12/2/2021

Fuller Designs
1101 Kresky Ave
Centralia, WA 98531
(360)807-4420

Subject: **Historic Schools Geotechnical Services**
89 SW 3rd St, Chehalis, WA
QG Project No.: QG21-143

Dear Client:

At your request, Quality Geo NW, PLLC (QG) has completed a preliminary geotechnical area review of the above referenced property's existing site conditions, including site visual reconnaissance, subsurface evaluation, slope analysis, and review of existing geologic literature for the site. The project site consists of a developed historic school property. It is our understanding that the client intends to renovate the existing structures and add a parking lot within the parcel.

QG understands that the permitting authority requires a geotechnical consultation to confirm that current conditions are favorable, and to provide any additional and necessary recommendations. The following report presents the findings and conclusions of our review, addresses feasibility of proposed site development, and provides additional geotechnical recommendations for planning and design intended to reduce the inherent risks associated with site development.

Aerial site map presented in Appendix A. Exploration Logs are presented in Appendix B. Laboratory Results are presented in Appendix C.

GEOLOGIC LITERATURE REVIEW

QG reviewed available map publications to assess known geologic conditions and hazards present at the site location. The Washington Geologic Information Portal (WGIP), maintained by the Department of Natural Resources Division of Geology and Earth Resources, provides 1:100,000-scale geologic mapping of the region. Geology of the site location and vicinity consists of Alpine Glacial Outwash deposits (Qapo(h)). The outwash on site is described as, "Outwash sand and gravel with minor silt and clay."

Available LiDAR imagery of the site did not reveal any obvious features of within the site or immediate vicinity.

The United States Department of Agriculture portal (USDA), provides a soil mapping of the region. The soils in the vicinity are mapped as Lacamas Silt Loam (118), these are formed by flood plains and terraces. The soils are described as silt loam from 0 to 17 inches, silty clay from 17 to 27 inches, and clay from 27 to 60+ inches. Depth to restrictive feature is more than 80 inches. Capacity of most limiting layer to transmit water (ksat), is listed as very low to moderately low (0.00 in/hr). Depth to water table is about 12 to 18 inches.

SITE INVESTIGATION METHODOLOGY

On 10/26/2021, a QG Staff Geologist visited the site to perform visual reconnaissance of the surface and topographic features of the subject property and its proximal slope. While on site, we conducted site surface explorations for a geologic hazard assessment and site feasibility characterization. Approximate relevant property dimensions were documented and mapped at representative intervals as access allowed. Soil conditions were evaluated through local exposures.

Exploration locations were marked in the field by an QG Project Geologist with respect to the provided map and cleared for public conductible utilities. Our exploration locations were selected by an QG Project Geologist prior to field work to provide safest access to relevant soil conditions. The geologist directed the advancement of 2 test pit locations (TP). The test pits were advanced within the vicinity of the anticipated development, to depths up to 10 feet below present grade (BPG). Deeper depths could not be achieved due to equipment capabilities and in general accordance with the specified contract depth.

During explorations QG logged each soil horizon we encountered, and field classified them in accordance with the Unified Soil Classification System (USCS Representative soil samples were collected from each unit, identified according to boring location and depth, placed in plastic bags to protect against moisture loss, and were transported to the soil laboratory for supplemental classification and other tests.

SURFACE OBSERVATION

The site is adjacent to an established residential neighborhood. The site parcel currently has two structures on it that were used for educational purposes and is a developed lot with neighboring residences within the vicinity. The site is generally flat and is vegetated with grass, small shrubs and trees.

SUBSURFACE CONDITIONS:

Site soils were generally consistent across the property. Beneath sod, shallow soil unit, soils were identified as a horizon of fat clay with sand native material. These soils were in a generally medium dense condition and presented a single layer with intermixed organic fines. These soils are relatively clean native fat clay with sand unit, with minor gravel. This unit appears to extend past the maxim extent of our exploration depths. Soils appear to resemble the mapped glacial outwash unit.

