# Appendix A2 Landslide Hazard Assessment Prepared by Associated Earth Science, Inc.

September 24, 2019



September 24, 2019 Project No. 180070E001

Issaquah School District 5150 220<sup>th</sup> Avenue SE Issaquah, Washington 98029

Attention: Mr. Tom Mullins

Subject: Landslide Hazard Assessment Issaquah High School #4 and Elementary School #17 4221 228<sup>th</sup> Avenue SE Issaquah, Washington

Dear Mr. Mullins:

We are pleased to present the findings of the landslide hazard assessment completed for the subject project. This report has been prepared for the exclusive use of the Issaquah School District, and their authorized agents, for specific application to this project. No other warranty, express or implied, is made.

#### SITE AND PROJECT DESCRIPTION

The subject site is comprised of three parcels totaling approximately 40 acres located at 4441, 4443, and 4461 228<sup>th</sup> Avenue SE in Issaquah, Washington (King County Parcel Nos. 1624069001, 1624069029, and 1624069031). The location of the site is shown on the "Vicinity Map," Figure 1.

As shown on Figure 2, a relatively flat to gently sloping plateau is located in the central portion of the property. From this plateau, the topography generally slopes down toward the northeast, east, south, and southwest. Elevations on the property range from a low of approximately 415 feet near the northeastern corner of the site to a maximum of approximately 526 feet in the southern portion of the site. Slope inclinations on the flanks of the plateau are generally about 30 percent or less, but steepen to approximately 40 to 50 percent over a maximum height of approximately 30 feet near the southeast corner of the property. This area classifies as a Steep Slope Hazard Area under the *Issaquah Municipal Code* (IMC). The central portion of the property was previously developed with a church, dormitories, and accessory buildings. These structures were demolished in early 2019. Grading associated with the demolition has resulted in some localized areas of steep slopes in the areas of the former structures. Maximum slope inclinations in these areas were visually estimated to be up to approximately 2H:1V (Horizontal:Vertical).

The central plateau area, including the area of the demolished buildings, generally consists of bare or sparsely vegetated ground with some scattered trees and areas of asphalt pavement. The remainder of the site generally consists of mixed coniferous/deciduous forest with some access roads. A water tank is located in a forested area near the south end of the plateau. The locations of the former buildings and other prominent site features are shown on the 2017 aerial photo included as Figure 2. The topographic contours included on Figure 2 are based on Light Detection and Ranging (LIDAR) data and are representative of conditions prior to building demolition.

Based on review of civil plan sheets prepared by AHBL, dated May 20, 2019, we understand that preliminary development plans for the site consist of a new high school and elementary school. The high school and elementary school buildings will be located in the southern and western portions of the site, respectively. The high school will have a football field and track, baseball and softball fields, tennis courts above a parking structure, surface parking, and space for future portable classrooms. The elementary school will have play areas, surface parking, and space for future portable classrooms. The proposed facility layout is shown in Figure 3.

Maximum cuts for the project will be up to approximately 17 to 18 feet and will be located in the southern portion of the site in the area of the proposed high school building. A maximum fill depth of approximately 41 feet will be located in the northeastern portion of the site in the area of the proposed baseball field. We understand that conceptual plans include the use of mechanically stabilized earth (MSE) walls to facilitate proposed grade changes in some areas.

#### SUBSURFACE EXPLORATION

Our field study included advancing 31 exploration pits and 12 exploration borings at the site. This information was supplemented by 20 additional exploration pits completed at the site for previous geotechnical studies by Terra Associates, Inc. (Terra) in July 2015 and by Earth Solutions NW (ESNW) in May 2014. These exploration logs were included in a report titled "Geotechnical Report, Madison Pointe," prepared by Terra for Murray Franklyn Companies, Project No. T7252, dated March 18, 2016. A copy of the Terra report was provided to us by the District. It should be noted that the log of ESNW exploration pit TP-2 was not included in the Terra report. The approximate locations of the explorations are shown on Figures 2 and 3. The conclusions and recommendations presented in our report are based on the explorations completed for this study. The number, locations, and depths of our explorations were completed within site and budgetary constraints. Copies of the exploration logs are included in Appendix A.

Because of the nature of exploratory work below ground, extrapolation of subsurface conditions between field explorations is necessary. It should be noted that subsurface conditions between the explorations may differ from those inferred by the boring data due to the random nature of deposition and the alteration of topography by past grading and/or filling. The nature and extent of any variations between the field explorations may not become fully evident until construction. If

variations are observed at that time, it may be necessary to re-evaluate specific recommendations in this report and make appropriate changes.

#### **Exploration Pits**

The exploration pits were excavated using a track-mounted excavator. The pits permitted direct, visual observation of subsurface conditions. Materials encountered in the exploration pits were studied and classified in the field by an engineering geologist from our firm. All of the exploration pits were backfilled immediately after examination and logging. Samples collected from the exploration pits were classified in the field and representative portions placed in watertight containers. The samples were then transported to our laboratory for further visual classification and laboratory testing.

#### **Exploration Borings**

The exploration borings drilled for our study were completed using a track-mounted, hollow-stem auger drill rig. During the drilling process, samples were generally obtained at 2.5- to 5-foot-depth intervals. The exploration borings were continuously observed and logged by an engineering geologist from our firm. The exploration logs presented in Appendix A are based on the field logs, drilling action, and review of the samples collected.

Disturbed, but representative samples were obtained by using the Standard Penetration Test (SPT) procedure in accordance with *American Society for Testing and Materials* (ASTM) D-1586. This test and sampling method consists of driving a standard 2-inch, outside-diameter, split-barrel sampler a distance of 18 inches into the soil with a 140-pound hammer free-falling a distance of 30 inches. The number of blows for each 6-inch interval is recorded, and the number of blows required to drive the sampler the final 12 inches is known as the Standard Penetration Resistance ("N") or blow count. If a total of 50 is recorded within one 6-inch interval, the blow count is recorded as the number of blows for the corresponding number of inches of penetration. The resistance, or N-value, provides a measure of the relative density of granular soils or the relative consistency of cohesive soils; these values are plotted on the boring logs in Appendix A.

The samples obtained from the split-barrel sampler were classified in the field and representative portions placed in watertight containers. The samples were then transported to our laboratory for further visual classification.

#### Stratigraphy

Detailed descriptions of the sediments encountered in each of the borings are provided on the exploration logs in Appendix A. The explorations generally encountered natural sediments consisting of granular, glacial sediments underlain by weathered sedimentary rock. Fine-grained glacial sediments and/or glacially consolidated non-glacial sediments were also encountered in some locations. In some areas of the site, the natural deposits were overlain by fill soils. The

following section presents more detailed subsurface information organized from the shallowest (youngest) to the deepest (oldest) sediment types.

#### Fill

Fill soils (those not naturally deposited) were encountered in 11 of the explorations at the site. Where encountered, the existing fill generally consisted of loose to dense, gravelly, silty to very silty sand. Portions of the fill contained trace to abundant quantities of wood debris. In general, the areas where existing fill soils were encountered were located near the former buildings, pavement areas, and property margins. Where encountered in our explorations, the existing fill soils ranged in thickness from approximately 1 to 9 feet. The thicknesses of the existing fill soils encountered in the explorations are summarized in Table 1.

Exploration	Fill Thickness (feet)					
EP-7	1					
EP-8	8					
EP-9	1					
EP-11	6					
EP-16	4					
EP-18	2					
EB-4	2.5					
EB-8	4.5					
EB-9	2.5					
TP-6 (Terra, 2015)	1					
TP-5 (ESNW, 2014)	9					

Table 1
Summary of Observed Fill Thicknesses

#### Forest Duff/Topsoil

A surficial forest duff/topsoil horizon was encountered in most of our explorations located outside of areas of existing fill or asphalt pavement. Where encountered in our explorations, the thickness of the forest duff/topsoil horizon generally ranged from approximately 2 to 8 inches. Organic topsoil thicknesses shown on the Terra and ESNW exploration logs generally ranged from approximately 6 inches to 2 feet.

#### Vashon Lodgement Till

With the exception of exploration pit EP-4, the natural sediments encountered in our exploration pits either directly below the ground surface, the surficial topsoil horizon, or the surficial fill layer generally consisted of loose to medium dense, non-stratified, silty to very silty, gravelly sand with

scattered cobbles. These sediments typically became dense to very dense below depths ranging from approximately 6 inches to 6 feet. We interpret these sediments to be representative of Vashon lodgement till. The Vashon lodgement till was deposited directly from basal, debris-laden, glacial ice during the Vashon Stade of the Fraser Glaciation, approximately 12,500 to 15,000 years ago. The high relative density characteristic of the Vashon lodgement till is due to its consolidation by the massive weight of the glacial ice from which it was deposited. The reduced density observed in the upper portion of the till is interpreted to be due to weathering.

Lodgement till sediments were also encountered in the upper portions of exploration borings EB-1, EB-2, EB-5 through EB-9, EB-11, and EB-12, and appear to have been encountered in all of the ESNW and Terra exploration pits except Terra pit TP-6. The Terra and ESNW exploration logs do not consistently identify the geologic units encountered. However, in their report, Terra describes these sediments as consisting of lodgement till. At the locations of exploration borings EB-5, EB-8, EB-11, and EB-12, and in Terra pits TP-4, TP-5, and TP-8, the till extended to depths ranging from approximately 2 to 28 feet. Where encountered elsewhere in the explorations, the till extended beyond the maximum depths explored of approximately 4.5 to 15.5 feet. Exploration borings EB-1, EB-2, and EB-7 met with driller refusal in the till at depths of approximately 10 to 15.5 feet. In addition to cobbles, lodgement till typically contains scattered boulders and the difficult drilling conditions encountered at these locations are likely due to the presence of boulders and/or clusters of cobbles in the till.

#### Vashon Ice Contact Sediments

Sediments encountered below the weathered till horizon in boring EB-12, approximately 2 feet below the ground surface, generally consisted of stiff to very stiff, fine sandy silt with trace to some gravel. We interpret these sediments to be representative of material deposited by meltwater in close proximity to the glacial ice during Vashon time. At the location of boring EB-12, the ice contact sediments extended to a depth of approximately 14.5 feet.

#### Olympia Non-Glacial Sediments

Sediments encountered at a depth of approximately 28 feet (below the Vashon lodgement till) in boring EB-11 generally consisted of very dense, tan-gray, fine to medium sand with moderate to high silt content. Below a depth of approximately 33.5 feet, the sediments of this geologic unit consisted of hard, tan silt with trace gravel. The silt was generally massive but contained scattered, thin, sandy lenses. Although we observed no clear, distinguishing features characteristic of a particular geologic unit, their color, gradation, and stratigraphic position below the lodgement till suggest that these sediments may be representative of material deposited during the Olympia non-glacial period. The Olympia non-glacial period occurred prior to the Fraser Glaciation, approximately 30,000 to 60,000 years ago. At the location of exploration boring EB-11, these sediments extended to a depth of approximately 48 feet.

#### Possession Drift

Sediments encountered below the Vashon lodgement till in boring EB-8 generally consisted of very stiff to hard, blue-gray silt. The silt was generally massive to laminated and contained scattered fine sand partings. These sediments effervesced in hydrochloric acid. We interpret these sediments to be representative of Possession Drift. The Possession Drift was deposited in a glaciomarine environment during the Possession Glaciation, approximately 60,000 to 80,000 years ago. At the location of boring EB-8, the Possession Drift extended beyond the maximum depth explored of approximately 26.5 feet.

#### Pre-Fraser Till

Sediments encountered below a depth of approximately 48 feet in boring EB-11 generally consisted of very dense, non-stratified, very silty, gravelly sand. Although these sediments appeared texturally similar to the Vashon lodgement till, their stratigraphic position below the suspected Olympia-aged non-glacial sediments indicate that they were deposited during a glacial period prior to the Fraser Glaciation. At the location of boring EB-11, the pre-Fraser till extended to a depth of approximately 68 feet.

#### Pre-Fraser Silt

Sediments encountered below the pre-Fraser till in boring EB-11 (below a depth of approximately 68 feet) generally consisted of hard silt with lenses and interbeds of very silty, fine sand. Based on their stratigraphic position below the pre-Fraser silt, deposition of these sediments also occurred prior to the Fraser Glaciation. These sediments were non-reactive in hydrochloric acid. At the location of boring EB-11, the pre-Fraser silt extended to a depth of approximately 80 feet.

#### Blakely Harbor Formation

Sediments encountered below the surficial topsoil horizon in exploration pit EP-4 consisted of loose, brown, very silty sand with some gravel and soft to medium stiff, yellowish-tan silt. These sediments became medium dense to dense below a depth of approximately 5.5 feet. The gravel-sized fraction of these sediments typically consisted of angular sedimentary rock. Similar sediments were encountered either directly below the surficial topsoil horizon, or below the lodgement till or pre-Fraser sediments in exploration borings EB-3 through EB-6, and EB-10 through EB-12. We interpret these sediments to be representative of the Blakely Harbor Formation. The Blakely Harbor Formation consists of a Miocene-aged sedimentary rock composed of sandstone, siltstone, conglomerate, tuff, and volcaniclastic sandstone. It is known to contain interbeds of coal, and in some locations, nearly coherent logs. Where encountered in our explorations, the bedrock was typically weathered and poorly lithified and exhibited physical characteristics more consistent with a non-lithified sediment than well indurated bedrock. However, the density/lithification of these sediments typically increased with depth. Sedimentary

rock is also noted on the exploration logs for Terra pits TP-4 through TP-6, and TP-8. At these locations, the bedrock was encountered at depths ranging from approximately 2.5 to 9 feet.

Exploration borings EB-4 through EB-6, EB-10, and EB-12 met with refusal in the bedrock at depths ranging from approximately 12 to 20 feet. Refusal depths and elevations for these boring locations are summarized below in Table 2. It should be noted that the refusal elevations shown in Table 2 were estimated from the LIDAR based topography shown on Figure 2. The elevations shown in Table 2 should be considered accurate to the degree implied by the methods used to estimate them.

Boring Number	Depth to Drilling Refusal (feet)	Apx. Drilling Refusal Elevation (feet)
EB-4	20	494
EB-5	14	506
EB-6	12	508
EB-10	20	445
EB-12	18	487

Table 2Summary of Drilling Refusal Depths in the Blakely Harbor Formation Bedrock

#### Geologic Map Review

Review of the regional geologic map titled *Geologic Map of the Issaquah 7.5' Quadrangle, King County, Washington*, by Booth and Minard (1992) indicates that the area of the site is underlain by Vashon lodgement till with Tertiary sedimentary rock mapped in portions of the southern and eastern parts of the site. Our interpretation of the sediments encountered in our explorations is consistent with the regional geologic map.

#### Hydrology

Slow to moderately rapid groundwater seepage was observed in 11 of the Associated Earth Sciences, Inc. (AESI) exploration pits. Seepage was also noted on three of the ESNW pits. Specifically, groundwater seepage was encountered in AESI exploration pits EP-4, EP-6, EP-10, EP-11, EP-13 through EP-15, EP-18, EP-19, EP-21, and EP-31, and in ESNW pits TP-1, TP-3, and TP-4. Generally, the seepage was limited to a thin, perched zone in the lower portion of the weathered till horizon within 4 feet of the ground surface. Similarly, shallow, perched seepage was encountered on the surface of the bedrock in exploration pit EP-4. This perched seepage, known as "interflow" occurs when stormwater infiltrates through the relatively permeable, weathered soil horizon and becomes perched atop the underlying, dense, low permeability, unweathered till or bedrock. Accumulation of interflow is typically a seasonal phenomenon. The exploration data indicates that the interflow is not laterally continuous across the site, but rather is limited to

relatively small isolated areas. Deeper perched seepage was encountered in exploration pit EP-6. At this location, the seepage was limited to a thin, perched zone in the unweathered till at a depth of approximately 7 feet. The occurrence or level of seepage below the site likely varies in response to changes in season, precipitation, and other factors.

#### LANDSLIDE HAZARDS AND RECOMMENDED MITIGATION

Slope inclinations on the site are generally about 30 percent or less, but steepen to approximately 40 to 50 percent over a maximum height of approximately 30 feet in a relatively small area located near the southeast corner of the property. Based on the morphology of the topography in this area, we interpret the steep slope to be a cut slope made for the construction of 228<sup>th</sup> Avenue SE and the south entrance road into the property.

Section 18.10.390 of the IMC defines Steep Slope Hazard Areas as any ground that rises at an inclination of 40 percent or more within a vertical elevation change of at least 10 feet. Section 18.10.580 of the IMC states that a buffer shall be established at a horizontal distance of 50 feet from the top, toe, and sides of Steep Slope Hazard Areas with an additional 15-foot building setback established from the edge of the buffer. The buffer may be reduced to a minimum of 10 feet upon acceptance by the City of a geotechnical study supporting the buffer reduction. Alteration of steep slopes are generally prohibited under the code with limited alterations allowed for trails, utilities, and surface water conveyance. The City may grant an exemption from the prohibition of steep slope alteration under the following conditions:

- 1. Where the height of a steep slope is 20 feet or less. In this case, an alteration may be granted upon review and acceptance by the City of a soils report prepared by a geologist or licensed geotechnical engineer demonstrating that no adverse impact will result from the exemption.
- 2. Where the slope has been created from previous legal grading activities. In this case, any remaining steep slope shall be subject to the protection mechanisms for steep slopes specified in the code.

Steep slope protection mechanisms specified in Section 18.10.580 of the IMC include a factor of safety of at least 1.5.

Review of the May 20, 2019 grading plans prepared by AHBL civil engineers indicates that the project will entail some grading of the steep slopes. A copy of the grading plan prepared for this area is shown in Figure 4. As previously stated, we interpret the steep slopes to consist of cut slopes associated with grading for construction of 228<sup>th</sup> Avenue SE and the entrance road into the property off of 228<sup>th</sup> Avenue SE. Consequently, alteration of these slopes is allowed under Section 18.10580D of the IMC, subject to the protection mechanisms specified in the code.

#### Slope Reconnaissance

We completed a reconnaissance of the steep slopes at the site at the time of our field exploration. During our reconnaissance of these areas, we did not observe any geomorphologic indications of historic landslide activity, such as tension cracks, landslide scarps, or hummocky topography. No emergent seepage or unusually deformed tree trunks indicative of historical or ongoing slope movement were observed.

#### LIDAR Mapping

LIDAR based imagery is a remote sensing technology that can be used to generate a detailed expression of ground surface topography even in densely vegetated areas. For this reason, LIDAR based topographic imagery can be helpful in distinguishing surface features (such as old landslide features) that may otherwise not be easily recognizable. A LIDAR based shaded relief map of the subject site is included as Figure 5. We did not observe any indications of historic landslide activity during our review of the LIDAR shaded relief map.

#### **Slope Stability Analysis**

An analysis of the global stability of the slope in the southeast corner of the site was conducted using the computer program SLOPE/W, version 7.23 by GeoSlope International. The program used the Morgenstern-Price method for evaluating a rotational failure. Input parameters for the analysis included slope geometry, geology, and soil strength parameters. The slope geometry used for our analysis was based on the topography depicted on the civil grading plan along section lines A-A' and B-B' (Figure 4). These sections extend through the steepest and highest portions of the slope. The following cases were analyzed for each of these two sections:

- Existing topographic conditions, static case.
- Existing topographic conditions, seismic case.
- Post-construction (post-grading) conditions, static case.
- Post-construction conditions, seismic case.

Subsurface exploration in this area indicates that the slope is underlain by bedrock with Vashon lodgement till overlying the bedrock in most areas. Because the shear strength of the bedrock is estimated to be equivalent to or stronger than the lodgement till, we conservatively assumed that the native sediments underlying the slope consist entirely of lodgement till. Soil strength parameters used for our analysis were assumed based on typical published values for lodgement till and our prior experience. The soil strength parameters used for our analysis are shown on the SLOPE/W profiles included in Appendix B. For evaluation of slope stability under seismic conditions, a horizontal ground acceleration of 0.26g was used for our analysis. This value is equivalent to ½ of the peak horizontal ground acceleration based on a seismic event with

a 2 percent probability of exceedance in 50 years in accordance with the 2015 *International Building Code* (IBC).

The stability of a slope can be expressed in terms of its factor of safety. The factor of safety of a slope is the ratio between the forces that resist sliding to the forces that drive sliding. For example, a factor of safety of 1.0 would indicate a slope where the driving forces and the resisting forces are exactly equal. Increasing factor of safety values greater than 1.0 indicate increased stability. Factors of safety below 1.0 indicate conditions where the driving forces exceed the resisting forces and landsliding is imminent.

Under static conditions, the minimum calculated factors of safety all exceeded the minimum value of 1.5 specified in the IMC. The IMC does not specify a minimum factor of safety for seismic conditions, but as a typical standard of practice, a factor of safety of 1.1 is generally considered to be a minimum acceptable value. The minimum factors of safety calculated for seismic conditions all exceeded a factor of safety of 1.5. The minimum calculated factors of safety are summarized below in Table 3. Copies of the results of the slope stability analysis are included in Appendix B.

