	46.94	0.00	0.00	0.53	0.51	0.51
P-89	J-96inter-tie		4.70	0.00	0.00	0.01	0.00	0.00
P-9	J-2	2098	16.93	0.04	0.00	0.19	0.11	0.11
P-90	174	J-105	30.03	0.00	0.00	0.09	0.00	0.00
P-91	J-20	1981	3.18	0.00	0.00	0.04	0.00	0.00
P-92	J-21	J-20	10.05	0.01	0.00	0.11	0.04	0.04
P-93	J-99	568	1.14	0.00	0.00	0.01	0.00	0.00
P-94	J-99	556	36.83	0.01	0.00	0.24	0.04	0.04
P-95	J-99	566	8.15	0.00	0.00	0.05	0.00	0.00
P-96	J-100	2080	105.30	0.05	0.00	0.67	0.28	0.28
P-97	J-106	894	13.95	0.02	0.00	0.16	0.08	0.08
P-98	J-173I-Central1		26.19	0.01	0.00	0.17	0.03	0.03
P-99	944	J-111	20.83	0.06	0.00	0.24	0.16	0.16
Valley Vie	O-Valley VYankis (Va		0.00	0.00	0.00	0.00	0.00	0.00
~@18th St -RV	I-18th St O-18th St							
~@AV-1-XX	I-AV-1 O-AV-1							
~@AV-2-XX	I-AV-2 O-AV-2							
~@AV-3-XX	I-AV-3 O-AV-3							
~@AV-4-XX	I-AV-4 O-AV-4							
~@AV-5-XX	I-AV-5 O-AV-5							
~@AV-6-XX	I-AV-6 O-AV-6							
~@High Lev-RV	I-High LevO-High Lev							
~@Valley V-RV	I-Valley VO-Valley V							

NODE RESULTS

NODE NODE EXTERNAL HYDRAULIC NODE PRESSURE NODE

2040 Fireflow - Main Zone East

NAME	TITLE	DEMAND gpm	GRADE ft	ELEVATION ft	HEAD ft	PRESSURE psi
5		0.40	397.33	243.40	153.93	66.70
6		9.10	397.34	244.40	152.94	66.27
9		3.80	397.24	205.80	191.44	82.96
10		12.90	397.24	213.70	183.54	79.53
11		0.20	397.25	236.90	160.35	69.49
12		5.20	397.25	236.90	160.75	69.66
13		0.20	395.08	198.90	196.18	85.01
14		3.00	395.09	201.40	193.69	83.93
15		4.20	394.67	186.10	208.57	90.38
16		2.20	394.66	186.10	208.56	90.38
17		14.50	392.95	175.70	217.25	94.14
18		3.10	392.94	171.90	221.04	95.79
19		2.00	392.88	165.30	227.58	98.62
22		4.70	395.31	186.50	208.81	90.49
23		10.70	395.29	187.70	207.59	89.95
24		2.70	634.28	604.50	29.78	12.90
26		12.20	397.61	240.30	157.31	68.17
28		2.80	397.62	322.60	75.02	32.51
29		1.00	397.62	319.00	78.62	34.07
31		8.70	396.34	216.80	179.54	77.80
32		7.90	396.35	214.70	181.65	78.72
33		0.70	393.77	183.00	210.77	91.33
34		5.00	393.78	183.50	210.28	91.12
36		6.10	393.94	194.40	199.54	86.47
37		0.80	395.01	319.00	76.01	32.94
38		5.10	395.01	290.50	104.51	45.29
40		7.20	395.20	190.80	204.40	88.57
41		0.40	396.89	219.10	177.79	77.04
43		0.20	396.57	253.50	143.07	62.00
46		9.10	397.93	229.90	168.03	72.81
47		2.90	634.16	544.40	89.76	38.89
48		0.80	634.16	543.60	90.56	39.24
49		19.70	396.63	243.00	153.63	66.57
50		1.40	396.63	244.20	152.43	66.05
51		9.70	397.61	240.00	157.61	68.30
52		2.10	397.61	261.50	136.11	58.98
54		4.90	396.83	209.30	187.53	81.26
56		1.40	395.37	193.00	202.37	87.69
59		0.50	394.75	252.50	142.25	61.64
60		1.80	394.75	252.90	141.85	61.47
65		9.60	394.90	192.40	202.50	87.75
66		3.10	394.63	191.30	203.33	88.11
68		6.10	392.12	205.20	186.92	81.00
69		4.40	392.11	208.70	183.41	79.48
70		1.10	397.61	285.20	112.41	48.71
72		25.40	396.84	255.00	141.84	61.46
75		21.00	396.65	247.70	148.95	64.55
76		48.80	396.56	256.00	140.56	60.91
83		0.20	396.13	221.90	174.23	75.50
85		0.20	396.13	222.10	174.03	75.41
86		7.70	396.13	222.40	173.73	75.28
89		6.40	396.33	225.60	170.73	73.98
92		8.40	392.52	192.40	200.12	86.72
97		3.40	393.90	173.90	220.00	95.33
98		0.30	393.90	174.00	219.90	95.29
101		0.40	393.90	174.30	219.60	95.16
102		6.70	393.90	176.00	217.90	94.42
103		0.30	393.90	175.70	218.20	94.55
104		6.70	394.91	179.70	215.21	93.26
107		6.70	394.92	183.60	211.32	91.57
108		2.80	394.92	183.60	211.32	91.57
109		12.40	397.61	236.20	161.41	69.95
118		25.50	397.88	192.50	205.38	89.00
119		5.60	395.88	217.70	178.18	77.21
121		3.60	396.05	230.70	165.35	71.65
137		13.20	394.70	180.00	214.70	93.04
166		9.80	393.83	182.90	210.93	91.40
172		6.20	393.86	174.10	219.76	95.23
174		3.40	393.86	175.70	218.16	94.54
175		11.00	394.05	183.60	210.45	91.19
178		3.60	394.06	183.60	210.46	91.20
192		11.80	394.51	183.60	210.91	91.40
201		5.60	394.57	178.30	216.27	93.72
212		5.90	396.58	256.30	140.28	60.79
213		3.50	396.57	253.50	143.07	62.00
214		7.60	397.61	230.10	167.51	72.59
224		5.80	396.88	224.20	172.68	74.83
247		22.00	393.33	192.10	201.23	87.20
248		13.10	396.57	248.60	147.97	64.12
253		8.50	396.57	240.90	155.67	67.46
254		30.10	396.56	230.80	165.76	71.83
295		34.50	396.14	210.10	186.04	80.62
325		7.70	393.79	183.90	209.89	90.95
342		5.10	393.78	165.40	228.38	98.96
343		10.20	393.78	163.20	230.58	99.92
344		4.60	393.78	164.20	229.58	99.48
346		0.90	393.78	165.60	228.18	98.88
356		14.00	396.89	219.10	177.79	77.04
361		16.90	397.31	243.10	154.21	66.82
375		7.60	396.24	230.50	165.74	71.82
384		16.10	393.87	183.20	210.67	91.29
385		1.80	393.86	183.60	210.26	91.11
396		1.60	394.97	221.20	173.77	75.30
398		4.60	394.81	220.50	174.31	75.53
407		8.20	393.88	226.99	166.89	72.32
408		4.30	393.40	223.30	170.10	73.71
421		7.60	394.93	184.20	210.73	91.32
424		1.80	392.74	189.90	202.84	87.90
432		65.20	392.47	184.10	208.37	90.30
468		29.10	395.94	204.20	191.74	83.09
473		2.50	393.86	178.30	215.56	93.41
474		3.10	396.33	210.70	185.63	80.44

2040 Fireflow - Main Zone East

480	10.80	396.33	219.70	176.63	76.54
481	0.30	396.33	220.90	175.43	76.02
483	2.10	396.89	214.00	182.89	79.25
492	12.90	392.23	195.50	196.73	85.25
504	9.80	392.19	192.80	199.39	86.40
505	8.70	393.73	197.20	196.53	85.16
509	14.40	393.45	200.00	193.45	83.83
510	7.90	394.74	189.60	205.14	88.89
512	10.00	394.74	184.80	209.94	90.97
513	1.10	394.63	178.80	215.83	93.53
518	4.60	394.56	182.20	212.36	92.02
526	19.20	394.35	201.80	192.55	83.44
530	5.00	395.85	220.30	175.55	76.07
536	6.30	395.27	201.90	193.37	83.79
540	1.30	395.08	202.30	192.78	83.54
543	3.30	395.02	210.90	184.12	79.78
544	2.50	395.10	216.10	179.00	77.57
552	4.90	394.24	191.50	202.74	87.85
556	6.00	393.99	206.10	187.89	81.42
565	4.30	394.99	210.80	184.19	79.81
566	2.30	394.00	204.60	189.40	82.07
568	3.40	394.00	206.30	187.70	81.34
569	10.60	393.84	178.30	215.54	93.40
573	2.20	393.84	178.00	214.84	93.10
578	2.60	397.76	280.80	116.96	50.68
579	5.50	389.73	205.50	184.23	79.83
582	7.20	397.42	212.80	184.62	80.00
584	7.30	397.42	207.60	189.82	82.26
590	8.40	397.48	208.60	189.88	81.85
597	5.60	398.77	222.20	176.57	76.52
599	8.30	634.15	592.40	41.75	18.09
601	2.10	634.15	577.30	56.85	24.64
619	3.30	634.15	559.00	75.15	32.57
620	15.00	634.16	583.00	51.16	22.17
623	2.90	634.16	588.00	46.16	20.00
628	3.60	604.63	420.40	184.23	79.83
631	4.60	604.61	382.80	221.81	96.12
632	1.40	604.57	455.20	149.37	64.73
642	2.70	604.61	304.60	300.01	130.00
649	2.70	604.78	392.70	212.08	91.90
657	12.60	604.78	331.20	273.58	118.55
661	8.20	392.76	190.90	201.86	87.47
665	11.70	393.86	174.40	219.46	95.10
668	18.20	393.93	182.30	211.63	91.71
675	2.30	393.93	180.60	213.33	92.44
676	4.10	396.83	206.70	190.13	82.39
682	0.80	396.83	208.20	187.63	81.31
683	5.60	394.60	200.30	194.30	84.20
686	1.50	393.72	278.90	114.82	49.75
693	10.30	391.87	197.40	194.47	84.27
700	0.10	397.26	237.50	159.76	69.23
704	3.70	396.08	190.10	205.98	89.26
705	7.20	395.96	185.50	210.46	91.20
710	22.00	395.97	197.50	198.47	86.00
717	9.90	397.27	204.90	192.37	83.36
718	0.20	393.33	191.20	202.13	87.59
726	2.40	392.57	190.00	202.57	87.78
780	55.20	395.70	195.00	200.70	86.97
781	0.10	396.58	252.20	144.38	62.57
784	8.40	396.59	259.80	136.79	59.27
788	24.50	396.60	258.50	138.10	59.84
791	7.60	396.59	256.00	140.59	60.92
792	0.60	396.59	254.90	141.69	61.40
797	6.20	396.59	255.30	141.29	61.23
800	5.80	393.88	177.30	216.58	93.85
802	1.30	393.88	178.00	215.88	93.55
803	9.70	395.23	217.90	177.33	76.84
807	11.50	394.90	272.60	122.30	52.99
808	7.30	395.50	215.50	180.00	78.00
813	6.90	395.08	244.90	150.18	65.08
815	5.40	395.24	219.20	176.04	76.28
817	6.60	395.02	275.20	119.82	51.92
827	9.70	395.41	186.80	208.61	90.40
828	4.40	395.56	192.50	203.06	87.99
831	2.90	395.16	216.90	178.26	77.24
842	5.20	395.03	234.00	161.03	69.78
844	7.10	395.01	260.00	135.01	58.51
856	4.40	395.54	194.40	201.14	87.16
860	3.90	396.06	230.20	165.86	71.87
865	4.10	395.06	195.90	199.16	86.30
868	4.20	395.07	197.00	198.07	85.83
872	1.60	395.08	199.50	195.58	84.75
881	4.00	393.87	198.80	194.07	84.10
885	4.60	393.87	204.20	189.67	82.19
893	4.10	394.02	198.10	195.92	84.90
894	1.60	394.00	206.30	187.70	81.34
899	9.80	394.64	192.10	202.54	87.77
901	9.50	394.76	189.00	205.76	89.16
906	3.40	395.01	292.50	102.51	44.42
910	2.50	395.01	294.90	100.11	43.38
916	8.10	395.00	222.40	172.60	74.79
922	1.60	395.00	238.30	156.70	67.90
923	5.40	393.93	182.20	211.73	91.75
929	1.10	393.93	181.60	212.33	92.01
937	5.30	393.88	183.80	210.08	91.03
944	5.90	393.97	196.50	197.47	85.57
945	5.40	393.99	192.00	201.99	87.53
954	4.30	393.98	193.70	200.28	86.79
958	10.00	394.07	201.60	192.47	83.40
961	2.30	394.00	205.40	188.60	81.73
962	6.00	393.84	178.30	214.54	92.97
964	0.40	393.84	179.40	214.44	92.92
975	10.50	393.80	184.50	209.30	90.69
979	2.20	393.40	173.70	219.70	95.20
994	8.60	395.13	192.30	202.83	87.89

2040 Fireflow - Main Zone East

1003	8.30	604.54	435.80	168.74	73.12
1023	10.00	604.53	389.60	214.93	93.14
1024	4.70	604.70	408.40	196.30	85.06
1032	6.80	604.52	455.00	149.52	64.79
1049	5.20	604.57	421.50	183.07	79.33
1050	9.50	393.80	188.20	205.60	89.09
1053	5.90	393.78	183.20	210.58	91.25
1056	3.00	393.84	192.00	201.84	87.46
1057	8.90	394.61	179.20	215.41	93.34
1060	9.80	394.58	196.50	198.08	85.83
1063	2.50	394.58	238.10	156.48	67.81
1064	4.40	394.05	181.30	212.75	92.19
1071	4.30	394.10	190.50	203.60	88.23
1084	17.80	394.41	198.50	195.91	84.90
1085	6.60	395.52	197.60	197.92	85.76
1089	3.60	395.49	190.70	204.79	88.74
1099	15.70	394.68	233.90	160.78	69.67
1100	1.10	466.48	339.70	126.78	54.94
1101	2.30	466.48	323.20	143.28	62.09
1103	8.20	634.13	346.40	287.73	124.68
1104	0.70	466.47	285.50	180.97	78.42
1107	4.80	393.06	211.40	181.66	78.72
1120	2.10	394.77	222.90	171.87	74.48
1121	3.30	392.11	205.30	186.81	80.95
1122	1.20	392.11	204.40	187.71	81.34
1125	3.00	390.98	205.00	185.98	80.59
1130	8.50	390.98	225.00	165.98	71.92
1134	10.70	397.29	202.90	194.39	84.24
1137	6.50	394.44	202.10	192.34	83.35
1156	9.30	395.17	184.90	210.27	91.12
1180	6.10	396.68	195.40	201.28	87.22
1181	5.20	395.30	186.00	209.30	90.70
1183	3.00	395.96	190.20	205.76	89.16
1184	8.70	392.57	189.70	202.87	87.91
1186	4.90	395.39	191.30	204.09	88.44
1210	6.80	397.30	215.60	181.70	78.74
1211	0.40	634.22	564.40	69.82	30.26
1214	3.10	634.46	607.60	26.86	11.64
1215	2.70	392.12	200.80	191.32	82.91
1217	6.10	392.11	207.80	184.31	79.87
1218	9.80	397.74	217.60	180.14	78.06
1223	4.10	395.58	187.20	208.38	90.30
1224	5.80	395.54	187.60	207.94	90.11
1229	5.90	395.48	224.40	171.08	74.13
1232	10.30	395.27	183.90	211.37	91.59
1235	7.80	392.54	197.20	195.34	84.65
1239	2.70	466.47	265.90	200.57	86.91
1240	0.20	634.46	608.90	25.56	11.07
1244	8.00	635.01	591.00	44.01	19.07
1251	9.70	635.24	622.30	12.94	5.61
1262	0.40	604.74	349.90	254.84	110.43
1270	2.60	395.30	184.30	211.00	91.43
1277	9.10	604.74	340.00	264.74	114.72
1284	7.50	398.59	224.00	174.59	75.66
1290	10.00	392.96	207.20	185.76	80.50
1293	5.20	392.94	206.60	186.34	80.75
1295	6.10	392.87	200.40	192.47	83.40
1298	0.90	394.77	224.20	170.57	73.91
1309	10.00	392.41	185.00	207.41	89.88
1310	7.80	393.80	184.40	209.40	90.74
1314	6.30	393.56	183.00	210.56	91.24
1318	5.50	395.27	221.20	174.07	75.43
1322	4.90	394.41	194.60	199.81	86.59
1328	4.90	393.59	192.30	201.29	87.23
1333	4.60	395.55	191.30	204.25	88.51
1337	5.30	395.52	192.80	202.72	87.85
1338	12.10	395.01	257.70	137.31	59.50
1356	3.40	395.49	190.80	204.69	88.70
1359	1.10	395.56	193.30	202.26	87.65
1364	4.60	395.29	193.90	201.39	87.27
1366	7.00	393.94	190.60	203.34	88.11
1375	13.20	392.78	168.30	224.48	97.28
1387	4.40	393.40	182.40	211.00	91.43
1388	8.20	394.85	200.40	194.45	84.26
1392	6.80	395.59	220.30	175.29	75.96
1396	2.40	394.68	308.10	86.58	37.52
1409	7.80	394.31	222.20	172.11	74.58
1410	2.90	604.80	392.50	212.30	92.00
1456	4.40	393.87	183.20	210.67	91.29
1465	4.30	395.04	235.70	159.34	69.05
1483	7.90	392.74	193.40	199.34	86.38
1484	19.20	393.80	183.60	210.20	91.09
1497	3.50	393.77	167.20	226.57	98.18
1498	2.10	604.74	396.40	208.34	90.28
1502	5.20	604.74	385.30	219.44	95.09
1513	1.00	604.75	339.40	265.35	114.98
1517	7.50	392.87	205.40	187.47	81.24
1519	1.30	392.85	211.30	181.55	78.67
1524	1.70	634.28	615.60	18.68	8.09
1544	22.50	394.55	194.80	199.75	86.56
1547	18.00	394.55	208.00	186.55	80.84
1570	13.30	396.58	195.50	201.08	87.13
1575	10.60	393.78	171.60	222.18	96.28
1576	2.30	396.57	253.70	142.87	61.91
1580	8.90	396.57	245.80	150.77	65.33
1626	25.50	397.13	272.90	124.23	53.83
1627	15.00	397.65	289.00	108.65	47.08
1630	40.10	396.81	266.70	130.11	56.38
1636	242.01	396.24	245.70	150.54	65.24
1637	34.90	396.73	249.10	147.63	63.97
1647	35.40	396.95	236.20	160.75	69.66
1648	35.80	392.76	187.30	205.46	89.03
1657	9.60	393.77	176.60	217.17	94.11
1658	9.50	394.98	185.90	209.08	90.60
1674	11.00	393.90	178.00	215.90	93.56

6" and 2"

2040 Fireflow - Main Zone East

1679	4.20	466.48	317.70	148.78	64.47
1689	4.10	466.47	323.60	142.87	61.91
1690	0.60	466.47	319.70	146.77	63.60
1698	7.10	396.58	256.80	139.78	60.57
1699	7.80	396.89	218.90	177.99	77.13
1700	3.70	396.89	216.20	180.69	78.30
1710	9.30	397.66	303.90	93.76	40.63
1711	1.00	394.60	209.80	184.80	80.08
1712	2.30	394.60	268.50	126.10	54.64
1713	2.20	634.22	571.10	63.12	27.35
1716	9.70	634.18	533.50	100.68	43.63
1719	0.90	634.18	516.50	117.68	51.00
1737	8.20	392.85	166.60	226.25	98.04
1742	13.20	393.80	183.60	210.20	91.09
1767	5.00	395.37	193.40	201.97	87.52
1773	4.70	397.35	272.20	125.15	54.23
1775	2.30	397.35	270.10	127.25	55.14
1776	6.70	397.35	269.20	128.15	55.53
1782	12.10	397.35	269.10	128.25	55.57
1788	8.40	397.35	269.00	128.35	55.62
1791	1.20	397.35	273.40	123.95	53.71
1793	1.60	397.35	270.60	126.75	54.92
1799	4.20	397.88	201.40	196.48	85.14
1800	3.70	394.90	166.10	228.80	99.14
1801	1.10	394.90	173.70	221.20	95.85
1805	3.40	394.89	179.70	215.19	93.25
1806	2.00	394.89	173.10	221.79	96.11
1808	1.90	394.89	178.80	215.09	93.21
1809	3.20	394.89	172.30	222.59	96.46
1810	6.00	394.91	178.50	215.41	93.34
1813	4.70	394.89	171.10	223.79	96.98
1814	8.70	394.89	167.10	227.79	98.71
1818	3.70	394.52	178.50	216.02	93.61
1821	6.70	394.90	169.80	225.10	97.54
1823	3.60	394.06	182.50	211.56	91.67
1826	5.20	394.09	183.30	210.79	91.34
1827	9.30	394.11	192.90	201.21	87.19
1831	2.80	396.26	234.10	162.16	70.27
1948	1.50	394.55	234.90	159.65	69.18
1960	6.20	397.26	237.60	159.66	69.18
1961	4.60	396.02	190.10	205.92	89.23
1968	0.60	392.85	164.90	227.95	98.78
1971	0.20	394.56	185.30	209.26	90.68
1973	3.90	393.95	198.40	195.55	84.74
1974	6.40	393.93	187.50	206.43	89.45
1975	6.20	393.93	186.60	207.33	89.84
1980	5.00	393.94	180.20	213.74	92.62
1981	1.80	393.93	183.10	210.83	91.36
1984	5.10	395.29	194.10	201.19	87.18
1985	0.30	394.48	195.20	199.28	86.36
1986	5.70	394.48	194.50	199.98	86.66
1987	5.40	394.01	198.50	195.51	84.72
1988	0.20	395.08	219.50	175.58	76.08
1989	2.10	395.08	222.30	172.78	74.87
1991	4.80	395.29	194.20	201.09	87.14
1994	1.00	395.13	190.70	204.43	88.59
1996	5.70	395.41	189.80	205.61	89.10
1997	5.60	395.52	191.50	204.02	88.41
2003	0.20	392.53	185.20	207.33	89.84
2007	4.30	395.71	200.60	195.11	84.55
2009	5.60	395.60	196.90	198.70	86.10
2010	6.60	395.80	191.70	204.10	88.44
2012	5.60	396.04	199.00	197.04	85.39
2013	4.90	395.23	200.10	195.13	84.55
2014	8.10	395.20	193.20	202.00	87.53
2016	7.30	394.78	222.30	172.48	74.74
2021	1.10	397.40	204.20	193.20	83.72
2023	0.80	392.11	206.90	185.21	80.26
2025	3.10	604.73	455.60	149.13	64.62
2028	1.80	604.69	520.90	83.79	36.31
2029	1.60	604.73	449.00	155.73	67.48
2030	1.00	604.72	460.10	144.62	62.67
2031	4.10	604.74	430.90	173.84	75.33
2032	1.20	604.73	484.00	120.73	52.32
2033	2.90	604.74	474.20	130.54	56.57
2047	1.00	466.47	309.00	157.47	68.24
2050	0.20	466.47	301.10	165.37	71.66
2051	0.10	397.60	229.60	168.00	72.80
2052	0.10	397.60	229.90	167.70	72.67
2053	6.00	397.48	220.60	176.88	76.65
2061	1.60	397.29	208.20	189.09	81.94
2063	10.40	397.18	205.00	192.18	83.28
2065	7.70	396.10	198.90	197.20	85.45
2066	5.70	396.13	222.20	173.93	75.37
2067	11.20	398.56	216.20	182.36	79.02
2072	10.70	396.88	221.90	174.98	75.82
2073	4.30	395.68	199.80	195.88	84.88
2074	3.40	396.89	220.90	175.99	76.26
2076	11.30	392.13	204.40	187.73	81.35
2078	5.30	395.17	199.20	195.97	84.92
2079	5.60	395.08	203.10	191.98	83.19
2080	6.70	394.11	191.60	202.51	87.76
2081	5.90	394.02	198.70	195.32	84.64
2083	11.50	395.00	255.40	139.60	60.49
2084	7.50	395.00	224.10	170.90	74.06
2086	7.60	397.76	230.30	167.46	72.57
2088	12.10	634.28	604.50	29.78	12.90
2090	12.90	604.80	391.30	213.50	92.52
2091	6.60	393.89	195.30	198.59	86.05
2092	3.20	396.58	251.60	144.98	62.83
2093	8.30	395.82	236.00	159.82	69.26
2094	9.30	395.37	188.50	206.87	89.65
2095	6.50	395.51	187.60	207.91	90.09
2096	4.60	395.60	196.50	199.10	86.28
2097	6.80	395.67	202.50	193.17	83.71

2040 Fireflow - Main Zone East

2098	7.00	393.87	202.10	191.77	83.10	
2100	9.40	393.84	197.30	196.54	85.17	
2101	10.80	394.78	270.60	124.18	53.81	
2103	11.70	394.72	236.90	157.82	68.39	
2104	5.10	397.40	200.50	196.90	85.32	
2105	7.80	394.65	201.90	192.75	83.52	
2106	3.50	393.40	192.10	201.30	87.23	
2107	8.50	394.58	190.50	204.08	88.44	
2109	6.50	395.82	190.80	205.02	88.84	
2110	4.80	395.52	192.70	202.82	87.89	
2111	4.10	395.56	191.00	204.56	88.64	
2112	8.90	395.83	190.20	205.63	89.11	
2113	7.40	396.11	195.50	200.61	86.93	
2115	6.30	394.63	191.90	202.73	87.85	
2117	5.50	396.72	217.50	179.22	77.66	
2119	9.50	392.77	193.60	199.17	86.31	
2120	5.30	466.47	268.60	197.87	85.74	
2121	4.60	395.38	193.00	202.38	87.70	
2122	7.80	393.80	183.70	210.10	91.04	
2123	5.70	395.49	193.20	202.29	87.66	
2125	1.70	394.00	206.20	187.80	81.38	
2126	3.60	395.39	192.50	202.89	87.92	
2127	11.50	392.13	203.70	188.43	81.65	
2129	6.20	397.43	218.10	179.33	77.71	
2130	4.80	393.95	198.00	195.95	84.91	
2132	2.80	397.61	230.10	167.51	72.59	
2133	5.70	634.16	578.00	56.16	24.33	
2137	7.70	396.13	198.20	197.93	85.77	
2138	10.10	396.33	221.50	174.83	75.76	
I-18th St	0.00	401.30	218.20	183.10	79.34	
O-18th St	0.00	401.34	218.20	183.14	79.36	
3-in or sm	0.20	394.66	185.50	209.16	90.64	
3-inch or	0.50	394.89	183.00	211.89	91.82	
3-inch or	0.20	393.93	183.10	210.83	91.36	
O-AV-1	0.00	395.00	283.80	111.20	48.19	
I-AV-2	0.00	604.53	306.00	298.53	129.36	
I-AV-3	0.00	466.47	253.40	213.07	92.33	
O-AV-4	0.00	393.72	289.30	104.42	45.25	
O-AV-5	0.00	401.02	225.30	175.72	76.14	
O-AV-6	0.00	397.29	208.10	189.19	81.98	
O-Centrali	----	541.19	333.50	207.69	90.00	
O-Fairview	Fairview PRV	466.50	346.50	120.00	52.00	
O-High Lev	High Level P	0.00	604.78	401.60	203.18	88.05
High Level	High Level R	----	605.00	605.00	0.00	0.00
Hillcrest		0.40	396.84	256.20	140.64	60.94
inter-tie		4.70	394.55	174.40	220.15	95.40
J-1		5.80	393.90	174.00	219.90	95.29
J-100		1.20	394.16	190.60	203.56	88.21
J-105		4.20	393.86	175.60	218.26	94.58
J-106		4.60	394.03	206.20	187.83	81.39
J-11		4.60	493.68	280.00	213.68	92.59
J-110		8.00	394.12	198.00	196.12	84.98
J-111		3.20	393.91	192.50	201.41	87.28
J-112		8.40	394.90	167.90	227.00	98.37
J-113		4.00	395.07	200.50	194.57	84.31
J-114		18.30	604.52	405.70	198.82	86.16
J-115		3.00	395.57	197.30	198.27	85.92
J-116		3.10	395.63	207.10	188.53	81.69
J-117		2.70	395.37	192.10	203.27	88.08
J-120		4.00	395.03	237.50	157.53	68.26
J-122		4.30	393.90	174.00	219.90	95.29
J-123		0.60	389.68	224.70	164.98	71.49
J-124		3.40	604.74	403.80	200.94	87.07
J-125		3.30	604.74	383.00	221.74	96.09
J-126		5.40	399.99	367.95	32.04	13.88
J-127		45.90	396.32	225.20	171.12	74.15
J-128		23.90	396.26	235.20	161.06	69.79
J-129		13.70	394.05	184.80	209.25	90.67
J-130		6.20	396.13	222.00	174.13	75.46
J-131		0.90	604.74	418.00	186.74	80.92
J-132		4.80	393.90	176.00	217.90	94.42
J-133		1.40	604.75	339.60	265.15	114.90
J-134		2.00	397.78	200.90	196.88	85.31
J-135		3.20	397.39	288.30	109.09	47.27
J-136		1.40	392.11	204.10	188.01	81.47
J-138		1.70	389.66	219.60	170.06	73.69
J-139		0.80	401.16	222.60	178.56	77.38
J-140		0.90	389.66	218.20	171.46	74.30
J-141		0.80	391.90	200.90	191.00	82.76
J-142		0.40	401.31	218.20	183.11	79.35
J-143		17.00	392.52	186.90	205.62	89.10
J-144		3.10	396.58	186.80	209.78	90.90
J-145		0.20	389.65	218.20	171.45	74.29
J-146		0.00	389.65	218.20	171.45	74.30
J-147		0.00	401.31	218.20	183.11	79.35
J-148		12.30	526.39	498.90	27.49	11.91
J-149		6.10	491.51	306.10	185.41	80.35
J-150		9.80	493.43	272.40	221.03	95.78
J-151		22.40	492.25	326.80	165.45	71.70
J-152		10.50	493.43	272.40	221.03	95.78
J-153		125.60	491.51	302.40	189.11	81.95
J-154		10.10	493.43	267.60	225.83	97.86
J-155		28.80	492.53	263.80	228.73	99.12
J-156		32.60	492.75	261.30	231.45	100.29
J-157		3.00	492.34	265.80	226.54	98.17
J-158		14.20	396.33	211.40	184.93	80.14
J-159		0.60	604.75	343.00	261.75	113.42
J-160		7.50	394.63	172.60	222.03	96.21
J-161		0.40	394.52	178.60	215.92	93.57
J-162		11.50	394.64	183.00	211.64	91.71
J-163		6.50	392.53	183.70	208.83	90.49
J-164		20.60	392.52	177.50	215.02	93.18
J-167		4.50	396.89	0.00	396.89	171.99
J-168		4.80	393.94	0.00	393.94	170.71
J-169		10.90	399.62	413.50	-13.88	-6.01

2040 Fireflow - Main Zone East

J-170		2.80	393.90	174.50	219.40	95.07
J-171		3.50	397.38	286.90	110.48	47.87
J-173		100.30	481.02	329.80	151.22	65.53
J-176		1.70	393.90	166.40	227.50	98.58
J-177		3.80	392.52	179.10	213.42	92.48
J-2		9.40	393.90	201.80	192.10	83.24
J-20		3.60	393.93	182.90	211.03	91.45
J-21		2.50	393.93	182.80	211.13	91.49
J-25		8.20	604.75	311.10	293.65	127.25
J-27		6.90	396.83	207.10	189.73	82.22
J-3		5.50	393.93	182.20	211.73	91.75
J-30		12.80	396.13	218.90	176.23	76.37
J-35		13.60	396.73	222.10	174.63	75.67
J-39		6.70	396.29	218.10	178.19	77.21
J-4		4.20	393.93	184.40	209.53	90.79
J-42		10.00	396.88	222.00	174.88	75.78
J-44		10.10	397.24	208.40	188.84	81.83
J-45		7.00	397.29	209.00	188.29	81.59
J-53		15.80	397.74	294.30	103.44	44.82
J-55		8.70	397.62	297.10	100.52	43.56
J-57		2.20	397.60	228.20	168.40	72.97
J-58		2.50	392.12	204.60	187.52	81.26
J-6		13.89	538.46	473.40	65.06	28.19
J-61		7.10	392.11	207.00	185.11	80.22
J-62		1.80	392.52	191.50	201.02	87.11
J-63		2.20	389.70	225.20	164.50	71.28
J-64		6.80	391.90	202.30	189.60	82.16
J-67		3.50	398.41	210.80	187.61	81.30
J-7		5.80	396.36	214.70	181.66	78.72
J-71		3.70	398.27	204.60	193.67	83.92
J-73		10.50	397.78	199.60	198.18	85.88
J-74		1.70	466.47	301.00	165.47	71.70
J-77		1.00	466.47	296.10	170.37	73.83
J-78		8.60	393.72	230.70	163.02	70.64
J-79		4.50	393.26	223.40	169.86	73.60
J-8		10.70	396.83	208.80	188.03	81.48
J-80		8.20	392.31	190.70	201.61	87.37
J-81		11.10	394.73	218.90	175.83	76.19
J-82		10.80	394.69	257.90	136.79	59.27
J-84		3.80	401.02	226.30	174.72	75.71
J-87		7.00	394.76	194.40	200.35	86.82
J-88		35.00	493.68	275.70	217.98	94.46
J-90		0.10	396.89	219.10	177.79	77.04
J-91		6.50	399.66	352.90	46.76	20.26
J-93		2.80	394.56	187.50	207.06	89.72
J-94		6.00	394.56	187.50	207.06	89.72
J-95		19.80	394.60	189.50	205.10	88.88
J-96		10.80	394.55	176.90	217.65	94.31
J-99		1.90	394.00	205.50	188.50	81.68
Kennicott	Kennicott Re		397.90	374.00	23.90	10.36
Main Reser	Main Reservo	----	400.20	383.30	16.90	7.32
physical d		0.10	394.97	222.00	172.97	74.95
I-RV-1		0.00	396.58	186.80	209.78	90.90
I-RV-2		0.00	391.90	200.90	191.00	82.76
O-South En		----	495.59	287.90	207.69	90.00
O-Valley V	Valley View	0.00	635.90	308.10	327.80	142.05
Yankis (Va	Yankis (Vall	----	635.90	631.50	4.40	1.91
Yates Rese	500,000 gal	----	400.20	376.00	24.20	10.49
O-18th St		----	389.66	218.20	171.46	74.30
I-18th St		0.00	389.64	218.20	171.44	74.29
I-AV-1		0.00	604.52	283.80	320.72	138.98
O-AV-2		0.00	395.01	306.00	89.01	38.57
O-AV-3		0.00	398.59	253.40	145.19	62.92
I-AV-4		0.00	604.74	289.30	315.44	136.69
I-AV-5		0.00	389.70	225.30	164.40	71.24
I-AV-6		0.00	392.11	208.10	184.01	79.74
I-Centrall		0.00	481.02	333.50	147.52	63.92
I-Fairview	Fairview PRV	0.00	634.12	346.50	287.62	124.64
I-High Lev	High Level P	0.00	399.99	401.60	-1.61	-0.70
O-RV-1		----	392.52	186.80	205.72	89.14
O-RV-2		----	397.78	200.90	196.88	85.31
I-South En		0.00	397.35	287.90	109.45	47.43
I-Valley V	Valley View	0.00	394.68	308.10	86.58	37.52

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
J-167	171.99	J-169	-6.01
J-168	170.71	I-High Level	-0.70
O-Valley Vie	142.05	Yankis (Vall	1.91
I-AV-1	138.98	1251	5.61
I-AV-4	136.69	Main Reservo	7.32

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-51	7.66	85	0.00
P-158	3.40	P-48	0.00
P-122	3.14	24	0.00
P-15	3.14	45	0.00
1479	2.73	46	0.00

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-51	25.61	85	0.00
597	6.88	24	0.00
329	4.99	45	0.00
712	4.75	46	0.00
P-173	4.53	P-48	0.00

HL / 1000

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-51	25.61	85	0.00
597	6.88	24	0.00
329	4.99	45	0.00
712	4.75	46	0.00
P-173	4.53	P-48	0.00

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
18th St PRV	PRV-1	74.30	ACTIVATED	79.34	74.30	909.29
18th St Pump	FCV-2	1200.00	BOOSTED	74.29	79.36	1200.00
Centralia Al	PRV-2	90.00	BOOSTED	63.92	90.00	26.19
Fairview PRV	PRV-1	52.00	ACTIVATED	124.64	52.00	24.90
High Level P	FCV-2	0.00	BOOSTED	-0.70	88.05	0.00
RV-1	PRV-1	85.00	CLOSED	90.90	89.14	0.00
RV-2	PRV-1	81.80	CLOSED	82.76	85.31	0.00
South End Pu	PRV-2	90.00	BOOSTED	47.43	90.00	414.99
Valley View	FCV-2	0.00	BOOSTED	37.52	142.05	0.00

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
High Level	148.00	High Level R
Kennicott R	544.82	Kennicott Re
Main Reserv	2494.41	Main Reserv
Yankis (Val	124.80	Yankis (Vall
Yates Reser	964.17	500,000 gal

NET SYSTEM INFLOW = 4276.20
 NET SYSTEM OUTFLOW = 0.00
 NET SYSTEM DEMAND = 4276.20

FireFlow/Hydrant Report

Fireflow/Hydrant Report:

Scenario: No Title
 Global Demand Factor for this Scenario: 1.000

Specified Minimum Pressure (psi): 20.0
 Minimum Static Pressure (psi) : 21.0

Flow-1: Flowrate to maintain the specified pressure at (hydrant) node
 Node-2: Node that has a lower pressure than specified value at Flow-1
 Flow-2: Flowrate to maintain the specified pressure at Node-2

Hose Constant = 0.00

Hydrant Node	Hydrant Constant	Elevation	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2 gpm	Flow Capacity	NFPA Color
H-146	0.0	200.8	85.1	2250.3	2208.5	9	2208.5	BLUE
H-157	0.0	208.8	81.7	2925.8			2925.8	BLUE
H-154	0.0	317.9	34.5	2397.8	2215.6	28	2215.6	BLUE
H-64	0.0	238.8	68.4	5374.7	5223.4	50	5223.4	BLUE
H-149	0.0	258.4	60.3	4453.6	3681.6	70	3681.6	BLUE
H-42	0.0	240.0	67.9	7373.1			7373.1	BLUE
H-41	0.0	239.1	68.3	7073.8			7073.8	BLUE
H-40	0.0	239.6	68.0	6830.6			6830.6	BLUE
H-39	0.0	240.2	67.8	6650.4			6650.4	BLUE
H-38	0.0	241.6	67.2	6503.1			6503.1	BLUE
H-37	0.0	245.7	65.4	6309.4			6309.4	BLUE
H-36	0.0	245.9	65.3	6303.1			6303.1	BLUE
H-35	0.0	246.3	65.1	6332.0			6332.0	BLUE
H-34	0.0	245.1	65.6	6472.0			6472.0	BLUE
H-33	0.0	247.6	64.6	6513.6	6413.4	76	6413.4	BLUE
H-150	0.0	236.6	69.8	17911.0	8755.7	28	8755.7	BLUE
H-158	0.0	231.3	72.1	7002.7	4481.6	28	4481.6	BLUE
H-156	0.0	237.3	69.5	7765.6	4146.5	28	4146.5	BLUE
H-155	0.0	234.8	70.6	8296.7	4047.1	28	4047.1	BLUE

2040 Fireflow - Main Zone East

H-113	0.0	217.1	77.9	8795.3	8522.5	224	8522.5	BLUE
H-114	0.0	216.3	78.3	7478.2	7223.4	224	7223.4	BLUE
H-115	0.0	217.7	77.6	6443.8	6262.8	224	6262.8	BLUE
H-116	0.0	220.4	76.5	5536.7	5444.8	224	5444.8	BLUE
H-60	0.0	241.0	67.4	5186.5	5019.8	1576	5019.8	BLUE
H-10	0.0	240.9	67.5	4662.3			4662.3	BLUE
H-59	0.0	240.9	67.5	4245.6			4245.6	BLUE
H-62	0.0	234.7	70.1	3952.1	3829.5	253	3829.5	BLUE
H-63	0.0	234.2	70.4	3777.1	3651.2	253	3651.2	BLUE
H-79	0.0	224.6	74.5	7590.7			7590.7	BLUE
H-83	0.0	221.1	76.0	7489.1			7489.1	BLUE
H-82	0.0	220.2	76.4	7376.1			7376.1	BLUE
H-81	0.0	219.0	76.8	7288.1	7194.4	J-127	7194.4	BLUE
H-526	0.0	212.0	79.8	2918.6	2795.7	J-130	2795.7	BLUE
H-527	0.0	213.1	79.3	2864.8	2756.8	J-130	2756.8	BLUE
H-528	0.0	214.6	78.7	2797.2	2708.9	J-130	2708.9	BLUE
H-529	0.0	215.3	78.4	2742.7	2664.0	J-130	2664.0	BLUE
H-530	0.0	214.7	78.6	2704.0	2619.8	J-130	2619.8	BLUE
H-120	0.0	214.6	79.0	5692.8			5692.8	BLUE
H-555	0.0	213.3	79.3	5165.2	4892.5	89	4892.5	BLUE
H-126	0.0	213.7	79.4	5341.9	5182.0	2074	5182.0	BLUE
H-127	0.0	212.8	79.8	3811.3	3684.8	2074	3684.8	BLUE
H-100	0.0	204.2	83.2	4069.5	3911.6	86	3911.6	BLUE
H-99	0.0	199.4	85.2	3962.8	3886.5	468	3886.5	BLUE
H-98	0.0	199.9	85.0	3531.5	3470.6	468	3470.6	BLUE
H-97	0.0	203.2	83.6	3175.2			3175.2	BLUE
H-101	0.0	203.3	83.5	2984.1			2984.1	BLUE
H-103	0.0	203.1	83.6	2687.1	2674.6	468	2674.6	BLUE
H-102	0.0	200.1	84.9	2558.5	2517.5	468	2517.5	BLUE
H-104	0.0	202.2	84.0	2332.8	2314.5	468	2314.5	BLUE
H-134	0.0	208.1	81.6	2080.9	2059.6	474	2059.6	BLUE
H-133	0.0	210.5	80.5	2461.5			2461.5	BLUE
H-161	0.0	207.8	82.2	3787.8	3721.3	582	3721.3	BLUE
H-166	0.0	204.3	83.7	4895.6			4895.6	BLUE
H-165	0.0	226.7	74.1	3779.6	2976.7	578	2976.7	BLUE
H-143	0.0	206.2	82.6	3029.0			3029.0	BLUE
H-142	0.0	201.9	84.5	3244.5	3185.3	676	3185.3	BLUE
H-140	0.0	201.3	84.7	3440.2	3369.7	676	3369.7	BLUE
H-138	0.0	207.4	82.1	3410.7	3386.5	682	3386.5	BLUE
H-147	0.0	234.3	70.6	3370.3			3370.3	BLUE
H-170	0.0	200.1	85.4	5081.9			5081.9	BLUE
H-171	0.0	199.7	85.6	4103.6			4103.6	BLUE
H-172	0.0	203.2	84.1	3771.0			3771.0	BLUE
H-173	0.0	196.5	87.0	3459.8	3396.0	1134	3396.0	BLUE
H-105	0.0	201.5	84.3	2270.5	2249.4	468	2249.4	BLUE
H-106	0.0	202.2	83.9	2149.2			2149.2	BLUE
H-107	0.0	200.1	84.8	1826.5			1826.5	BLUE
H-108	0.0	199.5	85.1	1592.7			1592.7	BLUE
H-109	0.0	197.3	86.0	1468.6			1468.6	GREEN
H-110	0.0	199.5	85.0	1392.3			1392.3	GREEN
H-111	0.0	198.2	85.6	1316.0			1316.0	GREEN
H-17	0.0	253.9	61.8	3851.6			3851.6	BLUE
H-12	0.0	256.9	60.5	3439.9			3439.9	BLUE
H-13	0.0	250.0	63.5	3467.2	3376.4	791	3376.4	BLUE
H-15	0.0	252.9	62.3	4553.1	4508.3	784	4508.3	BLUE
H-183	0.0	198.5	86.2	2307.5			2307.5	BLUE
H-524	0.0	223.7	75.8	2440.0			2440.0	BLUE
H-57	0.0	247.9	64.4	5027.3	4918.0	1576	4918.0	BLUE
H-58	0.0	239.9	67.9	5422.4	5178.9	1576	5178.9	BLUE
H-148	0.0	235.7	70.2	13094.6	6782.3	28	6782.3	BLUE
H-119	0.0	229.4	72.6	9382.3	9305.2	1647	9305.2	BLUE
H-21	0.0	261.5	58.6	6041.2			6041.2	BLUE
H-22	0.0	258.4	60.0	5889.0			5889.0	BLUE
H-23	0.0	257.0	60.6	5742.9			5742.9	BLUE
H-24	0.0	258.1	60.1	5564.9			5564.9	BLUE
H-25	0.0	257.3	60.4	5515.4			5515.4	BLUE
H-26	0.0	256.7	60.7	5498.7			5498.7	BLUE
H-27	0.0	254.5	61.6	5581.3			5581.3	BLUE
H-28	0.0	253.3	62.1	5661.3			5661.3	BLUE
H-29	0.0	253.3	62.1	5765.7			5765.7	BLUE
H-30	0.0	251.6	62.8	5957.3			5957.3	BLUE
H-31	0.0	248.6	64.1	6220.7			6220.7	BLUE
H-32	0.0	250.5	63.3	6366.0			6366.0	BLUE
H-47	0.0	250.2	63.4	6351.1			6351.1	BLUE
H-53	0.0	244.3	66.0	6240.0			6240.0	BLUE
H-48	0.0	244.4	65.9	5961.1			5961.1	BLUE
H-52	0.0	240.4	67.6	5796.9			5796.9	BLUE
H-51	0.0	240.1	67.7	5551.5			5551.5	BLUE
H-50	0.0	239.0	68.2	5392.8	5320.8	1636	5320.8	BLUE
H-49	0.0	238.5	68.4	5300.1	5176.0	1636	5176.0	BLUE
H-46	0.0	240.6	67.4	5088.4	4954.9	1636	4954.9	BLUE
H-44	0.0	245.1	65.7	7477.1			7477.1	BLUE
H-45	0.0	243.6	66.3	7536.2			7536.2	BLUE
H-43	0.0	243.6	66.3	7547.7	7497.1	75	7497.1	BLUE
H-65	0.0	238.2	68.7	7337.1	7255.7	50	7255.7	BLUE
H-66	0.0	237.1	69.1	7100.2	6871.1	50	6871.1	BLUE
H-77	0.0	227.9	73.1	7468.0			7468.0	BLUE
H-76	0.0	226.5	73.7	7213.4			7213.4	BLUE
H-75	0.0	227.6	73.2	7032.9			7032.9	BLUE
H-74	0.0	226.2	73.8	6982.7			6982.7	BLUE
H-73	0.0	228.1	73.0	6869.6			6869.6	BLUE
H-72	0.0	231.4	71.6	6748.7			6748.7	BLUE
H-71	0.0	231.0	71.8	6778.9			6778.9	BLUE
H-70	0.0	230.3	72.1	6845.3			6845.3	BLUE
H-69	0.0	234.3	70.3	6785.1			6785.1	BLUE
H-68	0.0	233.4	70.7	6918.3			6918.3	BLUE
H-67	0.0	238.7	68.4	6857.7			6857.7	BLUE
H-117	0.0	216.2	78.3	9119.9			9119.9	BLUE
H-118	0.0	217.9	77.6	9279.9			9279.9	BLUE
H-18	0.0	253.0	62.2	2472.7			2472.7	BLUE
H-19	0.0	253.1	62.2	2973.9			2973.9	BLUE
H-123	0.0	216.2	78.3	7039.4			7039.4	BLUE
H-125	0.0	214.8	78.9	5519.3	5487.2	1700	5487.2	BLUE
H-124	0.0	218.0	77.5	4751.7			4751.7	BLUE
H-128	0.0	216.6	77.9	2126.6	2045.1	89	2045.1	BLUE

2040 Fireflow - Main Zone East

H-130	0.0	221.3	75.8	1687.6	1655.9	89	1655.9	BLUE
H-129	0.0	220.9	76.0	1618.4	1585.2	89	1585.2	BLUE
H-153	0.0	294.8	44.6	3239.2	2984.7	1710	2984.7	BLUE
H-152	0.0	280.1	51.0	4993.4			4993.4	BLUE
H-151	0.0	288.0	47.6	13858.8	10310.1	28	10310.1	BLUE
H-11	0.0	261.4	58.9	1989.8			1989.8	BLUE
H-9	0.0	264.5	57.6	1924.5			1924.5	BLUE
H-8	0.0	266.5	56.7	1864.4			1864.4	BLUE
H-7	0.0	264.6	57.5	1892.6			1892.6	BLUE
H-5	0.0	267.0	56.5	2040.3	2016.6	1788	2016.6	BLUE
H-3	0.0	266.9	56.5	2076.2	1983.2	1791	1983.2	BLUE
H-4	0.0	263.5	58.0	1842.0	1755.6	1793	1755.6	BLUE
H-6	0.0	264.1	57.7	1987.4	1935.9	1788	1935.9	BLUE
H-141	0.0	266.7	56.6	1913.7	1890.8	1782	1890.8	BLUE
H-56	0.0	234.2	70.2	4957.6			4957.6	BLUE
H-160	0.0	216.1	78.6	2501.3			2501.3	BLUE
H-190	0.0	224.4	75.2	3454.6			3454.6	BLUE
H-162	0.0	204.9	83.4	3457.9	3414.1	2061	3414.1	BLUE
H-144	0.0	200.4	85.3	4351.6			4351.6	BLUE
H-145	0.0	202.8	84.3	4320.7			4320.7	BLUE
H-96	0.0	202.1	84.1	4028.4	3698.1	86	3698.1	BLUE
H-95	0.0	202.8	83.8	3852.3	3546.7	86	3546.7	BLUE
H-94	0.0	204.7	83.0	3724.5	3455.2	86	3455.2	BLUE
H-93	0.0	208.0	81.5	3572.7	3358.8	86	3358.8	BLUE
H-92	0.0	209.3	81.0	3403.7	3217.3	86	3217.3	BLUE
H-91	0.0	211.3	80.1	3301.0	3146.2	86	3146.2	BLUE
H-88	0.0	213.7	79.1	2943.0	2834.0	86	2834.0	BLUE
H-132	0.0	213.9	79.1	2748.8	2612.9	89	2612.9	BLUE
H-167	0.0	203.7	83.9	5173.0			5173.0	BLUE
H-168	0.0	200.7	85.2	5361.3			5361.3	BLUE
H-169	0.0	201.5	84.8	5394.8			5394.8	BLUE
H-16	0.0	255.8	61.0	3812.6	3737.8	784	3737.8	BLUE
H-14	0.0	254.0	61.8	4652.1	4537.4	788	4537.4	BLUE
H-191	0.0	224.5	75.2	3712.1			3712.1	BLUE
H-159	0.0	217.7	77.9	4545.9			4545.9	BLUE
H-131	0.0	211.3	80.4	2586.9	2559.1	483	2559.1	BLUE
H-164	0.0	258.3	60.4	2388.3	2042.8	578	2042.8	BLUE
H-163	0.0	228.2	73.4	6767.5	4666.6	28	4666.6	BLUE
H-531	0.0	224.0	76.7	3525.9	3501.7	J-84	3501.7	BLUE
H-80	0.0	215.9	78.2	6892.7	6689.0	86	6689.0	BLUE
H-78	0.0	219.3	76.7	6291.8	6199.3	86	6199.3	BLUE
H-84	0.0	212.8	79.5	4768.8	4570.1	86	4570.1	BLUE
H-85	0.0	199.7	85.1	4794.5	4358.5	86	4358.5	BLUE
H-87	0.0	200.0	85.0	4479.9	4077.8	86	4077.8	BLUE
H-86	0.0	200.4	84.8	4360.5	3975.5	86	3975.5	BLUE
H-543	0.0	220.9	76.0	6753.4			6753.4	BLUE
H-542	0.0	224.9	74.3	6325.8			6325.8	BLUE
H-545	0.0	216.2	78.0	6365.9			6365.9	BLUE
H-544	0.0	221.1	75.9	6036.1			6036.1	BLUE
H-546	0.0	223.1	75.1	5944.5			5944.5	BLUE
H-547	0.0	224.7	74.4	5795.2			5795.2	BLUE
H-548	0.0	226.5	73.6	5599.9			5599.9	BLUE
H-549	0.0	233.5	70.5	5322.5			5322.5	BLUE
H-550	0.0	243.5	66.2	4980.3			4980.3	BLUE
H-551	0.0	242.5	66.6	4920.2			4920.2	BLUE
H-552	0.0	230.9	71.7	5145.1			5145.1	BLUE
H-553	0.0	226.6	73.5	5211.8	5138.4	J-128	5138.4	BLUE
H-554	0.0	227.7	73.0	5148.5	5003.2	J-128	5003.2	BLUE
H-55	0.0	234.0	70.3	3344.7			3344.7	BLUE
H-54	0.0	233.4	70.6	2795.9			2795.9	BLUE
H-174	0.0	200.2	85.4	1640.6			1640.6	BLUE
H-282	0.0	186.8	90.9	6298.6			6298.6	BLUE
H-279	0.0	191.3	89.0	6293.7			6293.7	BLUE
H-1	0.0	282.1	50.0	3217.5			3217.5	BLUE
H-2	0.0	271.0	54.8	2558.2	2513.7	1791	2513.7	BLUE
H-20	0.0	253.3	62.1	4808.4			4808.4	BLUE
H-90	0.0	216.9	77.7	3051.2	2978.2	86	2978.2	BLUE
H-89	0.0	216.0	78.1	2989.2	2906.5	86	2906.5	BLUE
H-137	0.0	201.9	84.6	5345.4			5345.4	BLUE
H-112	0.0	216.5	78.1	8562.8			8562.8	BLUE
H-122	0.0	213.9	79.3	7730.0	7617.2	2074	7617.2	BLUE
H-121	0.0	216.9	78.0	8440.1			8440.1	BLUE
H-136	0.0	210.6	80.5	5355.0			5355.0	BLUE
H-135	0.0	204.2	83.3	5572.0			5572.0	BLUE
H-139	0.0	205.8	82.8	4214.9	4193.4	J-27	4193.4	BLUE
H-193	0.0	207.6	82.7	3787.6			3787.6	BLUE
H-196	0.0	199.7	85.8	5041.4			5041.4	BLUE
H-195	0.0	200.5	85.7	3929.4			3929.4	BLUE
H-189	0.0	223.9	76.6	3519.2			3519.2	BLUE
H-192	0.0	220.5	77.3	3996.5			3996.5	BLUE

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Master File : p:\0155_chehalis\1078 wsp_update\rpt-planning\mdlmg\01551078 city of chehalis capital improvement program 2040.KYP\01551078 city of chehalis capital improve :

 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

REGULATING VALVE DATA

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
18th St PRV	PRV-1	389.66
18th St Pump	Const_FLOW_Pump	0.00
Centralia Al	Const_HEAD_Pump	541.19
Fairview PRV	PRV-1	466.50
High Level P	Const_FLOW_Pump	360.00
RV-1	PRV-1	382.95
RV-2	PRV-1	389.67
South End Pu	Const_HEAD_Pump	495.59
Valley View	Const_FLOW_Pump	0.00

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1	NODE NAMES #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
3	5	6	24.78	10.00	90.0000	0.00
5	9	10	824.44	8.00	130.0000	0.00
6	11	12	38.56	8.00	90.0000	0.00
7	13	872	38.38	6.00	75.0000	0.00
8	15	16	7.84	6.00	90.0000	0.00
10	18	19	437.00	2.00	140.0000	0.00
12	22	23	750.00	8.00	130.0000	0.00
13	24	1524	360.61	4.00	130.0000	0.00
14	26	J-55	539.97	10.00	130.0000	0.00
16	28	29	217.00	10.00	130.0000	0.00
17	31	32	723.00	12.00	130.0000	0.00
21	37	38	170.42	4.00	75.0000	0.00
22	2014	40	325.43	8.00	130.0000	0.00
23	41	1699	28.75	12.00	130.0000	0.00
24	43	213	42.27	12.00	130.0000	0.00
26	47	48	173.64	4.00	130.0000	0.00
27	49	50	310.00	10.00	130.0000	0.00
28	51	52	222.00	8.00	130.0000	0.00
32	59	60	108.37	6.00	75.0000	0.00
35	65	66	295.51	6.00	75.0000	0.00
37	68	69	412.00	8.00	130.0000	0.00
38	52	70	245.00	6.00	130.0000	0.00
39	Hillcrest	72	81.50	4.00	130.0000	0.00
41	75	76	3275.00	12.00	130.0000	0.00
45	83	2066	32.96	12.00	130.0000	0.00
46	85	86	33.07	12.00	130.0000	0.00
52	97	98	74.85	8.00	130.0000	0.00
55	102	103	68.31	8.00	130.0000	0.00
56	104	1810	34.98	12.00	130.0000	0.00
59	107	108	7.82	12.00	130.0000	0.00
60	109	J-53	785.00	16.00	130.0000	0.00
66	118	J-169	2076.37	14.00	90.0000	0.00
68	119	121	704.00	14.00	75.0000	0.00
70	121	860	23.71	14.00	75.0000	0.00
72	118	1799	900.00	8.00	130.0000	0.00
85	physical d	396	23.76	14.00	75.0000	0.00
107	J-91	2067	949.00	18.00	130.0000	0.00
109	325	34	484.84	12.00	130.0000	0.00
110	2122	166	948.74	12.00	130.0000	0.00
112	166	962	902.00	12.00	130.0000	0.00
114	569	962	308.00	12.00	130.0000	0.00
115	569	665	1519.00	12.00	130.0000	0.00
118	172	J-105	650.00	12.00	130.0000	0.00
120	175	178	251.61	12.00	130.0000	0.00
123	178	1826	444.69	12.00	130.0000	0.00
126	1826	1827	278.93	12.00	130.0000	0.00
129	1827	192	1658.25	12.00	130.0000	0.00

2040 Fireflow - High Level Zone

137	192	201	248.00	12.00	130.0000	0.00
139	201	137	409.00	12.00	130.0000	0.00
141	15	137	446.49	12.00	130.0000	0.00
142	15	J-162	456.08	12.00	130.0000	0.00
145	201	J-93	562.05	12.00	90.0000	0.00
155	212	213	677.50	12.00	130.0000	0.00
156	214	26	1649.00	12.00	130.0000	0.00
163	2072	224	1245.00	12.00	130.0000	0.00
187	248	253	1835.17	12.00	130.0000	0.00
192	254	J-127	1507.19	12.00	130.0000	0.00
262	325	1575	908.76	12.00	130.0000	0.00
279	343	344	127.52	12.00	130.0000	0.00
280	344	342	115.85	12.00	130.0000	0.00
282	342	346	192.42	12.00	130.0000	0.00
283	86	J-130	1344.24	12.00	130.0000	0.00
292	356	361	2280.98	10.00	90.0000	0.00
298	32	J-7	60.00	10.00	90.0000	0.00
302	32	480	930.34	10.00	90.0000	0.00
318	384	385	126.00	10.00	130.0000	0.00
319	356	J-167	699.21	10.00	90.0000	0.00
320	356	41	37.27	10.00	90.0000	0.00
329	396	398	31.65	10.00	75.0000	0.00
331	398	1409	306.52	10.00	75.0000	0.00
340	407	408	647.97	10.00	75.0000	0.00
353	661	2119	350.44	6.00	75.0000	0.00
355	424	1648	189.00	10.00	90.0000	0.00
363	295	468	3228.55	10.00	130.0000	0.00
398	172	473	539.00	12.00	130.0000	0.00
403	474	480	672.00	8.00	90.0000	0.00
411	J-45	2129	770.00	8.00	90.0000	0.00
414	1217	1121	284.43	8.00	130.0000	0.00
417	492	1235	414.07	8.00	75.0000	0.00
429	505	509	502.00	8.00	75.0000	0.00
433	510	512	462.00	8.00	130.0000	0.00
435	513	J-160	231.52	8.00	75.0000	0.00
440	518	J-94	278.47	8.00	75.0000	0.00
448	92	1184	943.86	8.00	130.0000	0.00
451	530	119	42.30	8.00	75.0000	0.00
452	119	536	464.52	8.00	75.0000	0.00
458	536	2079	637.02	8.00	75.0000	0.00
461	540	2079	30.24	8.00	75.0000	0.00
464	544	543	465.44	8.00	75.0000	0.00
472	552	J-100	98.00	8.00	75.0000	0.00
476	I-AV-1	J-114	1506.58	8.00	130.0000	0.00
486	569	573	476.00	8.00	130.0000	0.00
490	385	166	264.00	8.00	140.0000	0.00
495	579	J-138	330.16	8.00	130.0000	0.00
497	582	584	548.98	8.00	130.0000	0.00
503	590	J-73	801.25	8.00	75.0000	0.00
511	599	601	450.87	8.00	130.0000	0.00
526	599	619	720.36	8.00	130.0000	0.00
531	620	623	618.14	8.00	130.0000	0.00
538	628	631	136.23	8.00	90.0000	0.00
541	632	1049	299.05	8.00	90.0000	0.00
547	631	642	578.19	8.00	90.0000	0.00
552	High Level	2090	1103.00	10.00	130.0000	0.00
565	509	661	1328.00	8.00	75.0000	0.00
569	597	1284	174.94	8.00	90.0000	0.00
571	46	2086	497.00	8.00	90.0000	0.00
574	665	668	872.08	8.00	130.0000	0.00
577	668	675	492.96	8.00	130.0000	0.00
584	676	J-27	893.25	10.00	130.0000	0.00
590	54	682	182.20	8.00	90.0000	0.00
591	683	J-95	505.00	8.00	90.0000	0.00
593	686	J-78	241.00	8.00	90.0000	0.00
597	408	J-79	21.00	8.00	75.0000	0.00
601	361	1960	1287.07	8.00	90.0000	0.00
612	705	710	248.15	8.00	130.0000	0.00
617	717	1134	965.00	8.00	130.0000	0.00
623	718	247	34.04	8.00	75.0000	0.00
630	424	726	91.39	8.00	75.0000	0.00
632	726	J-80	386.08	8.00	75.0000	0.00
652	468	780	2846.84	8.00	130.0000	0.00
684	781	2092	25.00	8.00	130.0000	0.00
686	784	1698	594.45	8.00	130.0000	0.00
690	788	791	1019.18	8.00	130.0000	0.00
693	792	791	123.52	8.00	130.0000	0.00
697	797	784	720.40	8.00	130.0000	0.00
700	800	802	282.00	6.00	130.0000	0.00
702	803	1465	267.21	6.00	75.0000	0.00
706	808	2009	929.18	6.00	75.0000	0.00
710	813	815	302.18	6.00	75.0000	0.00
712	121	2093	46.99	6.00	75.0000	0.00
714	2094	40	934.76	6.00	130.0000	0.00
723	828	2096	426.19	6.00	75.0000	0.00
726	544	831	72.71	6.00	75.0000	0.00
727	831	530	335.47	6.00	75.0000	0.00
735	831	1989	226.92	6.00	75.0000	0.00
739	842	844	615.87	6.00	75.0000	0.00
741	844	817	669.95	10.00	130.0000	0.00
749	856	J-115	240.00	6.00	75.0000	0.00
751	2078	14	273.95	6.00	75.0000	0.00
753	860	2097	569.00	6.00	75.0000	0.00
757	865	868	222.76	6.00	75.0000	0.00
760	868	J-113	502.26	6.00	75.0000	0.00
762	868	872	205.21	6.00	75.0000	0.00
772	881	2098	449.61	6.00	75.0000	0.00
776	885	J-111	304.95	6.00	75.0000	0.00
784	893	J-106	418.44	6.00	75.0000	0.00
785	893	J-110	416.57	6.00	75.0000	0.00
789	66	899	48.00	6.00	75.0000	0.00
791	899	901	175.00	6.00	75.0000	0.00
793	901	1742	1127.00	6.00	75.0000	0.00
797	906	910	180.00	8.00	130.0000	0.00
801	910	38	116.53	10.00	130.0000	0.00

2040 Fireflow - High Level Zone

807	842	2084	314.93	6.00	75.0000	0.00
812	916	922	348.45	8.00	130.0000	0.00
814	923	J-20	569.59	8.00	130.0000	0.00
817	J-21	929	248.00	6.00	75.0000	0.00
823	J-2	937	870.00	6.00	130.0000	0.00
825	J-2	556	502.00	6.00	75.0000	0.00
831	945	2080	473.03	6.00	75.0000	0.00
839	954	2081	460.04	6.00	75.0000	0.00
846	962	964	82.58	6.00	130.0000	0.00
858	1387	1314	65.93	4.00	75.0000	0.00
861	108	104	599.00	6.00	90.0000	0.00
867	958	J-110	1002.00	8.00	130.0000	0.00
874	994	65	736.58	6.00	75.0000	0.00
876	65	1986	656.95	6.00	75.0000	0.00
883	1003	1023	424.00	8.00	130.0000	0.00
903	1024	J-125	363.09	8.00	130.0000	0.00
905	O-High Lev	649	101.61	6.00	75.0000	0.00
910	1024	628	642.00	8.00	130.0000	0.00
912	1032	1003	811.00	6.00	90.0000	0.00
930	1050	1053	1269.52	6.00	90.0000	0.00
933	384	2100	964.00	6.00	75.0000	0.00
936	1057	16	435.81	6.00	90.0000	0.00
938	1060	1063	225.00	6.00	130.0000	0.00
941	1064	J-129	956.67	8.00	130.0000	0.00
948	1071	526	308.78	6.00	90.0000	0.00
949	526	1084	2823.93	8.00	130.0000	0.00
962	1085	1337	588.12	6.00	75.0000	0.00
966	1099	J-78	1370.13	8.00	130.0000	0.00
975	1100	1101	228.75	6.00	90.0000	0.00
976	O-Fairview	1101	118.14	6.00	90.0000	0.00
982	2103	J-81	265.32	6.00	75.0000	0.00
993	1121	1122	255.49	8.00	130.0000	0.00
994	2076	2127	300.30	8.00	130.0000	0.00
1000	1130	1125	650.51	8.00	130.0000	0.00
1001	2104	J-73	623.72	6.00	75.0000	0.00
1003	1134	2104	238.99	6.00	75.0000	0.00
1004	509	1290	478.00	6.00	75.0000	0.00
1007	1137	2105	327.02	6.00	75.0000	0.00
1009	1388	2013	267.00	6.00	75.0000	0.00
1012	2106	2107	591.74	6.00	75.0000	0.00
1014	510	23	924.74	6.00	75.0000	0.00
1017	2137	2109	470.82	6.00	75.0000	0.00
1019	2084	2109	326.70	6.00	75.0000	0.00
1020	2094	23	140.75	6.00	75.0000	0.00
1023	1156	23	477.86	6.00	75.0000	0.00
1024	2096	2073	229.38	6.00	75.0000	0.00
1025	2110	2096	273.09	6.00	75.0000	0.00
1026	2110	1997	279.58	6.00	75.0000	0.00
1028	1997	2111	244.00	6.00	75.0000	0.00
1030	2111	2112	268.86	6.00	75.0000	0.00
1032	1961	2113	418.00	6.00	75.0000	0.00
1035	704	1961	270.90	6.00	75.0000	0.00
1036	2109	1961	297.09	6.00	75.0000	0.00
1037	2010	2014	642.00	6.00	75.0000	0.00
1040	2012	2013	328.33	6.00	75.0000	0.00
1041	2065	2012	308.00	6.00	75.0000	0.00
1042	2137	2065	296.00	6.00	75.0000	0.00
1043	2113	2137	300.18	6.00	75.0000	0.00
1044	2113	1180	266.89	6.00	75.0000	0.00
1046	1181	22	93.00	6.00	75.0000	0.00
1047	2095	22	173.00	6.00	75.0000	0.00
1048	726	1184	40.06	8.00	130.0000	0.00
1051	1186	1996	269.43	6.00	75.0000	0.00
1053	827	1232	1143.25	6.00	75.0000	0.00
1058	1232	1156	597.28	6.00	75.0000	0.00
1060	1156	512	927.21	6.00	75.0000	0.00
1062	512	2107	783.40	6.00	75.0000	0.00
1064	2115	2107	155.32	6.00	75.0000	0.00
1069	2117	2065	579.53	6.00	75.0000	0.00
1071	2137	1210	580.23	6.00	75.0000	0.00
1074	1211	1713	81.79	6.00	130.0000	0.00
1076	24	1713	223.00	6.00	130.0000	0.00
1077	1215	J-58	327.00	8.00	130.0000	0.00
1078	68	1217	692.94	6.00	130.0000	0.00
1080	1218	2112	1049.55	6.00	75.0000	0.00
1083	2112	1223	326.05	6.00	75.0000	0.00
1085	1224	2111	321.86	6.00	75.0000	0.00
1087	1085	1333	418.92	6.00	75.0000	0.00
1088	1085	808	427.58	6.00	75.0000	0.00
1090	808	1229	207.76	6.00	75.0000	0.00
1091	1232	1181	476.00	6.00	75.0000	0.00
1094	1235	1483	375.00	6.00	75.0000	0.00
1095	2120	1104	147.00	6.00	90.0000	0.00
1096	2120	1239	581.73	6.00	130.0000	0.00
1099	1240	1214	42.84	6.00	130.0000	0.00
1100	1214	1244	471.00	6.00	130.0000	0.00
1103	1244	1251	558.00	6.00	130.0000	0.00
1110	Yankis (Va	1251	416.98	6.00	130.0000	0.00
1116	1513	J-25	173.82	10.00	130.0000	0.00
1117	1277	J-159	108.25	6.00	90.0000	0.00
1118	1277	1262	90.18	6.00	90.0000	0.00
1120	657	J-25	1605.00	10.00	130.0000	0.00
1125	1181	1270	559.53	8.00	130.0000	0.00
1127	2103	1099	1495.62	8.00	130.0000	0.00
1132	1277	I-AV-4	889.11	6.00	90.0000	0.00
1138	693	579	860.83	6.00	75.0000	0.00
1140	1284	O-AV-3	362.05	6.00	90.0000	0.00
1146	1290	2119	1322.78	6.00	130.0000	0.00
1148	1293	1295	372.96	6.00	130.0000	0.00
1150	398	2016	65.54	8.00	130.0000	0.00
1152	1120	1298	198.66	6.00	75.0000	0.00
1154	432	1309	2165.00	6.00	90.0000	0.00
1165	1310	1314	1161.00	4.00	75.0000	0.00
1169	2127	J-61	967.64	6.00	130.0000	0.00
1171	1318	2105	578.38	4.00	75.0000	0.00