DISCUSSION & RECOMMENDATIONS

The findings of QG's site reconnaissance at the subject site appear broadly consistent with available geologic literature and do not indicate any excessively prohibitive conditions exist for the site, assuming appropriate site management efforts are maintained.

Based on the information herein, QG provides the following development- and site-specific recommendations.

Gradation Analysis Methods and Results

During test pit excavations for general site investigation, QG additionally collected representative samples of native soil deposits among potential infiltration strata and depths. Representative soil samples were selected from the northwest corner of the site (where an infiltration pond is proposed) to characterize the local infiltration conditions.

We understand the project will be subject to infiltration design based on the Washington Department of Ecology Stormwater Management Manual for Western Washington (DoE SMMWW). For initial site infiltration characterization within the scope of this study, laboratory gradation analyses were completed including sieve and hydrometer tests for stormwater design characterization and rate determination to supplement field observations. Results of laboratory testing in terms of rate calculation are summarized below.

Laboratory results were interpreted to recommended design inputs in accordance with methods of the 2019 DoE SMMWW. Gradation results were applied to the Massmann (2003) equation (1) to calculate Ksat representing the initial saturated hydraulic conductivity.

(1) log10(Ksat) = -1.57 + 1.90*D10 + 0.015*D60 - 0.013*D90 - 2.08*ff

Corrected Ksat values presented below are a product of the initial Ksat and correction factor CFT. For a generalized site-wide design situation, we have applied a site variability factor of CFv = 0.7 along with typical values of CFt = 0.4 (for the Grain Size Method) and CFm = 0.9 (assuming standard influent control).

(2) CFT = CFv x CFt x CFm = 0.7 x 0.4 x 0.9 = 0.25

Results were cross-referenced with test pit logs to determine the validity and suitability of unique materials as an infiltration receptor. Additional reduction factors were applied for practical rate determination based on our professional judgement.

Table 1. Results Of Massmann Analysis

TP #	**Sample Depth** *(BPG)*	**Unit Extent** *(ft)*	**Soil Type**	**D10**	**D60**	**D90**	**Fines** (%)	**Ksat** *(in/hr)*	**Corrected Ksat** *(in/hr)*	**LT Design Infiltration Rate***(in/hr)*	**Cation Exchange Capacity** (meq/100g)	**Organic Content %**
1	2.0	1 to 10+	CH	0.004	0.1	0.14	83.5	0.71	0.177	**0.117**	18.4	3.1
1	4.0	1 to 10+	CH	0.002	0.1	0.12	85.9	0.63	8.74	**0.157**	29.3	2.1

Beneath topsoils, the lower brown-gray soils were observed to generally exhibit excessive fines content and moderate oxidation patterns. In-ground infiltration structures are required to maintain a minimum separation from restrictive soil & groundwater features. **Based on the elevated fine-grained soil content, we do not recommend the client use conventional inground infiltration galleries, such as deep trenches or drywells.**

Often, projects are required to utilize some form of infiltration regardless of site conditions. Alternatives to conventional in ground infiltration include the use of rain gardens, bio-swales, pervious pavement, or dispersion, which can be considered at the discretion of the designer and client depending on final development needs and constraints. Even in such restrictive soils, often lateral dispersion and evapotranspiration can allow for a minimal amount of hydraulic conductivity to be accounted for. Such methods should only be utilized across and near surfaces with a slope grade at or less than a 3H:1V, to avoid potential erosion. For shallow infiltration features (anything less than 2 feet deep) **we recommend a maximum design rate of up to 0.117 inch/hour be considered**, which is often minimally suitable for shallow infiltration features. Additionally, the stormwater controls shall have overflow protection that will prevent any overflow runoff from flowing directly toward structures, incorporating appropriate energy reducing features at the outfall location. Soils within the proposed stormwater control area should be protected throughout the construction process from any traffic, stockpiling, or disturbances beyond what is necessary for the facility installation.