Section Line	Case	Minimum Factor of Safety				
A-A'	Existing Static	2.43				
A-A'	Existing Seismic	1.52				
A-A'	Post-Construction Static	3.69				
A-A'	Post-Construction Seismic	2.13				
B-B'	Existing Static	2.64				
B-B'	Existing Seismic	1.62				
B-B'	Post-Construction Static	2.65				
B-B'	Post-Construction Seismic	1.61				

 Table 3

 Summary of Minimum Calculated Factors of Safety

#### Landslide Hazard Mitigation

Based on our observations and analyses, it is our opinion that the risk of damage to the proposed project by landsliding on the steep slope is low under both static and seismic conditions, with minimum calculated factors of safety exceeding the minimum acceptable value specified in the IMC. This opinion assumes that construction practices for the project will be completed in accordance with the recommendations presented in this report. We recommend that stormwater discharge on or adjacent to the top of the steep slope be avoided as it could increase the potential for accelerated erosion and negatively impact the stability of the slope.

As previously discussed, some areas of steep slope were generated during grading associated with the demolition of the former buildings. Post-demolition topography is not included on the project grading plans and, therefore, these steep slopes are not shown. However, the current grading plans indicate that grading proposed for the project will eliminate any steep slopes resulting from the demolition activities. At the time this report was prepared, development plans for the project were conceptual. We recommend that AESI review the final plans to verify that they comply with our recommendations.

We appreciate this opportunity to be of continued service to you with your project. Should you have any questions, please contact us at your convenience.

Sincerely, ASSOCIATED EARTH SCIENCES, INC. Kirkland, Washington

Timothy L. Peter, L.E.G., L.Hg. Senior Geologist

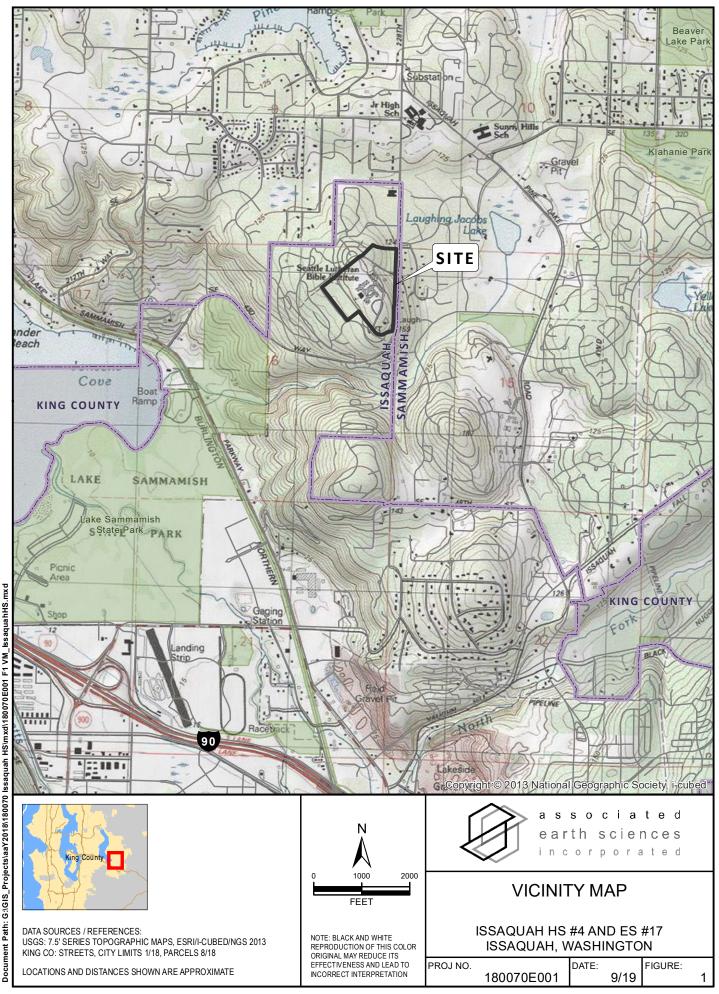
Stephen A. Siebert, P.E. Associate Geotechnical Engineer



Kurt D. Merriman, P.E. Senior Principal Engineer

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Figure 1:	Vicinity Map
Figure 2:	2017 Aerial, LIDAR Based Contours
Figure 3:	Site and Exploration Plan
Figure 4:	Steep Slope Areas
Figure 5:	LIDAR Shaded Relief Map
Appendix A:	Exploration Logs
Appendix B:	SLOPE/W Profiles



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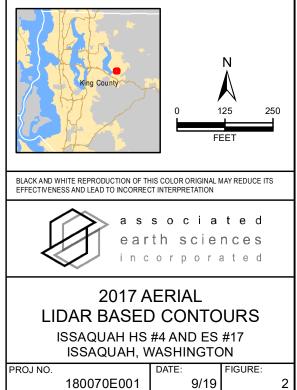
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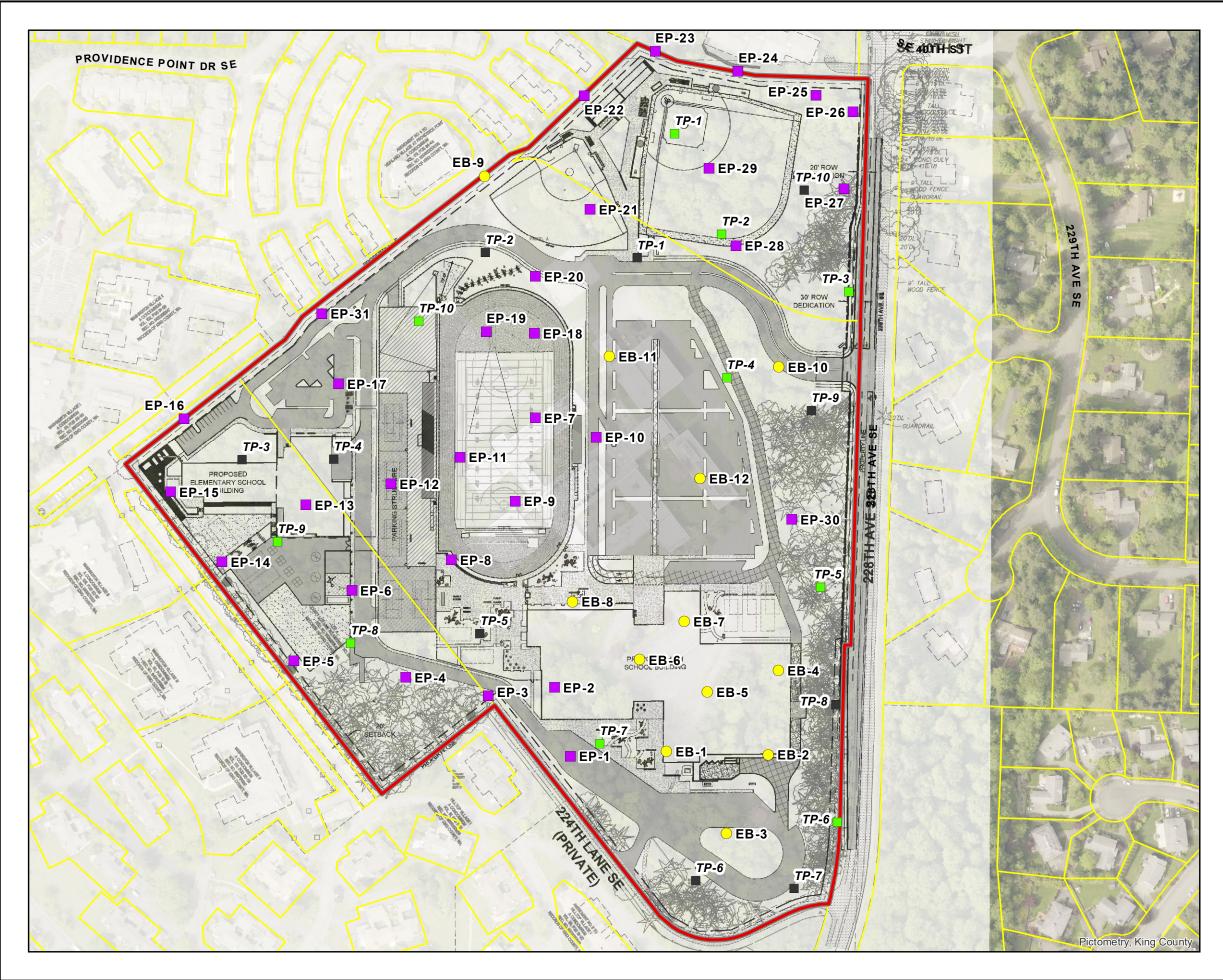
- EXPLORATION BORING
- EXPLORATION PIT
- TEST PIT BY EARTH SOLUTIONS NW, 2014
- TEST PIT BY TERRA ASSOCIATES INC., 2015
- PARCEL
- $\sim$  CONTOUR 20 FT
- ─ CONTOUR 5 FT

NOTE: IMAGE TAKEN PRIOR TO DEMOLITION OF EXISTING STRUCTURES. DEMO IN PROCESS DEC. 2018 AND DONE BY JUNE 2019.

DATA SOURCES / REFERENCES: PSLC: KING COUNTY 2016, GRID CELL SIZE IS 3'. DELIVERY 3 FLOWN 3/2/16 - 3/29/16. CONTOURS FROM LIDAR KING CO: STREETS, 1/19, PARCELS 4/19, AERIAL PICTOMETRY INT. 2017 TEST PITS FROM: "GEOTECHNICAL REPORT MADISON POINTE", BY TERRA ASSOCIATES 11/14/2018

LOCATIONS AND DISTANCES SHOWN ARE APPROXIMATE





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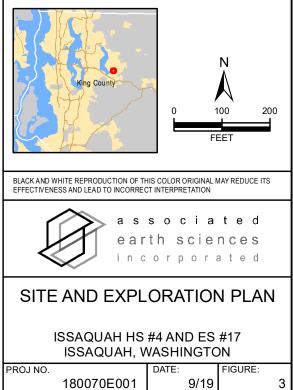
EXPLORATION BORING

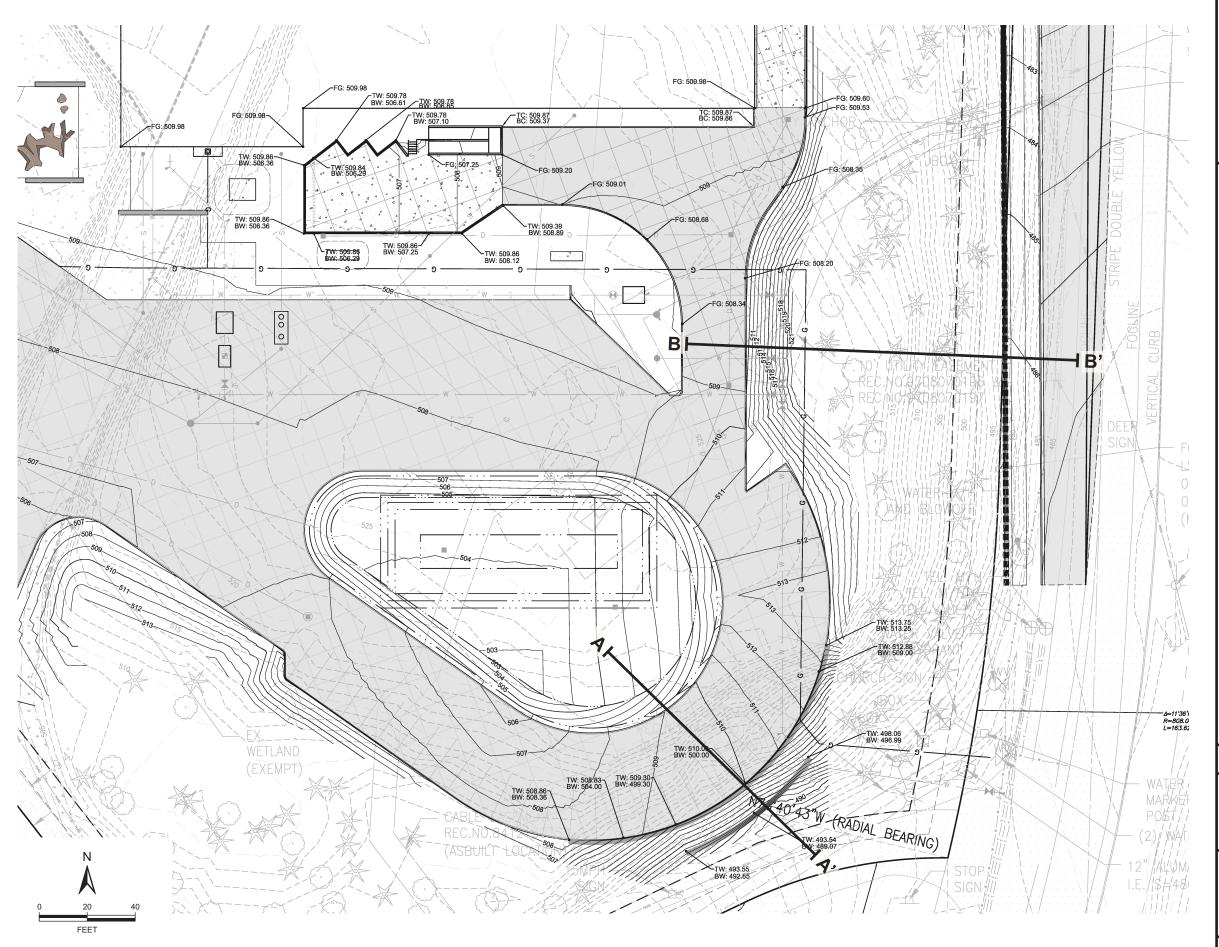
EXPLORATION PIT

- TEST PIT BY EARTH SOLUTIONS NW, 2014
- TEST PIT BY TERRA ASSOCIATES INC., 2015
- PARCEL

DATA SOURCES / REFERENCES: SITE PLAN: ABHL, ELEMENTARY SCHOOL SITE, ISDHS CHECK SET C7.0, 1/31/19 KING CO: STREETS, 1/19, PARCELS 4/19, AERIAL PICTOMETRY INT. 2017 TEST PITS FROM: "GEOTECHNICAL REPORT MADISON POINTE", BY TERRAASSOCIATES 11/14/2018

LOCATIONS AND DISTANCES SHOWN ARE APPROXIMATE





180070 Issaquah HS \ 180070E001 F4 Slopes. cc

#### LEGEND:

CONTOUR INTERVAL = 1'

NOTE: LOCATION AND DISTANCES SHOWN ARE APPROXIMATE.

NOTES: 1. BASE MAP REFERENCE: AHBL, ISSAQUAH SCHOOL DISTRICT HIGH SCHOOL #4, GRADING PLAN, SHEET C4.7, FINAL DESIGN, 5/20/19

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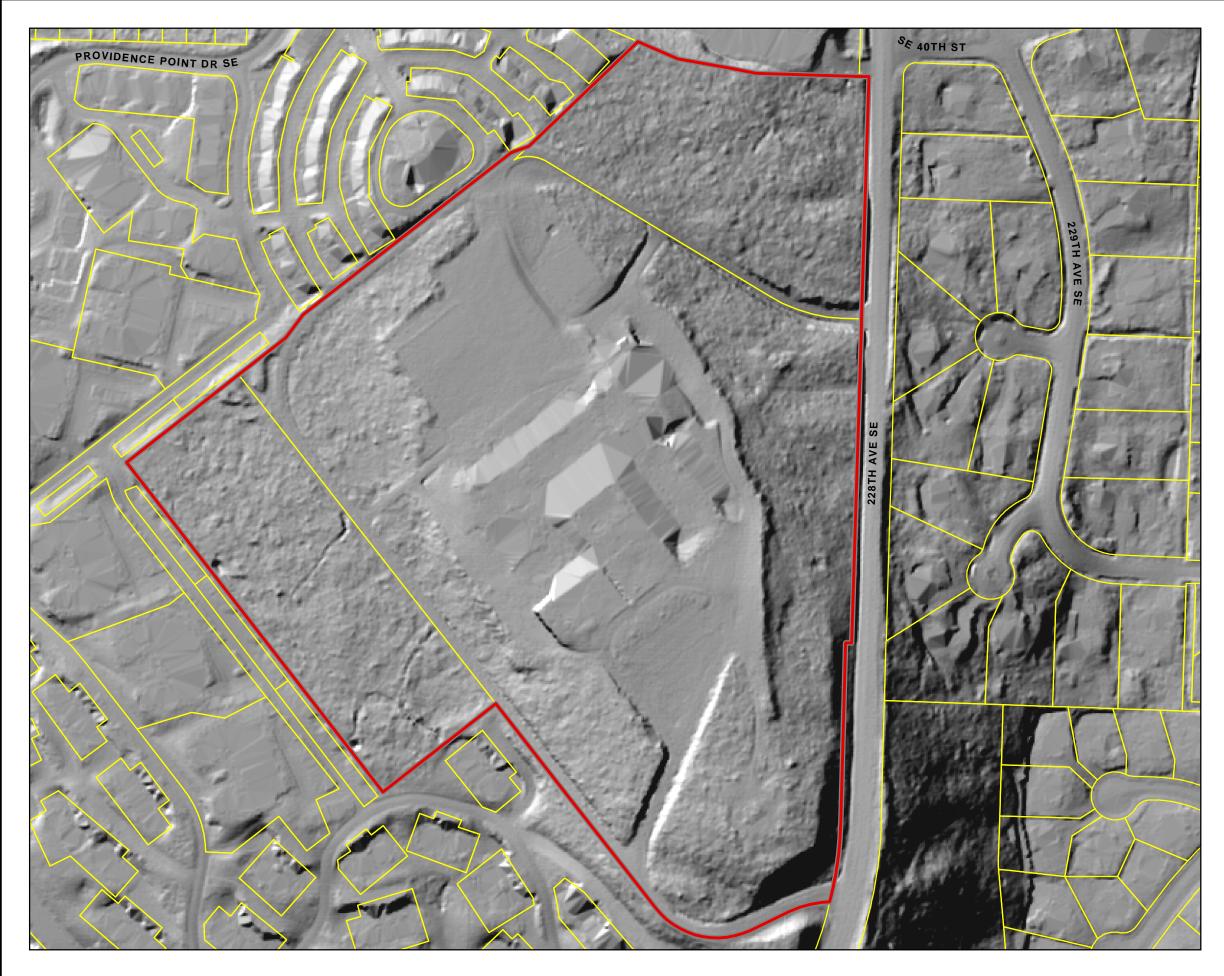
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## STEEP SLOPE AREAS

#### ISSAQUAH HS #4 AND ES #17 ISSAQUAH, WASHINGTON

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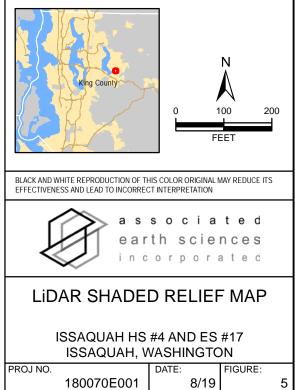
PROJ NO. DATE: FIGURE: 7/19



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	PARCEL

DATA SOURCES / REFERENCES: SITE PLAN: ABHL, ELEMENTARY SCHOOL SITE, ISDHS CHECK SET C7.0, 1/31/19 KING CO: STREETS, 1/19, PARCELS 4/19, AERIAL PICTOMETRY INT. 2017

LOCATIONS AND DISTANCES SHOWN ARE APPROXIMATE



## **APPENDIX A**

**Exploration Logs** 

	16	es <sup>(5)</sup>	GW	Well-graded gravel and gravel with sand, little to	Density         SPT <sup>(2)</sup> blows/foot					
200 Sieve	of Coarse 4 Sieve	≤5% Fines	GP	no fines Poorly-graded gravel and gravel with sand, little to no fines	Coarse- Grained SoilsVery Loose0 to 4 Loose4 to 10 Medium DenseTest SymbolsDense30 to 50 Very DenseG = Grain Size M = Moisture Content					
Coarse-Grained Soils - More than 50% <sup>(1)</sup> Retained on No. 200 Sieve	- More than 50% <sup>(1)</sup> Retained on No.	% Fines <sup>(5)</sup> % Fines <sup>(5)</sup> の の の の の の の の の の の の の	GM	Silty gravel and silty gravel with sand	Consistency Fine- Grained SoilsConsistency Very SoftSPT <sup>(2)</sup> blows/foot 0 to 2A = Atterberg Limits C = Chemical DD = Dry Density K = PermeabilityFine- Grained SoilsSoft Medium Stiff Stiff4 to 8 8 to 15C = Chemical DD = Dry Density K = Permeability					
)% <sup>(1)</sup> Re	Gravels - I		GC	Clayey gravel and clayey gravel with sand	Very Stiff 15 to 30 Hard >30					
More than 50	Fraction	Fines <sup>(5)</sup>	sw	Well-graded sand and sand with gravel, little to no fines	Descriptive Term     Size Range and Sieve Number       Boulders     Larger than 12"       Cobbles     3" to 12"					
ained Soils -	ore of Coarse Io. 4 Sieve	S5% F	SP	Poorly-graded sand and sand with gravel, little to no fines	Gravel       3" to No. 4 (4.75 mm)         Coarse Gravel       3" to 3/4"         Fine Gravel       3/4" to No. 4 (4.75 mm)         Sand       No. 4 (4.75 mm) to No. 200 (0.075 mm)         Coarse Sand       No. 4 (4.75 mm) to No. 10 (2.00 mm)					
Coarse-Gr	50% <sup>(1)</sup> or More Passes No.	Fines <sup>(5)</sup>	SM	Silty sand and silty sand with gravel	Coarse Sand         No. 4 (4.75 mm) to No. 10 (2.00 mm)           Medium Sand         No. 10 (2.00 mm) to No. 40 (0.425 mm)           Fine Sand         No. 40 (0.425 mm) to No. 200 (0.075 mm)           Silt and Clay         Smaller than No. 200 (0.075 mm)					
	Sands - 5	≥12%	SC	Clayey sand and clayey sand with gravel	(3) Estimated Percentage       Moisture Content         Component       Percentage by Weight       Dry - Absence of moisture, dusty, dry to the touch         Trace       <5					
Sieve	s Sun 50		ML	Silt, sandy silt, gravelly silt, silt with sand or gravel	Noise     Some     Sto <12     Slightly Moist - Perceptible       Some     5 to <12					
Passes No. 200 Sieve	Silts and Clays		CL	Clay of low to medium plasticity; silty, sandy, or gravelly clay, lean clay	(silty, sandy, gravelly)     Very Moist - Water visible but not free draining       Very modifier     30 to <50					
မ	Sill Sill Iourid I		OL	Organic clay or silt of low plasticity	Symbols Blows/6" or Sampler portion of 6" Type /					
ls - 50% <sup>(1)</sup> ol	ys - More		мн	Elastic silt, clayey silt, silt with micaceous or diatomaceous fine sand or silt	2.0" OD Split-Spoon Sampler (A) Sampler (SPT) Sampler (SPT) Sampler Sa					
Fine-Grained Soils - 50% <sup>(1)</sup> or Mo	Silts and Clays		СН	Clay of high plasticity, sandy or gravelly clay, fat clay with sand or gravel	(SP1)       3.25" OD Split-Spoon Ring Sampler       (a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c					
Fine			он	Organic clay or silt of medium to high plasticity	O Portion not recovered         (1) Percentage by dry weight         (2) (SPT) Standard Penetration Test         (4) Depth of ground water         (2) (SPT) Standard Penetration Test					
Highly	Organic Soils		РТ	Peat, muck and other highly organic soils	<ul> <li>(ASTM D-1586)</li> <li>(a) In General Accordance with Standard Practice for Description and Identification of Soils (ASTM D-2488)</li> <li>(b) Combined USCS symbols used for fines between 5% and 12%</li> </ul>					

Classifications of soils in this report are based on visual field and/or laboratory observations, which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field or laboratory testing unless presented herein. Visual-manual and/or laboratory classification methods of ASTM D-2487 and D-2488 were used as an identification guide for the Unified Soil Classification System.