2040 Fireflow - High Level Zone

1173	2105	1322	469.84	4.00	75.0000	0.00
1178	2115	40	301.65	4.00	75.0000	0.00
1179	2115	1328	589.61	4.00	75.0000	0.00
1182	803	J-81	638.00	4.00	75.0000	0.00
1185	1333	1337	528.94	4.00	75.0000	0.00
1189	1338	807	1527.54	8.00	130.0000	0.00
1193	518	192	70.97	4.00	75.0000	0.00
1195	192	1060	583.00	4.00	75.0000	0.00
1198	1060	705	1317.00	4.00	75.0000	0.00
1205	492	J-80	987.90	6.00	130.0000	0.00
1208	1356	828	273.00	4.00	75.0000	0.00
1210	1359	828	233.00	4.00	75.0000	0.00
1211	1364	1984	203.81	6.00	130.0000	0.00
1212	1364	1991	514.02	6.00	130.0000	0.00
1214	1364	2121	287.23	4.00	75.0000	0.00
1215	1366	36	660.16	6.00	130.0000	0.00
1217	1244	1251	681.00	6.00	130.0000	0.00
1226	1375	17	2480.00	4.00	90.0000	0.00
1236	17	1387	400.00	4.00	90.0000	0.00
1239	1388	1392	578.80	4.00	75.0000	0.00
1244	1314	33	129.52	4.00	90.0000	0.00
1245	937	1456	272.00	6.00	75.0000	0.00
1247	384	1456	264.58	6.00	75.0000	0.00
1248	1396I-Valley V	4.38	4.00	140.0000	0.00	
1258	505	1409	1080.00	4.00	75.0000	0.00
1261	1410	657	558.39	4.00	90.0000	0.00
1269	1023	I-AV-2	712.27	4.00	90.0000	0.00
1309	1456	881	418.71	6.00	130.0000	0.00
1315	885	1056	245.12	4.00	90.0000	0.00
1319	1465	2103	636.67	4.00	75.0000	0.00
1322	509	407	820.07	6.00	130.0000	0.00
1330	693	492	1027.10	6.00	130.0000	0.00
1338	1295	1483	948.39	6.00	130.0000	0.00
1340	1484	899	1892.00	4.00	75.0000	0.00
1351	344	1497	767.00	4.00	130.0000	0.00
1354	1498	1502	449.05	8.00	130.0000	0.00
1358	1502	J-133	279.67	10.00	130.0000	0.00
1371	1517	1519	275.00	2.00	135.0000	0.00
1384	1544	J-95	2295.00	12.00	90.0000	0.00
1388	1547	1544	288.55	12.00	130.0000	0.00
1389	1547	J-96	1327.00	12.00	130.0000	0.00
1396	1544	1547	2300.00	8.00	130.0000	0.00
1401	668	1674	1132.70	12.00	130.0000	0.00
1404	1674	102	746.13	12.00	130.0000	0.00
1406	102	J-1	620.69	12.00	130.0000	0.00
1409	92	J-164	484.87	12.00	130.0000	0.00
1423	421	107	867.00	12.00	130.0000	0.00
1426	1575	34	575.28	12.00	130.0000	0.00
1427	1576	248	446.87	12.00	130.0000	0.00
1429	248	1580	540.11	12.00	130.0000	0.00
1433	51	26	448.20	12.00	130.0000	0.00
1435	51	109	1427.59	12.00	130.0000	0.00
1440	6	109	475.62	12.00	130.0000	0.00
1441	6	1647	1469.07	12.00	130.0000	0.00
1443	1637	1647	5159.69	12.00	130.0000	0.00
1454	72	1637	1761.44	12.00	130.0000	0.00
1455	72	1626	3641.41	12.00	130.0000	0.00
1458	1627	1626	763.65	12.00	130.0000	0.00
1460	797	212	356.56	12.00	130.0000	0.00
1464	788	1630	3991.15	12.00	130.0000	0.00
1477	1630	1626	1130.08	12.00	130.0000	0.00
1479	1627Yates Rese		1075.00	12.00	130.0000	0.00
1481	1630	76	3539.00	12.00	130.0000	0.00
1483	76	1636	2341.00	12.00	130.0000	0.00
1487	1637	75	595.62	12.00	130.0000	0.00
1492	75	49	651.30	12.00	130.0000	0.00
1493	254	49	3310.10	12.00	130.0000	0.00
1494	254	J-35	1688.26	12.00	130.0000	0.00
1497	2072	1647	1022.00	12.00	130.0000	0.00
1499	1648	247	4693.50	12.00	130.0000	0.00
1500	343	1657	2072.02	8.00	130.0000	0.00
1509	1658	901	754.77	8.00	130.0000	0.00
1526	1674	800	496.84	8.00	130.0000	0.00
1531	800	174	473.00	8.00	130.0000	0.00
1534	1679	1689	748.17	6.00	90.0000	0.00
1544	1690	1689	126.93	8.00	90.0000	0.00
1548	2092	1698	669.39	8.00	130.0000	0.00
1552	1699	1700	801.40	10.00	130.0000	0.00
1553	2138	89	1389.60	8.00	130.0000	0.00
1560	1710	J-53	1056.65	8.00	130.0000	0.00
1562	1711	683	220.00	8.00	90.0000	0.00
1563	683	1712	500.00	8.00	115.0000	0.00
1564	1713	1716	178.58	6.00	130.0000	0.00
1567	1716	1719	185.05	6.00	130.0000	0.00
1584	1742	1737	1268.00	4.00	75.0000	0.00
1588	1737	1375	375.00	4.00	75.0000	0.00
1593	1742	1484	452.00	10.00	130.0000	0.00
1596	1484	975	1798.00	10.00	130.0000	0.00
1611	975	1310	71.00	10.00	130.0000	0.00
1612	1310	2122	454.00	10.00	130.0000	0.00
1615	2123	1089	511.48	8.00	130.0000	0.00
1617	1089	1186	243.51	6.00	75.0000	0.00
1618	1186	1767	570.00	8.00	130.0000	0.00
1621	J-135	J-171	184.70	8.00	130.0000	0.00
1626	1773	1775	197.00	8.00	130.0000	0.00
1628	1775	1776	68.00	8.00	130.0000	0.00
1629	1776	1782	1030.00	8.00	130.0000	0.00
1635	1782	1788	996.00	8.00	130.0000	0.00
1641	1788	1775	237.00	8.00	130.0000	0.00
1644	1773	1791	251.00	8.00	130.0000	0.00
1645	1776	1793	338.00	8.00	130.0000	0.00
1647	1788	1782	591.00	8.00	130.0000	0.00
1654	1800	1801	235.53	10.00	130.0000	0.00
1657	18053-inch or		110.20	8.00	130.0000	0.00
1658	1806	1808	400.00	6.00	130.0000	0.00

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1660	1809	1806	19.02	8.00	130.0000	0.00
1661	1810	1821	671.00	10.00	130.0000	0.00
1663	1800	1821	258.00	10.00	130.0000	0.00
1664	1813	1809	50.87	10.00	130.0000	0.00
1665	1814	1818	715.34	2.00	140.0000	0.00
1669	1813	1814	675.00	8.00	130.0000	0.00
1672	1821	J-112	525.00	8.00	130.0000	0.00
1673	1823	1826	385.26	6.00	90.0000	0.00
1676	1827	1071	62.38	12.00	130.0000	0.00
1677	1636	J-128	438.35	8.00	130.0000	0.00
1792	910	844	262.20	10.00	130.0000	0.00
1793	178	1823	69.34	8.00	90.0000	0.00
1796	1063	1948	325.00	2.00	135.0000	0.00
1799	1032	J-114	642.00	6.00	130.0000	0.00
1810	1960	12	21.03	8.00	90.0000	0.00
1811	12	10	1053.00	8.00	90.0000	0.00
1813	1767	J-117	290.12	6.00	75.0000	0.00
1818	1737	1968	132.00	4.00	75.0000	0.00
1820	1823	J-168	334.71	6.00	75.0000	0.00
1821	175	384	2123.70	10.00	130.0000	0.00
1825	1973	566	454.00	4.00	75.0000	0.00
1826	1974	1975	651.00	6.00	130.0000	0.00
1828	J-3	1980	517.00	6.00	75.0000	0.00
1830	3-inch or	1981	48.33	4.00	75.0000	0.00
1831	1984	1767	235.15	6.00	75.0000	0.00
1834	1985	1986	56.59	4.00	75.0000	0.00
1835	894	2125	20.33	8.00	130.0000	0.00
1836	1987	568	717.00	4.00	75.0000	0.00
1837	1988	1989	52.11	4.00	75.0000	0.00
1839	2121	1991	219.88	6.00	75.0000	0.00
1840	2126	2123	286.00	10.00	130.0000	0.00
1841	1994	994	209.00	6.00	75.0000	0.00
1842	1996	1997	691.73	6.00	75.0000	0.00
1843	1184	J-163	895.08	6.00	130.0000	0.00
1852	2007	2009	230.57	6.00	75.0000	0.00
1854	2010	2065	472.04	6.00	75.0000	0.00
1855	2012	J-39	579.11	8.00	75.0000	0.00
1856	2013	2014	469.09	6.00	130.0000	0.00
1858	2016	J-81	1482.47	4.00	75.0000	0.00
1860	2127	504	947.53	6.00	130.0000	0.00
1864	1121	2023	183.59	6.00	90.0000	0.00
1865	2127	1215	263.88	8.00	130.0000	0.00
1866	2025	2028	384.00	2.00	140.0000	0.00
1869	2029	2030	216.99	2.00	140.0000	0.00
1870	2031	2029	117.40	4.00	140.0000	0.00
1871	2029	2025	27.90	4.00	140.0000	0.00
1872	2025	2032	248.94	4.00	140.0000	0.00
1873	2033	2031	618.97	4.00	140.0000	0.00
1877	2031	J-124	145.24	8.00	130.0000	0.00
1883	2047	J-74	206.38	6.00	90.0000	0.00
1887	2053	582	671.02	4.00	90.0000	0.00
1892	2129	582	343.45	4.00	90.0000	0.00
1893	590	46	757.00	6.00	90.0000	0.00
1894	2061	J-45	335.58	6.00	90.0000	0.00
1895	2063	J-44	880.19	8.00	90.0000	0.00
1896	5	361	64.75	10.00	90.0000	0.00
1898	14	540	265.00	6.00	75.0000	0.00
1900	163-in or sm		34.44	6.00	90.0000	0.00
1901	17	18	236.00	6.00	90.0000	0.00
1904	24	2088	5.94	6.00	130.0000	0.00
1907	36	2130	291.60	6.00	75.0000	0.00
1908	38	2083	817.68	10.00	130.0000	0.00
1909	2014	J-87	300.00	6.00	75.0000	0.00
1917	69	J-61	263.00	8.00	130.0000	0.00
1920	295	J-30	1850.87	12.00	130.0000	0.00
1924	86	2066	285.00	12.00	130.0000	0.00
1927	104	J-112	808.02	6.00	75.0000	0.00
1930	118	710	2530.00	14.00	90.0000	0.00
1935	247	2106	22.48	8.00	75.0000	0.00
1936	325	2122	272.19	12.00	130.0000	0.00
1938	375	1218	736.59	14.00	75.0000	0.00
1940	396	1318	307.00	14.00	75.0000	0.00
1941	480	2138	730.48	10.00	90.0000	0.00
1947	530	2093	691.48	6.00	75.0000	0.00
1948	536	2078	287.42	8.00	75.0000	0.00
1949	565	1084	590.00	8.00	75.0000	0.00
1950	556	944	498.75	6.00	75.0000	0.00
1951	565	543	35.00	8.00	75.0000	0.00
1954	J-84	O-AV-5	54.14	8.00	90.0000	0.00
1956	584	717	786.89	10.00	90.0000	0.00
1958	590	584	267.70	10.00	90.0000	0.00
1960	620	2133	155.65	8.00	130.0000	0.00
1962	1410	649	52.91	8.00	90.0000	0.00
1964	661	424	118.60	10.00	75.0000	0.00
1965	665	172	143.00	12.00	130.0000	0.00
1967	710	137	1990.58	14.00	90.0000	0.00
1972	784	791	500.36	8.00	130.0000	0.00
1975	797	788	291.38	12.00	130.0000	0.00
1977	813	J-120	564.60	6.00	75.0000	0.00
1978	815	803	563.97	6.00	75.0000	0.00
1979	817	1338	454.00	10.00	130.0000	0.00
1982	856	2121	290.89	6.00	75.0000	0.00
1983	860	375	259.21	14.00	75.0000	0.00
1984	865	65	387.79	8.00	75.0000	0.00
1985	872	14	110.22	6.00	75.0000	0.00
1986	923	J-3	345.89	8.00	130.0000	0.00
1987	944	1987	383.07	6.00	75.0000	0.00
1989	954	945	225.61	6.00	75.0000	0.00
1990	958	J-106	266.00	6.00	75.0000	0.00
1992	994	1658	528.00	10.00	130.0000	0.00
1993	2101	60	140.36	6.00	75.0000	0.00
1995	1003	1049	529.64	8.00	130.0000	0.00
1996	1049	631	275.61	8.00	90.0000	0.00
1997	1050	975	402.00	6.00	90.0000	0.00
1998	1057	518	652.00	8.00	75.0000	0.00

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2000	1084	552	435.20	8.00	75.0000	0.00
2001	1099	1120	246.00	8.00	130.0000	0.00
2002	1107	J-79	210.02	8.00	75.0000	0.00
2003	1130	J-63	457.60	8.00	75.0000	0.00
2005	1137	398	600.00	8.00	75.0000	0.00
2010	1180	704	473.80	8.00	75.0000	0.00
2011	1183	704	38.34	6.00	75.0000	0.00
2014	1210	2067	566.74	14.00	75.0000	0.00
2020	1223	1224	265.83	6.00	75.0000	0.00
2021	1224	827	666.42	6.00	75.0000	0.00
2022	1229	815	301.07	6.00	75.0000	0.00
2024	1235	1517	896.98	8.00	75.0000	0.00
2025	1099	J-82	293.00	8.00	130.0000	0.00
2027	1284	46	713.52	8.00	90.0000	0.00
2031	1318	1392	306.00	14.00	75.0000	0.00
2032	1322	J-87	262.00	6.00	75.0000	0.00
2033	1328	2091	322.03	8.00	75.0000	0.00
2035	1337	2110	39.43	6.00	75.0000	0.00
2036	1338	813	634.51	6.00	75.0000	0.00
2037	1356	1089	17.89	6.00	75.0000	0.00
2039	1366	945	480.02	6.00	75.0000	0.00
2040	1387	979	479.26	6.00	130.0000	0.00
2042	1392	J-39	591.86	14.00	75.0000	0.00
2045	1409	407	306.00	10.00	75.0000	0.00
2048	1465	J-120	38.32	6.00	75.0000	0.00
2053	1107	1517	423.01	8.00	75.0000	0.00
2058	1570	J-8	1066.00	10.00	90.0000	0.00
2060	1575	342	808.04	12.00	130.0000	0.00
2063	1627	J-135	354.12	12.00	115.0000	0.00
2067	1648	432	2857.00	10.00	90.0000	0.00
2068	1658	421	772.00	10.00	130.0000	0.00
2070	1679	1101	25.75	6.00	90.0000	0.00
2071	1698	212	264.80	8.00	130.0000	0.00
2078	1800	1813	297.00	10.00	130.0000	0.00
2079	1809	1805	635.00	10.00	130.0000	0.00
2080	1810	107	583.38	12.00	130.0000	0.00
2087	1960	700	19.01	8.00	90.0000	0.00
2089	1973	J-2	345.00	6.00	75.0000	0.00
2090	1974	1366	377.42	6.00	75.0000	0.00
2091	1975	36	374.90	6.00	75.0000	0.00
2092	1981	J-4	275.32	6.00	75.0000	0.00
2093	994	1984	383.00	10.00	130.0000	0.00
2095	1986	552	515.83	6.00	75.0000	0.00
2096	1987	893	54.17	6.00	75.0000	0.00
2097	1989	842	189.64	6.00	75.0000	0.00
2102	1996	827	273.45	6.00	75.0000	0.00
2104	2007	375	649.59	10.00	130.0000	0.00
2105	2009	2096	41.52	6.00	75.0000	0.00
2111	2016	1120	22.21	8.00	130.0000	0.00
2114	1107	1293	379.00	6.00	75.0000	0.00
2118	2053	J-57	404.65	8.00	90.0000	0.00
2120	2063	717	379.81	10.00	90.0000	0.00
2127	2067	1218	331.70	14.00	75.0000	0.00
2128	2067	1180	580.16	8.00	75.0000	0.00
2139	2073	2007	37.55	10.00	130.0000	0.00
2141	2074	483	444.39	8.00	130.0000	0.00
2145	2076	492	344.58	8.00	75.0000	0.00
2146	2076	504	784.60	8.00	75.0000	0.00
2148	693	J-64	330.00	8.00	130.0000	0.00
2149	2078	865	288.23	8.00	75.0000	0.00
2150	2078	1991	297.24	6.00	75.0000	0.00
2152	2079	543	202.12	8.00	75.0000	0.00
2153	2080	2081	236.10	6.00	130.0000	0.00
2154	2080	958	585.00	6.00	75.0000	0.00
2155	2125	J-99	48.00	8.00	130.0000	0.00
2156	2081	958	325.04	6.00	75.0000	0.00
2159	2083	2084	265.54	8.00	75.0000	0.00
2160	2083	916	678.90	8.00	130.0000	0.00
2161	2084	565	310.77	8.00	75.0000	0.00
2162	2084	916	736.88	8.00	130.0000	0.00
2165	2086	578	560.00	8.00	130.0000	0.00
2166	2086	2132	593.29	8.00	90.0000	0.00
2169	2088	620	2465.45	8.00	130.0000	0.00
2170	2088	1214	158.00	6.00	130.0000	0.00
2173	2090	1410	14.60	8.00	90.0000	0.00
2174	2090	657	565.72	10.00	130.0000	0.00
2175	2091	1137	468.76	8.00	75.0000	0.00
2176	2091	505	311.20	8.00	75.0000	0.00
2179	2093	817	304.87	6.00	75.0000	0.00
2180	2093	1229	758.42	6.00	75.0000	0.00
2181	2094	2095	604.36	6.00	75.0000	0.00
2183	2095	1223	294.47	6.00	75.0000	0.00
2184	2095	1183	324.33	6.00	75.0000	0.00
2187	2097	856	426.07	6.00	75.0000	0.00
2188	2097	2073	206.00	6.00	75.0000	0.00
2189	2098	885	448.98	6.00	75.0000	0.00
2190	2098	2100	273.62	6.00	75.0000	0.00
2192	954	2130	268.01	6.00	75.0000	0.00
2193	2100	1050	360.00	6.00	90.0000	0.00
2194	2100	1056	405.41	6.00	75.0000	0.00
2195	2101	807	693.00	8.00	130.0000	0.00
2196	2101	J-82	1519.00	8.00	130.0000	0.00
2198	1290	1293	372.41	6.00	75.0000	0.00
2199	2103	60	154.27	6.00	75.0000	0.00
2202	2104	2021	244.00	4.00	75.0000	0.00
2203	2105	1388	298.00	6.00	75.0000	0.00
2206	2106	1328	152.76	8.00	75.0000	0.00
2207	2107	510	314.14	6.00	75.0000	0.00
2212	2109	2010	299.72	6.00	75.0000	0.00
2214	2110	1356	429.11	6.00	75.0000	0.00
2216	2111	1333	54.05	6.00	75.0000	0.00
2217	2112	1183	291.22	6.00	75.0000	0.00
2221	803	2113	632.05	6.00	75.0000	0.00
2223	2115	J-87	328.38	6.00	75.0000	0.00
2228	2117	1210	322.00	14.00	75.0000	0.00

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2231	2119	1483	385.00	6.00	75.0000	0.00
2234	2120	J-77	147.00	6.00	90.0000	0.00
2236	2121	2126	209.47	6.00	75.0000	0.00
2240	2123	2073	427.00	10.00	130.0000	0.00
2243	2125	961	36.45	8.00	130.0000	0.00
2244	2125	2081	266.99	8.00	130.0000	0.00
2246	2126	1984	286.12	10.00	130.0000	0.00
2249	2050	J-77	44.67	6.00	90.0000	0.00
2252	2129	2053	226.85	8.00	90.0000	0.00
2253	2130	961	455.00	6.00	75.0000	0.00
2254	2130	1973	40.73	6.00	75.0000	0.00
2257	2132	214	7.31	8.00	90.0000	0.00
2259	2133	599	622.41	8.00	130.0000	0.00
2260	2133	47	462.96	8.00	130.0000	0.00
2269	2138	481	66.26	10.00	90.0000	0.00
P-1	J-1	97	547.15	12.00	130.0000	0.00
P-100	J-112	1814	500.93	6.00	75.0000	0.00
P-101	J-113	2079	368.16	6.00	75.0000	0.00
P-102	J-114	1023	302.00	8.00	130.0000	0.00
P-103	J-125	649	346.91	8.00	130.0000	0.00
P-104	I-Fairview	1103	20.94	6.00	90.0000	0.00
P-105	J-115	J-116	419.54	6.00	75.0000	0.00
P-106	J-116	2097	250.67	6.00	75.0000	0.00
P-108	J-117	56	305.00	6.00	75.0000	0.00
P-11	J-3	1975	323.06	6.00	75.0000	0.00
P-111	J-120	807	266.76	6.00	75.0000	0.00
P-113	J-39	2117	288.00	14.00	75.0000	0.00
P-116	97	J-122	121.15	12.00	130.0000	0.00
P-117	J-140	J-145	46.63	12.00	130.0000	0.00
P-119	J-139	J-84	78.98	8.00	130.0000	0.00
P-121	J-140	J-138	42.92	12.00	130.0000	0.00
P-122	J-126Main Reser		111.73	18.00	130.0000	0.00
P-124	O-AV-1	2083	364.42	10.00	130.0000	0.00
P-125	O-AV-2	906	282.73	8.00	130.0000	0.00
P-127	J-127	295	2367.21	12.00	130.0000	0.00
P-128	J-127	J-128	4129.32	12.00	130.0000	0.00
P-130	J-128	1831	615.85	8.00	130.0000	0.00
P-131	J-129	1071	558.33	12.00	130.0000	0.00
P-132	668	J-129	1448.22	12.00	130.0000	0.00
P-133	J-133	1513	25.35	10.00	130.0000	0.00
P-134	J-122	J-132	800.00	12.00	130.0000	0.00
P-135	J-124	1502	393.57	10.00	130.0000	0.00
P-136	J-124	J-131	198.84	8.00	130.0000	0.00
P-138-CV	Kennicott	J-53	790.00	16.00	130.0000	0.00
P-140	O-AV-4	686	40.89	6.00	90.0000	0.00
P-143	I-AV-5	J-63	2.85	8.00	130.0000	0.00
P-144	O-AV-6	1134	545.75	4.00	75.0000	0.00
P-146	J-73	J-134	384.83	8.00	130.0000	0.00
P-147	J-64	J-141	135.51	8.00	130.0000	0.00
P-148	J-134	O-RV-2	6.27	8.00	130.0000	0.00
P-149	J-143	O-RV-1	5.82	12.00	130.0000	0.00
P-15	J-91	J-126	172.27	18.00	130.0000	0.00
P-150-CV	J-141	J-134	13.00	8.00	130.0000	0.00
P-151	J-142	J-139	80.78	8.00	130.0000	0.00
P-152	J-144	1570	631.51	12.00	130.0000	0.00
P-153-CV	J-143	J-144	24.87	12.00	130.0000	0.00
P-154	I-RV-1	J-144	5.63	12.00	130.0000	0.00
P-157	I-RV-2	J-141	7.13	8.00	130.0000	0.00
P-1570	1716	1103	1729.25	8.00	130.0000	0.00
P-158	J-145I-18th St		2.66	12.00	130.0000	0.00
P-159	J-145	J-146	2.68	12.00	130.0000	0.00
P-160-CV	J-146	J-147	9.25	12.00	130.0000	0.00
P-161	J-146O-18th St		3.23	12.00	130.0000	0.00
P-162	J-147	J-142	2.67	12.00	130.0000	0.00
P-164	I-18th St	J-147	3.12	12.00	130.0000	0.00
P-165	J-155	J-156	739.67	6.00	140.0000	0.00
P-166	66	J-110	322.75	6.00	75.0000	0.00
P-167	J-153	J-156	4747.12	12.00	115.0000	0.00
P-168	J-152	J-150	15.74	8.00	115.0000	0.00
P-169	J-154	J-88	471.34	12.00	115.0000	0.00
P-170	J-155	J-151	4833.50	6.00	140.0000	0.00
P-171	J-155	J-157	658.63	2.00	140.0000	0.00
P-172	J-156	J-154	1552.65	12.00	115.0000	0.00
P-173	J-148	J-6	2664.56	2.00	130.0000	0.00
P-174	J-149	J-153	1314.60	8.00	130.0000	0.00
P-175	J-150	J-152	2094.17	8.00	115.0000	0.00
P-176	J-64	2076	1014.00	8.00	75.0000	0.00
P-177	J-160	1057	847.45	8.00	75.0000	0.00
P-178	J-159	1513	18.67	6.00	90.0000	0.00
P-179	J-160	J-162	533.75	8.00	130.0000	0.00
P-18	J-135I-South En		77.91	12.00	130.0000	0.00
P-180	J-162	J-95	1493.70	12.00	130.0000	0.00
P-181	1818	J-161	94.69	2.00	140.0000	0.00
P-182	J-163	2003	50.56	6.00	130.0000	0.00
P-183	J-164	J-143	3640.74	12.00	130.0000	0.00
P-184	J-163	J-177	465.62	8.00	130.0000	0.00
P-186	1710	J-55	952.80	8.00	130.0000	0.00
P-188	31	J-158	1171.71	12.00	130.0000	0.00
P-19	33	34	11.57	4.00	90.0000	0.00
P-190	J-167	2074	284.73	10.00	90.0000	0.00
P-193-XX	432	780	9082.35	8.00	130.0000	0.00
P-194	76	1580	1373.43	12.00	130.0000	0.00
P-195	J-170	J-176	367.83	12.00	130.0000	0.00
P-196	J-168	J-21	156.89	6.00	75.0000	0.00
P-197	J-168	1980	565.74	8.00	130.0000	0.00
P-198	J-880-South En		3066.47	12.00	115.0000	0.00
P-199	J-171	1773	557.30	8.00	130.0000	0.00
P-2	101	J-1	84.14	8.00	130.0000	0.00
P-20	1576	213	32.42	12.00	130.0000	0.00
P-200	J-169	J-91	282.63	18.00	130.0000	0.00
P-201	J-173	J-153	21062.56	8.00	115.0000	0.00
P-203	J-177	J-164	335.35	8.00	130.0000	0.00
P-25	J-30	2066	908.00	12.00	130.0000	0.00
P-29	J-8	2063	977.55	10.00	90.0000	0.00
P-3	J-60-Central1		24935.52	6.00	115.0000	0.00

2040 Fireflow - High Level Zone

P-30	J-35	J-42	1262.05	12.00	130.0000	0.00
P-31	54	J-8	271.99	10.00	130.0000	0.00
P-33	J-42	2072	33.95	12.00	130.0000	0.00
P-34	1699	J-42	861.64	12.00	130.0000	0.00
P-36	2091	1322	322.00	6.00	75.0000	0.00
P-4	J-7	1570	1181.00	10.00	90.0000	0.00
P-40	J-44	10	918.28	8.00	90.0000	0.00
P-42	J-45	J-44	388.00	8.00	90.0000	0.00
P-43	J-132	J-170	233.32	12.00	130.0000	0.00
P-44	J-55	28	392.03	10.00	130.0000	0.00
P-47	J-57	2132	26.83	8.00	90.0000	0.00
P-48	41	J-90	18.53	10.00	90.0000	0.00
P-49	2051	J-57	16.66	8.00	90.0000	0.00
P-50	2052	J-57	17.24	8.00	90.0000	0.00
P-51	O-18th St	J-142	1.13	8.00	130.0000	0.00
P-53	J-4	1974	369.00	6.00	75.0000	0.00
P-54	923	J-4	253.57	6.00	75.0000	0.00
P-57	1217	I-AV-6	27.22	4.00	75.0000	0.00
P-58	1217	69	273.00	8.00	130.0000	0.00
P-6	J-11	J-88	987.96	8.00	115.0000	0.00
P-61	J-58	68	222.00	8.00	130.0000	0.00
P-62	J-61	J-136	302.00	8.00	130.0000	0.00
P-63	J-127	J-158	1896.96	12.00	130.0000	0.00
P-64	54	J-27	596.19	10.00	130.0000	0.00
P-65	J-67	597	417.00	8.00	90.0000	0.00
P-67	J-71	J-67	339.00	8.00	130.0000	0.00
P-69	J-73	J-71	449.75	8.00	75.0000	0.00
P-7	J-152	J-154	148.62	8.00	115.0000	0.00
P-71	J-63	J-123	21.02	8.00	130.0000	0.00
P-73	J-74	1679	128.71	6.00	90.0000	0.00
P-74	J-77	J-74	27.47	6.00	90.0000	0.00
P-75	I-AV-3	2120	128.95	6.00	90.0000	0.00
P-76	J-78	408	254.81	8.00	90.0000	0.00
P-77	J-79	1130	739.00	8.00	75.0000	0.00
P-78	J-80	504	390.06	8.00	75.0000	0.00
P-79	1396	J-82	521.89	6.00	90.0000	0.00
P-80	1388	J-87	625.00	6.00	130.0000	0.00
P-81	92	J-62	399.00	8.00	130.0000	0.00
P-82	J-84	597	632.70	8.00	90.0000	0.00
P-83	J-123	J-140	102.57	12.00	130.0000	0.00
P-84	J-93	1971	33.88	6.00	90.0000	0.00
P-86	I-High Lev	J-126	388.44	6.00	75.0000	0.00
P-87	J-94	526	1018.53	8.00	75.0000	0.00
P-88	J-93	J-94	3.82	6.00	90.0000	0.00
P-89	J-96inter-tie		1009.00	12.00	130.0000	0.00
P-9	J-2	2098	329.00	6.00	75.0000	0.00
P-90	J-105	174	266.00	12.00	130.0000	0.00
P-91	J-20	1981	59.00	6.00	75.0000	0.00
P-92	J-21	J-20	140.66	6.00	75.0000	0.00
P-93	568	J-99	19.30	8.00	130.0000	0.00
P-94	J-99	556	294.00	8.00	130.0000	0.00
P-95	566	J-99	49.52	8.00	130.0000	0.00
P-96	J-100	2080	161.00	8.00	130.0000	0.00
P-97	J-106	894	329.00	6.00	75.0000	0.00
P-98	I-Centrali	J-173	305.94	8.00	115.0000	0.00
P-99	J-111	944	378.41	6.00	75.0000	0.00
Valley Vie	O-Valley VYankis (Va		2734.85	4.00	140.0000	0.00

N O D E D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
5		0.40	243.40	
6		9.10	244.40	
9		3.80	205.80	
10		12.90	213.70	
11		0.20	236.90	
12		5.20	236.50	
13		0.20	198.90	
14		3.00	201.40	
15		4.20	186.10	
16		2.20	186.10	
17		14.50	175.70	
18		3.10	171.90	
19		2.00	165.30	
22		4.70	186.50	
23		10.70	187.70	
24		2.70	604.50	
26		12.20	240.30	
28		2.80	322.60	
29		1.00	319.00	
31		8.70	216.80	
32		7.90	214.70	
33		0.70	183.00	
34		5.00	183.50	
36		6.10	194.40	
37		0.80	319.00	
38		5.10	290.50	
40		7.20	190.80	
41		0.40	219.10	
43		0.20	253.50	
46		9.10	229.90	
47		2.90	544.40	
48		0.80	543.60	
49		19.70	243.00	
50		1.40	244.20	
51		9.70	240.00	
52		2.10	261.50	
54		4.90	209.30	
56		1.40	193.00	

2040 Fireflow - High Level Zone

59	0.50	252.50
60	1.80	252.90
65	9.60	192.40
66	3.10	191.30
68	6.10	205.20
69	4.40	208.70
70	1.10	285.20
72	25.40	255.00
75	21.00	247.70
76	48.80	256.00
83	0.20	221.90
85	0.20	222.10
86	7.70	222.40
89	6.40	225.60
92	8.40	192.40
97	3.40	173.90
98	0.30	174.00
101	0.40	174.30
102	6.70	176.00
103	0.30	175.70
104	6.70	179.70
107	6.70	183.60
108	2.80	183.60
109	12.40	236.20
118	25.50	192.50
119	5.60	217.70
121	3.60	230.70
137	13.20	180.00
166	9.80	182.90
172	6.20	174.10
174	3.40	175.70
175	11.00	183.60
178	3.60	183.60
192	11.80	183.60
201	5.60	178.30
212	5.90	256.30
213	3.50	253.50
214	7.60	230.10
224	5.80	224.20
247	22.00	192.10
248	13.10	248.60
253	8.50	240.90
254	30.10	230.80
295	34.50	210.10
325	7.70	183.90
342	5.10	165.40
343	10.20	163.20
344	4.60	164.20
346	0.90	165.60
356	14.00	219.10
361	16.90	243.10
375	7.60	230.50
384	16.10	183.20
385	1.80	183.60
396	1.60	221.20
398	4.60	220.50
407	8.20	226.99
408	4.30	223.30
421	7.60	184.20
424	1.80	189.90
432	65.20	184.10
468	28.10	204.20
473	2.50	178.30
474	3.10	210.70
480	10.80	219.70
481	0.30	220.90
493	2.10	214.00
492	12.90	195.50
504	9.80	192.80
505	8.70	197.20
509	14.40	200.00
510	7.90	189.60
512	10.00	184.80
513	1.10	178.80
518	4.60	182.20
526	19.20	201.80
530	5.00	220.30
536	6.30	201.90
540	1.30	202.30
543	3.30	210.90
544	2.50	216.10
552	4.90	191.50
556	6.00	206.10
565	4.30	210.80
566	2.30	204.60
568	3.40	206.30
569	10.60	178.30
573	2.20	179.00
578	2.60	280.80
579	5.50	205.50
582	7.20	212.80
584	7.30	207.60
590	8.40	208.60
597	5.60	222.20
599	8.30	592.40
601	2.10	577.30
619	3.30	559.00
620	15.00	583.00
623	2.90	588.00
628	3.60	420.40
631	4.60	382.80
632	1.40	455.20
642	2.70	304.60
649	2.70	392.70
657	12.60	331.20

2040 Fireflow - High Level Zone

661	8.20	190.90	
665	11.70	174.40	
668	18.20	182.30	
675	2.30	180.60	
676	4.10	206.70	
682	0.80	209.20	
683	5.60	200.30	
686	1.50	278.90	
693	10.30	197.40	
700	0.10	237.50	
704	3.70	190.10	
705	7.20	185.50	
710	22.00	197.50	
717	9.90	204.90	
718	0.20	191.20	
726	2.40	190.00	
780	55.20	195.00	
781	0.10	252.20	
784	8.40	259.80	
788	24.50	258.50	
791	7.60	256.00	
792	0.60	254.90	
797	6.20	255.30	
800	5.80	177.30	
802	1.30	178.00	
803	9.70	217.90	
807	11.50	272.60	
808	7.30	215.50	
813	6.90	244.90	
815	5.40	219.20	
817	6.60	275.20	
827	9.70	186.80	
828	4.40	192.50	
831	2.90	216.90	
842	5.20	234.00	
844	7.10	260.00	
856	4.40	194.40	
860	3.90	230.20	
865	4.10	195.90	
868	4.20	197.00	
872	1.60	199.50	
881	4.00	199.80	
885	4.60	204.20	
893	4.10	198.10	
894	1.60	206.30	
899	9.80	192.10	
901	9.50	189.00	
906	3.40	292.50	
910	2.50	294.90	
916	8.10	222.40	
922	1.60	238.30	
923	5.40	182.20	
929	1.10	181.60	
937	5.30	183.80	
944	5.90	196.50	
945	5.40	192.00	
954	4.30	193.70	
958	10.00	201.60	
961	2.30	205.40	
962	6.00	179.30	
964	0.40	179.40	
975	10.50	184.50	
979	2.20	173.70	
994	8.60	192.30	
1003	8.30	435.80	
1023	10.00	389.60	
1024	4.70	408.40	
1032	6.80	455.00	
1049	5.20	421.50	
1050	9.50	188.20	
1053	5.90	183.20	
1056	3.00	192.00	
1057	8.90	179.20	
1060	9.80	196.50	
1063	2.50	238.10	
1064	4.40	181.30	
1071	4.30	190.50	
1084	17.80	198.50	
1085	6.60	197.60	
1089	3.60	190.70	
1099	15.70	233.90	
1100	1.10	339.70	
1101	2.30	323.20	
1103	6" and 2"	8.20	346.40
1104		0.70	285.50
1107		4.80	211.40
1120		2.10	222.90
1121		3.30	205.30
1122		1.20	204.40
1125		3.00	205.00
1130		8.50	225.00
1134		10.70	202.90
1137		6.50	202.10
1156		9.30	184.90
1180		6.10	195.40
1181		5.20	186.00
1183		3.00	190.20
1184		8.70	189.70
1186		4.90	191.30
1210		6.80	215.60
1211		0.40	564.40
1214		3.10	607.60
1215		2.70	200.80
1217		6.10	207.80
1218		9.80	217.60

2040 Fireflow - High Level Zone

1223	4.10	187.20
1224	5.80	187.60
1229	5.90	224.40
1232	10.30	183.90
1235	7.80	197.20
1239	2.70	265.90
1240	0.20	608.90
1244	8.00	591.00
1251	9.70	622.30
1262	0.40	349.90
1270	2.60	184.30
1277	9.10	340.00
1284	7.50	224.00
1290	10.00	207.20
1293	5.20	206.60
1295	6.10	200.40
1298	0.90	224.20
1309	10.00	185.00
1310	7.80	184.40
1314	6.30	183.00
1318	5.50	221.20
1322	4.90	194.60
1328	4.90	192.30
1333	4.60	191.30
1337	5.30	192.80
1338	12.10	257.70
1356	3.40	190.80
1359	1.10	193.30
1364	4.60	193.90
1366	7.00	190.60
1375	13.20	168.30
1387	4.40	182.40
1388	8.20	200.40
1392	6.80	220.30
1396	2.40	308.10
1409	7.80	222.20
1410	2.90	392.50
1456	4.40	183.20
1465	4.30	235.70
1483	7.90	193.40
1484	19.20	183.60
1497	3.50	167.20
1498	2.10	396.40
1502	5.20	385.30
1513	1.00	339.40
1517	7.50	205.40
1519	1.30	211.30
1524	1.70	615.60
1544	22.50	194.80
1547	18.00	208.00
1570	13.30	195.50
1575	10.60	171.60
1576	2.30	253.70
1580	8.90	245.80
1626	25.50	272.90
1627	15.00	289.00
1630	40.10	266.70
1636	242.01	245.70
1637	34.90	249.10
1647	35.40	236.20
1648	35.80	187.30
1657	9.60	176.60
1658	9.50	185.90
1674	11.00	178.00
1679	4.20	317.70
1689	4.10	323.60
1690	0.60	319.70
1698	7.10	256.80
1699	7.80	218.90
1700	3.70	216.20
1710	9.30	303.90
1711	1.00	209.80
1712	2.30	268.50
1713	2.20	571.10
1716	9.70	533.50
1719	0.90	516.50
1737	8.20	166.60
1742	13.20	183.60
1767	5.00	193.40
1773	4.70	272.20
1775	2.30	270.10
1776	6.70	269.20
1782	12.10	269.10
1788	8.40	269.00
1791	1.20	273.40
1793	1.60	270.60
1799	4.20	201.40
1800	3.70	166.10
1801	1.10	173.70
1805	3.40	179.70
1806	2.00	173.10
1808	1.90	179.80
1809	3.20	172.30
1810	6.00	179.50
1813	4.70	171.10
1814	8.70	167.10
1818	3.70	178.50
1821	6.70	169.80
1823	3.60	182.50
1826	5.20	183.30
1827	9.30	192.90
1831	2.80	234.10
1948	1.50	234.90
1960	6.20	237.60
1961	4.60	190.10

2040 Fireflow - High Level Zone

1968	0.60	164.90
1971	0.20	185.30
1973	3.90	198.40
1974	6.40	187.50
1975	6.20	186.60
1980	5.00	180.20
1981	1.80	183.10
1984	5.10	194.10
1985	0.30	195.20
1986	5.70	194.50
1987	5.40	198.50
1988	0.20	219.50
1989	2.10	222.30
1991	4.80	194.20
1994	1.00	190.70
1996	5.70	189.80
1997	5.60	191.50
2003	0.20	185.20
2007	4.30	200.60
2009	5.60	196.90
2010	6.60	191.70
2012	5.60	199.00
2013	4.90	200.10
2014	8.10	193.20
2016	7.30	222.30
2021	1.10	204.20
2023	0.80	206.90
2025	3.10	455.60
2028	1.80	520.90
2029	1.60	449.00
2030	1.00	460.10
2031	4.10	430.90
2032	1.20	484.00
2033	2.90	474.20
2047	1.00	309.00
2050	0.20	301.10
2051	0.10	229.60
2052	0.10	229.90
2053	6.00	220.60
2061	1.60	208.20
2063	10.40	205.00
2065	7.70	198.90
2066	5.70	222.20
2067	11.20	216.20
2072	10.70	221.90
2073	4.30	199.80
2074	3.40	220.90
2076	11.30	204.40
2078	5.30	199.20
2079	5.60	203.10
2080	6.70	191.60
2081	5.90	198.70
2083	11.50	255.40
2084	7.50	224.10
2086	7.60	230.30
2088	12.10	604.50
2090	12.90	391.30
2091	6.60	195.30
2092	3.20	251.60
2093	8.30	236.00
2094	9.30	188.50
2095	6.50	187.60
2096	4.60	196.50
2097	6.80	202.50
2098	7.00	202.10
2100	9.40	197.30
2101	10.80	270.60
2103	11.70	236.90
2104	5.10	200.50
2105	7.80	201.90
2106	3.50	192.10
2107	8.50	190.50
2109	6.50	190.80
2110	4.80	192.70
2111	4.10	191.00
2112	8.90	190.20
2113	7.40	195.50
2115	6.30	191.90
2117	5.50	217.50
2119	9.50	193.60
2120	5.30	268.60
2121	4.60	193.00
2122	7.80	183.70
2123	5.70	193.20
2125	1.70	206.20
2126	3.60	192.50
2127	11.50	203.70
2129	6.20	218.10
2130	4.80	198.00
2132	2.80	230.10
2133	5.70	578.00
2137	7.70	198.20
2138	10.10	221.50
I-18th St	0.00	218.20
O-18th St	0.00	218.20
3-in or sm	0.20	185.50
3-inch or	0.50	183.00
3-inch or	0.20	183.10
O-AV-1	0.00	283.80
I-AV-2	0.00	306.00
I-AV-3	0.00	253.40
O-AV-4	0.00	289.30
O-AV-5	0.00	225.30
O-AV-6	0.00	208.10
O-Centrall	----	333.50

541.19

2040 Fireflow - High Level Zone

O-Fairview	Fairview PRV	----	346.50	466.50
O-High Lev	High Level P	0.00	401.60	
High Level	High Level R	----	605.00	605.00
Hillcrest		0.40	256.20	
inter-tie		4.70	174.40	
J-1		5.80	174.00	
J-100		1.20	190.60	
J-105		4.20	175.60	
J-106		4.60	206.20	
J-11		4.60	280.00	
J-110		8.00	198.00	
J-111		3.20	192.50	
J-112		8.40	167.90	
J-113		4.00	200.50	
J-114		18.30	405.70	
J-115		3.00	197.30	
J-116		3.10	207.10	
J-117		2.70	192.10	
J-120		4.00	237.50	
J-122		4.30	174.00	
J-123		0.60	224.70	
J-124		3.40	403.80	
J-125		3.30	383.00	
J-126		5.40	367.95	
J-127		45.90	225.20	
J-128		23.90	235.20	
J-129		13.70	184.80	
J-130		6.20	222.00	
J-131		0.90	418.00	
J-132		4.80	176.00	
J-133		1.40	339.60	
J-134		2.00	200.90	
J-135		3.20	288.30	
J-136		1.40	204.10	
J-138		1.70	219.60	
J-139		0.80	222.60	
J-140		0.90	218.20	
J-141		0.80	200.90	
J-142		0.40	218.20	
J-143		17.00	186.90	
J-144		3.10	186.80	
J-145		0.20	218.20	
J-146		0.00	218.20	
J-147		0.00	218.20	
J-148		12.30	498.90	
J-149		6.10	306.10	
J-150		9.80	272.40	
J-151		22.40	326.80	
J-152		10.50	272.40	
J-153		125.60	302.40	
J-154		10.10	267.60	
J-155		28.80	263.80	
J-156		32.60	261.30	
J-157		3.00	265.80	
J-158		14.20	211.40	
J-159		0.60	343.00	
J-160		7.50	172.60	
J-161		0.40	178.60	
J-162		11.50	183.00	
J-163		6.50	183.70	
J-164		20.60	177.50	
J-167		4.50	0.00	
J-168		4.80	0.00	
J-169		10.90	413.50	
J-170		2.80	174.50	
J-171		3.50	286.90	
J-173		100.30	329.80	
J-176		1.70	166.40	
J-177		3.80	179.10	
J-2		9.40	201.80	
J-20		3.60	182.90	
J-21		2.50	182.80	
J-25		8.20	311.10	
J-27		6.90	207.10	
J-3		5.50	182.20	
J-30		12.80	219.90	
J-35		13.60	222.10	
J-39		6.70	218.10	
J-4		4.20	184.40	
J-42		10.00	222.00	
J-44		10.10	208.40	
J-45		7.00	209.00	
J-53		15.80	294.30	
J-55		8.70	297.10	
J-57		2.20	229.20	
J-58		2.50	204.60	
J-6		13.89	473.40	
J-61		7.10	207.00	
J-62		1.80	191.50	
J-63		2.20	225.20	
J-64		6.80	202.30	
J-67		3.50	210.80	
J-7		5.80	214.70	
J-71		3.70	204.60	
J-73		10.50	199.60	
J-74		1.70	301.00	
J-77		1.00	296.10	
J-78		8.60	230.70	
J-79		4.50	223.40	
J-8		10.70	208.80	
J-80		8.20	190.70	
J-81		11.10	218.90	
J-82		10.80	257.90	
J-84		3.80	226.30	
J-87		7.00	194.40	

J-88		35.00	275.70	
J-90		0.10	219.10	
J-91		6.50	352.90	
J-93		2.80	187.50	
J-94		6.00	187.50	
J-95		19.80	189.50	
J-96		10.80	176.90	
J-99		1.90	205.50	
Kennicott	Kennicott Re	----	374.00	397.90
Main Reser	Main Reservo	----	383.30	400.20
physical d		0.10	222.00	
I-RV-1		0.00	186.80	
I-RV-2		0.00	200.90	
O-South En		----	287.90	495.59
O-Valley V	Valley View	0.00	308.10	
Yankis (Va	Yankis (Vall	----	631.50	635.90
Yates Rese	500,000 gal	----	376.00	400.20
O-18th St		----	218.20	389.66
I-18th St		0.00	218.20	
I-AV-1		0.00	283.80	
O-AV-2		0.00	306.00	
O-AV-3		0.00	253.40	
I-AV-4		0.00	289.30	
I-AV-5		0.00	225.30	
I-AV-6		0.00	208.10	
I-Centrali		0.00	333.50	
I-Fairview	Fairview PRV	0.00	346.50	
I-High Lev	High Level P	0.00	401.60	
O-RV-1		----	186.80	382.95
O-RV-2		----	200.90	389.67
I-South En		0.00	287.90	
I-Valley V	Valley View	0.00	308.10	

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 5
 MAXIMUM AND MINIMUM VELOCITIES = 5
 MAXIMUM AND MINIMUM HEAD LOSS/1000 = 5

SUPPLY ZONE DATA

THIS SYSTEM HAS MULTIPLE SUPPLY ZONES

ZONE NO. 1 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@18th St FRV ~@RV-2 ~@RV-1~@Yankis (Valley V
 ~@Fairview PRV~@Kennicott Reserv~@High Level Reser ~@Main Reservoir
 ~@Yates Reservoir

ZONE NO. 2 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@Centralia Alpha

ZONE NO. 3 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@South End Pump S

SYSTEM CONFIGURATION

NUMBER OF PIPES(P) = 734
 NUMBER OF END NODES(J) = 575
 NUMBER OF PRIMARY LOOPS(L) = 155
 NUMBER OF SUPPLY NODES(F) = 7
 NUMBER OF SUPPLY ZONES(Z) = 3

Case: 0

RESULTS OBTAINED AFTER 26 TRIALS: ACCURACY = 0.76255E-03

SIMULATION DESCRIPTION (LABEL)

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS		FLOWRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/ 1000 ft/f	HL/ 1000 ft/f
	#1	#2						
3	6	5	188.40	0.01	0.00	0.77	0.55	0.55
5	10	9	3.80	0.00	0.00	0.02	0.00	0.00
6	12	11	0.20	0.00	0.00	0.00	0.00	0.00
7	872	13	0.20	0.00	0.00	0.00	0.00	0.00
8	15	16	22.91	0.00	0.00	0.26	0.13	0.13
10	18	19	2.00	0.06	0.00	0.20	0.14	0.14
12	22	23	18.47	0.01	0.00	0.12	0.01	0.01
13	24	1524	1.70	0.00	0.00	0.04	0.00	0.00
14	J-55	26	70.00	0.02	0.00	0.29	0.04	0.04
16	28	29	1.00	0.00	0.00	0.00	0.00	0.00
17	32	31	7.97	0.00	0.00	0.02	0.00	0.00
21	38	37	0.80	0.00	0.00	0.02	0.00	0.00
22	2014	40	8.76	0.00	0.00	0.06	0.00	0.00
23	41	1699	80.60	0.00	0.00	0.23	0.02	0.02

2040 Fireflow - High Level Zone

24	213	43	0.20	0.00	0.00	0.00	0.00	0.00
26	47	48	0.80	0.00	0.00	0.02	0.00	0.00
27	49	50	1.40	0.00	0.00	0.01	0.00	0.00
28	51	52	3.20	0.00	0.00	0.02	0.00	0.00
32	60	59	0.50	0.00	0.00	0.01	0.00	0.00
35	65	66	57.13	0.30	0.00	0.65	1.02	1.02
37	68	69	9.85	0.00	0.00	0.06	0.00	0.00
38	52	70	1.10	0.00	0.00	0.01	0.00	0.00
39	72	Hillcrest	0.40	0.00	0.00	0.01	0.00	0.00
41	75	76	84.58	0.09	0.00	0.24	0.03	0.03
45	2066	83	0.20	0.00	0.00	0.00	0.00	0.00
46	86	85	0.20	0.00	0.00	0.00	0.00	0.00
52	97	98	0.30	0.00	0.00	0.00	0.00	0.00
55	102	103	0.30	0.00	0.00	0.00	0.00	0.00
56	1810	104	6.65	0.00	0.00	0.02	0.00	0.00
59	107	108	8.87	0.00	0.00	0.03	0.00	0.00
60	J-53	109	688.11	0.25	0.00	1.10	0.31	0.31
66	J-169	118	538.54	1.56	0.00	1.12	0.75	0.75
68	121	119	216.94	0.14	0.00	0.45	0.20	0.20
70	860	121	330.71	0.01	0.00	0.69	0.43	0.43
72	118	1799	4.20	0.00	0.00	0.03	0.00	0.00
85	396	physical d	0.10	0.00	0.00	0.00	0.00	0.00
107	J-91	2067	1642.36	0.84	0.00	2.07	0.88	0.88
109	325	34	45.87	0.00	0.00	0.13	0.01	0.01
110	166	2122	96.67	0.03	0.00	0.27	0.03	0.03
112	962	166	34.01	0.00	0.00	0.10	0.00	0.00
114	569	962	40.41	0.00	0.00	0.11	0.01	0.01
115	665	569	53.21	0.02	0.00	0.15	0.01	0.01
118	J-105	172	23.04	0.00	0.00	0.07	0.00	0.00
120	178	175	103.85	0.01	0.00	0.29	0.04	0.04
123	1826	178	122.77	0.02	0.00	0.35	0.05	0.05
126	1827	1826	143.18	0.02	0.00	0.41	0.07	0.07
129	192	1827	262.31	0.35	0.00	0.74	0.21	0.21
137	201	192	254.48	0.05	0.00	0.72	0.20	0.20
139	137	201	301.19	0.11	0.00	0.85	0.27	0.27
141	137	15	146.50	0.03	0.00	0.42	0.07	0.07
142	15	J-162	119.39	0.02	0.00	0.34	0.05	0.05
145	201	J-93	41.11	0.01	0.00	0.12	0.01	0.01
155	212	213	70.66	0.01	0.00	0.20	0.02	0.02
156	26	214	219.46	0.25	0.00	0.62	0.15	0.15
163	2072	224	5.80	0.00	0.00	0.02	0.00	0.00
187	248	253	8.50	0.00	0.00	0.02	0.00	0.00
192	254	J-127	252.65	0.30	0.00	0.72	0.20	0.20
262	325	1575	34.01	0.00	0.00	0.10	0.00	0.00
279	344	343	19.80	0.00	0.00	0.06	0.00	0.00
280	342	344	27.90	0.00	0.00	0.08	0.00	0.00
282	342	346	0.90	0.00	0.00	0.00	0.00	0.00
283	86	J-130	6.20	0.00	0.00	0.02	0.00	0.00
292	361	356	105.10	0.43	0.00	0.43	0.19	0.19
298	J-7	32	46.57	0.00	0.00	0.19	0.04	0.04
302	32	480	30.70	0.02	0.00	0.13	0.02	0.02
318	384	385	74.26	0.01	0.00	0.30	0.05	0.05
319	356	J-167	10.00	0.00	0.00	0.04	0.00	0.00
320	356	41	81.10	0.00	0.00	0.33	0.12	0.12
329	396	398	403.32	0.10	0.00	1.65	3.18	3.18
331	398	1409	176.16	0.21	0.00	0.72	0.68	0.68
340	407	408	91.09	0.13	0.00	0.37	0.20	0.20
353	2119	661	21.85	0.06	0.00	0.25	0.17	0.17
355	1648	424	14.06	0.00	0.00	0.06	0.00	0.00
363	295	468	83.30	0.20	0.00	0.34	0.06	0.06
398	172	473	2.50	0.00	0.00	0.01	0.00	0.00
403	480	474	3.10	0.00	0.00	0.02	0.00	0.00
411	2129	J-45	52.97	0.12	0.00	0.34	0.16	0.16
414	1217	1121	5.30	0.00	0.00	0.03	0.00	0.00
417	1235	492	56.92	0.10	0.00	0.36	0.25	0.25
429	505	509	52.05	0.11	0.00	0.33	0.21	0.21
433	512	510	0.43	0.00	0.00	0.00	0.00	0.00
435	J-160	513	1.10	0.00	0.00	0.01	0.00	0.00
440	518	J-94	6.91	0.00	0.00	0.04	0.01	0.01
448	1184	92	39.55	0.04	0.00	0.25	0.05	0.05
451	119	530	81.66	0.02	0.00	0.52	0.49	0.49
452	119	536	129.68	0.53	0.00	0.83	1.15	1.15
458	536	2079	55.56	0.15	0.00	0.35	0.24	0.24
461	540	2079	1.94	0.00	0.00	0.01	0.00	0.00
464	544	543	49.18	0.09	0.00	0.31	0.19	0.19
472	552	J-100	113.49	0.09	0.00	0.72	0.90	0.90
476	I-AV-1	J-114	0.00	0.00	0.00	0.00	0.00	0.00
486	569	573	2.20	0.00	0.00	0.01	0.00	0.00
490	385	166	72.46	0.03	0.00	0.46	0.12	0.12
495	J-138	579	38.42	0.01	0.00	0.25	0.04	0.04
497	582	584	34.18	0.02	0.00	0.22	0.04	0.04
503	J-73	590	0.02	0.00	0.00	0.00	0.00	0.00
511	599	601	2.10	0.00	0.00	0.01	0.00	0.00
526	599	619	3.30	0.00	0.00	0.02	0.00	0.00
531	620	623	2.90	0.00	0.00	0.02	0.00	0.00
538	628	631	57.30	0.02	0.00	0.37	0.18	0.18
541	1049	632	1.40	0.00	0.00	0.01	0.00	0.00
547	631	642	2.70	0.00	0.00	0.02	0.00	0.00
552	2090	High Level	212.00	0.38	0.00	0.87	0.35	0.35
565	509	661	60.85	0.38	0.00	0.39	0.28	0.28
569	1284	597	42.49	0.02	0.00	0.27	0.10	0.10
571	2086	46	89.92	0.21	0.00	0.57	0.42	0.42
574	668	665	50.57	0.06	0.00	0.32	0.07	0.07
577	668	675	2.30	0.00	0.00	0.01	0.00	0.00
584	J-27	676	4.10	0.00	0.00	0.02	0.00	0.00
590	54	682	0.80	0.00	0.00	0.01	0.00	0.00
591	J-95	683	8.90	0.00	0.00	0.06	0.01	0.01
593	J-78	686	1.50	0.00	0.00	0.01	0.00	0.00
597	408	J-79	164.01	0.04	0.00	1.05	1.78	1.78
601	361	1960	66.00	0.30	0.00	0.42	0.24	0.24
612	710	705	25.94	0.01	0.00	0.17	0.02	0.02
617	717	1134	4.73	0.00	0.00	0.03	0.00	0.00
623	247	718	0.20	0.00	0.00	0.00	0.00	0.00
630	424	726	86.76	0.05	0.00	0.55	0.55	0.55
632	726	J-80	17.36	0.01	0.00	0.11	0.03	0.03

2040 Fireflow - High Level Zone

652	468	780	55.20	0.24	0.00	0.35	0.09	0.09
684	2092	781	0.10	0.00	0.00	0.00	0.00	0.00
686	784	1698	13.16	0.00	0.00	0.08	0.01	0.01
690	788	791	17.86	0.01	0.00	0.11	0.01	0.01
693	791	792	0.60	0.00	0.00	0.00	0.00	0.00
697	797	784	11.89	0.00	0.00	0.08	0.00	0.00
700	800	802	1.30	0.00	0.00	0.01	0.00	0.00
702	803	1465	34.19	0.11	0.00	0.39	0.40	0.40
706	2009	808	10.03	0.04	0.00	0.11	0.04	0.04
710	815	813	30.71	0.10	0.00	0.35	0.32	0.32
712	121	2093	110.17	0.16	0.00	1.25	3.45	3.45
714	2094	40	18.99	0.04	0.00	0.22	0.05	0.05
723	2096	828	15.06	0.04	0.00	0.17	0.09	0.09
726	831	544	51.68	0.06	0.00	0.59	0.85	0.85
727	530	831	73.19	0.54	0.00	0.83	1.62	1.62
735	831	1989	18.61	0.03	0.00	0.21	0.13	0.13
739	844	842	9.12	0.02	0.00	0.10	0.03	0.03
741	817	844	92.14	0.05	0.00	0.38	0.07	0.07
749	J-115	856	15.45	0.02	0.00	0.18	0.09	0.09
751	2078	14	22.91	0.05	0.00	0.26	0.19	0.19
753	860	2097	42.53	0.34	0.00	0.48	0.59	0.59
757	868	865	17.53	0.03	0.00	0.20	0.11	0.11
760	J-113	868	6.86	0.01	0.00	0.08	0.02	0.02
762	872	868	14.87	0.02	0.00	0.17	0.08	0.08
772	2098	881	2.50	0.00	0.00	0.03	0.00	0.00
776	J-111	885	20.11	0.05	0.00	0.23	0.15	0.15
784	J-106	893	3.82	0.00	0.00	0.04	0.01	0.01
785	J-110	893	27.36	0.11	0.00	0.31	0.26	0.26
789	899	66	23.50	0.01	0.00	0.27	0.20	0.20
791	901	899	46.78	0.12	0.00	0.53	0.71	0.71
793	901	1742	55.21	1.08	0.00	0.63	0.96	0.96
797	910	906	3.40	0.00	0.00	0.02	0.00	0.00
801	910	38	70.02	0.01	0.00	0.29	0.04	0.04
807	842	2084	20.23	0.05	0.00	0.23	0.15	0.15
812	916	922	1.60	0.00	0.00	0.01	0.00	0.00
814	J-20	923	1.78	0.00	0.00	0.01	0.00	0.00
817	J-21	929	1.10	0.00	0.00	0.01	0.00	0.00
823	J-2	937	16.65	0.03	0.00	0.19	0.04	0.04
825	556	J-2	24.12	0.10	0.00	0.27	0.21	0.21
831	2080	945	30.11	0.15	0.00	0.34	0.31	0.31
839	2081	954	17.20	0.05	0.00	0.20	0.11	0.11
846	962	964	0.40	0.00	0.00	0.00	0.00	0.00
858	1314	1387	31.55	0.16	0.00	0.81	2.46	2.46
861	108	104	6.07	0.01	0.00	0.07	0.01	0.01
867	J-110	958	42.17	0.05	0.00	0.27	0.05	0.05
874	994	65	30.21	0.23	0.00	0.34	0.31	0.31
876	65	1986	46.98	0.47	0.00	0.53	0.71	0.71
883	1003	1023	27.76	0.01	0.00	0.18	0.02	0.02
903	J-125	1024	65.60	0.04	0.00	0.42	0.12	0.12
905	O-High Lev	649	360.00	3.15	0.00	4.08	30.96	30.96
910	1024	628	60.90	0.07	0.00	0.39	0.10	0.10
912	1003	1032	7.34	0.01	0.00	0.08	0.02	0.02
930	1050	1053	5.90	0.01	0.00	0.07	0.01	0.01
933	384	2100	7.94	0.03	0.00	0.09	0.03	0.03
936	16	1057	20.51	0.05	0.00	0.23	0.11	0.11
938	1060	1063	4.00	0.00	0.00	0.05	0.00	0.00
941	J-129	1064	4.40	0.00	0.00	0.03	0.00	0.00
948	526	1071	62.88	0.27	0.00	0.71	0.87	0.87
949	1084	526	43.06	0.15	0.00	0.27	0.05	0.05
962	1085	1337	5.28	0.01	0.00	0.06	0.01	0.01
966	1099	J-78	87.33	0.27	0.00	0.56	0.20	0.20
975	1101	1100	1.10	0.00	0.00	0.01	0.00	0.00
976	O-Fairview	1101	24.90	0.02	0.00	0.28	0.16	0.16
982	J-81	2103	3.45	0.00	0.00	0.04	0.01	0.01
993	1121	1122	1.20	0.00	0.00	0.01	0.00	0.00
994	2076	2127	37.59	0.01	0.00	0.24	0.04	0.04
1000	1130	1125	3.00	0.00	0.00	0.02	0.00	0.00
1001	J-73	2104	12.17	0.04	0.00	0.14	0.06	0.06
1003	2104	1134	5.97	0.00	0.00	0.07	0.02	0.02
1004	509	1290	34.88	0.20	0.00	0.40	0.41	0.41
1007	2105	1137	27.83	0.09	0.00	0.32	0.27	0.27
1009	2013	1388	48.29	0.20	0.00	0.55	0.75	0.75
1012	2107	2106	53.36	0.53	0.00	0.61	0.90	0.90
1014	23	510	29.30	0.28	0.00	0.33	0.30	0.30
1017	2137	2109	39.46	0.24	0.00	0.45	0.52	0.52
1019	2109	2094	58.42	0.35	0.00	0.66	1.07	1.07
1020	2094	23	44.15	0.09	0.00	0.50	0.64	0.64
1023	23	1156	22.61	0.09	0.00	0.26	0.18	0.18
1024	2073	2096	25.68	0.05	0.00	0.29	0.23	0.23
1025	2096	2110	20.20	0.04	0.00	0.23	0.15	0.15
1026	1997	2110	0.79	0.00	0.00	0.01	0.00	0.00
1028	2111	1997	24.93	0.05	0.00	0.28	0.22	0.22
1030	2112	2111	55.06	0.26	0.00	0.62	0.96	0.96
1032	2113	1961	23.31	0.08	0.00	0.26	0.19	0.19
1035	704	1961	15.98	0.03	0.00	0.18	0.10	0.10
1036	1961	2109	34.69	0.12	0.00	0.39	0.41	0.41
1037	2010	2014	42.62	0.38	0.00	0.48	0.60	0.60
1040	2012	2013	76.99	0.58	0.00	0.87	1.78	1.78
1041	2065	2012	10.32	0.01	0.00	0.12	0.04	0.04
1042	2137	2065	5.41	0.00	0.00	0.06	0.01	0.01
1043	2137	2113	19.23	0.04	0.00	0.22	0.14	0.14
1044	1180	2113	70.93	0.41	0.00	0.80	1.53	1.53
1046	22	1181	24.54	0.02	0.00	0.28	0.21	0.21
1047	2095	22	47.71	0.13	0.00	0.54	0.73	0.73
1048	726	1184	67.00	0.00	0.00	0.43	0.12	0.12
1051	1996	1186	22.54	0.05	0.00	0.26	0.18	0.18
1053	827	1232	4.02	0.01	0.00	0.05	0.01	0.01
1058	1232	1156	10.45	0.03	0.00	0.12	0.04	0.04
1060	1156	512	23.77	0.19	0.00	0.27	0.20	0.20
1062	512	2107	13.33	0.05	0.00	0.15	0.07	0.07
1064	2115	2107	26.69	0.04	0.00	0.30	0.25	0.25
1069	2117	2065	52.60	0.51	0.00	0.60	0.88	0.88
1071	1210	2137	71.80	0.91	0.00	0.91	1.56	1.56
1074	1713	1211	0.40	0.00	0.00	0.00	0.00	0.00
1076	24	1713	46.30	0.06	0.00	0.53	0.25	0.25

2040 Fireflow - High Level Zone

1077	1215	J-58	22.60	0.01	0.00	0.14	0.02	0.02
1078	68	1217	4.15	0.00	0.00	0.05	0.00	0.00
1080	1218	2112	67.71	1.47	0.00	0.77	1.40	1.40
1083	2112	1223	41.84	0.19	0.00	0.47	0.58	0.58
1085	2111	1224	1.76	0.00	0.00	0.02	0.00	0.00
1087	1333	1085	14.72	0.03	0.00	0.17	0.08	0.08
1088	1085	808	2.84	0.00	0.00	0.03	0.00	0.00
1090	808	1229	5.56	0.00	0.00	0.06	0.01	0.01
1091	1181	1232	16.74	0.05	0.00	0.19	0.11	0.11
1094	1483	1235	12.00	0.02	0.00	0.14	0.06	0.06
1095	2120	1104	0.70	0.00	0.00	0.01	0.00	0.00
1096	2120	1239	2.70	0.00	0.00	0.03	0.00	0.00
1099	1214	1240	0.20	0.00	0.00	0.00	0.00	0.00
1100	1244	1214	107.10	0.56	0.00	1.22	1.18	1.18
1103	1251	1244	60.64	0.23	0.00	0.69	0.41	0.41
1110	Yankis (Va	1251	124.80	0.66	0.00	1.42	1.57	1.57
1116	J-25	1513	39.80	0.00	0.00	0.16	0.02	0.02
1117	J-159	1277	9.50	0.00	0.00	0.11	0.03	0.03
1118	1277	1262	0.40	0.00	0.00	0.00	0.00	0.00
1120	657	J-25	48.00	0.04	0.00	0.20	0.02	0.02
1125	1181	1270	2.60	0.00	0.00	0.02	0.00	0.00
1127	1099	2103	9.63	0.01	0.00	0.06	0.00	0.00
1132	1277	I-AV-4	0.00	0.00	0.00	0.00	0.00	0.00
1138	579	693	32.92	0.32	0.00	0.37	0.37	0.37
1140	1284	O-AV-3	0.00	0.00	0.00	0.00	0.00	0.00
1146	1290	2119	26.72	0.12	0.00	0.30	0.09	0.09
1148	1293	1295	30.62	0.04	0.00	0.35	0.12	0.12
1150	398	2016	150.61	0.04	0.00	0.96	0.55	0.55
1152	1120	1298	0.90	0.00	0.00	0.01	0.00	0.00
1154	432	1309	10.00	0.06	0.00	0.11	0.03	0.03
1165	1310	1314	8.17	0.23	0.00	0.21	0.20	0.20
1169	2127	J-61	10.30	0.01	0.00	0.12	0.02	0.02
1171	1318	2105	16.65	0.44	0.00	0.43	0.75	0.75
1173	2105	1322	10.14	0.14	0.00	0.26	0.30	0.30
1178	40	2115	20.55	0.33	0.00	0.52	1.11	1.11
1179	2115	1328	17.17	0.47	0.00	0.44	0.80	0.80
1182	803	J-81	9.45	0.17	0.00	0.24	0.26	0.26
1185	1333	1337	4.95	0.04	0.00	0.13	0.08	0.08
1189	807	1338	17.12	0.01	0.00	0.11	0.01	0.01
1193	518	192	14.69	0.04	0.00	0.38	0.60	0.60
1195	1060	192	4.94	0.05	0.00	0.13	0.08	0.08
1198	705	1060	18.74	1.23	0.00	0.48	0.94	0.94
1205	492	J-80	10.69	0.02	0.00	0.12	0.02	0.02
1208	828	1356	9.56	0.07	0.00	0.24	0.27	0.27
1210	828	1359	1.10	0.00	0.00	0.03	0.00	0.00
1211	1364	1984	4.02	0.00	0.00	0.05	0.00	0.00
1212	1364	1991	1.45	0.00	0.00	0.02	0.00	0.00
1214	1212	1364	10.07	0.09	0.00	0.26	0.30	0.30
1215	1366	36	1.70	0.00	0.00	0.02	0.00	0.00
1217	1251	1244	54.46	0.23	0.00	0.62	0.34	0.34
1226	17	1375	5.35	0.16	0.00	0.14	0.07	0.07
1236	1387	17	24.95	0.45	0.00	0.64	1.13	1.13
1239	1392	1388	19.03	0.56	0.00	0.49	0.96	0.96
1244	33	1314	29.69	0.20	0.00	0.76	1.57	1.57
1245	937	1456	11.35	0.01	0.00	0.13	0.05	0.05
1247	1456	384	5.45	0.00	0.00	0.06	0.01	0.01
1248	1396I-Valley V		0.00	0.00	0.00	0.00	0.00	0.00
1258	1409	505	10.99	0.38	0.00	0.28	0.35	0.35
1261	1410	657	7.27	0.06	0.00	0.19	0.12	0.12
1269	1023	I-AV-2	0.00	0.00	0.00	0.00	0.00	0.00
1309	1456	881	1.50	0.00	0.00	0.02	0.00	0.00
1315	895	1056	8.21	0.04	0.00	0.21	0.14	0.14
1319	1465	2103	5.61	0.06	0.00	0.14	0.10	0.10
1322	407	509	58.08	0.31	0.00	0.66	0.38	0.38
1330	492	693	0.99	0.00	0.00	0.01	0.00	0.00
1338	1295	1483	24.52	0.07	0.00	0.28	0.08	0.08
1340	899	1484	13.48	0.96	0.00	0.34	0.51	0.51
1351	344	1497	3.50	0.01	0.00	0.09	0.02	0.02
1354	1502	1498	2.10	0.00	0.00	0.01	0.00	0.00
1358	J-133	1502	27.30	0.00	0.00	0.11	0.01	0.01
1371	1517	1519	1.30	0.02	0.00	0.13	0.07	0.07
1384	J-95	1544	56.00	0.06	0.00	0.16	0.02	0.02
1388	1544	1547	30.12	0.00	0.00	0.09	0.00	0.00
1389	1547	J-96	15.50	0.00	0.00	0.04	0.00	0.00
1396	1544	1547	3.38	0.00	0.00	0.02	0.00	0.00
1401	668	1674	79.24	0.03	0.00	0.22	0.02	0.02
1404	1674	102	30.50	0.00	0.00	0.09	0.00	0.00
1406	102	J-1	23.50	0.00	0.00	0.07	0.00	0.00
1409	92	J-164	29.35	0.00	0.00	0.08	0.00	0.00
1423	421	107	70.60	0.02	0.00	0.20	0.02	0.02
1426	34	1575	10.49	0.00	0.00	0.03	0.00	0.00
1427	1576	248	64.66	0.01	0.00	0.18	0.02	0.02
1429	248	1580	43.06	0.00	0.00	0.12	0.01	0.01
1433	51	26	161.67	0.04	0.00	0.46	0.09	0.09
1435	109	51	174.57	0.14	0.00	0.50	0.10	0.10
1440	109	6	501.14	0.34	0.00	1.42	0.71	0.71
1441	6	1647	303.64	0.41	0.00	0.86	0.28	0.28
1443	1647	1637	109.28	0.22	0.00	0.31	0.04	0.04
1454	72	1637	147.10	0.13	0.00	0.42	0.07	0.07
1455	1626	72	172.90	0.36	0.00	0.49	0.10	0.10
1458	1627	1626	530.31	0.60	0.00	1.50	0.78	0.78
1460	797	212	73.81	0.01	0.00	0.21	0.02	0.02
1464	1630	788	134.26	0.25	0.00	0.38	0.06	0.06
1477	1626	1630	331.91	0.37	0.00	0.94	0.33	0.33
1479	Yates Reese	1627	1003.99	2.75	0.00	2.85	2.55	2.55
1481	1630	76	157.55	0.29	0.00	0.45	0.08	0.08
1483	76	1636	227.49	0.38	0.00	0.65	0.16	0.16
1487	1637	75	221.47	0.09	0.00	0.63	0.16	0.16
1492	75	49	115.89	0.03	0.00	0.33	0.05	0.05
1493	49	254	94.79	0.11	0.00	0.27	0.03	0.03
1494	J-35	254	187.96	0.19	0.00	0.53	0.11	0.11
1497	1647	2072	158.97	0.09	0.00	0.45	0.08	0.08
1499	247	1648	125.06	0.25	0.00	0.35	0.05	0.05
1500	343	1657	9.60	0.01	0.00	0.06	0.00	0.00
1509	1658	901	111.49	0.24	0.00	0.71	0.31	0.31

