GeoEngineers
1101 South Fawcett Avenue, Suite 200
Tacoma, Washington 98402
253.383.4940

August 1, 2023

Avenue 55, LLC
601 Union Street, Suite 2930
Seattle, Washington 98101

Attention: Ben Varin

Subject: Revised Report Addendum 2
Geotechnical Engineering Services
DuPont 243
DuPont, Washington
File No. 26421-001-00

INTRODUCTION AND PROJECT UNDERSTANDING

This revised report addendum presents supplemental geotechnical recommendations and considerations for the proposed DuPont 243 project and is intended to replace our Report Addendum dated November 8, 2022 (2022 Addendum[1]). The purpose of this revision is to reflect the updated site plan layout described below and review final geotechnical design considerations presented in that study. The site is located at 1700 Center Drive in DuPont, Washington. An overview of the property and surrounding area is shown on the Figure 1, Vicinity Map.

Our experience at the site includes involvement with the previous owner, Dupont Station Partners, LLC. for the proposed DuPont Industrial Warehouse (also referred to as Lot "Y" Industrial Park). We understand you have been given permission by Dupont Station Partners, LLC and have the full use of studies held by GeoEngineers, Inc. (GeoEngineers) and as related to the site address. Our previous geotechnical deliverables for the site consist of:

- "Geotechnical Engineering Services, Lot 'Y' Industrial Park, DuPont, Washington" dated October 10, 2011 (2011 Report). As part of our services, we advanced 22 test pit explorations in the project area to develop an understanding of subsurface conditions. The 2011 Report presents

[1] "Report Addendum, Geotechnical Engineering Services, DuPont Industrial Park, DuPont, Washington", prepared for Avenue 55, LLC, dated November 8, 2022.

a summary of our findings, conclusions and recommendations regarding geotechnical engineering aspects of the proposed industrial park development.

- "Report Addendum, Geotechnical Engineering Services, DuPont Industrial Warehouse, DuPont, Washington" dated May 11, 2018 (2018 Addendum), which includes our review of a proposed development site plan and updated recommended seismic design parameters.

Our understanding of the current project is based on discussions and correspondence with Avenue 55, LLC, Barghausen Consulting Engineers, Inc. (project civil engineer) and Innova Architects (project architect). We were provided an updated site plan sheet A0.1 "SEPA Permit Date July 17, 2023". The overall project will include construction of an approximate 243,000 square foot, dock-high slab, warehouse building, referred to as Building A. Surrounding improvements will include paved parking and driveway areas, hardscaping, new utility installation, landscaping and stormwater management facilities, including an approximate 27,000 square foot infiltration pond (inferred from above plans). Additional elements may or may not include relatively short retaining walls (less than 8 feet tall) along the south property area, which will be considered as landscaping elements, to separate the project site from the Lower Sequalitchew Creek and associated buffers.

This report addendum is intended to provide recommendations to accommodate the proposed current design but also, some slight variations to the site planning and design (e.g., addition or elimination of retaining walls, small outbuilding structures, changes to roadway alignments, etc.). As such, we support the use of this geotechnical report for slight variations in site design. We would still recommend our review and comment on the variations, once established.

PURPOSE AND SCOPE OF SERVICES

The purpose of our services is to review site conditions and our previously provided geotechnical recommendations for the site. Based on the currently proposed improvements, we provide our opinion on the suitability of our previous recommendations and provide updated/revised recommendations (if necessary). Our services have been provided in accordance with our signed agreement with Avenue 55, LLC (signed October 17, 2022). Details regarding our specific scope of services for the project can be reviewed in our agreement or provided upon request.

SUBSURFACE CONDITIONS

Subsurface Explorations

We previously explored subsurface conditions at the site by excavating 22 test pits to depths between about 8 and 11 feet below ground surface (bgs), corresponding to Elevation 209 to 183.5 feet. Approximate locations of each test pit relative to currently proposed improvements are shown on the Figure 2, Site Plan. A detailed summary of the test pit explorations, including completed laboratory testing and test pit logs, is presented in our 2011 Geotechnical Report. A brief overview is provided below.

Soil Conditions

We interpret native soils encountered in the test pits to be recessional glacial outwash deposits, consisting of medium dense to very dense sand and gravel with varying amounts of silt and cobble. The upper few

feet were occasionally weathered and loose to medium dense. Fill consisting of medium dense sand with gravel and trace silt was observed in one test pit (TP-9) extending to the full depths explored (8 feet bgs).