QG recommends the facility designer review these results and stated assumptions per reference literature to ensure applicability with the proposed development, level of anticipated controls, and long- term maintenance plan. The designer may make reasonable adjustments to correction factors and the resulting design values based on these criteria to ensure design and operational intent is met. We recommend that we be contacted if substantial changes to rate determination are considered.

Treatment Potential:

Depending on stormwater and runoff sources, some stormwater features, such as rain gardens or pervious pavements may require treatment. Stormwater facilities utilizing native soils as treatment media typically require Cation Exchange Capacities (CEC) of greater than 5 milliequivalents per 100grams (meq/100g) and organic contents greater than 1% (this may vary depending on local code). The underlying brown, gray clays did meet these treatment standards.

Drainage Controls:

QG recommends proper drainage controls for stormwater runoff during and after site development to protect the site. The ground surface adjacent to structures should be sloped to drain away at a 5% minimum to prevent ponding of water adjacent to them.

QG recommends all roof and footing water sources (new or existing) be tightlined (piped) away from the upland site to an existing catch basin, stormwater system, established channel, or down the slope to be released beyond the base using appropriate energy-dissipating features at the outfall to minimize point erosion. Roof and footing drains should be tightlined separately or should be gathered in an appropriately sized catch basin structure and redistributed collectively. If storm drains are incorporated for impervious flatworks (driveways, patios, etc.), collected waters should also be discharged according to the above recommendations. All drainage tightlines should be composed of appropriately sturdy material (such as rigid PVC), sized adequately according to anticipated flow, and anchored sufficiently. QG recommends slope tightlines be inspected by the owner periodically to look for signs of damage or displacement requiring repair.

Impervious Pavement Considerations:

QG anticipates most pavements will be constructed of flexible Hot Mix Asphalt surfacing, with thickened sections for anticipated heavy load areas. The main entrance/exit drive will likely experience different traffic volumes than the far end of the pavement areas. As a result, consideration could be given to increasing the pavement section in the main entrance/exit drive.

Pavement sections presented in the above table should not be used for areas which experience repeated truck traffic/parking, equipment or truck parking areas, entrances and exit aprons, or contain trash dumpster loading zones. In these areas, a Portland Cement Concrete (PCC) pavement should be used, as opposed to HMA.

One of the important considerations in designing a high quality and durable pavement is providing adequate drainage. Design of drainage for the proposed pavement section is outside of QG 's scope of work at this time. It is important that bird baths (leeching basins) and surface waves are not created during construction of the HMA layer. A proper slope should also be allowed, and drainage should be provided along the edges of pavements and around catch basins to prevent accumulation of free water within the base course, which otherwise may result in subgrade softening and pavement deterioration under exposure and repeated traffic conditions.

All pavements require regular maintenance and repair in order to maintain the serviceability of the pavement. These repairs and maintenance are due to normal wear and tear of the pavement surface and are required in order to extend the serviceability life of the pavement. However, after 10 years of service, a normal pavement structure is likely to deteriorate to a point where pavement rehabilitation may be required to maintain the serviceability. The deterioration is more likely if the pavement is constructed over poor subgrade soils or in area of higher traffic volumes.

Rigid pavement components are commonly utilized for portions of accesses and ancillary exterior improvements. The project civil designer may re-evaluate the below general recommendations for pavement thicknesses and base sections, if necessary, to ensure proper application to a given structure and use. QG recommends that we be contacted for further consultation if the below sections are proposed to be reduced.

Concrete driveway aprons and curb alignments, if utilized, should consist of a minimum 6-inch thickness of unreinforced concrete pavement over structural base fill. Base thickness should correspond to related location and anticipated traffic loading. For light traffic areas, a 6-inch minimum base thickness (total 12-inch section) can be applied. For heavy traffic zones, we recommend allotting a 12- inch minimum base section beneath the pavement, or the incorporation of reinforcing steel in the concrete.

Concrete sidewalks, walkways and patios if present may consist of a minimum 4-inch section of plain concrete (unreinforced) installed over a 6-inch minimum compacted base of crushed rock. At locations where grade has been raised with structural fill, a 4-inch minimum crushed rock section may be used. Flatworks should employ frequent joint controls to limit cracking potential.