### EXPLORATION LOG KEY

FIGURE A1

**earth sciences** incorporated

associated

ſ		> a		ociated		Exploration	Boring				
	D			sciences porated	Project Number 180070E001	Exploration Nur EB-1	mber			eet of 1	
Projec Locat	ion			Jeepond M	<u>S #4 and ES #17</u> VA		Ground Su Datum	face El	evation (ft)		20
Driller Hamr	r/Equ	iipme Veiat	nt it/Drop	Advance Dr 140# / 30 in	rilling Technology / Track Rig iches		Date Start/I Hole Diame		6/25/19		5/19
		, oldi							-1		
(#)		oles	Graphic Symbol				Well Completion Water Level Blows/6"		Blows/F	oot	
Depth (ft)	S T	Samples	Syn				Well ompletio /ater Lev Blows/6"				
					DESCRIPTION		05	10	20 30	0 40	)
-	Π	0.4		Maiat graviah t	Asphalt - 3.5 inches Vashon Lodgement Till	cotified (CM)	16				
Ļ	Ш	S-1		woist, grayish t	tan, gravelly, very silty, ŠAND; nonsti	atilied (Sivi).	21 12			<b>▲</b> 33	
-		S-2		Pagamag mattl	ed; some gravel.		7				
-	Ш	3-2		Becomes mou	ed, some gravel.		14 19			<b>▲</b> 33	
- 5				Containa a long	s of gray silt at 5 to 6 feet.						
-		S-3			moist and gravelly below 6 feet.		6 12 23			<b>▲</b> 35	
-				Decomes very	moist and graveny below o reet.		23				
-				Refusal on a ro	ock at 7.5 feet. Moved over 2.5 feet a	nd resumed drilling.					
-											
- 10				Becomes gray.							
-		S-4		Decomes gray.			19 22 18			•	40
-							10				
-											
-											
- 15		S-5					50/4	"			<b>▲</b> 50/4'
-			1.1.	Bottom of explora No groundwater e	tion boring at 15.5 feet due to refusal.						
-											
-											
-											
- 20											
ŀ											
-											
-											
-											
- 25											
-											
019											
st 26, 2											
AESIBOR 180070.GPJ August 26, 2019											
NO.GPU	amp	ler Ty	pe (ST	·):							
2 1800	_			Spoon Sampler (	=	I - Moisture				ed by:	TJP <b>Y:</b> CJK
SIBOR			) Split \$ Sampl	Spoon Sampler (I	D & M) 📕 Ring Sample 🖓	Water Level () Water Level at time o	f drilling (AT	D)	Appro	veu D	y∙ CJK
- AE	<u>ت</u>	5.00	Jampi	-			- `	-			

	$\sim$			ciated		Exploration Exploration Nu	Boring			
	J			sciences porated	Project Number 180070E001	Exploration Nu EB-2	Imber		Sheet 1 of 1	
Projec Locatio		me		Issaquah H	S #4 and ES #17	·	Ground Su Datum			524
Driller/	Equ	ipme	nt	Advance Dr	rilling Technology / Track Rig iches		Date Start/F	inish	NAVD 88 6/25/19,6/2	25/19
Hamm	ier V	Veigh	t/Drop	<u>140# / 30 in</u>	iches		Hole Diame	ter (in)	7	
Depth (ft)	S T	Samples	Graphic Symbol				Well Completion Water Level Blows/6"	I	Blows/Foot	Other Tests
Ĕ	T	ŝ	00		DESCRIPTION		BI	10	20 30 4	10 G
	╫		<u></u>	~	Forest Duff - 4 inches					
-		S-1		Moist, reddish	Vashon Lodgement Till brown, gravelly, very silty, SAND (SM	Л).	2 6 8 12		▲20	
-		S-2		Becomes tan.			6 14 14		<b>▲</b> 28	
- 5 -	T	S-3		Blowcounts are	likely overstated, pounding on a roc	k.	50/4			<b>▲</b> 50/4"
-				Difficult drilling.						
- - 10		S-4		Becomes mottl	ed and very gravelly.		20 50/5			<b>5</b> 0/5"
-				No groundwater e	tion boring at 11 feet due to refusal. encountered. t and attempted to re-drill. Met refusal at 7.5	5 feet.				
- - 15										
-										
- 20										
-										
-										
- 25 -										
Ist 26, 2019										
AESIBOK 1800/0.GPJ August 26, 2019			pe (ST Split S	): Spoon Sampler (	SPT)	1 - Moisture			Logged by	
ž [				Spoon Sampler (I	D & M) 🔲 Ring Sample 🔤	Water Level ()			Approved	by: CJK
AESI	<u>م</u> ر ا	Grab	Sample	9	Shelby Tube Sample -	Water Level at time of	ot drilling (ATI	)		

	$\sim$			ociated		Exploration Exploration Nu	Boring	3			
	D			n <b>sciences</b> rporated	Project Number 180070E001	Exploration Nu EB-3	Imber			Sheet 1 of 1	
Projec		ame		Issaquah H	S #4 and ES #17		Ground S	urface	Elevation (		5
Locati Driller/	/Equ	uipme	ent	Issaquah, V Advance Dr	illing Technology / Track Rig		Datum Date Star			) 88 19,6/25/	19
Hamm	ner V	Veigl	nt/Drop	0 140# / 30 in	ches		Hole Dian	ieter (i	n) <u>7</u>	,	
f)		Ś	0 -				vel				ti vi
Depth (ft)	s	Samples	Graphic Symbol				Well Completion Water Level		Blows	/Foot	Other Tests
Dep	S T	Sar	ලිගි		DESCRIPTION		Com V Wate				Othe
_			<u></u>		Forest Duff / Topsoil - 6 inche				10 20	30 40	
-		S-1			Blakely Harbor Formation			2	10		
	Н			Nioist, mottied i	light brown, very silty, SAND, trace to	some gravel (SIVI).		5			
	$\mathbb{H}$			-							
-		S-2						3	<b>1</b> 9		
-				-			1	1			
- 5	$\mathbb{H}$										
-		S-3		-					<b>▲</b> 22	2	
				_			1	3			
				-							
ſ				-							
ł											
- 10	$\square$			Becomes very	moist.						
-		S-4		-			1	1		▲30	
				-				5			
				-							
Ī											
-				-							
- 15	$\square$			Trace fine grav	el.						
-		S-5						)		<b>▲</b> 39	9
				-							
				-							
-				_							
- 20	$\square$			Becomes tan g	ray with heavy orange brown mottling	. Contains coal	1	2			
-		S-6		fragments.			1	3		▲35	
-				-							
				-							
				-							
Ī				-							
- 25	Π	S-7		Becomes grave	elly.		2 50	8			<b>▲</b> 50/5"
-			1	Bottom of explora	tion boring at 26 feet			5			30/3
- 19				No groundwater e							
26, 20											
riguet											
AESIBOR 180070.GPJ August 26, 2019											
0.070 Sa	- ·		/pe (S		<b>D</b> .		<u> </u>		I	'	
2 1 2 8	_			Spoon Sampler (S		- Moisture				gged by: proved by:	TJP
			Split Samp	Spoon Sampler (I	D & M)	Water Level () Water Level at time c	of drillina (A	TD)			UIN
۳ L	~	Giad	Samp					,			

	$\hat{\boldsymbol{\boldsymbol{\alpha}}}$	<b>&gt;</b> a		ociated		Exploration	Boring			
	D			<b>sciences</b> rporated	Project Number 180070E001	Exploration Nu EB-4	Imber		Sheet 1 of 1	
Projec Locati Driller Hamm	on /Equ	ipme	nt nt/Drop	Issaquah, V Advance Dr	rilling Technology / Track Rig		Ground Surf Datum Date Start/F Hole Diamet	_NA inish _6/2	on (ft) <u>5'</u> AVD 88 25/19,6/25	
Depth (ft)	S T	Samples	Graphic Symbol		DESCRIPTION		Well Completion Water Level Blows/6"		ws/Foot	Other Tests
		S-1		Verv moist. red	Fill Idish brown, very silty, gravelly, SANI	D: nonstratified (SM).	5 4	10 20	30 40	
-	Н			,		,	5	-9		
-		S-2		Very moist, red consists of ang	Blakely Harbor Formation Idish brown, gravelly, very silty, fine S Jular sandstone fragments (SM).	AND; gravel fraction	2 2 3	<b>▲</b> 5		
- 5 - -		S-3		Becomes tan a	nd silty.		4 5 13	<b>▲</b> 1	8	
- - - 10 -	Ţ	S-4		Contains angul	ar gray gravel; poor recovery.		21 50 50/6"			<b>▲</b> 50/6"
- - 15 -	T	S-5					38 <del>5</del> 0/3"			<b>▲</b> 50/3"
- 20	T	S-6			and more lithified. tion boring at 20 feet due to refusal. ncountered.		50/5"			<b>▲</b> 50/5"
- 25										
GPJ August 2				~						
SOR 18007		2" OE 3" OE		Spoon Sampler ( Spoon Sampler (I		- Moisture Water Level () Water Level at time c	of drilling (ATD		Logged by: Approved by	тјр <b>у:</b> Сјк

ſ		> a		ociated		Exploration	Borin	g			
{				<b>sciences</b> rporated	Project Number 180070E001	Exploration Nur EB-5	mber			Sheet 1 of 1	
Proje Loca		ame		Issaquah H Issaquah, V	S #4 and ES #17		Ground Datum	Surfa	ICE Elevation	n (ft) <u>5</u> VD 88	520
Drille	r/Equ	uipme Moiat	nt ht/Drop	Advance Dr	rilling Technology / Track Rig		Date Sta Hole Dia		nish <u>6/2</u>	5/19,6/2	5/19
		l		_140#7 30 11					a (iii) _ <b>/</b>		
(ŧ		les	bol				etion	.9/8	Blow	vs/Foot	ests
Depth (ft)	S T	Samples	Graphic Symbol				Well Completion Water Level	Blow	Biov	10/1 000	other Tests
				_	DESCRIPTION		≥ U		10 20	30 4	0
		0.4		Maiat business	Asphalt - 1.5 inches thick Vashon Lodgement Till very gravelly, very silty, SAND; round			18			
-		S-1		woist, drown, v	Blakely Harbor Formation			19 50/6"			<b>5</b> 0/6"
-		S-2		Moist grav silt	ty, SAND; contains angular rock fragi	monte (SM)		22 38			
-		0-2		woist, gray, sit	y, SAND, contains angular rock hagi	nenta (GM).	Ę	38 50/6"			<b>50/6</b> "
- 5											
-		S-3		Orange brown	mottling.			28 33 0/3"			<b>▲</b> 50/3"
-											
-											
-											
- 10		S-4		Becomes more	heavily mottled.			18			
-		0-4						50/4"			●50/4"
-											
-								50/4"			
-		S-5		Bottom of explora	ation boring at 14 feet due to refusal.						●50/4"
- 15				No groundwater e	encountered.						
-											
-											
ł											
-											
- 20											
F											
Ī											
[											
- 25											
6, 2019											
AESIBOR 180070.GPJ August 26, 2019											
GPJ A											
80070.(	_		/pe (ST ) Split {	<u>`):</u> Spoon Sampler (:	SPT) 🗌 No Recovery M	1 - Moisture			I	_ogged by	: TJP
30R 1.	$\overline{\square}$			Spoon Sampler (I	D & M) 🗍 Ring Sample 🛛 🖓	Water Level ()			1	Approved I	
AESI	<b>8</b> 3	Grab	Sampl	e	Shelby Tube Sample -	Water Level at time o	f drilling (	ATD)			-

	$\widehat{\lambda}$	> a		ciated		Exploration	Boring			
	2			sciences porated	Project Number 180070E001	Exploration Nu EB-6	mber		Sheet 1 of 1	
Projec Locatio	on			Jeepond M	<u>S #4 and ES #17</u> VA		Ground Su Datum	rface E	levation (ft)	520
Driller/ Hamm	'Equi ner W	ipme Veigh	nt t/Drop	Advance Dr 140# / 30 in	illing Technology / Track Rig ches	g	Date Start/ Hole Diam		6/26/19.6/	26/19
Depth (ft)			Graphic Symbol				Well Completion Water Level Blows/6"		Blows/Foot	other Tests
Dep	S T	San	Syi		DESCRIPTION		Comp Water Blov			Other
	+			٦	Asphalt - 2 inches		_	10	20 30	40
-		S-1		Moist, grayish t	Vashon Lodgement Till an, gravelly, very silty, SAND; nons	stratified (SM).	8 10 15		▲25	
-		S-2		Some gravel.			12 21 27			<b>▲</b> 48
- 5 - -		S-3		Trace gravel; c sand.	ontains scattered thin lenses (<1/8	inches thick) of fine	18 11 18		▲29	
- - 10 -	T	S-4		Gravelly drilling Moist, yellowisł (SM).	Blakely Harbor Formation at 9 feet. h tan to gray, silty, SAND; contains			an		<b>▲</b> 50/6"
-	Τ	S-5		· · /	tion boring at 12.25 feet due to refusal. ncountered.		46 50/3	3 <sup>ee</sup>		<b>▲</b> 50/3"
- - 15 -										
- - 20 -										
- 25										
PJ August 26, 20										
OR 18007		2" OD 3" OD		Spoon Sampler ( Spoon Sampler (I	D & M) Ring Sample	M - Moisture ☑ Water Level () ▼ Water Level at time o	of drilling (AT	D)	Logged b Approved	

	$\hat{\boldsymbol{\lambda}}$	> a		ociated		Exploration Exploration Nu	Boring	-	
	J			sciences porated	Project Number 180070E001	Exploration Nu EB-7	umber	Sheet 1 of 2	1
Projec Locatio		me		<u>Issaquah H</u> Issaquah, V	S #4 and ES #17	·	Ground Surf	ace Elevation (ft)	520
Driller/	'Equ	ipme	nt t/Dron	<u>Advance Dr</u> 140# / 30 in	illing Technology / Track Rig		Date Start/Fi Hole Diameter	inish <u>6/26/19,6/</u>	26/19
		veign		140# / 30 11				er (in) _7	
(#)		les	bic bol				Well Completion Water Level Blows/6"	Blows/Foot	ests
Depth (ft)	S T	Samples	Graphic Symbol				Well Completion Water Level Blows/6"	Diows/1 000	Other Tests
	ľ	0)			DESCRIPTION		ŭ≥_	10 20 30	40 0
	$\mathbb{H}$			<b>\</b>	Asphalt - 2.5 inches Vashon Lodgement Till				
		S-1		Moist, grayish t	an, gravelly, very silty, SAND; nonst	ratified (SM).	6 10	<b>▲</b> 16	
	$\mathbb{H}$						10		
	Ш	S-2					18 50/5"		<b>5</b> 0/5"
- 5									
	Ш	S-3		Poor recovery,	driving a rock.		25 50/5"		<b>50/5</b> "
				Very difficullt d	rilling.				
	Н	<b>•</b> •					14		
-	Ш	S-4		Becomes yello	wish tan, very gravelly.		46 50/5"		<b>5</b> 0/5
- 10		S-5		No recovery.			50/1"		<b>5</b> 0/1"
-		00		Bottom of explora No groundwater e	tion boring at 10 feet due to refusal. Incountered.				-50/1
- 15									
- 20									
20									
Ī									
Ī									
6									
- 25									
[									
3, 2019									
igust 21									
AESIBOR 180070.GPJ August 26, 2019									
5. Sa	-		pe (ST	<sup>·</sup> ): Spoon Sampler (:	SPT) 🗌 No Recovery 🛛 🕅	1 - Moisture		Logged b	y: TJP
8 [ 8 [	-			Spoon Sampler ( Spoon Sampler (I	D & M) 📕 Ring Sample 🛛	Z Water Level ()		Approved	Iby: CJK
AESIB			Sample		Shelby Tube Sample	Water Level at time	of drilling (ATD	))	

	Ĵ		arth	ociated sciences rporated	Project Number 180070E001	Exploration Exploration Nu EB-8	Borir umber	ng			heet of 1	
Projec Locatio Driller/ Hamm	on /Equ	uipme	nt it/Drop	Issaduah, V	illing Technology / Track Rig		Ground Datum Date Sta Hole Dia	art/F	inish	levation (ft) _NAVD _6/26/1 _7	88	
Depth (ft)	S T	Samples	Graphic Symbol		DESCRIPTION		Well Completion Water Level	Blows/6"	10	Blows/f	=oot 60 40	Othar Tasts
-		S-1		· · Moist, tan, grav ·	<b>Fill</b> velly, very silty, SAND (SM).			1 2 2	▲4			
-		S-2		Trace tile debri	S.			3 3 4	▲7			
- 5 - -		S-3		— — — — — — — — — — — — — — — — — — —	<b>Vashon Lodgement Till</b> an, gravelly, very silty, SAND; nonst			5 10 14		▲24		
- - 10 -		S-4		Becomes very Drilling action b	moist. becomes smoother at 12 feet.			14 25 36				<b>▲</b> 61
- - 15 -		S-5		Drilling action b	ecomes gravelly.			18 36 36				▲72
- - 20 -		S-6		Verv moist. blu	ed with increased moisture. <b>Possession Drift</b> e gray, SILT; contains fine sand part ydrochloric acid (ML).	ings; massive;		16 15 20			▲35	
- - 25 -		S-7		Becomes lamir				9 12 16			28	
J August 26, 2019				Bottom of explora No groundwater e	tion boring at 26.5 feet ncountered.							
OR 1800		2" OE 3" OE		Spoon Sampler ( Spoon Sampler (I		I - Moisture Z Water Level () Z Water Level at time of	of drilling (		))		jed by: oved by	TJP ″: CJK

