



March 10, 2022

CITY OF CHEHALIS

Attn: Amelia Schwartz, City Planner

1321 S. Market Street

Chehalis, WA 98532

Re: Alderwood Terrace – Chehalis
Traffic Letter

Dear Ms. Schwartz,

I am pleased to provide this Traffic Letter for the proposed 20 – lot plat (19 – net new) for SFDU's located at 2118 & 2124 Jackson Highway in Chehalis, WA 98532. Access to the site would be via two intersections on Jackson Highway.

Traffic Review History

- Prior to this Traffic Letter a Site Trip Generation Letter was prepared by RB Engineering dated 11.23.2021 for a 20 – lot plat that identified the site traffic generation based on the Institute of Transportation Engineers Trip Generation Manual 10th Edition. The 11th Edition has been published September 2021.
- The City retained Gibbs & Olson to conduct a review of the RB Engineering letter and identified that per CMC 12.04.330 that a Traffic Impact Analysis is required
- I was retained and inspected the site, the RB Engineering Letter, the City's response via Gibbs & Olson and reviewed the City's Municipal Code Section 12.04.330. My review noted the provided Trip Generation was based on an out of date Trip Generation Manual. I conducted a Trip Generation calculation based on the 11th Edition of the TGM that resulted in one less PM peak hour trip being generated. I also reviewed the CMC 12.04.330 subsection B that identifies the trip threshold as 10 peak hour peak direction trips.

Pursuant to my review I prepared and submitted a Technical E-mail to the City on 02.22.2022, copy attached, that noted that while the project does generate more than 10 PM peak hour trips there would be no intersections affected by 10 peak hour peak direction trips and thus further traffic review should not be required. I also noted that based on my prior work in the site area that the site traffic distribution noted by RB Engineering may have been too heavily weighted to and from the northwest of the site.

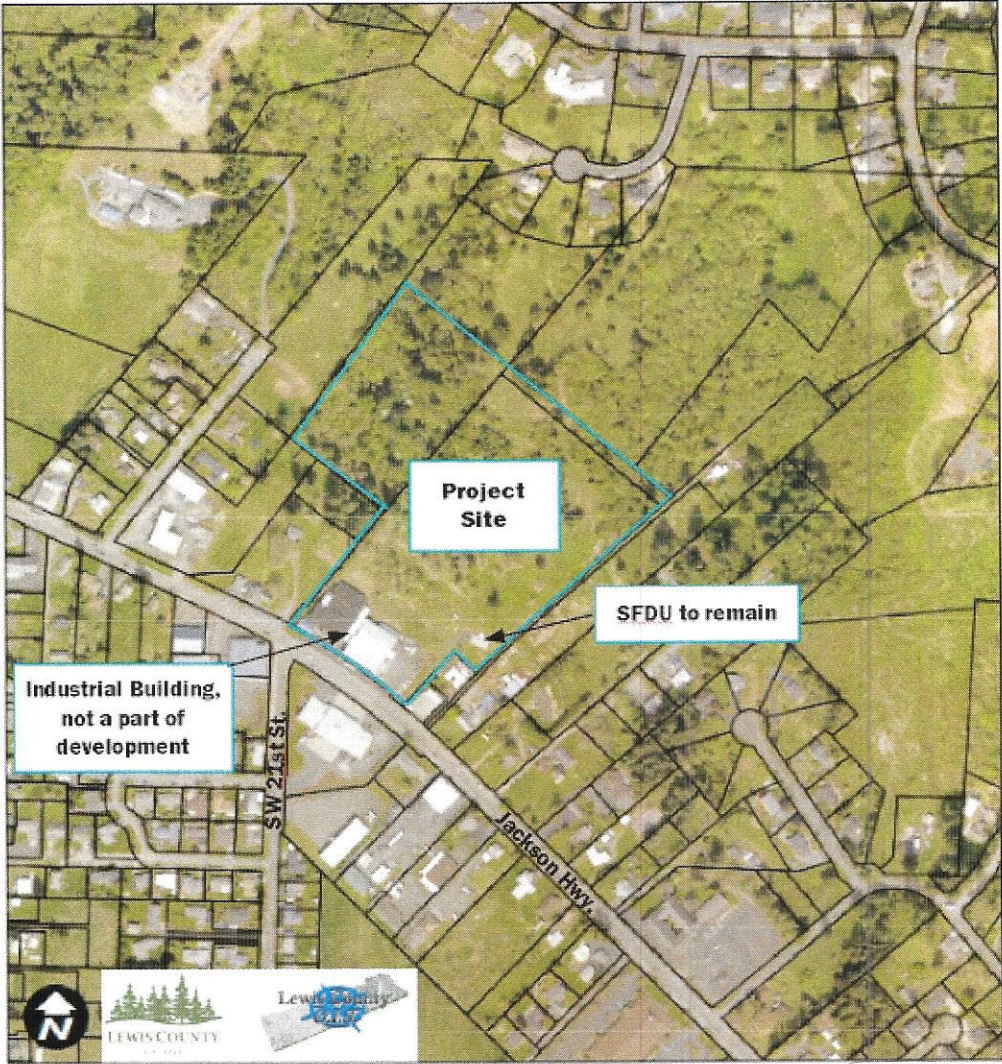
- Gibbs & Olson reviewed my Technical E-mail and provided the City feedback on 02.28.2022 that noted that per CMC 12.04.330B.2.c indicates that a Traffic Impact

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Analysis is required for projects generating 10 or more PM peak hour trips in the Chehalis Transportation Benefit District's geographical boundaries that are comprised of the corporate limits of the City of Chehalis.

This Traffic Letter documents the Traffic Generation, provides the Trip Distribution and inspects the Site Accesses. Below is an aerial view of the site obtained from Lewis County GIS:

Alderwood Terrace - Chehalis



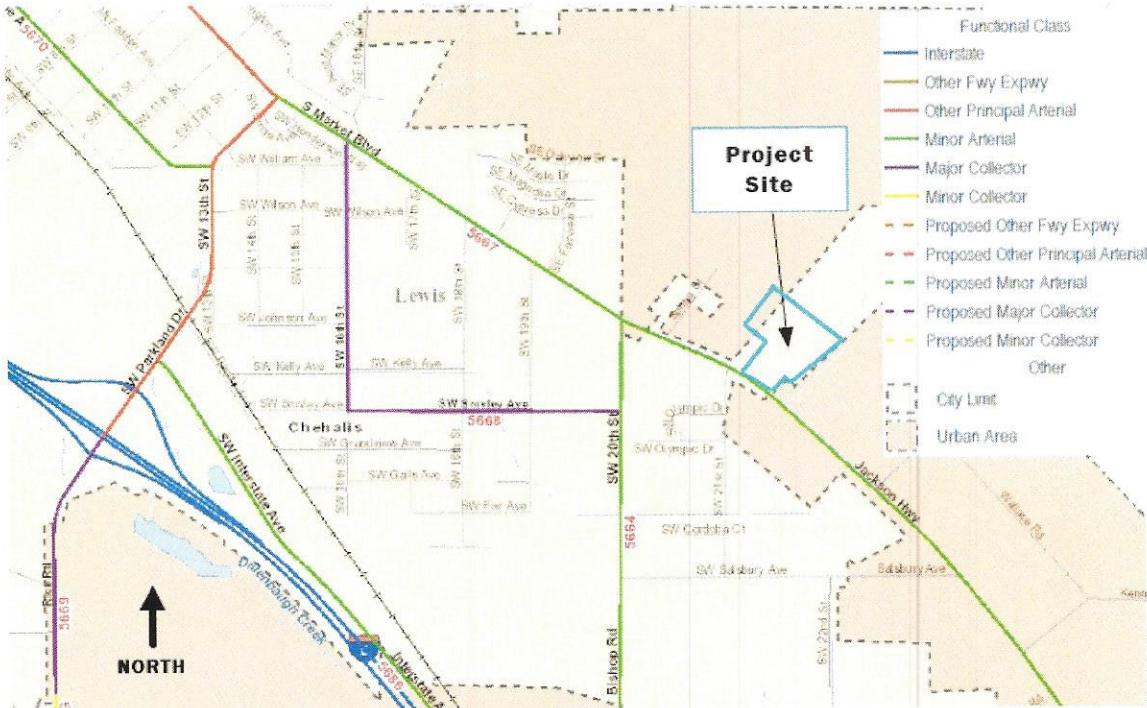
The project site is partially developed with an industrial building to remain, not a part of the project, and a SFDU. The existing SFDU is included in the proposed project.

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A copy of the Preliminary Site Plan prepared by RB Engineering, Inc. dated 04.08.2021 is attached. The site plan shows the 20 – lot plat for SFDU’s including one existing to remain with two proposed accesses on Jackson Highway. The plan also depicts the existing Veritas Company Building that is to remain and is not a part of the development

Street System

I understand that the City follows the WSDOT Functional Classification Map, the pertinent section of the WSDOT map is below:



WSDOT WSDOT Functional Classification Map

The primary streets within the study area and their classifications are as follows (streets near the site):

- S. Market Blvd./Jackson Hwy Minor Arterial
- Bishop Road/SW 20th Street Minor Arterial

Jackson Highway near the site is a 2-lane Minor Arterial with a posted speed limit of 35 MPH. The corridor has paved shoulders and some sidewalks.

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Site Traffic Generation and Distribution

Definitions

A vehicle trip is defined as a single or one direction vehicle movement with either the origin or destination (exiting or entering) inside the proposed development.

Traffic generated by development projects consists of the following types:

- Pass-By Trips: Trips made as intermediate stops on the way from an origin to a primary trip destination.
- Diverted Link Trips: Trips attracted from the traffic volume on a roadway within the vicinity of the generator but which require a diversion from that roadway to another roadway in order to gain access to the site.
- Captured Trips: Site trips shared by more than one land use in a multi-use development.
- Primary (New) Trips: Trips made for the specific purpose of using the services of the project.

Site Trip Generation

The proposed 19 – net new lot Alderwood Terrace project is expected to generate the vehicular trips during the average weekday, street traffic AM and PM street peak hours as shown in Table 1. The trip generation for the project is calculated using trip rates from the Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition, for the Single Family Detached Housing (ITE Land Use Code 210). All site trips made by all vehicles for all purposes, including commuter, visitor, and service and delivery vehicle trips are included in the trip generation values.