Pervious / Permeable Pavement:

Site soil conditions appear generally amenable for pervious pavement surfaces, if necessary, to meet local stormwater code. Based on our infiltration and laboratory analysis, both rigid and flexible pervious pavement sections appear feasible.

The following recommendations are not given to serve as an engineering design but are given to assure that minimum adequate drainage is maintained for site features in relation to the present soil types, and do not reflect assumed ESALs, anticipated traffic loads, or rutting. These should be considered by the project civil site designer prior to finalizing their engineering design, as well as considering the local municipal code requirements, or material manufacturer/supplier specifications. Alternatives may be utilized at the civil engineer's discretion.

Table 2: Preliminary Pervious Pavement Considerations

Scenario	Pavement Type	Pavement Thickness (in)	Permeable Ballast (in)	Drainage Course (in)	Non-woven Fabric? (Y/N)
Car Access/Parking (Flexible)	Pervious Asphalt	4.0	2.0	10.0	Yes
Truck Access/Parking (rigid)	Pervious Concrete	7.0	2.0	12.0	Yes

Organic topsoils and the silty shallow soils shall be removed from proposed pavement areas. Construction traffic over subgrades intended for pervious pavements should be limited as much as possible to prevent over-compaction and degradation of infiltration characteristics within these areas. Prior to placement of pavement sections, native subgrade should be adequately compacted to prevent settlement, but not so excessively that infiltration becomes infeasible.

Pervious pavement sections should consist of an unreinforced layer of pervious asphaltic concrete (PAC) for car access, or pervious cementitious concrete (PCC) for heavy truck access, overlaying a leveling course of crushed permable ballast over a basal drainage course separated from in place native subgrade soils by a non-woven geotextile fabric. The drainage and leveling courses shall be gently compacted to allow for the maximum settlement of grains within the section. Excessive compaction of the pavement during placement should be avoided. Material type and thickness should correspond to related location and anticipated use as detailed in Table 3.

Geotextile fabric shall meet section 9-33.2(1), tables 1 and 2: Geotextile for Underground Drainage, from the WSDOT Standard Specifications. Aggregate within the leveling course shall be crushed, angular, relatively clean, and conform to the most recent WSDOT standard specification for Permeable Ballast (WSDOT section 9-03.9(2)), or an approved free draining alternative. The aggregate within the underlying drainage course shall conform to WSDOT Standard Specification *9-03.12(5) - Gravel Backfill for Drywells, or specification 9-03.12(4) Gravel Backfill for Drains* (or an approved alternative). Alternatively, the entire drainage course and leveling course may jointly be composed of WSDOT Permeable Ballast. Pervious pavement materials shall conform to those specified by the project civil designer and the supplying manufacturer and yield a minimum infiltration rate of 100 inches-per-hour when tested at any location per the procedures outlined in *ASTM C 1701-09, Infiltration Rate of In-Place Pervious Concrete*.

We recommend that the placement of material be monitored by a representative of QG to ensure proper placement and thickness.

Flexible Pavement

Washington Department of Transportation (WSDOT) Pavement Policy was used to provide the pavement section recommendations for the proposed roadway developments. Based on the overall size of the planned roadway, we assumed typically low traffic. Table 4 includes preliminary recommendations for impervious hot-mix asphalt (HMA) pavement and base course thickness for the new roadway. This recommendation assumes that the subgrade will be prepared following the recommendations provided in this report and the traffic assumptions are valid.

Table 3: Preliminary Pavement Design Recommendations for Roadway

Pavement Layer Type	Minimum Thickness, inches	WSDOT Specifications
Hot-Mix Asphalt	4	Section 5.4.4
Base Course (Dense Graded)	8	Section 5.4.4

These calculated sections should be considered preliminary until verifying the parameters, traffic loading, and assumed grading are applicable to the final project design. We recommend pavement sections be reviewed by the project designer, who may apply an alternative section for final project use based on the conditions reported herein and final design and construction preferences.