	$\sim$	> a		o c i a t e d		Exploration	Boring		
	J			<b>sciences</b> rporated	Project Number 180070E001	Exploration Nu EB-9	Imber	She 1 c	et of 1
Project Locatio		ime		Issaquah H	S #4 and ES #17		Ground Surfa	ace Elevation (ft)	
Driller/	'Equ			Issaquah, V Advance Dr	illing Technology / Track Rig ches		Date Start/Fir		,6/26/19
Hamm		Veigh	t/Drop	<u>140# / 30 in</u>	cnes		Hole Diamete	er (in) <u>7</u>	
(#)		les	hic ool				Well Completion Water Level Blows/6"	Blows/Fo	ests
Depth (ft)	S	Samples	Graphic Symbol				Well Completion <u>Water Level</u> Blows/6"	DIUWS/FC	Other Tests
	'	0)			DESCRIPTION		U S S M	10 20 30	40 <sup>tõ</sup>
	$\mathbf{H}$			<u></u>	Asphalt - 1.5 inches Fill				
		S-1		Moist, grayish t scattered orgar	an and brown (mixed), gravelly, very nic debris (SM).	silty, SAND; contains	12 16 11	▲ <sub>27</sub>	
	$\square$				Vashon Lodgement Till		6		
		S-2		Very moist, tan	gray, very silty, gravelly, SAND; non	stratified (SM).	9	▲21	
- 5									
		S-3		Becomes tan to	o grayish tan.		8 16		40
	Н						24		
[									
- 10									
	$\square$	S-4		Becomes mois	t.		16 24 30		<b>4</b> 54
-	Щ	-					30		
F									
- 15	П	S-5		Becomes very	moist.		48 50/1"		<b>5</b> 0/1"
F									
ſ									
-									
-									
- 20	П	S-6					33 50/5"		<b>5</b> 0/5
ľ									
ľ									
-									
ŀ									
- 25	Ħ	S-7		Poor recovery.			50/4"		50/4"
ŀ				Bottom of explora No groundwater e	tion boring at 25.5 feet encountered.				
2019									
just 26									
PJ Auc									
D.070 D.070	<b>-</b>	-	pe (ST						
7 180 L	-			Spoon Sampler (\$ Spoon Sampler (I		I - Moisture		Logge Appro	d by: TJP ved by: CJK
AESIBOR 180070.GPJ August 26, 2019	-0+		Sampl		Shelby Tube Sample	Water Level at time of	of drilling (ATD)		

	$\sim$	<b>&gt;</b> a	asso	o ciate d		Exploration Exploration Nu	Boring	3			
	D			sciences porated	Project Number 180070E001	Exploration Nu EB-10	Imber			Sheet 1 of 1	
Projec Locati		ime		Issaduah. V	<u>S #4 and ES #17</u> VA		Ground S Datum	urface		n (ft) <u>4</u> VD 88	65
Driller/ Hamm	/Equ ner V	iipme Veigł	nt ht/Drop	Advance Dr 140# / 30 in	rilling Technology / Track Rig		Date Star Hole Dian		_6/2	6/19,6/26	6/19
											v
Depth (ft)		Samples	Graphic Symbol				Well Completion Water Level		Blow	vs/Foot	Other Tests
Dep	S T	San	Sy		DESCRIPTION		Well Completion Water Level				Other
	+				Blakely Harbor Formation			5	0 20	30 40	,
-		S-1		Very moist, bro	wn to tan, very silty, gravelly, SAND	(SM).		8	<b>▲</b> 13		
ŀ											
-		S-2					1	5		<b>▲</b> 33	
-				Becomes mois rock fragments	t, grayish tan, silty with angular grave	l sized sedimentary		8			
- 5		S-3		rook nagmonto			1	1			_
-	Щ	0-0		Becomes tan to	o yellowish tan.		1	5 2		3	/
-											
-											
- 10							50	/ <b>5</b> "			
		S-4		Becomes mottl present.	ed and fine grained (siltstone); angula	ar rock fragments still		5			<b>50/5</b> "
-											
- 15											
-		S-5					1 2 50	3 9 /5"			<b>5</b> 0/5
-								5			
-											
ŀ											
- 20	-	S-6		Poor recovery. Bottom of explora	tion boring at 20 feet due to refusal.		50	/2"			<b>5</b> 0/2"
-				No groundwater e	incountered.						
F											
-											
F											
- 25											
-											
2019											
just 26,											
PJ Au											
	-	-	/pe (ST			Mojotura				oggod br-	''
OR 18	<b>—</b>			Spoon Sampler (S Spoon Sampler (I	D & M) 👖 Ring Sample 🛛 🖓	- Moisture Water Level ()				ogged by: Approved b	TJP <b>y:</b> CJK
AESIB	-		Sampl		Shelby Tube Sample		of drilling (A	TD)			

	$\sim$	> 4	sso	o ciate d				Expl	oration	Bori	ng				
	Z			<b>sciences</b> rporated		roject Numbe 80070E00		E	xploration Νι EB-11	umber				heet of 3	
Projec Locatio Driller/ Hamm	on 'Equ	iipme	nt nt/Drop	Issaquah H Issaquah, V Advance Dr 140# / 30 in	VA illing Tech		Frack Ri	ig		Ground Datum Date St Hole Di	tart/Fir	nish _	NAVD		
Depth (ft)	S T	Samples	Graphic Symbol			DESCRIF	PTION			Well Completion	Blows/6"	E 10	3lows/l	Foot 30 40	Other Tests
					V	ashon Lodge	ement Til	1			6				
-		S-1		Very moist, gra	yish tan, ver	y silty, grave	lly, SAND	); nonstratifie	d (SM).		9 9		<b>▲</b> 18		
-	Ι	S-2		Becomes mois	t.						29 50/6"				<b>5</b> 0/6"
- 5				Met with refusa	l at 4 feet; m	noved over 4	feet and	resumed drill	ing.						
-		S-3									4 37 50/5"				<b>◆</b> 50/5"
- - 10 -	1	S-4		Becomes very	moist.						50/3"				<b>▲</b> 50/3"
- - 15 -		S-5		Becomes very	moist.						14 50/4"				◆50/4"
- 20	T	S-6									50/6"				<b>▲</b> 50/6"
AESIBOR 180070.GPJ August 26, 2019		S-7		Becomes very Driller adding w Drilling action b	vater (~1 to 2 Olymp	2 gallons). ia Nonglacia	al Sedime		lty.		13 21 30				●51
THE Sa		ler Tv	/pe (ST	-):											
18007		2" OE	Split S	Spoon Sampler (		No Recover	-	M - Moisture						ged by:	TJP
a Bor				Spoon Sampler (I	D&M) 👖	Ring Sampl	le			of drilling		)	Арр	roved by	CJK
	8 2	Grab	Sample	e	111111	Shelby Tub	e Sample	y⊈ Water L		or animing	(תום)	/			

	$\gtrsim$		ociated		Exploration	Boring		
	J		<b>h sciences</b> orporated	Project Number 180070E001	Exploration Nu EB-11	mber	Sheet 2 of	
Project Location		me	<u>Issaquah H</u> Issaguah, V	S #4 and ES #17	· · · · · · · · · · · · · · · · · · ·	Ground Surfa	ace Elevation (ft)	500
Driller/	/Equi		Advance D	rilling Technology / Track Rig		Date Start/Fi		
Hamm			op <u>140# / 30 ir</u>			Hole Diamete	er (in) <u>7</u>	
(#)		hic				Well Completion Water Level Blows/6"	Blows/Foo	ests
Depth (ft)	S T	Samples Graphic Svmhol	5			Well Completion <u>Water Level</u> Blows/6"	BIOWS/1 00	t Other Tests
		0,		DESCRIPTION		Ŭ Š 🖁	10 20 30	40
_		S-8	Moist, tan gray	r, fine to medium SAND, some silt (S	P-SM).	18 30		<b>▲</b> 71
	Н		· [.			41		
	$\left  \right $		Sand becomes	s tan, silty, and fine grained.		27		
		S-9	 Moist, tan, SIL	T; nonplastic; massive; driller adding	water (ML).	39 50/6"		<b>\$50/6</b> "
- 35								
		S-10				11 37		<b>5</b> 0/5"
						50/5"		
	Πs	S-11				27		<b>5</b> 0/6"
	Н		Trace gravel.			50/6"		
- 40								
		S-12	Contains a lens	s (~3 inches thick) of lightly mottled,	fine sandy, silt at ~40.5	20 39 50		<b>5</b> 0/6"
						50		
-								
- 45								
-	5	S-13				12 20		<b>▲</b> 53
-						33		
-				Pre-Fraser Till				
-			Gravelly drilling	g action at 48 feet.				
- 50			Moist. gravish	tan, very silty, gravelly, SAND; nonst	ratified (SM).			
-		S-14				20 32 48		▲80
-								
-								
-								
- 55	$\square$			in moisture content.		12		
-	Ш	S-15	Becomes very	moist and gray.		12 33 50/5"		<b>\$</b> 50/5"
ust 26,								
J Aug								
Sa Sa	-	er Type (						
ж [ [	-		it Spoon Sampler ( it Spoon Sampler (		1 - Moisture Z Water Level ()		Logged I Approve	<b>by:</b> TJP diby: CJK
AESIBOR 180070.GPJ August 26, 2019	-04	Grab Sam			Water Level at time o	f drilling (ATD		

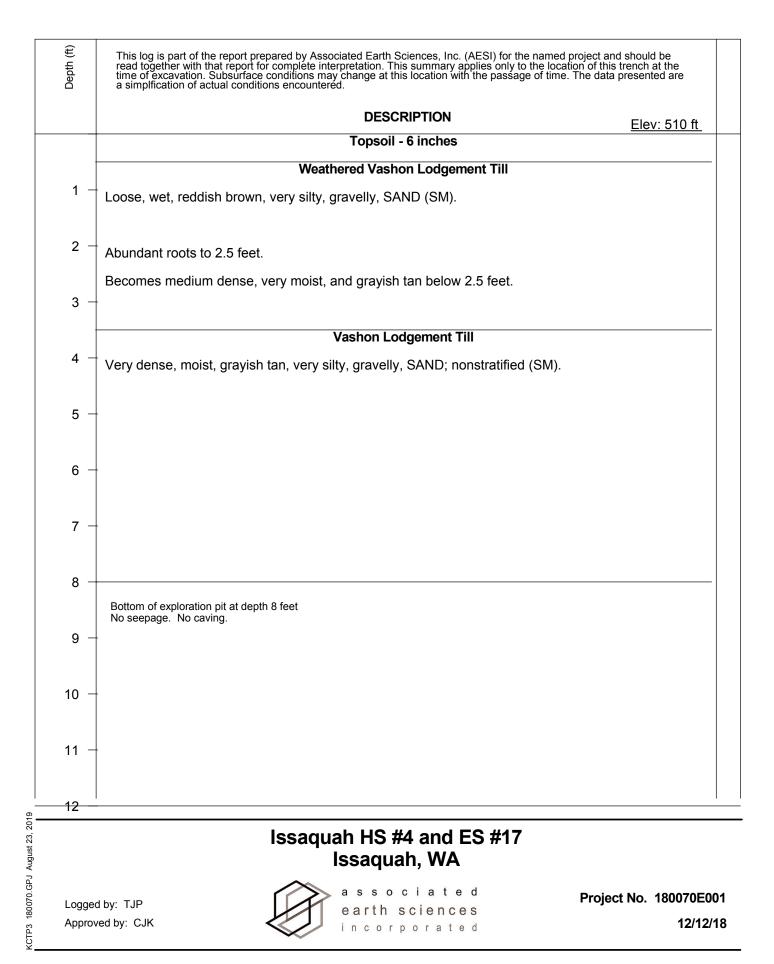
	2			ociated nsciences	Project Number	Exploration Exploration Nu	Borin	g		S	neet		
			nco	rporated	180070E001	EB-11					of 3		
Projec Locatio		ame		Issaduah, V	S #4 and ES #17 VA		Ground Datum	Surfa		vation (ft)		00	_
Driller/	Equ er \	uipme Neial	ent ht/Droi	Advance Dr 140# / 30 in	illing Technology / Track Rig		Date Sta Hole Dia			6/27/1 7	9,6/27	7/19	
		, veigi							, (III)	_/			_
E E		ŝ	o ic				evel	.9					ests
Depth (ft)	S	Samples	Graphic Symbol				Well Completion Water Level	Blows/6"		Blows/I	oot		Other Tests
۳ ۳	Т	Sa	ပလ		DESCRIPTION		Cor	Ē	10	20 3	0 40		Ō₽
	+							10		20 0		,	
-		S-16					F	13 33 50/6"				<b>50</b> /6	
-				-				0/0					
				Driller adding w	vater.								
-													
- 65	Τ	0.4-		-				16					
-		S-17						22 27				49	
-													
-					Pre-Fraser Silt		_						
				Drilling action b	becomes smooth below 68 feet.								
- 70													
		S-18	3	Moist, mottled t at 71 feet; non-	tan, SILT; nonplastic; contains thin sa reactive in hydrochloric acid (ML).	and lens (~1 inch thick)		17				67	
-		• • •						17 27 40				67	
-													
F				-									
-													
- 75	-			Maiat graviah t	on your alley find CAND, froquent th	in langaa (, 2 inchaa							
		S-19		thick) of silt (SN	an, very silty, fine SAND; frequent th /).	in ienses (~2 inches		16 27				<b>4</b> 73	
				•				46					
-													
F													
-													
- 80	$\square$	S-20	)  . . . .	-	Blakely Harbor Formation		- 5	50/6"				<b>4</b> 50/6	
-		0 _0			action at 80 feet. y silty, gravelly, SAND; nonstratified	(SM)							
				ivioisi, gray, vei	y silly, gravelly, SAND, honstratilled	(311).							
-													
- 85	$\square$	S-21		Becomes greer	nish gray, very gravelly, and contains	pink rock fragments.		40 0/3"				<b>4</b> 50/3	
-			1.1.1.	Bottom of explora	tion boring at 85.75 feet		_ `	0/3				00/0	
<u>6</u>				No groundwater e	incountered.								
26, 20													
ngust													
A Lds													_
<u> </u>	-		ype (S										
	-			Spoon Sampler (		- Moisture					jed by: oved b	TJP <b>y:</b> CJK	
	~		Samp	Spoon Sampler (I	D & M)	Water Level () Water Level at time o	f drillina (J	ATD)		Чүр	5100 D	J. OIV	
۲ ۲	-	Giad	Samp					. = )					

				o ciate d		Exploration	Boring			
$\triangleleft$	1			sciences rporated	Project Number 180070E001	Exploration Nur EB-12	mber		Sheet 1 of 1	
Projec Locatio		ne		Issaduah, V	<u>S #4 and ES #17</u> VA		Ground Sur Datum		tion (ft)	505
Driller/ Hamm	Equip er Wo	men eight	it /Drop	Advance Di 140# / 30 in	rilling Technology / Track Rig		Date Start/F Hole Diame		/28/19,6/2	28/19
Depth (ft)	ST	Samples	Graphic Symbol				Well Completion Water Level Blows/6"	Bl	ows/Foot	Other Tests
Ď	T	ů,	00		DESCRIPTION		B Ka	10 2	20 30 4	40 <sup>5</sup>
-		6-1		Very moist, mo	Vashon Lodgement Till ottled tan, very silty, gravelly, SAND; r	nonstratified (SM).	5 9 9		18	
-		6-2		Very moist, mc	Vashon Ice Contact ttled tan, fine sandy, SILT, some gra	vel; nonplastic (ML).	4 5 6	▲11		
- 5 - -		5-3		Trace to some	gravel.		4 6 10	▲1	16	
- - 10 -		6-4		No gravel. Becomes blue	gray below 11 feet.		5 10 15		▲25	
- - 15 -		6-5		Moist, purplish Becomes purpl	Blakely Harbor Formation a action below 14.5 feet. gray, silty, fine SAND, trace organics ish greenish gray and fine to medium					\$50/4"
- 20		ŝ-6 .	·] ·]	pebble gravel. Bottom of explora No groundwater e	tion boring at 18 feet due to refusal. encountered.					<b>◆</b> 50/5"
AESIBOR 180070.GPJ August 26, 2019										
AESIBOR 180070.	<u> </u>	OD OD	Split	Spoon Sampler ( Spoon Sampler (	D & M) 📕 Ring Sample 🛛 🖓	<ul> <li>M - Moisture</li> <li>Water Level ()</li> <li>Water Level at time of</li> </ul>	f drilling (ATE	))	Logged by Approved	

## LOG OF EXPLORATION PIT NO. EP-1

Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named read together with that report for complete interpretation. This summary applies only to the loca time of excavation. Subsurface conditions may change at this location with the passage of time a simplification of actual conditions encountered.	e. The data presented are
	DESCRIPTION	<u>Elev: 505 ft</u>
	Topsoil - 6 inches	
	Weathered Vashon Lodgement Till	
1 –	Loose, very moist, brown, very silty, gravelly, SAND; abundant roots (SM).	
2 -	Becomes medium dense and tan below 2 feet.	
3 -		
	Vashon Lodgement Till	
4 -	Hard, very moist, grayish tan, fine sandy, SILT; oxidized fracture surfaces; no	nstratified (ML).
5 -		
6 -	Trace to some gravel below 6 feet.	
7 -		
8 -		
9 -	. Bottom of exploration pit at depth 8.5 feet No seepage. No caving.	
10 -		
11 –		
12 -		
	Issaquah HS #4 and ES #17 Issaquah, WA	
Logge	d by: TJP a s s o c i a t e d e arth sciences	Project No. 180070

## LOG OF EXPLORATION PIT NO. EP-2



## LOG OF EXPLORATION PIT NO. EP-3

Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named proje read together with that report for complete interpretation. This summary applies only to the location or time of excavation. Subsurface conditions may change at this location with the passage of time. The a simplfication of actual conditions encountered.	data presented are
	DESCRIPTION	<u>Elev: 485 ft</u>
	Topsoil - 8 inches	
1 -	Weathered Vashon Lodgement Till Loose, very moist, brown to reddish brown, very silty, gravelly, SAND (SM).	
2 -	-	
3 -	Abundant roots 0 to 2.5 feet. Becomes medium dense, increased moisture, and gr mottling below 2.5 feet.	ayish tan with
	Vashon Lodgement Till	
4 -	Dense, very moist, grayish tan, very silty, gravelly, SAND; scattered cobbles; mottled above 5 feet (sandy till); nonstratified (SM).	
5 -	-	
6 -	-	
7 -	-	
8 -		
0	Bottom of exploration pit at depth 8 feet No seepage. No caving.	
9 -	T Contraction of the second seco	
10 -	-	
11 -		
<del>12 -</del>	-	
-	Issaquah HS #4 and ES #17 Issaquah, WA	
	associated	

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Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named proj- read together with that report for complete interpretation. This summary applies only to the location time of excavation. Subsurface conditions may change at this location with the passage of time. The a simplification of actual conditions encountered.	of this trench at the e data presented are
	DESCRIPTION	<u>Elev: 480 ft</u>
	Topsoil - 10 inches	
1 -	<b>Blakely Harbor Formation</b> Loose, very moist, brown, very silty, SAND, some gravel; abundant roots (SM).	
2 –		
0	Soft to medium stiff, very moist to wet, yellowish tan, SILT (ML).	
3 –		
4 —		
5 —		
6 —	Medium dense to dense, very moist, yellowish tan, very silty, fine SAND (SM) and SILT (ML); stratified (sandstone/siltstone).	d hard, fine sandy,
7 —		
8 -		
9 —		
10 -	Bottom of exploration pit at depth 9 feet Moderately rapid seepage 2 to 4 feet. Moderate sloughing 2 to 4 feet.	
11 –		
12 -		
	Issaquah HS #4 and ES #17 Issaquah, WA	
Logge	iby: TJP associated P	roject No. 180070E

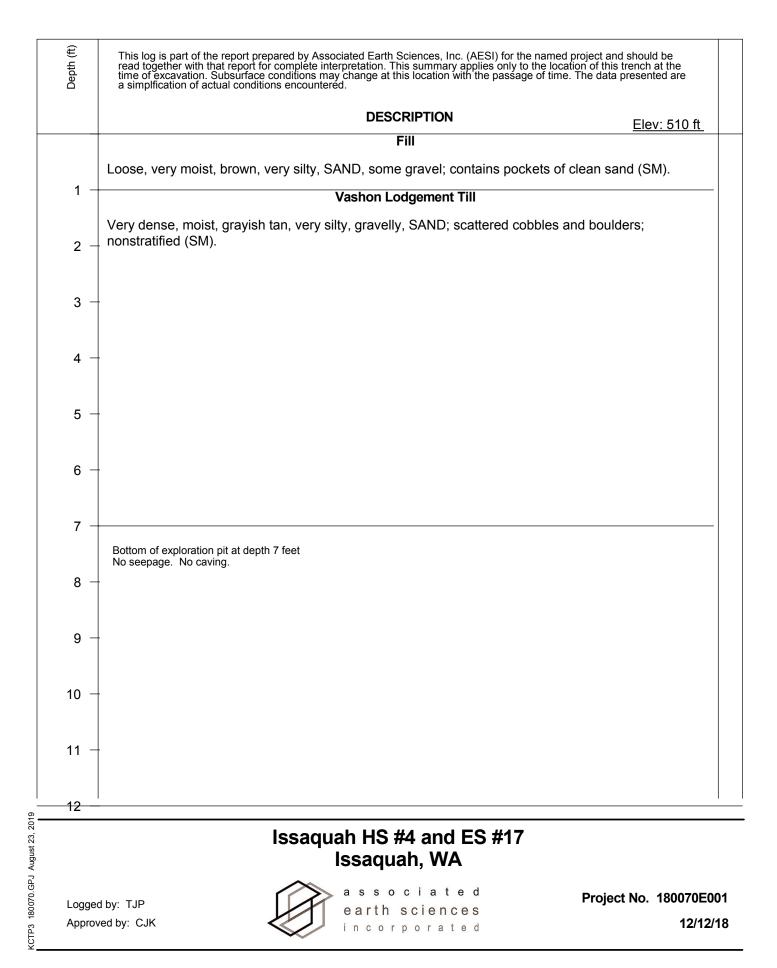
Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.
	DESCRIPTION Elev: 476 ft
	Topsoil - 6 inches
	Weathered Vashon Lodgement Till
1 -	Loose to medium dense, very moist, brown, very silty, gravelly, SAND; scattered cobbles; abundant roots (SM).
2 -	Blakely Harbor Formation
	Medium dense to dense, very moist, yellowish tan, very silty, SAND (SM).
3 -	-
4 -	-
5 -	-
6 -	
Ū	Becomes very dense below 6 feet.
7 -	
7 -	Bottom of exploration pit at depth 7 feet
0	No seepage. No caving.
8 -	
9 -	
10 -	-
11 -	+
12	
	Issaquah HS #4 and ES #17 Issaquah, WA
	d by: TJP ved by: CJK a ssociated Project No. 180070E001 in corporated 12/13/18