TABLE 1 - VEHICULAR TRIP GENERATION ALDERWOOD TERRACE - CHEHALIS TRAFFIC LETTER - TRIP GENERATION, DISTRIBUTION AND ACCESS INSPECTION										
Time Period	Size (X)	TG Rate	Enter %	Enter Trips	Exit %	Exit Trips	Total (T)	Pass-by %*	Pass-by Trips	Net Total
Proposed: Single Family Detached Housing - General Urban/Suburban (ITE LUC 210, 18 - net new units)										
Weekday	19	9.43	50%	90	50%	90	179	-	--	--
AM peak hour	19	0.7	26%	3	74%	10	13	-	--	--
PM peak hour	19	0.94	63%	11	37%	7	18	-	--	--

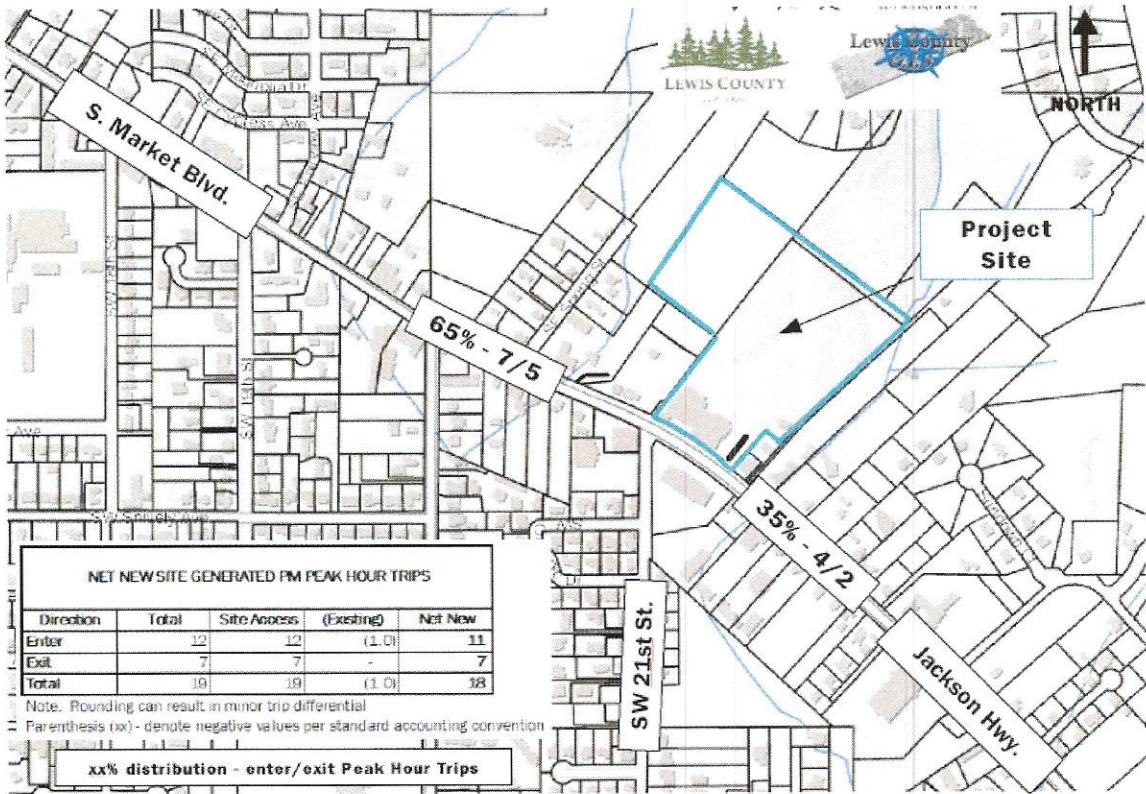
Where X = number of units or sf and T = Trips; parenthesis (xx) denote negative values
 * - Pass-by rates per ITE, local Agency data and Traffic Engineering Experience, residential trips are typically considered new thus for analysis no pass-by to account for service/delivery type trips is taken
 Trip rates per the Institute of Transportation Engineers Trip Generation Manual 11th Edition
 Note: Due to rounding some values may not add up

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The Trip Generation indicates that the future residents of the proposed project would generate about 18 net new PM peak hour trips.

Trip Distribution

Trips to and from the site were distributed to the surrounding street network based on the characteristics of the network, existing traffic volume patterns, see attached traffic data collected at Jackson Highway at SW 21st St and at SW Salsbury Avenue on Wednesday 03.02.2022, and the location of likely trip origins and destinations (residential, business, shopping, social and recreational opportunities).

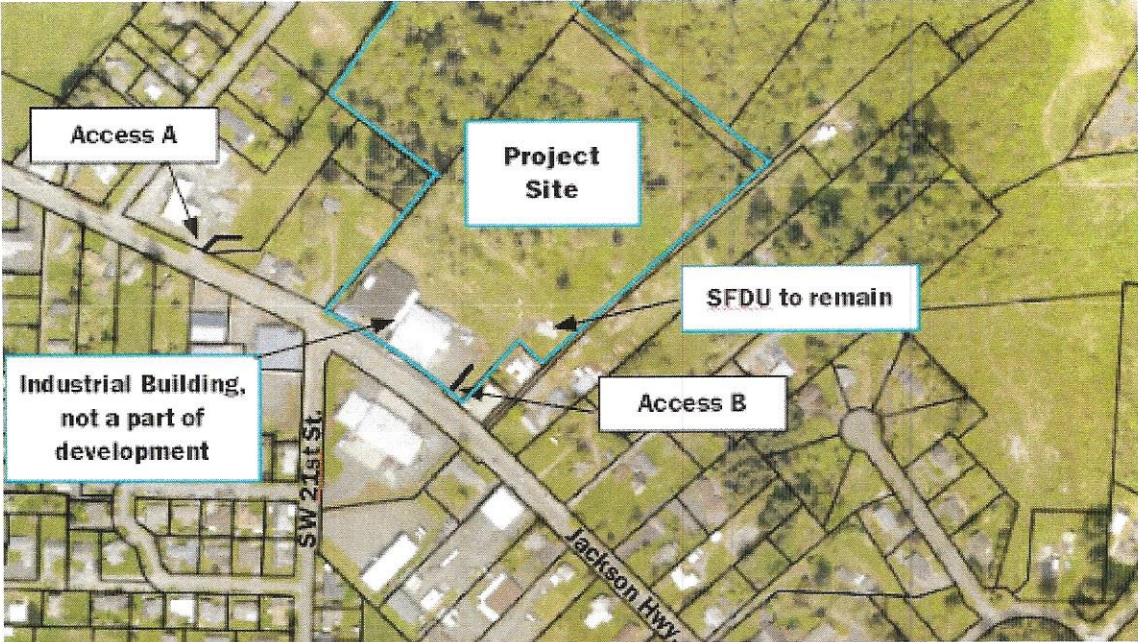


No intersections would be affected by 10 peak hour peak direction trips and thus operational traffic review should not be required.

Access Inspection

The project proposal includes two accesses onto S. Market St./Jackson Highway as generally depicted below:

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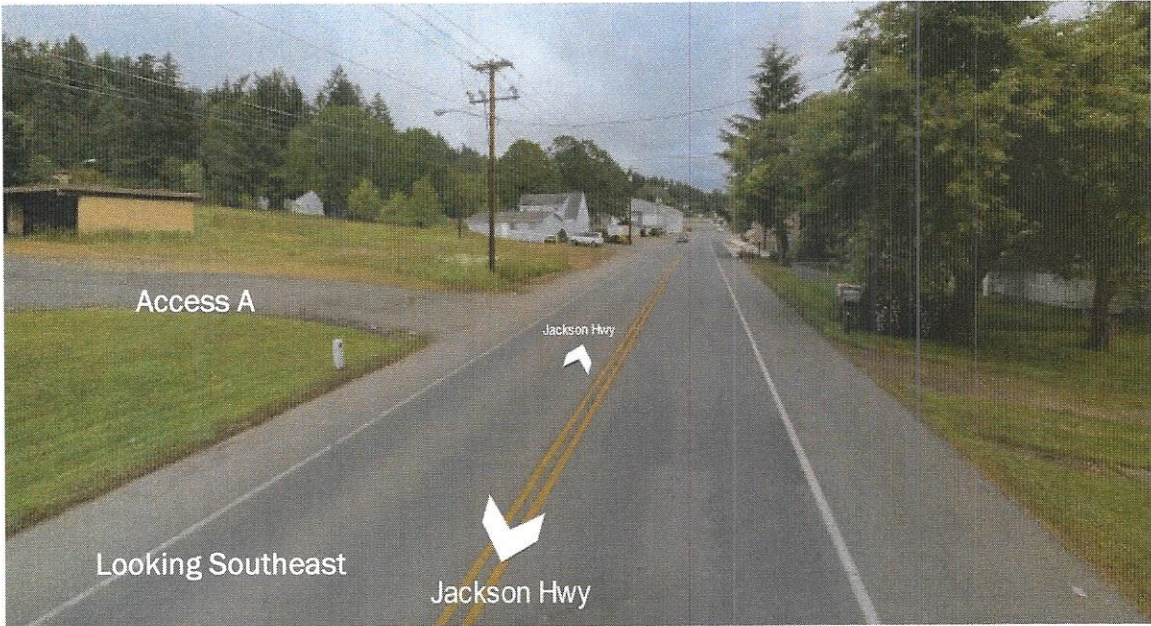


Access A (Alderwood Lane SE, Private Street) would replace an existing gravel driveway and would serve 16 homes in the proposed project. Access B (Veristas Place SE, Private Street) would serve four homes including the existing SFDU. Below are photographs of the site accesses looking to the northwest and southeast obtained from Bing Streetside:

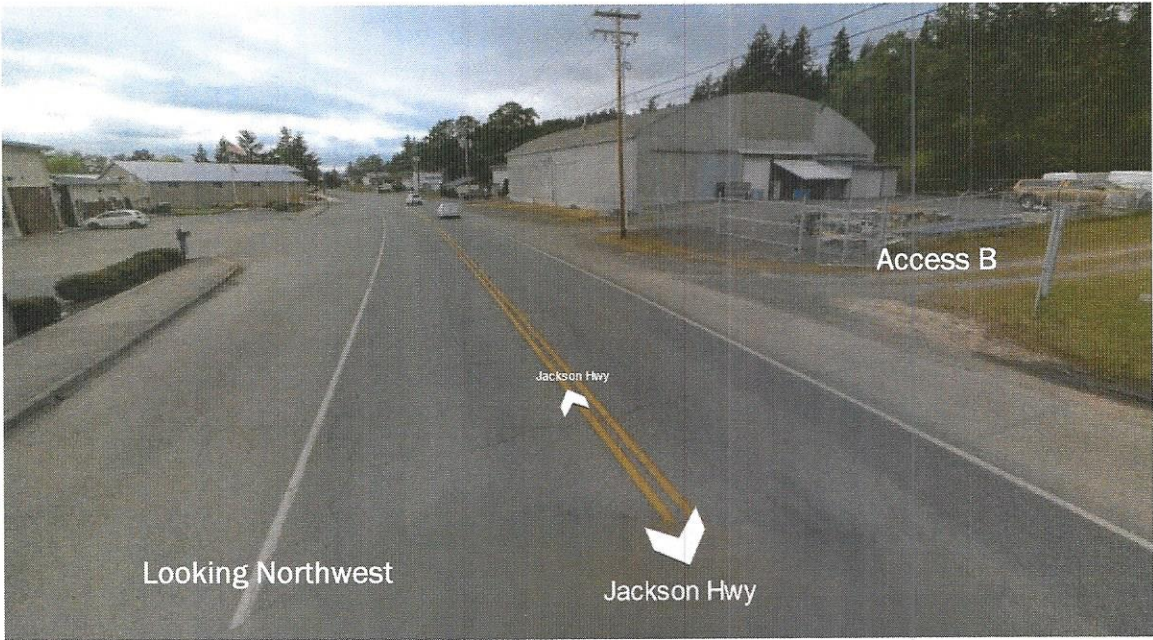
Access A (Alderwood Lane SE, Private Street):



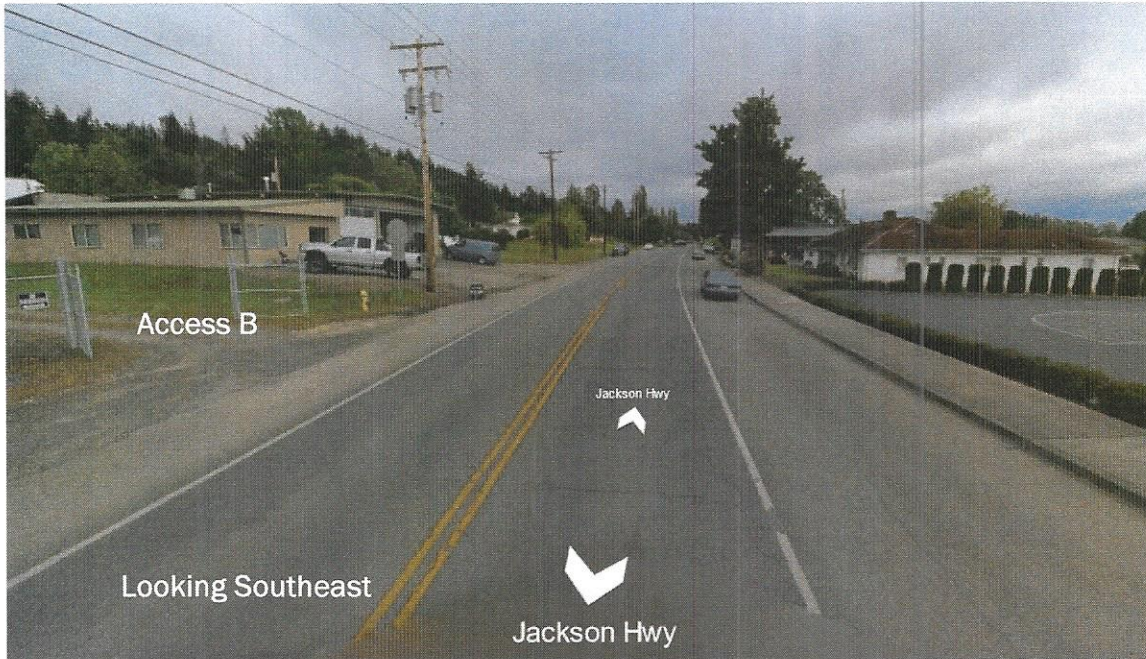
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Access B (Veristas Place SE, Private Street):



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The required **Stopping Sight Distance** for a 35 MPH speed per the American Association of State Highway and Transportation Officials "A Policy on Geometric Design of Highways and Streets" is **250 feet**. The Entering Sight Distance is 335 and 390 feet for a right turn and left turn from a stop, respectively. AASHTO identifies **SSD** as the critical sight line to be provided, see Section 9.5.1 attached in the Appendix.

