



associated
earth sciences
incorporated

July 9, 2019
Project No. 180090E002

Puyallup School District
323 - 12th Street NW
Puyallup, Washington 98371

Attention: Les Gerstmann

Subject: Addendum to Subsurface Exploration and Geotechnical Engineering Evaluation
Infiltration Feasibility Assessment
LSC-Kessler Center
1501 - 39th Avenue SW
Puyallup, Washington

Dear Mr. Gerstmann:

Associated Earth Sciences, Inc. (AESI) is pleased to present the enclosed copy of the subject addendum. This addendum summarizes our infiltration feasibility assessment and supplements our report titled "Subsurface Exploration and Geotechnical Engineering Evaluation, LSC-Kessler Center," prepared for Puyallup School District, dated June 17, 2019. Our recommendations are preliminary in that the site improvements (building, parking and drainage) are preliminary and construction details have not been finalized at the time of this addendum. If any changes in the nature or design of the proposed site layout are made, the conclusions and recommendations contained in this addendum and our report should be reviewed and modified, or verified, as necessary.

Our understanding of the project is based on information provided by Puyallup School District representatives and conversations with the civil engineer, Mr. Rick Hand, P.E. (Sitts & Hill Engineers, Inc. [Sitts & Hill]). We are familiar with the site through AESI's recently completed geotechnical evaluation and observations during construction of the adjacent infiltration trench for the Warehouse Expansion project. We are also familiar with the site from previous subsurface exploration and reporting for earlier phases of work on the subject site (AESI, September 13, 2005; December 6, 2005; April 18, 2006; and May 30, 2018).

INFILTRATION FEASIBILITY ASSESSMENT

We understand that project plans include infiltration of stormwater. Specifically, based on discussions with Sitts & Hill (the project civil engineer) stormwater will be captured and treated by modular bioretention units and then conveyed to infiltration trenches for disposal. Roof runoff and runoff from other non-pollution generating surfaces will be conveyed directly to proposed infiltration trenches located in the southwest area of the site. The proposed trenches will be 5-feet wide by 10-feet tall, with two 30-inch perforated pipes stacked vertically.

We reviewed subsurface information from our geotechnical evaluation and observations during construction of the Warehouse Infiltration trench, a portion of which extends on the Kessler site. Site soils consist of a variable thickness layer of silt and silty fine sand (Vashon recessional lacustrine sediments), an intermittent perching layer of glacial till and hard silt, overlying coarse-grained sand and gravel (Vashon advance outwash sediments). The Vashon advance outwash sediments are the target infiltration receptor horizon at the site.

Puyallup Municipal Code (PMC), Chapter 21.10.040, adopts as their stormwater management manual the 2014 Washington State Department of Ecology Stormwater Management Manual for Western Washington (Ecology Manual). The Ecology Manual requires site specific exploration and testing for infiltration design to assess site suitability criteria for drawdown time (infiltration rate) and separation from perching layers. Subsurface exploration and infiltration testing are scheduled for July and August in the infiltration facility footprint to document the site-specific conditions at the proposed facility location.

Infiltration feasibility at the site is primarily dependent on the permeability and extent of the unsaturated Vashon advance outwash. For purposes of infiltration feasibility, it is our opinion that the infiltration receptor horizon will be present in the southwest portion of the site at depths ranging from 15 to 25 feet based on information from nearby explorations. Based on the texture, composition, and density of the site soils, along with our experience at the site, it is our opinion that design infiltration rates will require in-situ infiltration testing. To provide infiltration rates for site- and project-specific design, we recommend that AESI perform Pilot Infiltration Tests (PITs) as described in the Ecology Manual. The PIT tests should take place at the bottom elevation of the proposed infiltration systems. For preliminary sizing and layout considers we anticipate that the design infiltration rate will be on the order of 1 to 5 inches per hour. We note that the adjacent Warehouse infiltration trench design infiltration rate is 5 inches per hour.

The suitability of the site for infiltration of stormwater can be limited by groundwater beneath a facility. For the proposed type of infiltration facility, the Ecology Manual requires that there be at least 5 feet of vertical separation between the base of the facility and a low permeability stratum or the seasonal high groundwater level. Based on the subsurface exploration

information near the facility, the groundwater table is sufficient deep, and is present at about 70 to 75 feet below ground surface.

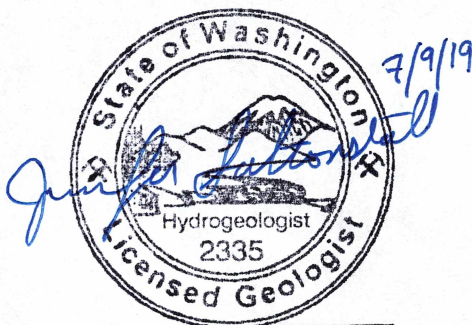
Design-specific infiltration facility geotechnical recommendations should be made once a design is available and will include design infiltration rate, estimation of seasonal groundwater high, and considerations for site and subgrade preparation, overflow path, and protection of the facility.

CLOSURE

At the time this letter was prepared, infiltration facility concepts were being developed. Current concepts call for construction of an underground infiltration trench in the southwest portion of the site. The trench would be constructed similarly to the Warehouse Expansion infiltration trench in that the base of the trench would extend a minimum of 2 feet into the underlying Vashon advance outwash.

We have enjoyed working with you on this addendum and are confident that our report and addendum will aid in the successful completion of your project. If you should have any questions or require further assistance, please do not hesitate to call.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Kirkland, Washington



Jennifer H. Saltonstall

Jennifer H. Saltonstall, L.G., L.Hg.
Principal Geologist/Hydrogeologist