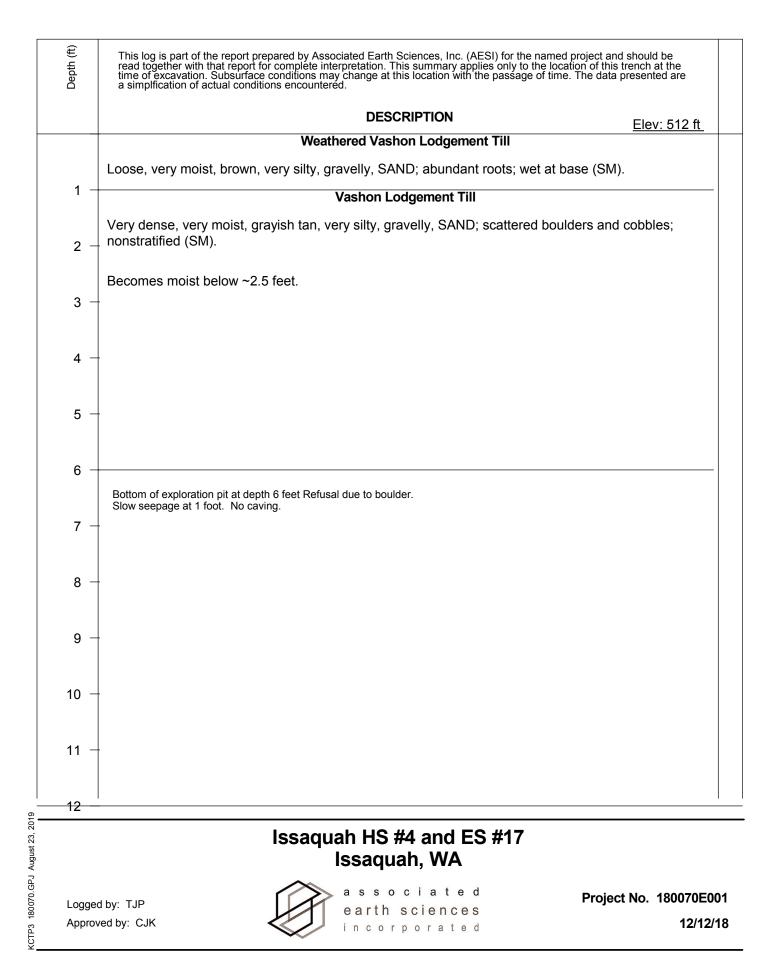
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Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.
	DESCRIPTION Elev: 482 ft
	Topsoil - 6 inches
	Weathered Vashon Lodgement Till
1 -	Loose, very moist, reddish brown, very silty, gravelly, SAND (SM).
	Abundant roots 0 to 2 feet.
2 -	Becomes medium dense and tan below 2 feet.
3 -	Vashon Lodgement Till
	Dense, very moist, mottled grayish tan, very silty, gravelly, SAND; scattered cobbles and boulders;
4 -	_ nonstratified (SM).
5 -	-
6 -	-
7 -	Wet at 7 feet.
8 -	-
9 -	
	Bottom of exploration pit at depth 9 feet Slow discontinuous seepage at 7 feet. No caving.
10 -	+
11 -	+
12	
	Issaquah HS #4 and ES #17 Issaquah, WA
Logge	ed by: TJP associated Project No. 180070E

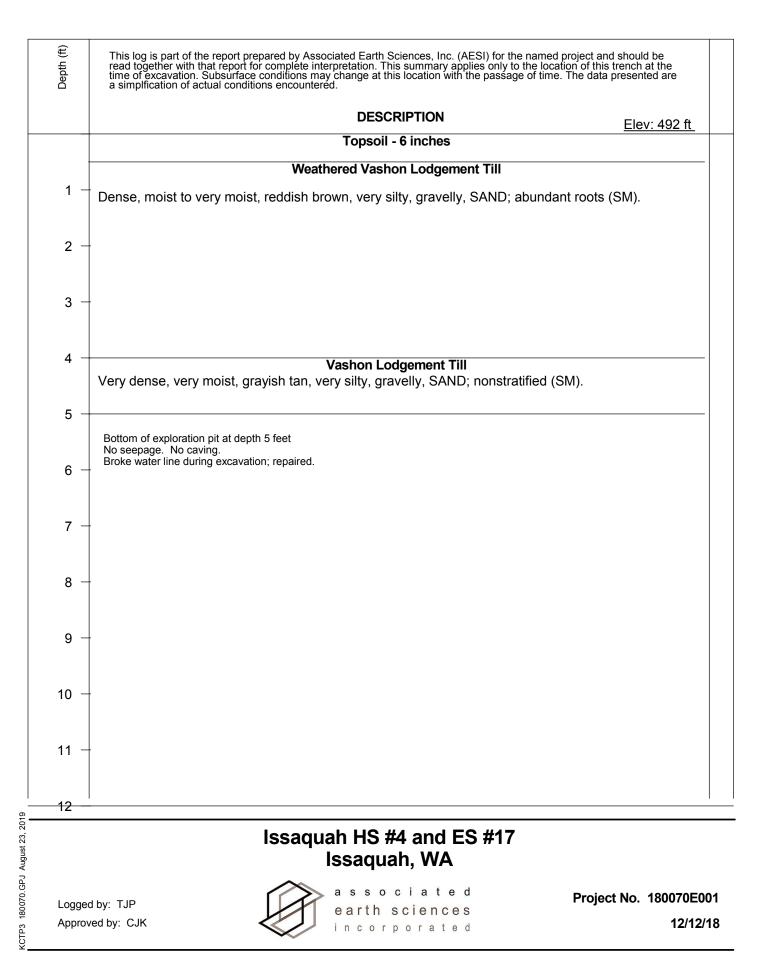
Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named p read together with that report for complete interpretation. This summary applies only to the location time of excavation. Subsurface conditions may change at this location with the passage of time. a simplification of actual conditions encountered.	roject and should be on of this trench at the The data presented are
	DESCRIPTION	<u>Elev: 505 ft</u>
	Fill	
	Loose, very moist, brown, very silty, gravelly, SAND (SM).	
1 -	Vashon Lodgement Till	
	Very dense, moist, tan gray, very silty, gravelly, SAND; nonstratified (SM).	
2 -	Very difficult digging.	
3 -	-	
4 -	- -	
5 -		
	Bottom of exploration pit at depth 5 feet	
6 -	No seepage. No caving.	
Ũ		
7 -	-	
'		
8 -		
0		
0		
9 –	*	
4.5		
10 -		
11 -	+	
-12 -		
	Issaquah HS #4 and ES #17 Issaquah, WA	
Logge	d by: TJP a s s o c i a t e d e arth sciences	Project No. 180070E00

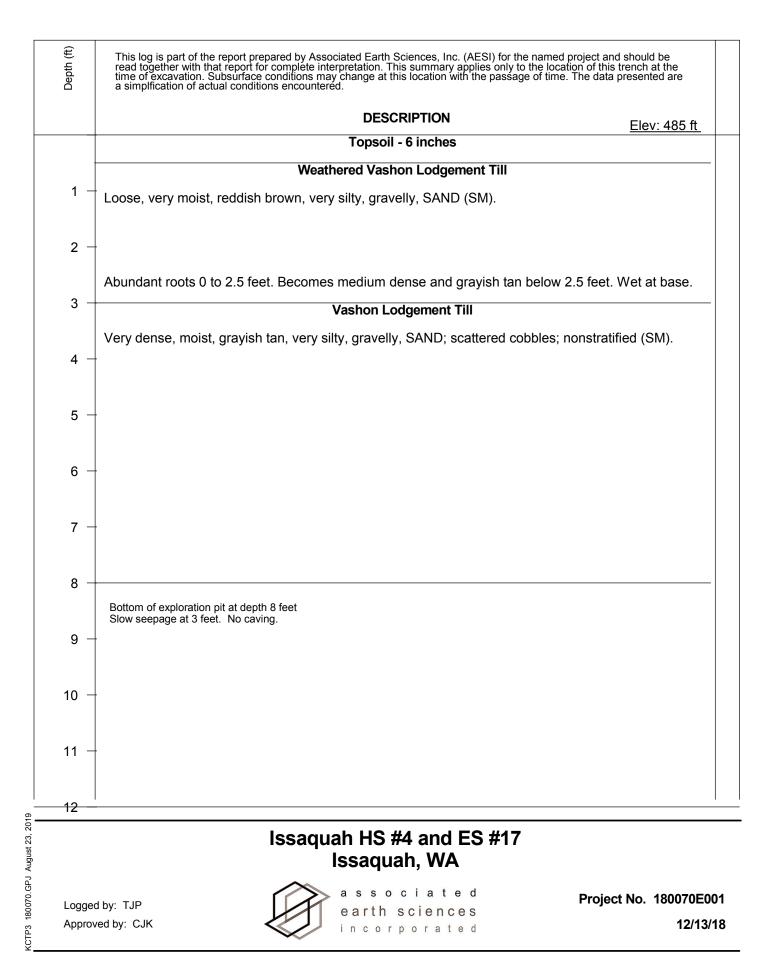
Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named projec read together with that report for complete interpretation. This summary applies only to the location of time of excavation. Subsurface conditions may change at this location with the passage of time. The c a simplfication of actual conditions encountered.	t and should be this trench at the lata presented are
	DESCRIPTION	<u>Elev: 500 ft</u>
	Fill	
1 —	Loose, moist, brown, very silty, gravelly, SAND (SM).	
2 -		
3 —	Abundant roots 0 to 4 feet	
4 —	Becomes tan below 4 feet.	
5 —		
6 —		
7 -		
8 —	Weathered Vashon Lodgement Till Medium dense, moist, reddish brown, very silty, gravelly, SAND (SM).	
9 —		
10 —	Clay pipe encountered at 10 feet in north end of excavation. Vashon Lodgement Till	
11 -	Very dense, moist, grayish tan, very silty, SAND, some gravel; nonstratified (SM).	
	Bottom of exploration pit at depth 11 feet No seepage. No caving.	
12	Issaquah HS #4 and ES #17 Issaquah, WA	
	associated Pro earth sciences incorporated	Dject No. 180070E001 12/12/18





Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named read together with that report for complete interpretation. This summary applies only to the locat time of excavation. Subsurface conditions may change at this location with the passage of time. a simplfication of actual conditions encountered.	project and should be ion of this trench at the The data presented are
	DESCRIPTION	<u>Elev: 512 ft</u>
	Fill	
	Loose, very moist to wet, brown, very silty, gravelly, SAND; contains trace woo	od debris (SM).
1 -		
2 -	Clay pipe and wires encountered at ~2 and 3 feet.	
3 -		
4 -		
_		
5 -		
6 -		
Ū	Vashon Lodgement Till Very dense, very moist, grayish tan, very silty, gravelly, SAND; nonstratified (S	• • • •
7 -	very dense, very moist, grayish tan, very siity, graveliy, SAND, honstratilied (S	, , , , , , , , , , , , , , , , , , ,
	Bottom of exploration pit at depth 7 feet Slow seepage at $\sim$ 2 feet. Moderately severe caving at $\sim$ 2 feet.	
8 -		
9 –		
10 -		
10 -		
11 -		
12 -		
	Issaquah HS #4 and ES #17 Issaquah, WA	
	associated earth sciences incorporated	Project No. 180070E0 12/12/



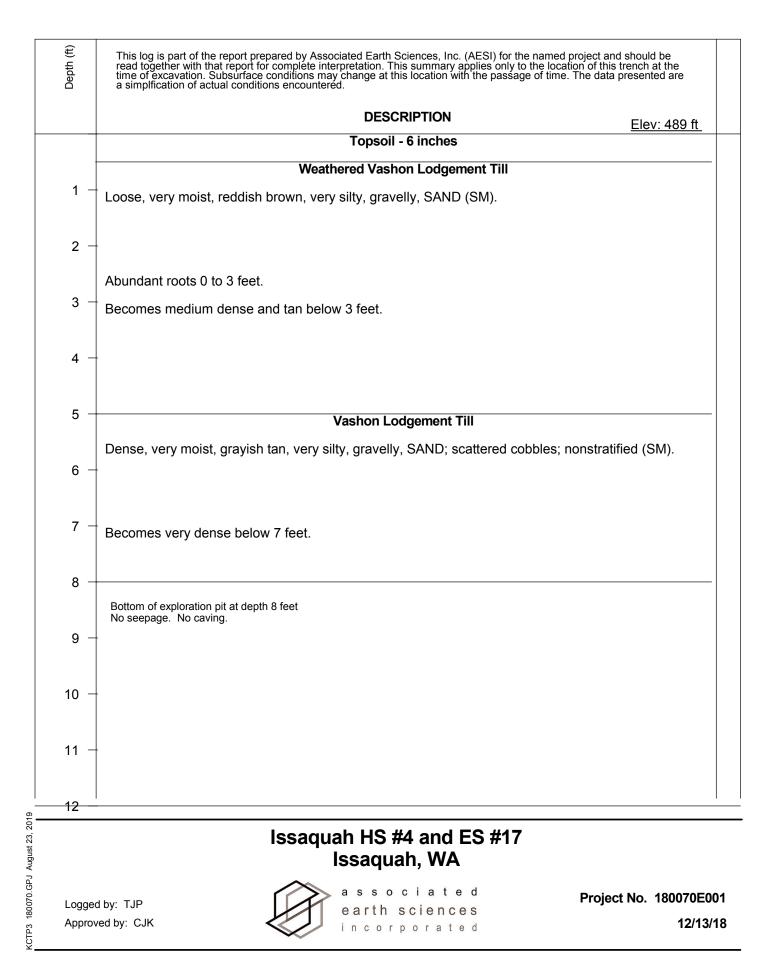


	DESCRIPTION Flow 470 ft
	Elev: 476 ft           Topsoil - 6 inches
	Weathered Vashon Lodgement Till
1 -	Loose, very moist, reddish brown, very silty, gravelly, SAND (SM).
2 -	-
	Wet at 2.5 feet. Abundant roots 0 to 2.5 feet.
3 -	Becomes medium dense, very moist, and tan below 3 feet.
	Vashon Lodgement Till
4 -	Dense, very moist, tan, very silty, gravelly, SAND; scattered cobbles; nonstratified (SM).
	Lightly mottled 3.5 to 4.5 feet. Becomes very dense below 4.5 feet.
5 -	+
0	
6 -	
7 -	
•	Bottom of exploration pit at depth 7 feet
8 -	Slow seepage at 2.5 feet. No caving.
9 -	-
10 -	-
11 -	+
12	
	Issaquah HS #4 and ES #17 Issaquah, WA

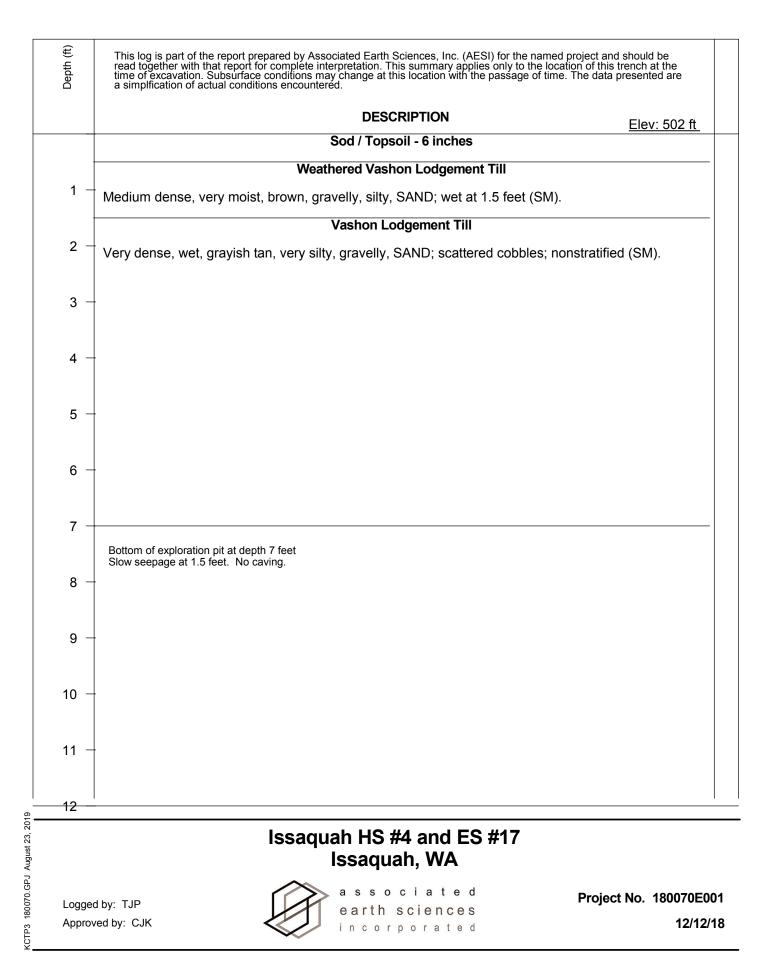
Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project a read together with that report for complete interpretation. This summary applies only to the location of th time of excavation. Subsurface conditions may change at this location with the passage of time. The dat a simplfication of actual conditions encountered.	
	DESCRIPTION	<u>Elev: 477 ft</u>
	Topsoil - 8 inches	
1 -	Weathered Vashon Lodgement Till Loose, very moist, reddish brown, gravelly, very silty, SAND; scattered cobbles (SM)	
2 -		
	Wet at 2.5 feet. Abundant roots 0 to 2.5 feet. Becomes medium dense and tan below	2 5 foot
3 -	Wet at 2.5 leet. Abundant roots 0 to 2.5 leet. Becomes medium dense and tan below	7 2.5 leel.
	Vashon Lodgement Till	
4 -	Dense, very moist, gravish tan, very silty, gravelly, SAND; scattered cobbles; nonstra	tified (SM).
	Mottled 3.5 to 5 feet.	、 /
5 -	-	
6 -	Becomes very dense below ~6 feet.	
7 -	-	
8 -		
	Bottom of exploration pit at depth 8 feet Moderately rapid seepage at 2.5 feet. No caving.	
9 -		
10 -	+	
11 -	*	
<del>12</del> –		
IZ -	looguuch LIC #4 and EC #47	
	Issaquah HS #4 and ES #17 Issaquah, WA	
	associated Brai	

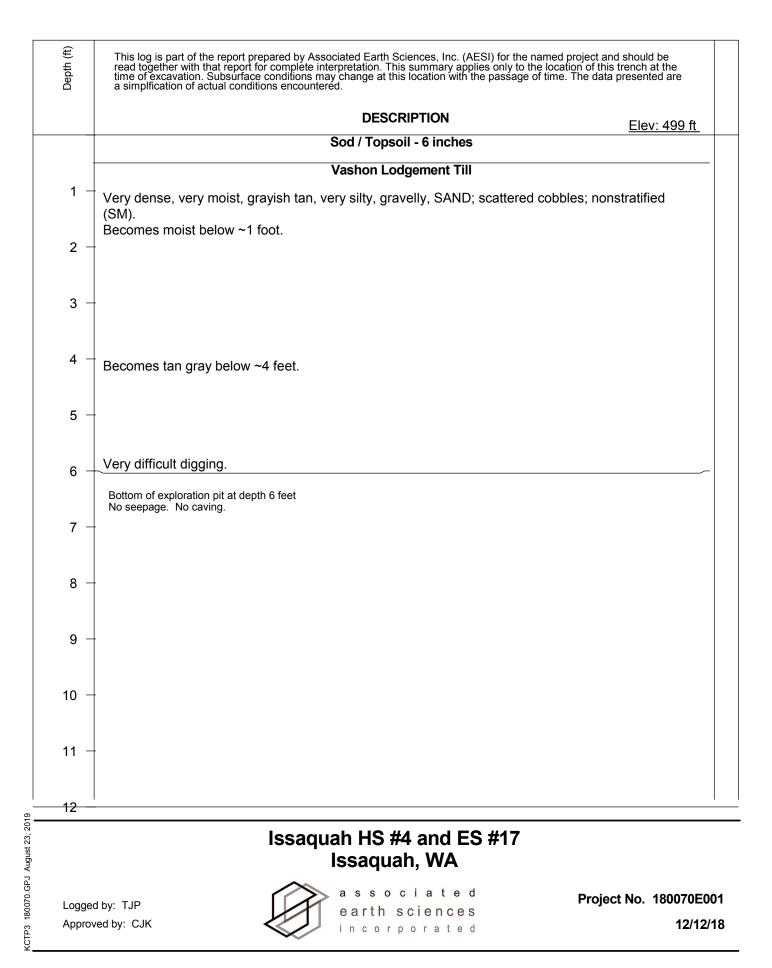
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Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named p read together with that report for complete interpretation. This summary applies only to the location time of excavation. Subsurface conditions may change at this location with the passage of time. a simplification of actual conditions encountered.	on of this trench at the The data presented are
	DESCRIPTION	Elev: 480 ft
	Forest Duff	
1 -	<b>Fill</b> Very dense, moist, grayish brown, very silty, gravelly, SAND; scattered cobbles	s (SM).
2 -	Medium dense to dense, moist, grayish brown, very gravelly, fine to medium SA scattered cobbles (SP).	AND, trace silt;
	Abundant wood debris below ~2.5 feet.	
3 -	Pockets of silty, sand below 3 feet.	
4 -	Vashon Lodgement Till	
	Dense, very moist, gray, very silty, gravelly, SAND; scattered cobbles; nonstrat	ified (SM)
5 -		
6 -	Becomes tan gray below 6 feet.	
7 -	_	
8 -		
C	Bottom of exploration pit at depth 8 feet No seepage. No caving.	
9 -		
10 -	-	
11 -		
12		
	Issaquah HS #4 and ES #17 Issaquah, WA	
Logge Appro	d by: TJP a s s o c i a t e d e arth sciences	Project No. 180070E 12/13