The main entrance/exit drive will likely experience different traffic volumes than the far end of the pavement areas. As a result, consideration could be given to increasing the pavement section in the main entrance/exit drive. Pavement sections presented in the above table should not be used for areas which experience repeated truck traffic/parking, equipment or truck parking areas, entrances and exit aprons, or contain trash dumpster loading zones. In these areas, a Portland Cement Concrete (PCC) pavement should be used.

One of the important considerations in designing a high quality and durable pavement is providing adequate drainage. Design of drainage for the proposed pavement section is outside of QG 's scope of work at this time. It is important that bird baths (leeching basins) and surface waves are not created during construction of the HMA layer. A proper slope should also be allowed, and drainage should be provided along the edges of pavements and around catch basins to prevent accumulation of free water within the base course, which otherwise may result in subgrade softening and pavement deterioration under exposure and repeated traffic conditions.

All pavements require regular maintenance and repair in order to maintain the serviceability of the pavement. These repairs and maintenance are due to normal wear and tear of the pavement surface and are required in order to extend the serviceability life of the pavement. However, after 10 years of service, a normal pavement structure is likely to deteriorate to a point where pavement rehabilitation may be required to maintain the serviceability. The deterioration is more likely if the pavement is constructed over poor subgrade soils or in area of higher traffic volumes.

Rigid Pavement

Rigid pavement components are commonly utilized for portions of accesses and ancillary exterior improvements. The project civil design engineer may reevaluate the general recommendations outlined below for pavement thicknesses and base sections, if necessary, to ensure proper application to a given structure and use. QG recommends that we be contacted for further consultation if the below sections are proposed to be reduced.

Concrete driveway aprons and curb alignments, if utilized, shall consist of a minimum 6-inch thickness of unreinforced concrete pavement over structural base fill. Base thickness shall correspond to related location and anticipated traffic loading. For light traffic areas, a 6-inch minimum base thickness (total 12-inch section) over geogrid can be applied. For heavy traffic zones, we recommend allotting a 12-inch minimum base section.

For other paved areas which experience repeated truck traffic, equipment or truck parking areas, entrances and exit aprons, or contain trash dumpster loading zones, a Portland Cement Concrete (PCC) pavement should be used. The PCC layer thickness is recommended to be 8.0 inches with a minimum of 6.0 inches thick crushed stone base course over suitably firm subgrade or geogrid, but may be modified depending on the final design. The reinforcement details for PCC layers shall be designed by the project design engineer as the project conditions dictate.

Concrete sidewalks, walkways and patios if present may consist of a minimum 4-inch section of plain concrete (unreinforced) installed over a 6-inch minimum compacted base of crushed rock over suitably firm subgrade or geogrid.

Specifications for concrete aprons and flatworks are sometimes predetermined by the local municipality, and may conflict with the above. In this case, we recommend either adhering to the more stringent option, or contacting QG for clarification.

CLOSING:

We trust this letter satisfies your project needs currently and thank you for the opportunity to be of service. QG wishes you the best while completing the project.

Respectfully Submitted,

Quality Geo NW, PLLC

State of Washington
Engineering Geologist
19110623
Licensed Geologist
LUKE PRESTON MCCANN

12/2/2021

Luke Preston McCann, L.E.G.
Principal Licensed Engineering Geologist

Ray Gean II
Staff Geologist/Project Manager

Attachments: *Limitations*
Appendix A. Aerial Site Map
Appendix B. Exploration Logs
Appendix C. Laboratory Results

LIMITATIONS

Upon acceptance and use of this report, and its interpretations and recommendations, the user shall agree to indemnify and hold harmless QG, including its owners, employees and subcontractors, from any adverse effects resulting from development and occupation of the subject site. Ultimately, it is the owner's choice to develop and live in such an area of possible geohazards (which exist in perpetuity across the earth in one form or another), and therefore the future consequences, both anticipated and unknown, are solely the responsibility of the owner. By using this report for development of the subject property, the owner must accept and understand that it is not possible to fully anticipate all inherent risks of development. The recommendations provided above are intended to reduce (but may not eliminate) such risks.