2040 Fireflow - High Level Zone

1526	1674	800	37.74	0.02	0.00	0.24	0.04	0.04
1531	800	174	30.64	0.01	0.00	0.20	0.03	0.03
1534	1679	1689	4.70	0.01	0.00	0.05	0.01	0.01
1544	1689	1690	0.60	0.00	0.00	0.00	0.00	0.00
1548	1698	2092	3.30	0.00	0.00	0.02	0.00	0.00
1552	1699	1700	3.70	0.00	0.00	0.02	0.00	0.00
1553	2138	89	6.40	0.00	0.00	0.04	0.00	0.00
1560	J-53	1710	91.80	0.23	0.00	0.59	0.22	0.22
1562	683	1711	1.00	0.00	0.00	0.01	0.00	0.00
1563	683	1712	2.30	0.00	0.00	0.01	0.00	0.00
1564	1713	1716	43.70	0.04	0.00	0.50	0.23	0.23
1567	1716	1719	0.90	0.00	0.00	0.01	0.00	0.00
1584	1742	1737	16.65	0.95	0.00	0.42	0.75	0.75
1588	1737	1375	7.85	0.07	0.00	0.20	0.19	0.19
1593	1742	1484	25.36	0.00	0.00	0.10	0.01	0.01
1596	1484	975	19.64	0.01	0.00	0.08	0.00	0.00
1611	975	1310	14.68	0.00	0.00	0.06	0.00	0.00
1612	2122	1310	1.28	0.00	0.00	0.01	0.00	0.00
1615	2123	1089	3.51	0.00	0.00	0.02	0.00	0.00
1617	1089	1186	27.19	0.06	0.00	0.31	0.26	0.26
1618	1186	1767	44.84	0.03	0.00	0.29	0.06	0.06
1621	J-135	J-171	40.50	0.01	0.00	0.26	0.05	0.05
1626	1773	1775	31.10	0.01	0.00	0.20	0.03	0.03
1628	1775	1776	14.40	0.00	0.00	0.09	0.01	0.01
1629	1776	1782	6.10	0.00	0.00	0.04	0.00	0.00
1635	1788	1782	2.58	0.00	0.00	0.02	0.00	0.00
1641	1775	1788	14.40	0.00	0.00	0.09	0.01	0.01
1644	1773	1791	1.20	0.00	0.00	0.01	0.00	0.00
1645	1776	1793	1.60	0.00	0.00	0.01	0.00	0.00
1647	1788	1782	3.42	0.00	0.00	0.02	0.00	0.00
1654	1800	1801	1.10	0.00	0.00	0.00	0.00	0.00
1657	18053-inch or		0.50	0.00	0.00	0.00	0.00	0.00
1658	1806	1808	1.90	0.00	0.00	0.02	0.00	0.00
1660	1809	1806	3.90	0.00	0.00	0.02	0.00	0.00
1661	1810	1821	42.38	0.01	0.00	0.17	0.02	0.02
1663	1821	1800	28.73	0.00	0.00	0.12	0.01	0.01
1664	1813	1809	11.00	0.00	0.00	0.04	0.00	0.00
1665	1814	1818	4.10	0.37	0.00	0.42	0.52	0.52
1669	1813	1814	8.23	0.00	0.00	0.05	0.00	0.00
1672	1821	J-112	6.95	0.00	0.00	0.04	0.00	0.00
1673	1826	1823	15.21	0.02	0.00	0.17	0.06	0.06
1676	1827	1071	109.83	0.00	0.00	0.31	0.04	0.04
1677	J-128	1636	14.52	0.00	0.00	0.09	0.01	0.01
1792	844	910	75.92	0.01	0.00	0.31	0.05	0.05
1793	178	1823	15.32	0.00	0.00	0.10	0.02	0.02
1796	1063	1948	1.50	0.03	0.00	0.15	0.09	0.09
1799	1032	J-114	0.54	0.00	0.00	0.01	0.00	0.00
1810	1960	12	59.70	0.00	0.00	0.38	0.20	0.20
1811	12	10	54.30	0.17	0.00	0.35	0.16	0.16
1813	1767	J-117	4.10	0.00	0.00	0.05	0.01	0.01
1818	1737	1968	0.60	0.00	0.00	0.02	0.00	0.00
1820	1823	J-168	26.93	0.09	0.00	0.31	0.25	0.25
1821	175	384	92.85	0.16	0.00	0.38	0.08	0.08
1825	566	1973	6.57	0.06	0.00	0.17	0.13	0.13
1826	1975	1974	0.06	0.00	0.00	0.00	0.00	0.00
1828	1980	J-3	6.08	0.01	0.00	0.07	0.02	0.02
1830	19813-inch or		0.20	0.00	0.00	0.01	0.00	0.00
1831	1767	1984	35.74	0.10	0.00	0.41	0.43	0.43
1834	1986	1985	0.30	0.00	0.00	0.01	0.00	0.00
1835	894	2125	13.88	0.00	0.00	0.09	0.01	0.01
1836	1987	568	2.58	0.02	0.00	0.07	0.02	0.02
1837	1989	1988	0.20	0.00	0.00	0.01	0.00	0.00
1839	2121	1991	33.82	0.09	0.00	0.38	0.39	0.39
1840	2123	2126	217.30	0.10	0.00	0.89	0.36	0.36
1841	994	1994	1.00	0.00	0.00	0.01	0.00	0.00
1842	1997	1996	18.54	0.09	0.00	0.21	0.13	0.13
1843	1184	J-163	18.75	0.04	0.00	0.21	0.05	0.05
1852	2007	2009	29.80	0.07	0.00	0.34	0.31	0.31
1854	2065	2010	39.99	0.25	0.00	0.45	0.53	0.53
1855	J-39	2012	72.27	0.23	0.00	0.46	0.39	0.39
1856	2013	2014	23.80	0.03	0.00	0.27	0.07	0.07
1858	2016	J-81	5.10	0.12	0.00	0.13	0.08	0.08
1860	504	2127	9.51	0.01	0.00	0.11	0.01	0.01
1864	1121	2023	0.80	0.00	0.00	0.01	0.00	0.00
1865	2127	1215	25.30	0.01	0.00	0.16	0.02	0.02
1866	2025	2028	1.80	0.04	0.00	0.18	0.11	0.11
1869	2029	2030	1.00	0.01	0.00	0.10	0.04	0.04
1870	2031	2029	8.70	0.01	0.00	0.22	0.07	0.07
1871	2029	2025	6.10	0.00	0.00	0.16	0.04	0.04
1872	2025	2032	1.20	0.00	0.00	0.03	0.00	0.00
1873	2031	2033	2.90	0.01	0.00	0.07	0.01	0.01
1877	J-124	2031	15.70	0.00	0.00	0.10	0.01	0.01
1883	J-74	2047	1.00	0.00	0.00	0.01	0.00	0.00
1887	2053	582	18.14	0.42	0.00	0.46	0.63	0.63
1892	2129	582	23.24	0.34	0.00	0.59	0.99	0.99
1893	46	590	30.83	0.18	0.00	0.35	0.23	0.23
1894	J-45	2061	1.60	0.00	0.00	0.02	0.00	0.00
1895	J-44	2063	71.87	0.24	0.00	0.46	0.28	0.28
1896	5	361	188.00	0.04	0.00	0.77	0.55	0.55
1898	14	540	3.24	0.00	0.00	0.04	0.01	0.01
1900	163-in or sm		0.20	0.00	0.00	0.00	0.00	0.00
1901	17	18	5.10	0.00	0.00	0.06	0.01	0.01
1904	2088	24	50.70	0.00	0.00	0.58	0.30	0.30
1907	2130	36	14.24	0.02	0.00	0.16	0.08	0.08
1908	38	2083	64.12	0.03	0.00	0.26	0.04	0.04
1909	2014	J-87	49.57	0.24	0.00	0.56	0.79	0.79
1917	J-61	69	1.80	0.00	0.00	0.01	0.00	0.00
1920	295	J-30	32.80	0.01	0.00	0.09	0.00	0.00
1924	2066	86	14.10	0.00	0.00	0.04	0.00	0.00
1927	104	J-112	6.02	0.01	0.00	0.07	0.02	0.02
1930	118	710	508.84	1.71	0.00	1.06	0.68	0.68
1935	2106	247	147.26	0.03	0.00	0.94	1.46	1.46
1936	2122	325	87.59	0.01	0.00	0.25	0.03	0.03
1938	1218	375	689.23	1.23	0.00	1.44	1.66	1.66
1940	1318	396	405.02	0.19	0.00	0.84	0.62	0.62

2040 Fireflow - High Level Zone

1941	480	2138	16.80	0.00	0.00	0.07	0.01	0.01
1947	530	2093	3.47	0.00	0.00	0.04	0.01	0.01
1948	536	2078	67.82	0.10	0.00	0.43	0.35	0.35
1949	565	1084	138.27	0.76	0.00	0.88	1.30	1.30
1950	556	944	10.10	0.02	0.00	0.11	0.04	0.04
1951	543	565	86.92	0.02	0.00	0.55	0.55	0.55
1954	J-84	O-AV-5	0.00	0.00	0.00	0.00	0.00	0.00
1956	584	717	49.33	0.04	0.00	0.20	0.05	0.05
1958	590	584	22.45	0.00	0.00	0.09	0.01	0.01
1960	620	2133	23.10	0.00	0.00	0.15	0.02	0.02
1962	649	1410	288.40	0.19	0.00	1.84	3.61	3.61
1964	661	424	74.50	0.02	0.00	0.30	0.14	0.14
1965	172	665	14.34	0.00	0.00	0.04	0.00	0.00
1967	710	137	460.90	1.12	0.00	0.96	0.56	0.56
1972	791	784	9.66	0.00	0.00	0.06	0.00	0.00
1975	788	797	91.90	0.01	0.00	0.26	0.03	0.03
1977	813	J-120	5.09	0.01	0.00	0.06	0.01	0.01
1978	803	815	6.11	0.01	0.00	0.07	0.02	0.02
1979	1338	817	23.73	0.00	0.00	0.10	0.01	0.01
1982	856	2121	39.12	0.15	0.00	0.44	0.51	0.51
1983	375	860	377.14	0.14	0.00	0.79	0.54	0.54
1984	865	65	83.50	0.20	0.00	0.53	0.51	0.51
1985	14	872	16.67	0.01	0.00	0.19	0.10	0.10
1986	J-3	923	4.16	0.00	0.00	0.03	0.00	0.00
1987	1987	944	19.11	0.05	0.00	0.22	0.13	0.13
1989	945	954	6.08	0.00	0.00	0.07	0.02	0.02
1990	958	J-106	23.91	0.05	0.00	0.27	0.20	0.20
1992	994	1658	199.19	0.16	0.00	0.81	0.31	0.31
1993	60	2101	4.69	0.00	0.00	0.05	0.01	0.01
1995	1049	1003	43.40	0.03	0.00	0.28	0.05	0.05
1996	631	1049	50.00	0.04	0.00	0.32	0.14	0.14
1997	1050	975	5.54	0.00	0.00	0.06	0.01	0.01
1998	1057	518	26.20	0.04	0.00	0.17	0.06	0.06
2000	1084	552	77.41	0.19	0.00	0.49	0.44	0.44
2001	1120	1099	135.21	0.11	0.00	0.86	0.45	0.45
2002	J-79	1107	103.99	0.16	0.00	0.66	0.76	0.76
2003	1130	J-63	44.02	0.07	0.00	0.28	0.16	0.16
2005	398	1137	71.96	0.23	0.00	0.46	0.39	0.39
2010	1180	704	118.72	0.46	0.00	0.76	0.98	0.98
2011	704	1183	99.04	0.11	0.00	1.12	2.84	2.84
2014	2067	1210	668.68	0.89	0.00	1.39	1.57	1.57
2020	1223	1224	27.46	0.07	0.00	0.31	0.26	0.26
2021	1224	827	23.42	0.13	0.00	0.27	0.20	0.20
2022	1229	815	30.00	0.09	0.00	0.34	0.31	0.31
2024	1517	1235	52.73	0.20	0.00	0.34	0.22	0.22
2025	1099	J-82	22.56	0.00	0.00	0.14	0.02	0.02
2027	46	1284	49.99	0.10	0.00	0.32	0.14	0.14
2031	1392	1318	427.18	0.21	0.00	0.89	0.69	0.69
2032	J-87	1322	42.96	0.16	0.00	0.49	0.60	0.60
2033	2091	1328	85.13	0.17	0.00	0.54	0.53	0.53
2035	1337	2110	4.93	0.00	0.00	0.06	0.01	0.01
2036	813	1338	18.71	0.08	0.00	0.21	0.13	0.13
2037	1356	1089	27.28	0.00	0.00	0.31	0.26	0.26
2039	945	1366	18.63	0.06	0.00	0.21	0.13	0.13
2040	1387	979	2.20	0.00	0.00	0.02	0.00	0.00
2042	J-39	1392	453.01	0.45	0.00	0.94	0.76	0.76
2045	1409	407	157.37	0.17	0.00	0.64	0.56	0.56
2048	1465	J-120	24.27	0.01	0.00	0.28	0.21	0.21
2053	1107	1517	61.53	0.12	0.00	0.39	0.29	0.29
2058	J-8	1570	68.77	0.09	0.00	0.28	0.09	0.09
2060	1575	342	33.90	0.00	0.00	0.10	0.00	0.00
2063	1627	J-135	458.69	0.27	0.00	1.30	0.75	0.75
2067	1648	432	75.20	0.29	0.00	0.31	0.10	0.10
2068	1658	421	78.20	0.04	0.00	0.32	0.05	0.05
2070	1101	1679	21.50	0.00	0.00	0.24	0.12	0.12
2071	1698	212	2.76	0.00	0.00	0.02	0.00	0.00
2078	1800	1813	23.93	0.00	0.00	0.10	0.01	0.01
2079	1805	1805	3.90	0.00	0.00	0.02	0.00	0.00
2080	107	1810	55.03	0.01	0.00	0.16	0.01	0.01
2087	1960	700	0.10	0.00	0.00	0.00	0.00	0.00
2089	1973	J-2	21.32	0.06	0.00	0.24	0.17	0.17
2090	1366	1974	9.93	0.02	0.00	0.11	0.04	0.04
2091	36	1975	9.84	0.01	0.00	0.11	0.04	0.04
2092	1981	J-4	0.07	0.00	0.00	0.00	0.00	0.00
2093	1984	994	238.99	0.17	0.00	0.98	0.44	0.44
2095	1986	552	40.98	0.29	0.00	0.46	0.55	0.55
2096	893	1987	27.09	0.01	0.00	0.31	0.26	0.26
2097	1989	842	16.31	0.02	0.00	0.19	0.10	0.10
2102	827	1996	9.70	0.01	0.00	0.11	0.04	0.04
2104	375	2007	304.49	0.44	0.00	1.24	0.68	0.68
2105	2009	2096	14.18	0.00	0.00	0.16	0.08	0.08
2111	2016	1120	138.21	0.01	0.00	0.88	0.47	0.47
2114	1107	1293	37.67	0.18	0.00	0.43	0.47	0.47
2118	J-57	2053	106.55	0.23	0.00	0.68	0.57	0.57
2120	717	2063	34.70	0.01	0.00	0.14	0.02	0.02
2127	2067	1218	766.74	0.67	0.00	1.60	2.03	2.03
2128	2067	1180	195.75	1.43	0.00	1.25	2.47	2.47
2139	2007	2073	270.39	0.02	0.00	1.10	0.55	0.55
2141	2074	483	2.10	0.00	0.00	0.01	0.00	0.00
2145	492	2076	32.34	0.03	0.00	0.21	0.09	0.09
2146	504	2076	0.55	0.00	0.00	0.00	0.00	0.00
2148	693	J-64	23.61	0.01	0.00	0.15	0.02	0.02
2149	2078	865	70.07	0.11	0.00	0.45	0.37	0.37
2150	1991	2078	30.46	0.09	0.00	0.35	0.32	0.32
2152	2079	543	41.04	0.03	0.00	0.26	0.14	0.14
2153	2080	2081	61.66	0.10	0.00	0.70	0.43	0.43
2154	2080	958	13.82	0.04	0.00	0.16	0.07	0.07
2155	2125	J-99	51.81	0.00	0.00	0.33	0.08	0.08
2156	958	2081	22.09	0.06	0.00	0.25	0.18	0.18
2159	2083	2084	28.25	0.02	0.00	0.18	0.07	0.07
2160	2083	916	24.37	0.01	0.00	0.16	0.02	0.02
2161	2084	565	55.65	0.07	0.00	0.36	0.24	0.24
2162	916	2084	14.67	0.01	0.00	0.09	0.01	0.01
2165	2086	578	2.60	0.00	0.00	0.02	0.00	0.00
2166	2132	2086	100.12	0.30	0.00	0.64	0.51	0.51

2040 Fireflow - High Level Zone

2169	2088	620	41.00	0.12	0.00	0.26	0.05	0.05
2170	1214	2088	103.80	0.18	0.00	1.18	1.12	1.12
2173	1410	2090	278.23	0.05	0.00	1.78	3.38	3.38
2174	2090	657	53.33	0.02	0.00	0.22	0.03	0.03
2175	1137	2091	93.29	0.29	0.00	0.60	0.63	0.63
2176	2091	505	49.76	0.06	0.00	0.32	0.20	0.20
2179	2093	817	75.01	0.52	0.00	0.85	1.70	1.70
2180	2093	1229	30.33	0.24	0.00	0.34	0.32	0.32
2181	2095	2094	14.02	0.05	0.00	0.16	0.08	0.08
2183	1223	2095	10.28	0.01	0.00	0.12	0.04	0.04
2184	1183	2095	57.94	0.34	0.00	0.66	1.05	1.05
2187	2097	856	28.07	0.12	0.00	0.32	0.27	0.27
2188	2073	2097	13.89	0.02	0.00	0.16	0.07	0.07
2189	895	2098	7.30	0.01	0.00	0.08	0.02	0.02
2190	2098	2100	17.18	0.03	0.00	0.19	0.11	0.11
2192	954	2130	18.98	0.04	0.00	0.22	0.13	0.13
2193	2100	1050	20.94	0.04	0.00	0.24	0.11	0.11
2194	1056	2100	5.21	0.00	0.00	0.06	0.01	0.01
2195	2101	807	3.25	0.00	0.00	0.02	0.00	0.00
2196	J-82	2101	9.36	0.00	0.00	0.06	0.00	0.00
2198	1293	1290	1.85	0.00	0.00	0.02	0.00	0.00
2199	2103	60	6.99	0.00	0.00	0.08	0.02	0.02
2202	2104	2021	1.10	0.00	0.00	0.03	0.00	0.00
2203	1388	2105	29.11	0.09	0.00	0.33	0.29	0.29
2206	1328	2106	97.40	0.10	0.00	0.62	0.68	0.68
2207	510	2107	21.84	0.05	0.00	0.25	0.17	0.17
2212	2109	2010	9.24	0.01	0.00	0.10	0.04	0.04
2214	2110	1356	21.12	0.07	0.00	0.24	0.16	0.16
2216	2111	1333	24.27	0.01	0.00	0.28	0.21	0.21
2217	1183	2112	38.09	0.14	0.00	0.43	0.48	0.48
2221	2113	803	58.45	0.70	0.00	0.67	1.10	1.10
2223	J-87	2115	29.62	0.10	0.00	0.34	0.30	0.30
2228	1210	2117	590.08	0.40	0.00	1.23	1.25	1.25
2231	1483	2119	4.63	0.00	0.00	0.05	0.01	0.01
2234	J-77	2120	8.70	0.00	0.00	0.10	0.02	0.02
2236	2126	2121	9.36	0.01	0.00	0.11	0.04	0.04
2240	2073	2123	226.52	0.17	0.00	0.93	0.39	0.39
2243	2125	961	21.02	0.00	0.00	0.13	0.01	0.01
2244	2081	2125	60.64	0.03	0.00	0.39	0.10	0.10
2246	2126	1984	204.34	0.09	0.00	0.83	0.33	0.33
2249	J-77	2050	0.20	0.00	0.00	0.00	0.00	0.00
2252	2053	2129	82.40	0.08	0.00	0.53	0.35	0.35
2253	961	2130	18.72	0.06	0.00	0.21	0.13	0.13
2254	2130	1973	18.66	0.01	0.00	0.21	0.13	0.13
2257	214	2132	211.86	0.01	0.00	1.35	2.04	2.04
2259	2133	599	13.70	0.00	0.00	0.09	0.01	0.01
2260	2133	47	3.70	0.00	0.00	0.02	0.00	0.00
2269	2138	481	0.30	0.00	0.00	0.00	0.00	0.00
F-1	J-1	97	17.30	0.00	0.00	0.05	0.00	0.00
F-100	J-112	1814	4.57	0.00	0.00	0.05	0.01	0.01
F-101	2079	J-113	10.86	0.02	0.00	0.12	0.05	0.05
F-102	1023	J-114	17.76	0.00	0.00	0.11	0.01	0.01
F-103	649	J-125	68.90	0.04	0.00	0.44	0.13	0.13
F-104	1103I-Fairview		24.90	0.00	0.00	0.28	0.16	0.16
F-105	J-116	J-115	18.45	0.05	0.00	0.21	0.13	0.13
F-106	2097	J-116	21.55	0.04	0.00	0.24	0.17	0.17
F-108	J-117	56	1.40	0.00	0.00	0.02	0.00	0.00
F-11	1975	J-3	3.58	0.00	0.00	0.04	0.01	0.01
F-111	J-120	807	25.37	0.06	0.00	0.29	0.23	0.23
F-113	2117	J-39	531.98	0.30	0.00	1.11	1.03	1.03
F-116	97	J-122	13.60	0.00	0.00	0.04	0.00	0.00
F-117	J-140	J-145	0.20	0.00	0.00	0.00	0.00	0.00
F-119	J-84	J-139	1.20	0.00	0.00	0.01	0.00	0.00
F-121	J-140	J-138	40.12	0.00	0.00	0.11	0.01	0.01
F-122	Main Reser	J-126	2563.70	0.22	0.00	3.23	2.01	2.01
F-124	O-AV-1	2083	0.00	0.00	0.00	0.00	0.00	0.00
F-125	O-AV-2	906	0.00	0.00	0.00	0.00	0.00	0.00
F-127	J-127	295	150.60	0.18	0.00	0.43	0.08	0.08
F-128	J-127	J-128	41.22	0.03	0.00	0.12	0.01	0.01
F-130	J-128	1831	2.80	0.00	0.00	0.02	0.00	0.00
F-131	1071	J-129	168.41	0.05	0.00	0.48	0.09	0.09
F-132	J-129	668	150.31	0.11	0.00	0.43	0.08	0.08
F-133	1513	J-133	28.70	0.00	0.00	0.12	0.01	0.01
F-134	J-122	J-132	9.30	0.00	0.00	0.03	0.00	0.00
F-135	1502	J-124	20.00	0.00	0.00	0.08	0.00	0.00
F-136	J-124	J-131	0.90	0.00	0.00	0.01	0.00	0.00
F-138-CV	Kennicott	J-53	795.70	0.32	0.00	1.27	0.41	0.41
F-140	O-AV-4	686	0.00	0.00	0.00	0.00	0.00	0.00
F-143	I-AV-5	J-63	0.00	0.00	0.00	0.00	0.00	0.00
F-144	O-AV-6	1134	0.00	0.00	0.00	0.00	0.00	0.00
F-146	J-73	J-134	2.00	0.00	0.00	0.01	0.00	0.00
F-147	J-64	J-141	0.80	0.00	0.00	0.01	0.00	0.00
F-148	J-134	O-RV-2	0.00	0.00	0.00	0.00	0.00	0.00
F-149	J-143	O-RV-1	0.00	0.00	0.00	0.00	0.00	0.00
F-15	J-126	J-91	2198.30	0.26	0.00	2.77	1.51	1.51
F-150-XXCV	J-141	J-134						
F-151	J-139	J-142	0.40	0.00	0.00	0.00	0.00	0.00
F-152	1570	J-144	3.10	0.00	0.00	0.01	0.00	0.00
F-153-XXCV	J-143	J-144						
F-154	I-RV-1	J-144	0.00	0.00	0.00	0.00	0.00	0.00
F-157	I-RV-2	J-141	0.00	0.00	0.00	0.00	0.00	0.00
F-1570	1716	1103	33.10	0.06	0.00	0.21	0.03	0.03
F-158	J-145I-18th St		0.00	0.00	0.00	0.00	0.00	0.00
F-159	J-145	J-146	0.00	0.00	0.00	0.00	0.00	0.00
F-160-XXCV	J-146	J-147						
F-161	J-146O-18th St		0.00	0.00	0.00	0.00	0.00	0.00
F-162	J-147	J-142	0.00	0.00	0.00	0.00	0.00	0.00
F-164	I-18th St	J-147	0.00	0.00	0.00	0.00	0.00	0.00
F-165	J-156	J-155	54.20	0.22	0.00	0.61	0.29	0.29
F-166	66	J-110	77.53	0.58	0.00	0.88	1.80	1.80
F-167	J-156	J-153	258.19	1.23	0.00	0.73	0.26	0.26
F-168	J-152	J-150	9.15	0.00	0.00	0.06	0.00	0.00
F-169	J-88	J-154	375.39	0.24	0.00	1.06	0.52	0.52
F-170	J-155	J-151	22.40	0.28	0.00	0.25	0.06	0.06
F-171	J-155	J-157	3.00	0.19	0.00	0.31	0.29	0.29

2040 Fireflow - High Level Zone

P-172	J-154	J-156	344.99	0.69	0.00	0.98	0.44	0.44
P-173	J-6	J-148	12.30	12.07	0.00	1.26	4.53	4.53
P-174	J-153	J-149	6.10	0.00	0.00	0.04	0.00	0.00
P-175	J-152	J-150	0.65	0.00	0.00	0.00	0.00	0.00
P-176	J-64	2076	16.01	0.02	0.00	0.10	0.02	0.02
P-177	J-160	1057	14.59	0.02	0.00	0.09	0.02	0.02
P-178	1513	J-159	10.10	0.00	0.00	0.11	0.03	0.03
P-179	J-162	J-160	23.19	0.01	0.00	0.15	0.02	0.02
P-18	J-135I-South En		414.99	0.04	0.00	1.18	0.50	0.50
P-180	J-162	J-95	84.70	0.04	0.00	0.24	0.03	0.03
P-181	1818	J-161	0.40	0.00	0.00	0.04	0.01	0.01
P-182	J-163	2003	0.20	0.00	0.00	0.00	0.00	0.00
P-183	J-164	J-143	17.00	0.00	0.00	0.05	0.00	0.00
P-184	J-163	J-177	12.05	0.00	0.00	0.08	0.01	0.01
P-186	1710	J-55	82.50	0.17	0.00	0.53	0.18	0.18
P-188	J-158	31	0.73	0.00	0.00	0.00	0.00	0.00
P-19	34	33	30.39	0.02	0.00	0.78	1.63	1.63
P-190	J-167	2074	5.50	0.00	0.00	0.02	0.00	0.00
P-193-XX	432	780						
P-194	1580	76	34.16	0.01	0.00	0.10	0.00	0.00
P-195	J-170	J-176	1.70	0.00	0.00	0.00	0.00	0.00
P-196	J-168	J-21	11.05	0.01	0.00	0.13	0.05	0.05
P-197	J-168	1980	11.08	0.00	0.00	0.07	0.00	0.00
P-198	O-South En	J-88	414.99	1.91	0.00	1.18	0.62	0.62
P-199	J-171	1773	37.00	0.02	0.00	0.24	0.04	0.04
P-2	J-1	101	0.40	0.00	0.00	0.00	0.00	0.00
P-20	213	1576	66.96	0.00	0.00	0.19	0.02	0.02
P-200	J-91	J-169	549.44	0.03	0.00	0.69	0.12	0.12
P-201	J-153	J-173	126.49	10.49	0.00	0.81	0.50	0.50
P-203	J-177	J-164	8.25	0.00	0.00	0.05	0.00	0.00
P-25	J-30	2066	20.00	0.00	0.00	0.06	0.00	0.00
P-29	2063	J-8	96.17	0.16	0.00	0.39	0.16	0.16
P-3	O-CentralI	J-6	26.19	2.73	0.00	0.30	0.11	0.11
P-30	J-42	J-35	201.56	0.16	0.00	0.57	0.13	0.13
P-31	J-8	54	16.70	0.00	0.00	0.07	0.00	0.00
P-33	2072	J-42	142.47	0.00	0.00	0.40	0.07	0.07
P-34	1699	J-42	69.10	0.02	0.00	0.20	0.02	0.02
P-36	1322	2091	48.20	0.24	0.00	0.55	0.75	0.75
P-4	1570	J-7	52.37	0.06	0.00	0.21	0.05	0.05
P-40	10	J-44	37.60	0.08	0.00	0.24	0.08	0.08
P-42	J-45	J-44	44.37	0.04	0.00	0.28	0.11	0.11
P-43	J-132	J-170	4.50	0.00	0.00	0.01	0.00	0.00
P-44	J-55	28	3.80	0.00	0.00	0.02	0.00	0.00
P-47	2132	J-57	108.95	0.02	0.00	0.70	0.59	0.59
P-48	41	J-90	0.10	0.00	0.00	0.00	0.00	0.00
P-49	J-57	2051	0.10	0.00	0.00	0.00	0.00	0.00
P-50	J-57	2052	0.10	0.00	0.00	0.00	0.00	0.00
P-51	O-18th St	J-142	0.00	0.00	0.00	0.00	0.00	0.00
P-53	1974	J-4	3.59	0.00	0.00	0.04	0.01	0.01
P-54	923	J-4	0.54	0.00	0.00	0.01	0.00	0.00
P-57	1217	I-AV-6	0.00	0.00	0.00	0.00	0.00	0.00
P-58	69	1217	7.25	0.00	0.00	0.05	0.00	0.00
P-6	J-88	J-11	4.60	0.00	0.00	0.03	0.00	0.00
P-61	J-58	68	20.10	0.00	0.00	0.13	0.01	0.01
P-62	J-61	J-136	1.40	0.00	0.00	0.01	0.00	0.00
P-63	J-127	J-158	14.93	0.00	0.00	0.04	0.00	0.00
P-64	54	J-27	11.00	0.00	0.00	0.04	0.00	0.00
P-65	597	J-67	31.89	0.03	0.00	0.20	0.06	0.06
P-67	J-67	J-71	28.39	0.01	0.00	0.18	0.02	0.02
P-69	J-71	J-73	24.69	0.02	0.00	0.16	0.05	0.05
P-7	J-154	J-152	20.30	0.00	0.00	0.13	0.02	0.02
P-71	J-63	J-123	41.82	0.00	0.00	0.27	0.05	0.05
P-73	1679	J-74	12.60	0.01	0.00	0.14	0.04	0.04
P-74	J-74	J-77	9.90	0.00	0.00	0.11	0.03	0.03
P-75	I-AV-3	2120	0.00	0.00	0.00	0.00	0.00	0.00
P-76	J-78	408	77.23	0.08	0.00	0.49	0.31	0.31
P-77	J-79	1130	55.52	0.18	0.00	0.35	0.24	0.24
P-78	J-80	504	19.85	0.01	0.00	0.13	0.04	0.04
P-79	J-82	1396	2.40	0.00	0.00	0.03	0.00	0.00
P-80	1388	J-87	30.01	0.07	0.00	0.34	0.11	0.11
P-81	92	J-62	1.80	0.00	0.00	0.01	0.00	0.00
P-82	597	J-84	5.00	0.00	0.00	0.03	0.00	0.00
P-83	J-123	J-140	41.22	0.00	0.00	0.12	0.01	0.01
P-84	J-93	1971	0.20	0.00	0.00	0.00	0.00	0.00
P-86	J-126I-High Lev		360.00	12.03	0.00	4.08	30.96	30.96
P-87	J-94	526	39.03	0.13	0.00	0.25	0.12	0.12
P-88	J-93	J-94	38.11	0.00	0.00	0.43	0.35	0.35
P-89	J-96inter-tie		4.70	0.00	0.00	0.01	0.00	0.00
P-9	J-2	2098	19.39	0.05	0.00	0.22	0.14	0.14
P-90	174	J-105	27.24	0.00	0.00	0.08	0.00	0.00
P-91	J-20	1981	2.07	0.00	0.00	0.02	0.00	0.00
P-92	J-21	J-20	7.45	0.00	0.00	0.08	0.02	0.02
P-93	J-99	568	0.82	0.00	0.00	0.01	0.00	0.00
P-94	J-99	556	40.22	0.01	0.00	0.26	0.05	0.05
P-95	J-99	566	8.87	0.00	0.00	0.06	0.00	0.00
P-96	J-100	2080	112.29	0.05	0.00	0.72	0.32	0.32
P-97	J-106	894	15.48	0.03	0.00	0.18	0.09	0.09
P-98	J-173I-CentralI		26.19	0.01	0.00	0.17	0.03	0.03
P-99	944	J-111	23.31	0.07	0.00	0.26	0.19	0.19
Valley Vie	O-Valley VYankis (Va		0.00	0.00	0.00	0.00	0.00	0.00
~@18th St -RV	I-18th St O-18th St							
~@AV-1-XX	I-AV-1 O-AV-1							
~@AV-2-XX	I-AV-2 O-AV-2							
~@AV-3-XX	I-AV-3 O-AV-3							
~@AV-4-XX	I-AV-4 O-AV-4							
~@AV-5-XX	I-AV-5 O-AV-5							
~@AV-6-XX	I-AV-6 O-AV-6							
~@High Lev-RV	I-High LevO-High Lev							
~@Valley V-RV	I-Valley VO-Valley V							

N O D E R E S U L T S

N O D E N O D E E X T E R N A L H Y D R A U L I C N O D E P R E S S U R E N O D E

2040 Fireflow - High Level Zone

NAME	TITLE	DEMAND gpm	GRADE ft	ELEVATION ft	HEAD ft	PRESSURE psi
5		0.40	396.98	243.40	153.58	66.55
6		9.10	397.00	244.40	152.60	66.12
9		3.80	396.47	205.80	190.67	82.62
10		12.90	396.47	213.70	182.77	79.20
11		0.20	396.64	236.90	159.74	69.22
12		5.20	396.64	236.50	160.14	69.39
13		0.20	395.99	198.90	197.09	85.41
14		3.00	396.00	201.40	194.60	84.33
15		4.20	395.25	186.10	209.15	90.63
16		2.20	395.25	186.10	209.15	90.63
17		14.50	393.64	175.70	217.94	94.44
18		3.10	393.64	171.90	221.74	96.09
19		2.00	393.58	165.30	228.28	98.92
22		4.70	396.41	186.50	209.91	90.96
23		10.70	396.40	187.70	208.70	90.44
24		2.70	634.28	604.50	29.78	12.90
26		12.20	397.15	240.30	156.85	67.97
28		2.80	397.17	322.60	74.57	32.32
29		1.00	397.17	319.00	78.17	33.88
31		8.70	395.84	216.80	179.04	77.58
32		7.90	395.84	214.70	181.14	78.49
33		0.70	394.46	183.00	211.46	91.63
34		5.00	394.48	183.50	210.98	91.42
36		6.10	394.65	194.40	200.25	86.77
37		0.80	396.08	319.00	77.08	33.40
38		5.10	396.08	290.50	105.58	45.75
40		7.20	396.44	190.80	205.64	89.11
41		0.40	396.51	219.10	177.41	76.88
43		0.20	396.21	253.50	142.71	61.84
46		9.10	396.37	229.90	166.47	72.14
47		2.90	634.16	544.40	89.76	38.89
48		0.80	634.16	543.60	90.56	39.24
49		19.70	396.25	243.00	153.25	66.41
50		1.40	396.25	244.20	152.05	65.89
51		9.70	397.19	240.00	157.19	68.12
52		2.10	397.19	261.50	135.69	58.80
54		4.90	395.99	209.30	186.69	80.90
56		1.40	396.25	193.00	203.25	88.07
59		0.50	396.17	252.50	143.67	62.26
60		1.80	396.17	252.90	143.27	62.08
65		9.60	395.75	192.40	203.35	88.12
66		3.10	395.45	191.30	204.15	88.46
68		6.10	395.15	205.20	189.95	82.31
69		4.40	395.15	208.70	186.45	80.79
70		1.10	397.19	285.20	111.99	48.53
72		25.40	396.50	255.00	141.50	61.32
75		21.00	396.28	247.70	148.58	64.38
76		48.80	396.19	256.00	140.19	60.75
83		0.20	395.65	221.90	173.75	75.29
85		0.20	395.65	222.10	173.55	75.20
86		7.70	395.65	222.40	173.25	75.07
89		6.40	395.81	225.60	170.21	73.76
92		8.40	395.15	192.40	202.75	87.86
97		3.40	394.58	173.90	220.68	95.63
98		0.30	394.58	174.00	220.58	95.58
101		0.40	394.58	174.30	220.28	95.45
102		6.70	394.58	176.00	218.58	94.72
103		0.30	394.58	175.70	218.88	94.85
104		6.70	395.75	179.70	216.05	93.62
107		6.70	395.76	183.60	212.16	91.94
108		2.80	395.76	183.60	212.16	91.94
109		12.40	397.33	236.20	161.13	69.82
118		25.50	398.12	192.50	205.62	89.10
119		5.60	396.69	217.70	178.99	77.56
121		3.60	396.83	230.70	166.13	71.99
137		13.20	395.29	180.00	215.29	93.29
166		9.80	394.52	182.90	211.62	91.70
172		6.20	394.54	174.10	220.44	95.53
174		3.40	394.55	175.70	218.85	94.83
175		11.00	394.72	183.60	211.12	91.49
178		3.60	394.73	183.60	211.13	91.49
192		11.80	395.12	183.60	211.52	91.66
201		5.60	395.17	178.30	216.87	93.98
212		5.90	396.22	256.30	139.92	60.63
213		3.50	396.21	253.50	142.71	61.84
214		7.60	396.90	230.10	166.80	72.28
224		5.80	396.50	224.20	172.30	74.66
247		22.00	395.50	192.10	203.40	88.14
248		13.10	396.20	248.60	147.60	63.96
253		8.50	396.20	240.90	155.30	67.30
254		30.10	396.14	230.80	165.34	71.65
295		34.50	395.66	210.10	185.56	80.41
325		7.70	394.48	183.90	210.58	91.25
342		5.10	394.47	165.40	229.07	99.26
343		10.20	394.47	163.20	231.27	100.22
344		4.60	394.47	164.20	230.27	99.78
346		0.90	394.47	165.60	228.87	99.18
356		14.00	396.52	219.10	177.42	76.88
361		16.90	396.95	243.10	153.85	66.67
375		7.60	396.98	230.50	166.48	72.14
384		16.10	394.56	183.20	211.36	91.59
385		1.80	394.55	183.60	210.95	91.41
396		1.60	396.43	221.20	175.23	75.93
398		4.60	396.33	220.50	175.83	76.19
407		8.20	395.95	226.99	168.96	73.22
408		4.30	395.82	223.30	172.52	74.76
421		7.60	395.78	184.20	211.58	91.68
424		1.80	395.25	189.90	205.35	88.98
432		65.20	394.96	184.10	210.86	91.37
468		29.10	395.46	204.20	191.26	82.88
473		2.50	394.54	178.30	216.24	93.71
474		3.10	395.82	210.70	185.12	80.22

2040 Fireflow - High Level Zone

480	10.80	395.82	219.70	176.12	76.32
481	0.30	395.82	220.90	174.92	75.80
483	2.10	396.52	214.00	182.52	79.09
492	12.90	395.20	195.50	199.70	86.54
504	9.80	395.17	192.80	202.37	87.69
505	8.70	395.75	197.20	198.55	86.04
509	14.40	395.64	200.00	195.64	84.78
510	7.90	396.12	189.60	206.52	89.49
512	10.00	396.12	184.80	211.32	91.57
513	1.10	395.22	178.80	216.42	93.78
518	4.60	395.17	182.20	212.97	92.29
526	19.20	395.04	201.80	193.24	83.74
530	5.00	396.67	220.30	176.37	76.43
536	6.30	396.16	201.90	194.26	84.18
540	1.30	396.00	202.30	193.70	83.94
543	3.30	395.97	210.90	185.07	80.20
544	2.50	396.06	216.10	179.96	77.98
552	4.90	395.00	191.50	203.50	88.18
556	6.00	394.71	206.10	188.61	81.73
565	4.30	395.96	210.80	185.16	80.23
566	2.30	394.73	204.60	190.13	82.39
568	3.40	394.73	206.30	188.43	81.65
569	10.60	394.53	178.30	216.23	93.70
573	2.20	394.53	179.00	215.53	93.39
578	2.60	396.58	280.80	115.78	50.17
579	5.50	395.52	205.50	190.02	82.34
582	7.20	396.21	212.80	183.41	79.48
584	7.30	396.19	207.60	188.59	81.72
590	8.40	396.20	208.60	187.60	81.29
597	5.60	396.26	222.20	174.06	75.42
599	8.30	634.15	592.40	41.75	18.09
601	2.10	634.15	577.30	56.85	24.64
619	3.30	634.15	559.00	75.15	32.57
620	15.00	634.16	583.00	51.16	22.17
623	2.90	634.16	588.00	46.16	20.00
628	3.60	605.47	420.40	185.07	80.20
631	4.60	605.45	382.80	222.65	96.48
632	1.40	605.41	455.20	150.21	65.09
642	2.70	605.45	304.60	300.85	130.37
649	2.70	605.62	392.70	212.92	92.27
657	12.60	605.37	331.20	274.17	118.81
661	8.20	395.26	190.90	204.36	88.56
665	11.70	394.54	174.40	220.14	95.40
668	18.20	394.61	182.30	212.31	92.00
675	2.30	394.61	180.60	214.01	92.74
676	4.10	395.99	206.70	189.29	82.03
682	0.80	395.99	208.20	186.79	80.94
683	5.60	395.19	200.30	194.89	84.45
686	1.50	395.90	278.90	117.00	50.70
693	10.30	395.20	197.40	197.80	85.71
700	0.10	396.64	237.50	159.14	68.96
704	3.70	396.98	190.10	206.88	89.65
705	7.20	396.40	185.50	210.90	91.39
710	22.00	396.41	197.50	198.91	86.19
717	9.90	396.16	204.90	191.26	82.88
718	0.20	395.50	191.20	204.30	88.53
726	2.40	395.20	190.00	205.20	88.92
780	55.20	395.22	195.00	200.22	86.76
781	0.10	396.22	252.20	144.02	62.41
784	8.40	396.23	259.80	136.43	59.12
788	24.50	396.24	258.50	137.74	59.69
791	7.60	396.23	256.00	140.23	60.77
792	0.60	396.23	254.90	141.33	61.24
797	6.20	396.23	255.30	140.93	61.07
800	5.80	394.56	177.30	217.26	94.15
802	1.30	394.56	178.00	216.56	93.84
803	9.70	396.34	217.90	178.44	77.32
807	11.50	396.17	272.60	123.57	53.55
808	7.30	396.43	215.50	180.93	78.40
813	6.90	396.23	244.90	151.33	65.58
815	5.40	396.33	219.20	177.13	76.76
817	6.60	396.15	275.20	120.95	52.41
827	9.70	396.34	186.80	209.54	90.80
828	4.40	396.43	192.50	203.93	88.37
831	2.90	396.13	216.90	179.23	77.66
842	5.20	396.08	234.00	162.08	70.23
844	7.10	396.10	260.00	136.10	58.98
856	4.40	396.38	194.40	201.98	87.53
860	3.90	396.84	230.20	166.64	72.21
865	4.10	395.95	195.90	200.05	86.69
868	4.20	395.97	197.00	198.97	86.22
872	1.60	395.99	199.50	196.49	85.15
881	4.00	394.56	199.80	194.76	84.40
885	4.60	394.57	204.20	190.37	82.50
893	4.10	394.76	198.10	196.66	85.22
894	1.60	394.73	206.30	188.43	81.65
899	9.80	395.46	192.10	203.36	88.12
901	9.50	395.58	189.00	206.58	89.52
906	3.40	396.08	292.50	103.58	44.89
910	2.50	396.08	294.90	101.18	43.85
916	8.10	396.04	222.40	173.64	75.24
922	1.60	396.04	238.30	157.74	68.35
923	5.40	394.63	182.20	212.43	92.05
929	1.10	394.64	181.60	213.04	92.32
937	5.30	394.58	183.80	210.78	91.34
944	5.90	394.69	196.50	198.19	85.88
945	5.40	394.71	192.00	202.71	87.84
954	4.30	394.71	193.70	201.01	87.10
958	10.00	394.82	201.60	193.22	83.73
961	2.30	394.73	205.40	189.33	82.04
962	6.00	394.52	178.30	215.22	93.26
964	0.40	394.52	179.40	215.12	93.22
975	10.50	394.49	184.50	209.99	91.00
979	2.20	394.09	173.70	220.39	95.50
994	8.60	395.98	192.30	203.68	88.26

2040 Fireflow - High Level Zone

1003	8.30	605.38	435.80	169.58	73.48
1023	10.00	605.37	389.60	215.77	93.50
1024	4.70	605.54	408.40	197.14	85.43
1032	6.80	605.37	455.00	150.37	65.16
1049	5.20	605.41	421.50	183.91	79.69
1050	9.50	394.49	188.20	206.29	89.39
1053	5.90	394.48	183.20	211.28	91.55
1056	3.00	394.54	192.00	202.54	87.77
1057	8.90	395.21	179.20	216.01	93.60
1060	9.80	395.17	196.50	198.67	86.09
1063	2.50	395.17	238.10	157.07	68.06
1064	4.40	394.72	181.30	213.42	92.48
1071	4.30	394.77	190.50	204.27	88.52
1084	17.80	395.19	198.50	196.69	85.23
1085	6.60	396.43	197.60	198.83	86.16
1089	3.60	396.35	190.70	205.65	89.11
1099	15.70	396.18	233.90	162.28	70.32
1100	1.10	466.48	339.70	126.78	54.94
1101	2.30	466.48	323.20	143.28	62.09
1103	8.20	634.13	346.40	287.73	124.68
1104	0.70	466.47	285.50	180.97	78.42
1107	4.80	395.62	211.40	184.22	79.83
1120	2.10	396.29	222.90	173.39	75.13
1121	3.30	395.14	205.30	189.84	82.27
1122	1.20	395.14	204.40	190.74	82.66
1125	3.00	395.61	205.00	190.61	82.60
1130	8.50	395.61	225.00	170.61	73.93
1134	10.70	396.16	202.90	193.26	83.74
1137	6.50	396.10	202.10	194.00	84.07
1156	9.30	396.31	184.90	211.41	91.61
1180	6.10	397.45	195.40	202.05	87.55
1181	5.20	396.39	186.00	210.39	91.17
1183	3.00	396.87	190.20	206.67	89.56
1184	8.70	395.19	189.70	205.49	89.05
1186	4.90	396.28	191.30	204.98	88.83
1210	6.80	397.99	215.60	182.39	79.03
1211	0.40	634.22	564.40	69.82	30.26
1214	3.10	634.46	607.60	26.86	11.64
1215	2.70	395.15	200.80	194.35	84.22
1217	6.10	395.14	207.80	187.34	81.18
1218	9.80	398.20	217.60	180.60	78.26
1223	4.10	396.55	187.20	209.35	90.72
1224	5.80	396.47	187.60	208.87	90.51
1229	5.90	396.42	224.40	172.02	74.54
1232	10.30	396.34	183.90	212.44	92.06
1235	7.80	395.31	197.20	198.11	85.85
1239	2.70	466.47	265.90	200.57	86.91
1240	0.20	634.46	608.90	25.56	11.07
1244	8.00	635.01	591.00	44.01	19.07
1251	9.70	635.24	622.30	12.94	5.61
1262	0.40	605.33	349.90	255.43	110.69
1270	2.60	396.39	184.30	212.09	91.90
1277	9.10	605.33	340.00	265.33	114.98
1284	7.50	396.27	224.00	172.27	74.65
1290	10.00	395.44	207.20	188.24	81.57
1293	5.20	395.44	206.60	188.84	81.83
1295	6.10	395.40	200.40	195.00	84.50
1298	0.90	396.29	224.20	172.09	74.57
1309	10.00	394.90	185.00	209.90	90.96
1310	7.80	394.49	184.40	210.09	91.04
1314	6.30	394.26	183.00	211.26	91.54
1318	5.50	396.62	221.20	175.42	76.02
1322	4.90	396.05	194.60	201.45	87.29
1328	4.90	395.64	192.30	203.34	88.11
1333	4.60	396.46	191.30	205.16	88.90
1337	5.30	396.42	192.80	203.62	88.24
1338	12.10	396.15	257.70	138.45	60.00
1356	3.40	396.35	190.80	205.55	89.07
1359	1.10	396.42	193.30	203.12	88.02
1364	4.60	396.15	193.90	202.25	87.64
1366	7.00	394.65	190.60	204.05	88.42
1375	13.20	393.48	168.30	225.18	97.58
1387	4.40	394.09	182.40	211.69	91.73
1388	8.20	396.28	200.40	195.88	84.88
1392	6.80	396.83	220.30	176.53	76.50
1396	2.40	396.17	308.10	88.07	38.16
1409	7.80	396.12	222.20	173.92	75.37
1410	2.90	605.43	392.50	212.93	92.27
1456	4.40	394.56	183.20	211.36	91.59
1465	4.30	396.23	235.70	160.53	69.57
1483	7.90	395.33	193.40	201.93	87.50
1484	19.20	394.50	183.60	210.90	91.39
1497	3.50	394.46	167.20	227.26	98.48
1498	2.10	605.33	396.40	208.93	90.54
1502	5.20	605.33	385.30	220.03	95.35
1513	1.00	605.33	339.40	265.93	115.24
1517	7.50	395.50	205.40	190.10	82.38
1519	1.30	395.48	211.30	184.18	79.81
1524	1.70	634.28	615.60	18.68	8.09
1544	22.50	395.14	194.80	200.34	86.81
1547	18.00	395.14	208.00	187.14	81.09
1570	13.30	395.90	195.50	200.40	86.84
1575	10.60	394.48	171.60	222.88	96.58
1576	2.30	396.21	253.70	142.51	61.75
1580	8.90	396.20	245.80	150.40	65.17
1626	25.50	396.86	272.90	123.96	53.71
1627	15.00	397.45	289.00	108.45	47.00
1630	40.10	396.48	266.70	129.78	56.24
1636	242.01	395.81	245.70	150.11	65.05
1637	34.90	396.37	249.10	147.27	63.82
1647	35.40	396.59	236.20	160.39	69.50
1648	35.80	395.25	187.30	207.95	90.11
1657	9.60	394.47	176.60	217.87	94.41
1658	9.50	395.82	185.90	209.92	90.97
1674	11.00	394.58	178.00	216.58	93.85

6" and 2"

2040 Fireflow - High Level Zone

1679	4.20	466.48	317.70	148.78	64.47
1689	4.10	466.47	323.60	142.87	61.91
1690	0.60	466.47	319.70	146.77	63.60
1698	7.10	396.22	256.80	139.42	60.42
1699	7.80	396.51	218.90	177.61	76.97
1700	3.70	396.51	216.20	180.31	78.14
1710	9.30	397.35	303.90	93.45	40.49
1711	1.00	395.19	209.80	185.39	80.34
1712	2.30	395.19	268.50	126.69	54.90
1713	2.20	634.22	571.10	63.12	27.35
1716	9.70	634.18	533.50	100.68	43.63
1719	0.90	634.18	516.50	117.68	51.00
1737	8.20	393.55	166.60	226.95	98.34
1742	13.20	394.50	183.60	210.90	91.39
1767	5.00	396.25	193.40	202.85	87.90
1773	4.70	397.16	272.20	124.96	54.15
1775	2.30	397.15	270.10	127.05	55.06
1776	6.70	397.15	269.20	127.95	55.44
1782	12.10	397.15	269.10	128.05	55.49
1788	8.40	397.15	269.00	128.15	55.53
1791	1.20	397.16	273.40	123.76	53.63
1793	1.60	397.15	270.60	126.55	54.84
1799	4.20	398.12	201.40	196.72	85.25
1800	3.70	395.74	166.10	229.64	99.51
1801	1.10	395.74	173.70	222.04	96.22
1805	3.40	395.74	179.70	216.04	93.62
1806	2.00	395.74	173.10	222.64	96.48
1808	1.90	395.74	178.80	215.94	93.57
1809	3.20	395.74	172.30	223.44	96.82
1810	6.00	395.75	178.50	216.25	93.71
1813	4.70	395.74	171.10	224.64	97.34
1814	8.70	395.74	167.10	228.64	99.08
1818	3.70	395.37	178.50	216.87	93.98
1821	6.70	395.74	169.80	225.94	97.91
1823	3.60	394.73	182.50	212.23	91.97
1826	5.20	394.75	183.30	211.45	91.63
1827	9.30	394.77	192.90	201.87	87.48
1831	2.80	395.81	234.10	161.71	70.07
1948	1.50	395.14	234.90	160.24	69.44
1960	6.20	396.64	237.60	159.04	68.92
1961	4.60	396.96	190.10	206.86	89.64
1968	0.60	393.55	164.90	228.65	99.08
1971	0.20	395.17	185.30	209.87	90.94
1973	3.90	394.67	198.40	196.27	85.05
1974	6.40	394.63	187.50	207.13	89.76
1975	6.20	394.63	186.60	208.03	90.15
1980	5.00	394.64	180.20	214.44	92.92
1981	1.80	394.63	183.10	211.53	91.66
1984	5.10	396.15	194.10	202.05	87.56
1985	0.30	395.28	195.20	200.08	86.70
1986	5.70	395.28	194.50	200.78	87.01
1987	5.40	394.74	198.50	196.24	85.04
1988	0.20	396.10	219.50	176.60	76.53
1989	2.10	396.10	222.30	173.80	75.31
1991	4.80	396.15	194.20	201.95	87.51
1994	1.00	395.98	190.70	205.28	88.96
1996	5.70	396.33	189.80	206.53	89.50
1997	5.60	396.42	191.50	204.92	88.80
2003	0.20	395.15	185.20	209.95	90.98
2007	4.30	396.54	200.60	195.94	84.91
2009	5.60	396.47	196.90	199.57	86.48
2010	6.60	396.82	191.70	205.12	88.89
2012	5.60	397.06	199.00	198.06	85.83
2013	4.90	396.48	200.10	196.38	85.10
2014	8.10	396.44	193.20	203.24	88.07
2016	7.30	396.30	222.30	174.00	75.40
2021	1.10	396.16	204.20	191.96	83.18
2023	0.80	395.14	206.90	188.24	81.57
2025	3.10	605.32	455.60	149.72	64.88
2028	1.80	605.27	520.90	84.37	36.56
2029	1.60	605.32	449.00	156.32	67.74
2030	1.00	605.31	460.10	145.21	62.92
2031	4.10	605.33	430.90	174.43	75.58
2032	1.20	605.32	484.00	121.32	52.57
2033	2.90	605.32	474.20	131.12	56.82
2047	1.00	466.47	309.00	157.47	68.24
2050	0.20	466.47	301.10	165.37	71.66
2051	0.10	396.87	229.60	167.27	72.48
2052	0.10	396.87	229.90	166.97	72.35
2053	6.00	396.64	220.60	176.04	76.28
2061	1.60	396.43	208.20	188.23	81.57
2063	10.40	396.15	205.00	191.15	82.83
2065	7.70	397.07	198.90	198.17	85.88
2066	5.70	395.65	222.20	173.45	75.16
2067	11.20	398.88	216.20	182.68	79.16
2072	10.70	396.50	221.90	174.60	75.66
2073	4.30	396.52	199.80	196.72	85.24
2074	3.40	396.52	220.90	175.62	76.10
2076	11.30	395.17	204.40	190.77	82.67
2078	5.30	396.06	199.20	196.86	85.30
2079	5.60	396.00	203.10	192.90	83.59
2080	6.70	394.86	191.60	203.26	88.08
2081	5.90	394.76	198.70	196.06	84.96
2083	11.50	396.05	255.40	140.65	60.95
2084	7.50	396.03	224.10	171.93	74.50
2086	7.60	396.58	230.30	166.28	72.06
2088	12.10	634.28	604.50	29.78	12.90
2090	12.90	605.38	391.30	214.08	92.77
2091	6.60	395.81	195.30	200.51	86.89
2092	3.20	396.22	251.60	144.62	62.67
2093	8.30	396.67	236.00	160.67	69.62
2094	9.30	396.49	188.50	207.99	90.13
2095	6.50	396.53	187.60	208.93	90.54
2096	4.60	396.46	196.50	199.96	86.65
2097	6.80	396.50	202.50	194.00	84.07

2040 Fireflow - High Level Zone

2098	7.00	394.56	202.10	192.46	83.40	
2100	9.40	394.53	197.30	197.23	85.47	
2101	10.80	396.17	270.60	125.57	54.41	
2103	11.70	396.17	236.90	159.27	69.02	
2104	5.10	396.16	200.50	195.66	84.79	
2105	7.80	396.19	201.90	194.29	84.19	
2106	3.50	395.53	192.10	203.43	88.15	
2107	8.50	396.07	190.50	205.57	89.08	
2109	6.50	396.84	190.80	206.04	89.28	
2110	4.80	396.42	192.70	203.72	88.28	
2111	4.10	396.48	191.00	205.48	89.04	
2112	8.90	396.73	190.20	206.53	89.50	
2113	7.40	397.04	195.50	201.54	87.33	
2115	6.30	396.11	191.90	204.21	88.49	
2117	5.50	397.58	217.50	180.08	78.04	
2119	9.50	395.32	193.60	201.72	87.41	
2120	5.30	466.47	268.60	197.87	85.74	
2121	4.60	396.24	193.00	203.24	88.07	
2122	7.80	394.49	183.70	210.79	91.34	
2123	5.70	396.35	193.20	203.15	88.03	
2125	1.70	394.73	206.20	188.53	81.70	
2126	3.60	396.24	192.50	203.74	88.29	
2127	11.50	395.16	203.70	191.46	82.97	
2129	6.20	396.56	218.10	178.46	77.33	
2130	4.80	394.67	198.00	196.67	85.22	
2132	2.80	396.88	230.10	166.78	72.27	
2133	5.70	634.16	578.00	56.16	24.33	
2137	7.70	397.08	198.20	198.88	86.18	
2138	10.10	395.82	221.50	174.32	75.54	
I-18th St	0.00	396.25	218.20	178.05	77.16	
O-18th St	0.00	396.25	218.20	178.05	77.16	
3-in or sm	0.20	395.25	185.50	209.75	90.89	
3-inch or	0.50	395.74	183.00	212.74	92.19	
3-inch or	0.20	394.63	183.10	211.53	91.66	
O-AV-1	0.00	396.05	283.80	112.25	48.64	
I-AV-2	0.00	605.37	306.00	299.37	129.73	
I-AV-3	0.00	466.47	253.40	213.07	92.33	
O-AV-4	0.00	395.90	289.30	106.60	46.19	
O-AV-5	0.00	396.25	225.30	170.95	74.08	
O-AV-6	0.00	396.16	208.10	188.06	81.49	
O-Centrali	----	541.19	333.50	207.69	90.00	
O-Fairview	Fairview PRV	----	466.50	346.50	120.00	52.00
O-High Lev	High Level P	0.00	608.77	401.60	207.17	89.77
High Level	High Level R	----	605.00	605.00	0.00	0.00
Hillcrest		0.40	396.50	256.20	140.30	60.80
inter-tie		4.70	395.13	174.40	220.73	95.65
J-1		5.80	394.58	174.00	220.58	95.58
J-100		1.20	394.91	190.60	204.31	88.53
J-105		4.20	394.55	175.60	218.95	94.88
J-106		4.60	394.76	206.20	188.56	81.71
J-11		4.60	493.68	280.00	213.68	92.59
J-110		8.00	394.87	198.00	196.87	85.31
J-111		3.20	394.62	192.50	202.12	87.59
J-112		8.40	395.74	167.90	227.84	98.73
J-113		4.00	395.99	200.50	195.49	84.71
J-114		18.30	605.37	405.70	199.67	86.52
J-115		3.00	396.41	197.30	199.11	86.28
J-116		3.10	396.46	207.10	189.36	82.06
J-117		2.70	396.25	192.10	204.15	88.46
J-120		4.00	396.23	237.50	158.73	68.78
J-122		4.30	394.58	174.00	220.58	95.58
J-123		0.60	395.54	224.70	170.84	74.03
J-124		3.40	605.33	403.80	201.53	87.33
J-125		3.30	605.58	383.00	222.58	96.45
J-126		5.40	399.98	367.95	32.03	13.88
J-127		45.90	395.84	225.20	170.64	73.94
J-128		23.90	395.81	235.20	160.61	69.60
J-129		13.70	394.72	184.80	209.92	90.96
J-130		6.20	395.65	222.00	173.65	75.25
J-131		0.90	605.33	418.00	187.33	81.17
J-132		4.80	394.58	176.00	218.58	94.72
J-133		1.40	605.33	339.60	265.73	115.15
J-134		2.00	396.20	200.90	195.30	84.63
J-135		3.20	397.19	288.30	108.89	47.18
J-136		1.40	395.15	204.10	191.04	82.79
J-138		1.70	395.53	219.60	175.93	76.24
J-139		0.80	396.25	222.60	173.65	75.25
J-140		0.90	395.53	218.20	177.33	76.85
J-141		0.80	395.20	200.90	194.30	84.20
J-142		0.40	396.25	218.20	178.05	77.16
J-143		17.00	395.14	186.90	208.24	90.24
J-144		3.10	395.90	186.80	209.10	90.61
J-145		0.20	395.53	218.20	177.33	76.85
J-146		0.00	395.53	218.20	177.33	76.85
J-147		0.00	396.25	218.20	178.05	77.16
J-148		12.30	526.39	498.90	27.49	11.91
J-149		6.10	491.51	306.10	185.41	80.35
J-150		9.80	493.43	272.40	221.03	95.78
J-151		22.40	492.25	326.80	165.45	71.70
J-152		10.50	493.43	272.40	221.03	95.78
J-153		125.60	491.51	302.40	189.11	81.95
J-154		10.10	493.43	267.60	225.83	97.86
J-155		28.80	492.53	263.80	228.73	99.12
J-156		32.60	492.75	261.30	231.45	100.29
J-157		3.00	492.34	265.80	226.54	98.17
J-158		14.20	395.84	211.40	184.44	79.92
J-159		0.60	605.33	343.00	262.33	113.68
J-160		7.50	395.22	172.60	222.62	96.47
J-161		0.40	395.37	178.60	216.77	93.93
J-162		11.50	395.23	183.00	212.23	91.97
J-163		6.50	395.15	183.70	211.45	91.63
J-164		20.60	395.15	177.50	217.65	94.31
J-167		4.50	396.52	0.00	396.52	171.82
J-168		4.80	394.64	0.00	394.64	171.01
J-169		10.90	399.68	413.50	-13.82	-5.99

2040 Fireflow - High Level Zone

J-170	2.80	394.58	174.50	220.08	95.37
J-171	3.50	397.18	286.90	110.28	47.79
J-173	100.30	481.02	329.80	151.22	65.53
J-176	1.70	394.58	166.40	228.18	98.88
J-177	3.80	395.15	179.10	216.05	93.62
J-2	9.40	394.61	201.80	192.81	83.55
J-20	3.60	394.63	182.90	211.73	91.75
J-21	2.50	394.64	182.80	211.84	91.80
J-25	8.20	605.33	311.10	294.23	127.50
J-27	6.90	395.99	207.10	188.89	81.85
J-3	5.50	394.63	182.20	212.43	92.05
J-30	12.80	395.65	218.90	175.75	76.16
J-35	13.60	396.33	222.10	174.23	75.50
J-39	6.70	397.29	218.10	179.19	77.65
J-4	4.20	394.63	184.40	210.23	91.10
J-42	10.00	396.50	222.00	174.50	75.62
J-44	10.10	396.39	208.40	187.99	81.46
J-45	7.00	396.43	209.00	187.43	81.22
J-53	15.80	397.58	294.30	103.28	44.75
J-55	8.70	397.17	297.10	100.07	43.37
J-57	2.20	396.87	228.20	167.67	72.66
J-58	2.50	395.15	204.60	190.55	82.57
J-6	13.89	538.46	473.40	65.06	28.19
J-61	7.10	395.15	207.00	188.15	81.53
J-62	1.80	395.15	191.50	203.65	88.25
J-63	2.20	395.54	225.20	170.34	73.81
J-64	6.80	395.20	202.30	192.90	83.59
J-67	3.50	396.23	210.80	185.43	80.35
J-7	5.80	395.84	214.70	181.14	78.49
J-71	3.70	396.22	204.60	191.62	83.04
J-73	10.50	396.20	199.60	196.60	85.19
J-74	1.70	466.47	301.00	165.47	71.70
J-77	1.00	466.47	296.10	170.37	73.83
J-78	8.60	395.90	230.70	165.20	71.59
J-79	4.50	395.78	223.40	172.38	74.70
J-8	10.70	395.99	208.80	187.19	81.12
J-80	8.20	395.19	190.70	204.49	88.61
J-81	11.10	396.17	218.90	177.27	76.82
J-82	10.80	396.17	257.90	138.27	59.92
J-84	3.80	396.25	226.30	169.95	73.65
J-87	7.00	396.21	194.40	201.81	87.45
J-88	35.00	493.68	275.70	217.98	94.46
J-90	0.10	396.51	219.10	177.41	76.88
J-91	6.50	399.71	352.90	46.81	20.29
J-93	2.80	395.17	187.50	207.67	89.99
J-94	6.00	395.17	187.50	207.67	89.99
J-95	19.80	395.19	189.50	205.69	89.13
J-96	10.80	395.13	176.90	218.23	94.57
J-99	1.90	394.73	205.50	189.23	82.00
Kennicott	Kennicott Re	397.90	374.00	23.90	10.36
Main Reser	Main Reservo	400.20	383.30	16.90	7.32
physical d		396.43	222.00	174.43	75.59
I-RV-1		395.90	186.80	209.10	90.61
I-RV-2		395.20	200.90	194.30	84.20
O-South En		495.59	287.90	207.69	90.00
O-Valley V	Valley View	635.90	308.10	327.80	142.05
Yankis (Va	Yankis (Vall	635.90	631.50	4.40	1.91
Yates Rese	500,000 gal	400.20	376.00	24.20	10.49
O-18th St		395.53	218.20	177.33	76.85
I-18th St		395.53	218.20	177.33	76.85
I-AV-1		605.37	283.80	321.57	139.35
O-AV-2		396.08	306.00	90.08	39.04
O-AV-3		396.27	253.40	142.87	61.91
I-AV-4		605.33	289.30	316.03	136.95
I-AV-5		395.54	225.30	170.24	73.77
I-AV-6		395.14	208.10	187.04	81.05
I-Centrall		481.02	333.50	147.52	63.92
I-Fairview	Fairview PRV	634.12	346.50	287.62	124.64
I-High Lev	High Level P	387.95	401.60	-13.65	-5.92
O-RV-1		395.14	186.80	208.34	90.28
O-RV-2		396.20	200.90	195.30	84.63
I-South En		397.15	287.90	109.25	47.34
I-Valley V	Valley View	396.17	308.10	88.07	38.16

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
J-167	171.82	J-169	-5.99
J-168	171.01	I-High Level	-5.92
O-Valley Vie	142.05	Yankis (Vall	1.91
I-AV-1	139.35	1251	5.61
I-AV-4	136.95	Main Reservo	7.32

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
905	4.08	503	0.00
P-86	4.08	85	0.00
P-122	3.23	P-48	0.00
1479	2.85	24	0.00
P-15	2.77	45	0.00

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
905	30.96	85	0.00
P-86	30.96	503	0.00
P-173	4.53	24	0.00
1962	3.61	45	0.00
712	3.45	46	0.00

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PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
905	30.96	85	0.00
P-86	30.96	503	0.00
P-173	4.53	24	0.00
1962	3.61	45	0.00
712	3.45	46	0.00

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
18th St PRV	PRV-1	74.30	CLOSED	77.16	76.85	0.00
18th St Pump	FCV-2	0.00	BOOSTED	76.85	77.16	0.00
Centralia Al	PRV-2	90.00	BOOSTED	63.92	90.00	26.19
Fairview PRV	PRV-1	52.00	ACTIVATED	124.64	52.00	24.90
High Level P	FCV-2	360.00	BOOSTED	-5.92	89.77	360.00
RV-1	PRV-1	85.00	CLOSED	90.61	90.28	0.00
RV-2	PRV-1	81.80	CLOSED	84.20	84.63	0.00
South End Pu	PRV-2	90.00	BOOSTED	47.34	90.00	414.99
Valley View	FCV-2	0.00	BOOSTED	38.16	142.05	0.00

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
High Level	-212.00	High Level R
Kennicott R	795.70	Kennicott Re
Main Reserv	2563.70	Main Reserv
Yankis (Val	124.80	Yankis (Vall
Yates Reser	1003.99	500,000 gal

NET SYSTEM INFLOW = 4488.20
 NET SYSTEM OUTFLOW = -212.00
 NET SYSTEM DEMAND = 4276.20

FireFlow/Hydrant Report

Fireflow/Hydrant Report:

Scenario: No Title
 Global Demand Factor for this Scenario: 1.000

Specified Minimum Pressure (psi): 20.0
 Minimum Static Pressure (psi) : 21.0

Flow-1: Flowrate to maintain the specified pressure at (hydrant) node
 Node-2: Node that has a lower pressure than specified value at Flow-1
 Flow-2: Flowrate to maintain the specified pressure at Node-2

Hose Constant = 0.00

Hydrant Node	Hydrant Constant	Elevation	Static Pressure	Flow-1 gpm	Flow-2 gpm	Node-2 gpm	Flow Capacity	NFPA Color
H-451	0.0	346.6	112.1	1692.6	1274.3	1032	1274.3	GREEN
H-462	0.0	436.4	73.2	1598.1	1459.5	632	1459.5	GREEN
H-461	0.0	345.7	112.6	2206.4	1701.7	632	1701.7	BLUE
H-401	0.0	456.0	64.7	1117.0			1117.0	GREEN
H-354	0.0	435.8	73.5	1267.4	1249.6	1032	1249.6	GREEN
H-297	0.0	321.7	122.9	4954.9	1892.0	2028	1892.0	BLUE
H-294	0.0	311.5	127.3	3983.7	1468.3	2028	1468.3	GREEN
H-246	0.0	330.5	119.1	1904.8	1410.3	2028	1410.3	GREEN
H-245	0.0	319.7	123.8	1457.5	1410.3	2028	1410.3	GREEN
H-296	0.0	392.5	92.3	2993.0	2710.4	2028	2710.4	BLUE
H-458	0.0	413.0	83.4	1490.9	1265.1	1032	1265.1	GREEN
H-460	0.0	437.6	72.7	1475.1	1355.2	1032	1355.2	GREEN
H-295	0.0	338.9	115.5	5554.7	2226.4	2028	2226.4	BLUE
H-201	0.0	386.9	94.6	2882.1	1284.7	2028	1284.7	GREEN

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Date & Time: Fri Sep 10 13:59:14 2021

Master File : p:\0155_chehalis\1078_wsp_update\rpt-planning\mdlng\01551078 city of chehalis water system model - calibrated.KYP\01551078 city of chehalis water system model

 SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED

FLOWRATE = gallons/minute
 HEAD (HGL) = feet
 PRESSURE = psig

REGULATING VALVE DATA

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
18th St PRV	PRV-1	389.66
18th St Pump	Const_FLOW_Pump	0.00
Centralia Al	Const_HEAD_Pump	541.19
Fairview PRV	PRV-1	466.50
High Level P	Const_FLOW_Pump	0.00
RV-1	PRV-1	389.55
RV-2	PRV-1	389.67
South End Pu	Const_HEAD_Pump	495.59
Valley View	Const_FLOW_Pump	0.00

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NAMES #1	NODE NAMES #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
3	5	6	24.78	10.00	90.0000	0.00
5	9	10	824.44	6.00	90.0000	0.00
6	11	12	38.56	8.00	90.0000	0.00
7	13	872	38.38	6.00	75.0000	0.00
8	15	16	7.84	6.00	90.0000	0.00
10	18	19	437.00	2.00	140.0000	0.00
12	22	23	750.00	8.00	115.0000	0.00
13	24	1524	360.61	4.00	115.0000	0.00
14	26	J-55	539.97	8.00	115.0000	0.00
16	28	29	217.00	4.00	115.0000	0.00
17	31	32	723.00	2.00	113.0723	0.00
21	37	38	170.42	4.00	75.0000	0.00
22	2014	40	325.43	8.00	115.0000	0.00
23	41	1699	28.75	12.00	115.0000	0.00
24	43	213	42.27	12.00	115.0000	0.00
26	47	48	173.64	4.00	115.0000	0.00
27	49	50	310.00	10.00	115.0000	0.00
28	51	52	222.00	8.00	115.0000	0.00
32	59	60	108.37	6.00	75.0000	0.00
35	65	66	295.51	6.00	75.0000	0.00
37	68	69	412.00	8.00	115.0000	0.00
38	52	70	245.00	6.00	115.0000	0.00
39	Hillcrest	72	81.50	4.00	115.0000	0.00
41	75	76	3275.00	12.00	130.0000	0.00
45	83	2066	32.96	12.00	130.0000	0.00
46	85	86	33.07	12.00	130.0000	0.00
52	97	98	74.85	8.00	130.0000	0.00
55	102	103	68.31	8.00	130.0000	0.00
56	104	1810	34.98	12.00	130.0000	0.00
59	107	108	7.82	12.00	130.0000	0.00
60	109	J-53	785.00	16.00	115.0000	0.00
66	118	J-91	2359.00	14.00	90.0000	0.00
68	119	121	704.00	14.00	75.0000	0.00
70	121	860	23.71	14.00	75.0000	0.00
72	118	1799	900.00	8.00	130.0000	0.00
85	physical d	396	23.76	14.00	75.0000	0.00
107	J-91	2067	949.00	14.00	75.0000	0.00
109	325	34	484.84	12.00	115.0000	0.00
110	2122	166	948.74	12.00	115.0000	0.00
112	166	962	902.00	12.00	115.0000	0.00
114	569	962	308.00	12.00	115.0000	0.00
115	569	665	1519.00	12.00	115.0000	0.00
118	172	J-105	650.00	12.00	115.0000	0.00
120	175	178	251.61	12.00	115.0000	0.00
123	178	1826	444.69	12.00	115.0000	0.00
126	1826	1827	278.93	12.00	115.0000	0.00
129	1827	192	1658.25	12.00	115.0000	0.00

2040 Peak Hour Demand

137	192	201	248.00	12.00	115.0000	0.00
139	201	137	409.00	12.00	115.0000	0.00
141	15	137	446.49	12.00	115.0000	0.00
142	15	J-95	1949.78	12.00	115.0000	0.00
145	201	J-93	562.05	12.00	90.0000	0.00
155	212	213	677.50	12.00	115.0000	0.00
156	214	26	1649.00	12.00	115.0000	0.00
163	2072	224	1245.00	12.00	115.0000	0.00
187	248	253	1835.17	12.00	130.0000	0.00
192	254	J-127	1507.19	12.00	130.0000	0.00
262	325	1575	908.76	12.00	115.0000	0.00
279	343	344	127.52	12.00	130.0000	0.00
280	344	342	115.85	12.00	130.0000	0.00
282	342	346	192.42	12.00	130.0000	0.00
283	86	J-130	1344.24	12.00	130.0000	0.00
292	356	361	2280.98	10.00	90.0000	0.00
298	32	J-7	60.00	10.00	90.0000	0.00
302	32	480	930.34	10.00	90.0000	0.00
318	384	385	126.00	10.00	115.0000	0.00
319	356	2074	983.94	10.00	90.0000	0.00
320	356	41	37.27	10.00	90.0000	0.00
329	396	398	31.65	10.00	75.0000	0.00
331	398	1409	306.52	10.00	75.0000	0.00
340	407	408	647.97	10.00	75.0000	0.00
353	661	2119	350.44	6.00	75.0000	0.00
355	424	1648	189.00	10.00	90.0000	0.00
363	295	468	3228.55	10.00	130.0000	0.00
398	172	473	539.00	12.00	115.0000	0.00
403	474	480	672.00	8.00	90.0000	0.00
411	J-45	2129	770.00	8.00	90.0000	0.00
414	1217	1121	284.43	6.00	90.0000	0.00
417	492	1235	414.07	8.00	75.0000	0.00
429	505	509	502.00	8.00	75.0000	0.00
433	510	512	462.00	8.00	115.0000	0.00
435	513	1057	1078.98	8.00	75.0000	0.00
440	518	J-94	278.47	8.00	75.0000	0.00
448	92	1184	943.86	8.00	115.0000	0.00
451	530	119	42.30	8.00	75.0000	0.00
452	119	536	464.52	8.00	75.0000	0.00
458	536	2079	637.02	8.00	75.0000	0.00
461	540	2079	30.24	8.00	75.0000	0.00
464	544	543	465.44	8.00	75.0000	0.00
472	552	J-100	98.00	8.00	75.0000	0.00
476	I-AV-1	J-114	1506.58	4.00	90.0000	0.00
486	569	573	476.00	8.00	115.0000	0.00
490	385	166	264.00	8.00	140.0000	0.00
495	579	J-138	330.16	8.00	115.0000	0.00
497	582	584	548.98	8.00	115.0000	0.00
503	590	J-73	801.25	8.00	75.0000	0.00
511	599	601	450.87	8.00	115.0000	0.00
526	599	619	720.36	8.00	115.0000	0.00
531	620	623	618.14	8.00	115.0000	0.00
538	628	631	136.23	8.00	90.0000	0.00
541	632	1049	299.05	8.00	90.0000	0.00
547	631	642	578.19	8.00	90.0000	0.00
552	High Level	2090	1103.00	8.00	90.0000	0.00
565	509	661	1328.00	8.00	75.0000	0.00
569	597	1284	174.94	8.00	90.0000	0.00
571	46	2086	497.00	8.00	90.0000	0.00
574	665	668	872.08	8.00	115.0000	0.00
577	668	675	492.96	8.00	115.0000	0.00
584	676	J-27	893.25	8.00	90.0000	0.00
590	54	682	182.20	8.00	90.0000	0.00
591	683	J-95	505.00	8.00	90.0000	0.00
593	686	J-78	241.00	8.00	90.0000	0.00
597	408	J-79	21.00	8.00	75.0000	0.00
601	361	1960	1287.07	8.00	90.0000	0.00
612	705	710	248.15	8.00	115.0000	0.00
617	717	1134	965.00	8.00	115.0000	0.00
623	718	247	34.04	8.00	75.0000	0.00
630	424	726	91.39	8.00	75.0000	0.00
632	726	J-80	386.08	8.00	75.0000	0.00
652	468	780	2846.84	8.00	130.0000	0.00
684	781	2092	25.00	8.00	115.0000	0.00
686	784	1698	594.45	8.00	115.0000	0.00
690	788	791	1019.18	8.00	115.0000	0.00
693	792	791	123.52	8.00	115.0000	0.00
697	797	784	720.40	8.00	115.0000	0.00
700	800	802	282.00	6.00	130.0000	0.00
702	803	1465	267.21	6.00	75.0000	0.00
706	808	2009	929.18	6.00	75.0000	0.00
710	813	815	302.18	6.00	75.0000	0.00
712	121	2093	46.99	6.00	75.0000	0.00
714	2094	40	934.76	4.00	75.0000	0.00
723	828	2096	426.19	6.00	75.0000	0.00
726	544	831	72.71	6.00	75.0000	0.00
727	831	530	335.47	6.00	75.0000	0.00
735	831	1989	226.92	6.00	75.0000	0.00
739	842	844	615.87	6.00	75.0000	0.00
741	844	817	669.95	6.00	75.0000	0.00
749	856	J-115	240.00	6.00	75.0000	0.00
751	2078	14	273.95	6.00	75.0000	0.00
753	860	2097	569.00	6.00	75.0000	0.00
757	865	868	222.76	6.00	75.0000	0.00
760	868	J-113	502.26	6.00	75.0000	0.00
762	868	872	205.21	6.00	75.0000	0.00
772	881	2098	449.61	6.00	75.0000	0.00
776	885	J-111	304.95	6.00	75.0000	0.00
784	893	J-106	418.44	6.00	75.0000	0.00
785	893	J-110	416.57	6.00	75.0000	0.00
789	66	899	48.00	6.00	75.0000	0.00
791	899	901	175.00	6.00	75.0000	0.00
793	901	1742	1127.00	6.00	75.0000	0.00
797	906	910	180.00	6.00	75.0000	0.00
801	910	38	116.53	6.00	75.0000	0.00

2040 Peak Hour Demand

807	842	2084	314.93	6.00	75.0000	0.00
812	916	922	348.45	6.00	75.0000	0.00
814	923	J-20	569.59	6.00	75.0000	0.00
817	J-21	929	248.00	6.00	75.0000	0.00
823	J-2	937	870.00	6.00	75.0000	0.00
825	J-2	556	502.00	6.00	75.0000	0.00
831	945	2080	473.03	6.00	75.0000	0.00
839	954	2081	460.04	6.00	75.0000	0.00
846	962	964	82.58	6.00	115.0000	0.00
858	1387	1314	65.93	4.00	75.0000	0.00
861	108	104	599.00	6.00	90.0000	0.00
867	958	J-110	1002.00	6.00	75.0000	0.00
874	994	65	736.58	6.00	75.0000	0.00
876	65	1986	656.95	6.00	75.0000	0.00
883	1003	1023	424.00	6.00	90.0000	0.00
903	1024	J-125	363.09	6.00	90.0000	0.00
905	O-High Lev	649	101.61	6.00	75.0000	0.00
910	1024	628	642.00	6.00	90.0000	0.00
912	1032	1003	811.00	6.00	90.0000	0.00
930	1050	1053	1269.52	6.00	90.0000	0.00
933	384	2100	964.00	6.00	75.0000	0.00
936	1057	16	435.81	6.00	90.0000	0.00
938	1060	1063	225.00	6.00	115.0000	0.00
941	1064	J-129	956.67	6.00	90.0000	0.00
948	1071	526	308.78	6.00	90.0000	0.00
949	526	1084	2823.47	6.00	75.0000	0.00
962	1085	1337	588.12	6.00	75.0000	0.00
966	1099	J-78	1370.13	6.00	90.0000	0.00
975	1100	1101	228.75	6.00	90.0000	0.00
976	O-Fairview	1101	118.14	6.00	90.0000	0.00
982	2103	J-81	265.32	6.00	75.0000	0.00
993	1121	1122	255.49	6.00	90.0000	0.00
994	2076	2127	300.30	6.00	75.0000	0.00
1000	1130	1125	650.51	6.00	75.0000	0.00
1001	2104	J-73	623.72	6.00	75.0000	0.00
1003	1134	2104	238.99	6.00	75.0000	0.00
1004	509	1290	478.00	6.00	75.0000	0.00
1007	1137	2105	327.02	6.00	75.0000	0.00
1009	1388	2013	267.00	6.00	75.0000	0.00
1012	2106	2107	591.74	6.00	75.0000	0.00
1014	510	23	924.74	6.00	75.0000	0.00
1017	2137	2109	470.82	6.00	75.0000	0.00
1019	2084	2109	326.70	6.00	75.0000	0.00
1020	2094	23	140.75	6.00	75.0000	0.00
1023	1156	23	477.86	6.00	75.0000	0.00
1024	2096	2073	229.38	6.00	75.0000	0.00
1025	2110	2096	273.09	6.00	75.0000	0.00
1026	2110	1997	279.58	6.00	75.0000	0.00
1028	1997	2111	244.00	6.00	75.0000	0.00
1030	2111	2112	268.86	6.00	75.0000	0.00
1032	1961	2113	418.00	6.00	75.0000	0.00
1035	704	1961	270.90	6.00	75.0000	0.00
1036	2109	1961	297.09	6.00	75.0000	0.00
1037	2010	2014	642.00	6.00	75.0000	0.00
1040	2012	2013	328.33	6.00	75.0000	0.00
1041	2065	2012	308.00	6.00	75.0000	0.00
1042	2137	2065	296.00	6.00	75.0000	0.00
1043	2113	2137	300.18	6.00	75.0000	0.00
1044	2113	1180	266.89	6.00	75.0000	0.00
1046	1181	22	93.00	6.00	75.0000	0.00
1047	2095	22	173.00	6.00	75.0000	0.00
1048	726	1184	40.06	8.00	115.0000	0.00
1051	1186	1996	269.43	6.00	75.0000	0.00
1053	827	1232	1143.25	6.00	75.0000	0.00
1058	1232	1156	597.28	6.00	75.0000	0.00
1060	1156	512	927.21	6.00	75.0000	0.00
1062	512	2107	783.40	6.00	75.0000	0.00
1064	2115	2107	155.32	6.00	75.0000	0.00
1069	2117	2065	579.53	6.00	75.0000	0.00
1071	2137	1210	580.23	6.00	75.0000	0.00
1074	1211	1713	81.79	6.00	115.0000	0.00
1076	24	1713	223.00	6.00	115.0000	0.00
1077	1215	J-58	327.00	6.00	75.0000	0.00
1078	68	1217	692.94	6.00	115.0000	0.00
1080	1218	2112	1049.55	6.00	75.0000	0.00
1083	2112	1223	326.05	6.00	75.0000	0.00
1085	1224	2111	321.86	6.00	75.0000	0.00
1087	1085	1333	418.92	6.00	75.0000	0.00
1088	1085	808	427.58	6.00	75.0000	0.00
1090	808	1229	207.76	6.00	75.0000	0.00
1091	1232	1181	476.00	6.00	75.0000	0.00
1094	1235	1483	375.00	6.00	75.0000	0.00
1095	2120	1104	147.00	6.00	90.0000	0.00
1096	2120	1239	581.73	6.00	115.0000	0.00
1099	1240	1214	42.84	6.00	115.0000	0.00
1100	1214	1244	471.00	6.00	115.0000	0.00
1103	1244	1251	558.00	6.00	115.0000	0.00
1110	Yankis (Va	1251	413.91	6.00	115.0000	0.00
1116	1513	J-25	173.82	8.00	130.0000	0.00
1117	1277	1396	339.91	6.00	90.0000	0.00
1118	1277	1262	90.18	6.00	90.0000	0.00
1120	657	J-25	1605.00	10.00	130.0000	0.00
1125	1181	1270	559.53	6.00	75.0000	0.00
1127	2103	1099	1495.62	6.00	75.0000	0.00
1132	1277	I-AV-4	889.11	6.00	90.0000	0.00
1138	693	579	860.83	6.00	75.0000	0.00
1140	1284	O-AV-3	362.05	6.00	90.0000	0.00
1146	1290	2119	1322.78	4.00	75.0000	0.00
1148	1293	1295	372.96	4.00	75.0000	0.00
1150	398	2016	65.54	6.00	75.0000	0.00
1152	1120	1298	198.66	6.00	75.0000	0.00
1154	432	1309	2165.00	6.00	90.0000	0.00
1165	1310	1314	1161.00	4.00	75.0000	0.00
1169	2127	J-61	967.64	4.00	75.0000	0.00
1171	1318	2105	578.38	4.00	75.0000	0.00

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1173	2105	1322	469.84	4.00	75.0000	0.00
1178	2115	40	301.65	4.00	75.0000	0.00
1179	2115	1328	589.61	4.00	75.0000	0.00
1182	803	J-81	638.00	4.00	75.0000	0.00
1185	1333	1337	528.94	4.00	75.0000	0.00
1189	1338	807	1527.54	4.00	75.0000	0.00
1193	518	192	70.97	4.00	75.0000	0.00
1195	192	1060	583.00	4.00	75.0000	0.00
1198	1060	705	1317.00	4.00	75.0000	0.00
1205	492	J-80	987.90	4.00	75.0000	0.00
1208	1356	828	273.00	4.00	75.0000	0.00
1210	1359	828	233.00	4.00	75.0000	0.00
1211	1364	1984	203.81	4.00	75.0000	0.00
1212	1364	1991	514.02	4.00	75.0000	0.00
1214	1364	2121	287.23	4.00	75.0000	0.00
1215	1366	36	660.16	4.00	75.0000	0.00
1217	1244	1251	681.00	6.00	115.0000	0.00
1226	1375	17	2480.00	4.00	90.0000	0.00
1236	17	1387	400.00	4.00	90.0000	0.00
1239	1388	1392	578.80	4.00	75.0000	0.00
1244	1314	33	129.52	4.00	90.0000	0.00
1245	937	1456	272.00	4.00	75.0000	0.00
1247	384	1456	264.58	4.00	75.0000	0.00
1248	1396I-Valley V		4.38	4.00	140.0000	0.00
1258	505	1409	1080.00	4.00	75.0000	0.00
1261	1410	657	558.39	4.00	90.0000	0.00
1269	1023	I-AV-2	712.27	4.00	90.0000	0.00
1309	1456	881	418.71	4.00	75.0000	0.00
1315	885	1056	245.12	4.00	90.0000	0.00
1319	1465	2103	636.67	4.00	75.0000	0.00
1322	509	407	820.07	4.00	75.0000	0.00
1330	693	492	1027.10	4.00	75.0000	0.00
1338	1295	1483	948.39	4.00	75.0000	0.00
1340	1484	899	1892.00	4.00	75.0000	0.00
1351	344	1497	767.00	4.00	130.0000	0.00
1354	1498	1502	449.05	8.00	130.0000	0.00
1358	1502	J-133	279.67	8.00	130.0000	0.00
1371	1517	1519	275.00	2.00	114.3142	0.00
1384	1544	J-95	2295.00	12.00	90.0000	0.00
1388	1547	1544	288.55	12.00	115.0000	0.00
1389	1547	J-96	1327.00	12.00	115.0000	0.00
1396	1544	1547	2300.00	8.00	115.0000	0.00
1401	668	1674	1132.70	12.00	130.0000	0.00
1404	1674	102	746.13	12.00	130.0000	0.00
1406	102	J-1	620.69	12.00	130.0000	0.00
1409	92	J-143	4125.62	12.00	115.0000	0.00
1423	421	107	867.00	12.00	130.0000	0.00
1426	1575	34	575.28	12.00	115.0000	0.00
1427	1576	248	446.87	12.00	130.0000	0.00
1429	248	1580	540.11	12.00	130.0000	0.00
1433	51	26	448.20	12.00	115.0000	0.00
1435	51	109	1427.59	12.00	115.0000	0.00
1440	6	109	475.62	12.00	115.0000	0.00
1441	6	1647	1469.07	12.00	115.0000	0.00
1443	1637	1647	5159.69	12.00	115.0000	0.00
1454	72	1637	1761.44	12.00	115.0000	0.00
1455	72	1626	3641.41	12.00	115.0000	0.00
1458	1627	1626	763.65	12.00	115.0000	0.00
1460	797	212	356.56	12.00	115.0000	0.00
1464	788	1630	3991.15	12.00	115.0000	0.00
1477	1630	1626	1130.08	12.00	115.0000	0.00
1479	1627Yates Rese		1075.00	12.00	130.0000	0.00
1481	1630	76	3539.00	12.00	130.0000	0.00
1483	76	1636	2341.00	12.00	130.0000	0.00
1487	1637	75	595.62	12.00	115.0000	0.00
1492	75	49	651.30	12.00	115.0000	0.00
1493	254	49	3310.10	12.00	115.0000	0.00
1494	254	J-35	1688.26	12.00	115.0000	0.00
1497	2072	1647	1022.00	12.00	115.0000	0.00
1499	1648	247	4693.50	12.00	115.0000	0.00
1500	343	1657	2072.02	8.00	130.0000	0.00
1509	1658	901	754.77	8.00	130.0000	0.00
1526	1674	800	496.84	8.00	130.0000	0.00
1531	800	174	473.00	8.00	130.0000	0.00
1534	1679	1689	748.17	6.00	90.0000	0.00
1544	1690	1689	126.93	8.00	90.0000	0.00
1548	2092	1698	669.39	8.00	115.0000	0.00
1552	1699	1700	801.40	10.00	130.0000	0.00
1553	2138	89	1389.60	8.00	115.0000	0.00
1560	1710	J-53	1056.65	8.00	115.0000	0.00
1562	1711	683	220.00	8.00	90.0000	0.00
1563	683	1712	500.00	8.00	115.0000	0.00
1564	1713	1716	178.58	6.00	115.0000	0.00
1567	1716	1719	185.05	6.00	115.0000	0.00
1584	1742	1737	1268.00	4.00	75.0000	0.00
1588	1737	1375	375.00	4.00	75.0000	0.00
1593	1742	1484	452.00	10.00	130.0000	0.00
1596	1484	975	1798.00	10.00	130.0000	0.00
1611	975	1310	71.00	10.00	130.0000	0.00
1612	1310	2122	454.00	10.00	130.0000	0.00
1615	2123	1089	511.48	8.00	115.0000	0.00
1617	1089	1186	243.51	6.00	75.0000	0.00
1618	1186	1767	570.00	8.00	115.0000	0.00
1621	J-135	1773	742.00	8.00	130.0000	0.00
1626	1773	1775	197.00	8.00	130.0000	0.00
1628	1775	1776	68.00	8.00	130.0000	0.00
1629	1776	1782	1030.00	8.00	130.0000	0.00
1635	1782	1788	996.00	8.00	130.0000	0.00
1641	1788	1775	237.00	8.00	130.0000	0.00
1644	1773	1791	251.00	8.00	130.0000	0.00
1645	1776	1793	338.00	8.00	130.0000	0.00
1647	1788	1782	591.00	8.00	130.0000	0.00
1654	1800	1801	235.53	10.00	130.0000	0.00
1657	18053-inch or		110.20	8.00	130.0000	0.00
1658	1806	1808	400.00	6.00	115.0000	0.00

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1660	1809	1806	19.02	8.00	130.0000	0.00
1661	1810	1821	671.00	10.00	130.0000	0.00
1663	1800	1821	258.00	10.00	130.0000	0.00
1664	1813	1809	50.87	10.00	130.0000	0.00
1665	1814	1818	535.81	2.00	140.0000	0.00
1669	1813	1814	675.00	8.00	130.0000	0.00
1672	1821	J-112	525.00	8.00	130.0000	0.00
1673	1823	1826	385.26	6.00	90.0000	0.00
1676	1827	1071	62.38	8.00	90.0000	0.00
1677	1636	J-128	438.35	8.00	130.0000	0.00
1792	910	844	262.20	4.00	75.0000	0.00
1793	178	1823	69.34	8.00	90.0000	0.00
1796	1063	1948	325.00	2.00	106.5232	0.00
1799	1032	J-114	642.00	4.00	90.0000	0.00
1810	1960	12	21.03	8.00	90.0000	0.00
1811	12	10	1053.00	8.00	90.0000	0.00
1813	1767	J-117	290.12	6.00	75.0000	0.00
1818	1737	1968	132.00	4.00	75.0000	0.00
1820	1823	J-21	491.61	6.00	75.0000	0.00
1821	175	384	2123.70	10.00	115.0000	0.00
1825	1973	566	454.00	4.00	75.0000	0.00
1826	1974	1975	651.00	4.00	75.0000	0.00
1828	J-3	1980	517.00	6.00	75.0000	0.00
1830	3-inch or	1981	48.33	4.00	75.0000	0.00
1831	1984	1767	235.15	6.00	75.0000	0.00
1834	1985	1986	56.59	4.00	75.0000	0.00
1835	894	2125	20.33	8.00	115.0000	0.00
1836	1987	568	717.00	4.00	75.0000	0.00
1837	1988	1989	52.11	4.00	75.0000	0.00
1839	2121	1991	219.88	6.00	75.0000	0.00
1840	2126	2123	286.00	10.00	115.0000	0.00
1841	1994	994	209.00	6.00	75.0000	0.00
1842	1996	1997	691.73	6.00	75.0000	0.00
1843	1184	2003	971.73	6.00	115.0000	0.00
1852	2007	2009	230.57	6.00	75.0000	0.00
1854	2010	2065	472.04	6.00	75.0000	0.00
1855	2012	J-39	579.11	8.00	75.0000	0.00
1856	2013	2014	469.09	6.00	115.0000	0.00
1858	2016	J-81	1482.47	4.00	75.0000	0.00
1860	2127	504	947.53	4.00	75.0000	0.00
1864	1121	2023	183.59	6.00	90.0000	0.00
1865	2127	1215	263.88	6.00	75.0000	0.00
1866	2025	2028	384.00	2.00	140.0000	0.00
1869	2029	2030	216.99	2.00	140.0000	0.00
1870	2031	2029	117.40	4.00	140.0000	0.00
1871	2029	2025	27.90	4.00	140.0000	0.00
1872	2025	2032	248.94	4.00	140.0000	0.00
1873	2033	2031	618.97	4.00	140.0000	0.00
1877	2031	J-124	145.24	8.00	115.0000	0.00
1883	2047	J-74	206.38	6.00	90.0000	0.00
1887	2053	582	671.02	4.00	90.0000	0.00
1892	2129	582	343.45	4.00	90.0000	0.00
1893	590	46	757.00	6.00	90.0000	0.00
1894	2061	J-45	335.58	6.00	90.0000	0.00
1895	2063	J-44	880.19	8.00	90.0000	0.00
1896	5	361	64.75	10.00	90.0000	0.00
1898	14	540	265.00	6.00	75.0000	0.00
1900	163-in or sm		34.44	6.00	90.0000	0.00
1901	17	18	236.00	6.00	90.0000	0.00
1904	24	2088	5.94	6.00	115.0000	0.00
1907	36	2130	291.60	6.00	75.0000	0.00
1908	38	2083	817.68	6.00	75.0000	0.00
1909	2014	J-87	300.00	6.00	75.0000	0.00
1917	69	J-61	263.00	8.00	115.0000	0.00
1920	295	J-30	1850.87	12.00	130.0000	0.00
1924	86	2066	285.00	12.00	130.0000	0.00
1927	104	J-112	808.02	6.00	75.0000	0.00
1930	118	710	2530.00	14.00	90.0000	0.00
1935	247	2106	22.48	8.00	75.0000	0.00
1936	325	2122	272.19	12.00	115.0000	0.00
1938	375	1218	736.59	14.00	75.0000	0.00
1940	396	1318	307.00	14.00	75.0000	0.00
1941	480	2138	730.48	10.00	90.0000	0.00
1947	530	2093	691.48	6.00	75.0000	0.00
1948	536	2078	287.42	8.00	75.0000	0.00
1949	565	1084	590.00	8.00	75.0000	0.00
1950	556	944	498.75	6.00	75.0000	0.00
1951	565	543	35.00	8.00	75.0000	0.00
1954	J-84	O-AV-5	54.14	8.00	90.0000	0.00
1956	584	717	786.89	10.00	90.0000	0.00
1958	590	584	267.70	10.00	90.0000	0.00
1960	620	2133	155.65	8.00	115.0000	0.00
1962	1410	649	52.91	8.00	90.0000	0.00
1964	661	424	118.60	10.00	75.0000	0.00
1965	665	172	143.00	12.00	115.0000	0.00
1967	710	137	1990.58	14.00	90.0000	0.00
1972	784	791	500.36	8.00	115.0000	0.00
1975	797	788	291.38	12.00	115.0000	0.00
1977	813	J-120	564.60	6.00	75.0000	0.00
1978	815	803	563.97	6.00	75.0000	0.00
1979	817	1338	454.00	6.00	75.0000	0.00
1982	856	2121	290.89	6.00	75.0000	0.00
1983	860	375	259.21	14.00	75.0000	0.00
1984	865	65	387.79	8.00	75.0000	0.00
1985	872	14	110.22	6.00	75.0000	0.00
1986	923	J-3	345.89	6.00	75.0000	0.00
1987	944	1987	383.07	6.00	75.0000	0.00
1989	954	945	225.61	6.00	75.0000	0.00
1990	958	J-106	266.00	6.00	75.0000	0.00
1992	994	1658	528.00	10.00	115.0000	0.00
1993	2101	60	140.36	6.00	75.0000	0.00
1995	1003	1049	529.64	6.00	90.0000	0.00
1996	1049	631	275.61	8.00	90.0000	0.00
1997	1050	975	402.00	6.00	90.0000	0.00
1998	1057	518	652.00	8.00	75.0000	0.00

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2000	1084	552	435.20	8.00	75.0000	0.00
2001	1099	1120	246.00	6.00	75.0000	0.00
2002	1107	J-79	210.02	8.00	75.0000	0.00
2003	1130	J-63	457.60	8.00	75.0000	0.00
2005	1137	398	600.00	8.00	75.0000	0.00
2010	1180	704	473.80	8.00	75.0000	0.00
2011	1183	704	38.34	6.00	75.0000	0.00
2014	1210	2067	566.74	14.00	75.0000	0.00
2020	1223	1224	265.83	6.00	75.0000	0.00
2021	1224	827	666.42	6.00	75.0000	0.00
2022	1229	815	301.07	6.00	75.0000	0.00
2024	1235	1517	896.98	8.00	75.0000	0.00
2025	1099	J-82	293.00	6.00	75.0000	0.00
2027	1284	46	713.52	8.00	90.0000	0.00
2031	1318	1392	306.00	14.00	75.0000	0.00
2032	1322	J-87	262.00	6.00	75.0000	0.00
2033	1328	2091	322.03	8.00	75.0000	0.00
2035	1337	2110	39.43	6.00	75.0000	0.00
2036	1338	813	634.51	6.00	75.0000	0.00
2037	1356	1089	17.89	6.00	75.0000	0.00
2039	1366	945	480.02	6.00	75.0000	0.00
2040	1387	979	479.26	6.00	115.0000	0.00
2042	1392	J-39	591.86	14.00	75.0000	0.00
2045	1409	407	306.00	10.00	75.0000	0.00
2048	1465	J-120	38.32	6.00	75.0000	0.00
2053	1107	1517	423.01	8.00	75.0000	0.00
2058	1570	J-8	1066.00	10.00	90.0000	0.00
2060	1575	342	808.04	12.00	130.0000	0.00
2063	1627	J-135	354.12	12.00	115.0000	0.00
2067	1648	432	2857.00	10.00	90.0000	0.00
2068	1658	421	772.00	10.00	115.0000	0.00
2070	1679	1101	25.75	6.00	90.0000	0.00
2071	1698	212	264.80	8.00	115.0000	0.00
2078	1800	1813	297.00	10.00	130.0000	0.00
2079	1809	1805	635.00	10.00	130.0000	0.00
2080	1810	107	583.38	12.00	130.0000	0.00
2087	1960	700	19.01	8.00	90.0000	0.00
2089	1973	J-2	345.00	6.00	75.0000	0.00
2090	1974	1366	377.42	6.00	75.0000	0.00
2091	1975	36	374.90	6.00	75.0000	0.00
2092	1981	J-4	275.32	6.00	75.0000	0.00
2093	994	1984	383.00	10.00	115.0000	0.00
2095	1986	552	515.83	6.00	75.0000	0.00
2096	1987	893	54.17	6.00	75.0000	0.00
2097	1989	842	189.64	6.00	75.0000	0.00
2102	1996	827	273.45	6.00	75.0000	0.00
2104	2007	375	649.59	10.00	115.0000	0.00
2105	2009	2096	41.52	6.00	75.0000	0.00
2111	2016	1120	22.21	6.00	75.0000	0.00
2114	1107	1293	379.00	6.00	75.0000	0.00
2118	2053	J-57	404.65	8.00	90.0000	0.00
2120	2063	717	379.81	10.00	90.0000	0.00
2127	2067	1218	331.70	14.00	75.0000	0.00
2128	2067	1180	580.16	8.00	75.0000	0.00
2139	2073	2007	37.55	10.00	115.0000	0.00
2141	2074	483	444.39	8.00	115.0000	0.00
2145	2076	492	344.58	8.00	75.0000	0.00
2146	2076	504	784.60	8.00	75.0000	0.00
2148	693	J-64	330.00	8.00	115.0000	0.00
2149	2078	865	288.23	8.00	75.0000	0.00
2150	2078	1991	297.24	6.00	75.0000	0.00
2152	2079	543	202.12	8.00	75.0000	0.00
2153	2080	2081	236.10	6.00	115.0000	0.00
2154	2080	958	585.00	6.00	75.0000	0.00
2155	2125	J-99	48.00	8.00	115.0000	0.00
2156	2081	958	325.04	6.00	75.0000	0.00
2159	2083	2084	265.54	8.00	75.0000	0.00
2160	2083	916	678.90	6.00	75.0000	0.00
2161	2084	565	310.77	8.00	75.0000	0.00
2162	2084	916	736.88	6.00	75.0000	0.00
2165	2086	578	560.00	8.00	115.0000	0.00
2166	2086	2132	593.29	8.00	90.0000	0.00
2169	2088	620	2465.45	8.00	115.0000	0.00
2170	2088	1214	158.00	6.00	115.0000	0.00
2173	2090	1410	14.60	8.00	90.0000	0.00
2174	2090	657	565.72	8.00	115.0000	0.00
2175	2091	1137	468.76	8.00	75.0000	0.00
2176	2091	505	311.20	8.00	75.0000	0.00
2179	2093	817	304.87	6.00	75.0000	0.00
2180	2093	1229	758.42	6.00	75.0000	0.00
2181	2094	2095	604.36	6.00	75.0000	0.00
2183	2095	1223	294.47	6.00	75.0000	0.00
2184	2095	1183	324.33	6.00	75.0000	0.00
2187	2097	856	426.07	6.00	75.0000	0.00
2188	2097	2073	206.00	6.00	75.0000	0.00
2189	2098	885	448.98	6.00	75.0000	0.00
2190	2098	2100	273.62	6.00	75.0000	0.00
2192	954	2130	268.01	6.00	75.0000	0.00
2193	2100	1050	360.00	6.00	90.0000	0.00
2194	2100	1056	405.41	6.00	75.0000	0.00
2195	2101	807	693.00	6.00	115.0000	0.00
2196	2101	J-82	1519.00	6.00	75.0000	0.00
2198	1290	1293	372.41	6.00	75.0000	0.00
2199	2103	60	154.27	6.00	75.0000	0.00
2202	2104	2021	244.00	4.00	75.0000	0.00
2203	2105	1388	298.00	6.00	75.0000	0.00
2206	2106	1328	152.76	8.00	75.0000	0.00
2207	2107	510	314.14	6.00	75.0000	0.00
2212	2109	2010	299.72	6.00	75.0000	0.00
2214	2110	1356	429.11	6.00	75.0000	0.00
2216	2111	1333	54.05	6.00	75.0000	0.00
2217	2112	1183	291.22	6.00	75.0000	0.00
2221	803	2113	632.05	6.00	75.0000	0.00
2223	2115	J-87	328.38	6.00	75.0000	0.00
2228	2117	1210	322.00	14.00	75.0000	0.00

2040 Peak Hour Demand

2231	2119	1483	385.00	6.00	75.0000	0.00
2234	2120	J-77	147.00	6.00	90.0000	0.00
2236	2121	2126	209.47	6.00	75.0000	0.00
2240	2123	2073	427.00	10.00	115.0000	0.00
2243	2125	961	36.45	8.00	115.0000	0.00
2244	2125	2081	266.99	8.00	115.0000	0.00
2246	2126	1984	286.12	10.00	115.0000	0.00
2249	2050	J-77	44.67	6.00	90.0000	0.00
2252	2129	2053	226.85	8.00	90.0000	0.00
2253	2130	961	455.00	6.00	75.0000	0.00
2254	2130	1973	40.73	6.00	75.0000	0.00
2257	2132	214	7.31	8.00	90.0000	0.00
2259	2133	599	622.41	8.00	115.0000	0.00
2260	2133	47	462.96	8.00	115.0000	0.00
2269	2138	481	66.26	10.00	90.0000	0.00
P-1	J-1	97	547.15	12.00	130.0000	0.00
P-100	J-112	1814	500.93	6.00	75.0000	0.00
P-101	J-113	2079	368.16	6.00	75.0000	0.00
P-102	J-114	1023	302.00	4.00	90.0000	0.00
P-103	J-125	649	346.91	6.00	90.0000	0.00
P-104	I-Fairview	1103	20.94	6.00	90.0000	0.00
P-105	J-115	J-116	419.54	6.00	75.0000	0.00
P-106	J-116	2097	250.67	6.00	75.0000	0.00
P-108	J-117	56	305.00	6.00	75.0000	0.00
P-11	J-3	1975	323.06	6.00	75.0000	0.00
P-111	J-120	807	266.76	6.00	75.0000	0.00
P-113	J-39	2117	288.00	14.00	75.0000	0.00
P-116	97	J-122	121.15	12.00	130.0000	0.00
P-117	J-140	J-145	46.63	12.00	130.0000	0.00
P-119	J-139	J-84	78.98	8.00	130.0000	0.00
P-121	J-140	J-138	42.92	12.00	130.0000	0.00
P-122	J-126Main Reser		111.73	14.00	90.0000	0.00
P-124	O-AV-1	2083	364.42	8.00	75.0000	0.00
P-125	O-AV-2	906	282.73	4.00	75.0000	0.00
P-127	J-127	295	2367.21	12.00	130.0000	0.00
P-128	J-127	J-128	4129.32	12.00	130.0000	0.00
P-130	J-128	1831	615.85	8.00	130.0000	0.00
P-131	J-129	1071	558.33	6.00	90.0000	0.00
P-132	668	J-129	1448.22	12.00	130.0000	0.00
P-133	J-133	1513	25.35	8.00	130.0000	0.00
P-134	J-122	J-132	800.00	12.00	130.0000	0.00
P-135	J-124	1502	393.57	8.00	130.0000	0.00
P-136	J-124	J-131	198.84	8.00	130.0000	0.00
P-138-CV	Kennicott	J-53	790.00	16.00	115.0000	0.00
P-140	O-AV-4	686	40.89	6.00	90.0000	0.00
P-143	I-AV-5	J-63	2.85	8.00	130.0000	0.00
P-144	O-AV-6	1134	545.75	4.00	75.0000	0.00
P-146	J-73	J-134	384.83	8.00	115.0000	0.00
P-147	J-64	J-141	135.51	8.00	115.0000	0.00
P-148	J-134	O-RV-2	6.27	8.00	130.0000	0.00
P-149	J-143	O-RV-1	5.82	12.00	130.0000	0.00
P-15	J-91	J-126	172.27	14.00	90.0000	0.00
P-150-CV	J-141	J-134	13.00	8.00	130.0000	0.00
P-151	J-142	J-139	80.78	8.00	130.0000	0.00
P-152	J-144	1570	631.51	12.00	115.0000	0.00
P-153-CV	J-143	J-144	24.87	12.00	130.0000	0.00
P-154	I-RV-1	J-144	5.63	12.00	130.0000	0.00
P-157	I-RV-2	J-141	7.13	8.00	130.0000	0.00
P-1570	1716	1103	1729.25	8.00	115.0000	0.00
P-158	J-145I-18th St		2.66	12.00	115.0000	0.00
P-159	J-145	J-146	2.68	12.00	115.0000	0.00
P-160-CV	J-146	J-147	9.25	12.00	115.0000	0.00
P-161	J-146O-18th St		3.23	12.00	130.0000	0.00
P-162	J-147	J-142	2.67	12.00	115.0000	0.00
P-164	I-18th St	J-147	3.12	12.00	130.0000	0.00
P-165	J-155	J-156	739.67	6.00	140.0000	0.00
P-166	66	J-110	322.75	6.00	75.0000	0.00
P-167	J-153	J-156	4747.12	12.00	115.0000	0.00
P-168	J-152	J-150	15.74	8.00	115.0000	0.00
P-169	J-154	J-88	471.34	12.00	115.0000	0.00
P-170	J-155	J-151	4833.50	6.00	140.0000	0.00
P-171	J-155	J-157	658.63	2.00	140.0000	0.00
P-172	J-156	J-154	1552.65	12.00	115.0000	0.00
P-173	J-148	J-6	2664.56	2.00	130.0000	0.00
P-174	J-149	J-153	1314.60	8.00	130.0000	0.00
P-175	J-150	J-152	2094.17	8.00	115.0000	0.00
P-18	J-135I-South En		77.91	12.00	130.0000	0.00
P-19	33	34	11.57	4.00	90.0000	0.00
P-2	101	J-1	84.14	8.00	130.0000	0.00
P-20	1576	213	32.42	12.00	130.0000	0.00
P-25	J-30	2066	908.00	12.00	130.0000	0.00
P-29	J-8	2063	977.55	10.00	90.0000	0.00
P-3	J-60-Centrali		24935.52	6.00	115.0000	0.00
P-30	J-35	J-42	1262.05	12.00	115.0000	0.00
P-31	54	J-8	271.99	8.00	90.0000	0.00
P-33	J-42	2072	33.95	12.00	115.0000	0.00
P-34	1699	J-42	861.64	12.00	115.0000	0.00
P-36	2091	1322	322.00	6.00	75.0000	0.00
P-4	J-7	1570	1181.00	10.00	90.0000	0.00
P-40	J-44	10	918.28	8.00	90.0000	0.00
P-42	J-45	J-44	388.00	8.00	90.0000	0.00
P-43	J-880-South En		3066.47	12.00	115.0000	0.00
P-44	J-55	28	392.03	8.00	115.0000	0.00
P-47	J-57	2132	26.83	8.00	90.0000	0.00
P-48	41	J-90	18.53	10.00	90.0000	0.00
P-49	2051	J-57	16.66	8.00	90.0000	0.00
P-50	2052	J-57	17.24	8.00	90.0000	0.00
P-51	O-18th St	J-142	1.13	8.00	115.0000	0.00
P-53	J-4	1974	369.00	6.00	75.0000	0.00
P-54	923	J-4	253.57	6.00	75.0000	0.00
P-57	1217	I-AV-6	27.22	4.00	75.0000	0.00
P-58	1217	69	273.00	8.00	115.0000	0.00
P-6	J-11	J-88	987.96	8.00	115.0000	0.00
P-61	J-58	68	222.00	6.00	115.0000	0.00
P-62	J-61	J-136	302.00	8.00	115.0000	0.00

2040 Peak Hour Demand

P-63	2076	J-64	1014.00	8.00	75.0000	0.00
P-64	54	J-27	596.19	8.00	90.0000	0.00
P-65	J-67	597	417.00	8.00	90.0000	0.00
P-67	J-71	J-67	339.00	8.00	115.0000	0.00
P-69	J-73	J-71	449.75	8.00	75.0000	0.00
P-7	J-152	J-154	148.62	8.00	115.0000	0.00
P-71	J-63	J-123	21.02	8.00	130.0000	0.00
P-73	J-74	1679	128.71	6.00	90.0000	0.00
P-74	J-77	J-74	27.47	6.00	90.0000	0.00
P-75	I-AV-3	2120	128.95	6.00	90.0000	0.00
P-76	J-78	408	254.81	8.00	90.0000	0.00
P-77	J-79	1130	739.00	8.00	75.0000	0.00
P-78	J-80	504	390.06	8.00	75.0000	0.00
P-79	1396	J-82	521.89	6.00	90.0000	0.00
P-80	1388	J-87	625.00	6.00	115.0000	0.00
P-81	92	J-62	399.00	8.00	115.0000	0.00
P-82	J-84	597	632.70	8.00	90.0000	0.00
P-83	J-123	J-140	102.57	12.00	130.0000	0.00
P-84	J-93	1971	33.88	6.00	90.0000	0.00
P-86	I-High Lev	J-126	388.44	6.00	75.0000	0.00
P-87	J-94	526	1018.53	8.00	75.0000	0.00
P-88	J-93	J-94	3.82	6.00	90.0000	0.00
P-89	J-96inter-tie	1009.00	12.00	115.0000	0.00	
P-9	J-2	2098	329.00	6.00	75.0000	0.00
P-90	J-105	174	266.00	12.00	130.0000	0.00
P-91	J-20	1981	59.00	6.00	75.0000	0.00
P-92	J-21	J-20	140.66	6.00	75.0000	0.00
P-93	568	J-99	19.30	8.00	115.0000	0.00
P-94	J-99	556	294.00	8.00	115.0000	0.00
P-95	566	J-99	49.52	8.00	115.0000	0.00
P-96	J-100	2080	161.00	8.00	115.0000	0.00
P-97	J-106	894	329.00	6.00	75.0000	0.00
P-98	I-Central	J-153	21368.49	8.00	115.0000	0.00
P-99	J-111	944	378.41	6.00	75.0000	0.00
Valley Vie	O-Valley VYankis (Va	2731.89	4.00	140.0000	0.00	

N O D E D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
5		0.70	243.40	
6		14.20	244.40	
9		6.00	205.80	
10		20.30	213.70	
11		0.30	236.90	
12		8.10	236.50	
13		0.30	198.90	
14		4.70	201.40	
15		17.40	186.10	
16		3.50	186.10	
17		22.60	175.70	
18		4.90	171.90	
19		3.20	165.30	
22		7.40	186.50	
23		16.60	187.70	
24		4.20	604.50	
26		19.00	240.30	
28		4.40	322.60	
29		1.60	323.60	
31		5.20	216.80	
32		12.30	214.70	
33		1.00	183.00	
34		7.80	183.50	
36		9.60	194.40	
37		1.20	333.40	
38		7.90	290.50	
40		11.40	190.80	
41		0.60	219.10	
43		0.30	253.50	
46		14.30	229.90	
47		4.70	544.40	
48		1.30	543.60	
49		30.90	243.00	
50		2.20	244.20	
51		15.10	240.00	
52		3.40	261.50	
54		7.60	209.30	
56		2.20	193.00	
59		0.80	252.50	
60		2.90	252.90	
65		15.00	192.40	
66		4.70	191.30	
68		9.60	205.20	
69		6.90	208.70	
70		1.80	285.20	
72		39.80	255.00	
75		32.70	247.70	
76		66.30	256.00	
83		0.20	221.90	
85		0.20	222.10	
86		12.00	222.40	
89		10.10	225.60	
92		39.60	192.40	
97		5.40	173.90	
98		0.50	174.00	
101		0.60	174.30	
102		10.40	176.00	
103		0.50	175.70	
104		10.50	179.70	
107		10.60	183.60	

2040 Peak Hour Demand

108	4.40	183.60
109	19.40	236.20
118	41.90	192.50
119	8.80	217.70
121	5.60	230.70
137	20.60	180.00
166	15.30	182.90
172	9.60	174.10
174	5.30	175.70
175	17.20	183.60
178	5.50	183.60
192	18.50	183.60
201	8.90	178.30
212	9.40	256.30
213	5.40	253.50
214	12.00	230.10
224	9.00	224.20
247	34.40	192.10
248	20.40	248.60
253	13.30	240.90
254	47.10	230.80
295	54.00	210.10
325	12.10	183.90
342	8.10	165.40
343	15.90	163.20
344	7.30	164.20
346	1.40	165.60
356	23.90	219.10
361	26.30	243.10
375	11.90	230.50
384	25.20	183.20
385	2.80	183.60
396	2.60	221.20
398	7.20	220.50
407	12.80	226.99
408	6.70	223.30
421	11.90	184.20
424	3.00	189.90
432	36.40	184.10
468	44.00	204.20
473	3.90	178.30
474	4.90	210.70
480	16.90	219.70
481	0.50	220.90
483	3.20	214.00
492	20.10	195.50
504	15.40	182.80
505	13.70	197.20
509	22.60	200.00
510	12.30	189.60
512	15.70	184.80
513	7.80	178.80
518	7.20	182.20
526	30.10	201.80
530	7.70	220.30
536	10.10	201.90
540	2.10	202.30
543	5.20	210.90
544	3.90	216.10
552	7.60	191.50
556	9.30	206.10
565	6.90	210.80
566	3.70	204.60
568	5.30	206.30
569	16.60	178.30
573	3.40	179.00
578	4.10	280.80
579	8.60	205.50
582	11.40	212.80
584	11.60	207.60
590	13.20	208.60
597	8.90	222.20
599	13.00	592.40
601	3.30	577.30
619	5.20	559.00
620	23.50	583.00
623	4.50	588.00
628	5.70	420.40
631	7.20	382.80
632	2.20	455.20
642	4.20	304.60
649	4.40	392.70
657	19.70	331.20
661	13.00	190.90
665	18.30	174.40
668	28.60	182.30
675	3.60	180.60
676	6.50	206.70
682	1.30	209.20
683	8.90	200.30
686	2.30	278.90
693	16.00	197.40
700	0.10	237.50
704	5.70	190.10
705	11.30	185.50
710	34.50	197.50
717	15.50	204.90
718	0.20	191.20
726	3.80	190.00
780	20.60	185.00
781	0.20	252.20
784	13.10	259.80
788	38.40	258.50
791	11.90	256.00
792	0.90	254.90

2040 Peak Hour Demand

797	9.90	255.30
800	9.00	177.30
802	2.00	178.00
803	15.20	217.90
807	18.00	272.60
808	11.30	215.50
813	10.90	244.90
815	8.50	219.20
817	10.40	275.20
827	15.10	186.80
828	6.80	192.50
831	4.50	216.90
842	8.20	234.00
844	11.30	260.00
856	6.90	194.40
860	6.20	230.20
865	6.50	195.90
868	6.70	197.00
872	2.60	199.50
881	6.30	199.80
885	7.30	204.20
893	6.40	198.10
894	2.50	206.30
899	15.30	192.10
901	15.00	189.00
906	5.40	292.50
910	4.00	294.90
916	12.70	222.40
922	2.50	238.30
923	8.40	182.20
929	1.80	181.60
937	8.30	183.80
944	9.10	196.50
945	8.50	192.00
954	6.80	193.70
958	15.80	201.60
961	3.60	205.40
962	9.30	179.30
964	0.60	179.40
975	16.40	184.50
979	3.50	173.70
994	13.40	192.30
1003	12.80	435.80
1023	15.60	389.60
1024	7.30	408.40
1032	10.60	455.00
1049	8.00	421.50
1050	14.70	188.20
1053	9.20	183.20
1056	4.70	192.00
1057	15.70	179.20
1060	15.30	196.50
1063	4.00	238.10
1064	6.90	181.30
1071	6.70	190.50
1084	28.00	198.50
1085	10.40	197.60
1089	5.60	190.70
1099	24.60	233.90
1100	1.70	339.70
1101	3.60	323.20
1103	6" and 2"	346.40
1104	1.10	285.50
1107	7.30	211.40
1120	3.40	222.90
1121	5.30	205.30
1122	1.90	204.40
1125	4.70	205.00
1130	13.40	225.00
1134	16.60	202.90
1137	10.10	202.10
1156	14.50	184.90
1180	9.50	195.40
1181	8.20	186.00
1183	4.80	190.20
1184	14.10	189.70
1186	7.90	191.30
1210	10.60	215.60
1211	0.60	564.40
1214	4.80	607.60
1215	4.30	200.80
1217	9.50	207.80
1218	15.30	217.60
1223	6.40	187.20
1224	9.00	187.60
1229	9.20	224.40
1232	16.00	183.90
1235	12.20	197.20
1239	4.20	265.90
1240	0.30	608.90
1244	12.30	591.00
1251	14.90	622.30
1262	0.70	349.90
1270	4.10	184.30
1277	16.10	340.00
1284	11.70	224.00
1290	15.80	207.20
1293	8.10	206.60
1295	9.60	200.40
1298	1.40	224.20
1309	15.70	185.00
1310	12.20	184.40
1314	9.80	183.00
1318	8.60	221.20
1322	7.60	194.60

2040 Peak Hour Demand

1328	7.70	192.30
1333	7.20	191.30
1337	8.40	192.80
1338	19.00	257.70
1356	5.20	190.80
1359	1.70	193.30
1364	7.30	193.90
1366	11.00	190.60
1375	20.70	168.30
1387	6.90	182.40
1388	12.80	200.40
1392	10.70	220.30
1396	6.40	308.10
1409	12.20	222.20
1410	4.50	392.50
1456	6.90	183.20
1465	6.80	235.70
1483	12.40	193.40
1484	30.00	183.60
1497	5.60	167.20
1498	3.30	396.40
1502	8.20	385.30
1513	1.50	339.40
1517	11.60	205.40
1519	2.00	211.30
1524	2.60	615.60
1544	35.40	194.80
1547	28.40	208.00
1570	20.90	200.80
1575	16.70	171.60
1576	3.40	253.70
1580	3.90	245.80
1626	40.10	272.90
1627	23.70	289.00
1630	62.70	266.70
1636	363.20	245.70
1637	54.50	249.10
1647	55.40	236.20
1648	56.10	187.30
1657	15.00	163.30
1658	14.90	185.90
1674	17.20	178.00
1679	6.50	317.70
1689	6.30	323.60
1690	0.90	319.70
1698	11.10	256.80
1699	12.20	218.90
1700	5.80	216.20
1710	7.70	303.90
1711	1.60	209.80
1712	3.60	268.50
1713	3.50	571.10
1716	15.10	533.50
1719	1.30	516.50
1737	12.90	166.60
1742	20.70	183.60
1767	7.90	193.40
1773	8.60	272.20
1775	3.60	270.10
1776	10.40	269.20
1782	19.00	269.10
1788	13.20	269.00
1791	1.80	273.40
1793	2.40	270.60
1799	6.50	201.40
1800	5.80	166.10
1801	1.70	173.70
1805	5.40	179.70
1806	3.00	173.10
1808	2.90	179.80
1809	5.10	172.30
1810	9.40	179.50
1813	7.50	171.10
1814	12.40	167.10
1818	3.90	160.70
1821	10.60	169.80
1823	6.90	182.50
1826	8.00	183.30
1827	14.50	192.90
1831	4.50	234.10
1948	2.40	234.90
1960	9.60	237.60
1961	7.20	190.10
1968	1.00	164.80
1971	0.20	185.30
1973	6.10	198.40
1974	10.10	187.50
1975	9.70	186.60
1980	3.70	180.20
1981	2.80	183.10
1984	8.10	194.10
1985	0.40	195.20
1986	8.90	194.50
1987	8.40	198.50
1988	0.40	219.50
1989	3.40	222.30
1991	7.50	194.20
1994	1.50	190.70
1996	9.00	189.80
1997	8.80	191.50
2003	7.00	185.20
2007	6.70	200.60
2009	8.70	196.90
2010	10.30	191.70
2012	8.80	199.00

2040 Peak Hour Demand

2013	7.70	200.10	
2014	12.70	193.20	
2016	11.40	222.30	
2021	1.80	204.20	
2023	1.30	206.90	
2025	4.80	455.60	
2028	2.80	520.90	
2029	2.70	449.00	
2030	1.60	460.10	
2031	6.50	430.90	
2032	1.80	484.00	
2033	4.50	474.20	
2047	1.50	309.00	
2050	0.30	301.10	
2051	0.10	229.60	
2052	0.10	229.90	
2053	9.40	220.60	
2061	2.40	208.20	
2063	16.30	205.00	
2065	11.90	198.90	
2066	8.90	222.20	
2067	17.60	216.20	
2072	16.60	221.90	
2073	6.60	199.80	
2074	10.30	220.90	
2076	17.70	204.40	
2078	8.40	199.20	
2079	9.00	203.10	
2080	10.50	191.60	
2081	9.30	198.70	
2083	18.00	255.40	
2084	11.80	224.10	
2086	12.00	230.30	
2088	19.00	604.50	
2090	20.20	391.30	
2091	10.30	195.30	
2092	5.10	251.60	
2093	13.00	236.00	
2094	14.60	188.50	
2095	10.20	187.60	
2096	7.10	196.50	
2097	10.50	202.50	
2098	11.00	202.10	
2100	14.50	197.30	
2101	17.00	270.60	
2103	18.40	236.90	
2104	8.00	200.50	
2105	12.20	201.90	
2106	5.60	192.10	
2107	13.40	190.50	
2109	10.20	190.80	
2110	7.40	192.70	
2111	6.40	191.00	
2112	14.00	190.20	
2113	11.70	195.50	
2115	10.00	191.90	
2117	8.60	217.50	
2119	14.90	193.60	
2120	8.30	268.60	
2121	7.30	193.00	
2122	12.20	183.70	
2123	8.90	193.20	
2125	2.60	206.20	
2126	5.70	192.50	
2127	18.00	203.70	
2129	9.70	218.10	
2130	7.60	198.00	
2132	4.60	230.10	
2133	9.00	578.00	
2137	11.90	198.20	
2138	15.90	221.50	
I-18th St	0.00	218.20	
O-18th St	0.00	218.20	
3-in or sm	0.20	185.50	
3-inch or	0.80	183.00	
3-inch or	0.40	183.10	
O-AV-1	0.00	283.80	
I-AV-2	0.00	306.00	
I-AV-3	0.00	253.40	
O-AV-4	0.00	289.30	
O-AV-5	0.00	225.30	
O-AV-6	0.00	208.10	
O-Centrali	----	333.50	541.19
O-Fairview	Fairview PRV	346.50	466.50
O-High Lev	High Level F	401.60	
High Level	High Level R	605.00	614.00
Hillcrest		256.20	
inter-tie		174.40	
J-1		174.00	
J-100		190.60	
J-105		175.60	
J-106		206.20	
J-11		280.00	
J-110		198.00	
J-111		192.50	
J-112		167.90	
J-113		200.50	
J-114		405.70	
J-115		197.30	
J-116		207.10	
J-117		192.10	
J-120		237.50	
J-122		174.00	
J-123		224.70	
J-124		403.80	

2040 Peak Hour Demand

J-125	5.10	383.00		
J-126	8.40	367.95		
J-127	58.00	225.20		
J-128	37.60	235.20		
J-129	21.40	184.80		
J-130	9.70	222.00		
J-131	1.40	418.00		
J-132	5.80	176.00		
J-133	2.20	339.60		
J-134	3.00	200.90		
J-135	9.10	288.30		
J-136	2.20	204.10		
J-138	2.70	219.60		
J-139	1.20	222.60		
J-140	1.30	218.20		
J-141	1.20	200.90		
J-142	0.60	218.20		
J-143	30.20	193.40		
J-144	4.90	193.40		
J-145	0.30	218.20		
J-146	0.10	218.20		
J-147	0.10	218.20		
J-148	19.30	498.90		
J-149	9.50	306.10		
J-150	15.30	272.40		
J-151	35.00	326.80		
J-152	16.40	272.40		
J-153	353.60	302.40		
J-154	15.80	267.60		
J-155	45.20	263.80		
J-156	51.10	261.30		
J-157	4.80	265.80		
J-2	14.80	201.80		
J-20	5.50	182.90		
J-21	6.40	182.80		
J-25	12.90	311.10		
J-27	10.80	207.10		
J-3	8.50	182.20		
J-30	20.00	219.90		
J-35	21.30	222.10		
J-39	10.60	218.10		
J-4	6.50	184.40		
J-42	15.50	222.00		
J-44	15.90	208.40		
J-45	10.80	209.00		
J-53	24.80	294.30		
J-55	6.70	297.10		
J-57	3.30	229.20		
J-58	4.00	204.60		
J-6	37.70	473.40		
J-61	11.10	207.00		
J-62	2.90	191.50		
J-63	3.50	225.20		
J-64	10.70	202.30		
J-67	5.50	210.80		
J-7	9.00	214.70		
J-71	5.80	204.60		
J-73	16.40	199.60		
J-74	2.60	301.00		
J-77	1.60	296.10		
J-78	13.40	230.70		
J-79	7.10	223.40		
J-8	16.80	208.80		
J-80	12.80	190.70		
J-81	17.20	218.90		
J-82	16.90	257.90		
J-84	6.00	226.30		
J-87	11.00	194.40		
J-88	55.00	275.70		
J-90	0.10	219.10		
J-91	25.20	352.90		
J-93	4.30	187.50		
J-94	9.40	187.50		
J-95	34.40	189.50		
J-96	16.90	176.90		
J-99	2.90	205.50		
Kennicott	Kennicott Re	----	374.00	397.90
Main Reser	Main Reservo	----	383.30	401.30
physical d		0.20	222.00	
I-RV-1		0.00	193.40	
I-RV-2		0.00	200.90	
O-South En		----	287.90	495.59
O-Valley V	Valley View	0.00	308.10	
Yankis (Va	Yankis (Vall	----	631.50	699.50
Yates Rese	500,000 gal	----	376.00	401.30
O-18th St		----	218.20	389.66
I-18th St		0.00	218.20	
I-AV-1		0.00	283.80	
O-AV-2		0.00	306.00	
O-AV-3		0.00	253.40	
I-AV-4		0.00	289.30	
I-AV-5		0.00	225.30	
I-AV-6		0.00	208.10	
I-Centrali		0.00	333.50	
I-Fairview	Fairview PRV	0.00	346.50	
I-High Lev	High Level P	0.00	401.60	
O-RV-1		----	193.40	389.55
O-RV-2		----	200.90	389.67
I-South En		0.00	287.90	
I-Valley V	Valley View	0.00	308.10	

OUTPUT OPTION DATA

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
 MAXIMUM AND MINIMUM PRESSURES = 5
 MAXIMUM AND MINIMUM VELOCITIES = 5
 MAXIMUM AND MINIMUM HEAD LOSS/1000 = 5

S U P P L Y Z O N E D A T A

THIS SYSTEM HAS MULTIPLE SUPPLY ZONES

ZONE NO. 1 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@18th St PRV ~@RV-2 ~@RV-1-@Yankis (Valley V
 ~@Fairview PRV-@Kennicott Reserv ~@Main Reservoir ~@Yates Reservoir
 ~@High Level Reser

ZONE NO. 2 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@Centralia Alpha

ZONE NO. 3 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
 ~@South End Pump S

S Y S T E M C O N F I G U R A T I O N

NUMBER OF PIPES(P) = 712
 NUMBER OF END NODES(J) = 560
 NUMBER OF PRIMARY LOOPS(L) = 148
 NUMBER OF SUPPLY NODES(F) = 7
 NUMBER OF SUPPLY ZONES(Z) = 3

Case: 0

RESULTS OBTAINED AFTER 15 TRIALS: ACCURACY = 0.81859E-04

S I M U L A T I O N D E S C R I P T I O N (L A B E L)

P I P E L I N E R E S U L T S

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

P I P E N A M E	N O D E N U M B E R S		F L O W R A T E gpm	H E A D L O S S ft	M I N O R L O S S ft	L I N E V E L O . ft/s	H L + M L / 1000 ft/f	H L / 1000 ft/f
	#1	#2						
3	6	5	403.01	0.06	0.00	1.65	2.26	2.26
5	10	9	6.00	0.01	0.00	0.07	0.01	0.01
6	12	11	0.30	0.00	0.00	0.00	0.00	0.00
7	872	13	0.30	0.00	0.00	0.00	0.00	0.00
8	15	16	68.87	0.01	0.00	0.78	1.03	1.03
10	18	19	3.20	0.14	0.00	0.33	0.33	0.33
12	22	23	4.63	0.00	0.00	0.03	0.00	0.00
13	24	1524	2.60	0.00	0.00	0.07	0.01	0.01
14	26	J-55	12.70	0.00	0.00	0.08	0.01	0.01
16	28	29	1.60	0.00	0.00	0.04	0.00	0.00
17	32	31	5.20	0.86	0.00	0.53	1.19	1.19
21	38	37	1.20	0.00	0.00	0.03	0.01	0.01
22	2014	40	37.61	0.02	0.00	0.24	0.05	0.05
23	41	1699	115.63	0.00	0.00	0.33	0.06	0.06
24	213	43	0.30	0.00	0.00	0.00	0.00	0.00
26	47	48	1.30	0.00	0.00	0.03	0.00	0.00
27	49	50	2.20	0.00	0.00	0.01	0.00	0.00
28	51	52	5.20	0.00	0.00	0.03	0.00	0.00
32	60	59	0.80	0.00	0.00	0.01	0.00	0.00
35	65	66	75.63	0.51	0.00	0.86	1.72	1.72
37	68	69	18.85	0.01	0.00	0.12	0.01	0.01
38	52	70	1.80	0.00	0.00	0.02	0.00	0.00
39	72	Hillcrest	0.60	0.00	0.00	0.02	0.00	0.00
41	75	76	123.30	0.17	0.00	0.35	0.05	0.05
45	2066	83	0.20	0.00	0.00	0.00	0.00	0.00
46	86	85	0.20	0.00	0.00	0.00	0.00	0.00
52	97	98	0.50	0.00	0.00	0.00	0.00	0.00
55	102	103	0.50	0.00	0.00	0.00	0.00	0.00
56	1810	104	10.34	0.00	0.00	0.03	0.00	0.00
59	107	108	13.57	0.00	0.00	0.04	0.00	0.00
60	J-53	109	1509.56	1.32	0.00	2.41	1.68	1.68
66	J-91	118	979.24	5.37	0.00	2.04	2.28	2.28
68	121	119	298.75	0.25	0.00	0.62	0.35	0.35
70	860	121	435.74	0.02	0.00	0.91	0.71	0.71
72	118	1799	6.50	0.00	0.00	0.04	0.00	0.00
85	396	physical d	0.20	0.00	0.00	0.00	0.00	0.00
107	J-91	2067	1968.48	11.03	0.00	4.10	11.62	11.62
109	325	34	71.93	0.01	0.00	0.20	0.02	0.02
110	166	2122	149.50	0.09	0.00	0.42	0.09	0.09
112	166	962	59.38	0.02	0.00	0.17	0.02	0.02
114	962	569	49.48	0.00	0.00	0.14	0.01	0.01
115	569	665	29.48	0.01	0.00	0.08	0.00	0.00
118	172	J-105	17.66	0.00	0.00	0.05	0.00	0.00
120	178	175	293.91	0.08	0.00	0.83	0.33	0.33
123	1826	178	336.13	0.19	0.00	0.95	0.42	0.42
126	1827	1826	390.78	0.16	0.00	1.11	0.56	0.56
129	192	1827	483.52	1.37	0.00	1.37	0.83	0.83
137	201	192	463.99	0.19	0.00	1.32	0.77	0.77
139	137	201	606.81	0.52	0.00	1.72	1.26	1.26
141	137	15	222.77	0.09	0.00	0.63	0.20	0.20
142	15	J-95	136.50	0.16	0.00	0.39	0.08	0.08