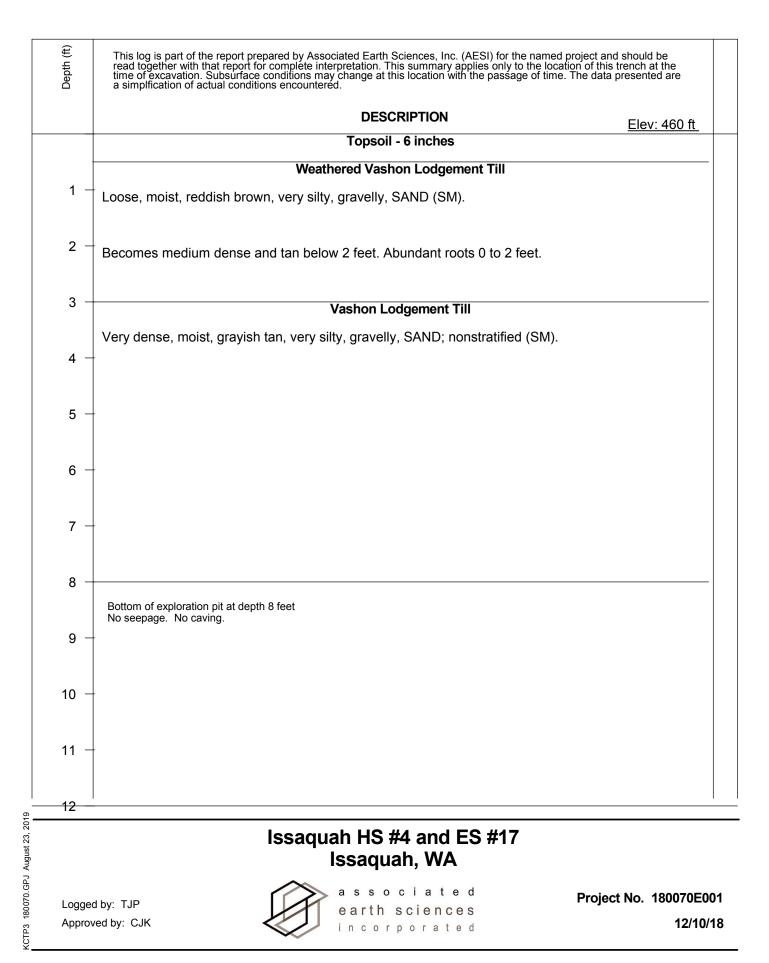
Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named proj read together with that report for complete interpretation. This summary applies only to the location time of excavation. Subsurface conditions may change at this location with the passage of time. The a simplification of actual conditions encountered.	ect and should be of this trench at the e data presented are
	DESCRIPTION	Elev: 501 ft
	Topsoil - 6 inches	
	Fill	
1 –	Medium dense, moist to very moist, grayish tan, fine to medium SAND, some silt; debris; wet at 2 feet (SP-SM).	scattered wood
2 -	Vashon Lodgement Till	
	Very dense, very moist, grayish tan, very silty, gravelly, SAND; nonstratified (SM)	
3 -		
4 -		
5 -	Bottom of exploration pit at depth 4.5 feet Refusal due to a large boulder. Slow seepage at 2 feet. No caving.	
	Clow Scepage at 2 leet. No caving.	
6 -		
7 –		
8 –		
0		
0		
9 –		
10 -		
11 –		
12		
	Issaquah HS #4 and ES #17 Issaquah, WA	
	Iby: TJP ed by: CJK associated P	roject No. 180070E 12/1

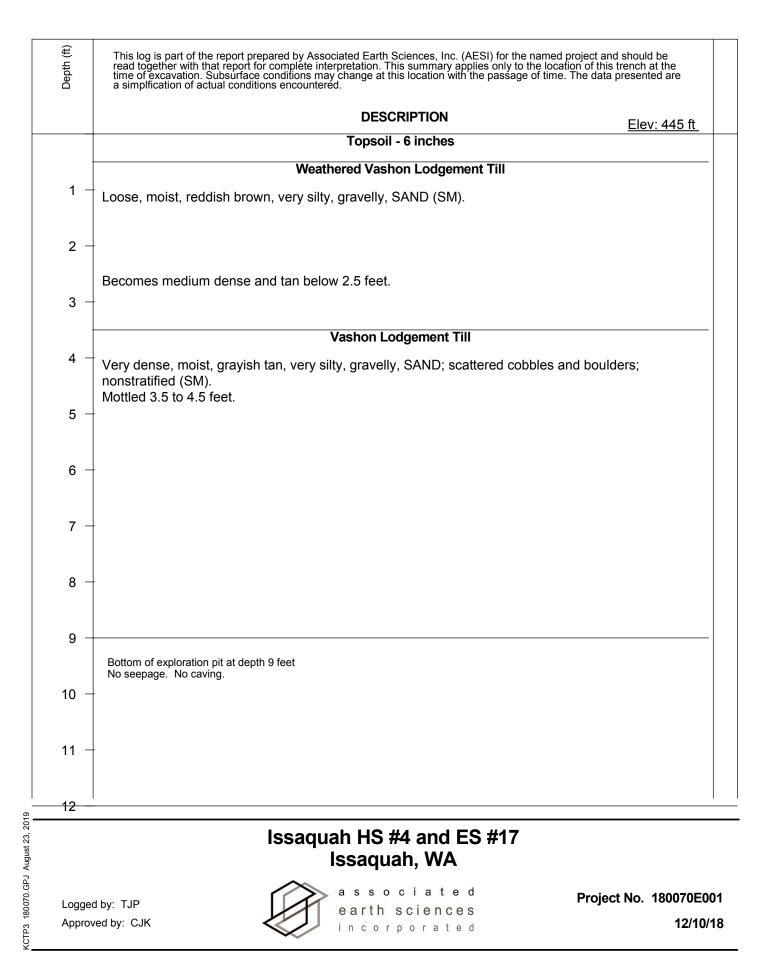




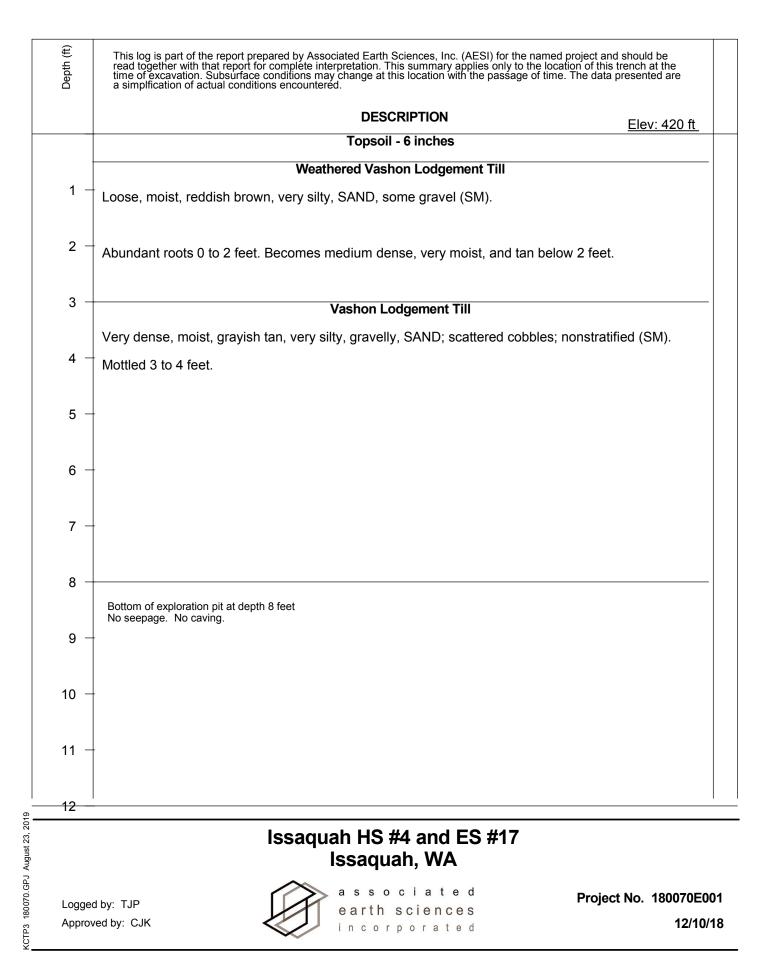
Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project read together with that report for complete interpretation. This summary applies only to the location of time of excavation. Subsurface conditions may change at this location with the passage of time. The d a simplification of actual conditions encountered.	
	DESCRIPTION	<u>Elev: 490 ft</u>
	Topsoil - 6 inches	
1	Weathered Vashon Lodgement Till	
1 —	Loose, moist, reddish brown to brown, very silty, gravelly, SAND (SM).	
2 –	Abundant roots 0 to 2 feet. Becomes medium dense, very moist, and tan below 2 fe	eet.
3 –	Wet at 3.5 feet.	
	Vashon Lodgement Till	
4 —	Very dense, moist, grayish tan, very silty, gravelly, SAND; nonstratified (SM).	
	Mottled 3.5 to 4.5 feet.	
5 –		
6 -		
7 –		
8 -		
9 —		
10	Bottom of exploration pit at depth 9.5 feet	
10 –	Slow seepage at 3.5 feet. No caving.	
11		
11 –		
12		
	Issaquah HS #4 and ES #17 Issaquah, WA	
	associated	

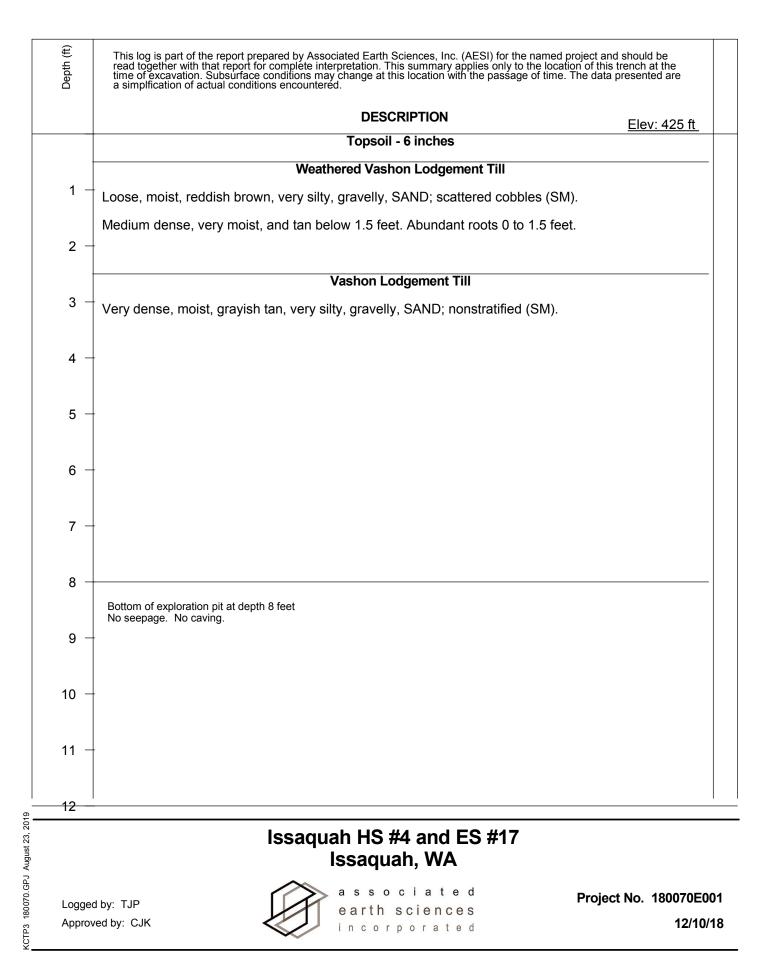
Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named read together with that report for complete interpretation. This summary applies only to the loca time of excavation. Subsurface conditions may change at this location with the passage of time a simplification of actual conditions encountered.	
	DESCRIPTION	<u>Elev: 478 ft</u>
	Topsoil - 8 inches	
1 -	Weathered Vashon Lodgement Till Loose, moist, reddish brown, very silty, gravelly, SAND (SM).	
	Abundant roots 0 to 2 feet.	
2 –	Becomes medium dense, very moist, and tan below 2 feet.	
3 -		
4 -	Vashon Lodgement Till	
	Dense, moist, tan, very silty, gravelly, SAND; nonstratified (SM).	
5 —	Mottled 4 to 5 feet.	
-	Very dense and grayish tan below 5 feet.	
6 —		
7 –		
8 -		
9 -	Bottom of exploration pit at depth 8.5 feet No seepage. No caving.	
10 -		
11 -		
12		
	Issaquah HS #4 and ES #17 Issaquah, WA	

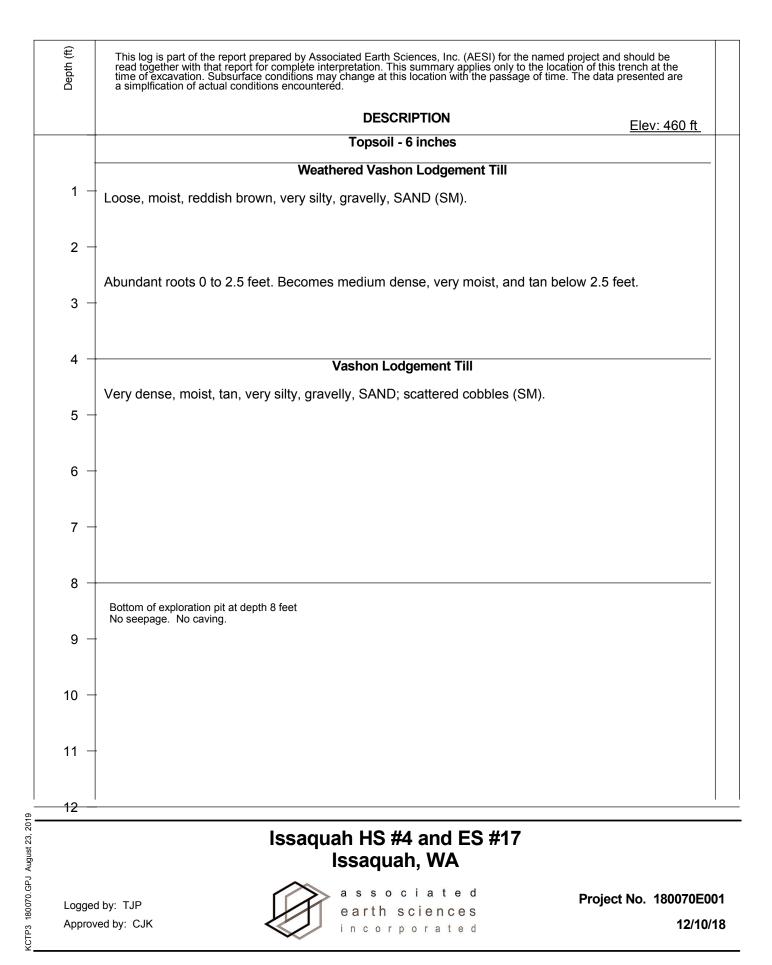




Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named project and should be read together with that report for complete interpretation. This summary applies only to the location of this trench at the time of excavation. Subsurface conditions may change at this location with the passage of time. The data presented are a simplfication of actual conditions encountered.
	DESCRIPTION Elev: 425 f
	Topsoil - 6 inches
	Weathered Vashon Lodgement Till
1 –	Loose, moist, reddish brown, very silty, gravelly, SAND (SM).
2 -	
3 –	Abundant roots 0 to 3 feet. Becomes medium dense and tan below 3 feet.
4 —	
	Vashon Lodgement Till
5 -	Very dense, moist, grayish tan, very silty, gravelly, SAND; scattered boulders and cobbles; nonstratified (SM). Mottled 4.5 to 6 feet.
6 —	
7 —	-
8 –	
9 –	
10 —	Bottom of exploration pit at depth 10 feet No seepage. No caving.
11 –	
12	
	Issaquah HS #4 and ES #17 Issaquah, WA
	d by: TJP ved by: CJK associated Project No. 180070 in corporated 12/

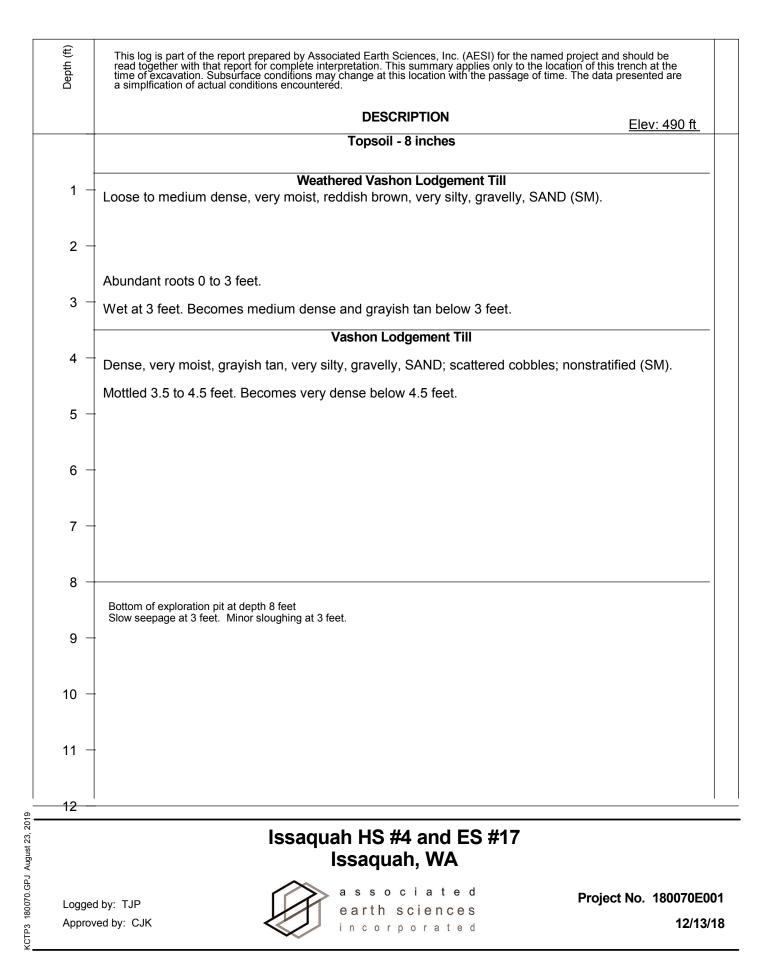






Depth (ft)	This log is part of the report prepared by Associated Earth Sciences, Inc. (AESI) for the named p read together with that report for complete interpretation. This summary applies only to the locati time of excavation. Subsurface conditions may change at this location with the passage of time. a simplification of actual conditions encountered.	project and should be ion of this trench at the The data presented are
	DESCRIPTION	<u>Elev: 460 ft</u>
	Topsoil - 6 inches	
	Weathered Vashon Lodgement Till	
1 -	Loose to medium dense, moist, reddish brown, very silty, gravelly, SAND; abur	ndant roots (SM).
2 -		
3 -		
	Vashon Lodgement Till	
4 –	Mottled 3.5 to 4.5 feet. Dense to very dense, moist, grayish tan, very silty, gravelly, SAND; scattered c (SM).	obbles; nonstratified
5 -		
6 -	Grades to tan gray below ~6 feet.	
7 -		
8 -		
9 -	Bottom of exploration pit at depth 9 feet	
	No seepage. No caving.	
10 -		
11 -		
12		
	Issaquah HS #4 and ES #17 Issaquah, WA	
	d by: TJP ved by: CJK	Project No. 180070E 12/10