Based on our understanding of geologic conditions and experience in the area, we anticipate recessional outwash soils are underlain by dense to very dense glacially consolidated soils at depth (glacial till and/or advance outwash).

Groundwater Conditions

Groundwater seepage was observed in one test pit (TP-14) at about 8 feet bgs, corresponding to Elevation 196 feet. Seepage and/or wet soils were not observed in remaining test pit excavations (as deep as about Elevation 183.5 feet).

We reviewed published groundwater maps and well information available online from the United States Geological Survey (USGS) National Water Information System (NWIS). Our review indicates groundwater elevations in the vicinity decrease from east to west, between about Elevation 200 feet (east of site, near Interstate 5) to Elevation 10 feet (west of site, near Puget Sound). The nearest readily available and most recently discovered information reviewed consisted of five groundwater wells within an approximate 1-mile radius of the project site; measured groundwater depths at these locations were below Elevation 140 feet.

In addition to the regional groundwater, areas of shallow perched groundwater could also be present throughout the site. It is common for perched groundwater to be present near contacts where soil that is more permeable overlies soil that is less permeable (i.e., sand over silt). The quantity and location of perched groundwater, if encountered, at this site is expected to be dependent on infiltration of surface water. Site grading can affect infiltration and therefore, the quantity and location of perched groundwater. Slow to moderate groundwater seepage should be expected if perched groundwater conditions are encountered. Slow seepage is defined as less than 1 gallon per minute (gpm) while moderate seepage is between 1 and 3 gpm.

GEOTECHNICAL DESIGN RECOMMENDATIONS

General

Except as modified in this addendum, the conclusions and recommendations presented in our 2011 Report and 2018 Addendum are appropriate for project design and construction. This includes but is not limited to site development and earthwork, fill placement and compaction, shallow foundation support and bearing surface preparation, retaining walls and stormwater designs. Updated and/or revised geotechnical design recommendations to these reports are provided in the sections below. The recommendations provided in this addendum supersede the recommendations presented in all our past studies, where applicable.

Seismic Design

Seismic Design Approach

Proposed structures will be designed in accordance with seismic design requirements presented in the 2018 or 2021 International Building Code (IBC). The 2018 and 2021 IBC both state that structures shall be designed and constructed to resist the effects of earthquake ground motions in accordance with the

American Society of Civil Engineers (ASCE) "Minimum Design Loads and Associated Criteria for Buildings and Other Structures, ASCE/SE 7-2016" (ASCE 7-16).

Seismic Design Parameters

We used map-based values available online as recommended by the USGS to determine the seismic design spectrum in accordance with ASCE 7-16.

Soils encountered in the test pits (as deep as about 11 feet bgs) consisted of medium dense to very dense sand and gravel recessional outwash deposits. We anticipate these soils are underlain by dense to very dense glacially consolidated soils at depth. We anticipate soils below the explorations and extending to depths of 100 feet bgs consist of dense to very dense glacially consolidated deposits. Based on subsurface conditions encountered, our review and our experience in similar soil conditions, we recommend using a design response spectrum for Site Class C. In our opinion, the parameters provided in Table 1 below are suitable for seismic design and analysis.

TABLE 1. RECOMMENDED SEISMIC DESIGN CRITERIA (2018 OR 2021 IBC PER ASCE 7-16)

ASCE 7-16 Seismic Design Parameters	
Site Class	C
Mapped Spectral Response Acceleration at Short Periods (S_S)	1.371 g
Mapped Spectral Response Acceleration at 1-Second Periods (S_1)	0.487 g
Site Amplification Factor at 0.2 Seconds (F_a)	1.2
Site Amplification Factor at 1.0 Seconds (F_v)	1.5
Design Spectral Response Acceleration at Short Periods (S_{DS})	1.097 g
Design Spectral Response Acceleration at 1-Second Periods (S_{D1})	0.487 g
Site Modified Peak Ground Acceleration (PGA_M)	0.632 g

Liquefaction Potential

DESCRIPTION

Liquefaction refers to the condition by which vibration or shaking of the ground, usually from earthquake forces, disturbs the soil structure (i.e., the arrangement of individual soil particles) within saturated and unconsolidated soils. This rearrangement of particles results in the development of excess pore pressures in saturated soils with subsequent loss of strength. Liquefaction susceptibility is difficult to predict and not all soils are susceptible to liquefaction. In general, soils that are susceptible to liquefaction include very loose to medium dense, "clean" to silty sands below the water table.