Appropriate sight lines are available on S. Market St./Jackson Hwy. presuming no signage, vegetation or vehicles are parked in the sight triangle.

Incident/Safety History

Incident data was reviewed using the WSDOT accident data portal available online at <https://remoteapps.wsdot.wa.gov/highwaysafety/collision/data/portal/public/>. This portal was used to review incidents in the site vicinity for the years 2017 to 2021. The WSDOT data is attached.

Inspection of the five years of recorded incidents occurring Jackson Hwy. near the site did not reveal any apparent issues.

Traffic Impact Mitigation

The project would be constructed in conformance to City requirements. Install "Stop" signs on the site access street approaches to Jackson Hwy. per applicable requirements.

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Attn: Amelia Schwartz, City Planner
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Summary and Recommendations

This Traffic Letter documents the Traffic Generation, provides the Trip Distribution and inspects the Site Accesses for the proposed 20 – lot plat (19 – net new) for SFDU's located at 2118 & 2124 Jackson Highway in Chehalis, WA 98532. Access to the site would be via two intersections on Jackson Highway.

Inspection of the site accesses showed good visibility available, presuming vegetation is properly maintained, signage is limited and no vehicles are parked in the sight triangle.

Based on my project review, I recommend that the Alderwood Terrace be allowed with the following traffic impact mitigation measures.

- Construct site in accordance with applicable City requirements.
- Construct the site accesses on Jackson Hwy. including ensuring no parking, signage or vegetation is in the sight triangle to pertinent criteria.
- Install 'Stop' signs on the access street approaches to Jackson Hwy. per applicable requirements.

Please contact me at 206.762.1978 or email me at jaketraffic@comcast.net if you have any questions.



Sincerely,

Mark J. Jacobs, PE, PTOE, President
JAKE TRAFFIC ENGINEERING, INC

03.10.2022

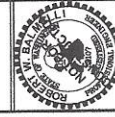
MJJ: mjj

NO.	DATE	REVISION

DESIGNED BY: ARP
 DRAWN BY: RMB
 CHECKED BY: RMB
 DATE: 04/08/21
 SCALE: 1" = 50'

ALDERWOOD TERRACE
 CITY OF CHEHALMS WA

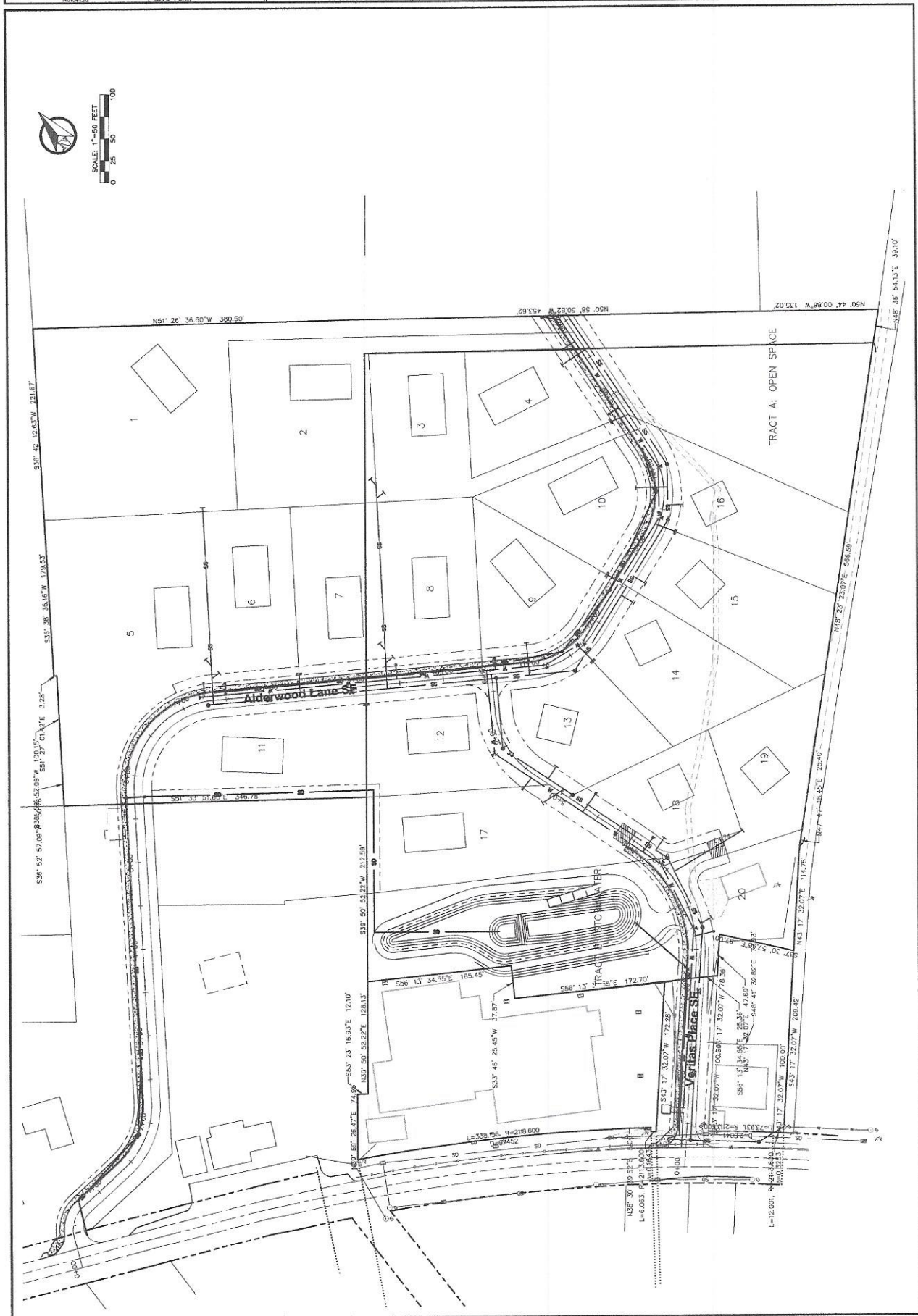
PRELIMINARY GRADING AND DRAINAGE PLAN



RB Engineering
 DESIGN → PERMIT → MANAGE
 7A 5th St
 DEWALD, WA 98592
 (360) 465-8888
 DM: Dinkley@rbeng.com

JOB NUMBER: 17025
 DRAWING NAME: 17025-171-000
 SHEET NO.: 2 OF 3





APPENDIX



DESIGN → PERMIT → MANAGE

November 23, 2021

Tammy Baraconi, Building and Planning manager
City of Chehalis Community Development
1321 S. Market Blvd.
Chehalis, WA 98532

Re: Alderwood Terrace Preliminary Plat
RBE NO. 17025

Dear Tammy:

This letter summarizes the anticipated trip generation for the proposed residential preliminary plat.

Project Description

The plat will consist of a 20-lot residential subdivision for single-family homes, with lot sizes of roughly ¼ acre to ½ ac. A Boundary Line Adjustment will create a 1.40-acre General Commercial lot corresponding to an existing commercial operation on the site. The remaining 13.79 platted acreage (within City limits and UGA) will be platted into twenty single family residential lots under R2 zoning, for a density of 1.45 du per acre. One of the proposed lots will accommodate an existing care-taker’s house (mobile home).

Analysis Summary

Weekday AM and PM peak hour trip generation for the proposed project was developed using projected trip rates provided in the ITE *Trip Generation Manual, 10th Edition*. Table 1 summarizes the trip generation and trip rates calculated. Trips from the existing commercial operation and single existing house are factored as existing trips.

Table 1				
VEHICLE TRIP GENERATION - ALDERWOOD TERRACE				
Time Period	Trip Rate	Trips Entering	Trips Exiting	TOTAL
New Car Sales (ITE Land Use Code 210)		20 Dwelling Units		
Average Weekday	T=9.44X	95 (50%)	94 (50%)	189
AM Peak Hour	T=0.74X	4 (25%)	11 (75%)	15
PM Peak Hour	T=0.99X	13 (63%)	7 (37%)	20

X = per dwelling unit
T = trips

Distribution

The site is accessed from Jackson Highway (SW Market Blvd), with two entrances, one accommodating three lower lots, and a second new private street accommodating thirteen new lots. Average vehicular trip ends (AVTE) distribution on Jackson Highway is estimated to be 80% to the west, and 20% to the east. Existing background PM peak hour trips on Jackson Hwy at the site are 850 PMPH trips, with an average of 8,000 AVDT (average vehicle daily trips) which would include pipeline traffic (other proposed projects), extrapolated from 2019 data. The project would represent 2.3% of existing PMPH trips and total AVDT.

Street segments and key intersections serving this site include NW Market Blvd (Jackson Hwy), extending to downtown commercial nodes at W Main Street and Chamber of Commerce Way; affected intersections include Jackson Hwy at SW 20th, SW 13th, W Main St., Parkland/Interstate Ave, Parkland/I-5, and Chamber of Commerce Way at N. National.

Summary

The project will add an estimated fifteen trips to the weekday AM peak hour with a modest increase of 20 trips for the PM peak hour.

The proposed new driveway onto Jackson Hwy will provide safe distribution of entering/exiting trips to the site without warrants for new center turn lanes. Except for curb returns and approach for new driveway, no new frontage improvements are anticipated for Jackson Hwy.