	DESCRIPTION Else 405 ft
T	Elev: 485 ft           Topsoil - 8 inches
ł	Weathered Vashon Lodgement Till
1 -	Loose, moist, brown, very silty, gravelly, SAND (SM).
2 -	Abundant roots 0 to 1.5 feet.
-	Becomes medium dense, very moist, and tan below 2.5 feet.
3 —	Decomes medium dense, very moist, and tan below 2.5 reet.
4 —	
5 —	
Ū	
6 -	Vashon Lodgement Till
	Dense, moist, light yellowish tan, very silty, gravelly, SAND; scattered cobbles; nonstratified (SM).
7 —	
8 –	
8 —	Bottom of exploration pit at depth 8 feet
8 - 9 -	Bottom of exploration pit at depth 8 feet No seepage. No caving. Note: The color and density of the Till at this location suggests that it contains a significant percentage of reworked material from the underlying bedrock.
	No seepage. No caving. Note: The color and density of the Till at this location suggests that it contains a significant percentage of reworked
	No seepage. No caving. Note: The color and density of the Till at this location suggests that it contains a significant percentage of reworked
9 — 10 —	No seepage. No caving. Note: The color and density of the Till at this location suggests that it contains a significant percentage of reworked
9 —	No seepage. No caving. Note: The color and density of the Till at this location suggests that it contains a significant percentage of reworked
9 — 10 —	No seepage. No caving. Note: The color and density of the Till at this location suggests that it contains a significant percentage of reworked



	Ear Solut NW	IUIIS Bellevue, W	h Place /ashing 425-4	N.E., 8 ton 980	05	TEST PIT NUMBER TP- PAGE 1 OF
						PROJECT NAME Plateau Campus Property
PROJ	ECT NUI	BER 3333				PROJECT LOCATION Issaguah, Washington
DATE	STARTE	D 5/5/14	CO	MPLET	ED <u>5/5/14</u>	GROUND ELEVATION TEST PIT SIZE
						GROUND WATER LEVELS:
LOGG	ED BY	SHA	CH	ECKED	BY SSR	
NOTE	6 Depti	of Topsoil & Sod 10	bare	soil		AFTER EXCAVATION
DEPTH	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG		MATERIAL DESCRIPTION
0			TPSL	24 24	TOPSOIL	
1				htt	0 Brown silly SA	ND with gravel, loose to medium dense, moist (Weathered Till)
			1			
		MC = 16.90% Fines = 24.00%	1		-mottled with I	ght iron cxide staining, becomes dense
-			1			
-		NO - 40 500	SM		-becomes very	dense and unweathered, perched seepage
5		MC = 12.50%				
-						
					_	
-				_L7.		ated at 7.0 feet below existing grade. Groundwater seepage encountered at 4.0
					feet during exc	avation. Bottom of test plt at 7.0 feet.
						bonom or lest pit at 7.0 idet.
				16		
	1					
1	0					
		3				
			1			

ľ	tar Soluti NW	ORS Bellevue, W	Place N.E ashington 425-449-4	5., Suite 201 88005 704	TEST PIT NUMBER TP- PAGE 1 OF	
CLIEN	T Plate	au Campus, LLC			PROJECT NAME Plateau Campus Property	
PROJE	CT NUN	BER 3333	418.) - <b>117</b> - 118.1 (1) - 11		PROJECT LOCATION Issaguah, Washington	
					GROUND ELEVATION TEST PIT SIZE	
EXCAV	ATION	CONTRACTOR NW	Excavatin		GROUND WATER LEVELS:	
				ED BY SSR	AT END OF EXCAVATION	
NOTES	Depth	of Topsoli & Sod 12	": lvy		AFTER EXCAVATION	
O DEPTH	SAMPLE TYPE NUMBER	TESTS	U.S.C.S. GRAPHIC	5001	MATERIAL DESCRIPTION	
-				10	ND with gravel, loose to medium dense, moist (Weathered Till)	
-	×	MC = 15.70% Fines = 29.10%		-heavy perched		
		MC = 8.00%	SM	-becomes very	nes very dense and unweathered	
5				5.0 Test plt termina	ated at 5.0 feet below existing grade. Groundwater seepage encountered at 1.	
				feet during exc.	avation. Bottom of test pit at 5.0 feet.	
	5					
				-		

1	Far Soluti NM	IONS Bellevue, V	th Place Vashing 425-4	e N.E., S ton 980 49-4704	ulte 201 05	TEST PIT NUMBER TP-		
						PROJECT NAME Plateau Campus Property		
PROJI	ECT NUN	IBER 3333				PROJECT LOCATION Issaguah, Washington		
DATE	STARTE	D <u>5/5/14</u>	_ co	MPLET	D 5/5/14	GROUND ELEVATION TEST PIT SIZE		
						GROUND WATER LEVELS;		
EXCAN	VATION			lener star		AT TIME OF EXCAVATION		
.OGG	ED BY	SHA	_ CH	ECKED	BY SSR	AT END OF EXCAVATION		
NOTES		1 07 1 00501 & 500 18	5": IVY	r				
C DEPTH	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG		MATERIAL DESCRIPTION		
Ť			-	24 2	TOPSOIL			
			TPSI	14 64				
1				14 1	6			
-		MC = 11.80%			Brown slity SA	ND with gravel, loose and medlum dense, moist (Weathered Tili)		
1		MC = 12.00%						
1					-becomes very	dense and unweathered		
	- 1		SM					
	1							
-		MC = 12.10%						
1								
				8	0			
1					Test pit termina feet during exce	ated at 8.0 feet below existing grade. Groundwater seepage encountered at 3.5		
					ion annig ond	Bottom of test pit et 8.0 feet.		
1								
				1				
		And the second sec	-					

	Ear Soluti NW	ODS Bellevue, V Telephone: Fax: 425-4	th Plac Vashing 425-4 49-471	e N.E., Su ston 9800 49-4704 1	5	TEST PIT NUMBER TP		
CLIEN	IT Plate	au Campus, LLC				PROJECT NAME Plateau Campus Property		
PROJ	ECT NUN	IBER 3333			a an anna a shatan a shatan a	PROJECT LOCATION Issaquah, Washington		
DATE	STARTE	D <u>5/5/14</u>	- co	MPLETE	D <u>5/5/14</u>	GROUND ELEVATION TEST PIT SIZE		
EXCA	VATION	CONTRACTOR NY	V Exce	ating		GROUND WATER LEVELS:		
EXCA	VATION I							
		of Tontoli & Red Fi	GH	EGRED E	IT SSK	AT END OF EXCAVATION		
NUIE	1	DI TOPADIT & SOO D	: Dare I			AFTER EXCAVATION		
o DEPTH	SAMPLE TYPE NUMBER	TESTS	U.S.C.S	GRAPHIC		MATERIAL DESCRIPTION		
			TPSI	<u><u><u><u></u></u> <u></u> <u></u> <u>0.6</u></u></u>	TOPSOIL	and the second se		
-		MC <b>≍ 14.30%</b>				ID with gravel, medium dense, moist (Fill)		
5		MC = 16.80%	SM		-native, unweath	ened till contact		
10				10.0	2			
					Test pit terminate excavation.	ed at 10.0 feet below existing grade. No groundwater encountered during		
					www.erguyii.	Bottom of test pit at 10.0 feet.		
				1				
	1	1						

1	Solu	rth tions	1 B T	805 - elievu elepho	Solutions NW 136th Place N.E., Suite 201 18, Washington 98005 one: 425-449-4704 25-449-4711	TEST PIT NUMBER TP PAGE 1 OI				
CLIEN	T_Plat	Bau C	ampu	<u>s, LLC</u>	C	and the second sec				
PROJ	ECT NU	MBER	333	33		PROJECT LOCATION Issaquah, Washington				
						GROUND ELEVATION TEST PIT SIZE				
					NW Excavating					
LOGG	ED BY	SHA			CHECKED BY SSR					
NOTE	S Dept	h of Te	opsol	& So	d 6": fems					
DEPTH	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC			MATERIAL DESCRIPTION				
0		TPSL	24	0.5	TOPSOIL					
			TT	0.0	Brown silky SAND with gravel, med	ium dense, moist (Weathered Till)				
1										
-					hanness you donce and unweith					
	- 1	SM			-becomes very dense and unweath	ereo				
-1	j									
		1		4.0						
1					Test pit terminated at 4.0 feet below	v existing grade. No groundwater encountered during excevation. Bottom of test pit at 4.0 feet.				
				9						
			1							
1										
1										
		1								
1										

CLIEN	NW NT Plate	Fax: 425-4	: <b>425-4</b>  49-471	49-4704 1		PAGE 1 OF PROJECT NAME Pleteau Campus Property PROJECT I OCATION International Action Property		
DATE EXCA EXCA LOGG	STARTE VATION VATION	ED <u>5/5/14</u> Contractor <u>NV</u> Method Sha	CC V Excav	MPLET rating ECKED	ED <u>5/5/14</u>	GROUND WATER LEVELS:		
OEPTH	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG		MATERIAL DESCRIPTION		
5		MC = 15.80% MC = 10.40% Fines = 11.30% MC = 21.60%	GP- GM		-cobbles -becomes very -cobbles down (	VD with gravel, medium dense, moist (Weathered Till) dense and unweathered to terminus of test pit raded GRAVEL with silt and sand, dense, moist		
		3			3.0 Test pit terminat excavation.	ed at 13.0 feet below existing grade. No groundwater encountered during Bottom of test pit at 13.0 feet.		

501	Arth 1805 - 136 Utions With With Fac 4254	th Place Vashing : 425-4	9 N.E., S Iton 9800 49-4704	)5	TEST PIT NUMBER TP PAGE 1 OF		
					PROJECT NAME Plateau Campus Property		
PROJECT	UMBER 3333				PROJECT LOCATION _issaguah, Washington		
					GROUND ELEVATION TEST PIT SIZE		
					_ GROUND WATER LEVELS:		
EXCAVATIO	N METHOD				AT TIME OF EXCAVATION		
			ECKED	BY SSR			
	pth of Topsoll & Sod 1	211 0011	1 T		AFTER EXCAVATION		
(ft) (ft) SAMPLE TYPE NI MARED	TESTS	U.S.C.S.	GRAPHIC LOG		MATERIAL DESCRIPTION		
0	-	TPSL	1 1 1 1 1 1 1	TOPSOIL			
-1	1	-	1112	0 Brown silty SA	ND with gravel, loose to medium dense, moist (Weathered Till)		
	MC = 23.20%	SM					
~				-fractured	of builture		
-			5403		raded GRAVEL with slit and sand, dense, moist		
5	MC = 17.20%	GP- GM					
-			olde.				
			1	excavation.	ted at 9.0 feet below existing grade. No groundwater encountered during		
					Bottom of test pit at 9.0 feet.		
				£			
1							
1							
1							

T.	Lari Soluti NW	Ons Bellevue, V Telephone: Fax: 425-4	th Place Vashingt 425-44 49-4711	N.E., Suiton 98005 19-4704		TEST PIT NUMBER TP- PAGE 1 OF
						PROJECT NAME Plateau Campus Property
PROJI	ECT NUN	BER 3333				PROJECT LOCATION Issagueh, Washington
DATE	STARTE	D <u>5/5/14</u>	COI	MPLETEO	5/5/14	GROUND ELEVATION TEST PIT SIZE
						GROUND WATER LEVELS:
EXCA	ATION J	METHOD				AT TIME OF EXCAVATION
LOGGI	ED BY 🧕	SHA	CHE	ECKED B	SSR	AT END OF EXCAVATION
NOTEE	B Depth	of Topsoll & Sod 10	D": fores	t duff		AFTER EXCAVATION
o DEPTH	SAMPLE TYPE NUMBER	TESTS	USCS	GRAPHIC LOG		MATERIAL DESCRIPTION
	100		TPSL	<u>1.0</u>	TOPSOIL	
-					Brown silty SAt	ND with gravel, loose to medium dense, moist (Weathered Till)
5		MC = 19.70%	SM		-becomes very -cobbles	dense and unweathered
					Test pit termina excavation.	ted at 8.0 feet below existing grade. No groundwater encountered during Bottom of test pit at 8.0 feet.

'Solut NW	lions	11 Bi Ti Fi	805 - 136th Place N.E., Suite 201 telievue, Washington 98005 elephone: 425-449-4704 ax: 425-449-4711	TEST PIT NUMBER TP-10 PAGE 1 OF 1
				PROJECT NAME Plateau Campus Property
ECT NU	MBER	333	33	PROJECT LOCATION Issaqueh, Washington
				14 GROUND ELEVATION TEST PIT SIZE
	CLIA	ιψυ -		
	1	T		
SAMPLE TYPE NUMBER	U.S.C.S.			MATERIAL DESCRIPTION
	TPSL	<u>12</u>	TOPSOIL	
		12 62	1.0 Brown eilty SAND with or	marilium danses molet
	SM		DIOWI SILY ON AD WAT SI	avel, meurum dense, moist
	-	Ш	3.0 -cobbles and weathered	fractured bedrock
		604	Brown poorly graded GR	fractured bedrock AVEL with slit and sand, dense, moist
	GP- GM	200		
		D. 731	Test pit terminated at 5.0	feet below existing grade. No groundwater encountered during excevation. Bottom of test pit at 5.0 feet.
	Solution NT Plate PECT NU STARTI NATION VATION ED BY	Mirror PECT NUMBER STARTED 5 VATION CON VATION METHOR DED BY SHA S Depth of T UA S Depth of T UA S Depth of T S Depth of T S S S S S S S S S S S S S	Earth Solutions NWm ECT NUMBER 33 STARTED 5/5/14 VATION CONTRACT VATION METHOD NED BY SHA S Depth of Topsol	Bellevue, Washington 98005 Telephone: 425-449-4704 Fax: 425-449-4704 Fax: 425-449-4711 WT Pleteau Campus, LLC ECT NUMBER 3333 STARTED 5/5/14 COMPLETED 5/5/ VATION CONTRACTOR NW Excevating VATION METHOD MED BY SHA CHECKED BY SSI S Depth of Topsoll & Sod 10": blackberry bushes S Depth of Topsoll & Sod 10": blackberry bushes S Depth of Topsoll & Sod 10": blackberry bushes TPSL 2 2 TOPSOIL TPSL 2 2 TOPSOIL 1.0 Brown silty SAND with gr SM 3.0 -cobbles and weathered 1 Brown poorly graded GR

GENERAL BH / TP / WELL 3333, GPJ GINT US GDT 8/5/4

	LOG OF TEST PIT NO. TP-1 FIGURE A-2										
PROJ		ME: Madison Pointe PROJ.	NO: <u>T-7252</u>	LC	OGGED	BY: CSD					
LOCA		Issaquah, Washington SURFACE CONDS: Here	avy Understory	AF	PROX	. ELEV: <u>466 Feet</u>					
DATE	LOGGE	D: July 8, 2015 DEPTH TO GROUNDWATER:	N/A DEP	гн то (	CAVING	9: _N/A					
DEPTH (FT.)	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	(%) M	POCKET PEN. (TSF)	REMARKS					
1-		Brown silty SAND, fine grained, dry, heavy organic inclusions. (SM) (Topsoil)	dry, heavy organic Loose 7.1								
2-	_1	Down sith CAND with some lifes to medium stringed		7.1							
3-		Brown silty SAND with gravel, fine to medium grained, dry, roots. (SM)									
4-											
5-											
6-	2			9.5							
7-		Gray silty SAND with gravel to SAND with silt and gravel, fine to medium grained, dry to moist, cemented. (SM/SP-SM)	Very Dense								
8											
9-											
10		Test pit terminated at approximately 10 feet.									
11-		No groundwater seepage observed.									
12-											
13-											
14											
15-											
NOTE: not be	This sub interprete	surface information pertains only to this test pit location and should d as being indicative of other locations at the site.		As Consu	ltants in Geo	ates, Inc. Geotechnical Engineering Jogy and ntal Earth Sciences					

	LOG OF TEST PIT NO. TP-2 FIGURE A-3											
PROJ		ME: Madison Pointe PROJ.	NO: <u>T-7252</u>	LC	OGGED	BY: CSD						
LOCA	TION:	Issaquah, Washington SURFACE CONDS: He	avy Understory	AF	PROX.	ELEV: 464 Feet						
DATE	LOGGE	DEPTH TO GROUNDWATER:	N/A DEP	тн то о	CAVING	6: _N/A						
<b>DEPTH (FT.)</b>	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	(%) M	POCKET PEN. (TSF)	REMARKS						
1-		Brown silty SAND, fine grained, dry, heavy organic inclusions. (SM) (Topsoil)	Loose									
2-	1	Brown silty SAND with gravel, fine to medium grained, dry, roots. (SM)	Medium Dense	9.2								
3-	2	Gray silty SAND with gravel, fine to medium grained, dry, cemented. (SM)	Dense	6.5								
5-												
6- 7-				8.1								
8	3	Gray silty SAND with gravel to SAND with silt and gravel, fine to medium grained, moist, cemented. (SM/SP-SM)	Very Dense	0.1								
9-												
10-		Test pit terminated at approximately 10 feet.										
11 —		No groundwater seepage observed.										
12-												
13-												
14 —												
15-												
NOTE: not be	This sub interprete	osurface information pertains only to this test pit location and should d as being indicative of other locations at the site.		As Consu	iltants in Geo	<b>Ites, Inc.</b> Geotechnical Engineering logy and tal Earth Sciences						

	LOG OF TEST PIT NO. TP-3 FIGURE A-4										
PROJ		ME: Madison Pointe PROJ.	NO: <u>T-7252</u>	LC	GGED	BY: CSD					
LOCA		Issaquah, Washington SURFACE CONDS: Mo	derate Understory	AF	PROX	. ELEV: <u>438 Feet</u>					
DATE	LOGGE	ED: July 8, 2015 DEPTH TO GROUNDWATER:	N/A DEP	ГН ТО	CAVINO	G: 0 to 3 Feet					
DEPTH (FT.)	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	(%) M	POCKET PEN. (TSF)	REMARKS					
		(6 inches ORGANICS)									
1— 2—	1	Brown silty SAND with gravel to SAND with silt and gravel, fine to medium grained, dry, roots. (SM/SP-SM)	Medium Dense	5.7							
3-											
5-	2			4.9							
6- 7-		Gray silty SAND with gravel to SAND with silt and gravel, fine to medium grained, dry to moist, cemented, occasional cobble. (SM/SP-SM)	Very Dense								
8-											
9 10		Test pit terminated at approximately 9 feet. No groundwater seepage observed. Minor caving observed in the upper 3 feet.									
11-	-	winor caving observed in the upper 5 reet.									
12-											
13—											
14⊸											
15-											
NOTE: not be i	This sub	osurface information pertains only to this test pit location and should d as being indicative of other locations at the site.		As Consu	iltants in Geo	Ates, Inc. Geotechnical Engineering blogy and htal Earth Sciences					

		LOG OF TEST PIT N		FIGURE A-5		
PROJ		ME: Madison Pointe PROJ.	NO: <u>T-7252</u>	LC	GGED	BY: CSD
LOCA	TION:	Issaquah, Washington SURFACE CONDS: Min	imal Understory	AP	PROX.	ELEV: 480 Feet
DATE	LOGGE	ED: July 8, 2015 DEPTH TO GROUNDWATER:	N/A DEP	гн то с		6: <u>N/A</u>
<b>DEPTH (FT.)</b>	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	(%) M	POCKET PEN. (TSF)	REMARKS
1-		Brown silty SAND, fine grained, dry, heavy organic inclusions. (SM) (Topsoil)	Loose			
2	1	Gray silty SAND with gravel, fine to medium grained, dry, some roots. (SM)	Dense	9.7		
4 5 6-	2			23.7		
7		Gray SILTSTONE, moist.	Very Dense			
9	3			25.1		
11-	1 M M	Test pit terminated at approximately 10 feet. No groundwater seepage observed.				
12						
13-						
14 –						
15-						
NOTE: not be i	This sub interprete	osurface information pertains only to this test pit location and should d as being indicative of other locations at the site		As: Consu	Itants in Geo	<b>Ites, Inc.</b> Geotechnical Engineering logy and tal Earth Sciences

		LOG OF TEST P	IT NO. TP-5			FIGURE A-6	
PROJ		ME: Madison Pointe	PROJ. NO: <u>T-7252</u>	LC	OGGED BY: CSD		
LOCA		Issaquah, Washington SURFACE COND	S: Moderate Understory	AF	PROX	ELEV: <u>490 Feet</u>	
DATE	LOGGE	ED: July 8, 2015 DEPTH TO GROUNDW	ATER: <u>N/A</u> DEP	тн то о	CAVING	6: <u>N/A</u>	
<b>DEPTH (FT.)</b>	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	(%) M	POCKET PEN. (TSF)	REMARKS	
1-		Brown silty SAND, fine grained, dry, heavy organic inclusions. (SM) (Topsoil)	Loose				
2	_1	Brown silty SAND with gravel, fine to medium grained dry, large roots. (SM)	, Medium Dense	9.0			
5-	2	Gray-brown silty SAND mixed with pieces of weathere SANDSTONE, fine to medium grained, dry, cobbles. (SM)	ed Very Dense	11.6			
7- 8-		*Sandstone pieces increase with depth, by 9 feet beca difficult to excavate with 125 machine	ame				
9 10		Test pit terminated at approximately 9 feet. No groundwater seepage observed.					
11-							
12 –							
13–							
14							
15-				Те	erra		
NOTE: not be	This sub	osurface information pertains only to this test pit location and shoul d as being indicative of other locations at the site.	ld	As Consu	socia Iltants in Geo	ates, Inc. Geotechnical Engineering plogy and ntal Earth Sciences	