2040 Peak Hour Demand

145	201	J-93	133.92	0.07	0.00	0.38	0.12	0.12
155	212	213	46.70	0.01	0.00	0.13	0.01	0.01
156	26	214	604.10	2.06	0.00	1.71	1.25	1.25
163	2072	224	9.00	0.00	0.00	0.03	0.00	0.00
187	248	253	13.30	0.00	0.00	0.04	0.00	0.00
192	254	J-127	318.13	0.46	0.00	0.90	0.30	0.30
262	325	1575	53.37	0.01	0.00	0.15	0.01	0.01
279	344	343	30.90	0.00	0.00	0.09	0.00	0.00
280	342	344	43.80	0.00	0.00	0.12	0.01	0.01
282	342	346	1.40	0.00	0.00	0.00	0.00	0.00
283	86	J-130	9.70	0.00	0.00	0.03	0.00	0.00
292	361	356	153.73	0.87	0.00	0.63	0.38	0.38
298	J-7	32	65.80	0.00	0.00	0.27	0.08	0.08
302	32	480	48.30	0.04	0.00	0.20	0.04	0.04
318	394	385	226.97	0.06	0.00	0.93	0.50	0.50
319	356	2074	13.50	0.00	0.00	0.06	0.00	0.00
320	356	41	116.33	0.01	0.00	0.48	0.23	0.23
329	396	398	370.57	0.09	0.00	1.51	2.71	2.71
331	398	1409	148.64	0.15	0.00	0.61	0.50	0.50
340	407	408	90.66	0.13	0.00	0.37	0.20	0.20
353	661	2119	8.52	0.01	0.00	0.10	0.03	0.03
355	424	1648	47.16	0.01	0.00	0.19	0.04	0.04
363	295	468	64.60	0.12	0.00	0.26	0.04	0.04
398	172	473	3.90	0.00	0.00	0.01	0.00	0.00
403	480	474	4.90	0.00	0.00	0.03	0.00	0.00
411	2129	J-45	122.24	0.57	0.00	0.78	0.74	0.74
414	1217	1121	8.50	0.01	0.00	0.10	0.02	0.02
417	1235	492	44.78	0.07	0.00	0.29	0.16	0.16
429	505	509	45.21	0.08	0.00	0.29	0.16	0.16
433	510	512	10.48	0.00	0.00	0.07	0.00	0.00
435	1057	513	7.80	0.01	0.00	0.05	0.01	0.01
440	518	J-94	9.60	0.00	0.00	0.06	0.01	0.01
448	92	1184	103.41	0.32	0.00	0.66	0.34	0.34
451	119	530	102.10	0.03	0.00	0.65	0.74	0.74
452	119	536	187.85	1.06	0.00	1.20	2.29	2.29
458	536	2079	82.44	0.32	0.00	0.53	0.50	0.50
461	540	2079	7.93	0.00	0.00	0.05	0.01	0.01
464	544	543	69.38	0.17	0.00	0.44	0.36	0.36
472	552	J-100	167.10	0.18	0.00	1.07	1.84	1.84
476	I-AV-1	J-114	0.00	0.00	0.00	0.00	0.00	0.00
486	569	573	3.40	0.00	0.00	0.02	0.00	0.00
490	385	166	224.17	0.26	0.00	1.43	1.00	1.00
495	J-138	579	85.04	0.08	0.00	0.54	0.24	0.24
497	582	584	123.74	0.26	0.00	0.79	0.48	0.48
503	590	J-73	65.94	0.26	0.00	0.42	0.33	0.33
511	599	601	3.30	0.00	0.00	0.02	0.00	0.00
526	599	619	5.20	0.00	0.00	0.03	0.00	0.00
531	620	623	4.50	0.00	0.00	0.03	0.00	0.00
538	628	631	89.30	0.06	0.00	0.57	0.41	0.41
541	1049	632	2.20	0.00	0.00	0.01	0.00	0.00
547	631	642	4.20	0.00	0.00	0.03	0.00	0.00
552	High Level	2090	215.80	2.33	0.00	1.38	2.11	2.11
565	509	661	39.94	0.17	0.00	0.25	0.13	0.13
569	1284	597	183.42	0.27	0.00	1.17	1.56	1.56
571	2086	46	291.41	1.83	0.00	1.86	3.68	3.68
574	668	665	19.98	0.01	0.00	0.13	0.02	0.02
577	668	675	3.60	0.00	0.00	0.02	0.00	0.00
584	J-27	676	6.50	0.00	0.00	0.04	0.00	0.00
590	54	682	1.30	0.00	0.00	0.01	0.00	0.00
591	J-95	683	14.10	0.01	0.00	0.09	0.01	0.01
593	J-78	686	2.30	0.00	0.00	0.01	0.00	0.00
597	408	J-79	39.00	0.00	0.00	0.25	0.12	0.12
601	361	1960	222.29	2.87	0.00	1.42	2.23	2.23
612	710	705	46.15	0.02	0.00	0.29	0.08	0.08
617	717	1134	34.51	0.04	0.00	0.22	0.04	0.04
623	247	718	0.20	0.00	0.00	0.00	0.00	0.00
630	726	424	31.74	0.01	0.00	0.20	0.08	0.08
632	726	J-80	46.78	0.07	0.00	0.30	0.17	0.17
652	468	780	20.60	0.04	0.00	0.13	0.01	0.01
684	2092	781	0.20	0.00	0.00	0.00	0.00	0.00
686	784	1698	7.80	0.00	0.00	0.05	0.00	0.00
690	788	791	19.40	0.02	0.00	0.12	0.02	0.02
693	791	792	0.90	0.00	0.00	0.01	0.00	0.00
697	797	784	14.30	0.01	0.00	0.09	0.01	0.01
700	800	802	2.00	0.00	0.00	0.02	0.00	0.00
702	803	1465	34.62	0.11	0.00	0.39	0.40	0.40
706	808	2009	7.47	0.02	0.00	0.08	0.02	0.02
710	815	813	19.76	0.04	0.00	0.22	0.14	0.14
712	121	2093	131.39	0.22	0.00	1.49	4.79	4.79
714	40	2094	6.46	0.12	0.00	0.16	0.13	0.13
723	2096	828	23.85	0.09	0.00	0.27	0.20	0.20
726	831	544	73.28	0.12	0.00	0.83	1.62	1.62
727	530	831	108.83	1.13	0.00	1.23	3.38	3.38
735	831	1989	31.05	0.08	0.00	0.35	0.33	0.33
739	844	842	25.52	0.14	0.00	0.29	0.23	0.23
741	817	844	59.24	0.73	0.00	0.67	1.10	1.10
749	J-115	856	22.07	0.04	0.00	0.25	0.18	0.18
751	2078	14	35.93	0.12	0.00	0.41	0.43	0.43
753	860	2097	59.45	0.63	0.00	0.67	1.10	1.10
757	868	865	18.05	0.03	0.00	0.20	0.12	0.12
760	J-113	868	6.45	0.01	0.00	0.07	0.02	0.02
762	872	868	18.30	0.03	0.00	0.21	0.12	0.12
772	2098	881	1.73	0.00	0.00	0.02	0.00	0.00
776	J-111	885	30.64	0.10	0.00	0.35	0.32	0.32
784	893	J-106	0.80	0.00	0.00	0.01	0.00	0.00
785	J-110	893	46.28	0.29	0.00	0.53	0.69	0.69
789	899	66	13.72	0.00	0.00	0.16	0.07	0.07
791	901	899	47.64	0.13	0.00	0.54	0.73	0.73
793	901	1742	74.23	1.87	0.00	0.84	1.66	1.66
797	910	906	5.40	0.00	0.00	0.06	0.01	0.01
801	910	38	13.02	0.01	0.00	0.15	0.07	0.07
807	842	2084	44.57	0.20	0.00	0.51	0.65	0.65
812	916	922	2.50	0.00	0.00	0.03	0.00	0.00
814	J-20	923	26.13	0.14	0.00	0.30	0.24	0.24
817	J-21	929	1.80	0.00	0.00	0.02	0.00	0.00

2040 Peak Hour Demand

823	J-2	937	15.70	0.08	0.00	0.18	0.09	0.09
825	556	J-2	31.50	0.17	0.00	0.36	0.34	0.34
831	2080	945	38.68	0.24	0.00	0.44	0.50	0.50
839	2081	954	13.90	0.03	0.00	0.16	0.07	0.07
846	962	964	0.60	0.00	0.00	0.01	0.00	0.00
858	1314	1387	49.58	0.37	0.00	1.27	5.67	5.67
861	108	104	9.17	0.01	0.00	0.10	0.02	0.02
867	J-110	958	25.77	0.23	0.00	0.29	0.23	0.23
874	994	65	36.75	0.33	0.00	0.42	0.45	0.45
876	65	1986	53.47	0.60	0.00	0.61	0.91	0.91
883	1003	1023	32.68	0.11	0.00	0.37	0.26	0.26
903	J-125	1024	102.30	0.78	0.00	1.16	2.15	2.15
905	O-High Lev	649	0.00	0.00	0.00	0.00	0.00	0.00
910	1024	628	95.00	1.20	0.00	1.09	1.87	1.87
912	1003	1032	22.22	0.10	0.00	0.25	0.13	0.13
930	1050	1053	9.20	0.03	0.00	0.10	0.02	0.02
933	384	2100	20.47	0.15	0.00	0.23	0.15	0.15
936	16	1057	65.17	0.41	0.00	0.74	0.93	0.93
938	1060	1063	6.40	0.00	0.00	0.07	0.01	0.01
941	J-129	1064	6.90	0.01	0.00	0.08	0.01	0.01
948	526	1071	70.39	0.33	0.00	0.80	1.08	1.08
949	526	1084	29.13	0.83	0.00	0.33	0.29	0.29
962	1085	1337	15.70	0.06	0.00	0.18	0.09	0.09
966	J-78	1099	29.27	0.29	0.00	0.33	0.21	0.21
975	1101	1100	1.70	0.00	0.00	0.02	0.00	0.00
976	O-Fairview	1101	38.60	0.04	0.00	0.44	0.35	0.35
982	J-81	2103	4.78	0.00	0.00	0.05	0.01	0.01
993	1121	1122	1.90	0.00	0.00	0.02	0.00	0.00
994	2076	2127	62.49	0.36	0.00	0.71	1.21	1.21
1000	1130	1125	4.70	0.01	0.00	0.05	0.01	0.01
1001	2104	J-73	8.11	0.02	0.00	0.09	0.03	0.03
1003	1134	2104	17.91	0.03	0.00	0.20	0.12	0.12
1004	509	1290	0.24	0.00	0.00	0.00	0.00	0.00
1007	2105	1137	3.14	0.00	0.00	0.04	0.00	0.00
1009	2013	1388	35.72	0.11	0.00	0.41	0.43	0.43
1012	2107	2106	22.72	0.11	0.00	0.26	0.19	0.19
1014	23	510	19.49	0.13	0.00	0.22	0.14	0.14
1017	2137	2109	52.44	0.41	0.00	0.59	0.87	0.87
1019	2109	2094	74.41	0.55	0.00	0.84	1.67	1.67
1020	2094	23	59.33	0.15	0.00	0.67	1.10	1.10
1023	23	1156	27.87	0.13	0.00	0.32	0.27	0.27
1024	2073	2096	20.47	0.04	0.00	0.23	0.15	0.15
1025	2096	2110	16.20	0.03	0.00	0.18	0.10	0.10
1026	1997	2110	14.72	0.02	0.00	0.17	0.08	0.08
1028	2111	1997	46.34	0.17	0.00	0.53	0.69	0.69
1030	2112	2111	79.67	0.51	0.00	0.90	1.90	1.90
1032	2113	1961	32.01	0.15	0.00	0.36	0.35	0.35
1035	704	1961	7.41	0.01	0.00	0.08	0.02	0.02
1036	1961	2109	32.22	0.11	0.00	0.37	0.35	0.35
1037	2010	2014	44.10	0.41	0.00	0.50	0.63	0.63
1040	2012	2013	87.25	0.74	0.00	0.99	2.24	2.24
1041	2012	2065	13.63	0.02	0.00	0.15	0.07	0.07
1042	2065	2137	16.18	0.03	0.00	0.18	0.10	0.10
1043	2137	2113	40.11	0.16	0.00	0.46	0.53	0.53
1044	1180	2113	81.66	0.53	0.00	0.93	1.98	1.98
1046	22	1181	38.53	0.05	0.00	0.44	0.49	0.49
1047	2095	22	50.56	0.14	0.00	0.57	0.82	0.82
1048	1184	726	82.31	0.01	0.00	0.53	0.22	0.22
1051	1996	1186	50.44	0.22	0.00	0.57	0.81	0.81
1053	1232	827	21.61	0.19	0.00	0.25	0.17	0.17
1058	1156	1232	11.38	0.03	0.00	0.13	0.05	0.05
1060	1156	512	1.99	0.00	0.00	0.02	0.00	0.00
1062	2107	512	3.23	0.00	0.00	0.04	0.00	0.00
1064	2115	2107	42.64	0.09	0.00	0.48	0.60	0.60
1069	2117	2065	68.80	0.84	0.00	0.78	1.44	1.44
1071	1210	2137	88.26	1.33	0.00	1.00	2.29	2.29
1074	1713	1211	0.60	0.00	0.00	0.01	0.00	0.00
1076	24	1713	71.90	0.16	0.00	0.82	0.71	0.71
1077	1215	J-58	39.91	0.17	0.00	0.45	0.53	0.53
1078	68	1217	7.46	0.01	0.00	0.08	0.01	0.01
1080	1218	2112	82.40	2.12	0.00	0.93	2.02	2.02
1083	2112	1223	45.56	0.22	0.00	0.52	0.67	0.67
1085	1224	2111	16.35	0.03	0.00	0.19	0.10	0.10
1087	1333	1085	26.06	0.10	0.00	0.30	0.24	0.24
1088	808	1085	0.04	0.00	0.00	0.00	0.00	0.00
1090	1229	808	18.81	0.03	0.00	0.21	0.13	0.13
1091	1181	1232	26.23	0.12	0.00	0.30	0.24	0.24
1094	1235	1483	7.98	0.01	0.00	0.09	0.03	0.03
1095	2120	1104	1.10	0.00	0.00	0.01	0.00	0.00
1096	2120	1239	4.20	0.00	0.00	0.05	0.00	0.00
1099	1214	1240	0.30	0.00	0.00	0.00	0.00	0.00
1100	1244	1214	167.30	1.60	0.00	1.90	3.39	3.39
1103	1251	1244	94.62	0.66	0.00	1.07	1.18	1.18
1110	Yankis (Va	1251	194.50	1.86	0.00	2.21	4.49	4.49
1116	J-25	1513	46.70	0.01	0.00	0.30	0.06	0.06
1117	1396	1277	16.80	0.03	0.00	0.19	0.08	0.08
1118	1277	1262	0.70	0.00	0.00	0.01	0.00	0.00
1120	657	J-25	59.60	0.05	0.00	0.24	0.03	0.03
1125	1181	1270	4.10	0.00	0.00	0.05	0.01	0.01
1127	1099	2103	27.24	0.39	0.00	0.31	0.26	0.26
1132	1277	I-AV-4	0.00	0.00	0.00	0.00	0.00	0.00
1138	579	693	76.44	1.51	0.00	0.87	1.76	1.76
1140	1284	O-AV-3	0.00	0.00	0.00	0.00	0.00	0.00
1146	1290	2119	6.68	0.18	0.00	0.17	0.14	0.14
1148	1293	1295	13.72	0.20	0.00	0.35	0.53	0.53
1150	398	2016	108.28	0.22	0.00	1.23	3.35	3.35
1152	1120	1298	1.40	0.00	0.00	0.02	0.00	0.00
1154	432	1309	15.70	0.14	0.00	0.18	0.07	0.07
1165	1310	1314	12.88	0.54	0.00	0.33	0.47	0.47
1169	2127	J-61	11.89	0.39	0.00	0.30	0.40	0.40
1171	1318	2105	21.99	0.73	0.00	0.56	1.26	1.26
1173	2105	1322	12.90	0.22	0.00	0.33	0.47	0.47
1178	40	2115	19.75	0.31	0.00	0.50	1.03	1.03
1179	2115	1328	8.69	0.13	0.00	0.22	0.23	0.23
1182	803	J-81	7.38	0.11	0.00	0.19	0.17	0.17

2040 Peak Hour Demand

1185	1333	1337	10.02	0.16	0.00	0.26	0.29	0.29
1189	807	1338	3.46	0.06	0.00	0.09	0.04	0.04
1193	518	192	24.87	0.11	0.00	0.64	1.58	1.58
1195	1060	192	13.15	0.28	0.00	0.34	0.49	0.49
1198	705	1060	34.85	3.89	0.00	0.89	2.95	2.95
1205	J-80	492	1.37	0.01	0.00	0.03	0.01	0.01
1208	828	1356	15.35	0.18	0.00	0.39	0.65	0.65
1210	828	1359	1.70	0.00	0.00	0.04	0.01	0.01
1211	1364	1984	4.37	0.01	0.00	0.11	0.06	0.06
1212	1364	1991	2.58	0.01	0.00	0.07	0.02	0.02
1214	2121	1364	14.25	0.16	0.00	0.36	0.56	0.56
1215	1366	36	5.32	0.06	0.00	0.14	0.09	0.09
1217	1251	1244	84.98	0.66	0.00	0.96	0.97	0.97
1226	17	1375	8.48	0.38	0.00	0.22	0.15	0.15
1236	1387	17	39.18	1.05	0.00	1.00	2.62	2.62
1239	1392	1388	24.83	0.91	0.00	0.63	1.58	1.58
1244	33	1314	46.50	0.47	0.00	1.19	3.59	3.59
1245	937	1456	7.40	0.05	0.00	0.19	0.17	0.17
1247	384	1456	4.07	0.01	0.00	0.10	0.06	0.06
1248	1396I-Valley V		0.00	0.00	0.00	0.00	0.00	0.00
1258	1409	505	15.41	0.70	0.00	0.39	0.65	0.65
1261	1410	657	8.44	0.09	0.00	0.22	0.15	0.15
1269	1023	I-AV-2	0.00	0.00	0.00	0.00	0.00	0.00
1309	1456	881	4.57	0.03	0.00	0.12	0.07	0.07
1315	885	1056	14.59	0.10	0.00	0.37	0.42	0.42
1319	1465	2103	0.56	0.00	0.00	0.01	0.00	0.00
1322	407	509	17.57	0.68	0.00	0.45	0.83	0.83
1330	693	492	6.77	0.15	0.00	0.17	0.14	0.14
1338	1295	1483	4.12	0.05	0.00	0.11	0.06	0.06
1340	899	1484	18.62	1.75	0.00	0.48	0.92	0.92
1351	344	1497	5.60	0.03	0.00	0.14	0.04	0.04
1354	1502	1498	3.30	0.00	0.00	0.02	0.00	0.00
1358	J-133	1502	43.00	0.02	0.00	0.27	0.05	0.05
1371	1517	1519	2.00	0.05	0.00	0.20	0.20	0.20
1384	J-95	1544	88.00	0.13	0.00	0.25	0.06	0.06
1388	1544	1547	47.29	0.00	0.00	0.13	0.01	0.01
1389	1547	J-96	24.20	0.00	0.00	0.07	0.00	0.00
1396	1544	1547	5.31	0.00	0.00	0.03	0.00	0.00
1401	668	1674	61.44	0.02	0.00	0.17	0.01	0.01
1404	1674	102	39.00	0.00	0.00	0.11	0.01	0.01
1406	102	J-1	28.10	0.00	0.00	0.08	0.00	0.00
1409	J-143	92	145.91	0.37	0.00	0.41	0.09	0.09
1423	421	107	107.30	0.04	0.00	0.30	0.04	0.04
1426	34	1575	16.63	0.00	0.00	0.05	0.00	0.00
1427	1576	248	37.60	0.00	0.00	0.11	0.01	0.01
1429	248	1580	3.90	0.00	0.00	0.01	0.00	0.00
1433	51	26	635.80	0.62	0.00	1.80	1.38	1.38
1435	109	51	656.10	2.08	0.00	1.86	1.46	1.46
1440	109	6	834.06	1.08	0.00	2.37	2.27	2.27
1441	6	1647	416.85	0.92	0.00	1.18	0.63	0.63
1443	1647	1637	148.45	0.48	0.00	0.42	0.09	0.09
1454	72	1637	212.16	0.32	0.00	0.60	0.18	0.18
1455	1626	72	252.56	0.91	0.00	0.72	0.25	0.25
1458	1627	1626	759.83	1.46	0.00	2.16	1.91	1.91
1460	797	212	64.70	0.01	0.00	0.18	0.02	0.02
1464	1630	788	146.70	0.36	0.00	0.42	0.09	0.09
1477	1626	1630	467.17	0.88	0.00	1.33	0.78	0.78
1479	Yates Reese	1627	1517.53	5.90	0.00	4.30	5.49	5.49
1481	1630	76	257.77	0.73	0.00	0.73	0.21	0.21
1483	76	1636	314.77	0.70	0.00	0.89	0.30	0.30
1487	1637	75	306.11	0.21	0.00	0.87	0.36	0.36
1492	75	49	150.11	0.06	0.00	0.43	0.09	0.09
1493	49	254	117.01	0.20	0.00	0.33	0.06	0.06
1494	J-35	254	248.22	0.41	0.00	0.70	0.24	0.24
1497	1647	2072	213.00	0.19	0.00	0.60	0.18	0.18
1499	247	1648	61.04	0.08	0.00	0.17	0.02	0.02
1500	343	1657	15.00	0.02	0.00	0.10	0.01	0.01
1509	1658	901	136.86	0.35	0.00	0.87	0.46	0.46
1526	1674	800	5.24	0.00	0.00	0.03	0.00	0.00
1531	174	800	5.76	0.00	0.00	0.04	0.00	0.00
1534	1679	1689	7.20	0.01	0.00	0.08	0.02	0.02
1544	1689	1690	0.90	0.00	0.00	0.01	0.00	0.00
1548	1698	2092	5.30	0.00	0.00	0.03	0.00	0.00
1552	1699	1700	5.80	0.00	0.00	0.02	0.00	0.00
1553	2138	89	10.10	0.01	0.00	0.06	0.00	0.00
1560	J-53	1710	7.70	0.00	0.00	0.05	0.00	0.00
1562	683	1711	1.60	0.00	0.00	0.01	0.00	0.00
1563	683	1712	3.60	0.00	0.00	0.02	0.00	0.00
1564	1713	1716	67.80	0.11	0.00	0.77	0.64	0.64
1567	1716	1719	1.30	0.00	0.00	0.01	0.00	0.00
1584	1742	1737	26.12	2.20	0.00	0.67	1.73	1.73
1588	1737	1375	12.22	0.16	0.00	0.31	0.42	0.42
1593	1742	1484	27.41	0.00	0.00	0.11	0.01	0.01
1596	1484	975	16.02	0.01	0.00	0.07	0.00	0.00
1611	975	1310	25.18	0.00	0.00	0.10	0.01	0.01
1612	1310	2122	0.10	0.00	0.00	0.00	0.00	0.00
1615	1089	2123	15.65	0.01	0.00	0.10	0.01	0.01
1617	1089	1186	29.74	0.07	0.00	0.34	0.31	0.31
1618	1186	1767	72.28	0.10	0.00	0.46	0.18	0.18
1621	J-135	1773	59.00	0.07	0.00	0.38	0.10	0.10
1626	1773	1775	48.60	0.01	0.00	0.31	0.07	0.07
1628	1775	1776	22.40	0.00	0.00	0.14	0.02	0.02
1629	1776	1782	9.60	0.00	0.00	0.06	0.00	0.00
1635	1788	1782	4.04	0.00	0.00	0.03	0.00	0.00
1641	1775	1788	22.60	0.00	0.00	0.14	0.02	0.02
1644	1773	1791	1.80	0.00	0.00	0.01	0.00	0.00
1645	1776	1793	2.40	0.00	0.00	0.02	0.00	0.00
1647	1788	1782	5.36	0.00	0.00	0.03	0.00	0.00
1654	1800	1801	1.70	0.00	0.00	0.01	0.00	0.00
1657	18053-inch or		0.80	0.00	0.00	0.01	0.00	0.00
1658	1806	1808	2.90	0.00	0.00	0.03	0.00	0.00
1660	1809	1806	5.90	0.00	0.00	0.04	0.00	0.00
1661	1810	1821	63.39	0.02	0.00	0.26	0.04	0.04
1663	1821	1800	42.24	0.00	0.00	0.17	0.02	0.02
1664	1813	1809	17.20	0.00	0.00	0.07	0.00	0.00

2040 Peak Hour Demand

1665	1814	1818	3.90	0.25	0.00	0.40	0.47	0.47
1669	1813	1814	10.04	0.00	0.00	0.06	0.00	0.00
1672	1821	J-112	10.54	0.00	0.00	0.07	0.00	0.00
1673	1826	1823	46.65	0.19	0.00	0.53	0.50	0.50
1676	1827	1071	78.23	0.02	0.00	0.50	0.32	0.32
1677	J-128	1636	48.43	0.03	0.00	0.31	0.07	0.07
1792	844	910	22.42	0.34	0.00	0.57	1.30	1.30
1793	178	1823	36.72	0.01	0.00	0.23	0.08	0.08
1796	1063	1948	2.40	0.10	0.00	0.25	0.32	0.32
1799	1032	J-114	11.62	0.18	0.00	0.30	0.28	0.28
1810	1960	12	212.59	0.04	0.00	1.36	2.05	2.05
1811	12	10	204.19	2.00	0.00	1.30	1.90	1.90
1813	1767	J-117	6.50	0.01	0.00	0.07	0.02	0.02
1818	1737	1968	1.00	0.00	0.00	0.03	0.00	0.00
1820	1823	J-21	76.47	0.86	0.00	0.87	1.76	1.76
1821	175	384	276.71	1.52	0.00	1.13	0.72	0.72
1825	566	1973	5.88	0.05	0.00	0.15	0.11	0.11
1826	1974	1975	5.00	0.05	0.00	0.13	0.08	0.08
1828	J-3	1980	3.70	0.00	0.00	0.04	0.01	0.01
1830	19813-inch	or	0.40	0.00	0.00	0.01	0.00	0.00
1831	1767	1984	57.88	0.25	0.00	0.66	1.05	1.05
1834	1986	1985	0.40	0.00	0.00	0.01	0.00	0.00
1835	894	2125	14.85	0.00	0.00	0.09	0.01	0.01
1836	1987	568	2.70	0.02	0.00	0.07	0.03	0.03
1837	1989	1988	0.40	0.00	0.00	0.01	0.00	0.00
1839	2121	1991	49.75	0.17	0.00	0.56	0.79	0.79
1840	2123	2126	289.54	0.22	0.00	1.18	0.78	0.78
1841	994	1994	1.50	0.00	0.00	0.02	0.00	0.00
1842	1997	1996	22.82	0.13	0.00	0.26	0.19	0.19
1843	1184	2003	7.00	0.01	0.00	0.09	0.01	0.01
1852	2007	2009	27.91	0.06	0.00	0.32	0.27	0.27
1854	2065	2010	54.35	0.44	0.00	0.62	0.93	0.93
1855	J-39	2012	109.69	0.49	0.00	0.70	0.84	0.84
1856	2013	2014	43.83	0.13	0.00	0.50	0.28	0.28
1858	2016	J-81	14.59	0.87	0.00	0.37	0.59	0.59
1860	504	2127	11.61	0.37	0.00	0.30	0.39	0.39
1864	1121	2023	1.30	0.00	0.00	0.01	0.00	0.00
1865	2127	1215	44.21	0.17	0.00	0.50	0.64	0.64
1866	2025	2028	2.80	0.10	0.00	0.29	0.25	0.25
1869	2029	2030	1.60	0.02	0.00	0.16	0.09	0.09
1870	2031	2029	13.70	0.02	0.00	0.35	0.16	0.16
1871	2029	2025	9.40	0.00	0.00	0.24	0.08	0.08
1872	2025	2032	1.80	0.00	0.00	0.05	0.00	0.00
1873	2031	2033	4.50	0.01	0.00	0.11	0.02	0.02
1877	J-124	2031	24.70	0.00	0.00	0.16	0.02	0.02
1883	J-74	2047	1.50	0.00	0.00	0.02	0.00	0.00
1887	2053	582	57.86	3.61	0.00	1.49	5.39	5.39
1892	2129	582	77.29	3.16	0.00	1.97	9.21	9.21
1893	46	590	81.99	1.08	0.00	0.93	1.43	1.43
1894	J-45	2061	2.40	0.00	0.00	0.03	0.00	0.00
1895	J-44	2063	271.03	2.83	0.00	1.73	3.22	3.22
1896	5	361	402.31	0.15	0.00	1.64	2.26	2.26
1898	14	540	10.03	0.01	0.00	0.11	0.04	0.04
1900	163-in	or sm	0.20	0.00	0.00	0.00	0.00	0.00
1901	17	18	8.10	0.00	0.00	0.09	0.02	0.02
1904	2088	24	78.70	0.00	0.00	0.89	0.84	0.84
1907	36	2130	3.97	0.00	0.00	0.05	0.01	0.01
1908	38	2083	3.92	0.01	0.00	0.04	0.01	0.01
1909	2014	J-87	37.62	0.14	0.00	0.43	0.47	0.47
1917	69	J-61	1.41	0.00	0.00	0.01	0.00	0.00
1920	295	J-30	51.00	0.02	0.00	0.14	0.01	0.01
1924	2066	86	21.90	0.00	0.00	0.06	0.00	0.00
1927	104	J-112	9.01	0.03	0.00	0.10	0.03	0.03
1930	118	710	930.84	5.24	0.00	1.94	2.07	2.07
1935	2106	247	95.64	0.01	0.00	0.61	0.66	0.66
1936	2122	325	137.40	0.02	0.00	0.39	0.08	0.08
1938	1218	375	881.12	1.93	0.00	1.84	2.62	2.62
1940	1318	396	373.37	0.16	0.00	0.78	0.53	0.53
1941	480	2138	26.50	0.01	0.00	0.11	0.01	0.01
1947	2093	530	14.43	0.06	0.00	0.16	0.08	0.08
1948	536	2078	95.31	0.19	0.00	0.61	0.65	0.65
1949	565	1084	129.40	0.68	0.00	0.83	1.15	1.15
1950	556	944	16.66	0.05	0.00	0.19	0.10	0.10
1951	543	565	132.81	0.04	0.00	0.85	1.20	1.20
1954	J-84	O-AV-5	0.00	0.00	0.00	0.00	0.00	0.00
1956	584	717	114.99	0.17	0.00	0.47	0.22	0.22
1958	590	584	2.85	0.00	0.00	0.01	0.00	0.00
1960	620	2133	36.50	0.01	0.00	0.23	0.05	0.05
1962	1410	649	111.80	0.03	0.00	0.71	0.62	0.62
1964	661	424	18.42	0.00	0.00	0.08	0.01	0.01
1965	665	172	31.16	0.00	0.00	0.09	0.01	0.01
1967	710	137	850.18	3.49	0.00	1.77	1.75	1.75
1972	791	784	6.60	0.00	0.00	0.04	0.00	0.00
1975	788	797	88.90	0.01	0.00	0.25	0.04	0.04
1977	J-120	813	7.79	0.01	0.00	0.09	0.03	0.03
1978	803	815	20.85	0.09	0.00	0.24	0.16	0.16
1979	1338	817	1.11	0.00	0.00	0.01	0.00	0.00
1982	856	2121	55.92	0.29	0.00	0.63	0.98	0.98
1983	375	860	501.38	0.24	0.00	1.04	0.92	0.92
1984	865	65	107.35	0.31	0.00	0.69	0.81	0.81
1985	14	872	21.20	0.02	0.00	0.24	0.16	0.16
1986	923	J-3	25.14	0.08	0.00	0.29	0.22	0.22
1987	1987	944	27.98	0.10	0.00	0.32	0.27	0.27
1989	945	954	18.28	0.03	0.00	0.21	0.12	0.12
1990	958	J-106	23.85	0.05	0.00	0.27	0.20	0.20
1992	994	1658	270.96	0.36	0.00	1.11	0.69	0.69
1993	60	2101	10.47	0.01	0.00	0.12	0.04	0.04
1995	1049	1003	67.70	0.53	0.00	0.77	1.00	1.00
1996	631	1049	77.90	0.09	0.00	0.50	0.32	0.32
1997	1050	975	25.56	0.07	0.00	0.29	0.16	0.16
1998	1057	518	41.67	0.09	0.00	0.27	0.14	0.14
2000	1084	552	130.53	0.51	0.00	0.83	1.17	1.17
2001	1120	1099	77.48	0.44	0.00	0.88	1.80	1.80
2002	J-79	1107	129.92	0.24	0.00	0.83	1.16	1.16
2003	J-63	1130	116.13	0.43	0.00	0.74	0.94	0.94

2040 Peak Hour Demand

2005	398	1137	106.45	0.48	0.00	0.68	0.80	0.80
2010	1180	704	144.87	0.67	0.00	0.92	1.41	1.41
2011	704	1183	131.76	0.18	0.00	1.49	4.81	4.81
2014	2067	1210	736.03	1.07	0.00	1.53	1.88	1.88
2020	1223	1224	55.47	0.26	0.00	0.63	0.97	0.97
2021	1224	827	30.12	0.21	0.00	0.34	0.31	0.31
2022	1229	815	7.41	0.01	0.00	0.08	0.02	0.02
2024	1517	1235	64.96	0.29	0.00	0.41	0.32	0.32
2025	1099	J-82	54.91	0.28	0.00	0.62	0.95	0.95
2027	46	1284	195.12	1.25	0.00	1.25	1.75	1.75
2031	1392	1318	403.96	0.19	0.00	0.84	0.62	0.62
2032	J-87	1322	26.54	0.06	0.00	0.30	0.25	0.25
2033	2091	1328	77.54	0.14	0.00	0.49	0.44	0.44
2035	1337	2110	17.32	0.00	0.00	0.20	0.11	0.11
2036	813	1338	16.65	0.07	0.00	0.19	0.10	0.10
2037	1356	1089	50.99	0.01	0.00	0.58	0.83	0.83
2039	945	1366	11.90	0.03	0.00	0.13	0.06	0.06
2040	1387	979	3.50	0.00	0.00	0.04	0.00	0.00
2042	J-39	1392	439.48	0.43	0.00	0.92	0.72	0.72
2045	1409	407	121.03	0.10	0.00	0.49	0.34	0.34
2048	1465	J-120	27.27	0.01	0.00	0.31	0.26	0.26
2053	1107	1517	78.56	0.19	0.00	0.50	0.46	0.46
2058	J-8	1570	276.71	1.20	0.00	1.13	1.13	1.13
2060	1575	342	53.30	0.01	0.00	0.15	0.01	0.01
2063	1627	J-135	734.00	0.64	0.00	2.08	1.79	1.79
2067	1648	432	52.10	0.15	0.00	0.21	0.05	0.05
2068	1658	421	119.20	0.12	0.00	0.49	0.15	0.15
2070	1101	1679	33.30	0.01	0.00	0.38	0.27	0.27
2071	212	1698	8.60	0.00	0.00	0.05	0.00	0.00
2078	1800	1813	34.74	0.00	0.00	0.14	0.01	0.01
2079	1805	1805	6.20	0.00	0.00	0.03	0.00	0.00
2080	107	1810	83.13	0.01	0.00	0.24	0.03	0.03
2087	1960	700	0.10	0.00	0.00	0.00	0.00	0.00
2089	1973	J-2	36.58	0.15	0.00	0.42	0.45	0.45
2090	1974	1366	4.43	0.00	0.00	0.05	0.01	0.01
2091	1975	36	8.25	0.01	0.00	0.09	0.03	0.03
2092	1981	J-4	33.44	0.10	0.00	0.38	0.38	0.38
2093	1984	994	322.61	0.36	0.00	1.32	0.95	0.95
2095	1986	552	44.17	0.33	0.00	0.50	0.64	0.64
2096	893	1987	39.08	0.03	0.00	0.44	0.51	0.51
2097	1989	842	27.25	0.05	0.00	0.31	0.26	0.26
2102	827	1996	36.63	0.12	0.00	0.42	0.45	0.45
2104	375	2007	367.84	0.79	0.00	1.50	1.21	1.21
2105	2009	2096	26.68	0.01	0.00	0.30	0.25	0.25
2111	2016	1120	82.28	0.04	0.00	0.93	2.01	2.01
2114	1107	1293	44.06	0.24	0.00	0.50	0.63	0.63
2118	J-57	2053	276.49	1.35	0.00	1.76	3.34	3.34
2120	717	2063	64.99	0.03	0.00	0.27	0.08	0.08
2127	2067	1218	978.82	1.06	0.00	2.04	3.19	3.19
2128	2067	1180	236.03	2.02	0.00	1.51	3.49	3.49
2139	2007	2073	333.23	0.04	0.00	1.36	1.01	1.01
2141	2074	483	3.20	0.00	0.00	0.02	0.00	0.00
2145	492	2076	32.82	0.03	0.00	0.21	0.09	0.09
2146	504	2076	5.59	0.00	0.00	0.04	0.00	0.00
2148	693	J-64	53.68	0.03	0.00	0.34	0.10	0.10
2149	2078	865	95.80	0.19	0.00	0.61	0.66	0.66
2150	1991	2078	44.83	0.19	0.00	0.51	0.65	0.65
2152	2079	543	68.62	0.07	0.00	0.44	0.35	0.35
2153	2080	2081	85.03	0.23	0.00	0.96	0.97	0.97
2154	2080	958	31.00	0.19	0.00	0.35	0.33	0.33
2155	2125	J-99	72.54	0.01	0.00	0.46	0.18	0.18
2156	958	2081	17.12	0.04	0.00	0.19	0.11	0.11
2159	2084	2083	20.64	0.01	0.00	0.13	0.04	0.04
2160	2083	916	6.56	0.01	0.00	0.07	0.02	0.02
2161	2084	565	3.49	0.00	0.00	0.02	0.00	0.00
2162	2084	916	8.64	0.02	0.00	0.10	0.03	0.03
2165	2086	578	4.10	0.00	0.00	0.03	0.00	0.00
2166	2132	2086	307.51	2.41	0.00	1.96	4.06	4.06
2169	2088	620	64.50	0.35	0.00	0.41	0.14	0.14
2170	1214	2088	162.20	0.51	0.00	1.84	3.20	3.20
2173	2090	1410	124.74	0.01	0.00	0.80	0.76	0.76
2174	2090	657	70.86	0.10	0.00	0.45	0.17	0.17
2175	1137	2091	99.49	0.33	0.00	0.63	0.70	0.70
2176	2091	505	43.50	0.05	0.00	0.28	0.15	0.15
2179	2093	817	68.54	0.44	0.00	0.78	1.43	1.43
2180	2093	1229	35.42	0.32	0.00	0.40	0.42	0.42
2181	2094	2095	6.94	0.01	0.00	0.08	0.02	0.02
2183	2095	1223	16.31	0.03	0.00	0.19	0.10	0.10
2184	1183	2095	70.12	0.49	0.00	0.80	1.50	1.50
2187	2097	856	40.75	0.23	0.00	0.46	0.55	0.55
2188	2073	2097	23.38	0.04	0.00	0.27	0.20	0.20
2189	885	2098	8.75	0.01	0.00	0.10	0.03	0.03
2190	2098	2100	33.60	0.10	0.00	0.39	0.38	0.38
2192	954	2130	25.38	0.06	0.00	0.29	0.23	0.23
2193	2100	1050	49.46	0.20	0.00	0.56	0.56	0.56
2194	1056	2100	9.89	0.02	0.00	0.11	0.04	0.04
2195	2101	807	8.28	0.01	0.00	0.09	0.01	0.01
2196	J-82	2101	14.81	0.13	0.00	0.17	0.08	0.08
2198	1293	1290	22.24	0.07	0.00	0.25	0.18	0.18
2199	2103	60	14.17	0.01	0.00	0.16	0.08	0.08
2202	2104	2021	1.80	0.00	0.00	0.05	0.01	0.01
2203	1388	2105	6.25	0.01	0.00	0.07	0.02	0.02
2206	1328	2106	78.52	0.07	0.00	0.50	0.45	0.45
2207	2107	510	3.29	0.00	0.00	0.04	0.01	0.01
2212	2109	2010	0.05	0.00	0.00	0.00	0.00	0.00
2214	2110	1356	40.84	0.24	0.00	0.46	0.55	0.55
2216	2111	1333	43.28	0.03	0.00	0.49	0.61	0.61
2217	1183	2112	56.84	0.30	0.00	0.64	1.01	1.01
2221	2113	803	78.06	1.15	0.00	0.89	1.83	1.83
2223	J-87	2115	41.58	0.19	0.00	0.47	0.57	0.57
2228	1210	2117	637.17	0.46	0.00	1.33	1.44	1.44
2231	2119	1483	0.30	0.00	0.00	0.00	0.00	0.00
2234	J-77	2120	13.60	0.01	0.00	0.15	0.05	0.05
2236	2126	2121	15.38	0.02	0.00	0.17	0.09	0.09
2240	2073	2123	282.79	0.32	0.00	1.16	0.75	0.75

2040 Peak Hour Demand

2243	2125	961	18.65	0.00	0.00	0.12	0.01	0.01
2244	2081	2125	78.94	0.06	0.00	0.50	0.21	0.21
2246	2126	1984	268.46	0.19	0.00	1.10	0.68	0.68
2249	J-77	2050	0.30	0.00	0.00	0.00	0.00	0.00
2252	2053	2129	209.23	0.45	0.00	1.34	1.99	1.99
2253	961	2130	15.05	0.04	0.00	0.17	0.09	0.09
2254	2130	1973	36.80	0.02	0.00	0.42	0.45	0.45
2257	214	2132	592.10	0.10	0.00	3.78	13.68	13.68
2259	2133	599	21.50	0.01	0.00	-0.14	0.02	0.02
2260	2133	47	6.00	0.00	0.00	0.04	0.00	0.00
2269	2138	481	0.50	0.00	0.00	0.00	0.00	0.00
P-1	J-1	97	18.40	0.00	0.00	0.05	0.00	0.00
P-100	J-112	1814	6.26	0.01	0.00	0.07	0.02	0.02
F-101	2075	J-113	12.75	0.02	0.00	0.14	0.06	0.06
F-102	1023	J-114	17.08	0.17	0.00	0.44	0.56	0.56
F-103	649	J-125	107.40	0.82	0.00	1.22	2.35	2.35
F-104	1103I-Fairview		38.60	0.01	0.00	0.44	0.35	0.35
F-105	J-116	J-115	26.77	0.11	0.00	0.30	0.25	0.25
F-106	2097	J-116	31.57	0.09	0.00	0.36	0.34	0.34
P-108	J-117	56	2.20	0.00	0.00	0.02	0.00	0.00
P-11	J-3	1975	12.94	0.02	0.00	0.15	0.07	0.07
F-111	J-120	807	13.18	0.02	0.00	0.15	0.07	0.07
F-113	2117	J-39	559.77	0.33	0.00	1.17	1.13	1.13
P-116	97	J-122	12.50	0.00	0.00	0.04	0.00	0.00
P-117	J-145	J-140	209.57	0.01	0.00	0.59	0.14	0.14
F-119	J-84	J-139	211.87	0.08	0.00	1.35	1.03	1.03
F-121	J-140	J-138	87.74	0.00	0.00	0.25	0.03	0.03
F-122	Main Reser	J-126	2981.32	2.00	0.00	6.21	17.88	17.88
F-124	O-AV-1	2083	0.00	0.00	0.00	0.00	0.00	0.00
F-125	O-AV-2	906	0.00	0.00	0.00	0.00	0.00	0.00
F-127	J-127	295	169.60	0.22	0.00	0.48	0.09	0.09
F-128	J-127	J-128	90.53	0.12	0.00	0.26	0.03	0.03
F-130	J-128	1831	4.50	0.00	0.00	0.03	0.00	0.00
F-131	1071	J-129	141.92	2.20	0.00	1.61	3.94	3.94
F-132	J-129	668	113.62	0.07	0.00	0.32	0.05	0.05
F-133	1513	J-133	45.20	0.00	0.00	0.29	0.06	0.06
F-134	J-122	J-132	5.80	0.00	0.00	0.02	0.00	0.00
F-135	1502	J-124	31.50	0.01	0.00	0.20	0.03	0.03
F-136	J-124	J-131	1.40	0.00	0.00	0.01	0.00	0.00
F-138-CV	Kennicott	J-53	1542.06	1.38	0.00	2.46	1.75	1.75
F-140	O-AV-4	686	0.00	0.00	0.00	0.00	0.00	0.00
F-143	I-AV-5	J-63	0.00	0.00	0.00	0.00	0.00	0.00
F-144	O-AV-6	1134	0.00	0.00	0.00	0.00	0.00	0.00
F-146	J-73	J-134	3.00	0.00	0.00	0.02	0.00	0.00
F-147	J-64	J-141	1.20	0.00	0.00	0.01	0.00	0.00
F-148	J-134	O-RV-2	0.00	0.00	0.00	0.00	0.00	0.00
F-149	O-RV-1	J-143	176.11	0.00	0.00	0.50	0.10	0.10
P-15	J-126	J-91	2972.92	3.06	0.00	6.20	17.79	17.79
F-150-XXCV	J-141	J-134						
F-151	J-139	J-142	210.67	0.08	0.00	1.34	1.02	1.02
F-152	1570	J-144	181.01	0.08	0.00	0.51	0.13	0.13
F-153-XXCV	J-143	J-144						
F-154	J-144	I-RV-1	176.11	0.00	0.00	0.50	0.10	0.10
F-157	I-RV-2	J-141	0.00	0.00	0.00	0.00	0.00	0.00
F-1570	1716	1103	51.40	0.16	0.00	0.33	0.09	0.09
F-158	J-145I-18th St		0.00	0.00	0.00	0.00	0.00	0.00
F-159	J-146	J-145	209.87	0.00	0.00	0.60	0.18	0.18
F-160-XXCV	J-146	J-147						
F-161	O-18th St	J-146	209.97	0.00	0.00	0.60	0.14	0.14
F-162	J-142	J-147	210.07	0.00	0.00	0.60	0.18	0.18
F-164	J-147I-18th St		209.97	0.00	0.00	0.60	0.14	0.14
F-165	J-156	J-155	85.00	0.50	0.00	0.96	0.67	0.67
F-166	66	J-110	84.65	0.68	0.00	0.96	2.12	2.12
F-167	J-156	J-153	420.10	3.03	0.00	1.19	0.64	0.64
F-168	J-152	J-150	14.28	0.00	0.00	0.09	0.01	0.01
F-169	J-88	J-154	603.70	0.59	0.00	1.71	1.25	1.25
F-170	J-155	J-151	35.00	0.63	0.00	0.40	0.13	0.13
F-171	J-155	J-157	4.80	0.46	0.00	0.49	0.69	0.69
F-172	J-154	J-156	556.20	1.67	0.00	1.58	1.07	1.07
P-173	J-6	J-148	19.30	27.81	0.00	1.97	10.44	10.44
P-174	J-153	J-149	9.50	0.00	0.00	0.06	0.00	0.00
P-175	J-152	J-150	1.02	0.00	0.00	0.01	0.00	0.00
P-18	J-135I-South En		665.90	0.09	0.00	1.89	1.19	1.19
P-19	34	33	47.50	0.04	0.00	1.21	3.74	3.74
P-2	J-1	101	0.60	0.00	0.00	0.00	0.00	0.00
P-20	213	1576	41.00	0.00	0.00	0.12	0.01	0.01
P-25	J-30	2066	31.00	0.00	0.00	0.09	0.00	0.00
P-29	2063	J-8	319.71	1.44	0.00	1.31	1.47	1.47
P-3	O-Centrali	J-6	57.00	11.52	0.00	0.65	0.46	0.46
P-30	J-42	J-35	269.52	0.35	0.00	0.76	0.28	0.28
P-31	J-8	54	26.20	0.01	0.00	0.17	0.04	0.04
P-33	2072	J-42	187.40	0.00	0.00	0.53	0.14	0.14
P-34	1699	J-42	97.63	0.04	0.00	0.28	0.04	0.04
P-36	1322	2091	31.84	0.11	0.00	0.36	0.35	0.35
P-4	1570	J-7	74.80	0.12	0.00	0.31	0.10	0.10
P-40	10	J-44	177.89	1.35	0.00	1.14	1.47	1.47
P-42	J-45	J-44	109.04	0.23	0.00	0.70	0.60	0.60
P-43	O-South En	J-88	665.90	4.60	0.00	1.89	1.50	1.50
P-44	J-55	28	6.00	0.00	0.00	0.04	0.00	0.00
P-47	2132	J-57	279.99	0.09	0.00	1.79	3.42	3.42
P-48	41	J-90	0.10	0.00	0.00	0.00	0.00	0.00
P-49	J-57	2051	0.10	0.00	0.00	0.00	0.00	0.00
P-50	J-57	2052	0.10	0.00	0.00	0.00	0.00	0.00
P-51	O-18th St	J-142	0.00	0.00	0.00	0.00	0.00	0.00
P-53	J-4	1974	19.53	0.05	0.00	0.22	0.14	0.14
P-54	J-4	923	7.41	0.01	0.00	0.08	0.02	0.02
P-57	1217	I-AV-6	0.00	0.00	0.00	0.00	0.00	0.00
P-58	69	1217	10.54	0.00	0.00	0.07	0.00	0.00
P-6	J-88	J-11	7.20	0.00	0.00	0.05	0.00	0.00
P-61	J-58	68	35.91	0.04	0.00	0.41	0.20	0.20
P-62	J-61	J-136	2.20	0.00	0.00	0.01	0.00	0.00
P-63	J-64	2076	41.78	0.14	0.00	0.27	0.14	0.14
P-64	54	J-27	17.30	0.01	0.00	0.11	0.02	0.02
P-65	J-67	597	43.35	0.05	0.00	0.28	0.11	0.11
P-67	J-71	J-67	48.85	0.03	0.00	0.31	0.09	0.09

2040 Peak Hour Demand

P-69	J-73	J-71	54.65	0.10	0.00	0.35	0.23	0.23
P-7	J-154	J-152	31.70	0.01	0.00	0.20	0.04	0.04
P-71	J-123	J-63	119.63	0.01	0.00	0.76	0.36	0.36
P-73	1679	J-74	19.60	0.01	0.00	0.22	0.10	0.10
P-74	J-74	J-77	15.50	0.00	0.00	0.18	0.07	0.07
P-75	I-AV-3	2120	0.00	0.00	0.00	0.00	0.00	0.00
P-76	408	J-78	44.97	0.03	0.00	0.29	0.12	0.12
P-77	1130	J-79	98.03	0.51	0.00	0.63	0.69	0.69
P-78	J-80	504	32.61	0.03	0.00	-0.21	0.09	0.09
P-79	J-82	1396	23.20	0.07	0.00	0.26	0.14	0.14
P-80	1388	J-87	41.50	0.16	0.00	0.47	0.26	0.26
P-81	92	J-62	2.90	0.00	0.00	0.02	0.00	0.00
P-82	597	J-84	217.87	1.36	0.00	1.39	2.15	2.15
P-83	J-140	J-123	120.53	0.01	0.00	0.34	0.05	0.05
P-84	J-93	1971	0.20	0.00	0.00	0.00	0.00	0.00
P-86	I-High Lev	J-126	0.00	0.00	0.00	0.00	0.00	0.00
P-87	J-94	526	129.62	1.17	0.00	0.83	1.15	1.15
P-88	J-93	J-94	129.42	0.01	0.00	1.47	3.32	3.32
P-89	J-96inter-tie		7.30	0.00	0.00	0.02	0.00	0.00
P-9	J-2	2098	37.58	0.16	0.00	0.43	0.47	0.47
P-90	J-105	174	11.06	0.00	0.00	0.03	0.00	0.00
P-91	J-20	1981	36.64	0.03	0.00	0.42	0.45	0.45
P-92	J-21	J-20	68.27	0.20	0.00	0.77	1.42	1.42
P-93	J-99	568	2.60	0.00	0.00	0.02	0.00	0.00
P-94	J-99	556	57.46	0.03	0.00	0.37	0.12	0.12
P-95	J-99	566	9.58	0.00	0.00	0.06	0.00	0.00
P-96	J-100	2080	165.20	0.13	0.00	1.05	0.82	0.82
P-97	J-106	894	17.35	0.04	0.00	0.20	0.11	0.11
P-98	J-153I-Centrali		57.00	2.43	0.00	0.36	0.11	0.11
P-99	944	J-111	35.54	0.16	0.00	0.40	0.43	0.43
Valley Vie	O-Valley VYankis (Va		0.00	0.00	0.00	0.00	0.00	0.00
~@18th St -RV	I-18th St O-18th St							
~@AV-1-XX	I-AV-1 O-AV-1							
~@AV-2-XX	I-AV-2 O-AV-2							
~@AV-3-XX	I-AV-3 O-AV-3							
~@AV-4-XX	I-AV-4 O-AV-4							
~@AV-5-XX	I-AV-5 O-AV-5							
~@AV-6-XX	I-AV-6 O-AV-6							
~@High Lev-RV	I-High LevO-High Lev							
~@Valley V-RV	I-Valley VO-Valley V							

N O D E R E S U L T S

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
5		0.70	394.06	243.40	150.66	65.29
6		14.20	394.12	244.40	149.72	64.88
9		6.00	388.99	205.80	183.19	79.38
10		20.30	389.00	213.70	175.30	75.96
11		0.30	391.00	236.90	154.10	66.78
12		8.10	391.00	236.50	154.50	66.95
13		0.30	380.33	198.90	181.43	78.62
14		4.70	380.35	201.40	178.95	77.54
15		17.40	382.06	186.10	195.96	84.91
16		3.50	382.05	186.10	195.95	84.91
17		22.60	375.74	175.70	200.04	86.68
18		4.90	375.73	171.90	203.83	88.33
19		3.20	375.59	165.30	210.29	91.13
22		7.40	381.70	186.50	195.20	84.59
23		16.60	381.70	187.70	194.00	84.07
24		4.20	694.87	604.50	90.37	39.16
26		19.00	392.50	240.30	152.20	65.95
28		4.40	392.50	322.60	69.90	30.29
29		1.60	392.50	323.60	68.90	29.85
31		5.20	381.19	216.80	164.39	71.23
32		12.30	382.05	214.70	167.35	72.52
33		1.00	377.62	183.00	194.62	84.34
34		7.80	377.67	183.50	194.17	84.14
36		9.60	378.40	194.40	184.00	79.74
37		1.20	380.22	333.40	46.82	20.29
38		7.90	380.22	290.50	89.72	38.88
40		11.40	381.98	190.80	191.18	82.84
41		0.60	393.04	219.10	173.94	75.37
43		0.30	392.67	253.50	139.17	60.31
46		14.30	386.10	229.90	156.20	67.69
47		4.70	694.52	544.40	150.12	65.05
48		1.30	694.52	543.60	150.92	65.40
49		30.90	392.44	243.00	149.44	64.76
50		2.20	392.44	244.20	148.24	64.24
51		15.10	393.12	240.00	153.12	66.35
52		3.40	393.12	261.50	131.62	57.03
54		7.60	383.36	209.30	174.06	75.43
56		2.20	380.90	193.00	187.90	81.42
59		0.80	381.38	252.50	128.88	55.85
60		2.90	381.38	252.90	128.48	55.67
65		15.00	379.96	192.40	187.56	81.28
66		4.70	379.45	191.30	188.15	81.53
68		9.60	380.53	205.20	175.33	75.98
69		6.90	380.52	208.70	171.82	74.46
70		1.80	393.12	285.20	107.92	46.76
72		39.80	393.03	255.00	138.03	59.81
75		32.70	392.50	247.70	144.80	62.75
76		66.30	392.33	256.00	136.33	59.08
83		0.20	391.54	221.90	169.64	73.51
85		0.20	391.54	222.10	169.44	73.42
86		12.00	391.54	222.40	169.14	73.29
89		10.10	381.99	225.60	156.39	67.77
92		39.60	381.71	192.40	189.31	82.04
97		5.40	377.75	173.90	203.85	88.34
98		0.50	377.75	174.00	203.75	88.29
101		0.60	377.76	174.30	203.46	88.16

2040 Peak Hour Demand

102	10.40	377.76	176.00	201.76	87.43
103	0.50	377.76	175.70	202.06	87.56
104	10.50	379.76	179.70	200.06	86.69
107	10.60	379.78	183.60	196.18	85.01
108	4.40	379.78	183.60	196.18	85.01
109	19.40	395.20	236.20	159.00	68.90
118	41.90	390.87	192.50	198.37	85.96
119	8.80	381.71	217.70	164.01	71.07
121	5.60	381.96	230.70	151.26	65.55
137	20.60	382.14	180.00	202.14	87.60
166	15.30	377.79	182.90	194.89	84.45
172	9.60	377.76	174.10	203.66	88.25
174	5.30	377.76	175.70	202.06	87.56
175	17.20	379.64	183.60	196.04	84.95
178	5.50	379.72	183.60	196.12	84.99
192	18.50	381.44	183.60	197.84	85.73
201	8.90	381.63	178.30	203.33	88.11
212	9.40	392.68	256.30	136.38	59.10
213	5.40	392.67	253.50	139.17	60.31
214	12.00	390.44	230.10	160.34	69.48
224	9.00	393.01	224.20	168.81	73.15
247	34.40	381.45	192.10	189.35	82.05
248	20.40	392.67	248.60	144.07	62.43
253	13.30	392.67	240.90	151.77	65.77
254	47.10	392.24	230.80	161.44	69.96
295	54.00	391.56	210.10	181.46	78.63
325	12.10	377.68	183.90	193.78	83.97
342	8.10	377.66	165.40	212.26	91.98
343	15.90	377.66	163.20	214.46	92.93
344	7.30	377.66	164.20	213.46	92.50
346	1.40	377.66	165.60	212.06	91.89
356	23.90	393.05	219.10	173.95	75.38
361	26.30	393.92	243.10	150.82	65.35
375	11.90	382.22	230.50	151.72	65.75
384	25.20	378.12	183.20	194.92	84.46
385	2.80	378.05	183.60	194.45	84.26
396	2.60	382.57	221.20	161.37	69.93
398	7.20	382.49	220.50	161.99	70.19
407	12.80	382.23	226.99	155.24	67.27
408	6.70	382.10	223.30	158.80	68.81
421	11.90	379.81	184.20	195.61	84.77
424	3.00	381.37	189.90	191.47	82.97
432	36.40	381.22	184.10	197.12	85.42
468	44.00	391.43	204.20	187.23	81.13
473	3.90	377.76	178.30	199.46	86.43
474	4.90	382.01	210.70	171.31	74.23
480	16.90	382.01	218.70	162.31	70.33
481	0.50	382.00	220.90	161.10	69.81
493	3.20	393.05	214.00	179.05	77.59
492	20.10	381.31	195.50	185.81	80.52
504	15.40	381.28	192.80	188.48	81.67
505	13.70	381.63	197.20	184.43	79.92
509	22.60	381.55	200.00	181.55	78.67
510	12.30	381.57	189.60	191.97	83.19
512	15.70	381.57	184.80	196.77	85.27
513	7.80	381.64	178.80	202.84	87.90
518	7.20	381.55	182.20	199.35	86.39
526	30.10	380.38	201.80	178.58	77.38
530	7.70	381.68	220.30	161.38	69.93
536	10.10	380.65	201.90	178.75	77.46
540	2.10	380.34	202.30	178.04	77.15
543	5.20	380.26	210.90	169.36	73.39
544	3.90	380.43	216.10	164.33	71.21
552	7.60	379.04	191.50	187.54	81.27
556	9.30	378.40	206.10	172.30	74.66
565	6.90	380.22	210.90	169.42	73.42
566	3.70	378.43	204.60	173.83	75.33
568	5.30	378.43	206.30	172.13	74.59
569	16.60	377.77	178.30	199.47	86.44
573	3.40	377.77	178.00	198.77	86.13
578	4.10	387.93	280.80	107.13	46.42
579	8.60	382.97	205.50	177.47	76.90
582	11.40	385.28	212.80	172.48	74.74
584	11.60	385.02	207.60	177.42	76.88
590	13.20	385.02	208.60	176.42	76.45
597	8.90	384.58	222.20	162.38	70.36
599	13.00	694.51	592.40	102.11	44.25
601	3.30	694.51	577.30	117.21	50.79
619	5.20	694.51	559.00	135.51	58.72
620	23.50	694.53	583.00	111.53	48.33
623	4.50	694.53	588.00	106.53	46.16
628	5.70	608.83	420.40	188.43	81.65
631	7.20	608.77	382.80	225.97	97.92
632	2.20	608.69	455.20	153.49	66.51
642	4.20	608.77	304.60	304.17	131.81
649	4.40	611.63	392.70	218.93	94.87
657	19.70	611.58	331.20	280.38	121.50
661	13.00	381.38	190.90	190.48	82.54
665	18.30	377.76	174.40	203.36	88.12
668	28.60	377.78	182.30	195.48	84.71
675	3.60	377.78	180.60	197.18	85.44
676	6.50	383.35	206.70	176.65	76.55
682	1.30	383.36	209.20	174.16	75.47
683	8.90	381.89	200.30	181.59	78.69
686	2.30	382.07	278.90	103.17	44.71
693	16.00	381.45	197.40	184.05	79.76
700	0.10	391.05	237.50	153.55	66.54
704	5.70	382.51	190.10	192.41	83.38
705	11.30	385.61	185.50	200.11	86.71
710	34.50	385.63	197.50	188.13	81.52
717	15.50	384.84	204.90	179.94	77.98
718	0.20	381.45	191.20	190.25	82.44
726	3.80	381.38	190.00	191.38	82.93
780	20.60	391.40	195.00	196.40	85.10
781	0.20	392.68	252.20	140.48	60.87

2040 Peak Hour Demand

784	13.10	392.68	259.80	132.88	57.58
788	38.40	392.70	258.50	134.20	58.15
791	11.90	392.68	256.00	136.68	59.23
792	0.90	392.68	254.90	137.78	59.70
797	9.90	392.68	255.30	137.38	59.53
800	9.00	377.76	177.30	200.46	86.87
802	2.00	377.76	178.00	199.76	86.56
803	15.20	381.50	217.90	163.60	70.89
807	18.00	381.36	272.60	108.76	47.13
808	11.30	381.39	215.50	165.89	71.89
813	10.90	381.37	244.90	136.47	59.14
815	8.50	381.41	218.20	162.21	70.29
817	10.40	381.30	275.20	106.10	45.98
827	15.10	381.35	186.80	194.55	84.30
828	6.80	381.27	192.50	188.77	81.80
831	4.50	380.55	216.90	163.65	70.92
842	8.20	380.43	234.00	146.43	63.45
844	11.30	380.57	260.00	120.57	52.25
856	6.90	381.12	194.40	186.72	80.91
860	6.20	381.98	230.20	151.78	65.77
865	6.50	380.28	195.90	184.38	79.90
868	6.70	380.30	197.00	183.30	79.43
872	2.60	380.33	199.50	180.83	78.36
881	6.30	378.07	199.80	178.27	77.25
885	7.30	378.09	204.20	173.89	75.35
893	6.40	378.48	198.10	180.38	78.16
894	2.50	378.44	206.30	172.14	74.60
899	15.30	379.46	192.10	187.36	81.19
901	15.00	379.58	189.00	190.58	82.59
906	5.40	380.22	292.50	87.72	38.01
910	4.00	380.23	294.90	85.33	36.97
916	12.70	380.20	222.40	157.80	68.38
922	2.50	380.20	238.30	141.90	61.49
923	8.40	378.51	182.20	196.31	85.07
929	1.80	378.85	181.60	197.25	85.48
937	8.30	378.15	183.80	194.35	84.22
944	9.10	378.35	196.50	181.85	78.80
945	8.50	378.49	192.00	186.49	80.81
954	6.80	378.46	193.70	184.76	80.06
958	15.80	378.53	201.60	176.93	76.67
961	3.60	378.44	205.40	173.04	74.98
962	9.30	377.78	179.30	198.48	86.01
964	0.60	377.78	179.40	198.38	85.96
975	16.40	377.70	184.50	193.20	83.72
979	3.50	376.78	173.70	203.08	88.00
994	13.40	380.29	192.30	187.99	81.46
1003	12.80	608.16	435.80	172.36	74.69
1023	15.60	608.05	389.60	218.45	94.66
1024	7.30	610.03	408.40	201.63	87.37
1032	10.60	608.05	455.00	153.05	66.32
1049	8.00	608.69	421.50	187.19	81.11
1050	14.70	377.77	188.20	189.57	82.15
1053	9.20	377.74	183.20	194.54	84.30
1056	4.70	377.99	192.00	185.99	80.59
1057	15.70	381.64	179.20	202.44	87.72
1060	15.30	381.72	196.50	185.22	80.26
1063	4.00	381.72	238.10	143.62	62.24
1064	6.90	377.83	181.30	196.53	85.16
1071	6.70	380.04	190.50	189.54	82.14
1084	28.00	379.55	198.50	181.05	78.45
1085	10.40	381.39	197.60	183.79	79.64
1089	5.60	381.08	190.70	190.38	82.50
1099	24.60	381.78	233.90	147.88	64.08
1100	1.70	466.46	339.70	126.76	54.93
1101	3.60	466.46	323.20	143.26	62.08
1103	6" and 2"	694.44	346.40	348.04	150.82
1104	1.10	466.43	285.50	180.93	78.40
1107	7.30	381.85	211.40	170.45	73.86
1120	3.40	382.22	222.90	159.32	69.04
1121	5.30	380.52	205.30	175.22	75.93
1122	1.90	380.52	204.40	176.12	76.32
1125	4.70	382.60	205.00	177.60	76.96
1130	13.40	382.60	225.00	157.60	68.29
1134	16.60	384.80	202.90	181.90	78.82
1137	10.10	382.01	202.10	179.91	77.96
1156	14.50	381.57	184.90	196.67	85.22
1180	9.50	383.18	195.40	187.78	81.37
1181	8.20	381.66	186.00	195.66	84.78
1183	4.80	382.33	190.20	192.13	83.26
1184	14.10	381.39	189.70	191.69	83.07
1186	7.90	381.01	191.30	189.71	82.21
1210	10.60	384.14	215.60	168.54	73.04
1211	0.60	694.72	564.40	130.32	56.47
1214	4.80	695.39	607.60	87.79	38.04
1215	4.30	380.75	200.80	179.95	77.98
1217	9.50	380.52	207.80	172.72	74.85
1218	15.30	384.15	217.60	166.55	72.17
1223	6.40	381.81	187.20	194.61	84.33
1224	9.00	381.56	187.60	193.96	84.05
1229	9.20	381.42	224.40	157.02	68.04
1232	16.00	381.54	183.90	197.64	85.64
1235	12.20	381.37	197.20	184.17	79.81
1239	4.20	466.43	265.90	200.53	86.89
1240	0.30	695.39	608.90	86.49	37.48
1244	12.30	696.98	591.00	105.98	45.93
1251	14.90	697.64	622.30	75.34	32.65
1262	0.70	381.40	349.90	31.50	13.65
1270	4.10	381.65	184.30	197.35	85.52
1277	16.10	381.40	340.00	41.40	17.94
1284	11.70	384.85	224.00	160.85	69.70
1290	15.80	381.55	207.20	174.35	75.55
1293	8.10	381.61	206.60	175.01	75.84
1295	9.60	381.42	200.40	181.02	78.44
1298	1.40	382.22	224.20	158.02	68.48
1309	15.70	381.08	185.00	196.08	84.97

2040 Peak Hour Demand

1310	12.20	377.70	184.40	193.30	83.76
1314	9.80	377.16	183.00	194.16	84.14
1318	8.60	382.74	221.20	161.54	70.00
1322	7.60	381.79	194.60	187.19	81.12
1328	7.70	381.53	192.30	189.23	82.00
1333	7.20	381.49	191.30	190.19	82.42
1337	8.40	381.34	192.80	188.54	81.70
1338	19.00	381.30	257.70	123.60	53.56
1356	5.20	381.10	190.80	190.30	82.46
1359	1.70	381.27	193.30	187.97	81.45
1364	7.30	380.67	193.90	186.77	80.93
1366	11.00	378.46	190.60	187.86	81.41
1375	20.70	375.36	168.30	207.06	89.72
1387	6.90	376.78	182.40	194.38	84.23
1388	12.80	382.01	200.40	181.61	78.70
1392	10.70	382.93	220.30	162.63	70.47
1396	6.40	381.43	308.10	73.33	31.78
1409	12.20	382.33	222.20	160.13	69.39
1410	4.50	611.66	392.50	219.16	94.97
1456	6.90	378.10	183.20	194.90	84.46
1465	6.80	381.39	235.70	145.69	63.13
1483	12.40	381.36	193.40	187.96	81.45
1484	30.00	377.71	183.60	194.11	84.11
1497	5.60	377.63	167.20	210.43	91.19
1498	3.30	611.50	396.40	215.10	93.21
1502	8.20	611.50	385.30	226.20	98.02
1513	1.50	611.51	339.40	272.11	117.92
1517	11.60	381.66	205.40	176.26	76.38
1519	2.00	381.61	211.30	170.31	73.80
1524	2.60	694.87	615.60	79.27	34.35
1544	35.40	381.77	194.80	186.97	81.02
1547	28.40	381.77	208.00	173.77	75.30
1570	20.90	382.17	200.80	181.37	78.59
1575	16.70	377.67	171.60	206.07	89.30
1576	3.40	392.67	253.70	138.97	60.22
1580	3.90	392.67	245.80	146.87	63.64
1626	40.10	393.94	272.90	121.04	52.45
1627	23.70	395.40	289.00	106.40	46.11
1630	62.70	393.06	266.70	126.36	54.76
1636	363.20	391.63	245.70	145.93	63.24
1637	54.50	392.71	249.10	143.61	62.23
1647	55.40	393.19	236.20	156.99	68.03
1648	56.10	381.37	187.30	194.07	84.10
1657	15.00	377.64	163.30	214.34	92.88
1658	14.90	379.93	185.90	194.03	84.08
1674	17.20	377.76	178.00	199.76	86.56
1679	6.50	466.45	317.70	148.75	64.46
1689	6.30	466.44	323.60	142.84	61.90
1690	0.90	466.44	319.70	146.74	63.59
1698	11.10	392.68	256.80	135.88	58.88
1699	12.20	393.04	218.90	174.14	75.46
1700	5.80	393.04	216.20	176.84	76.63
1710	7.70	396.52	303.90	92.62	40.13
1711	1.60	381.89	208.80	172.09	74.57
1712	3.60	381.89	268.50	113.39	49.14
1713	3.50	694.72	571.10	123.62	53.57
1716	15.10	694.60	533.50	161.10	69.81
1719	1.30	694.60	516.50	178.10	77.18
1737	12.90	375.52	166.60	208.92	90.53
1742	20.70	377.71	183.60	194.11	84.11
1767	7.90	380.91	193.40	187.51	81.25
1773	8.60	394.69	272.20	122.49	53.08
1775	3.60	394.68	270.10	124.58	53.98
1776	10.40	394.68	269.20	125.48	54.37
1782	19.00	394.67	269.10	125.57	54.41
1788	13.20	394.67	269.00	125.67	54.46
1791	1.80	394.69	273.40	121.29	52.56
1793	2.40	394.68	270.60	124.08	53.77
1799	6.50	390.87	201.40	189.47	82.10
1800	5.80	379.74	166.10	213.64	92.58
1801	1.70	379.74	173.70	206.04	89.28
1805	5.40	379.73	179.70	200.03	86.68
1806	3.00	379.73	173.10	206.63	89.54
1808	2.90	379.73	179.80	199.93	86.64
1809	5.10	379.73	172.30	207.43	89.89
1810	9.40	379.76	179.50	200.26	86.78
1813	7.50	379.73	171.10	208.63	90.41
1814	12.40	379.73	167.10	212.63	92.14
1818	3.90	379.48	160.70	218.78	94.80
1821	10.60	379.74	169.80	209.94	90.97
1823	6.90	379.71	182.50	197.21	85.46
1826	8.00	379.91	183.30	196.61	85.20
1827	14.50	380.06	192.90	187.16	81.10
1831	4.50	391.66	234.10	157.56	68.28
1948	2.40	381.62	234.90	146.72	63.58
1960	9.60	381.05	237.60	153.45	66.49
1961	7.20	382.51	190.10	192.41	83.38
1968	1.00	375.51	164.90	210.61	91.27
1971	0.20	381.56	185.30	196.26	85.05
1973	6.10	378.38	198.40	179.98	77.99
1974	10.10	378.47	187.50	190.97	82.75
1975	9.70	378.42	186.60	191.82	83.12
1980	3.70	378.43	180.20	198.23	85.90
1981	2.80	378.62	183.10	195.52	84.73
1984	8.10	380.66	194.10	186.56	80.84
1985	0.40	379.37	195.20	184.17	79.81
1986	8.90	379.37	194.50	184.87	80.11
1987	8.40	378.45	198.50	179.95	77.98
1988	0.40	380.48	219.50	160.98	69.76
1989	3.40	380.48	222.30	158.18	68.54
1991	7.50	380.66	194.20	186.46	80.80
1994	1.50	380.29	190.70	189.59	82.16
1996	9.00	381.23	189.80	191.43	82.95
1997	8.80	381.36	191.50	189.86	82.27
2003	7.00	381.38	185.20	196.18	85.01