This report does not represent a construction specification or engineered plan and shall not be used or referenced as such. The information included in this report should be considered supplemental to the requirements contained in the project plans & specifications and should be read in conjunction with the above referenced information. The selected recommendations presented in this report are intended to inform only the specific corresponding subjects. All other requirements of the above-mentioned items remain valid, unless otherwise specified.

Recommendations contained in this report are based on our understanding of the proposed development and construction activities, field observations and explorations, and laboratory test results. It is possible that soil and groundwater conditions could vary and differ between or beyond the points explored. If soil or groundwater conditions are encountered during construction that differ from those described herein, or if the scope of the proposed construction changes from that described in this report, QG should be notified immediately in order to review and provide supplemental recommendations.

The findings of this study are limited by the level of scope applied. We have prepared this report in substantial accordance with the generally accepted geotechnical engineering practice as it exists in the subject region. No warranty, expressed or implied, is made. The recommendations provided in this report assume that an adequate program of tests and observations will be conducted by a WABO approved special inspection firm during the construction phase in order to evaluate compliance with our recommendations.

This report may be used only by the Client and their design consultants and only for the purposes stated within a reasonable time from its issuance, but in no event later than 18 months from the date of the report. It is the Client's responsibility to ensure that the Designer, Contractor, Subcontractors, etc. are made aware of this report in its entirety. Note that if another firm assumes Geotechnical Engineer of Record responsibilities, they need to review this report and either concur with the findings, conclusions, and recommendations or provide alternate findings, conclusions and recommendation.

Land or facility use, on- and off-site conditions, regulations, or other factors may change over time, and additional work may be required. Based on the intended use of the report, QG may recommend that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the Client or anyone else will release QG from any liability resulting from the use of this report. The Client, the design consultants, and any unauthorized party, agree to defend, indemnify, and hold harmless QG from any claim or liability associated with such unauthorized use or non-compliance. We recommend that QG be given the opportunity to review the final project plans and specifications to evaluate if our recommendations have been properly interpreted. We assume no responsibility for misinterpretation of our recommendations.

Appendix A. Aerial Site Map

Quality Geo NW, PLLC	**Site Map** Historic Schools	Source: Google, 2021 Scale & Locations are approx. Not for Construction	**Figure 1**

Appendix B. Exploration Logs

TEST PIT LOG TP-1

PROJECT NUMBER QG21-143
PROJECT NAME Historic Schools
PROJECT LOCATION Chehalis, WA

FIELD WORK DATE 10/26/2021
DRILLING METHOD Excavated Test Pit

BORING LOCATION NW side of grass field
SURFACE ELEVATION Existing
LOGGED BY RG

COMMENTS

Depth (ft)	Samples	Is Analysed?	Graphic Log	USCS	Material Description
0–1				TS	TOPSOIL, sod
1–10				CH	FAT CLAY WITH SAND. Brown-gray color, moist, organics, minor cobble, medium dense to dense. Mottling observed at 3.5 feet. Gravel %=0.3 Sand%=31 Fines%=84
10					Termination Depth at 10.0 Feet. Terminated at Contracted Depth No Groundwater Encountered

Quality Geo, PLLC - Ph: 360-878-9705, qualitygeonw.com, 420 Golf Club Rd, Ste 203, Lacey, WA 98503 Page 1 of 1
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TEST PIT LOG TP-2

PROJECT NUMBER QG21-143
PROJECT NAME Historic Schools
PROJECT LOCATION Chehalis, WA

FIELD WORK DATE 10/26/2021
DRILLING METHOD Excavated Test Pit

BORING LOCATION SE side of grass field
SURFACE ELEVATION Existing
LOGGED BY RG

COMMENTS

Depth (ft)	Samples	Is Analysed?	Graphic Log	USCS	Material Description
0–1				TS	TOPSOIL, sod
1–10				CH	FAT CLAY WITH SAND. Brown-gray color, moist, organics, minor cobble, medium dense to dense. Mottling observed at 2.0 feet. Gravel %=0.3 Sand%=31 Fines%=84
10					Termination Depth at 10.0 Feet. Terminated at Contracted Depth No Groundwater Encountered