LOG OF TEST PIT NO. TP-6 FIGURE										
PROJ		ME: Madison Pointe	PROJ. I	NO: <u>T-7252</u>	LO	GGED	BY: CSD			
LOCA		Issaquah, Washington	SURFACE CONDS: Brus	sh/Weeds	APPROX. ELEV: 520 Feet					
DATE	LOGGE	D: July 8, 2015 DEP	TH TO GROUNDWATER:	N/A DEPT	гн то с	CAVING	6: <u>N/A</u>			
<b>DEPTH (FT.)</b>	SAMPLE NO.	DESCRIPTIO	Ν	CONSISTENCY/ RELATIVE DENSITY	(%) M	POCKET PEN. (TSF)	REMARKS			
1-	1	(less than 1" ORGANICS) FILL: gray sandy silt, fine grained, construction debris, large piece of	dry, roots, minor concrete.	Medium Dense	11.0					
2-		Black silty SAND, fine to medium ( heavy organic inclusions. (SM) (1	grained, dry, roots, <sup>-</sup> opsoil)	Medium Dense						
3-										
4	2			Dense	56.0					
5⊸										
6-		Red-brown SILTSTONE, very wea occasional boulders.	thered, some cobbles,							
7-										
8-										
9-		@-9' material becomes less weath	ered, larger pieces	Very Dense						
10-	3				46.6					
11 —	<b>4</b>	Test pit terminated at approximate No groundwater seepage observed	ly 10 feet. d.							
12-										
13	<b>1</b>									
14-										
15-										
NOTE: not be	: This sut interprete	osurface information pertains only to this tes d as being indicative of other locations at th		As Consu	ltants in Geo	ates, Inc. Geotechnical Engineering logy and ntal Earth Sciences				

	LOG OF TEST PIT NO. TP-7 FIGURE A-8										
PROJ		ME: Madison Pointe PROJ.	NO: <u>T-7252</u>	LC	GGED	BY: CSD					
LOCA		Issaquah, Washington SURFACE CONDS: Hea	avy Understory	AF	PROX.	ELEV: <u>516 Feet</u>					
DATE	LOGGI	ED: July 8, 2015 DEPTH TO GROUNDWATER:	N/A DEP	гн то с	CAVING	B: <u>N/A</u>					
<b>DEPTH (FT.)</b>	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	(%) M	POCKET PEN. (TSF)	REMARKS					
1-		Brown silty SAND, fine grained, dry, heavy organic inclusions. (SM) (Topsoil)	Loose								
2-	1	Brown silty SAND with gravel, fine to medium grained, dry, roots. (SM)	Medium Dense	8.0							
3–				1							
4-											
5-	2	Gray silty SAND with gravel to SAND with silt and gravel, fine to medium grained, dry, cemented. (SM/SP-SM)	Dense	5.9							
6-	2			0.0							
7-											
8-		Test pit terminated at approximately 7 feet. No groundwater seepage observed.									
9-											
10-											
11-											
12-											
13-											
14—											
15-											
NOTE: not be	This sul interprete	osurface information pertains only to this test pit location and should d as being indicative of other locations at the site.		As Consu	Itants in Geo	<b>Ites, Inc.</b> Geotechnical Engineering logy and tal Earth Sciences					

ROJ	ECT N/	ME: Madison Pointe PF	ROJ. NO: <u>T-7252</u>	L(	OGGED	BY: CSD
		Issaquah, Washington SURFACE CONDS:				
DATE	LOGG	ED: July 8, 2015 DEPTH TO GROUNDWAT	ER: <u>N/A</u> DE	PTH TO		6: _N/A
DEPTH (FT.)	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	(%) M	POCKET PEN. (TSF)	REMARKS
1-		Brown silty SAND, fine grained, dry, heavy organic inclusions. (SM) (Topsoil)	Loose			
2				5.3		
3-	1	Brown SAND with silt and gravel, fine to medium grained dry, roots. (SP-SM)	<sup>9,</sup> Medium Dense			
4- 5-			Dense			
6- 7 8-	2	Gray silty SAND with gravel, fine to medium grained, dry to moist, cemented, some cobbles/boulders. (SM/SP- SM)	Very Dense	12.7		
9-	3	Red-brown SANDSTONE, moist, weathered, difficult to excavate.	Very Dense	10.7		
10-		Test pit terminated at approximately 10 feet. No groundwater seepage observed.				
12-						
3						
15 -						

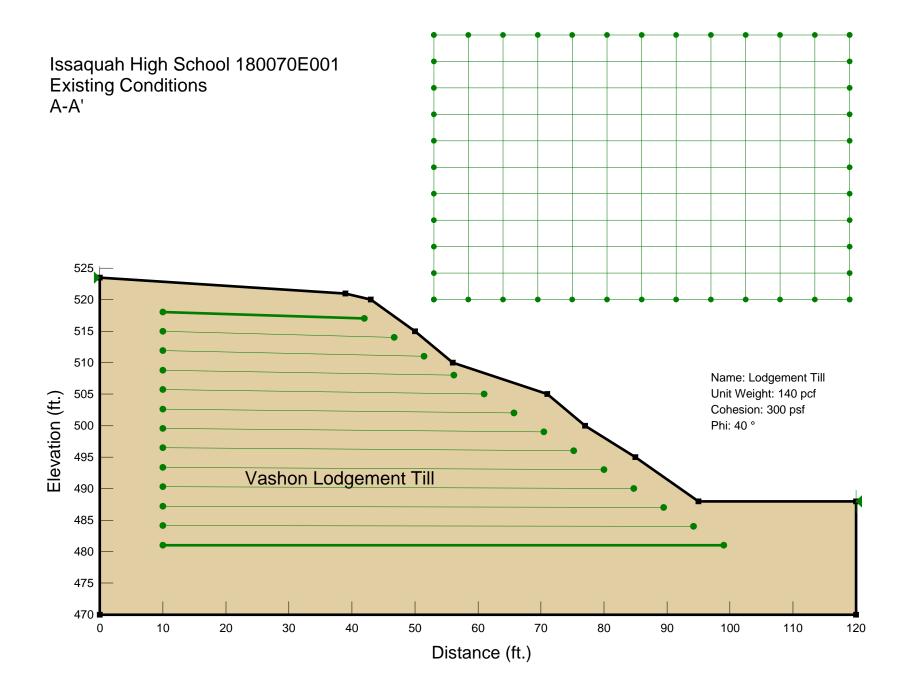
Geology and Geology and Environmental Earth Sciences

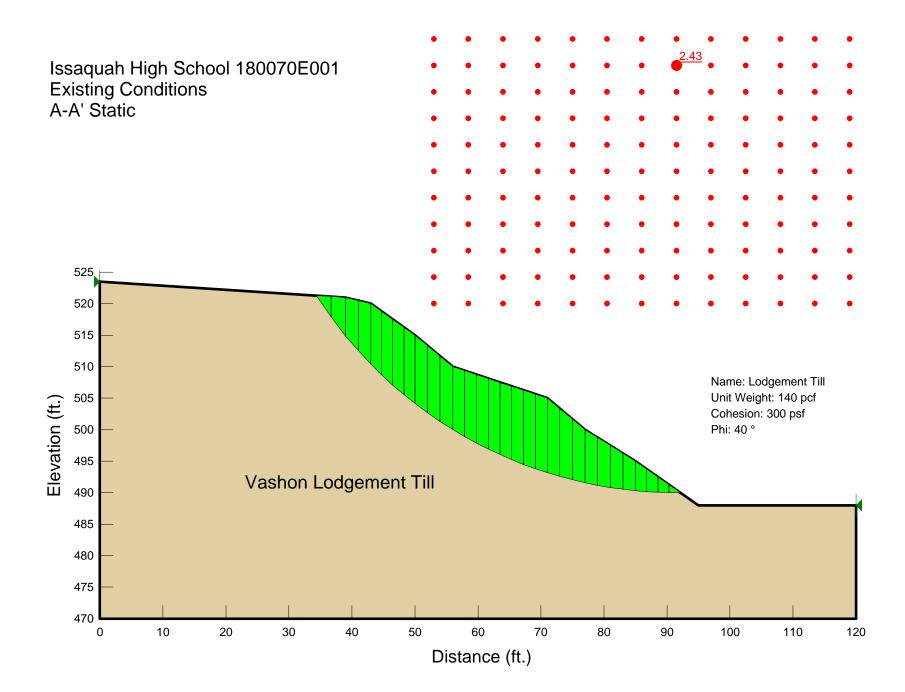
	LOG OF TEST PIT NO. TP-9 FIGURE A-10										
PROJ		ME: Madison Pointe	PROJ. NO: <u>T-7252</u>	LC	GGED	BY: CSD					
LOCA	TION:	Issaquah, Washington SURFACE COND	S: Moderate Understory	AF	PROX	. ELEV: <u>482 Feet</u>					
DATE	LOGG	ED: July 8, 2015 DEPTH TO GROUNDW	ATER: <u>N/A</u> DEP	тн то о	CAVING	G: <u>N/A</u>					
DEPTH (FT.)	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	(%) M	POCKET PEN. (TSF)	REMARKS					
1-		Brown silty SAND, fine grained, dry, heavy organic inclusions. (SM) (Topsoil)	Loose								
2-	_1	Brown silty SAND with gravel, fine to medium grained dry, roots. (SM)	, Medium Dense	7.2							
3- 4-											
5-		Gray silty SAND with gravel to SAND with silt and gravel to same cementation fine to medium grained, dry to moist, some cementation	vel, on,								
6-	2	occasional cobble/boulder. (SM/SP-SM)		8.0							
7		*Soil becomes less cemented with depth.	Very Dense								
8-	10 										
9-	3	*At 9 feet soil becomes wet.		11.6							
10-											
11 –		Test pit terminated at approximately 11 feet.									
12-	ĉ	No groundwater seepage observed.									
13-											
14 —											
15-											
NOTE: not be i	This sub interprete	osurface information pertains only to this test pit location and should d as being indicative of other locations at the site.	a	As: Consu	Itants in Geo	<b>Ites, Inc.</b> Geotechnical Engineering logy and tal Earth Sciences					

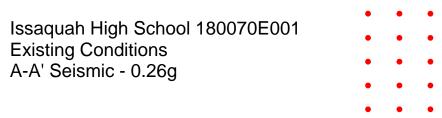
	LOG OF TEST PIT NO. TP-10 FIGURE A-11											
PROJ		ME: Madison Pointe P	ROJ. NO: <u>T-7252</u>	LC	DGGED BY: CSD							
LOCA		Issaquah, Washington SURFACE CONDS	Moderate Understory	oderate Understory APPROX. ELEV: 503 Feet								
DATE	LOGGE	ED: July 8, 2015 DEPTH TO GROUNDWA	TER: <u>N/A</u> DEP <sup>.</sup>	тн то о	CAVING	G: <u>N/A</u>						
DEPTH (FT.)	SAMPLE NO.	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	(%) M	POCKET PEN. (TSF)	REMARKS						
1-		Brown silty SAND, fine grained, dry, heavy organic inclusions. (SM) (Topsoil)	Loose									
2-	1	Brown silty SAND with gravel, fine to medium grained, dry, roots. (SM)	Medium Dense	5.9								
3			Dense									
5-	2		Very Dense	9.6								
6-	3											
7		Gray silty SAND with gravel, fine to medium grained, dr to moist, cemented, occasional cobble. (SM)	у									
8-												
9-												
10-												
11-		Test pit terminated at approximately 11 feet.										
12-		No groundwater seepage observed.										
13–												
14-												
		osurface information pertains only to this test pit location and should d as being indicative of other locations at the site.		As Consu	Itants in Geo	<b>Ites, Inc.</b> Geotechnical Engineering logy and Ital Earth Sciences						

## **APPENDIX B**

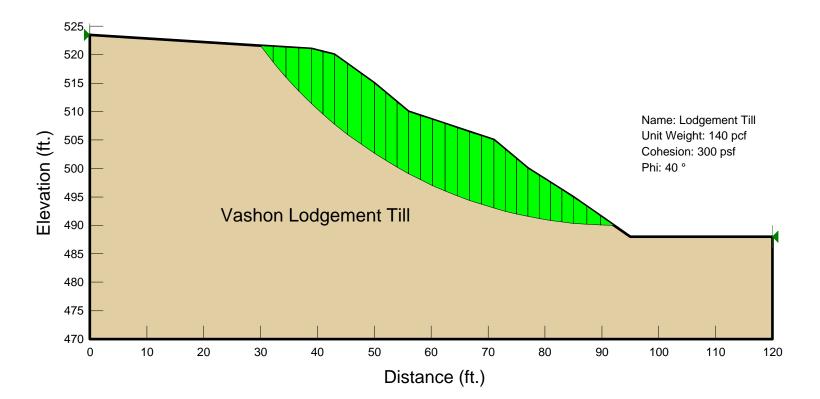
**SLOPE/W Profiles** 



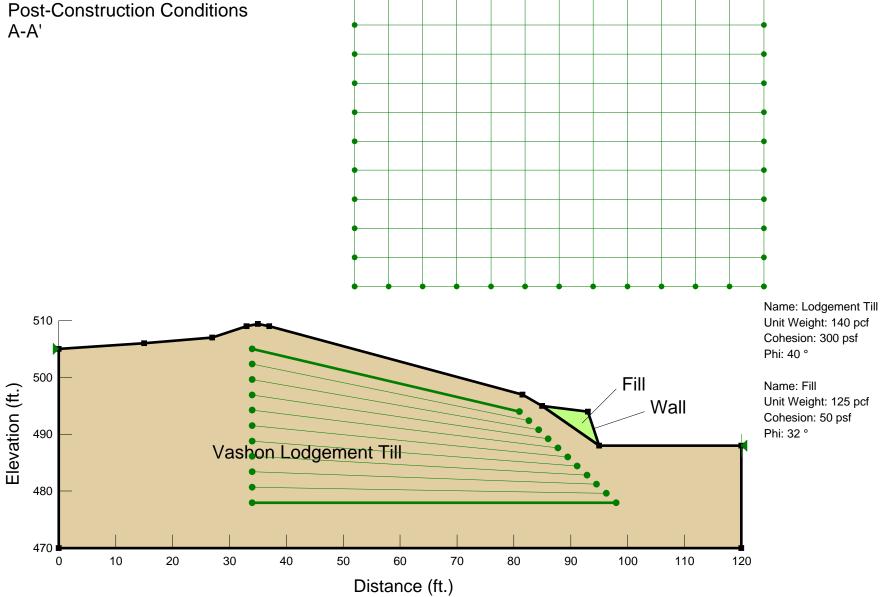




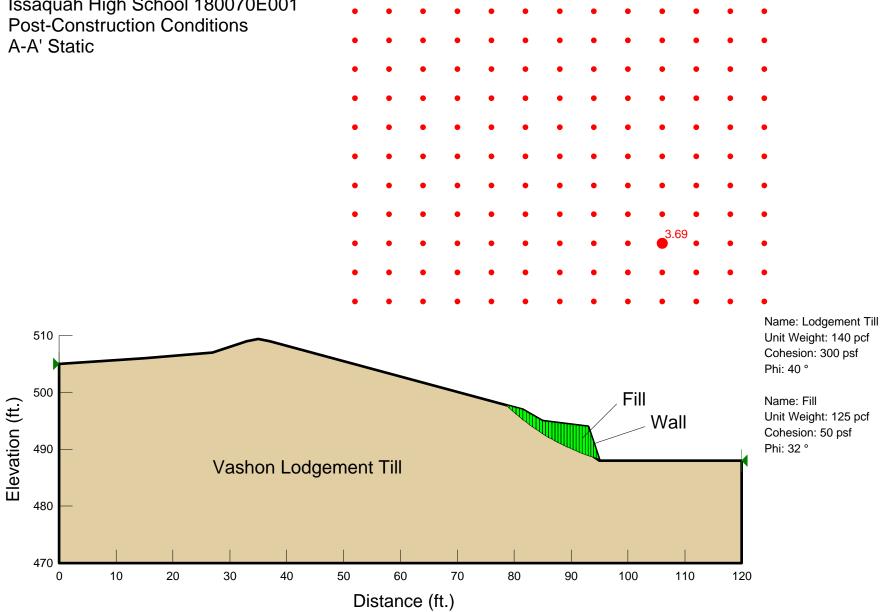
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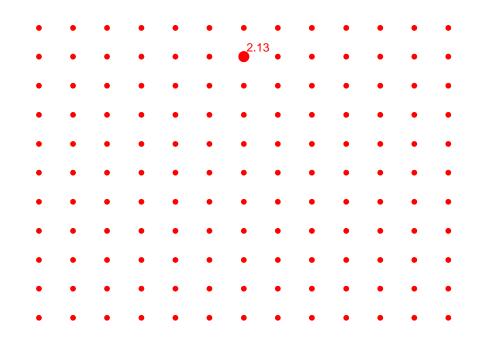
Issaquah High School 180070E001 Post-Construction Conditions

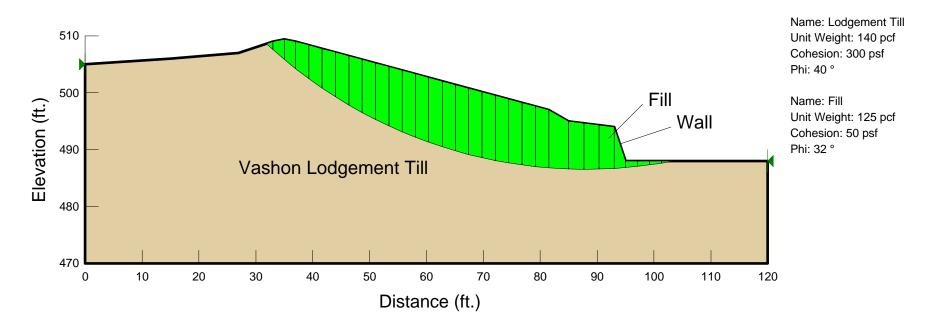


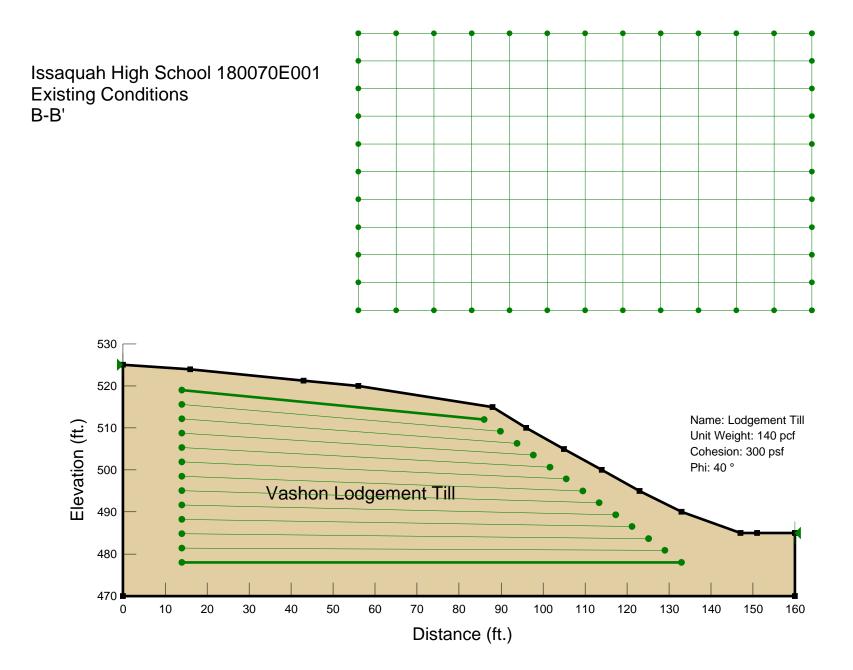
Issaquah High School 180070E001 Post-Construction Conditions A-A' Static



Issaquah High School 180070E001 Post-Construction Conditions A-A' Seismic - 0.26g

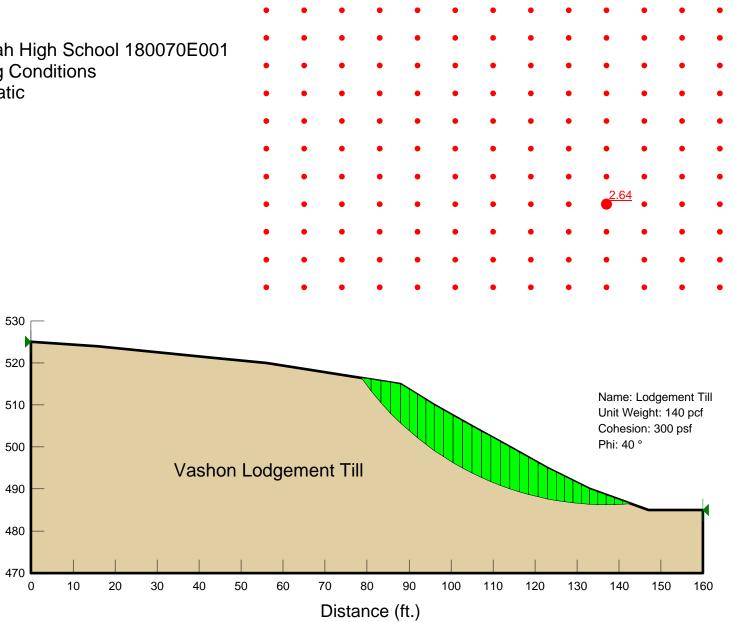






Issaquah High School 180070E001 Existing Conditions B-B' Static

Elevation (ft.)



Issaquah High School 180070E001 Existing Conditions B-B' Seismic - 0.26g

530