2040 Peak Hour Demand

2007	6.70	381.43	200.60	180.83	78.36
2009	8.70	381.37	196.90	184.47	79.94
2010	10.30	382.40	191.70	190.70	82.64
2012	8.80	382.87	199.00	183.87	79.68
2013	7.70	382.13	200.10	182.03	78.88
2014	12.70	382.00	193.20	188.80	81.81
2016	11.40	382.27	222.30	159.97	69.32
2021	1.80	384.77	204.20	180.57	78.25
2023	1.30	380.52	206.90	173.62	75.23
2025	4.80	611.46	455.60	155.86	67.54
2028	2.80	611.36	520.90	90.46	39.20
2029	2.70	611.46	449.00	162.46	70.40
2030	1.60	611.44	460.10	151.34	65.58
2031	6.50	611.48	430.90	180.58	78.25
2032	1.80	611.46	484.00	127.46	55.23
2033	4.50	611.47	474.20	137.27	59.48
2047	1.50	466.44	309.00	157.44	68.22
2050	0.30	466.44	301.10	165.34	71.65
2051	0.10	390.25	229.60	160.65	69.61
2052	0.10	390.25	229.90	160.35	69.48
2053	9.40	388.90	220.60	168.30	72.93
2061	2.40	387.88	208.20	179.68	77.86
2063	16.30	384.81	205.00	179.81	77.92
2065	11.90	382.84	198.90	183.94	79.71
2066	8.90	391.54	222.20	169.34	73.38
2067	17.60	385.21	216.20	169.01	73.24
2072	16.60	393.01	221.90	171.11	74.15
2073	6.60	381.39	199.80	181.59	78.69
2074	10.30	393.05	220.90	172.15	74.60
2076	17.70	381.28	204.40	176.88	76.65
2078	8.40	380.47	199.20	181.27	78.55
2079	9.00	380.34	203.10	177.24	76.80
2080	10.50	378.73	191.60	187.13	81.09
2081	9.30	378.50	198.70	179.80	77.91
2083	18.00	380.21	255.40	124.81	54.09
2084	11.80	380.22	224.10	156.12	67.65
2086	12.00	387.93	230.30	157.63	68.30
2088	19.00	694.88	604.50	90.38	39.16
2090	20.20	611.67	391.30	220.37	95.50
2091	10.30	381.68	195.30	186.38	80.76
2092	5.10	392.68	251.60	141.08	61.13
2093	13.00	381.74	236.00	145.74	63.15
2094	14.60	381.86	188.50	193.36	83.79
2095	10.20	381.84	187.60	194.24	84.17
2096	7.10	381.36	196.50	184.86	80.11
2097	10.50	381.35	202.50	178.85	77.50
2098	11.00	378.07	202.10	175.97	76.26
2100	14.50	377.97	197.30	180.67	78.29
2101	17.00	381.37	270.60	110.77	48.00
2103	18.40	381.39	236.90	144.49	62.61
2104	8.00	384.77	200.50	184.27	79.85
2105	12.20	382.01	201.90	180.11	78.05
2106	5.60	381.46	192.10	189.36	82.06
2107	13.40	381.57	190.50	191.07	82.80
2109	10.20	382.40	190.80	191.60	83.03
2110	7.40	381.33	192.70	188.63	81.74
2111	6.40	381.52	191.00	190.52	82.56
2112	14.00	382.03	190.20	191.83	83.13
2113	11.70	382.65	195.50	187.15	81.10
2115	10.00	381.67	191.90	189.77	82.23
2117	8.60	383.68	217.50	166.18	72.01
2119	14.90	381.36	193.60	187.76	81.36
2120	8.30	466.43	268.60	197.83	85.73
2121	7.30	380.83	193.00	187.83	81.39
2122	12.20	377.70	183.70	194.00	84.07
2123	8.90	381.08	193.20	187.88	81.41
2125	2.60	378.44	206.20	172.24	74.64
2126	5.70	380.85	192.50	188.35	81.62
2127	18.00	380.91	203.70	177.21	76.79
2129	9.70	388.44	218.10	170.34	73.82
2130	7.60	378.40	198.00	180.40	78.17
2132	4.60	390.34	230.10	160.24	69.44
2133	9.00	694.52	578.00	116.52	50.49
2137	11.90	382.81	198.20	184.61	80.00
2138	15.90	382.00	221.50	160.50	69.55
I-18th St	0.00	383.05	218.20	164.85	71.44
O-18th St	0.00	383.05	218.20	164.85	71.44
3-in or sm	0.20	382.05	185.50	196.55	85.17
3-inch or	0.80	379.73	183.00	196.73	85.25
3-inch or	0.40	378.62	183.10	195.52	84.73
O-AV-1	0.00	380.21	283.80	96.41	41.78
I-AV-2	0.00	608.05	306.00	302.05	130.89
I-AV-3	0.00	466.43	253.40	213.03	92.31
O-AV-4	0.00	382.07	289.30	92.77	40.20
O-AV-5	0.00	383.22	225.30	157.92	68.43
O-AV-6	0.00	384.80	208.10	176.70	76.57
O-Centrall	----	541.19	333.50	207.69	90.00
O-Fairview	Fairview PRV	466.50	346.50	120.00	52.00
O-High Lev	High Level P	611.63	401.60	210.03	91.01
High Level	High Level R	614.00	605.00	9.00	3.90
Hillcrest		393.03	256.20	136.83	59.29
inter-tie		381.77	174.40	207.37	89.86
J-1		377.76	174.00	203.76	88.29
J-100		378.86	190.60	188.26	81.58
J-105		377.76	175.60	202.16	87.60
J-106		378.48	206.20	172.28	74.65
J-11		490.99	280.00	210.99	91.43
J-110		378.77	198.00	180.77	78.33
J-111		378.19	192.50	185.69	80.46
J-112		379.74	167.90	211.84	91.80
J-113		380.31	200.50	179.81	77.92
J-114		607.88	405.70	202.18	87.61
J-115		381.16	197.30	183.86	79.67
J-116		381.27	207.10	174.17	75.47
J-117		380.90	192.10	188.80	81.81

2040 Peak Hour Demand

J-120	6.30	381.38	237.50	143.88	62.35	
J-122	6.70	377.75	174.00	203.75	88.29	
J-123	0.90	383.04	224.70	158.34	68.61	
J-124	5.40	611.48	403.80	207.68	90.00	
J-125	5.10	610.81	383.00	227.81	98.72	
J-126	8.40	399.30	367.95	31.35	13.59	
J-127	58.00	391.78	225.20	166.58	72.19	
J-128	37.60	391.66	235.20	156.46	67.80	
J-129	21.40	377.84	184.80	193.04	83.65	
J-130	9.70	391.53	222.00	169.53	73.47	
J-131	1.40	611.48	418.00	193.48	83.84	
J-132	5.80	377.75	176.00	201.75	87.43	
J-133	2.20	611.51	338.60	271.91	117.83	
J-134	3.00	384.75	200.90	183.85	79.67	
J-135	9.10	394.76	288.30	106.46	46.13	
J-136	2.20	380.52	204.10	176.42	76.45	
J-138	2.70	383.04	219.60	163.44	70.83	
J-139	1.20	383.14	222.60	160.54	69.57	
J-140	1.30	383.05	218.20	164.85	71.43	
J-141	1.20	381.42	200.90	180.52	78.23	
J-142	0.60	383.05	218.20	164.85	71.44	
J-143	30.20	382.09	193.40	188.69	81.76	
J-144	4.90	382.09	193.40	188.69	81.76	
J-145	0.30	383.05	218.20	164.85	71.44	
J-146	0.10	383.05	218.20	164.85	71.44	
J-147	0.10	383.05	218.20	164.85	71.44	
J-148	19.30	501.86	498.90	2.96	1.28	
J-149	9.50	485.71	306.10	179.61	77.83	
J-150	15.30	490.40	272.40	218.00	94.47	
J-151	35.00	487.61	326.80	160.81	69.69	
J-152	16.40	490.40	272.40	218.00	94.47	
J-153	353.60	485.71	302.40	183.31	79.43	
J-154	15.80	490.41	267.60	222.81	96.55	
J-155	45.20	488.24	263.80	224.44	97.26	
J-156	51.10	488.74	261.30	227.44	98.56	
J-157	4.80	487.79	265.80	221.99	96.19	
J-2	14.80	378.23	201.80	176.43	76.45	
J-20	5.50	378.65	182.90	195.75	84.83	
J-21	6.40	378.85	182.80	196.05	84.96	
J-25	12.90	611.52	311.10	300.42	130.18	
J-27	10.80	383.35	207.10	176.25	76.38	
J-3	8.50	378.44	182.20	196.24	85.04	
J-30	20.00	391.54	219.90	171.64	74.38	
J-35	21.30	392.65	222.10	170.55	73.90	
J-39	10.60	383.35	218.10	165.25	71.61	
J-4	6.50	378.52	184.40	194.12	84.12	
J-42	15.50	393.00	222.00	171.00	74.10	
J-44	15.90	387.65	208.40	179.25	77.67	
J-45	10.80	387.88	209.00	178.88	77.51	
J-53	24.80	396.52	294.30	102.22	44.29	
J-55	6.70	392.50	297.10	95.40	41.34	
J-57	3.30	390.25	229.20	161.05	69.79	
J-58	4.00	380.57	204.60	175.97	76.26	
J-6	37.70	529.67	473.40	56.27	24.38	
J-61	11.10	380.52	207.00	173.52	75.19	
J-62	2.90	381.71	191.50	190.21	82.43	
J-63	3.50	383.03	225.20	157.83	68.39	
J-64	10.70	381.42	202.30	179.12	77.62	
J-67	5.50	384.62	210.80	173.82	75.32	
J-7	9.00	382.05	214.70	167.35	72.52	
J-71	5.80	384.65	204.60	180.05	78.02	
J-73	16.40	384.75	199.60	185.15	80.23	
J-74	2.60	466.44	301.00	165.44	71.69	
J-77	1.60	466.44	296.10	170.34	73.81	
J-78	13.40	382.07	230.70	151.37	65.59	
J-79	7.10	382.10	223.40	158.70	68.77	
J-8	16.80	383.37	208.80	174.57	75.65	
J-80	12.80	381.31	190.70	190.61	82.60	
J-81	17.20	381.39	218.90	162.49	70.41	
J-82	16.90	381.50	257.90	123.60	53.56	
J-84	6.00	383.22	226.30	156.92	68.00	
J-87	11.00	381.85	194.40	187.45	81.23	
J-88	55.00	491.00	275.70	215.30	93.30	
J-90	0.10	393.04	219.10	173.94	75.37	
J-91	25.20	396.24	352.90	43.34	18.78	
J-93	4.30	381.56	187.50	194.06	84.09	
J-94	9.40	381.55	187.50	194.05	84.09	
J-95	34.40	381.90	189.50	192.40	83.37	
J-96	16.90	381.77	176.90	204.87	88.78	
J-99	2.90	378.43	205.50	172.93	74.94	
Kennicott	Kennicott Re	----	397.90	374.00	23.90	10.36
Main Reser	Main Reservo	----	401.30	383.30	18.00	7.80
physical d		0.20	382.57	222.00	160.57	69.58
I-RV-1		0.00	382.09	193.40	188.69	81.76
I-RV-2		0.00	381.42	200.90	180.52	78.23
O-South En		----	495.59	287.90	207.69	90.00
O-Valley V	Valley View	0.00	699.50	308.10	391.40	169.61
Yankis (Va	Yankis (Vall	----	699.50	631.50	68.00	29.47
Yates Rese	500,000 gal	----	401.30	376.00	25.30	10.96
O-18th St		----	383.05	218.20	164.85	71.44
I-18th St		0.00	383.05	218.20	164.85	71.44
I-AV-1		0.00	607.88	283.80	324.08	140.43
O-AV-2		0.00	380.22	306.00	74.22	32.16
O-AV-3		0.00	384.85	253.40	131.45	56.96
I-AV-4		0.00	381.40	289.30	92.10	39.91
I-AV-5		0.00	383.03	225.30	157.73	68.35
I-AV-6		0.00	380.52	208.10	172.42	74.72
I-Centrall		0.00	483.28	333.50	149.78	64.90
I-Fairview	Fairview PRV	0.00	694.43	346.50	347.93	150.77
I-High Lev	High Level P	0.00	399.30	401.60	-2.30	-1.00
O-RV-1		----	382.09	193.40	188.69	81.76
O-RV-2		----	384.75	200.90	183.85	79.67
I-South En		0.00	394.67	287.90	106.77	46.27
I-Valley V	Valley View	0.00	381.43	308.10	73.33	31.78

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
O-Valley Vie	169.61	I-High Level	-1.00
1103	150.82	J-148	1.28
I-Fairview P	150.77	High Level R	3.90
I-AV-1	140.43	Main Reservo	7.80
642	131.81	Kennicott Re	10.36

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-122	6.21	P-48	0.00
P-15	6.20	85	0.00
1479	4.30	1612	0.00
107	4.10	1088	0.00
2257	3.78	2212	0.00

HL + ML / 1000

PIPE NUMBER	MAXIMUM HL+ML/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL+ML/1000 (ft/ft)
P-122	17.88	1612	0.00
P-15	17.79	45	0.00
2257	13.68	46	0.00
107	11.62	85	0.00
P-173	10.44	P-48	0.00

HL / 1000

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
P-122	17.88	1612	0.00
P-15	17.79	45	0.00
2257	13.68	46	0.00
107	11.62	85	0.00
P-173	10.44	P-48	0.00

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
18th St PRV	PRV-1	74.30	WIDE OPEN	71.44	71.44	209.97
18th St Pump	FCV-2	0.00	BOOSTED	71.44	71.44	0.00
Centralia Al	PRV-2	90.00	BOOSTED	64.90	90.00	57.00
Fairview PRV	PRV-1	52.00	ACTIVATED	150.77	52.00	38.60
High Level P	FCV-2	0.00	BOOSTED	-1.00	91.01	0.00
RV-1	PRV-1	85.00	WIDE OPEN	81.76	81.76	176.11
RV-2	PRV-1	81.80	CLOSED	78.23	79.67	0.00
South End Pu	PRV-2	90.00	BOOSTED	46.27	90.00	665.90
Valley View	FCV-2	0.00	BOOSTED	31.78	169.61	0.00

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
High Level	215.80	High Level R
Kennicott R	1542.06	Kennicott Re
Main Reserv	2981.32	Main Reservo
Yankis (Val	194.50	Yankis (Vall
Yates Reser	1517.53	500,000 gal

NET SYSTEM INFLOW = 6451.21
 NET SYSTEM OUTFLOW = 0.00
 NET SYSTEM DEMAND = 6451.20

***** HYDRAULIC ANALYSIS COMPLETED *****

Pipes

Name	Node1	Node2	Length	Diameter	Roughness	Material	Rating	Reference Year
3	5	6	24.78	10	90	ci 0		1962
5	9	H-146	824.44	6	90	ci 0		1962
6	11	12	38.56	8	90	ci 0		1962
7	13	H-433	38.38	6	75	ci 0		1931
8	15	16	7.84	6	90	ci 0		1974
10	18	H-370	437	2	140	pe 0		1995
12	22	23	750	8	115	dij 0		1982
13	24		360.61	4	115	dij 0		1978
14	26	J-55	539.97345	8	115	dij 0		1991
16	28	H-154	217	4	115	dij 0		1992
17	31		723	2	113.0723	copper 0		1995
21	37	38	170.42	4	75	ci 0		1930
22	2014	H-514	325.43	8	115	dij 0		1995
23	41	1699	28.75	12	115	dij 0		2000
24	43	213	42.27	12	115	dij 0		1999
26	47	48	173.64	4	115	dij 0		1978
27	49	H-64	310	10	115	dij 0		1997
28	51	H-149	222	8	115	dij 0		1995
32	59	60	108.37	6	75	ci 0		1935
35	65	66	295.51	6	75	ci 0		1935
37	68	H-178	412	8	115	dij 0		1998
38	52	70	245	6	115	dij 0		1995
39	Hillcrest Private Water Meter	72	81.5	4	115	dij 0		1979
41	75	H-42	3275	12	130	dij 0		2008
45	83	2066	32.96	12	130	dij 0		2018
46	85	86	33.07	12	130	dij 0		2018
52	97	H-359	74.85	8	130	dij 0		2002
55	102	H-321	68.31	8	130	dij 0		2002
56	104	1810	34.98	12	130	dij 0		2005
59	107	108	7.82	12	130	dij 0		2005
60	109	H-150	785	16	115	dij 0		1984
66	118		2359	14	90	ci 0		1974
68	119	H-441	704	14	75	ci 0		1935
70	121	860	23.71	14	75	ci 0		1935
72	118	H-298	900	8	130	dij 0		2005
85	physical disconnect from Chehalis River' North Fork raw water		23.76	14	75	ci 0		1935
107	J-91		949	14	75	ci 0		1935
109	325	H-363	484.84	12	115	dij 0		1980
110	2122		948.74	12	115	dij 0		1980
112	166		902	12	115	dij 0		1979
114	569	H-334	308	12	115	dij 0		1978
115	569	665	1519	12	115	dij 0		1995
118	172		650	12	115	dij 0		1995
120	175	H-330	251.61	12	115	dij 0		1979
123	178		444.69	12	115	dij 0		1979
126	1826		278.93	12	115	dij 0		1979
129	1827		1658.25	12	115	dij 0		1979
137	192		248	12	115	dij 0		1979
139	201		409	12	115	dij 0		1979
141	15		446.49	12	115	dij 0		1974
142	15	H-308	1949.78	12	115	dij 0		1974
145	201		562.04999	12	90	ci 0		1974
155	212	213	677.5	12	115	dij 0		1999
156	214		1649	12	115	dij 0		1979
163	2072	H-113	1245	12	115	dij 0		1998
187	248	H-60	1835.17004	12	130	dij 0		2002
192	254		1507.19	12	130	dij 0		2007
262	325		908.76	12	115	dij 0		1980
279	343	344	127.52	12	130	dij 0		2009
280	344		115.85	12	130	dij 0		2009
282	342	H-365	192.42	12	130	dij 0		2009
283	86	H-526	1344.24	12	130	dij 0		2018
292	356		2280.98	10	90	ci 0		1962
298	32	J-7	60	10	90	ci 0		1962
302	32	480	930.34	10	90	ci 0		1962
318	384	385	126	10	115	dij 0		1980
319	356	H-126	983.94	10	90	ci 0		1962
320	356	41	37.27	10	90	ci 0		1962
329	396		31.65	10	75	ci 0		1949
331	398	H-247	306.52	10	75	ci 0		1949
340	407	H-248	647.97	10	75	ci 0		1949
353	661	H-231	350.44	6	75	ci 0		1949
355	424	1648	189	10	90	ci 0		1978
363	295		3228.55	10	130	dij 0		2007
398	172	H-341	539	12	115	dij 0		1995
403	474		672	8	90	ci 0		1962
411	J-45		770	8	90	ci 0		1963

Pipes

414	1217	1121	284.43	6	90	ci O	1972
417	492	1235	414.07	8	75	ci O	1949
429	505		502	8	75	ci O	1949
433	510	512	462	8	115	di O	1982
435	513	H-302	1078.98	8	75	ci O	1949
440	518	H-304	278.46655	8	75	ci O	1949
448	92	H-268	943.85999	8	115	di O	1984
451	530	119	42.3	8	75	ci O	1928
452	119		464.52	8	75	ci O	1928
458	536		637.02	8	75	ci O	1929
461	540	2079	30.24	8	75	ci O	1929
464	544	H-443	465.44	8	75	ci O	1927
472	552	H-397	98	8	75	ci O	1935
476	AV-1		1506.58447	4	90	ci O	1928
486	569		476	8	115	di O	1990
490	385		264	8	140	pvc O	1980
495	579	J-138	330.16	8	115	di O	1998
497	582	H-161	548.98	8	115	di O	1994
503	590	H-166	801.24609	8	75	ci O	1949
511	599		450.87	8	115	di O	1978
526	599	H-210	720.36	8	115	di O	1978
531	620		618.14	8	115	di O	1978
538	628		136.23	8	90	ci O	1928
541	632		299.05	8	90	ci O	1928
547	631		578.19	8	90	ci O	1928
552	High Level Reservoir	i-190	1103	8	90	ci O	1928
565	509	H-239	1328	8	75	ci O	1949
569	597	1284	174.94	8	90	ci O	1953
571	46		497	8	90	ci O	1953
574	665	H-338	872.08	8	115	di O	1997
577	668	H-339	492.96	8	115	di O	1997
584	676	H-143	893.25	8	90	ci O	1953
590	54	H-138	182.2	8	90	ci O	1953
591	683	H-310	505	8	90	ci O	1974
593	686	J-78	241	8	90	ci O	1950
597	408	J-79	21	8	75	ci O	1949
601	361		1287.07	8	90	ci O	1962
612	705		248.15	8	115	di O	1982
617	717	H-170	965	8	115	di O	1988
623	718	247	34.04	8	75	ci O	1927
630	424		91.39	8	75	ci O	1949
632	726	J-80	386.08	8	75	ci O	1949
652	468	H-105	2846.84	8	130	di O	2007
684	781	2092	25	8	115	di O	1999
686	784		594.45	8	115	di O	1999
690	788	i-309	1019.18	8	115	di O	1999
693	792	791	123.52	8	115	di O	1999
697	797	H-15	720.4	8	115	di O	1999
700	800	H-348	282	6	130	di O	2002
702	803	1465	267.21	6	75	ci O	1935
706	808		929.18	6	75	ci O	1930
710	813	815	302.18	6	75	ci O	1935
712	121	2093	46.99	6	75	ci O	1935
714	2094	H-512	934.76	4	75	ci O	1935
723	828	2096	426.19	6	75	ci O	1930
726	544	H-442	72.71	6	75	ci O	1935
727	831		335.47	6	75	ci O	1935
735	831		226.92	6	75	ci O	1927
739	842	H-454	615.87	6	75	ci O	1928
741	844	H-455	669.95	6	75	ci O	1928
749	856	Valve_2	240	6	75	ci O	1913
751	2078	H-434	273.95	6	75	ci O	1930
753	860		569	6	75	ci O	1930
757	865	868	222.76	6	75	ci O	1928
760	868		502.26	6	75	ci O	1931
762	868		205.21	6	75	ci O	1931
772	881	H-376	449.61	6	75	ci O	1933
776	885	J-111	304.95	6	75	ci O	1933
784	893	J-106	418.44	6	75	ci O	1935
785	893	H-405	416.57	6	75	ci O	1935
789	66	899	48	6	75	ci O	1935
791	899	901	175	6	75	ci O	1929
793	901	H-407	1127	6	75	ci O	1929
797	906		180	6	75	ci O	1935
801	910	38	116.53	6	75	ci O	1929
807	842	H-453	314.93	6	75	ci O	1928
812	916	H-446	348.45	6	75	ci O	1935
814	923	H-388	569.59	6	75	ci O	1931

Pipes

817	J-21		248	6	75	ci O	1931
823	J-2	H-377	870	6	75	ci O	1932
825	J-2		502	6	75	ci O	1935
831	945		473.03	6	75	ci O	1935
839	954		460.04	6	75	ci O	1931
846	962	H-333	82.58	6	115	dij O	1979
858	1387	1314	65.93	4	75	ci O	1935
861	108	H-408	599	6	90	ci O	1953
867	958		1002	6	75	ci O	1935
874	994	H-424	736.58	6	75	ci O	1935
876	65	H-61	656.95	6	75	ci O	1935
883	1003	i-604	424	6	90	ci O	1928
903	1024	J-125	363.08755	6	90	ci O	1928
905	High Level Pump Station	649	101.61	6	75	ci O	1928
910	1024		642	6	90	ci O	1928
912	1032	H-401	811	6	90	ci O	1928
930	1050		1269.52	6	90	ci O	1953
933	384	H-375	964	6	75	ci O	1935
936	1057		435.81	6	90	ci O	1974
938	1060		225	6	115	dij O	1982
941	1064		956.67273	6	90	ci O	1979
948	1071	526	308.78	6	90	ci O	1979
949	526		2823.47	6	75	ci O	1930
962	1085	H-499	588.12	6	75	ci O	1930
966	1099	H-243	1370.13	6	90	ci O	1955
975	1100	1101	228.75	6	90	ci O	1979
976	Fairview PRV	1101	118.14	6	90	ci O	1978
982	2103	J-81	265.32	6	75	ci O	1935
993	1121	H-176	255.49	6	90	ci O	1972
994	2076	2127	300.3	6	75	ci O	1949
1000	1130	H-216	650.51	6	75	ci O	1949
1001	2104	H-183	623.72	6	75	ci O	1949
1003	1134	2104	238.99	6	75	ci O	1949
1004	509	H-240	478	6	75	ci O	1949
1007	1137	2105	327.02	6	75	ci O	1935
1009	1388	2013	267	6	75	ci O	1935
1012	2106	H-252	591.74	6	75	ci O	1935
1014	510	H-497	924.74	6	75	ci O	1935
1017	2137	H-515	470.82	6	75	ci O	1935
1019	2094	2109	326.7	6	75	ci O	1935
1020	2094	23	140.75	6	75	ci O	1935
1023	1156	H-496	477.86	6	75	ci O	1935
1024	2096	2073	229.38	6	75	ci O	1929
1025	2110	H-494	273.09	6	75	ci O	1929
1026	2110	H-493	279.58	6	75	ci O	1929
1028	1997		244	6	75	ci O	1929
1030	2111	2112	268.86	6	75	ci O	1929
1032	1961	H-516	418	6	75	ci O	1935
1035	704	1961	270.9	6	75	ci O	1929
1036	2109	1961	297.09	6	75	ci O	1929
1037	2010	2014	642	6	75	ci O	1929
1040	2012	H-520	328.33	6	75	ci O	1935
1041	2065	2012	308	6	75	ci O	1935
1042	2137	H-517	296	6	75	ci O	1935
1043	2113	2137	300.18	6	75	ci O	1935
1044	2113	H-511	266.89	6	75	ci O	1935
1046	1181	22	93	6	75	ci O	1935
1047	2095	22	173	6	75	ci O	1935
1048	726	1184	40.06	8	115	dij O	1984
1051	1186	H-477	269.43	6	75	ci O	1935
1053	827		1143.25	6	75	ci O	1935
1058	1232	1156	597.28	6	75	ci O	1935
1060	1156	H-487	927.21	6	75	ci O	1935
1062	512	H-489	783.4	6	75	ci O	1935
1064	2115	2107	155.32	6	75	ci O	1935
1069	2117	2065	579.53	6	75	ci O	1935
1071	2137	H-518	580.23	6	75	ci O	1935
1074	1211	H-203	81.79	6	115	dij O	1978
1076	24		223	6	115	dij O	1978
1077	1215	H-180	327	6	75	ci O	1949
1078	68	H-177	692.94	6	115	dij O	1994
1080	1218	H-504	1049.55	6	75	ci O	1935
1083	2112	1223	326.05	6	75	ci O	1935
1085	1224	2111	321.86	6	75	ci O	1935
1087	1085	1333	418.92	6	75	ci O	1935
1088	1085	H-501	427.58	6	75	ci O	1935
1090	808		207.76	6	75	ci O	1935
1091	1232	H-486	476	6	75	ci O	1935

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1094	1235	1483	375	6	75	ci 0	1949
1095	2120	H-194	147	6	90	ci 0	1978
1096	2120		581.73	6	115	dij 0	1981
1099	1240	1214	42.84	6	115	dij 0	1978
1100	1214	i-908	471	6	115	dij 0	1978
1103	1244		558	6	115	dij 0	1978
1110	Yankis (Valley View) Reservoir		413.91	6	115	dij 0	1978
1116	1513	J-25	173.82	8	130	dij 0	2011
1117	1277		339.91	6	90	ci 0	1950
1118	1277	1262	90.18	6	90	ci 0	1950
1120	657		1605	10	130	dij 0	2011
1125	1181	H-490	559.53	6	75	ci 0	1935
1127	2103	H-291	1495.62	6	75	ci 0	1935
1132	1277	H-246	889.10541	6	90	ci 0	1950
1138	693	H-185	860.83	6	75	ci 0	1949
1140	1284	H-524	362.0549	6	90	ci 0	1978
1146	1290	H-237	1322.78	4	75	ci 0	1949
1148	1293	H-234	372.96	4	75	ci 0	1949
1150	398	2016	65.54	6	75	ci 0	1935
1152	1120	H-242	198.66	6	75	ci 0	1935
1154	432	H-287	2165	6	90	ci 0	1978
1165	1310		1161	4	75	ci 0	1935
1169	2127		967.64	4	75	ci 0	1949
1171	1318	2105	578.38	4	75	ci 0	1935
1173	2105	1322	469.84	4	75	ci 0	1935
1178	2115	40	301.65	4	75	ci 0	1935
1179	2115	1328	589.60999	4	75	ci 0	1935
1182	803	J-81	638	4	75	ci 0	1927
1185	1333		528.94	4	75	ci 0	1935
1189	1338	H-463	1527.54004	4	75	ci 0	1931
1193	518		70.97	4	75	ci 0	1935
1195	192		583	4	75	ci 0	1935
1198	1060	H-300	1317	4	75	ci 0	1935
1205	492	H-222	987.9	4	75	ci 0	1949
1208	1356	H-495	273	4	75	ci 0	1930
1210	1359	828	233	4	75	ci 0	1930
1211	1364	1984	203.81	4	75	ci 0	1931
1212	1364		514.02	4	75	ci 0	1931
1214	1364		287.23	4	75	ci 0	1931
1215	1366	H-381	660.16	4	75	ci 0	1931
1217	1244		681	6	115	dij 0	1978
1226	1375	H-372	2480	4	90	ci 0	1953
1236	17		400	4	90	ci 0	1953
1239	1388	H-519	578.8	4	75	ci 0	1935
1244	1314	33	129.52	4	90	ci 0	1980
1245	937		272	4	75	ci 0	1933
1247	384		264.58	4	75	ci 0	1933
1248	1396	Valley View (Prospect) BPS	4.38	4	140	ac 0	1972
1258	505	1409	1080	4	75	ci 0	1949
1261	1410	H-296	558.39	4	90	ci 0	1972
1269	1023	i-990	712.26611	4	90	ci 0	1928
1309	1456		418.71	4	75	ci 0	1933
1315	885		245.12	4	90	ci 0	1953
1319	1465	2103	636.67	4	75	ci 0	1935
1322	509		820.07	4	75	ci 0	1949
1330	693		1027.1	4	75	ci 0	1949
1338	1295	H-233	948.39	4	75	ci 0	1949
1340	1484		1892	4	75	ci 0	1935
1351	344	H-366	767	4	130	dij 0	2009
1354	1498		449.05	8	130	dij 0	2011
1358	1502		279.67	8	130	dij 0	2011
1371	1517	1519	275	2	114.3142	copper 0	1997
1384	1544		2295	12	90	ci 0	1974
1388	1547	1544	288.55	12	115	dij 0	1978
1389	1547	H-319	1326.99997	12	115	dij 0	1989
1396	1544	H-318	2300	8	115	dij 0	1978
1401	668	H-349	1132.7	12	130	dij 0	2002
1404	1674	H-220	746.13	12	130	dij 0	2002
1406	102	H-356	620.69	12	130	dij 0	2002
1409	92	H-271	4125.62	12	115	dij 0	1984
1423	421		867	12	130	dij 0	2005
1426	1575	H-364	575.28	12	115	dij 0	1980
1427	1576		446.87	12	130	dij 0	2002
1429	248		540.11	12	130	dij 0	2007
1433	51		448.2	12	115	dij 0	1979
1435	51		1427.59	12	115	dij 0	1979
1440	6		475.62	12	115	dij 0	1979
1441	6		1469.07	12	115	dij 0	1979

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1443	1637		5159.69	12	115	di O	1979
1454	72		1761.44	12	115	di O	1979
1455	72		3641.41	12	115	di O	1979
1458	1627		763.65	12	115	di O	1979
1460	797		356.56	12	115	di O	1999
1464	788		3991.15	12	115	di O	1999
1477	1630		1130.08	12	115	di O	1999
1479	1627		1075	12	130	di O	2002
1481	1630	H-21	3539	12	130	di O	2002
1483	76	H-47	2341	12	130	di O	2002
1487	1637	H-44	595.62	12	115	di O	1993
1492	75	H-65	651.3	12	115	di O	1993
1493	254	H-77	3310.1	12	115	di O	1993
1494	254		1688.26	12	115	di O	1993
1497	2072	H-117	1022	12	115	di O	1985
1499	1648		4693.5	12	115	di O	1978
1500	343		2072.02	8	130	di O	2009
1509	1658	H-402	754.77	8	130	di O	2009
1526	1674		496.84	8	130	di O	2002
1531	800	H-423	473	8	130	di O	2002
1534	1679		748.16998	6	90	ci O	1978
1544	1690	H-199	126.93	8	90	ci O	1978
1548	2092	H-18	669.39	8	115	di O	1999
1552	1699	H-123	801.4	10	130	di O	2005
1553	2138	H-128	1389.6	8	115	di O	1984
1560	1710	H-153	1056.65	8	115	di O	1984
1562	1711	H-311	220	8	90	ci O	1974
1563	683	H-313	500	8	115	di O	1974
1564	1713		178.58	6	115	di O	1978
1567	1716		185.05	6	115	di O	1978
1584	1742	H-374	1268	4	75	ci O	1929
1588	1737	H-373	375	4	75	ci O	1933
1593	1742		452	10	130	di O	2004
1596	1484		1798	10	130	di O	2004
1611	975	H-368	71	10	130	di O	2004
1612	1310		454	10	130	di O	2004
1615	2123		511.48	8	115	di O	1984
1617	1089	H-478	243.51	6	75	ci O	1930
1618	1186	H-476	570	8	115	di O	1984
1621	J-135		742	8	130	di O	2005
1626	1773		197	8	130	di O	2005
1628	1775	1776	68	8	130	di O	2005
1629	1776		1030	8	130	di O	2005
1635	1782	H-8	996	8	130	di O	2005
1641	1788		237	8	130	di O	2005
1644	1773	H-3	251	8	130	di O	2005
1645	1776		338	8	130	di O	2005
1647	1788	H-6	591.00006	8	130	di O	2005
1654	1800	H-413	235.53	10	130	di O	2005
1657	1805	H-419	110.2	8	130	di O	2005
1658	1806		400	6	115	di O	1985
1660	1809	1806	19.02	8	130	di O	2005
1661	1810	H-410	671	10	130	di O	2005
1663	1800		258	10	130	di O	2005
1664	1813	1809	50.87	10	130	di O	2005
1665	1814		535.81	2	140	pe O	2005
1669	1813		675	8	130	di O	2005
1672	1821	H-412	525	8	130	di O	2005
1673	1823		385.26	6	90	ci O	1979
1676	1827	1071	62.38	8	90	ci O	1979
1677	1636		438.35	8	130	di O	2002
1792	910	844	262.2	4	75	ci O	1928
1793	178		69.34	8	90	ci O	1979
1796	1063		325	2	106.5232	copper O	1982
1799	1032		642	4	90	ci O	1947
1810	1960	12	21.03	8	90	ci O	1962
1811	12	10	1053	8	90	ci O	1962
1813	1767	J-117	290.12	6	75	ci O	1935
1818	1737	1968	132	4	75	ci O	1929
1820	1823	J-21	491.61	6	75	ci O	1931
1821	175	H-331	2123.7	10	115	di O	1980
1825	1973	566	454	4	75	ci O	1935
1826	1974	H-384	651	4	75	ci O	1927
1828	J-3		517	6	75	ci O	1931
1830	3-inch or smaller service connect	1981	48.33	4	75	ci O	1931
1831	1984		235.15	6	75	ci O	1931
1834	1985	1986	56.59	4	75	ci O	1935
1835	894	2125	20.33	8	115	di O	1990

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1836	1987	568	717	4	75	ci O	1935
1837	1988	1989	52.11	4	75	ci O	1927
1839	2121	Valve_	219.88	6	75	ci O	1930
1840	2126		286	10	115	di O	1997
1841	1994	H-420	209	6	75	ci O	1930
1842	1996	H-480	691.73	6	75	ci O	1935
1843	1184		971.73	6	115	di O	1984
1852	2007	H-471	230.57	6	75	ci O	1930
1854	2010	2065	472.04	6	75	ci O	1935
1855	2012	J-39	579.11	8	75	ci O	1935
1856	2013	2014	469.09	6	115	di O	1982
1858	2016	H-293	1482.47	4	75	ci O	1927
1860	2127	H-225	947.53	4	75	ci O	1949
1864	1121	2023	183.59	6	90	ci O	1972
1865	2127	1215	263.88	6	75	ci O	1949
1866	2025		384	2	140	pvc O	1972
1869	2029	2030	216.99	2	140	pvc O	1972
1870	2031	2029	117.4	4	140	ac O	1972
1871	2029	2025	27.9	4	140	ac O	1972
1872	2025	2032	248.94	4	140	ac O	1972
1873	2033		618.97	4	140	ac O	1972
1877	2031		145.24	8	115	di O	1972
1883	2047	J-74	206.38	6	90	ci O	1978
1887	2053	H-160	671.02	4	90	ci O	1972
1892	2129		343.45	4	90	ci O	1972
1893	590	H-190	757	6	90	ci O	1953
1894	2061	H-162	335.58	6	90	ci O	1963
1895	2063	H-144	880.19	8	90	ci O	1962
1896	5	361	64.75	10	90	ci O	1962
1898	14	540	265	6	75	ci O	1930
1900	16	H-307	34.44	6	90	ci O	1974
1901	17	H-369	236	6	90	ci O	1953
1904	24	2088	5.94	6	115	di O	1978
1907	36	H-379	291.6	6	75	ci O	1931
1908	38	H-452	817.68	6	75	ci O	1929
1909	2014	J-87	300	6	75	ci O	1929
1917	69		263	8	115	di O	1998
1920	295		1850.87	12	130	di O	2007
1924	86	H-88	285	12	130	di O	2018
1927	104		808.02	6	75	ci O	1929
1930	118		2530	14	90	ci O	1974
1935	247	2106	22.48	8	75	ci O	1927
1936	325	H-362	272.19	12	115	di O	1980
1938	375		736.59	14	75	ci O	1935
1940	396		307	14	75	ci O	1935
1941	480	H-132	730.48	10	90	ci O	1962
1947	530	Valve_1	691.48	6	75	ci O	1935
1948	536	H-437	287.42	8	75	ci O	1928
1949	565	H-399	590	8	75	ci O	1927
1950	556	944	498.75	6	75	ci O	1935
1951	565	543	35	8	75	ci O	1927
1954	J-84	AV-5	54.14	8	90	ci O	1953
1956	584	H-167	786.89	10	90	ci O	1953
1958	590	584	267.7	10	90	ci O	1953
1960	620	2133	155.65	8	115	di O	1978
1962	1410		52.91	8	90	ci O	1928
1964	661	424	118.6	10	75	ci O	1949
1965	665	172	143	12	115	di O	1995
1967	710		1990.58	14	90	ci O	1974
1972	784	H-16	500.36	8	115	di O	1999
1975	797	H-14	291.38	12	115	di O	1999
1977	813		564.6	6	75	ci O	1928
1978	815		563.97	6	75	ci O	1928
1979	817		454	6	75	ci O	1928
1982	856	H-431	290.89	6	75	ci O	1930
1983	860		259.21	14	75	ci O	1935
1984	865	H-428	387.79	8	75	ci O	1928
1985	872	14	110.22	6	75	ci O	1931
1986	923	H-391	345.89	6	75	ci O	1931
1987	944		383.07	6	75	ci O	1935
1989	954	945	225.61	6	75	ci O	1931
1990	958	J-106	266	6	75	ci O	1935
1992	994		528	10	115	di O	1997
1993	2101	60	140.36	6	75	ci O	1935
1995	1003	H-460	529.64	6	90	ci O	1928
1996	1049		275.61	8	90	ci O	1928
1997	1050		402	6	90	ci O	1953
1998	1057	H-303	652	8	75	ci O	1949

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2000	1084		435.2	8	75	ci 0	1935
2001	1099		246	6	75	ci 0	1935
2002	1107	1120	210.02	8	75	ci 0	1949
2003	1130	J-63	457.6	8	75	ci 0	1949
2005	1137	H-251	600	8	75	ci 0	1927
2010	1180	704	473.8	8	75	ci 0	1935
2011	1183	704	38.34	6	75	ci 0	1929
2014	1210		566.74	14	75	ci 0	1935
2020	1223		265.83	6	75	ci 0	1935
2021	1224		666.42	6	75	ci 0	1935
2022	1229						
2024	1235	815	301.07	6	75	ci 0	1928
2025	1099	H-221	896.98	8	75	ci 0	1949
2027	1284	J-82	293	6	75	ci 0	1935
2031	1318	H-191	713.52	8	90	ci 0	1953
2032	1322	H-255	306	14	75	ci 0	1935
2033	1328	H-254	262	6	75	ci 0	1929
2035	1337	H-253	322.03	8	75	ci 0	1927
2036	1338	2110	39.43	6	75	ci 0	1930
2037	1356		634.51	6	75	ci 0	1928
2039	1366	1089	17.89	6	75	ci 0	1930
2040	1387	H-380	480.02	6	75	ci 0	1931
2042	1392		479.26	6	115	di 0	1980
2045	1409	H-523	591.86	14	75	ci 0	1935
2048	1465		306	10	75	ci 0	1949
2053	1107	J-120	38.32	6	75	ci 0	1935
2058	1570	3-in & smaller service	423.01	8	75	ci 0	1949
2060	1575	J-8	1066	10	90	ci 0	1953
2063	1627		808.04	12	130	di 0	2009
2067	1648	J-135	354.11557	12	115	di 0	1979
2068	1658		2857	10	90	ci 0	1978
2070	1679	H-426	772	10	115	di 0	1997
2071	1698	1101	25.75	6	90	ci 0	1978
2078	1800	212	264.8	8	115	di 0	1999
2079	1809	H-427	297	10	130	di 0	2005
2080	1810	H-417	635	10	130	di 0	2005
2087	1960		583.38	12	130	di 0	2005
2089	1973	700	19.01	8	90	ci 0	1962
2090	1974	J-2	345	6	75	ci 0	1933
2091	1975	1366	377.42	6	75	ci 0	1931
2092	1981	H-383	374.9	6	75	ci 0	1931
2093	994	J-4	275.32	6	75	ci 0	1931
2095	1986	H-422	383	10	115	di 0	1997
2096	1987	H-355	515.83	6	75	ci 0	1935
2097	1989	893	54.17	6	75	ci 0	1935
2102	1996		189.64	6	75	ci 0	1927
2104	2007	827	273.45	6	75	ci 0	1935
2105	2009	H-472	649.59	10	115	di 0	1997
2111	2016	2096	41.52	6	75	ci 0	1930
2114	1107	1120	22.21	6	75	ci 0	1935
2118	2053	H-218	379	6	75	ci 0	1949
2120	2063	H-159	404.65	8	90	ci 0	1963
2127	2067	717	379.81	10	90	ci 0	1953
2128	2067	1218	331.7	14	75	ci 0	1935
2139	2073	1180	580.16	8	75	ci 0	1935
2141	2074	2007	37.55	10	115	di 0	1997
2145	2076		444.39	8	115	di 0	1934
2146	2076	H-223	344.58	8	75	ci 0	1949
2148	693	H-227	784.6	8	75	ci 0	1949
2149	2078		330	8	115	di 0	1998
2150	2078	865	288.23	8	75	ci 0	1928
2152	2079	1991	297.24	6	75	ci 0	1930
2153	2080	H-436	202.12	8	75	ci 0	1929
2154	2080	H-396	236.1	6	115	di 0	1990
2155	2125		585	6	75	ci 0	1935
2156	2081	J-99	48	8	115	di 0	1990
2159	2083	958	325.04	6	75	ci 0	1935
2160	2083		265.54	8	75	ci 0	1935
2161	2084		678.9	6	75	ci 0	1929
2162	2084	565	310.77	8	75	ci 0	1930
2165	2086	H-445	736.88	6	75	ci 0	1929
2166	2086		560	8	115	di 0	1987
2169	2088	2132	593.29	8	90	ci 0	1953
2170	2088		2465.45	8	115	di 0	1978
2173	2090	1214	158	6	115	di 0	1978
2174	2090	1410	14.6	8	90	ci 0	1928
2175	2091		565.72	8	115	di 0	1988
2176	2091	1137	468.76	8	75	ci 0	1927
2176	2091	H-249	311.2	8	75	ci 0	1949

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2179	2093	H-466	304.87	6	75	ci O	1935
2180	2093		758.42	6	75	ci O	1928
2181	2094	2095	604.36	6	75	ci O	1935
2183	2095	1223	294.47	6	75	ci O	1935
2184	2095	H-498	324.33	6	75	ci O	1935
2187	2097	856	426.07	6	75	ci O	1930
2188	2097		206	6	75	ci O	1929
2189	2098		448.98	6	75	ci O	1933
2190	2098	H-378	273.62	6	75	ci O	1933
2192	954	2130	268.01	6	75	ci O	1931
2193	2100	1050	360	6	90	ci O	1953
2194	2100	H-326	405.41	6	75	ci O	1933
2195	2101	H-508	693	6	115	dij O	1981
2196	2101		1519	6	75	ci O	1928
2198	1290	H-235	372.41	6	75	ci O	1949
2199	2103	60	154.27	6	75	ci O	1935
2202	2104	2021	244	4	75	ci O	1949
2203	2105	1388	298	6	75	ci O	1935
2206	2106	1328	152.76	8	75	ci O	1927
2207	2107	510	314.14	6	75	ci O	1935
2212	2109	2010	299.72	6	75	ci O	1929
2214	2110	1356	429.11	6	75	ci O	1930
2216	2111	1333	54.05	6	75	ci O	1935
2217	2112	1183	291.22	6	75	ci O	1929
2221	803		632.05	6	75	ci O	1935
2223	2115	J-87	328.38	6	75	ci O	1935
2228	2117	1210	322	14	75	ci O	1935
2231	2119	1483	385	6	75	ci O	1949
2234	2120	J-77	147	6	90	ci O	1978
2236	2121	H-432	209.47	6	75	ci O	1930
2240	2123	H-474	427	10	115	dij O	1997
2243	2125	961	36.45	8	115	dij O	1990
2244	2125	2081	266.99	8	115	dij O	1990
2246	2126	H-429	286.12	10	115	dij O	1997
2249	2050	J-77	44.67	6	90	ci O	1978
2252	2129		226.85	8	90	ci O	1963
2253	2130		455	6	75	ci O	1931
2254	2130	1973	40.73	6	75	ci O	1933
2257	2132	H-163	7.31	8	90	ci O	1953
2259	2133	H-208	622.41	8	115	dij O	1978
2260	2133		462.96	8	115	dij O	1978
2269	2138	481	66.26	10	90	ci O	1962
P-1	J-1	H-358	547.15	12	130	dij O	2002
P-100	J-112	i-584	500.93	6	75	ci O	1929
P-101	J-113		368.16	6	75	ci O	1929
P-102	J-114	1023	302	4	90	ci O	1928
P-103	J-125	649	346.91245	6	90	ci O	1928
P-104	Fairview PRV	1103	20.94	6	90	ci O	1978
P-105	J-115	H-470	419.54	6	75	ci O	1930
P-106	J-116	2097	250.67	6	75	ci O	1929
P-108	J-117		305	6	75	ci O	1930
P-11	J-3	1975	323.06	6	75	ci O	1931
P-111	J-120	H-509	266.76	6	75	ci O	1935
P-113	J-39	H-521	288	14	75	ci O	1935
P-116	97	H-360	121.15	12	130	dij O	2002
P-117	J-140		46.63	12	130	dij O	2007
P-119	J-139	H-531	78.98	8	130	dij O	2007
P-121	J-140		42.92	12	130	dij O	2007
P-122	J-126	Main Reservoir	111.73317	14	90	ci O	2019
P-124	AV-1	H-450	364.4155	8	75	ci O	1929
P-125	AV-2		282.73389	4	75	ci O	1928
P-127	J-127		2367.21	12	130	dij O	2007
P-128	J-127		4129.32	12	130	dij O	2011
P-130	J-128		615.85	8	130	dij O	2002
P-131	J-129		558.32727	6	90	ci O	1979
P-132	668	J-129	1448.22	12	130	dij O	2011
P-133	J-133	1513	25.35	8	130	dij O	2011
P-134	J-122		800	12	130	dij O	2011
P-135	J-124	H-201	393.57	8	130	dij O	2011
P-136	J-124	J-131	198.84	8	130	dij O	2011
P-138	Kennicott Reservoir	Altitude Valve	790	16	115	dij O	1984
P-140	AV-4	686	40.89461	6	90	ci O	1950
P-143	AV-5	J-63	2.85	8	130	dij O	2007
P-144	AV-6	H-174	545.75	4	75	ci O	1949
P-146	J-73	J-134	384.83	8	115	dij O	1949
P-147	J-64	J-141	135.51	8	115	dij O	1949
P-148	J-134	RV-2	6.27	8	130	dij O	2007
P-149	J-143	RV-1	5.82	12	130	dij O	2000

Pipes

P-15	J-91	J-126	172.26683	14	90	ci 0	2019
P-150	J-141		13	8	130	dij 0	2007
P-151	J-142	J-139	80.78	8	130	dij 0	2007
P-152	J-144	H-282	631.51	12	115	dij 0	1984
P-153	J-143		24.87	12	130	dij 0	2000
P-154	RV-1	J-144	5.63	12	130	dij 0	2000
P-157	RV-2	J-141	7.13	8	130	dij 0	2007
P-1570	1716		1729.25	8	115	dij 0	1978
P-158	J-145	18th St Pump Station	2.66	12	115	dij 0	1949
P-159	J-145	J-146	2.67874	12	115	dij 0	1949
P-160	J-146	CV-2	9.254	12	115	dij 0	1949
P-161	J-146		3.23	12	130	dij 0	2007
P-162	J-147	J-142	2.66726	12	115	dij 0	1949
P-164	18th St PRV		3.12	12	130	dij 0	2007
P-165	J-155	i-51-1	739.67	6	140	pvc 0	1978
P-166	66	H-353	322.75	6	75	ci 0	1935
P-167	J-153	i-121	4747.12	12	115	dij 0	1979
P-168	J-152	J-150	15.74	8	115	dij 0	1993
P-169	J-154	J-88	471.34	12	115	dij 0	1979
P-170	J-155	i-53	4833.5	6	140	pvc 0	1978
P-171	J-155		658.63	2	140	pvc 0	1978
P-172	J-156	i-114	1552.65	12	115	dij 0	1979
P-173	J-148	i-123	2664.56	2	130	pvc 0	1979
P-174	J-149		1314.6	8	130	dij 0	2000
P-175	J-150	i-129	2094.17	8	115	dij 0	1993
P-18	J-135		77.91	12	130	dij 0	2005
P-19	33	34	11.57	4	90	ci 0	1980
P-2	101	H-357	84.14	8	130	dij 0	2002
P-20	1576	H-20	32.42	12	130	dij 0	2002
P-25	J-30	H-90	908	12	130	dij 0	2007
P-29	J-8	H-137	977.55	10	90	ci 0	1953
P-3	J-6	i-106-1	24935.52	6	115	dij 0	1979
P-30	J-35	H-112	1262.05286	12	115	dij 0	1985
P-31	54	J-8	271.99	8	90	ci 0	1953
P-33	J-42	2072	33.94719	12	115	dij 0	1985
P-34	1699	H-122	861.64	12	115	dij 0	2000
P-36	2091	1322	322	6	75	ci 0	1929
P-4	J-7	H-136	1181	10	90	ci 0	1953
P-40	J-44	10	918.28	8	90	ci 0	1962
P-42	J-45	J-44	388	8	90	ci 0	1963
P-43	J-88	i-110	3066.47	12	115	dij 0	1979
P-44	J-55	28	392.02652	8	115	dij 0	1992
P-47	J-57	2132	26.83	8	90	ci 0	1963
P-48	41	J-90	18.53	10	90	ci 0	1962
P-49	2051	J-57	16.66	8	90	ci 0	1963
P-50	2052	J-57	17.24	8	90	ci 0	1963
P-51	18th St Pump Station	J-142	1.13	8	115	dij 0	1949
P-53	J-4	1974	369	6	75	ci 0	1931
P-54	923	H-390	253.57	6	75	ci 0	1931
P-57	1217	AV-6	27.22	4	75	ci 0	1949
P-58	1217	H-532	273	8	115	dij 0	1998
P-6	J-11	i-128	987.96	8	115	dij 0	1994
P-61	J-58	68	222	6	115	dij 0	1994
P-62	J-61	J-136	302	8	115	dij 0	1998
P-63	2076	H-224	1014	8	75	ci 0	1949
P-64	54		596.19	8	90	ci 0	1953
P-65	J-67	597	417	8	90	ci 0	1989
P-67	J-71	H-193	339	8	115	dij 0	1989
P-69	J-73	H-196	449.75391	8	75	ci 0	1949
P-7	J-152	J-154	148.62	8	115	dij 0	1993
P-71	J-63	J-123	21.02	8	130	dij 0	2007
P-73	J-74	H-200	128.71	6	90	ci 0	1978
P-74	J-77	J-74	27.47	6	90	ci 0	1978
P-75	AV-3		128.94508	6	90	ci 0	1978
P-76	J-78	H-214	254.81	8	90	ci 0	1950
P-77	J-79	H-215	739	8	75	ci 0	1949
P-78	J-80	504	390.06	8	75	ci 0	1949
P-79	1396		521.89	6	90	ci 0	1950
P-80	1388		625	6	115	dij 0	1995
P-81	92	J-62	399	8	115	dij 0	1984
P-82	J-84	H-189	632.7	8	90	ci 0	1953
P-83	J-123	J-140	102.57	12	130	dij 0	2007
P-84	J-93	1971	33.88	6	90	ci 0	1974
P-86	High Level Pump Station		388.44	6	75	ci 0	1928
P-87	J-94	i-164	1018.53345	8	75	ci 0	1949
P-88	J-93	J-94	3.82	6	90	ci 0	1974
P-89	J-96	H-323	1009	12	115	dij 0	1992
P-9	J-2	2098	329	6	75	ci 0	1933

Pipes

P-90	J-105	H-345	266	12	130	dij0	2002
P-91	J-20	H-389	59	6	75	ci 0	1931
P-92	J-21	J-20	140.66	6	75	ci 0	1931
P-93	568	H-394	19.3	8	115	dij0	1990
P-94	J-99	556	294	8	115	dij0	1990
P-95	566	J-99	49.52	8	115	dij0	1990
P-96	J-100		161	8	115	dij0	1990
P-97	J-106	894	329	6	75	ci 0	1935
P-98	Centralia Alpha Pump Station	i-1	21368.49	8	115	dij0	1979
P-99	J-111	944	378.41	6	75	ci 0	1935
Valley View Fill Line	Valley View (Prospect) BPS		2731.89	4	140	aci0	1972

Appendix I – Water Quality Schedule Results and
Plans

WATER QUALITY MONITORING SCHEDULE

COLIFORM MONITORING PLAN

COLIFORM MONITORING MAP

DISINFECTION BYPRODUCT (DBP) MONITORING
MAP

CHLORINE RESIDUAL DBP AND TTHM
MONITORING

LEAD AND COPPER TEST RESULTS



Water Quality Monitoring Schedule

System: CHEHALIS WATER DEPARTMENT
Contact: David J Vasilauskas

PWS ID: 12250 P
Group: A - Comm

Region: SOUTHWEST
County: LEWIS

NOTE: To receive credit for compliance samples, you must fill out laboratory and sample paperwork completely, send your samples to a laboratory accredited by Washington State to conduct the analyses, AND ensure the results are submitted to DOH Office of Drinking Water. There is often a lag time between when you collect your sample, when we credit your system with meeting the monitoring requirement, and when we generate the new monitoring requirement.

Coliform Monitoring Requirements

	Aug 2021	Sep 2021	Oct 2021	Nov 2021	Dec 2021	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	Jun 2022	Jul 2022
Coliform Monitoring Population	8980	10633	10826	10826	10826	10860	10860	10860	11026	11426	9767	9013
Number of Routine Samples Required	10	10	10	10	10	10	10	10	10	10	10	10

- Collect samples from representative points throughout the distribution system.
- Collect required repeat samples following an unsatisfactory sample. In addition, collect a sample from each operating groundwater source.
- For systems that chlorinate, record chlorine residual (measured when the coliform sample is collected) on the coliform lab slip.

Chemical Monitoring Requirements

Distribution Monitoring



Water Quality Monitoring Schedule

<u>Test Panel/Analyte</u>	<u># Samples Required</u>	<u>Compliance Period</u>	<u>Frequency</u>	<u>Last Sample Date</u>	<u>Next Sample Due</u>
Lead and Copper	30	Jan 2021 - Dec 2023	standard - 3 year	07/15/2020	Jul 2023
Asbestos	1	Jan 2020 - Dec 2028	standard - 9 year	09/23/2013	Sep 2022
Total Trihalomethane (THM)	4	Jan 2021 - Mar 2021	standard - quarterly	04/20/2021	
Total Trihalomethane (THM)	4	Apr 2021 - Jun 2021	standard - quarterly	04/20/2021	
Total Trihalomethane (THM)	4	Jul 2021 - Sep 2021	standard - quarterly	04/20/2021	Jul 2021
Total Trihalomethane (THM)	4	Oct 2021 - Dec 2021	standard - quarterly	04/20/2021	Oct 2021
Halo-Acetic Acids (HAA5)	4	Jan 2021 - Mar 2021	standard - quarterly	04/20/2021	
Halo-Acetic Acids (HAA5)	4	Apr 2021 - Jun 2021	standard - quarterly	04/20/2021	
Halo-Acetic Acids (HAA5)	4	Jul 2021 - Sep 2021	standard - quarterly	04/20/2021	Jul 2021
Halo-Acetic Acids (HAA5)	4	Oct 2021 - Dec 2021	standard - quarterly	04/20/2021	Oct 2021

Notes on Distribution System Chemical Monitoring

- For *Lead and Copper*:
- Collect samples from the COLD WATER side of a KITCHEN or BATHROOM faucet that is used daily.
 - Before sampling, make sure the water has sat unused in the pipes for at least 6 hours, but no more than 12 hours (e.g. overnight).
 - If you are sampling from a faucet that has hot water, make sure cold water is the last water to run through the faucet before it sits overnight.
 - If your sampling frequency is annual or every 3 years, collect samples between June 1 and September 30.

For *Asbestos*: Collect the sample from one of your routine coliform sampling sites in an area of your distribution system that has asbestos concrete pipe.

For *Disinfection Byproducts (HAA5 and THM)*: Collect the samples at the locations identified in your Disinfection Byproducts (DBP) monitoring plan.



Water Quality Monitoring Schedule

Source Monitoring

- Collect 'source' chemical monitoring samples from a tap after all treatment (if any), but before entering the distribution system.
- Washington State grants monitoring waivers for various test panels /analytes. Please note that we may require some monitoring as a condition of some waivers. We have granted complete waivers for dioxin, endothal, glyphosate, diquat, and insecticides.
- Nitrate, arsenic, iron, and other individual inorganics are included as part of a Complete Inorganic (IOC) analysis when it is collected.

Source S01	N.FORK-NEWAUKUM RIV.	Surface	Use - Permanent	Susceptility - High
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<u>Test Panel/Analyte</u>	<u># Samples Required</u>	<u>Compliance Period</u>	<u>Frequency</u>	<u>Last Sample Date</u>	<u>Next Sample Due</u>
Nitrate	1	Jan 2021 - Dec 2021	standard - 1 year	08/06/2020	Nov 2021
Complete Inorganic (IOC)	1	Jan 2020 - Dec 2028	waiver - 9 year	07/14/2020	
Iron	1	Jan 2020 - Dec 2022	standard - 3 year	07/14/2020	
Herbicides	1	Jan 2014 - Dec 2022	waiver - 9 year	06/18/2015	
Pesticides	1	Jan 2020 - Dec 2022	standard - 3 year	03/11/2021	Sep 2022
Soil Fumigants	0	Jan 2020 - Dec 2022	waiver - 3 year		
Gross Alpha	1	Jan 2020 - Dec 2025	standard - 6 year	08/03/2016	Aug 2022
Radium 228	1	Jan 2020 - Dec 2025	standard - 6 year	08/03/2016	Aug 2022

Source S02	CHEHALIS RIVER	Surface	Use - Permanent	Susceptility - High
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<u>Test Panel/Analyte</u>	<u># Samples Required</u>	<u>Compliance Period</u>	<u>Frequency</u>	<u>Last Sample Date</u>	<u>Next Sample Due</u>
Nitrate	1	Jan 2021 - Dec 2021	standard - 1 year	08/06/2020	Aug 2021
Complete Inorganic (IOC)	1	Jan 2020 - Dec 2028	waiver - 9 year	07/14/2020	
Iron	1	Jan 2020 - Dec 2022	standard - 3 year	07/14/2020	
Volatile Organics (VOC)	1	Jan 2020 - Dec 2025	waiver - 6 year	08/02/2018	Aug 2024
Herbicides	1	Jan 2014 - Dec 2022	waiver - 9 year	06/18/2015	
Pesticides	1	Jan 2020 - Dec 2022	standard - 3 year	03/11/2021	Aug 2022
Soil Fumigants	0	Jan 2020 - Dec 2022	waiver - 3 year		
Gross Alpha	1	Jan 2020 - Dec 2025	standard - 6 year	08/03/2016	Aug 2022
Radium 228	1	Jan 2020 - Dec 2025	standard - 6 year	08/03/2016	Aug 2022



Water Quality Monitoring Schedule

Other Information

Other Reporting Schedules	Due Date
Measure chlorine residuals and submit monthly reports if your system uses continuous chlorination:	monthly
Submit Consumer Confidence Report (CCR) to customers and ODW (Community systems only):	07/01/2021
Submit CCR certification form to ODW (Community systems only):	10/01/2021
Submit Water Use Efficiency report online to ODW and to customers (Community and other municipal water systems only):	07/01/2021
Send notices of lead and copper sample results to the customers sampled:	30 days after you receive the laboratory results
Submit Certification of customer notification of lead and copper results to ODW:	90 days after you notify customers

Special Notes

None

Southwest Regional Water Quality Monitoring Contacts

For questions regarding chemical monitoring:	Sophia Petro: (360) 236-3046 or sophia.petro@doh.wa.gov
For questions regarding DBPs:	Regina Grimm, p.e.: (360) 236-3035 or regina.grimm@doh.wa.gov
For questions regarding coliform bacteria and microbial issues:	Southwest Office: (360) 236-3030 or SWRO.Coli@doh.wa.gov

Additional Notes

The information on this monitoring schedule is valid as of the date in the upper left corner on the first page. However, the information may change with subsequent updates in our water quality monitoring database as we receive new data or revise monitoring schedules. There is often a lag time between when you collect your sample and when we credit your system with meeting the monitoring requirement.

We have not designed this monitoring schedule to display all compliance requirements. The purpose of this schedule is to assist water systems with planning for most water quality monitoring, and to allow systems to compare their records with DOH ODW records. Please be aware that this monitoring schedule does not include constituents that require a special monitoring frequency, such as monitoring affiliated with treatment.

Any inaccuracies on this schedule will not relieve the water system owner and operator of the requirement to comply with applicable regulations.

If you have any questions about your monitoring requirements, please contact the regional office staff listed above.

Coliform Monitoring Plan for: Chehalis Water System

A. System Information

Plan Date: October 2021

Water System Name Chehalis	County Lewis	System I.D. Number 12250P
Name of Plan Preparer Gerald Mickelsen	Position Consultant	Daytime Phone 360-425-0991
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	<u>S01 N.FORK-NEWAUKUM RIV.</u> <u>S02 CHEHALIS RIVER</u> <u>S03 12200/Centralia (2 Way)</u>	
Storage: List and Describe	<u>Main Reservoir: 5 mg, open, concrete facility</u> <u>Kennicott Reservoir: 1 mg, above-ground, concrete tank</u> <u>Yates Reservoir: 0.5 mg, above-ground, steel tank</u> <u>High Level Reservoir: 0.15 mg, above-ground steel tank</u> <u>Valley View Reservoir No. 1: 0.067 mg, above-ground steel tank</u> <u>Valley View Reservoir No. 2: 0.067 mg, above-ground, steel tank</u>	
Treatment: Source Number & Process	<u>S01 and S02: flash mixing, flocculation, sedimentation, filtration, and chlorination.</u>	
Pressure Zones: Number and name	<u>1. Main Zone</u> <u>2. High-Level Zone</u> <u>3. Valley View/Fairview Zone</u> <u>4. South End Zone</u> <u>5. Centralia Alpha Zone</u>	
Population by Pressure Zone	<u>1. 6,211</u> <u>2. 373</u> <u>3. 325</u> <u>4. 536</u> <u>5. 105</u> *Populations are estimates based off known connections per pressure zone multiplied by a factor of 2.68 persons/connection (7,550 residents / 2,815 connections in 2020).	
Number of Routine Samples Required Monthly by Regulation:		<u>10</u>

Number of Sample Sites Needed to Represent the Distribution System:	<u>10</u>
*Request DOH Approval of Triggered Source Monitoring Plan?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

*If approval is requested a fee will be charged for the review.

B. Laboratory Information

Laboratory Name Lewis County Environmental Health	Office Phone 360-740-1231 After Hours Phone - -
Address <u>360 NW North St, Chehalis, WA</u> <u>98532</u>	Cell Phone - - Email <u>meredith.jones@lewiscountywa.gov</u>
Hours of Operation <u>Monday – Friday, 8:00 am – 4:30 pm</u>	
Contact Name <u>Meredith Jones</u>	
Emergency Laboratory Name Water Management Laboratories	Office Phone 253-531-3121 After Hours Phone 253-312-1651
Address <u>1515 80th Street E, Tacoma, WA</u> <u>98404</u>	Cell Phone 253-691-6691 Email <u>customerservice@watermanagementlabs.com</u>
Hours of Operation <u>Monday – Friday, 8:00 am – 5:00 pm</u>	
Contact Name <u>Debbie Taylor</u>	

C. Wholesaling of Groundwater

	Yes	No
We are a consecutive system and purchase groundwater from another water system.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
We sell groundwater to other public water systems.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, Water System Name: Contact Name:		

<p>Telephone Numbers Office - - After Hours - -</p>	
<p>If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -</p>	
<p>If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -</p>	
<p>If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -</p>	
<p>If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -</p>	

D. Routine, Repeat, and Triggered Source Sample Locations*

Location/Address for Routine Sample Sites	Location/Address for Repeat Sample Sites	Groundwater Sources for Triggered Sample Sites**
X1. Forest Station No. 2 Lewis County Fire District 5 3338 Jackson Hwy	1-1. N/A	N/A
	1-2. N/A	N/A
	1-3. N/A	N/A
		N/A
		N/A
X2. Centralia Alpha Booster Pump Station 909 N Fork Rd	2-1. N/A	N/A
	2-2. N/A	N/A
	2-3. N/A	N/A
		N/A
X3. South End Booster Pump Station 2999 Jackson Hwy	3-1. N/A	N/A
	3-2. N/A	N/A
	3-3. N/A	N/A
		N/A

*NOTE: If you need more than three routine samples to cover the distribution system, attach additional sheets as needed.

** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.

Important Notes for Sample Collector:

Location/Address for <u>Routine Sample Sites</u>	Location/Address for <u>Repeat Sample Sites</u>	Groundwater Sources for Triggered Sample Sites**
X4.	4-1. N/A	N/A
Ribelin Rd & Sturdevant Rd	4-2. N/A	N/A
	4-3. N/A	N/A
		N/A
		N/A
X5.	5-1. N/A	N/A
Valley View Pump Station 285 SE Prospect St	5-2. N/A	N/A
	5-3. N/A	N/A
		N/A
X6.	6-1. N/A	N/A
Valley View	6-2. N/A	N/A
	6-3. N/A	N/A
		N/A
		N/A

*NOTE: If you need more than three routine samples to cover the distribution system, attach additional sheets as needed.

** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.

Important Notes for Sample Collector:

Location/Address for <u>Routine</u> Sample Sites	Location/Address for <u>Repeat</u> Sample Sites	Groundwater Sources for Triggered Sample Sites**
X7. Scout Lodge 278 SE Adams Ave	7-1. N/A	N/A
	7-2. N/A	N/A
	7-3. N/A	N/A
		N/A
		N/A
X8. Water Treatment Plant 405 SE Parkhill Dr	8-1. N/A	N/A
	8-2. N/A	N/A
	8-3. N/A	N/A
		N/A
		N/A
X9. Denny's 118 SW Interstate Ave	9-1. N/A	N/A
	9-2. N/A	N/A
	9-3. N/A	N/A
		N/A
		N/A

*NOTE: If you need more than three routine samples to cover the distribution system, attach additional sheets as needed.

** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.

Important Notes for Sample Collector:

Location/Address for <u>Routine</u> Sample Sites	Location/Address for <u>Repeat</u> Sample Sites	Groundwater Sources for Triggered Sample Sites**
X10. Stan Hedwall Park 1501 Rice Rd	10-1. N/A	N/A
	10-2. N/A	N/A
	10-3. N/A	N/A
		N/A
		N/A
X11. NW West St & NW Ohio Ave	11-1. N/A	N/A
	11-2. N/A	N/A
	11-3. N/A	N/A
		N/A
		N/A
X12. Holiday Inn Express & Suites 730 Liberty Pl	12-1. N/A	N/A
	12-2. N/A	N/A
	12-3. N/A	N/A
		N/A
		N/A

*NOTE: If you need more than three routine samples to cover the distribution system, attach additional sheets as needed.

** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.

Important Notes for Sample Collector:

Location/Address for Routine Sample Sites	Location/Address for Repeat Sample Sites	Groundwater Sources for Triggered Sample Sites**
X13. 18 th Street Pump Station 71 SW 18 th St	13-1. N/A	N/A
	13-2. N/A	N/A
	13-3. N/A	N/A
		N/A
		N/A
X14. Chamber of Commerce 500 NW Chamber of Commerce Way	14-1. N/A	N/A
	14-2. N/A	N/A
	14-3. N/A	N/A
		N/A
		N/A
X15. Mattress Ranch 1500 NE State Ave	15-1. N/A	N/A
	15-2. N/A	N/A
	15-3. N/A	N/A
		N/A
		N/A

*NOTE: If you need more than three routine samples to cover the distribution system, attach additional sheets as needed.

** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.

Important Notes for Sample Collector:

Location/Address for <u>Routine</u> Sample Sites	Location/Address for <u>Repeat</u> Sample Sites	Groundwater Sources for Triggered Sample Sites**
X16. Dollar Tree 1495 NW Louisiana Ave	16-1. N/A	N/A
	16-2. N/A	N/A
	16-3. N/A	N/A
		N/A
		N/A
X17. Chehalis Public Works 2007 NE Kresky Ave	17-1. N/A	N/A
	17-2. N/A	N/A
	17-3. N/A	N/A
		N/A
		N/A
X18. Allied Mineral Products 138 Sears Rd	18-1. N/A	N/A
	18-2. N/A	N/A
	18-3. N/A	N/A
		N/A
		N/A

*NOTE: If you need more than three routine samples to cover the distribution system, attach additional sheets as needed.

** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.

Important Notes for Sample Collector:

Location/Address for Routine Sample Sites	Location/Address for Repeat Sample Sites	Groundwater Sources for Triggered Sample Sites**
X19. Penny Playground 1225 SW William Ave	19-1. N/A	N/A
	19-2. N/A	N/A
	19-3. N/A	N/A
		N/A
		N/A
X20. Newaukum Golf 153 Newaukum Golf Dr	20-1. N/A	N/A
	20-2. N/A	N/A
	20-3. N/A	N/A
		N/A
		N/A
X21. Alexander Park 1101 Riverside Rd W	21-1. N/A	N/A
	21-2. N/A	N/A
	21-3. N/A	N/A
		N/A
		N/A

*NOTE: If you need more than three routine samples to cover the distribution system, attach additional sheets as needed.

** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.

Important Notes for Sample Collector:

Reduced Triggered Source Monitoring Justification (add sheets as needed):

--

E. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January	X1-X10	July	X1-X10
February	X11-X20	August	X11-X20
March	X1-X10	September	X1-X10
April	X11-X20	October	X11-X20
May	X1-X10	November	X1-X10
June	X11-X20	December	X11-X20

F. Level 1 and Level 2 Assessment Contact Information

Name Dave Vasilaukas	Office Phone 360-748-0238 After Hours Phone 360-740-1105
Address 2007 NE Kresky Avenue Chehalis, WA 98532	Email dvasilaukas@ci.chehalis.wa.us
Name Lloyd Gruginski	Office Phone 360-748-4955 After Hours Phone 360-219-7186
Address 405 Park Hill Dr,	Email Lgruginski@ci.chehalis.wa.us

G. *E. coli*-Present Sample Response

Distribution System <i>E. coli</i> Response Checklist				
Background Information	Yes	No	N/A	To Do List
We inform staff members about activities within the distribution system that could affect water quality.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We document all water main breaks, construction & repair activities, and low pressure and outage incidents.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We can easily access and review documentation on water main breaks, construction & repair activities, and low pressure and outage incidents.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Our Cross-Connection Control Program is up-to-date.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We test all cross-connection control devices annually as required, with easy access to the proper documentation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We routinely inspect all treatment facilities for proper operation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We identified one or more qualified individuals who are able to conduct a Level 2 assessment of our water system.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
We have procedures in place for disinfecting and flushing the water system if it becomes necessary.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We can activate an emergency intertie with an adjacent water system in an emergency.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have a map of our service area boundaries.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have consumers who may not have access to bottled or boiled water.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is a sufficient supply of bottled water immediately available to our customers who are unable to boil their water.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have identified the contact person at each day care, school, medical facility, food service, and other customers who may have difficulty responding to a Health Advisory.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have messages prepared and translated into different languages to ensure our consumers will understand them.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have the capacity to print and distribute the required number of notices in a short time period.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Policy Direction	Yes	No	N/A	To Do List
We have discussed the issue of <i>E. coli</i> -present sample results with our policy makers.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If we find <i>E. coli</i> in a routine distribution sample, the policy makers want to wait until repeat test results are available before issuing advice to water system customers.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(Cont.)

Distribution System *E. coli* Response Checklist

Potential Public Notice Delivery Methods	Yes	No	N/A	To Do List
It is feasible to deliver a notice going door-to-door.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have a list of all of our customers' addresses.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have a list of customer telephone numbers or access to a Reverse 9-1-1 system.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have a list of customer email addresses.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We encourage our customers to remain in contact with us using social media.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have an active website we can quickly update to include important messages.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Our customers drive by a single location where we could post an advisory and expect everyone to see it.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We need a news release to supplement our public notification process.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Distribution System *E. coli* Response Plan

If we have *E. coli* in our distribution system we will immediately:

1. Call DOH. (360) 236-3030 or 1-877-481-4901 after hours.
2. Collect repeat and triggered source samples per Part D. Collect additional investigative samples as necessary.
3. Inspect our water system facilities, including treatment plants for proper operation.
4. Interview staff to determine whether anything unusual was happening in the water system service area, especially since the previous month's sample(s).
5. Review new construction activities, water main breaks, and pressure outages that may have occurred during the previous month.
6. Review Cross-Connection Control Program status.
7. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

<i>E. coli</i>-Present Triggered Source Sample Response Checklist – All Sources				
Background Information	Yes	No	N/A	To Do List
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We address any significant deficiencies identified during a sanitary survey.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
We routinely inspect our well site(s).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
We have a good raw water sample tap installed at each source.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public Notice	Yes	No	N/A	To Do List
We discussed the requirement for immediate public notice of an <i>E. coli</i> -present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We discussed the requirement for immediate public notice of an <i>E. coli</i> -present source sample result with our wholesale customers and encouraged them to develop a response plan.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have prepared templates and a communications plan that will help us quickly distribute our messages.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<i>E. coli</i>-Present Triggered Source Sample Response Checklist – Source S01*				
Alternate Sources	Yes	No	N/A	To Do List
We can stop using this source and still provide reliable water service to our customers.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We can provide bottled water to all or part of the distribution system for an indefinite period.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We can quickly replace our existing source of supply with a more protected new source.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Temporary Treatment	Yes	No	N/A	To Do List
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? 0.9 mg/L	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

<i>E. coli</i>-Present Triggered Source Sample Response Checklist – Source S02*				
Alternate Sources	Yes	No	N/A	To Do List
We can stop using this source and still provide reliable water service to our customers.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We can provide bottled water to all or part of the distribution system for an indefinite period.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We can quickly replace our existing source of supply with a more protected new source.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temporary Treatment	Yes	No	N/A	To Do List
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? 0.9 mg/L	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

<i>E. coli</i>-Present Triggered Source Sample Response Plan – All Sources
<p>If we have <i>E. coli</i> in Sources 01 or 02 water, we will immediately:</p> <ol style="list-style-type: none"> 1. Call DOH. (360) 236-3030 or 1-877-481-4901 after hours 2. Take repeat samples 3. Issue boil water advisory 4. Inform local media of boil water advisory

H. System Map

TTHM Sampling

TTHM - 2 SAMPLES PER QUARTER

1 TTHM PULLED IN THE MAIN PRESSURE ZONE REPRESENTING MAXIMUM RESIDENCE TIME

1 TTHM PULLED IN THE VALLEY VIEW / FAIRVIEW PRESSURE ZONE REPRESENTING MAXIMUM RESIDENCE TIME

	FEBRUARY	MAY	AUGUST	NOVEMBER
TTHM	XX	XX	XX	XX

MAIN PRESSURE ZONE

Sample Location SW 22nd St. Salsbury Ave.

COLLECTION DATE	ANALYSIS DATE	CHLOROFORM	BROMODICHLORO- METHANE	CHLORODIBROMO- METHANE	BROMOFORM	TOTAL THMS
--------------------	------------------	------------	---------------------------	---------------------------	-----------	---------------

Average

CENT/ALPHA PRESSURE ZONE

Site Location South end pump station

COLLECTION	ANALYSIS	CHLOROFORM	BROMODICHLORO- METHANE	CHLORODIBROMO- METHANE	BROMOFORM	TOTAL THMS
------------	----------	------------	---------------------------	---------------------------	-----------	---------------

Average

HAA5 Sampling

HAA5 - 2 SAMPLES PER QUARTER

1HAA5 PULLED IN THE MAIN PRESSURE ZONE REPRESENTING MAXIMUM RESIDENCE TIME

1HAA5 PULLED IN THE VALLEY VIEW / FAIRVIEW PRESSURE ZONE REPRESENTING MAXIMUM RESIDENCE TIME

	FEBRUARY	MAY	AUGUST	NOVEMBER
HAA5	XX	XX	XX	XX

MAIN PRSSURE ZONE

Sample Location SW 22nd St. Salbury Ave.

COLLECTION	ANALYSIS	Monochloro	Dichloroacetic	Trichloroacetic	Monobrom	Dibromo	TOTAL
------------	----------	------------	----------------	-----------------	----------	---------	-------

Average

CENT/ALPHA PRESSURE ZONE

Site Location South End Pump Station

COLLECTION DATE	ANALYSIS DATE	Monochloro acetic Acid	Dichloroacetic Acid	Trichloroacetic Acid	Monobrom oacetic Acid	Dibromo actic Acid	TOTAL HAA's
--------------------	------------------	---------------------------	------------------------	-------------------------	--------------------------	-----------------------	----------------

Average

TOC - 2 SAMPLES EACH MONTH

- 1 TOC PULLED FROM THE PRE-TREATMENT FLOW
- 1 TOC PULLED FROM THE POST TREATMENT FLOW

ALKALINITY - ALKALINITY ANALYSIS DONE DURING TOC SAMPLING

- 1 ALKALINITY PULLED FROM THE PRE-TREATMENT FLOW

SAMPLING PERIOD FOR TOC & ALKALINITY

THE THIRD MONDAY OF EACH MONTH

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
TOC	XX			XX			XX			XX		
ALKALINITY	XX			XX			XX			XX		

	WFP PRE & POST TREATMENT						
	PRE-TREATMENT SAMPLES (SOURCE)				POST TREATMENT SAMPLES		
	COLLECTION DATE	ANALYSIS DATE	TOC ANALYSIS	Raw ALKALINITY ANALYSIS	COLLECTION DATE	ANALYSIS DATE	TOC ANALYSIS
1st Quarter							
2nd Quarter							
3rd Quarter							
4th Quarter							



1515 80th St. E.
Tacoma, WA 98404
(253) 531-3121

Lead and Copper
Distribution System - Report of Analyses

Lead and Copper Analysis (LCR)	System Group Type: (circle one) (A) B Other:
Water System ID Number: 12250P	System Name: City of Chehalis
Source: S93 (standing distribution samples)	County: Lewis
	Consecutive System? YES NO
Sample Purpose: (check appropriate box) <input checked="" type="checkbox"/> RC - Routine/Compliance (satisfies monitoring requirements) <input type="checkbox"/> C - Confirmation (confirmation of chemical result)* <input type="checkbox"/> I - Investigative (does not satisfy monitoring requirements) <input type="checkbox"/> O - Other (specify - does not satisfy monitoring requirements)	Date Received: 06-04-2020 Date Analyzed: 06-09-2020 Date Reported: 06-10-2020 Supervisor Initials: <i>JMB</i>
Sample Composition: (check appropriate box) <input type="checkbox"/> S - Single Source <input type="checkbox"/> B - Blended (list sources in "Source Number" field) <input type="checkbox"/> C - Composite (list sources in "Source Number" field) <input checked="" type="checkbox"/> D - Distribution Sample	Sample Type: (check one) <input type="checkbox"/> Pre-treatment/Untreated (Raw) <input checked="" type="checkbox"/> Post-treatment (Finished) <input type="checkbox"/> Unknown or Other Contact Name: Dave Vasilauskas Phone Number: 360-345-1226
Send Report & Bill to: City of Chehalis 2007 Northeast Kresky Avenue, Chehalis WA 98532	Comments:

ANALYTICAL RESULTS

(DOH #) Analyte	(0009) Lead	(0023) Copper
State Detection Reporting Level (SDRL) (mg/L)	0.001	0.02
Regulatory Action Level (mg/L)	0.015	1.3
Analytical Method / Analyst's Initials	200.8/JMB	200.8/JMB


Lab Number / Sample Number _____/_____ /	Date Collected	Sample Location:	Lead (mg/L)	Copper (mg/L)
089 / 02566	06-03-2020	2007 NE Kresky Avenue	<0.0010	<0.020
089 / 02567	06-03-2020	405 SE Park Hill Drive	<0.0010	0.029
089 / 02568	06-03-2020	119 Newaukum Golf Drive	<0.0010	<0.020
089 / 02569	06-04-2020	900 Airport Road	0.0016	0.025
089 / 02570	06-04-2020	158 SW 4th Street	<0.0010	0.044
089 / 02571	06-04-2020	999 SW 19th Street	<0.0010	0.065
089 / 02572	06-03-2020	2166 SW Salsbury Avenue	<0.0010	0.026
089 / 02573	06-04-2020	2597 NE Kresky Avenue	<0.0010	0.040
089 / 02574	06-04-2020	420 NW Louisiana Avenue	<0.0010	0.174
089 / 02575	06-04-2020	2371 Jackson Hwy	<0.0010	0.020
089 / 02576	06-04-2020	159 Wallace Road	<0.0010	<0.020



WATER MANAGEMENT LABORATORIES INC.

1515 80th St. E.
Tacoma, WA 98404
(253) 531-3121

Lead and Copper Distribution System - Report of Analyses

Lead and Copper Analysis (LCR)	System Group Type: (circle one) (A) B Other:
Water System ID Number: 12250P	System Name: City of Chehalis
Source: S93 (standing distribution samples)	County: Lewis
	Consecutive System? YES NO
Sample Purpose: (check appropriate box) <input checked="" type="checkbox"/> RC - Routine/Compliance (satisfies monitoring requirements) <input type="checkbox"/> C - Confirmation (confirmation of chemical result)* <input type="checkbox"/> I - Investigative (does not satisfy monitoring requirements) <input type="checkbox"/> O - Other (specify - does not satisfy monitoring requirements)	Date Received: 06-25-2020 Date Analyzed: 06-30-2020 Date Reported: 07-17-2020 Supervisor Initials: 
Sample Composition: (check appropriate box) <input type="checkbox"/> S - Single Source <input type="checkbox"/> B - Blended (list sources in "Source Number" field) <input type="checkbox"/> C - Composite (list sources in "Source Number" field) <input checked="" type="checkbox"/> D - Distribution Sample	Sample Type: (check one) <input type="checkbox"/> Pre-treatment/Untreated (Raw) <input checked="" type="checkbox"/> Post-treatment (Finished) <input type="checkbox"/> Unknown or Other Contact Name: Dave Vasilauskas Phone Number: 360-345-1226
Send Report & Bill to: City of Chehalis 2007 Northeast Kresky Avenue, Chehalis WA 98532	Comments:

ANALYTICAL RESULTS

(DOH #) Analyte	(0009) Lead	(0023) Copper
State Detection Reporting Level (SDRL) (mg/L)	0.001	0.02
Regulatory Action Level (mg/L)	0.015	1.3
Analytical Method / Analyst's Initials	200.8/JMB	200.8/JMB

Lab Number / Sample Number ____/____	Date Collected	Sample Location:	Lead (mg/L)	Copper (mg/L)
089 / 03135	06-23-2020	1320 NW State Avenue	<0.0010	<0.020
089 / 03136	06-23-2020	169 Birdie Drive	<0.0010	<0.020
089 / 03137	06-23-2020	370 South Market Blvd	<0.0010	0.154
089 / 03138	06-23-2020	1401 NW Louisiana Avenue	<0.0010	0.107
089 / 03139	06-23-2020	2123 Jackson Hwy	<0.0010	0.286
089 / 03140	06-23-2020	1001 Interstate Avenue	<0.0010	0.108
089 / 03141	06-23-2020	200 NW Pacific Avenue	<0.0010	0.243
089 / 03142	06-23-2020	299 NW Center Street	<0.0010	0.223
089 / 03143	06-24-2020	59 SW 10th Street	<0.0010	0.155
089 / 03144	06-24-2020	377 SE Valleyview Way	<0.0010	<0.020
089 / 03145	06-24-2020	129 Newaukum Village Drive	<0.0010	<0.020



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Lead and Copper
Distribution System - Report of Analyses

Lead and Copper Analysis (LCR)	System Group Type: (circle one) (A) B Other:
Water System ID Number: 12250P	System Name: City of Chehalis
Source: S93 (standing distribution samples)	County: Lewis
	Consecutive System? YES NO
Sample Purpose: (check appropriate box) <input checked="" type="checkbox"/> RC - Routine/Compliance (satisfies monitoring requirements) <input type="checkbox"/> C - Confirmation (confirmation of chemical result)* <input type="checkbox"/> I - Investigative (does not satisfy monitoring requirements) <input type="checkbox"/> O - Other (specify - does not satisfy monitoring requirements)	Date Received: 07-16-2020 Date Analyzed: 07-22-2020 Date Reported: 07-29-2020 Supervisor Initials: <i>DMB</i>
Sample Composition: (check appropriate box) <input type="checkbox"/> S - Single Source <input type="checkbox"/> B - Blended (list sources in "Source Number" field) <input type="checkbox"/> C - Composite (list sources in "Source Number" field) <input checked="" type="checkbox"/> D - Distribution Sample	Sample Type: (check one) <input type="checkbox"/> Pre-treatment/Untreated (Raw) <input checked="" type="checkbox"/> Post-treatment (Finished) <input type="checkbox"/> Unknown or Other Contact Name: Dave Vasilauskas Phone Number: 360-345-1226
Send Report & Bill to: City of Chehalis 2007 Northeast Kresky Avenue, Chehalis WA 98532	Comments:

ANALYTICAL RESULTS

(DOH #) Analyte	(0009) Lead	(0023) Copper
State Detection Reporting Level (SDRL) (mg/L)	0.001	0.02
Regulatory Action Level (mg/L)	0.015	1.3
Analytical Method / Analyst's Initials	200.8/JMB	200.8/JMB

Lab Number / Sample Number ____/____	Date Collected	Sample Location:	Lead (mg/L)	Copper (mg/L)
089 / 03814	07-14-2020	1986 South Market Blvd	<0.0010	0.093
089 / 03815	07-13-2020	63 SW 10th Street	<0.0010	0.060
089 / 03816	07-14-2020	771 South Market Blvd	<0.0010	<0.020
089 / 03817	07-14-2020	450 SW 19th Street	<0.0010	0.059
089 / 03818	07-14-2020	196 Summit	<0.0010	0.030
089 / 03819	07-14-2020	2082 SW Salsbury Avenue	<0.0010	0.076
089 / 03820	07-14-2020	930 SW 16th Street	0.0047	0.083
089 / 03821	07-15-2020	1748 SW Snively Avenue	<0.0010	<0.020

NOTES:
 *Confirmation: Include the original lab number, sample number, and collection date of original sample in either comment section.
 mg/L: milligrams per liter or parts per million
 Regulatory Action level: The concentration against which the 90th percentile of all distribution samples collected during the monitoring period that, if exceeded, is the system is in violation.
 SDRL (State Detection Reporting Level): The minimum reporting level established by the department.
LAB COMMENTS AND DATA QUALIFIER-Note data qualifiers next to the individual result. Note the definition of the qualifiers here:

Appendix J – WWTP Reclaimed Water

WWFP EXCERPT

APPENDIX J
SECTION III
EFFLUENT LIMITATIONS
AND
RECLAIMED WATER STANDARDS

BACKGROUND

This Section will present information regarding standards and regulations which must be met for the new plant to discharge treated effluent to the Chehalis River during wet weather conditions, as well as, use of Class A reclaimed water for poplar tree irrigation and groundwater recharge during dry weather conditions. The Consent Decree established discharge parameters for wet weather conditions which are included in the City's NPDES Permit. Since the City will not continue to discharge treated effluent to the river during dry weather conditions, no discussion of the NPDES Permit requirements for dry weather discharge will be included in this report. The requirements for groundwater recharge with Class A reclaimed water will be included in a new NPDES or State Waste Discharge Permit issued jointly by DOE and DOH.

FINAL EFFLUENT LIMITATIONS (wet weather)

Final effluent limitations are conditioned on flow-based criteria specified in the Consent Decree. The flow-based criteria specify wet weather and dry weather flow conditions as a function of river flow.

In general, flow in the Centralia Reach shall be determined by the USGS Grand Mound gage using the following conversion equation:

$$y = 0.7396 x - 28.28$$

y is the flow, in CFS, in the Centralia Reach

x is the flow of the Chehalis River, in CFS, as measured at the Grand Mound gage.

CFS means cubic feet per second

"Dry weather" limits apply on the next day after the seven (7)-day moving average flow goes below 1,000 CFS and on all subsequent days until the "wet weather" limits apply. "Wet weather" limits apply when the seven (7) day moving average flow goes above 1,000 CFS and at least one of the previous seven days of flow was equal to or greater than 2,500 CFS.

Dry weather limits for ammonia go into effect 14 days after the seven (7)-day moving average flow is less than 1,000 CFS, provided that the 14-day phase-in period is triggered no earlier than March 1 of each year (hence, March 15 is the earliest date that the dry weather limits for ammonia will apply).

Final effluent limitations will take effect (according to the Consent Decree schedule) in January 2008 (or up to 2010 if an extension is granted). Final effluent limitations for wet weather conditions apply to the current outfall location. The final metal discharge limits may be modified or eliminated in the future pending the findings of further metal studies, which include a multi-faceted Comprehensive WER Study, currently nearing completion. Until this work is completed, the interim effluent limitations will be in effect. Tables III-1 and III-2 present a summary of final wet weather limits.

TABLE III-1 FINAL EFFLUENT LIMITATIONS (Wet Weather Flow-based)		
Parameters	Monthly Average	Daily Maximum
BOD ₅	30 mg/l, 732 lbs/day	45 mg/l, 2,330 lbs/day
TSS	30 mg/l, 768 lbs/day	45 mg/l, 2,330 lbs/day
Ammonia	-	15 mg/l, 644 lbs/day
Parameters	Monthly Average	Weekly Average
Fecal Coliform Bacteria	200/100 mL	400/100 mL
pH	shall not be outside the range of 6.0 to 9.0	

Plant Flow, Daily Maximum 13.0 MGD

Note: The monthly average effluent concentration of BOD₅ and TSS shall not exceed 30 mg/l or 15% of the respective monthly average influent concentrations, whichever is more stringent. The 15% TSS limit may be increased if the City can document several conditions as noted in WAC 173-221-050(4)(a)(i).

TABLE III-2 FINAL METALS EFFLUENT LIMITATIONS (Wet Weather Flow-based)		
Parameters	Monthly Average	Daily Maximum
Copper	10.9 µg/l	12.0 µg/l
Silver	1.29 µg/l	1.41 µg/l
Zinc	78.3 µg/l	85.9 µg/l

The Consent Decree allows the City to seek relief from the 85% TSS removal requirement based on WAC 173-221-050. I/I removal projects are also postponed until the City has funded the new treatment plant, because the City's sewer rates are currently above the hardship level (1.5% of median household income). DOE has indicated that they are willing to extend the interim 65% removal limit for TSS during wet weather conditions until such time as the City has removed enough I/I to meet the 85% TSS removal limit. Section VI of the GSP presents a schedule for I/I removal and the year in which the 85% TSS removal limit is expected to be met. This issue needs to be discussed with DOE in greater detail as the NPDES Permit for the final limits is being prepared and after the new treatment plant has established an operational history.

APPLICABLE RECLAIMED WATER STANDARDS

Water Reclamation and Reuse Standards (September 1997)

The Reclaimed Water Act of 1992 (RCW 90.46) requires DOE and DOH to prepare Water Reclamation and Reuse Standards by which treated wastewaters can be reused to meet certain water demands in lieu of using potable water. These standards were adopted in 1997.

Classes of reclaimed water and reuse options: The Standards define four classes of reclaimed water, namely A through D, in descending order of purity. The higher classifications allow a wider range of reuse options. Table III-3 of the Standards lists the allowed uses for each class of reclaimed water (attached at end of this section). Class A is the highest standard and requires that the treated wastewater be oxidized, coagulated, filtered and disinfected. "Oxidized" means, the process by which the organic matter in the wastewater has been stabilized such that the BOD₅ and TSS are less than 30 mg/l, is non-putrescible and contains dissolved oxygen. "Coagulation" is the step of adding chemicals to aide in filtration by agglomeration. "Filtered" is based on a turbidity of two

(2) nephelometric turbidity units (NTU) monthly average and five (5) NTU at any time. Class A reclaimed water needs to be disinfected such that the median number of total coliform organisms does not exceed 2.2 per 100 ml for the last seven days of samples and 23 per 100 ml for any sample. The Standards also specify requirements for the submission of Engineering Reports for proposed reuse projects, operational requirements, general design requirements, reliability requirements, and use area requirements.

The GSP recommends that the City produce Class A reclaimed water during dry weather conditions that will be used for poplar tree irrigation and groundwater recharge via surface percolation. Groundwater recharge by surface percolation is specifically allowed under Article 3 of the Reuse Standards. The reclaimed water must be Class A and include an additional step for nitrogen reduction such that the total nitrate concentration is less than 10 mg/l by the time the reclaimed water meets the groundwater. An industrial wastewater pretreatment program is also required to assure protection of the groundwater.

Class A reclaimed water also has many other uses including irrigation, car washes, impoundments, toilet flushing, dust control at construction sites, street cleaning, etc. Many of these other uses are consumptive uses that can be used in lieu of potable water. Table III-3 lists the potential uses for reclaimed water.

In reuse approach proposed in this plan, the reclaimed water is applied to poplar trees at a greater than agronomic rate, resulting in groundwater recharge. Class A reclaimed water is required for this use. However, if the trees are to be irrigated at strictly agronomic rates, then only Class D reclaimed water is required. Class D requirements call for effluent that is oxidized and disinfected. The disinfection requirement is that the median number of total coliform organisms does not exceed 240 per 100 ml for the last seven days.

The poplar trees have both a nitrogen and water agronomic rate. A conservative nitrogen agronomic rate used in this report is 250 pounds/acre/year. The water agronomic rate used in this report is 0.25 acre-inch/day over a 200-day growing season which equates to 1.36 million gallons per acre per growing season.

**Table III-3
Treatment and Quality Requirements for Reclaimed Water Use**

USE	Class A	Class B	Class C	Class D
<i>Irrigation of Nonfood Crops</i> Trees and Fodder, Fiber, and Seed Crops Sod, Ornamental Plants for Commercial Use, And Pasture to Which Milking Cows or Goats Have Access	Yes	Yes	Yes	Yes
<i>Irrigation of Food Crops</i> Spray Irrigation All Food Crops	Yes	No	No	No
Food Crops Which Undergo Physical or Chemical Processing Sufficient to Destroy All Pathogenic Agents	Yes	Yes	Yes	Yes
Surface Irrigation Food Crops Where There is No Reclaimed Water Contact With Edible Portion of Crop	Yes	Yes	No	No
Root Crops	Yes	No	No	No
Orchards and Vineyards	Yes	Yes	Yes	Yes
Food Crops Which Undergo Physical or Chemical Processing Sufficient to Destroy All Pathogenic Agents	Yes	Yes	Yes	Yes
<i>Landscape Irrigation</i> Restricted Access Areas (e.g., Cemeteries and Freeway Landscapes)	Yes	Yes	Yes	No
Open Access Areas (e.g., Golf Courses, Parks, Playgrounds, Schoolyards, and Residential Landscapes)	Yes	No	No	No
<i>Impoundments</i> Landscape Impoundments	Yes	Yes	Yes	No
Restricted Recreational Impoundments	Yes	Yes	No	No
Nonrestricted Recreational Impoundments	Yes	No	No	No
<i>Fish Hatchery Basins</i>	Yes	Yes	No	No
<i>Decorative Fountains</i>	Yes	No	No	No
<i>Flushing at Sanitary Sewers</i>	Yes	Yes	Yes	Yes
<i>Street Cleaning</i> Street Sweeping, Brush Dampening	Yes	Yes	Yes	No
Street Washing, Spray	Yes	No	No	No
<i>Washing of Corporation Yards, Lots, and Sidewalks</i> <i>Dust Control (Dampening Unpaved Roads and Other</i> <i>Surfaces)</i>	Yes	Yes	No	No
<i>Dampening of Soil for Compaction (at Compaction</i> <i>Sites, Landfills, Etc.)</i>	Yes	Yes	Yes	No
<i>Water Jetting for Consolidation of Backfill around</i> <i>Pipelines</i> Pipelines for Reclaimed Water, Sewage, Storm Drainage, Gas, and Conduits for Electricity	Yes	Yes	Yes	No
<i>Fire Fighting and Protection</i> Dumping from Aircraft	Yes	Yes	Yes	No
Hydrants or Sprinkler Systems in Buildings	Yes	No	No	No
<i>Toilet and Urinal Flushing</i>	Yes	No	No	No
<i>Ship Ballast</i>	Yes	Yes	Yes	No
<i>Washing Aggregate and Making Concrete</i>	Yes	Yes	Yes	No
<i>Industrial Boiler Feed</i>	Yes	Yes	Yes	No
<i>Industrial Cooling</i> Aerosols or Other Mist Not Created	Yes	Yes	Yes	No
Aerosols or Other Mist Created (e.g. Use in Cooling Towers, Forced Air Evaporation, or Spraying)	Yes	No	No	No
<i>Industrial Products</i> Without Exposure of Workers	Yes	Yes	Yes	No
With Exposure to Workers	Yes	No	No	No

Appendix K – Public Notification Form Templates

COLIFORM VIOLATION

NITRATE MCL VIOLATION CERTIFICATION FORM

E. COLI MCL VIOLATION

LEAD AND COPPER INITIAL MONITORING VIOLATION

ANNUAL NITRATE MONITORING VIOLATION FORM

DBP VIOLATION SPANISH

DBP VIOLATION

BROMATE VIOLATION

TTHM AND HAA5 VIOLATION

QUARTERLY NITRATE MONITORING VIOLATION FORM

ANNUAL MCL NITRATE MONITORING VIOLATION FORM

LEAD AND COPPER MONITORING VIOLATION

CHEMICAL MONITORING VIOLATION

DRINKING WATER WARNING: LOSS OF PRESSURE

DRINKING WATER WARNING: BACKFLOW INCIDENT

NOTICE TO WATER SYSTEM USERS

COLIFORM MAJOR MONITORING VIOLATION

We, _____ Water System, I.D. _____, located in _____ County are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During the month of _____ we did not monitor or test for coliform bacteria, and therefore cannot be sure of the quality of your drinking water during that time.

At this time:

- No action is required by the users.
- Our routine coliform sample required for the month of _____ has been collected and was found to show no presence of coliform bacteria.
- Samples will be collected in the future as required.
- Other information for customers:

For more information, contact _____ at (_____) _____ or at _____.
(owner or operator) (phone number) (address)

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses.) You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is sent to you by _____ Water System on ____/____/____

Coliform Major Monitoring Public Notice Certification Form

The purpose of this form (below) is to provide documentation to the department that public notice was distributed. Please check the appropriate box and fill in the date that the notice was distributed:

- Notice was mailed to all water customers on ____/____/____.
- Notice was hand delivered to all water customers on ____/____/____.
- Notice was posted (*with department approval*) at:
_____ on ____/____/____.



Signature of owner or operator

Position

Date

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD call (800) 833-6388.

Send copy of completed notification and certification to:

Northwest Drinking Water
Department of Health
20425 72nd Ave S, Suite 310
Kent, WA 98032-2358
Phone: (253) 395-6750
Fax: (253) 395-6760

Southwest Drinking Water
Department of Health
PO Box 47823
Olympia, WA 98504-7823
Phone: (360) 236-3030
Fax: (360) 664-8058

Eastern Drinking Water
Department of Health
16201 E Indiana Ave, Suite 1500
Spokane Valley, WA 99216
Phone: (509) 329-2100
Fax: (509) 329-2104

**NOTICE TO WATER SYSTEM USERS
LEAD AND COPPER INITIAL MONITORING VIOLATION**

We, _____ Water System, I.D. _____, located in _____ County are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. In the initial monitoring period of _____ to _____, we did not meet our monitoring requirements for lead and copper, and therefore cannot be sure of the quality of your drinking water at that time. At this time:

- No action is required by the users.
- Our required lead and copper samples have currently been collected.
- Samples will be collected in the future as required.
- Other information for customers:

For more information, please contact _____ at () _____ - _____ or at _____.
(Owner or operator) (Phone number) (Address)

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is sent to you by _____ Water System on ____/____/____

Lead and Copper Initial Monitoring Public Notice Certification Form

This section must be completed by Water System. Signature below indicates notice contained all required elements.

Complete the following items (check all that apply):

- Notice mailed to all water customers on ____/____/____.
- Notice hand delivered to all water customers on ____/____/____.
- Notice published in newspaper (attach copy)
- Notice posted at _____ on ____/____/____.
(By Department Approval Only)



Signature of owner or operator Position Date

Send copy of completed notification and certification to:
David Sternberg, Water Quality Compliance Programs Coordinator
Office of Drinking Water
Water Quality Section
PO Box 47822
Olympia, WA 98504-7822
FAX 360-236-2522

For people with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TDD/TTY call 711).

**NOTICE TO WATER SYSTEM USERS
ANNUAL NITRATE MONITORING VIOLATION FORM**

We, _____ Water System, I.D. _____, located in _____ County are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During _____, we did not monitor or test for nitrate, and therefore cannot be sure of the quality of your drinking water during that time.

At this time:

- No action is required by the users.
- Our routine nitrate sample required for _____ (current year) has been collected.
- Samples will be collected in the future as required.
- Other information for customers:

For more information, please contact _____ at ()__-____ or at _____.
Owner or operator Phone number Address

Please share this information with all people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is sent to you by _____ Water System on ___/___/___

Annual Nitrate Monitoring Public Notice Certification Form

This section must be completed by Water System. Signature below indicates notice contained all required elements.

Complete the following items (check all that apply):

- Notice mailed to all water customers on ___/___/___.
- Notice hand delivered to all water customers on ___/___/___.
- Notice published in newspaper (attach copy)
- Notice posted at _____ on ___/___/___.



(By Department Approval Only)

Signature of owner or operator Position Date

Send copy of completed notification and certification to:

David Sternberg, Water Quality Compliance Programs Coordinator
Office of Drinking Water
Water Quality Section
PO Box 47822
Olympia, WA 98504-7822
FAX 360-236-2522

For people with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TDD/TTY call 711).

AVISO A LOS USUARIOS DEL SISTEMA DE AGUA

FORMULARIO DE VIOLACIÓN DEL MONITOREO ANUAL DE NITRATO

Nosotros, el sistema de agua _____, con número de identificación (ID) _____, situado en el condado de _____, estamos obligados a monitorear regularmente su agua potable por contaminantes específicos. Los resultados del monitoreo indican si su agua potable cumple o no con las normas de salud. Durante el año _____, no realizamos monitoreo ni pruebas del agua para el nitrato, y por lo tanto no podemos asegurar la calidad de su agua potable durante ese tiempo.

En este momento:

- No se requiere ninguna acción de los usuarios.
- Hemos colectado la muestra rutinaria de nitrato para el _____ (el año actual).
- Colectaremos las muestras en el futuro según la norma.
- Otra información para los usuarios:

Para más información, por favor contacte a _____ al (____) _____ - _____ o en _____.
(El dueño / operador) (El número de teléfono) (La dirección)

Por favor comparte esta información con otras personas que pudieran tomar agua de este sistema, especialmente con aquellos que no hayan recibido este aviso directamente (por ejemplo, las personas que viven en apartamentos, residencias para ancianos, escuelas y negocios). Puede hacerlo colocando este aviso en un lugar público o entregando copias en persona o por correo.

Este aviso le fue enviado por el sistema de agua _____ la fecha ____/____/____.

Formulario de certificación de la notificación al público del monitoreo anual de nitrato

(Esta sección debe ser llenada por el sistema de agua. La firma abajo indica que la notificación contiene todos los elementos requeridos.)

Complete los siguientes puntos (marque todo lo que aplica)

- El aviso fue enviado por correo a todos los usuarios del sistema de agua el ____/____/____
- El aviso fue distribuido a mano a todos usuarios del sistema de agua el ____/____/____
- El aviso fue publicado en el periódico (adjunta la copia)
- Se colocó el aviso en _____ el ____/____/____

(Solo con permiso del departamento)

(Firma del dueño u operador)

(Posición)

____/____/____
(Fecha)

Envíe una copia de la notificación completa y la certificación a:

David Sternberg, Water Quality Compliance Programs Coordinator
Office of Drinking Water
Water Quality Section
PO Box 47822
Olympia, WA 98504-7822
FAX 360-236-2252

Para personas discapacitadas, este document está disponible a su pedido en otros formatos. Para hacer su pedido, llame al 1-800-525-0127 (TDD/TTY llame al 711).

AVISO A LOS USUARIOS DEL SISTEMA DE AGUA

VIOLACIÓN DEL MONITOREO DE LOS SUBPRODUCTOS DE LA DESINFECCIÓN

Nosotros, el sistema del agua _____, con numero de identificación _____, situado en el condado de _____ estamos obligados a monitorear regularmente su agua potable por contaminantes específicos. Los resultados del monitoreo indican si su agua potable cumple o no con las normas de salud. Durante el(los) mes(es) de _____ o los cuartos de _____ en el año de _____ no realizamos monitoreo ni pruebas del agua para el total de los trihalometanos, los haloácidos, o bromatos y por lo tanto no podemos asegurar la calidad de su agua potable durante ese tiempo.

En este momento:

- No se requiere ninguna acción de los usuarios.
- Colectaremos las muestras en el futuro según la norma.
- Otra información para los usuarios:

Por más información, contacte a _____ al (____) _____ o en _____.
(Dueño / operador) (Número de teléfono) (Dirección)

Por favor comparte esta información con otras personas que pudieran tomar agua de este sistema, especialmente con aquellos que no hayan recibido este aviso directamente (por ejemplo, las personas que viven en apartamentos, hospicios para ancianos, escuelas y negocios). Puede hacerlo colocando este aviso en un lugar público o entregando copias en persona o por correo.

Este aviso le fue enviado por el sistema de agua _____ el ____/____/____.

Formulario de certificación de la notificación al público del monitoreo de los subproductos de la desinfección

El propósito de este formulario (abajo) es documentar para el departamento que el aviso público fue distribuido.

Marque por favor la caja apropiada y complete la fecha que el aviso fue distribuido: (Esta sección debe ser llenada por el sistema de agua):

- El aviso fue enviado por correo a todos los usuarios del sistema de agua el ____/____/____.
- El aviso fue distribuido a mano a todos usuarios del sistema de agua el ____/____/____.
- Se colocó el aviso (solo con permiso del departamento) en:

_____ el ____/____/____.

(Firma del dueño u operador)

(Posición)



(Fecha)

Si usted necesita esta publicación en un formato diferente, llame al (800) 525-0127. Para TTY/TDD, llame al (800) 833-6388.

Envíe una copia de la notificación completa y la certificación a:

Northwest Drinking Water
Department of Health
20425 72nd Ave S, Suite 310
Kent, WA 98032-2358
Phone: (253) 395-6750
Fax: (253) 395-6760

Southwest Drinking Water
Department of Health
PO Box 47823
Olympia, WA 98504-7823
Phone: (360) 236-3030
Fax: (360) 664-8058

Eastern Drinking Water
Department of Health
16201 E Indiana Ave, Suite 1500
Spokane Valley, WA 99216
Phone: (509) 329-2100
Fax: (509) 329-2104

NOTICE TO WATER SYSTEM USERS

DISINFECTION BYPRODUCTS MONITORING VIOLATION

We, _____ Water System, I.D. _____, located in _____ County are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During the month(s) of _____ or quarter(s) _____ in the year of _____ we did not monitor or test for Total Trihalomethanes, Haloacetic Acids, or Bromate and therefore cannot be sure of the quality of your drinking water during that time.

At this time:

- No action is required by the users.
- Samples will be collected in the future as required.
- Other information for customers:

For more information, contact _____ at (_____) _____ or at _____.
(owner or operator) (phone number) (address)

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses.) You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is sent to you by _____ Water System on ____/____/____

Disinfection Byproducts Monitoring Public Notice Certification Form

The purpose of this form (below) is to provide documentation to the department that public notice was distributed. Please check the appropriate box and fill in the date that the notice was distributed:

- Notice was mailed to all water customers on ____/____/____.
- Notice was hand delivered to all water customers on ____/____/____.
- Notice was posted (*with department approval*) at:
_____ on ____/____/____.



Signature of owner or operator

Position

Date

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD call (800) 833-6388.

Send copy of completed notification and certification to:

Northwest Drinking Water
Department of Health
20425 72nd Ave S, Suite 310
Kent, WA 98032-2358
Phone: (253) 395-6750
Fax: (253) 395-6760

Southwest Drinking Water
Department of Health
PO Box 47823
Olympia, WA 98504-7823
Phone: (360) 236-3030
Fax: (360) 664-8058

Eastern Drinking Water
Department of Health
16201 E Indiana Ave, Suite 1500
Spokane Valley, WA 99216
Phone: (509) 329-2100
Fax: (509) 329-2104

NOTICE TO WATER SYSTEM USERS

QUARTERLY TOTAL TRIHALOMETHANE (TTHM)/HALOACETIC ACIDS (HAA5) MONITORING VIOLATION FORM

We, _____ Water System, I.D. _____, located in _____ County are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During the following quarters: _____, we did not monitor or test for the disinfection by-products TTHM and HAA5, and therefore cannot be sure of the quality of your drinking water during that time.

At this time:

- No action is required by the users.
- Our routine quarterly TTHM/HAA5 samples have been taken for _____ (time period).
- Samples will be collected in the future as required.
- Other information for customers:

For more information, please contact _____ at () ____ - ____ or at _____.
(owner or operator) (phone number) (address)

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses.) You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is sent to you by _____ Water System on __/__/__

Quarterly TTHM/HAA5 Monitoring Public Notice Certification Form

(This section must be completed by Water System. Signature below indicates notice contained all required elements.)

Complete the following items (check all that apply):

- Notice mailed to all water customers on ____ / ____ / ____.
- Notice hand delivered to all water customers on ____ / ____ / ____.
- Notice published in newspaper (attach copy)
- Notice posted at _____ on ____ / ____ / ____.

(By Department Approval Only)



Signature of owner or operator

Position

Date

The Department of Health is an equal opportunity agency. For persons with disabilities, this form is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).

Send copy of completed notification and certification to:

Office of Drinking Water, Water System Support Section, PO Box 47822, Olympia WA 985047822 fax (360) 236-2252

**NOTICE TO WATER SYSTEM USERS
QUARTERLY NITRATE MONITORING VIOLATION FORM**

We, _____ Water System, I.D. _____, located in _____ County are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. We are required to monitor for nitrates on a quarterly basis. We have failed to meet the monitoring requirements for nitrate for the _____ quarter(s) of _____ (year). We cannot be sure of the quality of your drinking water during that time. At this time:

- No action is required by the users.
- Our current quarterly nitrate samples have been collected.
- Samples will be collected in the future as required.
- Other information for customers:

For more information, please contact _____ at () _____ - _____ or at _____.
(owner or operator) (phone number) (address)

Please share this information with people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses.) You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is sent to you by _____ Water System on __/__/__

Quarterly Nitrate Monitoring Public Notice Certification Form

(This section to be completed by the Water System. Signature below indicates notice contained all required elements.)

Complete the following items (check all that apply):

- Notice mailed to all water customers on ____ / ____ / ____
- Notice hand-delivered to all water customers on ____ / ____ / ____
- Notice published in newspaper (attach copy)
- Notice posted at _____ on ____ / ____ / ____
(By Department Approval Only)



Signature of owner or operator Position Date

Send copy of completed notification and certification to:
David Sternberg, Water Quality Compliance Programs Coordinator
Office of Drinking Water
PO Box 47822
Olympia, WA 98504-7822
FAX 360-236-2252

For people with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TDD/TTY call 711).

NOTICE TO WATER SYSTEM USERS
Reliably and Consistently Under the Maximum Contaminant Level (MCL)
ANNUAL NITRATE MONITORING VIOLATION FORM

We, _____ Water System, I.D. _____, located in _____ County are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. We are required to collect a nitrate sample for Source # _____ each year, between the months of _____ and _____. During _____, we did not monitor or test for nitrate and therefore cannot be sure of the quality of your drinking water during that time. At this time:

- No action is required by the users.
- Our routine nitrate sample required to be collected between _____ and _____ (current year) has been collected.
- Samples will be collected in the future as required.
- Other information for customers:

For more information, please contact _____ at () _____ - _____ or at _____.
(owner or operator) (phone number) (address)

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses.) You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is sent to you by _____ Water System on ___ / ___ / ___

R & C Under the MCL Annual Nitrate Monitoring Public Notice Certification Form

(This section must be completed by the Water System. A signature below indicates the notice contained all required elements.)

Complete the following items (check all that apply):

- Notice mailed to all water customers on ___ / ___ / ___
 - Notice hand-delivered to all water customers on ___ / ___ / ___
 - Notice published in newspaper (attach copy)
 - Notice posted at _____ on ___ / ___ / ___
- (By Department Approval Only)**



 Signature of owner or operator Position Date

Send a copy of completed notification and certification to:
 David Sternberg, Water Quality Compliance Programs Coordinator
 Office of Drinking Water
 PO Box 47822
 Olympia, WA 98504-7822
 FAX 360-236-2252

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD, call (800) 833-6388.

NOTICE TO WATER SYSTEM USERS

LEAD AND COPPER MONITORING VIOLATION

We, _____ Water System, I.D. _____, located in _____ County are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. In _____ we did not meet our monitoring requirements for lead and copper, and therefore cannot be sure of the quality of your drinking water at that time.

At this time:

- No action is required by the users.
- Samples will be collected in the future as required.
- Other information for customers:

For more information, please contact _____ at () _____ - _____ or at _____.
Owner or Operator Phone Number Address

Please share this information with people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses.) You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is sent to you by _____ Water System on ___/___/___

Lead and Copper Monitoring Public Notice Certification Form

This section must be completed by the water system. Signature below indicates notice contained all required elements.

Complete the following items (check all that apply).

- Notice mailed to all water customers on ___/___/___.
- Notice hand delivered to all water customers on ___/___/___.
- Notice published in newspaper (attach copy)
- Notice posted at _____ on ___/___/___.

(By Department Approval Only)



Signature of owner or operator

Position

Date

Send copy of completed notification and certification to

Lead and Copper Program
Office of Drinking Water
PO Box 47822
Olympia, WA 98504-7822
FAX 360-236-2252

AVISO PARA LOS USUARIOS DEL SISTEMA DE AGUA

VIOLACIÓN DEL MONITOREO DE PLOMO Y COBRE

Nosotros, el sistema de agua _____, con número de identificación (I.D#) _____, ubicado en el condado de _____, regularmente debemos monitorear contaminantes específicos en el agua que usted toma. Los resultados del monitoreo son un indicador para comprobar si el agua que usted toma cumple con los estándares de salud. En _____ no cumplimos con el requisito de monitorear el plomo y el cobre, y por lo tanto no podemos estar seguros de la calidad del agua que usted tomó en esa fecha.

En este momento:

- Ninguna acción se requiere de parte de los usuarios.
- Las muestras serán tomadas en el futuro como se requiere.
- Otra información para los usuarios:

Para mayor información comuníquese con _____ al teléfono () _____ - _____ o con

_____ (dueño u operador) _____ (teléfono) _____ (dirección)

Pase esta información a todas las personas que pudieran tomar agua de este suministro, especialmente aquellas personas que no hayan recibido este aviso (por ejemplo, personas que vivan en apartamentos, asilos de ancianos, escuelas y negocios.) Usted puede hacerlo colocando este aviso en un lugar público donde se pueda leer claramente o distribuyendo copias en persona o enviándolas por correo.

Este aviso es enviado a usted por el Sistema de Suministro de Agua _____ fecha ____/____/____.

NOTICE TO WATER SYSTEM USERS

CHEMICAL MONITORING VIOLATION

We, _____ Water System, I.D. _____, located in _____ County are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. In _____ we did not meet our monitoring requirements for the chemicals listed below, and therefore cannot be sure of the quality of your drinking water at that time.

- Volatile Organic Contaminants (VOCs).
- Complete Inorganic Contaminants (IOCs).
- Pesticides.
- Herbicides.
- _____ Other (List Test Panel or Specific IOC Analyte)

At this time:

- Our required _____ samples have been collected for this monitoring period.
- Samples will be collected in the future as required.
- Other information for customers:

For more information, please contact _____ at () _____ - _____ or at _____.
Owner or Operator Phone Number Address

This notice is sent to you by _____ Water System on ___ / ___ / ___

Chemical Monitoring Public Notice Certification Form

This section must be completed by the water system. Signature below indicates notice contained all required elements.

Complete the following items (check all that apply):

- Notice mailed to all water customers on ___ / ___ / ___.
- Notice hand delivered to all water customers on ___ / ___ / ___.
- Notice included in annual Consumer Confidence Report (attach copy).
- Notice posted at _____ on ___ / ___ / ___.
(By Department Approval Only)



Signature of owner or operator Position Date

Send copy of completed notification and certification to:

Office of Drinking Water, Water Quality Section
PO Box 47822
Olympia, WA 98504-7822
FAX 360-236-2252

DRINKING WATER WARNING: LOSS OF PRESSURE

Public Notification

The _____ Water System, ID _____, located in _____ County may be contaminated because of a loss of pressure in the water system. Even if you didn't lose water pressure, your tap water may still be contaminated.

Until Further Notice, Boil Your Tap Water Before Drinking. Bring all water to a roiling boil for one minute. Let it cool before using. You should use boiled or purchased bottled water for drinking, making ice, brushing teeth, washing dishes, and food preparation. Boiling kills bacteria and other organisms in the water.

When pressure loss occurs, contamination from the environment or from human or animal waste can be drawn into the water system. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems. These symptoms are not only caused by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care provider.

What caused the pressure loss?

What is the affected area?

What are we doing to correct the problem?

What should you do when we restore pressure to the water system?

We will notify you when you no longer need to boil the water.

For more information, please call _____ at () ____ - ____ or email _____.

Please share this notice with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments and businesses). You can post it in a public place, share copies by hand, or mail it.

The _____ Water System sent this notice to you on ___/___/___

For Water Utility Use Only:

<p>Pressure Loss Public Notice Certification Form</p> <p>Within 10 days of notifying your customers, please complete this certification form and return a copy of each type of notice you distributed (hand-delivered notice, news release, email, phone transcript, etc.) to our regional office. Call 1-800-521-0323 for the regional office address.</p>		
<p>Distribution was completed on ___ / ___ / ___.</p> <p>Were the water users notified within 24 hours?</p> <p style="text-align: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Check all that apply:</p> <p><input type="checkbox"/> Hand delivery,</p> <p><input type="checkbox"/> News release (TV, radio, newspaper, etc.),</p> <p><input type="checkbox"/> Posting at _____</p> <p><input type="checkbox"/> Other _____</p>	
<p>_____ Signature of owner or operator</p>	<p>_____ Position</p>	<p>_____ Date</p>

Drinking Water Warning: Backflow Incident

Public Notification

The _____ Water System, ID _____, located in _____ County may be contaminated because of a backflow incident in which _____ (describe the substance) flowed back into the drinking water system. You are located in the service area potentially affected by this backflow incident.

Do Not Use Tap Water for Drinking, Laundry, or Bathing Until Further Notice. Use only purchased bottled water for drinking, making ice, brushing teeth, washing dishes, food preparation, and hand washing.

When backflow occurs, microbial or chemical contamination can be drawn into the water system. These contaminants can cause severe injury or illness.

What caused the backflow incident?

What is the affected area?

What are we doing to correct the problem?

Where can customers get bottled water?

What should you do before you begin using your tap water?

We will notify you when the water is safe to use.

For more information, please call _____ at () ____ - ____ or email _____.

Please share this notice with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments and businesses). You can post it in a public place, share copies by hand, or mail it.

The _____ Water System sent this notice to you on ___ / ___ / ___

For Water Utility Use Only:

Backflow Incident Public Notice Certification Form		
Within 10 days of notifying your customers, please complete this certification form and send a copy of each type of notice you distributed (hand-delivered notices, new releases, email, phone transcript, etc.) to our regional office. Call 1-800-521-0323 for the regional office address.		
Distribution was completed on ___ / ___ / ___.	Check all that apply:	
Were the water users notified within 24 hours?	<input type="checkbox"/> Hand delivery,	
<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> News release (TV, radio, newspaper, etc.),	
	<input type="checkbox"/> Posting at _____	
	<input type="checkbox"/> Other _____ + _____	
Signature of owner or operator	Position	Date

DOH Form (331-495) 6/14

For people with disabilities, this form is available on request in other formats. To submit a request, please call 800-525-0127 (TDD/TTY 711).

Appendix L – Water Shortage Response Plan

WATER SHORTAGE RESPONSE PLAN

City of Chehalis

Water Shortage Response Plan

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- B. Irrigation Response for City of Chehalis Managed Sites
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- D. Voluntary Customer Water Use Reduction Actions
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OVERVIEW

WATER SUPPLY SYSTEM

The City obtains its drinking water from the Newaukum and Chehalis Rivers. Water is captured at the Newaukum River intake and flows by gravity through 17.5 miles of pipeline to the water treatment plant. Water is captured at the Chehalis River intake and is pumped through 8,000 feet of pipeline to the water treatment plant. All water is treated and chlorinated prior to being served to the customers. The cities of Chehalis and Centralia have also constructed an emergency intertie connecting the two cities' water systems. Operation of this intertie requires cooperation and specific action by both cities. This intertie can help mitigate each city's supply shortages in an emergency condition.

The City of Chehalis owns and operates a water system serving customers within its City limits and with the Urban Growth Area of Lewis County. The focus of this report is to evaluate the City's water system and provide recommendation needed to respond to and avoid water shortages now and in the future.

The City has, over time, continued to upgrade and replace its original facilities. The Newaukum River provides the majority of the City's supply and is augmented with water from the Chehalis River intake. All water is treated at the City's filter plant and chlorinated prior to reaching any customer. The water system provides a good degree of reliability and is efficiently operated and maintained. This Water Shortage Response Plan (WSRP) addresses measures intended to meet present and future water demands.

PURPOSE OF STUDY

The purpose of this document is to help the City develop short-term water shortage response plans. Water system planning, as required by WAC 246-290-100, provides the framework for making key water supply management decisions. The WSRP outlines the actions required to reduce water usage and water demand in the event of a water shortage, and to provide information to citizens and businesses. This document is to provide a plan to management and personnel for the duration of the drought or emergency.

CAUSES OF WATER SHORTAGES

A water shortage can be any situation in which water supply is inadequate to meet demand. Potential causes of water shortages are:

- Drought
- Water contamination
- Inadequate planning to meet demand
- Inadequate or failed equipment
- Water waste
- Water outage due to loss of power or major service disruption

The frequency or cause of a water shortage may indicate the best way to overcome it. Droughts are temporary, but often reoccur. Thus, depending upon drought frequency, a solution to the problems created by drought may be reducing demand or augmenting supply. Water contamination can put a water supply out of commission permanently. In this case, a new source of supply may be warranted. To eliminate a water shortage caused by inadequate planning or equipment, consideration to design and capital improvements are necessary. To eliminate shortages resulting solely from increased demand for water resources, long-term resource management is required. This plan provides the framework to continue to ensure an adequate water supply while the permanent solution is developed.

This Plan has been prepared to conform to the guidelines developed by the Office of Drinking Water (ODW) of the Environmental Health Division of the State Department of Health (DOH).

DROUGHT

According to the National Drought Mitigation Center, drought is inevitable and is a normal part of virtually every climate on the planet, even rainy ones. Certainly, this is the case in Chehalis, Washington. While the 30 year average indicates that Chehalis receives about 47 inches of rain every year, only two inches total fall in July and August. This is our "normal predictable" weather pattern and our Water System Plan, Water Conservation Program and operations procedures addresses water use during normal periods.

The City of Chehalis' water system relies on rainfall to recharge the aquifers that feed the Newaukum and Chehalis Rivers. The City projects the amount of water our customers will consume based on historical usage and demand forecasting models. Highly unusual weather events can affect this relatively predictable cycle.

These weather events fall into two categories. The first is less than average fall/winter precipitation. The City depends on winter rains to recharge our aquifers. Since Chehalis' water sources rely on relatively shallow aquifers, they would likely experience an almost immediate reduction in water supply following a dry winter.

The second weather pattern that could cause a potential water shortage is a summer of sustained higher than normal temperatures and lower than normal precipitation. Both of these conditions can contribute to above-average demand and put a strain on the City's water supplies.

SYSTEM EMERGENCIES

System operating emergencies are, in most cases, not predictable. Emergencies may consist of pump failure, transmission line failure, reservoir failures, treatment plant failure or contamination.

The specific cause of any supply disruption will dictate the City's response and timing. Any major loss or reduction in the water source will require the City of Chehalis to implement the WSRP.

CONSERVATION vs. CURTAILMENT

There are important differences between a long-term conservation program and curtailment actions. Chehalis has a water conservation program in place. The program targets both indoor and outdoor water use for all our customers.

In contrast, curtailment is designed to quickly reduce water usage. It is relatively short-term and usually involves perceived "hardships" for the customers. It generally involves mandatory measures.

The focus of the public message and information strategy is different for each program. The long-term conservation message of environmental stewardship, water use efficiency, and saving money shifts during water supply shortage situations to a more personal message such as, "If everyone participates and cuts back, we will have enough water for your essential needs."

BACKGROUND

WATER SHORTAGE RESPONSE TEAM

When a **potential** water shortage is identified, the Water Shortage Response Team (WSRT) would be convened to consider whether this plan should be implemented. The team is comprised of the following staff:

- Water Superintendent (Chairperson)
- Water Treatment Plant Operator
- Public Works Director
- Public Works Office Manager (Information Officer)

The team would recommend the level of implementation and specific response actions, subject to review by the City Manager.

A variety of factors would form the basis of these decisions, including:

WATER SUPPLY FACTORS

- Total water supply available, including interties.
- Operational conditions of Newaukum and Chehalis Intakes, transmission lines, reservoirs, and the water treatment plant.
- The rate of decline in river levels compared with the normal operating levels.
- Amount of time required to implement a supply-enhancement measure.
- Weather conditions based on both short-term and long-term weather forecasts and modeling by the National Weather Service.
- The City of Chehalis is currently able to produce 4.8 mgd (3,333 gpm). For more detailed water supply factors, see Chapter 3 of the Water System Plan.

WATER DEMAND FACTORS

- Historical and current trends and seasonal forecasts for the system's daily water demands.
- The estimated margin of safety provided by the demand reduction compared with the level of risk assumed if no action is taken.
- Amount of time required to implement the water use reduction measures.
- Amount of expected savings provided by a water use reduction measure.
- City of Chehalis's Maximum Day Demand is 3.60 mgd (2,500 gpm) for the year 2020. For more detailed water demand factors, see Chapter 2 of the Water System Plan.

OTHER FACTORS

- The amount of lost water revenue compared with the increase margin of supply reliability.
- Consultation with elected officials, state resource agencies, the county, interested organizations.
- Amount of time lag between implementation of a measure and water use reduction.
- Ultimate cost to City customers.
- Equity in demand reduction between customer classes.
- Impact to local economy.
- Current events.
- Action taken by neighboring jurisdictions, which influence or directly affect City customers.
- Environmental benefits.

WATER SHORTAGE RESPONSE

FOUR STAGES OF WATER SHORTAGE RESPONSE

The WSRP includes four stages of response. The stages include:

- I. Advisory
- II. Voluntary
- III. Mandatory
- IV. Emergency Curtailment

As the water shortage conditions become more serious, the City would implement the higher levels of response. Each has progressively more stringent requirements to coincide with conditions of increasing severity. Appendix A contains a matrix that provides an overview of possible management actions and the levels at which they would most likely be implemented.

At the Advisory Stage, customers would be informed as early as meaningful data is available that water supply and demand conditions may result in a less than normal supply of water. If the supply and demand situation predicted at the Advisory Stage develops, the City would move to

the Voluntary Stage, which relies on the voluntary cooperation and support of customers to meet water use reduction goals. If the voluntary measures do not provide the necessary reduction in water use, the Mandatory Stage would be implemented. The Emergency Curtailment Stage would only be used when extraordinary levels of reductions are required to ensure that demand does not exceed supply and that public health and safety are not compromised.

Following is a detailed discussion of the four stages, including objectives, triggers, public messages, internal operating actions, communication actions, and supply and demand actions.

ADVISORY STAGE

Objectives

- Prepare City staff, relevant agencies, and water users for a potential water shortage, thereby allowing all parties adequate time for planning and coordination.
- Undertake supply management actions that forestall or minimize the need for more stringent demand or supply management actions later on.

Triggers

There are a variety of conditions that may cause concern about water availability and signal a potential water shortage. Conditions that may trigger the Advisory Stage include but are not limited to the following:

- The Newaukum and Chehalis River flows are normally at their lowest in September and October. When river or aquifer levels are below historical low levels, staff would continue monitoring river levels and begin monitoring precipitation and analyzing all available data. If the river levels do not come up to historical levels and precipitation continues to be below normal, the City would declare an Advisory Stage in March.
- River levels that are significantly below historical norms for the current time of year and data indicates that expected demands may not be met if this trend worsens or continue.
- Lower than normal winter precipitation.
- Major equipment out of service which lowers source production (water treatment train, pump at the Chehalis River intake, transmission line from either source) which require long lead times for equipment replacement or require extensive reconstruction to bring back into service.

The Advisory Stage may be discontinued when water supply conditions return to normal.

Public Message

"The potential exists for lower than normal water supply. Customers may be asked to reduce consumption unless conditions return to normal. Please use water wisely. We will keep you informed"

City of Chehalis Internal Operating Actions

1. Convene the City's WSRT to evaluate conditions, determine actions, and assign tasks.
2. Intensify communication with all City staff so they can communicate our message clearly to concerned customers.
3. Intensify data collection for all source and treatment meter records, tank level records, monitoring river level and any aquifer information, and weather conditions.
4. Assess current water main flushing activities to determine whether they should be accelerated so they are completed prior to peak usage periods or reduced to conserve supply.
5. Assess water quality in the distributions system to target areas that may experience degradation with reduced consumption.
6. Develop a list of critical water uses and users.
7. Reduce watering of City owned and managed landscapes. Reduce or eliminate seasonal plantings. Appendix B contains a list of recommendations regarding irrigation water use reduction steps in City managed landscapes.
8. Initiate planning and preparation for Voluntary Stage actions.

Communication Actions

1. Brief City Department Heads, City Manager, City Council, and all City staff members.
2. Consult with and provide status reports to state resource agencies, interest groups, and Chehalis Basin Partnership. Specific entities include Lewis County, City of Centralia, State Department of Health, interested environmental and community organizations and large commercial customers.
3. Develop a status report for customers/businesses with special interests, such as landscape, nursery industry and developers.
4. Develop and distribute public outreach and education materials explaining the water shortage response stages and expected ranges of actions through a variety of communication channels (i.e., print and radio media, City website, direct mail, etc.). Post updated status reports on the City's website and through other communication channels. Prepare information for customers, including developers, who may be planning new landscaping.

VOLUNTARY STAGE

Objectives

The objectives of the Voluntary Stage are to:

- Inform City water customers of a water shortage and the need to reduce water use and eliminate water waste.
- Reduce water use to meet consumption goals through voluntary customer actions.
- Forestall or minimize the need for more stringent demand or supply management actions.

- Minimize the disruption to customers while meeting consumption goals.
- Maintain water quality standards throughout the shortage.

Triggers

- River flows and aquifer levels continue to be lower than the historical normal.
- Rainfall is significantly less than normal by February 1.
- The summer is predicted to be hot and dry.
- Water use demand projections indicate that a systematic response to reducing demand is required.

Public Message

*"We are relying on the support and cooperation of **all** water users to reduce consumption and stretch the available water supply. Water use needs to be reduced by ___ percent, approximately ___ gallons per household per day. Customers are responsible for determining how they will meet that goal. Water waste is not allowed. If everyone cooperates, more stringent restriction may be avoided. In addition to meeting essential water needs of customers, the needs of fish habitat and other environmental concerns is a priority"*

City of Chehalis Internal Operating Actions

1. Continue Advisory Stage actions.
2. WSRT to prepare weekly reports for distribution to staff and local media on supply conditions and consumption levels.
3. WSRT will consider the current and projected supply conditions and seasonal demand and set consumption goals that may be revised as necessary.
4. Reduce all operating system water uses to essential levels.
5. Reduce irrigation at City-owned and managed landscapes. Reduce or eliminate seasonal plantings (Appendix B).
6. Reduce washing of City fleet vehicles; request that City departments bring fleet vehicles to commercial car washes that recycle water.
7. Eliminate hosing of sidewalks, driveways, parking lots, etc., at City facilities except in situations where it is necessary for public health and safety.
8. Activate existing emergency intertie, if available, as necessary to increase emergency supply availability.
9. Increase water quality monitoring actions as necessary.
10. WSRT will evaluate whether target consumption levels and supply conditions warrant a rate surcharge to reinforce voluntary actions and/or to recover revenue losses. The WSRT would make recommendations to the City Manager for action by the City Council.
11. Implement staffing reassignments as needed and plan staffing changes that may be needed for the Mandatory Stage, including staff to enforce mandatory restrictions.

Communication Actions

1. The WSRT would establish systematic communications with City Department Heads, the City Manager, and City Council, including the suggested nature and scope of the voluntary measures and strategies.
2. Consult with and provide status reports to state resource agencies, interest groups, and Chehalis Basin Partnership. Specific entities include Lewis County, City of Centralia, State Department of Health, interested environmental and community organizations and large commercial customers. Post updated status reports on the City website.
3. Develop and implement a comprehensive public awareness and education campaign with the goal of keeping customers informed about supply and demand conditions. This campaign will recommend customer actions to significantly reduce demand, reinforce desired customer actions, and remind customers that if goals are not achieved, mandatory restrictions may be necessary. The campaign may include press releases to the local print media and radio stations, publishing in the Daily Chronicle and the City website a list of recommended actions for customers to take to reduce their water consumption, a direct mailing to all City customers with a list of the recommended actions, and other appropriate strategies.
4. Promote consumption goals for typical households and a percentage reduction goal for commercial customers.
5. Prepare a current list of commercial car washes in Chehalis that recycle water.
6. Contact the City's largest water users and request a percentage reduction. Contact other public agencies to inform them of conditions and request their cooperation.
7. Identify customers with large irrigation accounts and promote use of daily weather information, such as rainfall and reduced evapotranspiration (ET) rates to minimize irrigation uses. Provide current ET rates on City's website.
8. Provide water quality information to the public so that if flushing is necessary, the public understands that it is essential for water quality maintenance.
9. Initiate remaining planning and preparation for the Mandatory Stage.
10. Establish and promote "hotlines" for customers to obtain additional water conservation information.
11. Establish regular communication with Public Works Department and City employees, especially staff that has regular contact with the public, such as Utility Billing representative, meter readers, and Water Section crew. Keep them up to date on conditions, goals, and City actions so they can provide accurate information to customers.

Supply & Demand Management Action

1. Assigned staff will "tag" observed obvious water waste, such as hoses without shutoff nozzles, irrigating during the heat of the day, excessive water running into storm drains, etc., with a Water Waste Notice that informs the customer about supply conditions and the need to reduce water waste.
2. Evaluate the ability to accelerate or enhance long-term conservation programs and implement as appropriate.
3. Request state, county, and private organizations eliminate washing of fleet vehicles except at commercial car washes that use recycled water.

Voluntary customer actions are included in Appendix D.

MANDATORY STAGE

Objectives

The objectives of the Mandatory Stage are to:

- Achieve targeted consumption reduction goals by restricting defined water uses.
- Ensure that an adequate water supply will be available during the duration of the water shortage to protect public health and safety.
- Minimize the disruption to customers' lives and businesses while meeting target consumption goals.
- Promote equity among customers' by establishing clear restrictions that affect all customers equally.

Triggers

The Mandatory Stage would be implemented when:

- The City loses either of its sources due to decreased river level. The City would remain at the Mandatory Stage until this source comes back online.
- The current water supply would not be able to meet demand projections
- Measures implemented in the Voluntary Stage are not adequately reducing demand.
- The time available to implement measures to reduce water use is not sufficient to allow education of customers required for voluntary compliance.
- It is evident the level of water use reduction required would not be achieved through voluntary compliance.

Public Message

"We are imposing mandatory restrictions to reduce demand because the voluntary approach is not resulting in necessary water use reductions. We are continuing to rely on the support and cooperation of our customers to reduce water use. However, we need the certainty and predictability of restricting certain water uses. This way, we can ensure that an adequate supply of water is available for public health and safety throughout this shortage."

City of Chehalis Internal Operating Actions

1. Continue actions from Advisory and Voluntary Stages, as appropriate.
2. The WSRT would develop a list of recommended water use restrictions and exemptions from restrictions.
3. The WSRT would finalize and implement a process for receiving, recording, and responding to reported violations of restrictions.
4. The WSRT would make recommendations to move to the Mandatory Stage and develop mandatory restrictions, emergency surcharges, and fees, subject to the City Managers approval, to present to the City Council for consideration. The WSRT would recommend the nature, scope, and timing of restrictions.
5. Work with City of Chehalis Parks Maintenance Supervisor to restrict irrigation levels in park areas to levels that meet or exceed the irrigation restrictions while maintaining public safety (Appendix B).
6. The WSRT would finalize and implement enforcement procedures and assess fines where mandatory restrictions are not followed (Appendix E). The WSRT would review and process all requests for exemptions from mandatory requirements.
7. Work with the City of Chehalis and District Fire Departments to ensure that they are complying with mandatory restrictions (Appendix F).
8. Initiate planning and preparation for the Emergency Curtailment Stage.

Communication Actions

1. The WSRT will provide periodic reports to the City Department Heads, the City Manager, and City Council, including the suggested nature and scope of the mandatory restrictions, implementation strategies, and customer response data.
2. Consult with and provide status reports to state resource agencies, interest groups, and Chehalis Basin Partnership. Specific entities include Lewis County, City of Centralia, State Department of Health, interested environmental and community organizations and large commercial customers. Post updated status reports on the City website.
3. Through a media campaign and direct mail communicate:

- Scope and nature of mandatory restrictions.
 - Reason for imposing the restrictions.
 - Consumption goals and ways in which to achieve those goals.
 - Additional restrictions that may be imposed if water use reduction goals are not achieved.
 - Enforcement mechanisms and fines.
 - Rate Surcharges.
 - Projections for how long restrictions will be in place.
4. In communicating mandatory restrictions to the public, a clear distinction will be made between lawn/turf watering and watering gardens and ornamental plantings. The type and amount of watering will be clearly defined.
 5. Any exemption from water use restrictions will be clearly identified.
 6. Contact irrigation customers and inform them that the City may shut down their irrigation meters in the event of an immediate water shortage situation.
 7. Provide area landscape management and property management companies with water use restriction information.
 8. Restrict hydrant usage to essential purposes, including recall of hydrant permits previously issued. This should include contacting each registered hydrant user. Require the use of best management practices (BMPs) to reduce water use, meet operational needs, and provide for dust control. If an alternate source of water is available, all hydrant permits may be rescinded.
 9. Post updated status reports on the City website.
 10. Establish a "Customer Hotline" for residents to report violations of restrictions.
 11. Continue and enhance communications actions from the Advisory and Voluntary Stages.
 12. Work with the City and County's Community Planning and Development Departments to defer landscape installation requirements until the shortage is over. **No exemptions will be allowed for watering new lawn installations.**
 13. Advise Fire Departments to discontinue the use of water in training exercises until the emergency is over.
 14. Evaluate resources and plans for moving into the Emergency Curtailment Stage. Begin preparatory measures as appropriate.

Supply & Demand Management Actions

The WSRT will review, evaluate, and recommend possible restrictions to the City Manager for authorization by the City Council.

The following is a list of possible watering restrictions. The nature of the restrictions actually used will depend on the situation and may change as the severity of the situation changes.

1. Prohibit all watering during the warmest hours of the day, for example between 9:00 a.m. and 7:00 p.m.
2. Limit all watering to a specific number of days per week or per month. The option chosen will depend on target consumption goals, the time of year and the extent to which watering is occurring, and how much demands have already decreased.
3. Ban lawn watering, with other landscape watering prohibited during the warmest hours of the day—for example, between 9:00 a.m. and 7:00 p.m.
4. Prohibit use of any ornamental fountain using drinking water for operation or makeup water.
5. Prohibit car washing except at commercial car wash facilities that recycle water.
6. Prohibit washing of sidewalks, streets, decks or driveway except as necessary for public health and safety.
7. Limit pressure washing of buildings to situations that require it as part of a scheduled building rehabilitation project (i.e., painting).
8. Prohibit water waste, including untended hoses without shut-off nozzles, obvious leaks, and water running to waste, such as gutter flooding, and sprinklers/irrigation whose spray pattern unnecessarily and significantly hits paved areas.
9. If an alternate source of water is available, prohibit use of drinking water for dust control at construction areas.