Sincerely,

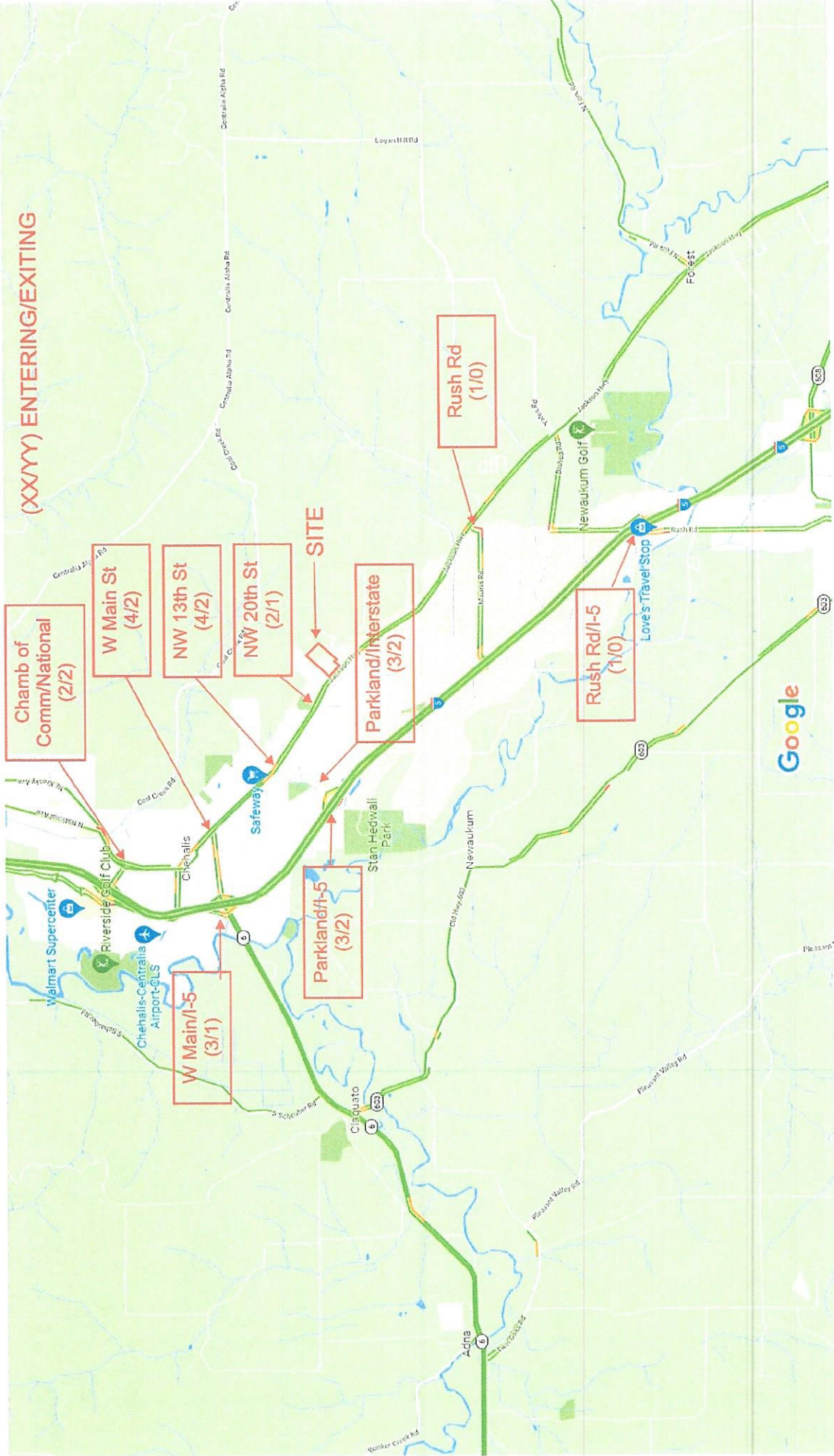


Robert Balmelli PE
Principal Engineer

Cc: Project File

Enclosure: Trip Generation Distribution Exhibit

ALDERWOOD TERRACE PRELIMINARY PLAT
ESTIMATED PMPH DISTRIBUTION





January 14, 2022

Amelia Schwartz
City Planner
City of Chehalis
Building & Planning Department
1321 S Market Blvd
Chehalis, WA 98532

RE: Review of Alderwood Terrace Preliminary Plat Trip Generation Letter

Dear Amelia,

Gibbs & Olson has reviewed the above referenced trip generation letter prepared by RB Engineering in conjunction with City of Chehalis Municipal Code 12.04.330 Traffic Impact Analysis.

The submitted traffic study is not a traffic impact analysis and does not meet the requirements of CMC 12.04.330. CMC 12.04.330.B.2.a requires a traffic impact analysis be completed in accordance with the requirements outlined in CMC 12.04.330 when the proposed project generates more than 10 vehicles in the peak direction of the peak hour on the adjacent streets and intersections. This includes the summation of all turning movements that affect the peak direction of traffic. Per the trip generation letter for this project, 11 trips exiting are identified in the AM Peak Hour, and 13 trips are identified entering in the PM Peak hour.

CMC 12.04.330.B.2.c requires a traffic impact analysis be completed in accordance with the requirements outlined in CMC 12.04.330 when the proposed project is within an existing transportation benefit district. Per CMC 3.11.010, the Chehalis Transportation Benefit District geographical boundaries are comprised of the corporate limits of the City of Chehalis. The proposed project is within the city limits and is therefore within an existing transportation benefit district.

Gibbs & Olson also recommends that the "New Car Sales (ITE Land Use Code 210)" in Table 1 of the trip generation letter be corrected to "Single-Family Detached Housing (ITE Land Use Code 210)".

Based on our review, Gibbs & Olson recommends the City of Chehalis require the project proponent to prepare and submit a full traffic impact analysis (TIA) that addresses all required elements as outlined in CMC 12.04.330 for the proposed project.

Amelia Schwartz
City of Chehalis
January 14, 2022
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If you have any questions regarding the above information, our review or our recommendation please contact me at your convenience.

Sincerely,



Richard A. Gushman, PE

Attachment: Submitted Trip Generation Letter with Review Comment in Red Text

File: 0155.0184



DESIGN → PERMIT → MANAGE

November 23, 2021

Tammy Baraconi, Building and Planning manager
City of Chehalis Community Development
1321 S. Market Blvd.
Chehalis, WA 98532

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Street segments and key intersections serving this site include NW Market Blvd (Jackson Hwy), extending to downtown commercial nodes at W Main Street and Chamber of Commerce Way; affected intersections include Jackson Hwy at SW 20th, SW 13th, W Main St., Parkland/Interstate Ave, Parkland/I-5, and Chamber of Commerce Way at N. National.

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Sincerely,

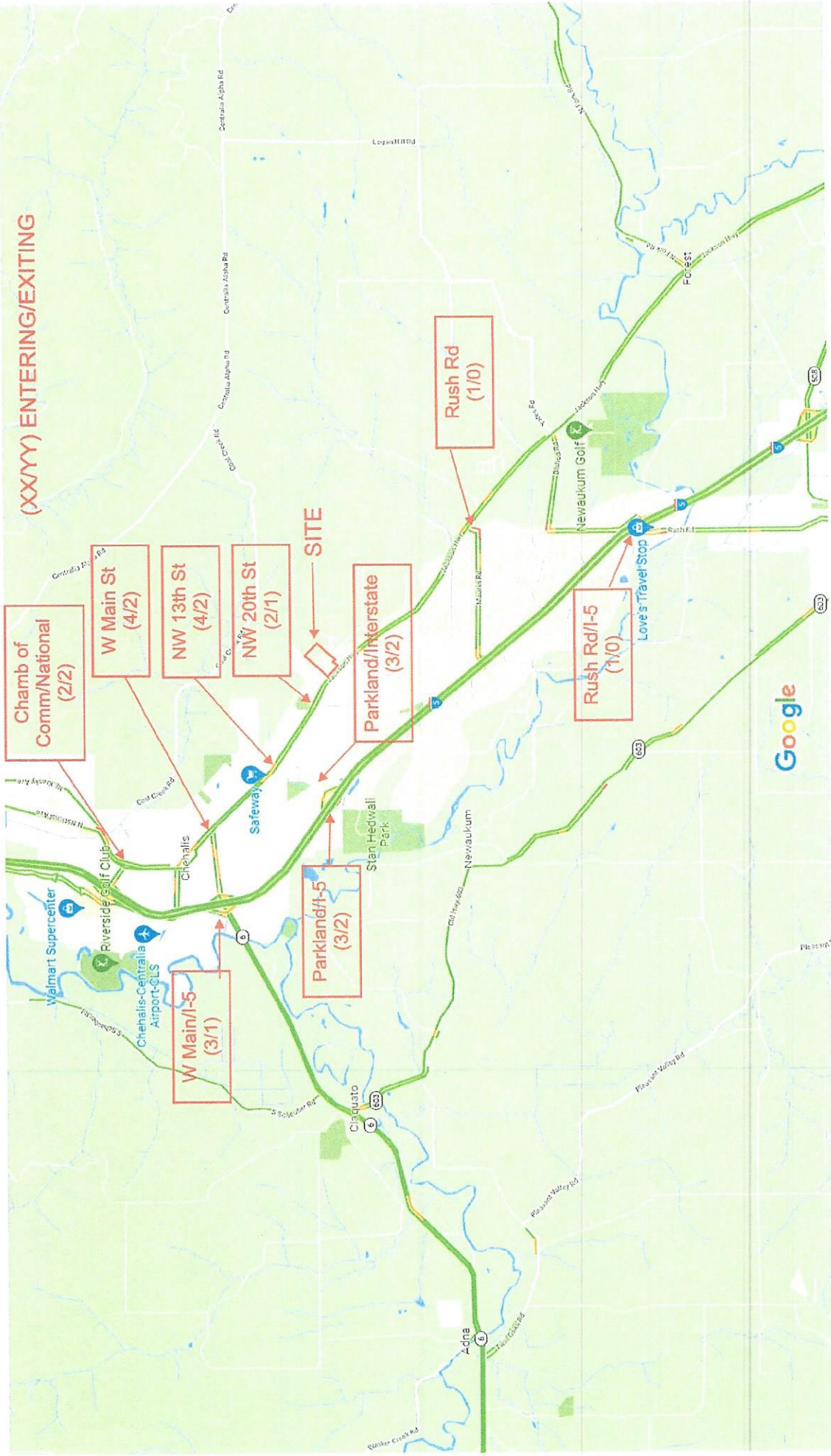


Robert Balmelli PE
Principal Engineer

Cc: Project File

Enclosure: Trip Generation Distribution Exhibit

ALDERWOOD TERRACE PRELIMINARY PLAT
ESTIMATED PMPH DISTRIBUTION



Live traffic

From: Mark J Jacobs, PE, PTO [mailto:JakeTraffic@comcast.net]
Sent: Tuesday, February 22, 2022 10:59 AM
To: 'aschwartz@ci.chehalis.wa.us'
Cc: 'Chris Aldrich'
Subject: 2022.018 - Alderwood Terrace Traffic Comments

Amelia

I have been contacted by Chris regarding a 20 – lot SFDU project off of Jackson Highway. Chris prepared a Site Trip Generation and Distribution Letter for the project noting 20 new PM peak hour trips with ~80% of the traffic to and from the west and the balance to and from the east. Chris’s Trip Generation projection used the 10th Edition of the ITE Trip Generation Manual; the 11th Edition of the manual is now available. Per the new ITE data the future residents of the project would generate about 19 PM peak hour trips, see Table 1.

**TABLE 1 - VEHICULAR TRIP GENERATION
 ALDERWOOD TERRACE - CHEHALIS
 TRAFFIC LETTER - TRIP GENERATION, DISTRIBUTION AND ACCESS INSPECTION**

Time Period	Size (X)	TG Rate	Enter %	Enter Trips	Exit %	Exit Trips	Total (T)
Proposed: Single Family Detached - General Urbary/Suburban (ITE LUC 210; 20 - units)							
Weekday	20	9.43	50%	94	50%	94	188
AM peak hour	20	0.7	26%	4	74%	10	14
PM peak hour	20	0.94	63%	12	37%	7	19

T = trips, X = number of units

* - pass-by trips percent per ITE and **JTE** Traffic Engineering experience, there would be some pass-by trips such as mail/service type. Trip rates per the Institute of Transportation Engineers Trip Generation Manual 11th Edition

Note: Due to rounding some values may not add up.

A vehicle trip is defined as a single or one direction vehicle movement with either the origin or destination (exiting or entering) inside the study site. The above trip generation values account for all the site trips made by all vehicles for all purposes, including commuter, visitor, recreation, and service and delivery vehicle trips.

The City retained the services of Gibbs & Olson to provide feedback to the submitted Trip Generation Letter. Mr. Richard Gushman, PE recommended that the City require a full TIA be conducted per CMC 12.04.330. Subsection B below identifies the trip threshold as 10 peak hour peak direction trips.