Ground settlement, lateral spreading and/or sand boils may result from soil liquefaction. Structures, such as buildings, supported on liquefied soils may suffer loss of bearing capacity, foundation settlement and/or lateral movement that can be damaging to the buildings.

SEISMIC HAZARD MAP REVIEW

We re-reviewed the "Liquefaction Susceptibility Map of Pierce County, Washington" (Palmer et al. 2004[2]) and the Washington State Department of Natural Resources (DNR) Interactive Natural Hazards Map. According to the maps, the site has "very low to low" potential for liquefaction.

ESTIMATED LIQUEFACTION POTENTIAL

Based on the soil and groundwater conditions observed in our explorations, our interpretation of the regional geology and review of hazard maps in the area, it is still our opinion the potential for liquefaction at the site is low.

Lateral Spreading Potential

Lateral spreading related to seismic activity typically involves lateral displacement of large, surficial blocks of non-liquefied soil when an underlying soil layer loses strength during seismic shaking. Lateral spreading usually develops in areas where sloping ground or large grade changes (including retaining walls) are present. Based on our understanding of the subsurface conditions, liquefaction risk, current site topography and proposed site grading, it is our opinion the risk of lateral spreading at the site is low.

Surface Rupture Potential

We reviewed published geologic seismic feature maps of the project vicinity, including maps available online from the DNR, USGS and the Washington Department of Geology and Earth Sciences map "Faults and Earthquakes in Washington State" (Czajkowski and Bowman 2014[3]). The nearest mapped faults to the project site are the Tacoma fault zone (approximately 10 miles northeast of the site) and the Olympia structure (approximately 10 miles southwest). Locations of these fault zones have been inferred from geophysical studies and there are no known surface expressions of the fault. Based on our understanding of local geology, bedrock in the project area is covered by several hundred feet of glacial soils. Based on this information and the fault distance from the project site, it is our opinion the risk for seismic surface rupture at the site is low.

Conventional Retaining Walls and Below-grade Structures

We recommend the following updates to the lateral earth pressures be used for design of conventional retaining walls and below-grade structures in Table 2 below. The parameters below include additional conditions not presented in our 2011 Report that we typically provide in today's studies, for use as needed. Our design pressures assume two conditions: level backfill and 2H:1V (horizontal: vertical) sloping backfill. If drained design parameters are used, drainage systems must be included in the design in accordance with the recommendations presented in our 2011 Report. Our 2011 Report also provides descriptions for the active and at-rest conditions, including surcharge loading, and should be used as part of retaining wall design.

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[2] Palmer, Stephen P., Magsino, Sammantha L., Bilderback, Eric L., Poelstra, James L., Folger, Derek S., and Niggemann, Rebecca A. 2004. Liquefaction Susceptibility Map of Pierce County, Washington. Washington state Department of Natural Resources. Dated September 1, 2004.

[3] Czajkowski, Jessica L. and Bowman, Jeffrey D. 2014. Faults and Earthquakes in Washington State. Washington State Department of Natural Resources. Open File Report 2014-05, 1 sheet, scale 1:750,000.

TABLE 2. LATERAL SOIL PRESSURE PARAMETERS FOR RETAINING WALLS AND BELOW-GRADE STRUCTURES

Soil Parameter	EFD[1] (Level Backfill Condition) (pounds per cubic foot [pcf])	EFD[1] (2H:1V Backfill Condition) (pcf)
Active Earth Pressure	35 pcf drained; 80 pcf undrained[2]	55 pcf drained; 90 pcf undrained[2]
At-rest Earth Pressure	55 pcf drained; 90 pcf undrained[2]	80 pcf drained; 100 pcf undrained[2]
Seismic Loading[3]	14*H pounds per square foot (psf)	22*H psf

Notes:

[1] Equivalent fluid density in pcf.

[2] This value includes hydrostatic pressures.

[3] If the retaining wall is to be designed for seismic forces, we recommend that the seismic loading be approximated using a uniform lateral pressure based on backfill condition, where H is the height (in feet) of the structure. This seismic lateral pressure is in addition to the static soil load and any anticipated hydrostatic pressures. This assumes that the wall is free to yield somewhat during a seismic event.