Exemptions

1. If an alternate source of water is not available and dust control is required to comply with air quality requirements, water may be applied to construction areas or other areas at the minimum rate necessary to achieve the desired results provided that all appropriate best management practices are being employed.
2. Ballfields and playfields may be watered at the **minimum rate necessary** for safety purposes and dust control.
3. Customers with special medical needs, such as home dialysis, will be exempted from any emergency surcharge or restrictions, provided these customers notify the City of such a need. Their exemption will not apply to outdoor water use.

If water supply conditions continue to deteriorate and if irrigation is still occurring, lawn watering will be banned before moving to the Emergency Curtailment Stage.

EMERGENCY CURTAILMENT STAGE

At this stage, the City would recognize that a critical water situation exists. Without additional significant curtailment actions, a shortage of water for public health and safety would be imminent.

This stage is characterized by two basic approaches. First, increasingly stringent water use restrictions would be established and enforced. Secondly, significant rate surcharges would be

used to encourage customer compliance. While a rate surcharge may be implemented in either the Voluntary or Mandatory stages, a surcharge is a key component to the success of this stage, and any previous surcharge may be increased if appropriate.

Objectives

The objectives of the Emergency Curtailment Stage are to:

- Ensure that throughout the water shortage, an adequate water supply exists to protect public health and safety.
- Sharply reduce water demand.
- Restrict certain defined water uses in order to meet consumption goals.

Triggers

The Emergency Curtailment Stage would be implemented when the WSRT determines that:

- The City is unable to fully use the Newaukum River water right due to low flows in the river and water quality concerns.
- The City is unable to fully use the Chehalis River water right due to the restriction of maintaining base flows within the River.
- The City is unable to fully use either the Newaukum River or Chehalis River source because of transmission line failure.
- The City is unable to use the full capacity of the water treatment plant because of equipment failure.
- Measures to reduce water use implemented in the Voluntary and Mandatory Stages have not adequately reduced demand.
- The time available to implement measures to reduce water use is not sufficient to allow education of customers required for voluntary or mandatory compliance.

Public Message

The public message would be determined based upon actual conditions of the emergency.

"A water supply emergency exists. Severe restrictions on water use are necessary to maintain adequate water supplies essential for basic public health and safety. The public's continued cooperation is requested. Restrictions will be strenuously enforced."

City of Chehalis Internal Operating Actions

1. The WSRT would define the water shortage as an emergency and, with approval of the City Manager, would implement procedures for the Council to formally declare a Water Shortage Emergency.

2. The WSRT would develop a list of water use restrictions, prohibitions, exemptions, and surcharge rates for recommendation, subject to the City Managers approval, to present to the City Council for consideration.
3. The WSRT would increase the frequency of reports to the City Manager and City Council. Reports would provide detail on the implementation of the Emergency Curtailment Stage and customer response data.
4. The WSRT would establish water use reduction goals. Consumption goals may be set in a variety of ways. Determining factors include equity among customers and the utility billing software in use. Single-family residential goals may be set as a standard per house allotment or as a percentage reduction from previous year's consumption. Consumption goals may be below customers' average winter month use. Commercial, institutional, and multifamily residential customers may be asked to reduce water use by a set percentage of their average consumption during the previous year.
5. Adjust or modify utility billing systems to implement any approved surcharges and penalties.
6. Increase enforcement actions in accordance with the applicable ordinance approved by the City Council.
7. Provide training for personnel and deploy additional "Water Watcher" patrols.
8. Notify the Police Department regarding enforcement of curtailment actions and coordinate with them regarding the potential need for enforcement assistance.
9. Further enhance river level, aquifer, and water quality monitoring actions.
10. The WSRT would increase meeting frequency to daily status briefings to review the current situation and determine which actions are working and those that need to be improved. Focus on messages that are easy to communicate, implement, and have the potential to sharply reduce demand.

Communication Actions

1. Define the problem to the public as an emergency, and institute formal procedures to declare a service area wide emergency.
2. Inform customers of the rate surcharge and how it will affect them. Provide information on an appeal process.
3. Define and communicate exemptions for medical facilities and other public health situations.
4. Consult with and provide status reports to state resource agencies, interest groups, and the Chehalis Basin Partnership. Specific entities include Lewis County, City of Centralia, State Department of Health, interested environmental and community organizations, and large commercial customers. Post updated status reports on the City website.
5. Through a media campaign and direct mail, communicate to City customers the:
 - Scope and nature of rationing and curtailments.
 - Reasons for imposing curtailments.
 - Water use reduction goals.
 - Enforcement mechanisms and fines.

- Projections for how long curtailments will be in place.
 - Rate surcharges.
6. Clearly identify any exemptions from the water use curtailment.
 7. Inform customers about possible pressure reductions and problems this may cause.
 8. Provide area landscape firms with water use curtailment information.
 9. Provide contractors and landscape firms with information on locations to obtain alternate sources of water (if alternate sources can be identified) for street cleaning, construction projects, landscape irrigation, dust control, etc.
 10. Post updated status reports on the City website.
 11. Continue and enhance communication actions from the Advisory, Voluntary, and Mandatory Stages.

Supply & Demand Management Actions

The following are possible Emergency Curtailment water use restrictions. All appropriate actions identified in the previous three phases of the drought response should be implemented in conjunction with these measures.

1. Prohibit all lawn/turf irrigation.
2. Prohibit all irrigation of gardens and ornamental landscapes.
3. Prohibit use of any ornamental fountain using drinking water for operation or makeup water.
4. Prohibit car washing except at commercial car wash facilities that recycle water.
5. Rescind all hydrant permits.
6. Prohibit washing of sidewalks, streets, decks, or driveways except as necessary for public health and safety.
7. Prohibit pressure washing of buildings unless water is obtained from a source other than the City.
8. Prohibit filling or adding water to swimming pools at public and private facilities.
9. Require the Fire Departments to discontinue the use of water in training exercises until the emergency is over.
10. If available, provide an alternate source of water to tanker trucks for street cleaning, construction projects, landscaping irrigation, dust control, etc.
11. Consider limitation of issuance of new meter installations for irrigation and/or domestic uses.

Exemptions

1. If an alternate source of water is not available and dust control is required to comply with air quality requirements and dust control and other hydrant water uses are determined to be necessary to meet essential health and safety requirements, water may be applied to construction or other areas. It can be applied only at the minimum rate necessary to achieve

the desired result, provided that all appropriate best management practices are being employed.

2. Customers with special medical needs, such as home dialysis, will be exempt from any emergency surcharge or restriction, provided these customers notify the City of such a need. Their exemptions will not apply to outdoor water use.

APPENDIX A
City of Chehalis Water Shortage Response Plan
Matrix of Shortage Response Actions

The following matrix is intended to provide an overview of the possible management actions and the levels at which they would most likely be implemented. Additional and/or alternative actions may be necessary.

Action	Shortage Management Phase				Comments
	Advisory	Voluntary	Mandatory	Curtailment	
Communications					
Media coordination	X	X	X	X	
Develop & implement public outreach and education plan.	X	X	X	X	
Coordination with resource agencies and local jurisdictions.	X	X	X	X	
Coordinate with largest water users.	X	X	X	X	
Establish customer hotlines		X	X	X	
Notify irrigation customers of potential shut down procedures.			X	X	
Internal Operating Actions (City)					
WSRT coordination & planning	X	X	X	X	
Reduce all Maintenance & Operations water uses to essential levels.		X	X	X	
Reducing washing of City fleet vehicles		X	X	X	
Eliminate hosing of sidewalks, driveways, parking lots, etc. at City facilities		X	X	X	Exemption for public health or safety.
Reduce watering of City-managed landscapes. Eliminate seasonal plantings.	X	X	X	X	Meet or exceed citywide water use restrictions
As necessary, activate emergency intertie to increase emergency supply availability.		X	X	X	

Assess water main flushing activities. Increase water quality monitoring actions as necessary.	X	X	X	X	
Finalize water use restrictions, exemptions, and enforcement procedures and penalties.			X	X	Subject to approval of City Council.
Surcharges & Penalties			X	X	
Water Watcher Patrols			X	X	
Declare water emergency.				X	
Supply & Demand Management Actions					
Residential indoor water use recommendations/tips.	X	X	X	X	
Residential outdoor water use recommendations/tips (non-landscape).	X	X	X	X	
Residential landscape water use recommendation/tips.	X	X	X	X	
Commercial water use recommendations/tips.	X	X	X	X	
Commercial landscape water use recommendations/tips.	X	X	X	X	
Water waste prohibition.	X	X	X	X	
Landscaping					
Time of day watering restrictions (i.e., prohibited from 7 a.m. to 9 p.m.).			X	X	
Day(s) of week lawn watering restrictions.			X	X	
Prohibit all lawn/turf watering, including new installations.			X	X	Delay of installation & bonding requirements possible. Possible exemptions for ballfields/playfields for safety purposes. All lawn watering banned prior to moving to Emergency Curtailment Level.
Prohibit all garden/ornamental watering.				X	
Ornamental fountain restrictions.		X	X	X	Prohibit at Mandatory and Curtailment Level.

Car washing restrictions.		X	X	X	Request at Voluntary Level, restrictions as necessary
Construction & Facility Water Uses					
Restrict/rescind hydrant use permits.			X	X	
Construction site water use restriction, dust control best management practices required.			X	X	Water use prohibited only if an alternate source (reclaimed water) is available. Best management practices.
Construction site water use restrictions.				X	Water use prohibited. Alternate source (reclaimed water) may be used. Exemptions as necessary to meet air quality regulations.
Sidewalk, deck, and driveway washing restrictions.			X	X	Except as necessary for public health or safety.
Building pressure washing restrictions.			X	X	Limited at Mandatory Level, prohibited at Curtailment Level.
Fire Department training exercise restrictions.		X	X	X	Request at Mandatory Level, restricted at Emergency Curtailment Level.
Swimming pool water use restrictions.			X	X	Prohibit at Emergency Curtailment Level, both public and private.

APPENDIX B
City of Chehalis Water Shortage Response Plan
Irrigation Response for City of Chehalis Managed Sites

Site	Shortage Management Phase ⁽¹⁾			Comments
	Level II	Level III	Level IV	
Parks				
Landscape	On	Reduce by 25-60%	100% reduction	The landscape should be hand watered until Level IV (Emergency Curtailment) is reached.
Turf	On	Reduce by 25-60%	100% reduction	The athletic fields need to be kept safe and irrigated if their use will be allowed.
Buildings				
Landscape	On	Reduce by 25-60%	100% reduction	
Turf	Off	Off	Off	
Medians and Street Features				
Landscape	Off	Off	Off	
Turf	Off	Off	Off	

1. Level II is the Voluntary Stage, Level III is the Mandatory Stage, and Level IV is the Emergency Curtailment Stage.

APPENDIX C
City of Chehalis Water Shortage Response Plan
Contact List

A working list of contacts for easy reference should be developed and regularly updated by the Water Superintendent. In the event of a water shortage, the following will be contacted directly. They will be apprised of the situation, and their support and cooperation in reducing demand will be requested.

Other Public Agencies

- City of Centralia
- Lewis County
- Chehalis School District
- Lewis County PUD # 1
- Local State Offices
- Local Federal Offices

Large Customers

- Staff will develop a contact list based on previous two year's water consumption

Landscape Interests

- WSU/Lewis County Cooperative Extension
- Local nurseries
- Local landscape contractors
- The Irrigation Association
- Washington Association of Landscape Professionals
- Washington State Nursery and Landscape Association

Business Groups

- Lewis County Chamber of Commerce
- Master Builders Association
- Rotary Clubs of Lewis County

APPENDIX D
City of Chehalis Water Shortage Response Plan
Voluntary Customer Water Use Reduction Actions

Residential Indoor

- Flush the toilet less often. Each flush uses 1.6 to 7 gallons of water, depending upon the age of the toilet.
- Dishwasher should be run only when there are full loads of dishes. Each load uses 8 to 13 gallons of water.
- Wash only full loads of laundry. Each load uses 15 to 40 gallons of water. Frontloading washing machines use approximately 30 percent less water than toploading models.
- Keep a pitcher of cold drinking water in the refrigerator rather than running the faucet until the water gets cold.
- Take shorter showers. Each minute of showering time uses 2 to 5 gallons of water. Try to limit showering time to five minutes.
- Avoid letting the faucet run while shaving, brushing teeth or washing vegetables.
- While waiting for hot water, use a container to catch tap water for use on plants.

Residential Outdoors

- Wash cars less often. Instead of using a hose, consider a commercial car wash that recycles water.
- Always use a shutoff nozzle when using a hose. Be sure there are no leaks in any hose fittings.

Commercial and Residential Landscape

- Water lawns and gardens only early in the morning or late in the evening to reduce water loss from evaporation.
- Consider letting established lawns go dormant until the shortage is over. Homes that normally water lawns will save from 25 to 50 percent by not watering them.
- Do not water lawns when it is raining. If you have an automatic irrigation system, learn how to change the program that controls your system in order to cut back on irrigation time. Turn off automated irrigation system clocks during rainy spells. Install a rain sensor on automatic irrigation systems that will override the system during rainfall.
- Eliminate outdoor water play, such as running through a sprinkler, plastic water slides, and wading/swimming pools that require frequent refilling.
- Eliminate all hosing of sidewalks, driveways, and decks. Use a broom instead.
- Water established plants only when necessary, testing the soil moisture levels in the root zone with your fingers. Two or four inches of mulch in your planting beds will help retain moisture.

- Create tree wells around trees to minimize runoff when watering.

Commercial

- Set goals for reduced water use and inform managers and employees. Give businesses ideas for limiting water use and ask them for their ideas.
- Repair all leaks and dripping faucets. Ensure that constantly running toilets are repaired. Urge employees to report leaks.
- Reduce or eliminate routine vehicle cleaning during the shortage. Use a local commercial car wash facility that recycles water.
- Ensure that all hoses are fitted with shutoff nozzles.
- Eliminate hosing as a means of disposing of used ice.
- Eliminate all hosing of walkways, parking lots, and loading docks. If washing paved areas is necessary for public health and safety, pressure washers use substantially less water.
- Postpone routine building washing until after the shortage.
- Post signs informing customers of the nature of the water shortage and ask for cooperation in reducing water use.
- Turn off all non-recirculating fountains. On windy days, when there is significant water loss, turn off **all** fountains.
- Ask restaurants to deliver water only on request.
- Accelerate restroom upgrades by replacing older toilets with low flow (1.6- gallon-per-flush) or High Efficiency (1.0 to 1.3 gallon per flush) models.

Appendix E
Chehalis Water Shortage Response Plan
Mandatory Restrictions-Enforcement Procedural Checklist

- ___ Determine fines and/or surcharges to be imposed for mandatory restriction infractions, including whether or not there will be "one fine for all infractions" or whether certain selected water use reduction actions would command a higher fine than others.
- ___ Determine the number of warnings before fines or surcharges apply.
- ___ Establish a database for tracking violations.
- ___ Print self-duplicating "Notice of Violation" forms: one copy for location where violation occurred, one to record violation with billing. Print violations and fines on the Notice of violation.
- ___ Assign and train staff with customer service and communication experience to "Water Watch."
- ___ Establish procedure for "Water Watchers" to record warnings and penalties on customer accounts.
- ___ Establish a "hotline" for customers to report violations. To help avoid frivolous complaints, recorded message should note that only complaints with name and address of complainant will be pursued.
- ___ Provide all field and customer service staff members with fact sheets and question and answer sheets. Provide briefings on restrictions and enforcement procedures. Train field staff to tag obvious violations.

APPENDIX F
City of Chehalis Water Shortage Response Plan
Fire Department WSRP Response

The City of Chehalis' Fire Department and District Fire Departments uses water in a variety of ways. These uses include:

Firefighting and accident response
Vehicle washing
Washing of training area
Wet Training
Pumper Testing

The following explains how these water uses might be affected during the four levels of drought response.

Advisory Level

At this level, the City would be communicating a possible water supply shortage to our customers. It may make sense to schedule any wet training for earlier or later in the season in case restrictions are in place.

Voluntary Level

In this level, the City would be asking our customers to voluntarily reduce their water use by a certain amount (generally about 10 percent). The Fire Department may change their water use at this level in the following ways.

- Firefighting: The Fire Department would still respond to fires with the appropriate amount of water. How after incident clean up should occur with mechanical means whenever feasible.
- Vehicle washing: Currently, vehicles are washed at least twice a week. During this level, vehicles would only be washed if they have mud on them but would continue to be rinsed as needed, but no more than once per day.
- Pumper testing: Test pumper as a part of wet training.
- Training: Scheduled wet training could still occur at this level.

At this level, the City would acknowledge a serious water supply shortage. Water use restrictions would be enforced with fines. The Fire Department may alter their water use in the following way at this level:

Firefighting: The Fire Department would still respond to fires with the appropriate amount of water. How after incident clean up should only clean up with water when mechanical means are not feasible.

Vehicle washing: During this level, vehicles would only be washed if they have mud on them but would only be rinsed every other day as needed.

Pumper testing: Pumper testing should only occur as safety measures require.

Training: Scheduled wet training should not occur at this level.

Emergency Curtailment

At this level, the City of Chehalis would be faced with a critical water supply shortage. The goal would be to provide enough water to meet our customer's health and safety needs during the duration of the emergency. Customers would be allotted a certain amount of water and charged heavy surcharges if they exceed these amounts. No outdoor irrigation would be allowed for any customer. At this level, the Fire Department would need to change their water uses in the following ways.

Firefighting: The Fire Department would still respond to fires with the appropriate amount of water. How after incident clean would only be with mechanical unless a safety issue exists.

Pumper testing: Would not be allowed.

Training: Scheduled wet training may not occur at this level.

Appendix M – Cross Connection Control

CROSS CONNECTION CONTROL ACTIVITIES
ANNUAL SUMMARY REPORT



Public Water System Cross-Connection Control Activities Annual Summary Report for ____

Part 1: Public Water System (PWS) and Cross-Connection Control Specialist (CCS) Information

PWS ID:	PWS Name:	County:
Provide name and certification number of CCS who develops and implements your CCC program.		
CCS Name (Last, First & MI):		CCS Phone: (____) ____ - ____
CCS Cert. No.:	BAT Cert. No. (if applicable):	
CCS is (check one): PWS owner or employee <input type="checkbox"/> On contract to PWS <input type="checkbox"/> Volunteer or other <input type="checkbox"/>		

Part 2: Status of Cross-Connection Control (CCC) Program at end of Reporting Year

PWS has (check one box in each column below):	
A written CCC program plan Y <input type="checkbox"/> N <input type="checkbox"/>	CCC implementation activities Y <input type="checkbox"/> N <input type="checkbox"/>

(CCC program plan may be a separate document or part of water system plan or small water system management program.)

Provide information about PWS's specific CCC Program Elements. *Check one box in each column for each row.*

Program Element Number	Description of Element [See WAC 246-290-490(3)]	This Program Element is Currently:	
		Included in Written Program	Being Implemented or is Completed
1	Legal Authority Established	Y <input type="checkbox"/> N <input type="checkbox"/>	Y <input type="checkbox"/> N <input type="checkbox"/>
2	Hazard Evaluation Procedures and Schedules	Y <input type="checkbox"/> N <input type="checkbox"/>	Y <input type="checkbox"/> N <input type="checkbox"/>
3	CCC Procedures and Schedules	Y <input type="checkbox"/> N <input type="checkbox"/>	Y <input type="checkbox"/> N <input type="checkbox"/>
4	Certified CCS Provided	Y <input type="checkbox"/> N <input type="checkbox"/>	Y <input type="checkbox"/> N <input type="checkbox"/>
5	Backflow Preventer Inspection and Testing	Y <input type="checkbox"/> N <input type="checkbox"/>	Y <input type="checkbox"/> N <input type="checkbox"/>
6	Testing Quality Control Assurance Program	Y <input type="checkbox"/> N <input type="checkbox"/>	Y <input type="checkbox"/> N <input type="checkbox"/>
7	Backflow Incident Response Procedures	Y <input type="checkbox"/> N <input type="checkbox"/>	Y <input type="checkbox"/> N <input type="checkbox"/>
8	Public Education Program	Y <input type="checkbox"/> N <input type="checkbox"/>	Y <input type="checkbox"/> N <input type="checkbox"/>
9	CCC Records	Y <input type="checkbox"/> N <input type="checkbox"/>	Y <input type="checkbox"/> N <input type="checkbox"/>
10	Reclaimed Water Permit	Y <input type="checkbox"/> N <input type="checkbox"/> N/A <input type="checkbox"/>	Y <input type="checkbox"/> N <input type="checkbox"/> N/A <input type="checkbox"/>

Did you check one box in EACH of the above columns for EACH row?

Part 3A: System Characteristics

Indicate the number of connections of each type that the PWS serves (whether or not they are protected by backflow preventers). **Estimate if necessary.**

Type of Service Connection	Number
Residential (as defined by PWS)	
All Other (include dedicated fire sprinkler and irrigation lines and PWS-owned facilities such as water and wastewater treatment plants and pumping stations, parks, piers, and docks)	
Total Number of Connections	

Part 3B: Cross-Connection Control for High-Hazard Premises or Systems Served by the PWS

If PWS does not serve any high-hazard premises or systems, check here and go to Part 4.

- Complete all cells. Count only premises PWS serves water to. Enter zero (0) if PWS doesn't serve such premises.
- Report data as accurately as possible. DOH currently bases CCC compliance actions on this information.

Type of High-Hazard Premises or Systems [WAC 246-290-490(4)(b)]	Number of Connections			
	A. Being Served Water by PWS ¹	B. With Premises Isolation by AG or RP ²	C. With Column B AG Inspected or RP Tested	D. Granted Exception from Mandatory Premises Isolation
Agricultural (farms and dairies)				
Beverage bottling plants (including breweries)				
Car washes				
Chemical plants				
Commercial laundries and dry cleaners				
Both reclaimed water and potable water provided				
Film processing facilities				
Dedicated fire protection systems with chemical addition or using unapproved auxiliary supplies				
Food processing plants (including canneries, slaughter houses, rendering plants)				
Hospitals, medical centers, nursing homes, veterinary, medical and dental clinics, blood plasma centers and mortuaries. Please complete Part 3C on next page.				
Dedicated irrigation systems using purveyor's water supply and with chemical addition ⁴				
Laboratories				
Metal plating industries				
Petroleum processing or storage plants				
Piers and docks				
Radioactive material processing plants or nuclear reactors				
Survey access denied or restricted				
Wastewater lift/pump stations (non-residential only)				
Wastewater treatment plants				
Unapproved auxiliary water supply interconnected with potable water supply				
Other high-hazard premises (please list): ⁵				
Totals				

¹ Count multiple connections or parallel installations to the same premises as *separate* connections.

² Count only those connections with AG or RPBA installed for premises isolation. Don't include connections with in-premises protection only, or connections with DCVAs or DCDAs installed for premises isolation.

³ Count only those connections *whose premises isolation preventers* were inspected (AG) or tested (RPBA) during report year.

⁴ For example, dedicated lines to irrigation systems in parks, playgrounds, golf courses, cemeteries, estates, etc.

⁵ Premises with hazardous materials or processes (requiring isolation by AG or RPBA) such as: aircraft and automotive manufacturers, pulp and paper mills, metal manufacturers, military bases, and wholesale customers that pose a high hazard to the PWS. May be grouped together in categories, e.g.: *other manufacturing* or *other commercial*. **If needed, attach additional sheet giving same information as requested in table.**

Part 3C: Cross-Connection Control for Medical Premises Served by the PWS

If PWS does not serve any medical premises of the types shown below, check here and go to Part 4.

- Complete all cells. **Do not count the same premises more than once.**
- Count only premises PWS serves water to. Enter zero (0) if PWS doesn't serve such premises.
- Report data as accurately as possible. DOH will base CCC compliance actions on this information.

Type of High-Hazard Premises or Systems [WAC 246-290-490(4)(b)]	Number of Connections at end of year			
	A. Being Served Water by PWS ¹	B. With Premises Isolation by AG or RP ²	C. With Column B AG Inspected or RP Tested ³	D. Granted Exception from Mandatory Premises Isolation
Hospitals				
Hospitals (include psychiatric hospitals and alcohol and drug treatment centers)				
Facilities for Treatment and Care of Patients not Located in Hospitals Counted Above				
Same day surgery centers				
Out-patient clinics and offices				
Alternative health out-patient clinics and offices				
Psychiatric out-patient clinics and offices				
Chiropractors				
Hospice care centers				
Childbirth centers				
Kidney dialysis centers				
Blood centers				
Dental clinics and offices				
Facilities for Housing Patients				
Nursing homes				
Boarding homes				
Residential treatment centers				
Other Medical-Related Facilities				
Mortuaries				
Morgues and autopsy facilities (not in hospitals)				
Veterinarian offices, clinics, and hospitals				
All other (describe in Part 6: Comments on pg 6)				
Totals				

¹ Count multiple connections or parallel installations to the same premises as *separate* connections.

² Count only connections with premises isolation AGs or RPs (RPBA or RPDA). Don't include connections with in-premises protection only or connections with DCVAs or DCDAAs installed for premises isolation.

³ Count only connections whose premises isolation preventers were inspected (AG) or tested (RP's) during report year. The number in Column C can't be larger than the number in Column B in the same row.

Part 4A: Backflow Preventer Inventory and Testing Data

- Complete all cells. **Count only backflow preventers relied on to protect the PWS.** Enter zero (0), if there are no backflow preventers in that category.
- **If PWS records don't distinguish between premises isolation and in-premises protection preventers, enter all data in rows 1-6 and check box above row 1.**
- Count AVBs on irrigation systems only. **If you don't track AVBs, check the box above the "AVB" column.**
- Count multiple tests (or failures) for any particular backflow preventer as one test (or failure).
- Count each assembly separately for multiple service connections or parallel installations. Count RPDA's and DCDA's as single assemblies (don't count bypass separately).
- Count assemblies installed on dedicated fire or irrigation lines as Premises Isolation Assemblies. **If PWS doesn't track AVBs, check here.**

Backflow Preventer Category and Inspection/Testing Information		Air Gap	RPBA	RPDA	DCVA	DCDA	PVBA	SVBA	AVB
Premises Isolation, including preventers isolating PWS-owned facilities. <i>If In-Premises Protection preventers are also included, check here</i> <input type="checkbox"/> .									
<i>Rows 1 – 3 pertain ONLY to Premises Isolation preventers in service at beginning of the year (fill in report year)</i>									
1	In service at beginning of year								
2	Inspected and/or tested ¹								
3	Failed inspection or test this year								
<i>Rows 4 – 6 pertain ONLY to NEW Premises Isolation preventers installed during the reporting year</i>									
4	New preventers installed ²								
5	Inspected and/or tested ¹								
6	Failed inspection or test ³								
7	Preventers taken out of service this year ³								
Premises Isolation Total at end of year⁴									
In-Premises Protection (Fixture Protection or Area Isolation), including preventers within PWS-owned facilities.									
<i>Rows 8 – 10 pertain ONLY to In-Premises Protection Preventers in service at beginning of report year</i>									
8	In service at beginning of year								
9	Inspected and/or tested ¹								
10	Failed inspection or test this year								
<i>Rows 11 – 13 pertain ONLY to NEW In-Premises Protection preventers installed during the reporting year</i>									
11	New preventers installed ²								
12	Inspected and/or tested ¹								
13	Failed inspection or test this year								
14	Preventers taken out of service ³								
In-Premises Protection Total at end of year⁴									
Grand Total at end of reporting year									

¹ Initial and/or routine annual inspection (for proper installation and approval status) and/or test (for testable assemblies only using DOH/USC test procedures).
² Includes preventers installed on connections where backflow prevention was not previously required and any preventers that replaced those in service at beginning of the report year. Replacement preventers may be of a different type than the original.
³ New or existing preventers taken out of service, whether or not they were replaced by the same type or different type of preventer.
⁴ Total at end of the year should be equal to the number of preventers in service at beginning of year plus those installed during the year minus the number of preventers taken out of service during the reporting year.

Part 4B: Other Implementation Activities

Complete all cells. Enter zero (0) if not applicable.

Activity or Condition	Number
<i>New</i> service connections evaluated for cross-connection hazards to PWS.	
<i>New</i> service connections requiring backflow protection to protect the PWS. ¹	
<i>Existing</i> service connections evaluated for cross-connection hazards to PWS.	
<i>Existing</i> service connections requiring backflow protection to protect the PWS. ^{1,2}	
Exceptions granted to high-hazard premises per WAC 246-290-490(4)(b). ³	
CCC enforcement actions taken by PWS. ⁴	

¹ Include services where either premises isolation or in-premises preventers were required to protect the PWS.

² Include existing services that need new, additional, or higher-level backflow prevention.

³ Submit a completed DOH Exception to High-Health Hazard Premises Isolation Requirements Form (green) for each exception granted during the year.

⁴ “Enforcement actions” mean actions taken by the PWS (such as water shut-off, PWS installation of backflow preventer, etc.) when the customer fails to comply with PWS’s CCC requirements.

Part 5: Backflow Incidents, Risk Factors, and Indicators During Report Year:

Complete only one column for each row. Check “Data Not Available” if PWS doesn’t track such data.

Backflow Incidents, Risk Factors, and Indicators		Number (Enter 0 if none)	Check if Data Not Available
Backflow Incidents			
1	Backflow incidents that contaminated the PWS. ⁵		<input type="checkbox"/>
2	Backflow incidents that contaminated the customer’s drinking water system only. ⁵		<input type="checkbox"/>
Risk Factors for Backflow			
3	Distribution main breaks per 100 miles of pipe.		<input type="checkbox"/>
4	Low-pressure events (<20 psi in PWS distribution system).		<input type="checkbox"/>
5	Water outage events.		<input type="checkbox"/>
Indicators of Possible Backflow			
6	Total health-related complaints received by PWS. ⁶		<input type="checkbox"/>
7	Received during BWA or PN events. ⁷		<input type="checkbox"/>
8	Received during low pressure or water outage events.		<input type="checkbox"/>
9	Total aesthetic complaints (color, taste, odor, air in lines, etc.).		<input type="checkbox"/>
10	Received during BWA or PN events. ⁷		<input type="checkbox"/>
11	Received during low pressure or water outage events.		<input type="checkbox"/>

⁵ Purveyors must submit a completed DOH Backflow Incident Report form for each backflow incident known to contaminate the public water system. DOH is also interested in receiving information on backflow incidents that contaminated the customer’s drinking water system only. The DOH Incident Report form, Form #331-243, is available on the Office of Drinking Water (ODW) website at <http://www.doh.wa.gov/Portals/1/Documents/Pubs/331-457-F.pdf> or from ODW on request.

⁶ Such as stomachache, headache, vomiting, diarrhea, skin rashes, etc.

⁷ “BWA” means *Boil Water Advisory* and “PN” means *Public Notification* for water quality reasons.

Part 6: Comments and Clarifications

Enter comments or clarifications to any of the information included in this report. *Please date the comment.*

Part No.	Comment	Date

Part 7: Report Completion Information

Enter dates in MM/DD/YYYY format.

I certify that the information provided in this CCC Activities Report is complete and accurate to the best of my knowledge.		
CCC Program Mgr. Name (print) ¹ :	Title:	
Signature:	Date:	
Phone: (____) ____ - ____	E-mail: _____@_____	
I have reviewed this report and certify that the information provided is complete and accurate to the best of my knowledge.		
PWS Mgr./Owner Name (print) ² :	Title:	
Signature:	Op. Cert. No.:	Date:

¹ CCC Program Manager is generally the CCS responsible for developing and implementing the PWS’s CCC Program.

² The person that the CCC Program Manager reports to or other manager having direct responsibility and/or oversight of the CCC program. This person doesn’t need to be in charge of the entire water system.

If you have a question or comment regarding this form, you can find contact information at <https://www.doh.wa.gov/communityandenvironment/drinkingwater> or email us at CCCprogram@doh.wa.gov.

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD, call (800) 833-6388.

Appendix N – Capital Improvement Project Cost
Estimates

CIP COST ESTIMATES

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Pump Station Improvement PS-3
 18th Street Pump Station Capacity Upgrade



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$17,000	\$17,000
2	Removal of Ex Pump Skid and Control Panel	1	LS	\$10,000	\$10,000
3	Package Booster Pump Station	1	LS	\$200,000	\$200,000
4	DI Piping, Fittings and Accessories	1	LS	\$15,000	\$15,000
5	Electrical and Control	1	LS	\$50,000	\$50,000
6	Portable Generator	1	LS	\$65,000	\$65,000
Subtotal					\$357,000
Sales Tax @ 8.2%					\$29,000
Contingency @ 20%					\$77,000
Engineering, Permitting, and Administrative Costs @ 30%					\$139,000
Total Estimated Project Cost					\$602,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$1,000

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Source Improvement S-3
 Chehalis River Intake and Transmission Line



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$330,000	\$330,000
2	Project Temporary Traffic Control	1	LS	\$495,000	\$495,000
3	Hydroseeding	1,500	SY	\$5	\$7,500
4	Bank Run Gravel for Trench Backfill	8,300	TON	\$40	\$332,000
5	Ballast	1,100	TON	\$40	\$44,000
6	CSTC	790	TON	\$40	\$31,600
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	460	TON	\$140	\$64,400
8	Replace Cement Concrete Panel, 8-inch	1,500	SY	\$200	\$300,000
9	Foundation Material	200	TON	\$100	\$20,000
10	Shoring	1	LS	\$26,000	\$26,000
11	Construction Surveying	1	LS	\$65,000	\$65,000
12	Open Cut HDPE Pipe for Water Main 24 In. Dia.	7,300	LF	\$200	\$1,460,000
13	HDD HDPE Pipe for Water Main 24 In. Dia.	600	LF	\$1,200	\$720,000
14	Butterfly Valve 24-inch	9	EA	\$6,600	\$59,400
15	Combination Air Release Valve	2	EA	\$6,000	\$12,000
16	Connect to Pump Station	1	LS	\$15,000	\$15,000
17	Connect to Water Treatment Plant	1	LS	\$15,000	\$15,000
18	Intake Facility	1	LS	\$200,000	\$200,000
19	Erosion Control Measures	1	LS	\$35,000	\$35,000
Subtotal					\$4,230,000
Sales Tax @ 8.2%					\$350,000
Contingency @ 20%					\$920,000
Engineering, Permitting, and Administrative Costs @ 30%					\$1,650,000
Total Estimated Project Cost					\$7,150,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$10,000
- Total Estimated Project Cost is rounded to the nearest \$10,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-2
 Louisiana Avenue Extension



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$15,000	\$15,000
2	Project Temporary Traffic Control	1	LS	\$20,000	\$20,000
3	Bank Run Gravel for Trench Backfill	600	TON	\$40	\$24,000
4	Ballast	170	TON	\$40	\$6,800
5	CSTC	50	TON	\$40	\$2,000
6	HMA for Pavement Repair Cl. 1/2" PG 58H-22	70	TON	\$140	\$9,800
7	Foundation Material	20	TON	\$100	\$2,000
8	Shoring	1	LS	\$3,000	\$3,000
9	Construction Surveying	1	LS	\$3,000	\$3,000
10	CL 52 Ductile Iron Pipe for Water Main 12 In. Dia.	601	LF	\$120	\$72,120
11	Connect to Existing Water Main	1	EA	\$2,500	\$2,500
12	Water Services	2	EA	\$1,500	\$3,000
13	Fire Hydrant Assembly	2	EA	\$6,500	\$13,000
14	Erosion Control Measures	1	LS	\$2,000	\$2,000
Subtotal					\$178,000
Sales Tax @ 8.2%					\$15,000
Contingency @ 20%					\$39,000
Engineering, Permitting, and Administrative Costs @ 30%					\$70,000
Total Estimated Project Cost					\$302,000

Notes and Assumptions

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- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-3
 NW Chamber of Commerce Way Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$30,000	\$30,000
2	Project Temporary Traffic Control	1	LS	\$60,000	\$60,000
3	Hydroseeding	300	SY	\$5	\$1,500
4	Bank Run Gravel for Trench Backfill	700	TON	\$40	\$28,000
5	Ballast	90	TON	\$40	\$3,600
6	CSTC	30	TON	\$40	\$1,200
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	40	TON	\$140	\$5,600
8	Foundation Material	20	TON	\$100	\$2,000
9	Shoring	1	LS	\$3,000	\$3,000
10	Construction Surveying	1	LS	\$6,000	\$6,000
11	CL 52 Ductile Iron Pipe for Water Main 12 In. Dia.	620	LF	\$120	\$74,400
12	Connect to Existing Water Main	4	EA	\$2,500	\$10,000
13	Gate Valve 12-inch	4	EA	\$1,800	\$7,200
14	Water Services	1	EA	\$1,500	\$1,500
15	Fire Hydrant Assembly	1	EA	\$6,500	\$6,500
16	Erosion Control Measures	1	LS	\$3,000	\$3,000
17	Railroad Crossing	300	LF	\$500	\$150,000
Subtotal					\$394,000
Sales Tax @ 8.2%					\$32,000
Contingency @ 20%					\$85,000
Engineering, Permitting, and Administrative Costs @ 30%					\$153,000
Total Estimated Project Cost					\$664,000

Notes and Assumptions

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- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-4
 Bishop Road Loop



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$45,000	\$45,000
2	Project Temporary Traffic Control	1	LS	\$70,000	\$70,000
3	Hydroseeding	300	SY	\$5	\$1,500
4	Bank Run Gravel for Trench Backfill	1,700	TON	\$40	\$68,000
5	Ballast	530	TON	\$40	\$21,200
6	CSTC	140	TON	\$40	\$5,600
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	220	TON	\$140	\$30,800
8	Foundation Material	60	TON	\$100	\$6,000
9	Shoring	1	LS	\$7,000	\$7,000
10	Construction Surveying	1	LS	\$10,000	\$10,000
11	CL 52 Ductile Iron Pipe for Water Main 12 In. Dia.	2,000	LF	\$120	\$240,000
12	Connect to Existing Water Main	3	EA	\$2,500	\$7,500
13	Gate Valve 12-inch	4	EA	\$1,800	\$7,200
14	Water Services	22	EA	\$1,500	\$33,000
15	Fire Hydrant Assembly	6	EA	\$6,500	\$39,000
16	Erosion Control Measures	1	LS	\$5,000	\$5,000
Subtotal					\$597,000
Sales Tax @ 8.2%					\$49,000
Contingency @ 20%					\$129,000
Engineering, Permitting, and Administrative Costs @ 30%					\$233,000
Total Estimated Project Cost					\$1,008,000

Notes and Assumptions

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- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-5
 Rush Road Loop



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$35,000	\$35,000
2	Project Temporary Traffic Control	1	LS	\$50,000	\$50,000
3	Hydroseed	300	SY	\$5	\$1,500
4	Bank Run Gravel for Trench Backfill	1,200	TON	\$40	\$48,000
5	Ballast	380	TON	\$40	\$15,200
6	CSTC	100	TON	\$40	\$4,000
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	160	TON	\$140	\$22,400
8	Foundation Material	40	TON	\$100	\$4,000
9	Shoring	1	LS	\$5,000	\$5,000
10	Construction Surveying	1	LS	\$7,000	\$7,000
11	CL 52 Ductile Iron Pipe for Water Main 12 In. Dia.	1,400	LF	\$120	\$168,000
12	Connect to Existing Water Main	2	EA	\$2,500	\$5,000
13	Gate Valve 12-inch	1	EA	\$1,800	\$1,800
14	Water Services	12	EA	\$1,500	\$18,000
15	Fire Hydrant Assembly	6	EA	\$6,500	\$39,000
16	Erosion Control Measures	1	LS	\$4,000	\$4,000
Subtotal					\$428,000
Sales Tax @ 8.2%					\$35,000
Contingency @ 20%					\$93,000
Engineering, Permitting, and Administrative Costs @ 30%					\$167,000
Total Estimated Project Cost					\$723,000

Notes and Assumptions

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- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-6
 Median Street Loop



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$10,000	\$10,000
2	Project Temporary Traffic Control	1	LS	\$15,000	\$15,000
3	Bank Run Gravel for Trench Backfill	400	TON	\$40	\$16,000
4	Ballast	140	TON	\$40	\$5,600
5	CSTC	40	TON	\$40	\$1,600
6	HMA for Pavement Repair Cl. 1/2" PG 58H-22	60	TON	\$140	\$8,400
7	Foundation Material	20	TON	\$100	\$2,000
8	Shoring	1	LS	\$2,000	\$2,000
9	Construction Surveying	1	LS	\$3,000	\$3,000
10	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	550	LF	\$75	\$41,250
11	Connect to Existing Water Main	4	EA	\$2,500	\$10,000
12	Gate Valve 8-inch	2	EA	\$1,500	\$3,000
13	Gate Valve 12-inch	2	EA	\$1,800	\$3,600
14	Water Services	1	EA	\$1,500	\$1,500
15	Fire Hydrant Assembly	2	EA	\$6,500	\$13,000
16	Erosion Control Measures	1	LS	\$2,000	\$2,000
Subtotal					\$138,000
Sales Tax @ 8.2%					\$11,000
Contingency @ 20%					\$30,000
Engineering, Permitting, and Administrative Costs @ 30%					\$54,000
Total Estimated Project Cost					\$233,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-7
 National Avenue Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$45,000	\$45,000
2	Project Temporary Traffic Control	1	LS	\$65,000	\$65,000
3	Bank Run Gravel for Trench Backfill	2,000	TON	\$40	\$80,000
4	Ballast	710	TON	\$40	\$28,400
5	CSTC	180	TON	\$40	\$7,200
6	HMA for Pavement Repair Cl. 1/2" PG 58H-22	300	TON	\$140	\$42,000
7	Foundation Material	80	TON	\$100	\$8,000
8	Shoring	1	LS	\$10,000	\$10,000
9	Construction Surveying	1	LS	\$9,000	\$9,000
10	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	2,800	LF	\$75	\$210,000
11	Connect to Existing Water Main	3	EA	\$2,500	\$7,500
12	Gate Valve 8-inch	5	EA	\$1,500	\$7,500
13	Water Services	8	EA	\$1,500	\$12,000
14	Fire Hydrant Assembly	4	EA	\$6,500	\$26,000
15	Erosion Control Measures	1	LS	\$5,000	\$5,000
Subtotal					\$563,000
Sales Tax @ 8.2%					\$46,000
Contingency @ 20%					\$122,000
Engineering, Permitting, and Administrative Costs @ 30%					\$219,000
Total Estimated Project Cost					\$950,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-8
 IL/CG/R1 Zone Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$110,000	\$110,000
2	Project Temporary Traffic Control	1	LS	\$160,000	\$160,000
3	Hydroseed	600	SY	\$5	\$3,000
4	Bank Run Gravel for Trench Backfill	2,400	TON	\$40	\$96,000
5	Ballast	670	TON	\$40	\$26,800
6	CSTC	760	TON	\$40	\$30,400
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	280	TON	\$140	\$39,200
8	Replace Cement Concrete Panel, 8-inch	1,800	SY	\$200	\$360,000
9	Foundation Material	120	TON	\$100	\$12,000
10	Shoring	1	LS	\$15,000	\$15,000
11	Construction Surveying	1	LS	\$22,000	\$22,000
12	CL 52 Ductile Iron Pipe for Water Main 6 In. Dia.	2,600	LF	\$65	\$169,000
13	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	1,500	LF	\$75	\$112,500
14	Connect to Existing Water Main	23	EA	\$2,500	\$57,500
15	Gate Valve 6-inch	18	EA	\$1,200	\$21,600
16	Gate Valve 8-inch	4	EA	\$1,500	\$6,000
17	Water Service, 1-inch Diameter	50	EA	\$1,500	\$75,000
18	Water Service, 2-inch Diameter	2	EA	\$3,000	\$6,000
19	Fire Hydrant Assembly	8	EA	\$6,500	\$52,000
20	Erosion Control Measures	1	LS	\$11,000	\$11,000
Subtotal					\$1,385,000
Sales Tax @ 8.2%					\$114,000
Contingency @ 20%					\$300,000
Engineering, Permitting, and Administrative Costs @ 30%					\$540,000
Total Estimated Project Cost					\$2,339,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Land acquisitions or easements are not included
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-9
 SE 3rd Street Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$35,000	\$35,000
2	Project Temporary Traffic Control	1	LS	\$55,000	\$55,000
3	Hydroseed	700	SY	\$5	\$3,500
4	Bank Run Gravel for Trench Backfill	1,900	TON	\$40	\$76,000
5	Foundation Material	50	TON	\$100	\$5,000
6	Shoring	1	LS	\$6,000	\$6,000
7	Construction Surveying	1	LS	\$8,000	\$8,000
8	CL 52 Ductile Iron Pipe for Water Main 18 In. Dia.	1,600	LF	\$150	\$240,000
9	Connect to Existing Water Main	3	EA	\$2,500	\$7,500
10	Butterfly Valve 14-inch	1	EA	\$2,200	\$2,200
11	Butterfly Valve 18-inch	3	EA	\$6,600	\$19,800
12	Fire Hydrant Assembly	1	EA	\$6,500	\$6,500
13	Erosion Control Measures	1	LS	\$4,000	\$4,000
Subtotal					\$469,000
Sales Tax @ 8.2%					\$38,000
Contingency @ 20%					\$101,000
Engineering, Permitting, and Administrative Costs @ 30%					\$182,000
Total Estimated Project Cost					\$790,000

Notes and Assumptions

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- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Improvement D-9 is constructed simultaneously with improvement S-3. Road restoration is not included because these costs are included in S-3
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-10
 Interstate Avenue Loop



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$10,000	\$10,000
2	Project Temporary Traffic Control	1	LS	\$15,000	\$15,000
3	Hydroseed	100	SY	\$5	\$500
4	Bank Run Gravel for Trench Backfill	400	TON	\$40	\$16,000
5	Ballast	130	TON	\$40	\$5,200
6	CSTC	40	TON	\$40	\$1,600
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	60	TON	\$140	\$8,400
8	Foundation Material	20	TON	\$100	\$2,000
9	Shoring	1	LS	\$2,000	\$2,000
10	Construction Surveying	1	LS	\$2,000	\$2,000
11	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	500	LF	\$75	\$37,500
12	Connect to Existing Water Main	2	EA	\$2,500	\$5,000
13	Water Service, 1-inch Diameter	1	EA	\$1,500	\$1,500
14	Water Service, 2-inch Diameter	2	EA	\$3,000	\$6,000
15	Fire Hydrant Assembly	1	EA	\$6,500	\$6,500
16	Erosion Control Measures	1	LS	\$1,000	\$1,000
Subtotal					\$120,000
Sales Tax @ 8.2%					\$10,000
Contingency @ 20%					\$26,000
Engineering, Permitting, and Administrative Costs @ 30%					\$47,000
Total Estimated Project Cost					\$203,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-11
 High Level Zone Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$70,000	\$70,000
2	Project Temporary Traffic Control	1	LS	\$105,000	\$105,000
3	Hydroseed	1,600	SY	\$5	\$8,000
4	Bank Run Gravel for Trench Backfill	3,400	TON	\$40	\$136,000
5	Ballast	640	TON	\$40	\$25,600
6	CSTC	160	TON	\$40	\$6,400
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	270	TON	\$140	\$37,800
8	Foundation Material	130	TON	\$100	\$13,000
9	Shoring	1	LS	\$16,000	\$16,000
10	Construction Surveying	1	LS	\$14,000	\$14,000
11	CL 52 Ductile Iron Pipe for Water Main 6 In. Dia.	650	LF	\$65	\$42,250
12	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	4,000	LF	\$75	\$300,000
13	Connect to Existing Water Main	11	EA	\$2,500	\$27,500
14	Gate Valve 8-inch	12	EA	\$1,500	\$18,000
15	Water Service, 1-inch Diameter	25	EA	\$1,500	\$37,500
16	Fire Hydrant Assembly	3	EA	\$6,500	\$19,500
17	Erosion Control Measures	1	LS	\$7,000	\$7,000
Subtotal					\$884,000
Sales Tax @ 8.2%					\$72,000
Contingency @ 20%					\$191,000
Engineering, Permitting, and Administrative Costs @ 30%					\$344,000
Total Estimated Project Cost					\$1,491,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-12
 High Level Reservoir Fill Line Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$20,000	\$20,000
2	Project Temporary Traffic Control	1	LS	\$30,000	\$30,000
3	Hydroseed	500	SY	\$5	\$2,500
4	Bank Run Gravel for Trench Backfill	900	TON	\$40	\$36,000
5	Ballast	130	TON	\$40	\$5,200
6	CSTC	40	TON	\$40	\$1,600
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	60	TON	\$140	\$8,400
8	Foundation Material	30	TON	\$100	\$3,000
9	Shoring	1	LS	\$4,000	\$4,000
10	Construction Surveying	1	LS	\$5,000	\$5,000
11	CL 52 Ductile Iron Pipe for Water Main 10 In. Dia.	1,100	LF	\$110	\$121,000
12	Connect to Existing Water Main	3	EA	\$2,500	\$7,500
13	Gate Valve 10-inch	3	EA	\$1,600	\$4,800
14	Water Service, 1-inch Diameter	7	EA	\$1,500	\$10,500
15	Erosion Control Measures	1	LS	\$3,000	\$3,000
Subtotal					\$263,000
Sales Tax @ 8.2%					\$22,000
Contingency @ 20%					\$57,000
Engineering, Permitting, and Administrative Costs @ 30%					\$103,000
Total Estimated Project Cost					\$445,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-13
 Valley View Zone Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$20,000	\$20,000
2	Project Temporary Traffic Control	1	LS	\$30,000	\$30,000
3	Hydroseed	300	SY	\$5	\$1,500
4	Bank Run Gravel for Trench Backfill	800	TON	\$40	\$32,000
5	Ballast	220	TON	\$40	\$8,800
6	CSTC	60	TON	\$40	\$2,400
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	100	TON	\$140	\$14,000
8	Foundation Material	30	TON	\$100	\$3,000
9	Shoring	1	LS	\$4,000	\$4,000
10	Construction Surveying	1	LS	\$5,000	\$5,000
11	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	1,100	LF	\$75	\$82,500
12	Connect to Existing Water Main	8	EA	\$2,500	\$20,000
13	Gate Valve 8-inch	9	EA	\$1,500	\$13,500
14	Water Service, 1-inch Diameter	14	EA	\$1,500	\$21,000
15	Fire Hydrant Assembly	2	EA	\$6,500	\$13,000
16	Erosion Control Measures	1	LS	\$3,000	\$3,000
Subtotal					\$274,000
Sales Tax @ 8.2%					\$22,000
Contingency @ 20%					\$59,000
Engineering, Permitting, and Administrative Costs @ 30%					\$107,000
Total Estimated Project Cost					\$462,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-14
 NE State Avenue Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$15,000	\$15,000
2	Project Temporary Traffic Control	1	LS	\$25,000	\$25,000
3	Hydroseed	200	SY	\$5	\$1,000
4	Bank Run Gravel for Trench Backfill	700	TON	\$40	\$28,000
5	Ballast	250	TON	\$40	\$10,000
6	CSTC	70	TON	\$40	\$2,800
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	100	TON	\$140	\$14,000
8	Foundation Material	30	TON	\$100	\$3,000
9	Shoring	1	LS	\$4,000	\$4,000
10	Construction Surveying	1	LS	\$4,000	\$4,000
11	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	1,000	LF	\$75	\$75,000
12	Connect to Existing Water Main	1	EA	\$2,500	\$2,500
13	Water Service, 1-inch Diameter	2	EA	\$1,500	\$3,000
14	Fire Hydrant Assembly	2	EA	\$6,500	\$13,000
15	Erosion Control Measures	1	LS	\$2,000	\$2,000
Subtotal					\$202,000
Sales Tax @ 8.2%					\$17,000
Contingency @ 20%					\$44,000
Engineering, Permitting, and Administrative Costs @ 30%					\$79,000
Total Estimated Project Cost					\$342,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-15
 NE Washington Avenue and NE Adams Avenue Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$235,000	\$235,000
2	Project Temporary Traffic Control	1	LS	\$355,000	\$355,000
3	Hydroseed	1,000	SY	\$5	\$5,000
4	Bank Run Gravel for Trench Backfill	3,400	TON	\$40	\$136,000
5	Ballast	480	TON	\$40	\$19,200
6	CSTC	2,350	TON	\$40	\$94,000
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	100	TON	\$140	\$14,000
8	Replace Cement Concrete Panel, 8-inch	6,600	SY	\$200	\$1,320,000
9	Foundation Material	140	TON	\$100	\$14,000
10	Shoring	1	LS	\$18,000	\$18,000
11	Construction Surveying	1	LS	\$48,000	\$48,000
12	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	2,300	LF	\$75	\$172,500
13	CL 52 Ductile Iron Pipe for Water Main 10 In. Dia.	2,700	LF	\$110	\$297,000
14	Connect to Existing Water Main	11	EA	\$2,500	\$27,500
15	Gate Valve 8-inch	7	EA	\$1,500	\$10,500
16	Gate Valve 10-inch	11	EA	\$1,600	\$17,600
17	Water Service, 1-inch Diameter	103	EA	\$1,500	\$154,500
18	Fire Hydrant Assembly	11	EA	\$6,500	\$71,500
19	Erosion Control Measures	1	LS	\$24,000	\$24,000
Subtotal					\$3,033,000
Sales Tax @ 8.2%					\$249,000
Contingency @ 20%					\$656,000
Engineering, Permitting, and Administrative Costs @ 30%					\$1,181,000
Total Estimated Project Cost					\$5,119,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-16
 SE Adams Ave and SE Washington Ave Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$130,000	\$130,000
2	Project Temporary Traffic Control	1	LS	\$195,000	\$195,000
3	Hydroseeding	1100	SY	\$5	\$5,500
4	Bank Run Gravel for Trench Backfill	4,900	TON	\$40	\$196,000
5	Ballast	1,690	TON	\$40	\$67,600
6	CSTC	460	TON	\$40	\$18,400
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	700	TON	\$140	\$98,000
8	Foundation Material	200	TON	\$100	\$20,000
9	Shoring	1	LS	\$26,000	\$26,000
10	Construction Surveying	1	LS	\$26,000	\$26,000
11	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	7,500	LF	\$75	\$562,500
12	Connect to Existing Water Main	15	EA	\$2,500	\$37,500
13	Gate Valve 6-inch	2	EA	\$1,200	\$2,400
14	Gate Valve 8-inch	16	EA	\$1,500	\$24,000
15	Gate Valve 10-inch	3	EA	\$1,600	\$4,800
16	Water Service, 1-inch diameter	104	EA	\$1,500	\$156,000
17	Water Service, 2-inch diameter	2	EA	\$3,000	\$6,000
18	Fire Hydrant Assembly	10	EA	\$6,500	\$65,000
19	Reconnecting Existing Fire Hydrants	2	EA	\$2,000	\$4,000
20	Erosion Control Measures	1	LS	\$13,000	\$13,000
Subtotal					\$1,658,000
Sales Tax @ 8.2%					\$136,000
Contingency @ 20%					\$359,000
Engineering, Permitting, and Administrative Costs @ 30%					\$646,000
Total Estimated Project Cost					\$2,799,000

Notes and Assumptions

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- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-17
 NW Quincy Pl to NW Division St Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$20,000	\$20,000
2	Project Temporary Traffic Control	1	LS	\$40,000	\$40,000
3	Hydroseeding	200	SY	\$5	\$1,000
4	Bank Run Gravel for Trench Backfill	700	TON	\$40	\$28,000
5	Ballast	260	TON	\$40	\$10,400
6	CSTC	70	TON	\$40	\$2,800
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	110	TON	\$140	\$15,400
8	Foundation Material	30	TON	\$100	\$3,000
9	Shoring	1	LS	\$4,000	\$4,000
10	Construction Surveying	1	LS	\$4,000	\$4,000
11	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	1,000	LF	\$75	\$75,000
12	Connect to Existing Water Main	5	EA	\$2,500	\$12,500
	Gate Valve 6-inch	3	EA	\$1,200	\$3,600
13	Gate Valve 8-inch	2	EA	\$1,500	\$3,000
14	Water Service, 1-inch diameter	20	EA	\$1,500	\$30,000
	Water Service, 2-inch diameter	1	EA	\$3,000	\$3,000
15	Fire Hydrant Assembly	1	EA	\$6,500	\$6,500
16	Erosion Control Measures	1	LS	\$2,000	\$2,000
Subtotal					\$264,000
Sales Tax @ 8.2%					\$22,000
Contingency @ 20%					\$57,000
Engineering, Permitting, and Administrative Costs @ 30%					\$103,000
Total Estimated Project Cost					\$446,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-18
 NW Center St and NW Railroad Ave Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$10,000	\$10,000
2	Project Temporary Traffic Control	1	LS	\$20,000	\$20,000
3	Bank Run Gravel for Trench Backfill	400	TON	\$40	\$16,000
4	Ballast	170	TON	\$40	\$6,800
5	CSTC	50	TON	\$40	\$2,000
6	HMA for Pavement Repair Cl. 1/2" PG 58H-22	70	TON	\$140	\$9,800
7	Foundation Material	20	TON	\$100	\$2,000
8	Shoring	1	LS	\$3,000	\$3,000
9	Construction Surveying	1	LS	\$3,000	\$3,000
10	CL 52 Ductile Iron Pipe for Water Main 6 In. Dia.	750	LF	\$65	\$48,750
11	Connect to Existing Water Main	6	EA	\$2,500	\$15,000
12	Gate Valve 6-inch	5	EA	\$1,200	\$6,000
13	Gate Valve 10-inch	2	EA	\$1,600	\$3,200
14	Fire Hydrant Assembly	1	EA	\$6,500	\$6,500
15	Erosion Control Measures	1	LS	\$2,000	\$2,000
Subtotal					\$154,000
Sales Tax @ 8.2%					\$13,000
Contingency @ 20%					\$33,000
Engineering, Permitting, and Administrative Costs @ 30%					\$60,000
Total Estimated Project Cost					\$260,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-19
 SW Pacific Ave and SW Alfred St Hydrant Replacement



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$1,000	\$1,000
2	Project Temporary Traffic Control	1	LS	\$1,000	\$1,000
3	Hydroseed	10	SY	\$5	\$50
4	Bank Run Gravel for Trench Backfill	10	TON	\$40	\$400
5	Ballast	10	TON	\$40	\$400
6	CSTC	10	TON	\$40	\$400
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	10	TON	\$140	\$1,400
8	Construction Surveying	1	LS	\$1,000	\$1,000
9	Fire Hydrant Assembly	1	EA	\$6,500	\$6,500
10	Erosion Control Measures	1	LS	\$1,000	\$1,000
Subtotal					\$13,000
Sales Tax @ 8.2%					\$1,000
Contingency @ 20%					\$3,000
Engineering, Permitting, and Administrative Costs @ 30%					\$5,000
Total Estimated Project Cost					\$22,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$1,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$1,000

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-20
 Chehalis Avenue Apartments Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$10,000	\$10,000
2	Project Temporary Traffic Control	1	LS	\$15,000	\$15,000
3	Hydroseeding	100	SY	\$5	\$500
4	Bank Run Gravel for Trench Backfill	400	TON	\$40	\$16,000
5	Ballast	150	TON	\$40	\$6,000
6	CSTC	40	TON	\$40	\$1,600
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	60	TON	\$140	\$8,400
8	Cement Concrete Driveway	1	EA	\$3,000	\$3,000
9	Foundation Material	20	TON	\$100	\$2,000
10	Shoring	1	LS	\$2,000	\$2,000
11	Construction Surveying	1	LS	\$3,000	\$3,000
12	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	600	LF	\$75	\$45,000
13	Connect to Existing Water Main	2	EA	\$2,500	\$5,000
14	Gate Valve 6-inch	1	EA	\$1,200	\$1,200
15	Gate Valve 8-inch	1	EA	\$1,500	\$1,500
16	Fire Hydrant Assembly	2	EA	\$6,500	\$13,000
17	Erosion Control Measures	1	LS	\$2,000	\$2,000
Subtotal					\$135,000
Sales Tax @ 8.2%					\$11,000
Contingency @ 20%					\$29,000
Engineering, Permitting, and Administrative Costs @ 30%					\$53,000
Total Estimated Project Cost					\$228,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-21
 SW Williams Ave Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$20,000	\$20,000
2	Project Temporary Traffic Control	1	LS	\$30,000	\$30,000
3	Hydroseeding	200	SY	\$5	\$1,000
4	Bank Run Gravel for Trench Backfill	600	TON	\$40	\$24,000
5	Ballast	220	TON	\$40	\$8,800
6	CSTC	60	TON	\$40	\$2,400
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	90	TON	\$140	\$12,600
8	Foundation Material	30	TON	\$100	\$3,000
9	Shoring	1	LS	\$4,000	\$4,000
10	Construction Surveying	1	LS	\$4,000	\$4,000
11	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	1,000	LF	\$75	\$75,000
12	Connect to Existing Water Main	5	EA	\$2,500	\$12,500
13	Gate Valve 6-inch	4	EA	\$1,200	\$4,800
14	Gate Valve 8-inch	1	EA	\$1,500	\$1,500
15	Water Services	26	EA	\$1,500	\$39,000
16	Fire Hydrant Assembly	1	EA	\$6,500	\$6,500
17	Erosion Control Measures	1	LS	\$2,000	\$2,000
Subtotal					\$251,000
Sales Tax @ 8.2%					\$21,000
Contingency @ 20%					\$54,000
Engineering, Permitting, and Administrative Costs @ 30%					\$98,000
Total Estimated Project Cost					\$424,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-22
 R2 and School Zone Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$170,000	\$170,000
2	Project Temporary Traffic Control	1	LS	\$255,000	\$255,000
3	Hydroseed	1500	SY	\$5	\$7,500
4	Bank Run Gravel for Trench Backfill	5,600	TON	\$40	\$224,000
5	Ballast	2,170	TON	\$40	\$86,800
6	CSTC	560	TON	\$40	\$22,400
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	910	TON	\$140	\$127,400
8	Foundation Material	270	TON	\$100	\$27,000
9	Shoring	1	LS	\$34,000	\$34,000
10	Construction Surveying	1	LS	\$35,000	\$35,000
11	CL 52 Ductile Iron Pipe for Water Main 6 In. Dia.	7,400	LF	\$65	\$481,000
12	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	2,300	LF	\$75	\$172,500
13	Connect to Existing Water Main	34	EA	\$2,500	\$85,000
14	Gate Valve 6-inch	14	EA	\$1,200	\$16,800
15	Gate Valve 8-inch	24	EA	\$1,500	\$36,000
16	Gate Valve 10-inch	2	EA	\$1,600	\$3,200
17	Water Service, 1-inch Diameter	174	EA	\$1,500	\$261,000
18	Water Service, 2-inch Diameter	1	EA	\$3,000	\$3,000
19	Fire Hydrant Assembly	18	EA	\$6,500	\$117,000
20	Erosion Control Measures	1	LS	\$18,000	\$18,000
Subtotal					\$2,183,000
Sales Tax @ 8.2%					\$179,000
Contingency @ 20%					\$472,000
Engineering, Permitting, and Administrative Costs @ 30%					\$850,000
Total Estimated Project Cost					\$3,684,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Land acquisitions or easements are not included
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-23
 Wallace Rd Loop and Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$40,000	\$40,000
2	Project Temporary Traffic Control	1	LS	\$60,000	\$60,000
3	Hydroseed	400	SY	\$5	\$2,000
4	Bank Run Gravel for Trench Backfill	1,500	TON	\$40	\$60,000
5	Ballast	530	TON	\$40	\$21,200
6	CSTC	140	TON	\$40	\$5,600
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	220	TON	\$140	\$30,800
8	Foundation Material	60	TON	\$100	\$6,000
9	Shoring	1	LS	\$8,000	\$8,000
10	Construction Surveying	1	LS	\$9,000	\$9,000
11	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	1,000	LF	\$75	\$75,000
12	CL 52 Ductile Iron Pipe for Water Main 10 In. Dia.	1,200	LF	\$110	\$132,000
13	Connect to Existing Water Main	3	EA	\$2,500	\$7,500
14	Gate Valve 8-inch	1	EA	\$1,500	\$1,500
15	Gate Valve 10-inch	2	EA	\$1,600	\$3,200
16	Gate Valve 12-inch	2	EA	\$1,800	\$3,600
17	Water Services	24	EA	\$1,500	\$36,000
18	Fire Hydrant Assembly	3	EA	\$6,500	\$19,500
19	Erosion Control Measures	1	LS	\$5,000	\$5,000
Subtotal					\$526,000
Sales Tax @ 8.2%					\$43,000
Contingency @ 20%					\$114,000
Engineering, Permitting, and Administrative Costs @ 30%					\$205,000
Total Estimated Project Cost					\$888,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Improvement D-9 is constructed simultaneously with improvement S-3. Road restoration is not included because these costs are included in S-3
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-24
 SW 22nd St Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$15,000	\$15,000
2	Project Temporary Traffic Control	1	LS	\$25,000	\$25,000
3	Hydroseed	200	SY	\$5	\$1,000
4	Bank Run Gravel for Trench Backfill	600	TON	\$40	\$24,000
5	Ballast	210	TON	\$40	\$8,400
6	CSTC	60	TON	\$40	\$2,400
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	90	TON	\$140	\$12,600
8	Foundation Material	30	TON	\$100	\$3,000
9	Shoring	1	LS	\$3,000	\$3,000
10	Construction Surveying	1	LS	\$4,000	\$4,000
11	CL 52 Ductile Iron Pipe for Water Main 8 In. Dia.	830	LF	\$75	\$62,250
12	Connect to Existing Water Main	2	EA	\$2,500	\$5,000
13	Gate Valve 8-inch	2	EA	\$1,500	\$3,000
14	Water Service, 1-inch Diameter	19	EA	\$1,500	\$28,500
15	Fire Hydrant Assembly	2	EA	\$6,500	\$13,000
16	Erosion Control Measures	1	LS	\$2,000	\$2,000
Subtotal					\$212,000
Sales Tax @ 8.2%					\$17,000
Contingency @ 20%					\$46,000
Engineering, Permitting, and Administrative Costs @ 30%					\$83,000
Total Estimated Project Cost					\$358,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-25
 Woodland Village Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$35,000	\$35,000
2	Project Temporary Traffic Control	1	LS	\$55,000	\$55,000
3	Hydroseed	300	SY	\$5	\$1,500
4	Bank Run Gravel for Trench Backfill	1,300	TON	\$40	\$52,000
5	Ballast	450	TON	\$40	\$18,000
6	CSTC	120	TON	\$40	\$4,800
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	190	TON	\$140	\$26,600
8	Foundation Material	50	TON	\$100	\$5,000
9	Shoring	1	LS	\$7,000	\$7,000
10	Construction Surveying	1	LS	\$8,000	\$8,000
11	CL 52 Ductile Iron Pipe for Water Main 10 In. Dia.	1,800	LF	\$110	\$198,000
12	Connect to Existing Water Main	3	EA	\$2,500	\$7,500
13	Gate Valve 10-inch	5	EA	\$1,600	\$8,000
14	Water Service, 1-inch Diameter	17	EA	\$1,500	\$25,500
15	Water Service, 2-inch Diameter	2	EA	\$3,000	\$6,000
16	Fire Hydrant Assembly	4	EA	\$2,000	\$8,000
17	Erosion Control Measures	1	LS	\$4,000	\$4,000
Subtotal					\$470,000
Sales Tax @ 8.2%					\$39,000
Contingency @ 20%					\$102,000
Engineering, Permitting, and Administrative Costs @ 30%					\$183,000
Total Estimated Project Cost					\$794,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-26
 SE Prospect St Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$20,000	\$20,000
2	Project Temporary Traffic Control	1	LS	\$30,000	\$30,000
3	Hydroseed	200	SY	\$5	\$1,000
4	Bank Run Gravel for Trench Backfill	700	TON	\$40	\$28,000
5	Ballast	220	TON	\$40	\$8,800
6	CSTC	90	TON	\$40	\$3,600
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	100	TON	\$140	\$14,000
8	Foundation Material	30	TON	\$100	\$3,000
9	Shoring	1	LS	\$4,000	\$4,000
10	Construction Surveying	1	LS	\$5,000	\$5,000
11	CL 52 Ductile Iron Pipe for Water Main 10 In. Dia.	900	LF	\$110	\$99,000
12	Connect to Existing Water Main	5	EA	\$2,500	\$12,500
13	Gate Valve 8-inch	1	EA	\$1,500	\$1,500
14	Gate Valve 10-inch	5	EA	\$1,600	\$8,000
15	Water Service, 1-inch Diameter	7	EA	\$1,500	\$10,500
16	Fire Hydrant Assembly	1	EA	\$6,500	\$6,500
17	Erosion Control Measures	1	LS	\$3,000	\$3,000
Subtotal					\$258,000
Sales Tax @ 8.2%					\$21,000
Contingency @ 20%					\$56,000
Engineering, Permitting, and Administrative Costs @ 30%					\$101,000
Total Estimated Project Cost					\$436,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main

City of Chehalis Water System Plan
 Planning Level Opinion of Probable Cost
 Distribution System Improvement D-27
 S Market Blvd Improvements



Item No.	Item Description	Quantity	Units	Unit Cost	Amount
1	Mobilization	1	LS	\$140,000	\$140,000
2	Project Temporary Traffic Control	1	LS	\$275,000	\$275,000
3	Hydroseed	800	SY	\$5	\$4,000
4	Bank Run Gravel for Trench Backfill	4,800	TON	\$40	\$192,000
5	Ballast	1640	TON	\$40	\$65,600
6	CSTC	370	TON	\$40	\$14,800
7	HMA for Pavement Repair Cl. 1/2" PG 58H-22	1,010	TON	\$140	\$141,400
8	Foundation Material	140	TON	\$100	\$14,000
9	Shoring	1	LS	\$17,000	\$17,000
10	Construction Surveying	1	LS	\$5,000	\$5,000
11	CL 52 Ductile Iron Pipe for Water Main 10 In. Dia.	4,800	LF	\$110	\$528,000
12	Connect to Existing Water Main	14	EA	\$2,500	\$35,000
13	Gate Valve 8-inch	1	EA	\$1,500	\$1,500
14	Gate Valve 10-inch	1	EA	\$1,600	\$1,600
15	Butterfly Valve, 16-inch	20	EA	\$7,500	\$150,000
16	Water Service, 1-inch Diameter	64	EA	\$1,500	\$96,000
17	Water Service, 2-inch Diameter	10	EA	\$3,000	\$30,000
18	Fire Hydrant Assembly	14	EA	\$6,500	\$91,000
19	Erosion Control Measures	1	LS	\$3,000	\$3,000
Subtotal					\$1,805,000
Sales Tax @ 8.2%					\$148,000
Contingency @ 20%					\$391,000
Engineering, Permitting, and Administrative Costs @ 30%					\$703,000
Total Estimated Project Cost					\$3,047,000

Notes and Assumptions

- October 2021 - ENR Seattle Construction Cost Index - 13,573.94
- Sales Tax, Contingency, Engineering, Permitting, and Administrative Costs are rounded to the nearest \$1,000
- Total Estimated Project Cost is rounded to the nearest \$1,000
- Quantities are based on City of Chehalis Standard Drawings where applicable
- Mobilization is 10% of Roadway Bid Items rounded to the nearest \$5,000
- Project Temporary Traffic Control is 15% of Roadway Bid Items rounded to the nearest \$5,000
- Foundation Material is 0.027 tons per linear foot of water main
- Shoring is \$3.50 per linear foot of water main rounded to the nearest \$1,000
- Construction Surveying is 2% of Roadway Bid Items rounded to the nearest \$1,000
- Erosion Control Measures is 1% of Roadway Bid Items rounded to the nearest \$1,000
- Two valves per tee and three per crosses
- Fire hydrants at every intersection and every 300 feet