B. When Required.

1. The need for a TIA will be based on the size of the proposed development, existing street and intersection and other pertinent factors associated with the proposed project.
2. A TIA will be required if a proposed development meets one or more of the following conditions:
 - a. The proposed project generates more than 10 vehicles in the peak direction of the peak hour on turning movements that affect the peak direction of traffic.
 - b. The proposed project generates more than 25 percent of the site-generated peak hour traffic through intersection.
 - c. The proposed project is within an existing or proposed transportation benefit area. This may include local/state transportation improvement areas programmed for development reimbursements.
 - d. The proposed project may potentially affect the implementation of the street system outlined in the transportation improvement program, or any other documented transportation project.
 - e. If the original TIA was prepared more than two years before the proposed project completion date.
 - f. The increase in traffic volume as measured by ADT, peak hour, or peak hour of the "critical" movement.
3. Even if it is determined that a TIA is not required, the director of public works or designated consultant will conduct TGSs. TGSs will be used to forecast project-generated traffic for an established future horizon.

Per the trip distribution identified by Chris there would be no City intersections affected by 10 or more peak hour peak directions trips ($12 * 80\% = 9.6$). And based on a traffic distribution I had projected for a residential project I conducted a TIA for in late 2015 located in the SWC of SW Salsbury Ave at Jackson Highway, even less. I used a 65/35 versus the 80/20 split noted by Chris.

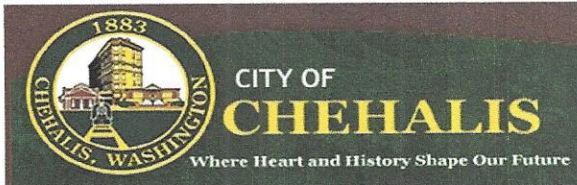
Please advise me what the City requires for Traffic Documentation on this project, if anything further than what Chris already conducted (updated to reflect the TGM 11th Edition)

Thank you

Mark

Mark J Jacobs, PE, PTOE
JAKE TRAFFIC ENGINEERING, INC
2614 39th Ave. SW
Seattle, WA 98116 – 2503
206.762.1978 o
206.799.5692 c

From: Chris Aldrich [mailto:Chrisa@rbengineers.com]
Sent: Tuesday, February 22, 2022 9:07 AM
To: Mark Jacobs PE, PTOE (jaketraffic@comcast.net)
Subject: FW: Alderwood Terrace Traffic Comments



Community Development Department
1321 S. Market Blvd., Chehalis, WA 98532
360.345.2229/Fax: 360.345.1039
www.ci.chehalis.wa.us email:

February 28, 2022

Amelia Schwartz
City Planner
City of Chehalis
Building & Planning Department
1321 S Market Blvd
Chehalis, WA 98532

RE: 2nd Review Comment Letter for Alderwood Terrace Preliminary Plat Trip Generation Letter (2022.018 - Alderwood Terrace)

Dear Amelia,

Gibbs & Olson has reviewed the February 22, 2022, email from Mark J. Jacobs, PE, PTOE of Jake Traffic Engineering, Inc. regarding RB Engineering's Trip Generation and Distribution Letter (TGDL) dated November 23, 2021 (copy attached). Gibbs & Olson issued our first review comment letter on January 14, 2022, with review comments (copy attached).

Mr. Jacobs' email stated that the original TGDL indicated the project would result in 20 new PM peak hour trips with approximately 80% of the traffic to/from the west and the balance to/from the east. The initial TGDL utilized the 10th Edition of the ITE Trip Generation Manual which has since been updated and replaced with the 11th Edition of the ITE Trip Generation Manual. Mr. Jacobs then utilized the updated factors from the 11th Edition to document that the project will result in 19 new PM peak hour trips with the same 80/20 split of trips to/from west and east respectively. Mr. Jacobs also provided a copy of the Single-Family Detached Housing (Land Use Code 210) pages from the 11th Edition of the ITE Trip Generation Manual (copy attached).

80% of the total 19 PM peak hour trips results in 15.2 PM peak hour trips to/from the west. Per the table in Mr. Jacobs' email, 63% of the PM peak hour trips are entering the proposed project based on the table in Mr. Jacobs' email which results in 9.6 PM peak hour trips in the peak direction of the peak hour on the adjacent streets and intersections which does not exceed 10 vehicles as identified Chehalis Municipal Code (CMC) 12.04.330B.2.a.

However, CMC 12.04.330B.2.c indicates a full Traffic Impact Analysis (TIA) is required when the proposed project is within an existing or proposed transportation benefit district. Per CMC 3.11.010, the Chehalis Transportation Benefit District's geographical boundaries are comprised of the corporate limits of the City of Chehalis. The proposed project is within the city limits and is therefore within an existing transportation benefit district. Therefore, a full TIA is required per city code.

The project proponent shall prepare and submit a full TIA addressing all required elements as outlined in CMC 12.04.330 for the proposed project.

If you have any questions regarding the above information, our review or our recommendation please contact me at your convenience.

Sincerely,



Richard A. Gushman, PE
Interim City Engineer

Attachments:

- January 14, 2022 Review Comment letter with 11/23/2021 Submitted Trip Generation Letter
- February 22, 2022 Email from Mr. Jacobs
- Single-Family Detached Housing (210) pages from 11th Edition, ITE Trip Generation Manual

File: 0155.0184 - 2022.018

From: [Mark J Jacobs, PE, PTO](mailto:Mark.J.Jacobs@GibbsOlson.com)
To: [Rich Gushman](mailto:Rich.Gushman@GibbsOlson.com)
Cc: [Carol Ruiz](mailto:Carol.Ruiz@GibbsOlson.com); [Amelia Schwartz](mailto:Amelia.Schwartz@GibbsOlson.com)
Subject: RE: 2022.018 - Alderwood Terrace Traffic Comments
Date: Wednesday, February 23, 2022 7:07:06 PM
Attachments: [ITE-11th-LUC210-SFDU-TG.pdf](#)

[EXTERNAL]
Rich

Sorry about the delay, I was having e-mail challenges on Tuesday that I hope are fixed now.

The requested information is attached.

Thank you

Mark J Jacobs, PE, PTOE
 JAKE TRAFFIC ENGINEERING, INC
 2614 39th Ave. SW
 Seattle, WA 98116 – 2503
 206.762.1978 o
 206.799.5692 c

From: Rich Gushman [mailto:rgushman@gibbs-olson.com]
Sent: Tuesday, February 22, 2022 1:59 PM
To: Mark R. Jacobs
Cc: Carol Ruiz; Amelia Schwartz
Subject: RE: 2022.018 - Alderwood Terrace Traffic Comments

Hi Mark,

Amelia Schwartz with the City of Chehalis forwarded your email to us so we could review the information you've presented below. You're referencing the 11th Edition of the ITE TGM. We've ordered a copy of this but haven't received it yet. As we discussed on the phone, we would appreciate it if you could scan and email us a copy of the specific pages from the 11th Edition that you're referencing. We will review this and determine if any additional information is required in regard to the traffic evaluation for the proposed project. If questions, please contact me at your convenience.

Best Regards,

Rich Gushman, PE | President

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From: Mark J Jacobs, PE, PTO <jake.traffic@comcast.net>
Sent: Tuesday, February 22, 2022 10:59 AM
To: Amelia Schwartz <aschwartz@ci.chehalis.wa.us>
Cc: 'Chris Aldrich' <Chrisa@rbengineers.com>
Subject: 2022.018 - Alderwood Terrace Traffic Comments

NOTICE: This message originated outside of the City network - DO NOT CLICK on links or open attachments unless you are sure the content is safe!

Amelia

I have been contacted by Chris regarding a 20 – lot SFDU project off of Jackson Highway. Chris prepared a Site Trip Generation and Distribution Letter for the project noting 20 new PM peak hour trips with ~80% of the traffic to and from the west and the balance to and from the east. Chris's Trip Generation projection used the 10th Edition of the ITE [Trip Generation Manual](#); the 11th Edition of the manual is now available. Per the new ITE data the future residents of the project would generate about 19 PM peak hour trips, see Table 1.

TABLE 1 - VEHICULAR TRIP GENERATION ALDERWOOD TERRACE - CHEHALIS TRAFFIC LETTER - TRIP GENERATION, DISTRIBUTION AND ACCESS INSPECTION										
Time Period	Size (X)	TG Rate	Enter %	Enter Trips	Exit %	Exit Trips	Total (T)	Pass-by*	Pass-by Trips	Net Total
Proposed: Single Family Detached - General Urban/Suburban (ITE LUC 210; 20 - units)										
Weekday	20	9.43	50%	94	50%	94	189	--	--	--
AM peak hour	20	0.7	26%	4	74%	10	14	--	--	--
PM peak hour	20	0.94	63%	12	37%	7	19	--	--	--

T = trips, X = number of units

* - pass-by trips percent per ITE and JTE Traffic Engineering experience, there would be some pass-by trips such as mail/service type of trips.

Trip rates per the Institute of Transportation Engineers [Trip Generation Manual](#) 11th Edition

Note: Due to rounding some values may not add up.

A vehicle trip is defined as a single or one direction vehicle movement with either the origin or destination (exiting or entering) inside the study site. The above trip generation values account for all the site trips made by all vehicles for all purposes, including commuter, visitor, recreation, and service and delivery vehicle trips.

The City retained the services of Gibbs & Olson to provide feedback to the submitted Trip Generation Letter. Mr. Richard Gushman, PE recommended that the City require a full TIA be conducted per CMC 12.04.330. Subsection B below identifies the trip threshold as 10 peak hour peak direction trips.

B. When Required

1. The need for a TIA will be based on the size of the proposed development, existing street and intersection conditions, traffic volumes, accident history, community concerns, and other pertinent factors associated with the proposed project.
2. A TIA will be required if a proposed development meets one or more of the following conditions:
 - a. The proposed project generates more than 10 vehicles in the peak direction of the peak hour on the adjacent streets and intersections. This includes the summation of all turning movements that affect the peak direction of traffic.
 - b. The proposed project generates more than 25 percent of the site-generated peak hour traffic through a signalized intersection or "critical" movement at a nonsignalized intersection.
 - c. The proposed project is within an existing or proposed transportation benefit area. This may include transportation benefit districts (TBD), local improvement districts (LID), or local/state transportation improvement areas programmed for development reimbursements.
 - d. The proposed project may potentially affect the implementation of the street system outlined in the transportation element of the comprehensive plan, the six-year transportation improvement program, or any other documented transportation project.
 - e. If the original TIA was prepared more than two years before the proposed project completion date.
 - f. The increase in traffic volume as measured by ADT, peak hour, or peak hour of the "critical" movement is more than 10 percent.
3. Even if it is determined that a TIA is not required, the director of public works or designated consultant may require the developer to have a trip generation study (TGS) conducted. TGSs will be used to forecast project-generated traffic for an established future horizon.

Per the trip distribution identified by Chris there would be no City intersections affected by 10 or more peak hour peak directions trips ($12 * 80\% = 9.6$). And based on a traffic distribution I had projected for a residential project I conducted a TIA for in late 2015 located in the SWC of SW Salsbury Ave at Jackson Highway, even less. I used a 65/35 versus the 80/20 split noted by Chris.

Please advise me what the City requires for Traffic Documentation on this project, if anything further than what Chris already conducted (updated to reflect the TGM 11th Edition)

Thank you

Mark

Mark J Jacobs, PE, PTOE
JAKE TRAFFIC ENGINEERING, INC
2614 39th Ave, SW
Seattle, WA 98116 -- 2503
206.762.1978 o
206.799.5692 c

From: Chris Aldrich [mailto:Chrisa@rbengineers.com]
Sent: Tuesday, February 22, 2022 9:07 AM
To: Mark Jacobs PE, PTOE (jaketraffic@comcast.net)
Subject: FW: Alderwood Terrace Traffic Comments

Mark-

Here were Gibbs&Olsen's comments on Alderwood. We didn't to update the land use code in the trip gen letter, and you may adjust the total/peak numbers anyway. Our scoping letter attached too. Need fee proposal for approval, but this one is the most time sensitive. Thanks! C

From: Amelia Schwartz <aschwartz@ci.chehalis.wa.us>
Sent: Friday, January 14, 2022 3:49 PM
To: Chris Aldrich <Chrisa@rbengineers.com>
Subject: Alderwood Terrace Traffic Comments

Here you go!