Infiltration Feasibility Assessment

Infiltration Approach

Stormwater management facilities at the site could include bioretention and on-site infiltration areas. We understand stormwater facilities will be designed in accordance with the City of DuPont 2022 Municipal Code. Per Section 22.01.090 of the DuPont Code, the Washington State Department of Ecology (Ecology) *Stormwater Management Manual for Western Washington* (SWMMWW), shall be used for stormwater drainage design.

According to the 2019 SWMMWW, infiltration rate of on-site soils can be determined by either in-situ testing (e.g., pilot infiltration tests [PIT]) or correlation to grain-size distribution from soil samples. Grain-size analysis is only appropriate for soils unconsolidated by glacial advance. We interpret soils encountered in test pits at the site to consist of recessional outwash deposits, which are unconsolidated by glacial advance. Therefore, it is our opinion that the grain-size analysis method is appropriate for the site.

Where necessary, we also refer to the *2021 Pierce County Stormwater and Site Development Manual* (SMSDM).

Soil Grain-Size Analysis

Using the recommended procedures in the 2019 SWMMWW, we estimated initial saturated hydraulic conductivity ($K_{sat,initial}$) of selected soil samples based on grain-size analysis results using the Massmann method. Calculated $K_{sat,initial}$ was then reduced through correction factors to produce a preliminary long-term design infiltration rate ($K_{sat,design}$). Correction factors in the SWMMWW are based on site variability and number of tests conducted (C_{Fv}), uncertainty of the test method (C_{Ft}), and the potential for long-term clogging due to siltation and bio-buildup (C_{Fm}). Recommended correction factors are outlined in Section V-5.4 of the SWMMWW.

Table 3 below summarizes the partial and total correction factor(s) we considered in our analysis.

TABLE 3. GRAIN-SIZE ANALYSIS CORRECTION FACTOR SUMMARY

Issue	Correction Factor Value
Site Variability and Number of Locations Tested (CF_v)	0.80
Test Method (CF_t)	0.40
Siltation and Bio-Buildup (CF_m)	0.90
Total Correction Factor = CF_v x CF_r x CF_m	**CF_T = 0.29**

Table 4 below summarizes selected samples for grain-size analysis, calculated initial (short-term) infiltration rates and calculated design (long-term, with correction factors applied) infiltration rates. We considered a maximum initial infiltration rate of 100 inches per hour (in/hr) (corresponding to a maximum design rate of 29 in/hr) in our analysis. This is consistent with guidance presented in the Pierce County SMSDM, which allows a maximum design infiltration rate of 30 in/hr.

TABLE 4. ESTIMATED INFILTRATION RATE SUMMARY

Exploration	Depth (feet)	Elevation (feet)	Geologic Unit	USCS Soil Type	Percent Fines	$K_{sat,initial}$ (in/hr) [1]	$K_{sat,design}$ (in/hr) [2]
TP-2	6	203	Recessional Outwash	GP	1.7	100	29
TP-4	4	206	Recessional Outwash	SP	1.0	100	29
TP-7	4	207	Recessional Outwash	GP	1.1	100	29
TP-11	4	190	Recessional Outwash	GP	1.5	100	29
TP-12	6	196	Recessional Outwash	GP	1.0	100	29
TP-14	6	198	Recessional Outwash	GW	2.0	100	29
TP-15	4	199	Recessional Outwash	GP	1.2	54.7	15.7
TP-16	6	209	Recessional Outwash	GW	0.6	100	29
TP-20	6	192	Recessional Outwash	GP	4.2	94.1	27.1
TP-22	4	206	Recessional Outwash	GP	1.1	100	29

Notes:

[1] We considered a maximum initial (measured) infiltration rate of 100 in/hr.

[2] Per Pierce County, maximum allowable design infiltration rate is 30 in/hr.

USCS = Unified Soil Classification System

Recommended Design Infiltration Rate

Calculated design infiltration rates for the selected samples vary between about 15 and 29 in/hr, when also considering Pierce County SMSDM design criteria, and the limit of 30 in/hr. The upper few feet of soil encountered in the test pits were occasionally weathered and somewhat siltier. We anticipate slower infiltration rates within these upper siltier soils. Somewhat "cleaner" soils (fewer fines) were typically observed at depth, on average of about 3 feet bgs. We anticipate, and the data supports, faster infiltration rates in these soils at depth, compared to the upper weathered soils.