Appendix C. Laboratory Results

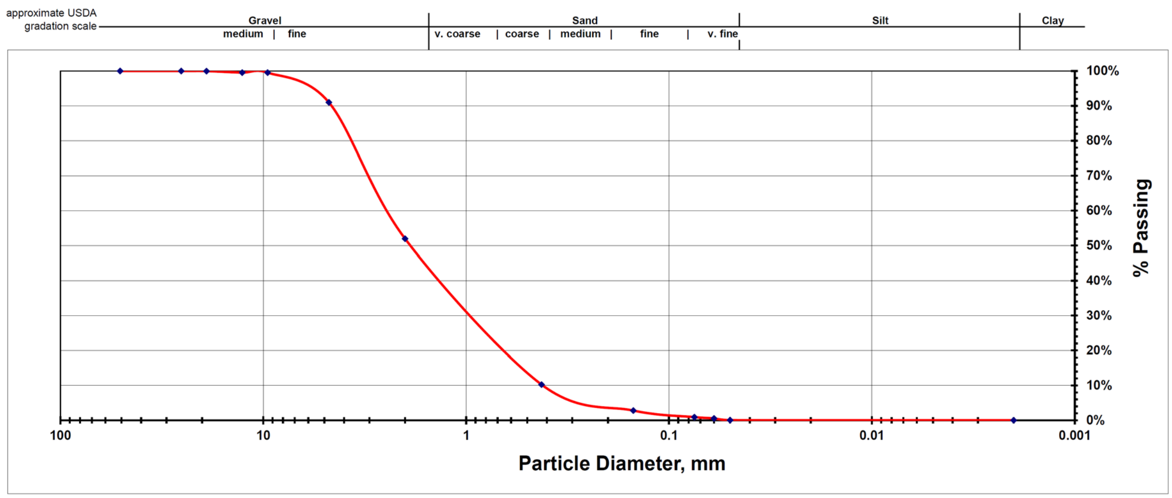
soiltest
farm consultants, inc.
2925 Driggs Dr., Moses Lake, Wa 98837 - www.soiltestlab.com
Office: (509)765-1622 - Fax:(509)765-0314 - (800)764-1622

PARTICLE SIZE DISTRIBUTION REPORT

CLIENT: Quality Geo NW
PROJECT: Historic Schools - QG21-143
Lab # S21-26084

Date Received 11/1/2021
Date Reported 11/4/2021
Test Method: ASTM D2487/ D 422

SAMPLE ID: TP-1@ 2'



description	CoCr	CoGr	MedGr	MedGr	MedGr	FiGr	vCoS	MedS	FiS	vFiS	(% of Whole Sample Passing last Sieve) Hydrometer Method			Sand	Gravel
seive #	2"	1"	3/4"	1/2"	3/8"	4	10	40	100	200					
diameter, mm	50.8	25.4	19.05	12.70	9.53	4.75	2.00	0.425	0.150	0.075	0.060	0.050	0.002	Total	Total
Retained	0.0%	0.0%	0.0%	0.4%	0.0%	8.5%	39.0%	41.7%	7.5%	1.9%	0.4%	0.5%	0.1%	90.4%	9.0%
Passing	100%	100%	100%	99.5%	99.5%	91.0%	52.0%	10.3%	2.8%	0.9%					