Amelia Schwartz
City Planner
City of Chehalis
Building and Planning Department
Office: 360.485.0373
aschwartz@ci.chehalis.wa.us





A Community of Transportation Professionals

Institute of Transportation Engineers



Trip Generation Manual

11th Edition • Volume 3
**General Urban/Suburban
and Rural**
(Land Uses 000–399)

September 2021

Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 174

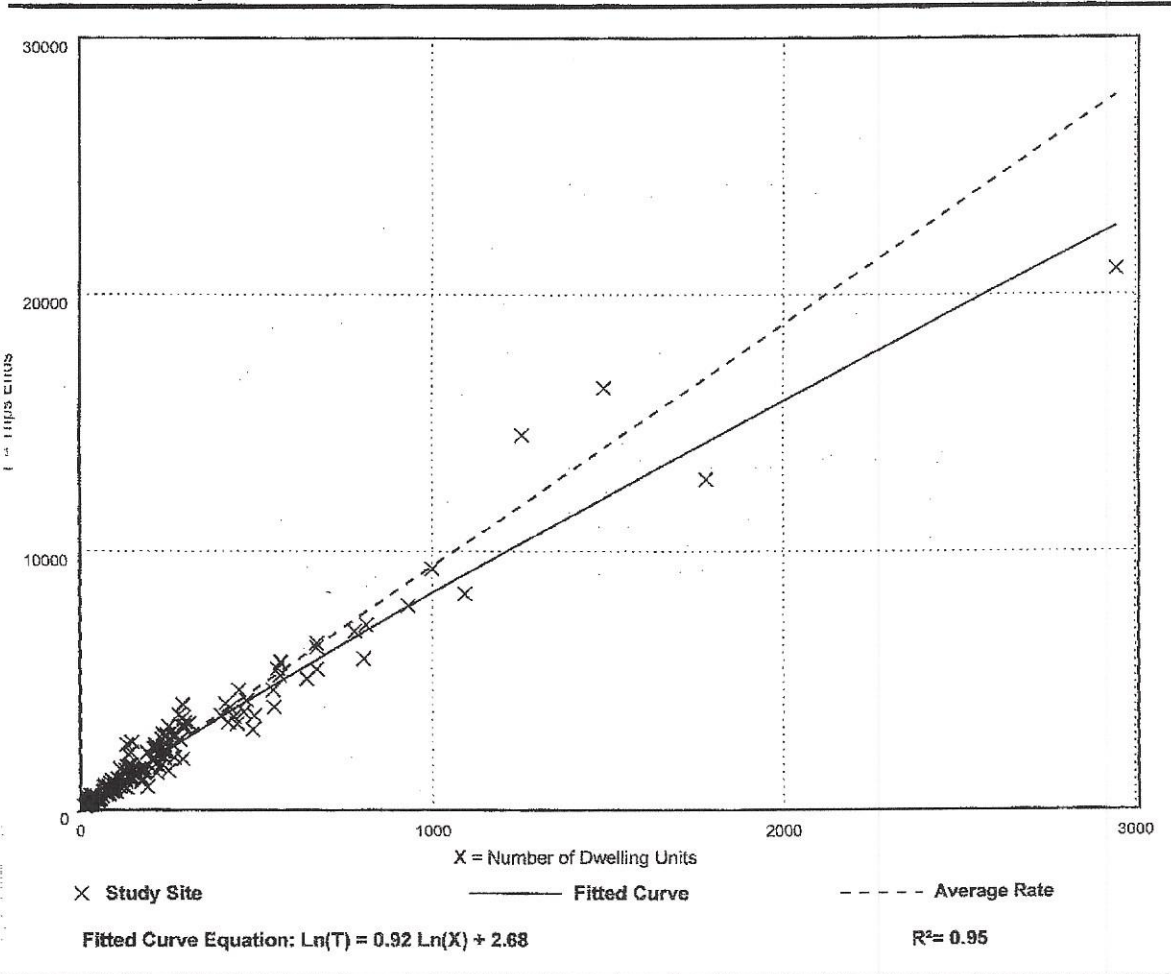
Avg. Num. of Dwelling Units: 246

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Scatter Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 192

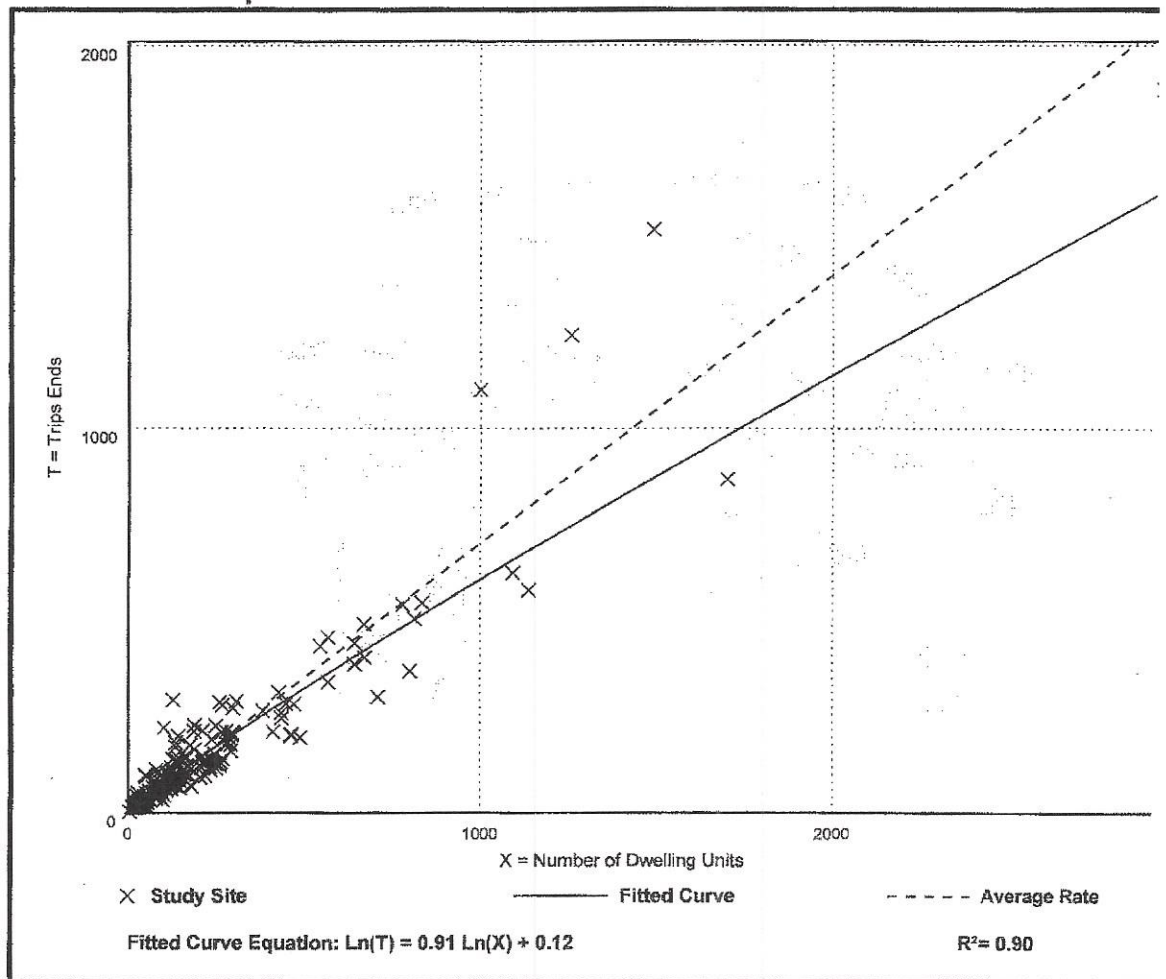
Avg. Num. of Dwelling Units: 226

Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviator
0.70	0.27 - 2.27	0.24

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 208

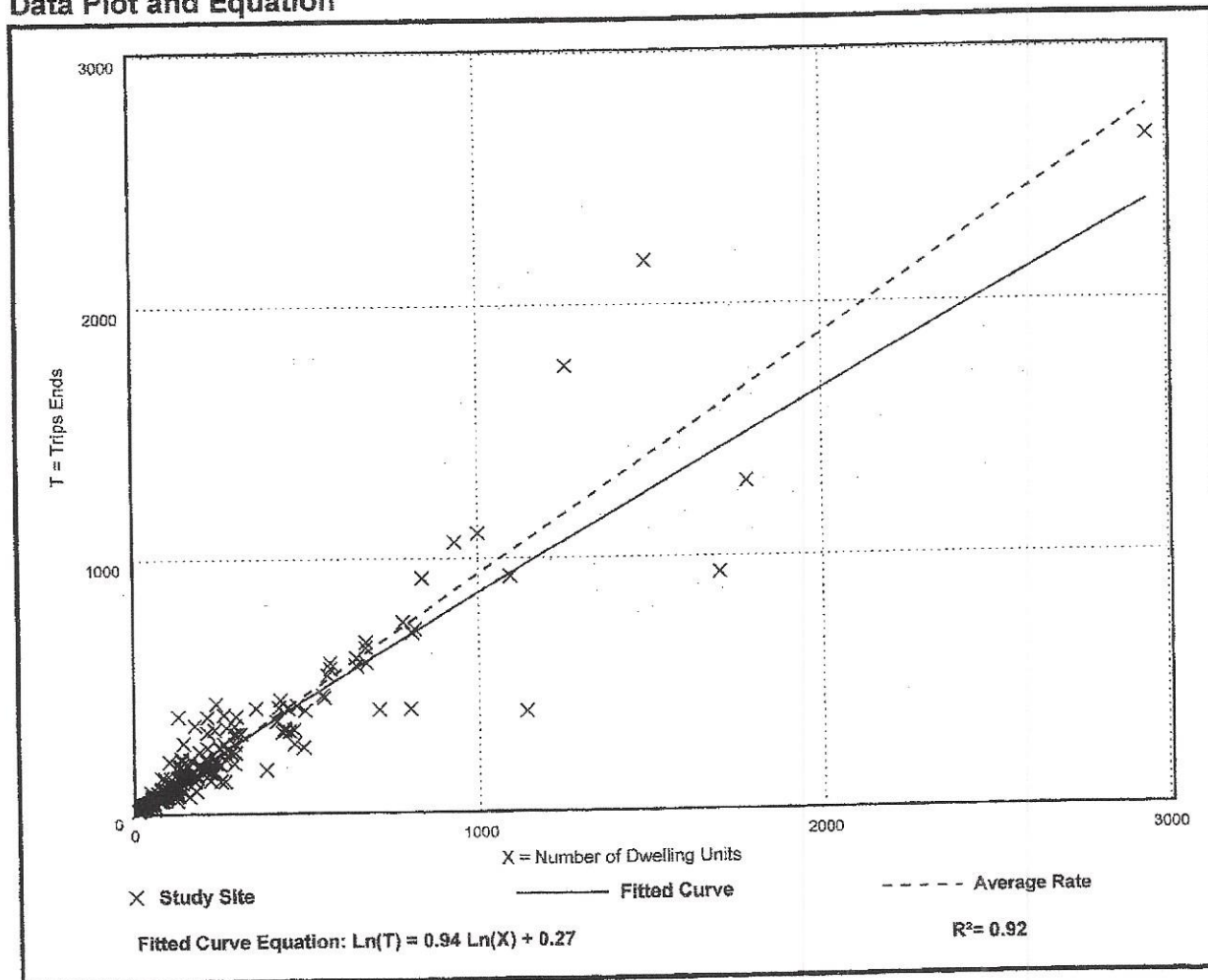
Avg. Num. of Dwelling Units: 248

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation





Prepared for: **Jake Traffic**
Traffic Count Consultants, Inc.

Phone: (253) 770-1407 FAX: (253) 770-1411 E-Mail: Team@TC2inc.com

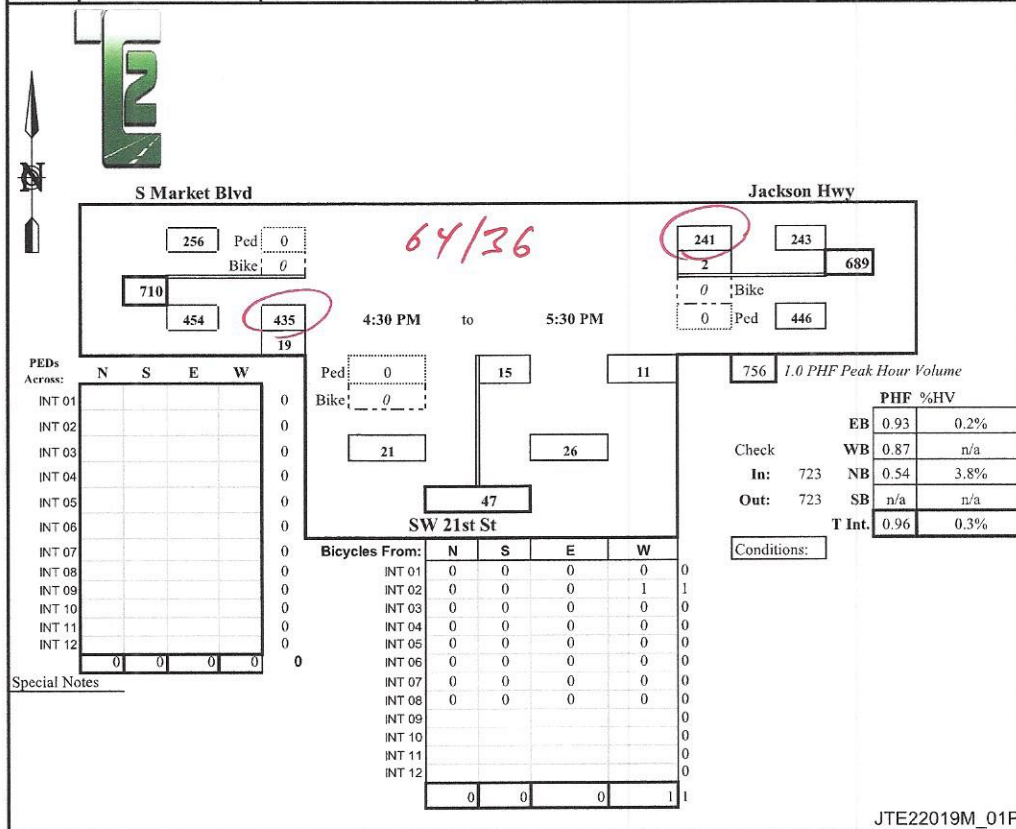
WBE/DBE

Intersection: SW 21st St & Jackson Hwy/S Market Blvd
 Location: Chehalis, Washington

Date of Count: Wed 03/02/2022
 Checked By: Jen

Time Interval Ending at	From North on (SB) 0				From South on (NB) SW 21st St				From East on (WB) Jackson Hwy				From West on (EB) S Market Blvd				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	0	0	0	0	6	0	0	0	0	71	0	0	0	86	6	169
4:30 P	0	0	0	0	1	2	0	1	0	0	64	0	0	0	105	1	173
4:45 P	0	0	0	0	0	4	0	3	0	1	69	0	1	0	105	3	185
5:00 P	0	0	0	0	0	2	0	3	0	0	58	0	0	0	96	9	168
5:15 P	0	0	0	0	0	1	0	1	0	1	56	0	0	0	118	4	181
5:30 P	0	0	0	0	1	8	0	4	0	0	58	0	0	0	116	3	189
5:45 P	0	0	0	0	0	1	0	0	0	1	52	0	0	0	70	1	125
6:00 P	0	0	0	0	0	3	0	0	2	3	44	0	0	0	78	0	128
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	0	0	0	0	2	27	0	12	2	6	472	0	1	0	774	27	1318
Peak Hour: 4:30 PM to 5:30 PM																	
Total	0	0	0	0	1	15	0	11	0	2	241	0	1	0	435	19	723
Approach	0				26				243				454				723
%HV	n/a				3.8%				n/a				0.2%				0.3%
PHF	n/a				0.54				0.87				0.93				0.96





Prepared for: **Jake Traffic**
Traffic Count Consultants, Inc.

Phone: (253) 770-1407 FAX: (253) 770-1411 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Jackson Hwy & SW Salisbury Ave
 Location: Chehalis, Washington

Date of Count: Wed 03/02/2022
 Checked By: Jen

Time Interval Ending at	From North on (SB) Jackson Hwy				From South on (NB) Jackson Hwy				From East on (WB) 0				From West on (EB) SW Salisbury Ave				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	0	66	3	0	2	62	0	0	0	0	0	0	0	0	6	139
4:30 P	0	0	87	2	0	4	44	0	0	0	0	0	0	2	0	3	142
4:45 P	1	0	69	9	1	2	54	0	0	0	0	0	2	2	0	4	140
5:00 P	0	0	83	5	0	3	50	0	0	0	0	0	3	0	2	146	
5:15 P	0	0	94	7	0	1	45	0	0	0	0	0	1	0	2	150	
5:30 P	0	0	93	5	0	4	42	0	0	0	0	0	3	0	5	152	
5:45 P	0	0	61	6	0	2	42	0	0	0	0	0	4	0	2	117	
6:00 P	0	0	61	6	2	2	44	0	0	0	0	0	2	0	1	116	
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Total Survey	1	0	614	43	3	20	383	0	0	0	0	0	0	17	0	25	1102
Peak Hour: 4:30 PM to 5:30 PM																	
Total	1	0	339	26	1	10	191	0	0	0	0	0	0	9	0	13	588
Approach	365				201				0				22				588
%HV	0.3%				0.5%				n/a				n/a				0.3%
PHF	0.90				0.90				n/a				0.69				0.97

PHF %HV

EB	0.69	n/a	
WB	n/a	n/a	
In: 588	NB	0.90	0.5%
Out: 588	SB	0.90	0.3%
T Int.	0.97	0.3%	

Conditions:

PEDs Across:

	N	S	E	W
INT 01	0	0	0	0
INT 02	0	0	0	0
INT 03	0	0	0	0
INT 04	0	0	0	0
INT 05	0	0	0	0
INT 06	0	0	0	0
INT 07	0	0	0	0
INT 08	0	0	0	0
INT 09	0	0	0	0
INT 10	0	0	0	0
INT 11	0	0	0	0
INT 12	0	0	0	0

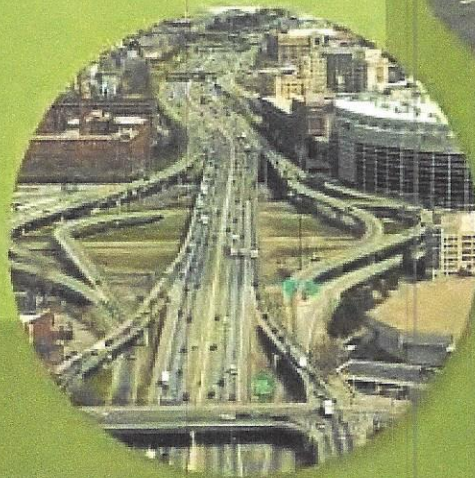
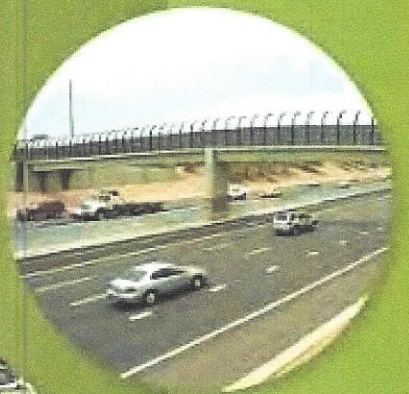
Special Notes

Bicycles From:

	N	S	E	W
INT 01	0	0	0	0
INT 02	0	0	0	0
INT 03	1	0	0	0
INT 04	0	0	0	0
INT 05	0	0	0	0
INT 06	0	0	0	0
INT 07	0	0	0	0
INT 08	0	0	0	0
INT 09	0	0	0	0
INT 10	0	0	0	0
INT 11	0	0	0	0
INT 12	0	0	0	0
Total	1	0	0	0

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2011
6th Edition



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at its junction with the major road. For simple unchannelized intersections involving low design speeds and stop or signal control, it may be desirable to warp the crowns of both roads into a plane at the intersection; the appropriate plane depends on the direction of drainage and other conditions. Changes from one cross slope to another should be gradual. Intersections at which a minor road crosses a multilane divided highway with a narrow median on a superelevated curve should be avoided whenever practical because of the difficulty in adjusting grades to provide a suitable crossing. Gradelines of separate turning roadways should be designed to fit the cross slopes and longitudinal grades of the intersection legs.

The alignment and grades are subject to greater constraints at or near intersections than on the open road. At or near intersections, the combination of horizontal and vertical alignment should provide traffic lanes that are clearly visible to drivers at all times, clearly understandable for any desired direction of travel, free from the potential for conflicts to appear suddenly, and consistent in design with the portions of the highway just traveled.

The combination of vertical and horizontal curvature should allow adequate sight distance at an intersection. As discussed in Section 3.5 on “Combinations of Horizontal and Vertical Alignment,” a sharp horizontal curve following a crest vertical curve is undesirable, particularly on intersection approaches.

9.5 INTERSECTION SIGHT DISTANCE

9.5.1 General Considerations

Each intersection has the potential for several different types of vehicular conflicts. The possibility of these conflicts actually occurring can be greatly reduced through the provision of proper sight distances and appropriate traffic controls. The avoidance of conflicts and the efficiency of traffic operations still depend on the judgment, capabilities, and response of each individual driver.

Stopping sight distance is provided continuously along each highway or street so that drivers have a view of the roadway ahead that is sufficient to allow drivers to stop. The provision of stopping sight distance at all locations along each highway or street, including intersection approaches, is fundamental to intersection operation.

Vehicles are assigned the right-of-way at intersections by traffic-control devices or, where no traffic-control devices are present, by the rules of the road. A basic rule of the road, at an intersection where no traffic-control devices are present, requires the vehicle on the left to yield to the vehicle on the right if they arrive at approximately the same time. Sight distance is provided at intersections to allow drivers to perceive the presence of potentially conflicting vehicles. This should occur in sufficient time for a motorist to stop or adjust their speed, as appropriate, to avoid colliding in the intersection. The methods for determining the sight distances needed by drivers approaching intersections are based on the same principles as stopping sight distance, but incorporate modified assumptions based on observed driver behavior at intersections.

The driver of a vehicle approaching an intersection should have an unobstructed view of the entire intersection, including any traffic-control devices, and sufficient lengths along the intersecting highway to permit the driver to anticipate and avoid potential collisions. The sight distance needed under various

assumptions of physical conditions and driver behavior is directly related to vehicle speeds and to the resultant distances traversed during perception-reaction time and braking.

Sight distance is also provided at intersections to allow the drivers of stopped vehicles a sufficient view of the intersecting highway to decide when to enter the intersecting highway or to cross it. If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. However, in some cases, a major-road vehicle may need to stop or slow to accommodate the maneuver by a minor-road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road.

9.5.2 Sight Triangles

Specified areas along intersection approach legs and across their included corners should be clear of obstructions that might block a driver's view of potentially conflicting vehicles. These specified areas are known as clear sight triangles. The dimensions of the legs of the sight triangles depend on the design speeds of the intersecting roadways and the type of traffic control used at the intersection. These dimensions are based on observed driver behavior and are documented by space-time profiles and speed choices of drivers on intersection approaches (12). Two types of clear sight triangles are considered in intersection design—approach sight triangles and departure sight triangles.

Approach Sight Triangles

Each quadrant of an intersection should contain a triangular area free of obstructions that might block an approaching driver's view of potentially conflicting vehicles. The length of the legs of this triangular area, along both intersecting roadways, should be such that the drivers can see any potentially conflicting vehicles in sufficient time to slow or stop before colliding within the intersection. Figure 9-15A shows typical clear sight triangles to the left and to the right for a vehicle approaching an uncontrolled or yield-controlled intersection.