Graph Values		
	D_{90}	5
	D_{60}	2.8
	D_{30}	1.00
	D_{10}	0.420

Coefficient of Uniformity: 6.7
Coefficient of Gradation: 0.85

	Sand	Silt	Clay
% of Sample < 2mm	39%	55%	6%

USDA TEXTURAL CLASSIFICATION of FRACTION PASSING 2mm SEIVE: **SILT LOAM**

OM (LOI 360) 3.1 %
CEC 18.4 meq/100g

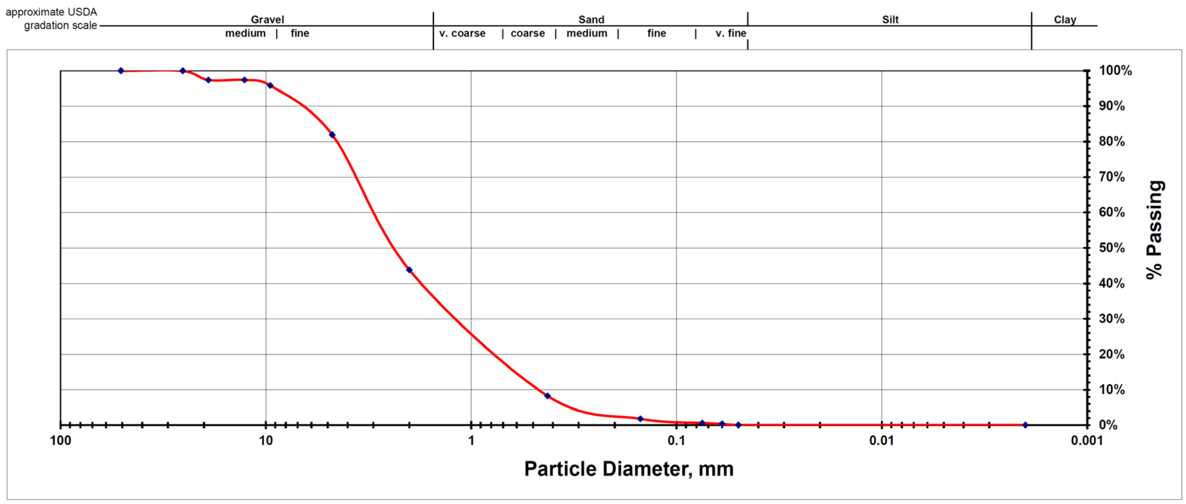
Reviewed by: BCT Date: 11/4/2021

soiltest farm consultants, inc.
2925 Driggs Dr., Moses Lake, Wa 98837 - www.soiltestlab.com
Office: (509)765-1622 - Fax:(509)765-0314 - (800)764-1622

PARTICLE SIZE DISTRIBUTION REPORT

CLIENT:	Quality Geo NW	Date Received	11/1/2021
PROJECT:	Historic Schools - QG21-143	Date Reported	11/4/2021
Lab #	S21-26085	Test Method:	ASTM D2487/ D 422

SAMPLE ID: TP-1 @ 4'



description	CoCr	CoGr	MedGr	MedGr	MedGr	FiGr	vCoS	MedS	FiS	vFiS	(% of Whole Sample Passing last Sieve) Hydrometer Method			Sand	Gravel
seive #	2"	1"	3/4"	1/2"	3/8"	4	10	40	100	200					
diameter, mm	50.8	25.4	19.05	12.70	9.53	4.75	2.00	0.425	0.150	0.075	0.060	0.050	0.002	Total	Total
Retained	0.0%	0.0%	2.6%	0.0%	1.6%	13.9%	38.1%	35.5%	6.5%	1.2%	0.2%	0.3%	0.0%	81.5%	18.1%
Passing	100%	100%	97%	97.4%	95.8%	81.9%	43.8%	8.3%	1.8%	0.6%					

Graph Values

D_{90}	7
D_{60}	3.0
D_{30}	1.40
D_{10}	0.450

Coefficient of Uniformity: 6.7
Coefficient of Gradation: 1.45

	Sand	Silt	Clay
% of Sample < 2mm	39%	55%	6%

USDA TEXTURAL CLASSIFICATION of FRACTION PASSING 2mm SEIVE: SILT LOAM

OM (LOI 360) 2.1 %
CEC 29.3 meq/100g

Reviewed by: BCT Date: 11/4/2021