Summary Reports - Total Crashes by Year

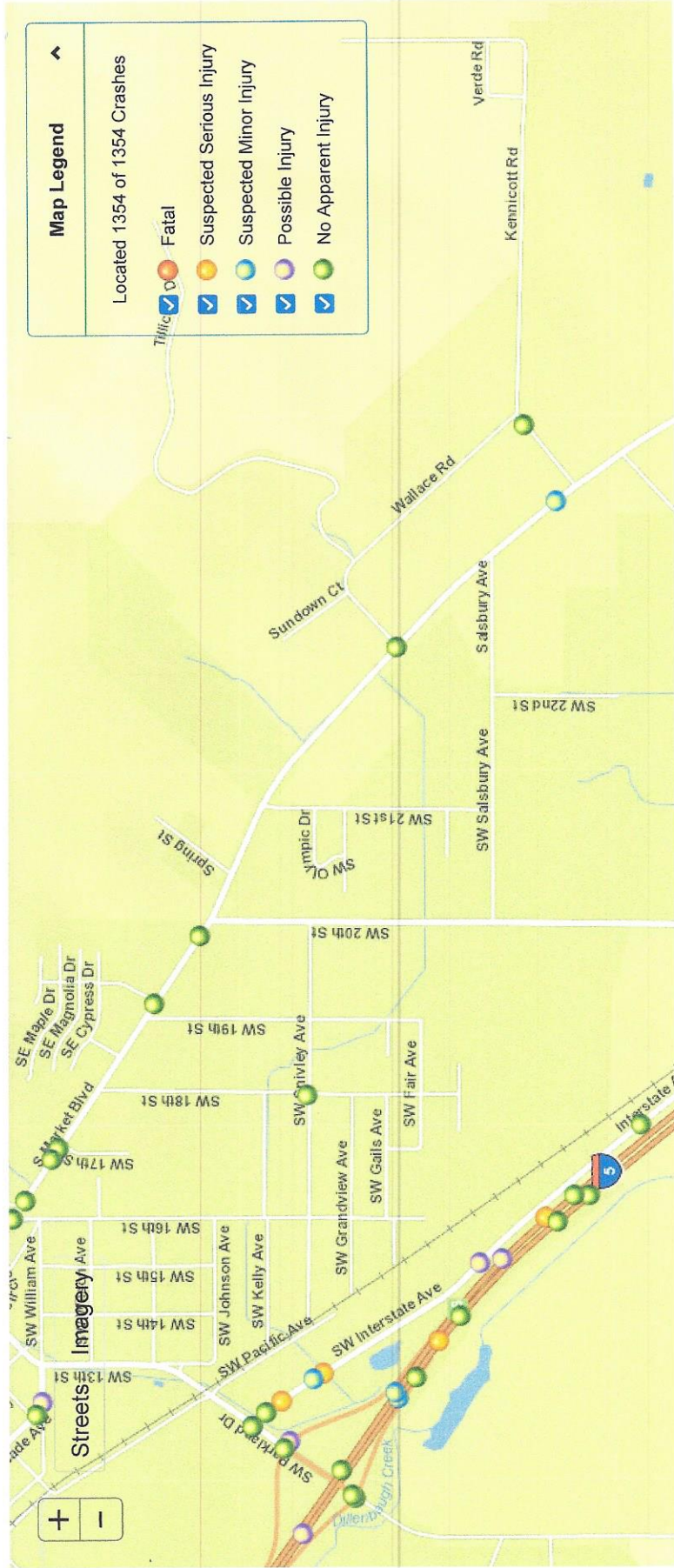
Report Year: 2021

Report Location: Lewis County

Report Jurisdiction: All Roads

Under 23 U.S. Code 148 and 23 U.S. Code 409, safety data, reports, surveys, schedules, list compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such report, surveys, schedules, lists, or data.

Data Charts Notes Map Additional crash data available by clicking on map marker.



(http://www.wsdot.wa.gov)

Summary Reports - Total Crashes by Year

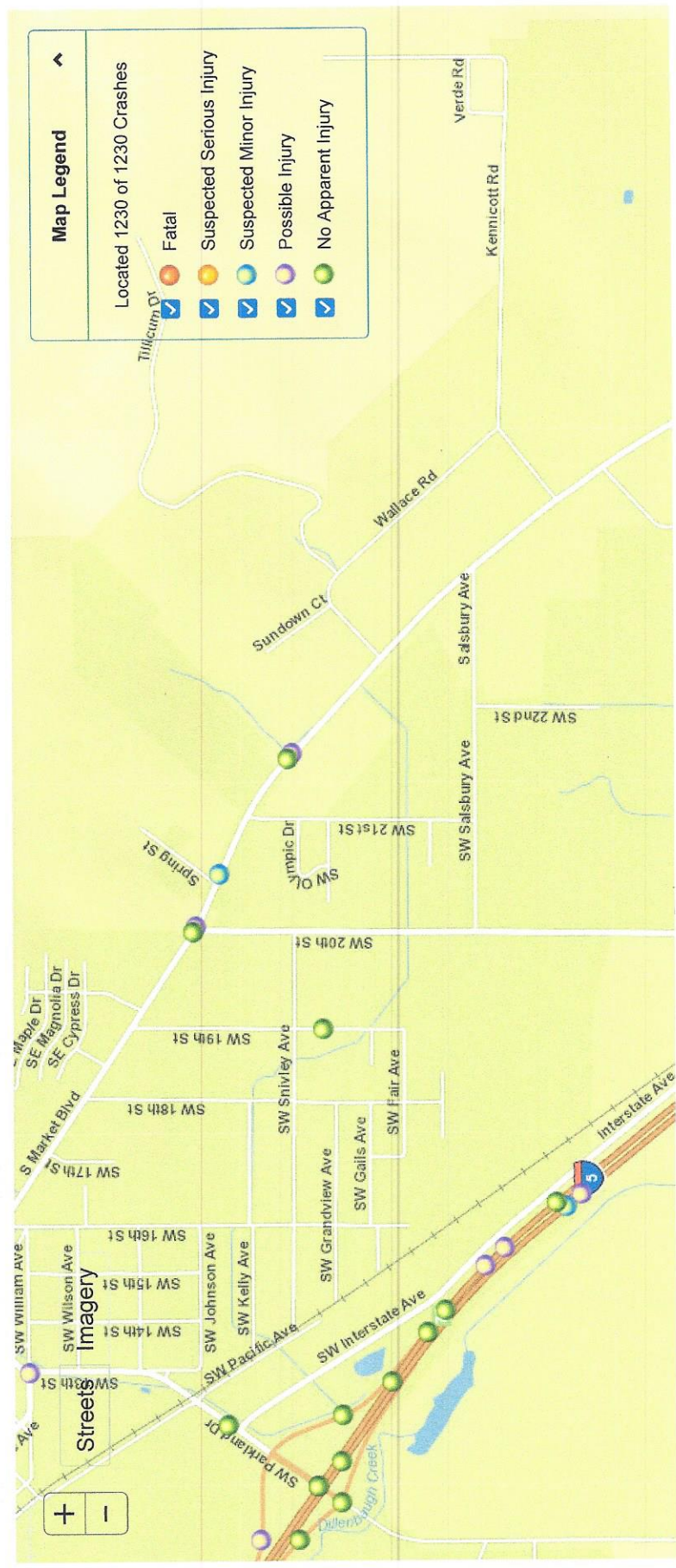
Report Year: 2020

Report Location: Lewis County

Report Jurisdiction: All Roads

Under 23 U.S. Code 148 and 23 U.S. Code 409, safety data, reports, surveys, schedules, list compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such report, surveys, schedules, lists, or data.

Data Charts Notes Map Additional crash data available by clicking on map marker.



Summary Reports - Total Crashes by Year

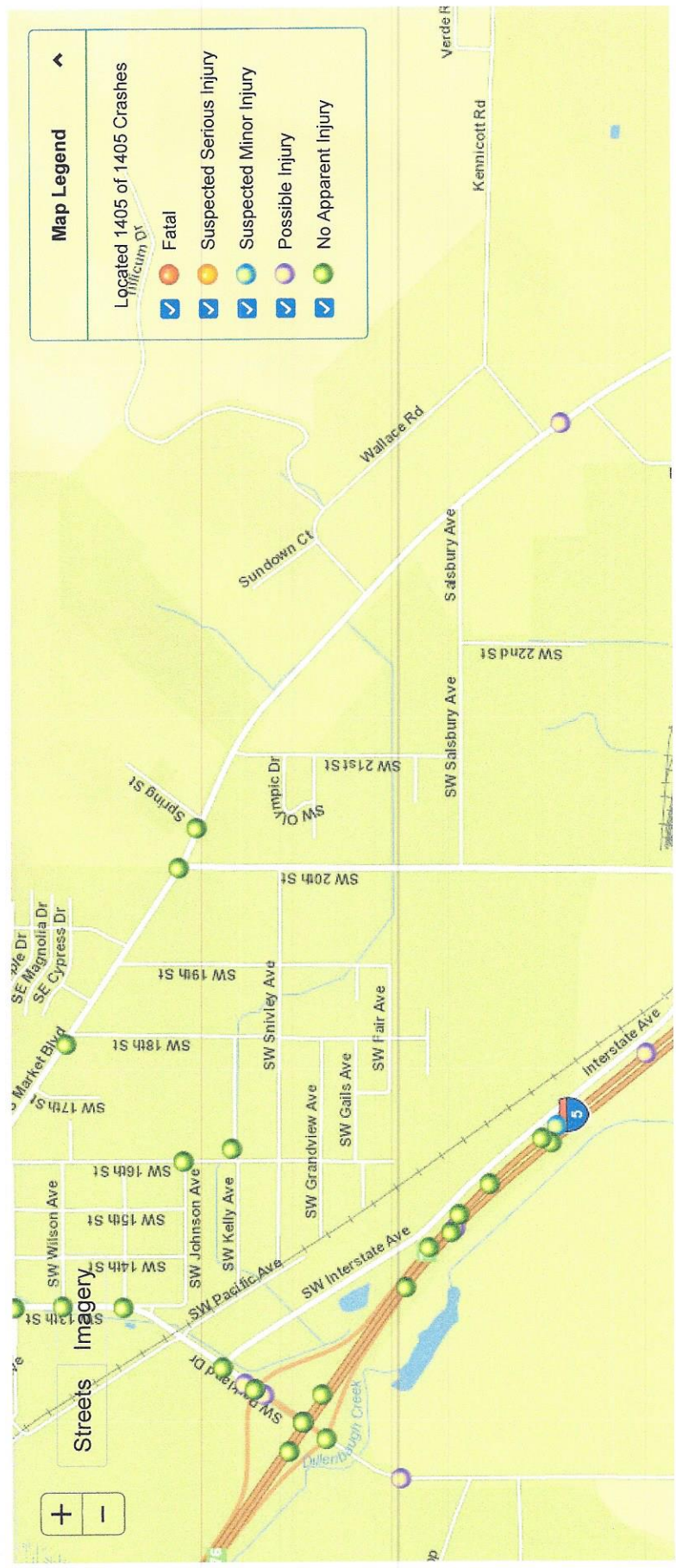
Report Year: 2018

Report Location: Lewis County

Report Jurisdiction: All Roads

Under 23 U.S. Code 148 and 23 U.S. Code 409, safety data, reports, surveys, schedules, list compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such report, surveys, schedules, lists, or data.

Data Charts Notes Map Additional crash data available by clicking on map marker.



(http://www.wsdot.wa.gov)

Summary Reports - Total Crashes by Year

Report Year: 2017
Report Location: Lewis County
Report Jurisdiction: All Roads

Under 23 U.S. Code 148 and 23 U.S. Code 409, safety data, reports, surveys, schedules, list compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such report, surveys, schedules, lists, or data.

Data Charts Notes Map Additional crash data available by clicking on map marker.