Due to the presence of surface weathered recessional outwash deposits, we recommend a design infiltration rate of 15 in/hr be used as an average value across the site for this project. This value may be

considered somewhat conservative. It is likely higher rates can be considered for deeper facilities. This rate would have to be considered on a case-by-case basis.

Stormwater Facility Code Assessment and Additional Design Considerations

Per Section V-5.6.SSC-5 of the SWMMWW, the base of the infiltration facility shall be no less than 5 feet above seasonal high water, bedrock or other low permeability layer. A reduced 3-foot minimum separation can be considered if groundwater mounding analysis and other design factors indicate the prevention of overtopping and that the other site suitability criteria specified in Section V-5.6 are met. Per Section V-5.2.7 of the SWMMWW, the minimum required vertical separation increases to 15 feet if the infiltration facility has a contributing drainage area exceeding 1-acre, otherwise an analytical groundwater model would be required to determine the final design infiltration rate.

- We anticipate static groundwater elevations to be below the depths of the completed test pits, and as deep as 20 feet below surrounding grade, based on recent review of published information and our work in the nearby area.
- Soils encountered in the explorations at depth were observed to consist of recessional outwash deposits and are relatively uniform across exploration locations. No clear demarcation was observed between high or low permeable layers, and in general, low permeability soils were not observed.
- It is our opinion a detailed groundwater analysis will not be required for relatively shallow infiltration facilities anticipated for this project. We suggest we be consulted for further review if infiltration facilities will be more than about 15 feet deep (below existing site grade).
- Additional field infiltration testing, such as PITs, could be considered as a part of this project design and review, especially if site-specific and/or faster rates were desired. At this time, it is our opinion that a PIT study would not provide much more benefit to this project. Additionally, maintaining enough water in the hole for this test may also prove difficult. If PIT studies are desired/required, we recommend the process also be observed with Regulatory Stormwater Agencies in the field so they can directly observe the infiltration process.
- Other considerations such as separation limits from structures, pond locations, security, set-backs, treatments or other requirements presented in the SWMMWW should also be reviewed and considered as a part of the final stormwater facility design.
- To help reduce clogging of infiltration facilities, we recommend they be protected during construction with siltation elimination/siltation control facilities, such as sweeping, temporary settling basins, silt fences and hay bales.
- Compaction of infiltration pond subgrade should be avoided, and equipment should not be permitted in the infiltration areas after they are excavated to design grade.
- We recommend we review project plans and specifications regarding infiltration and be retained during construction to observe soil conditions at the base of the infiltration facilities and verify exposed soil conditions are as anticipated for the proposed design.

Additional Geotechnical Services

Recommendations provided in this report are based on the assumptions and design information stated herein. We welcome the opportunity to review and discuss construction plans and specifications for this project as they are being developed. In addition, GeoEngineers should be retained to review the project plans and specifications when complete to confirm that our design recommendations have been implemented as intended.

Satisfactory foundation and earthwork performance depend to a large degree on quality of construction. Sufficient monitoring of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions often requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated.

We recommend that GeoEngineers be retained to observe construction at the site to confirm that subsurface conditions are consistent with the site explorations and to confirm that the intent of project plans and specifications relating to earthwork, pavement and foundation construction are being met.

LIMITATIONS

We have prepared this letter for the exclusive use by Avenue 55, LLC and their authorized agents for the proposed DuPont 243 project in DuPont, Washington. Avenue 55, LLC may distribute copies of this report to the owner and owner's authorized agents and regulatory agencies as may be required for the project.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this letter was prepared. The conclusions, recommendations and opinions presented in this report are based on our professional knowledge, judgment and experience. No warranty or other conditions, express or implied, should be understood. Please refer to Appendix A, Report Limitations and Guidelines for Use for additional information pertaining to the use of this report.

Sincerely,
GeoEngineers, Inc.

8/1/2023

Christopher R. Newton, PE
Geotechnical Engineer

Dennis (DJ) Thompson, PE
Associate

CRN:DJT:tlm:mce

Attachments
Figure 1. Vicinity Map
Figure 2. Site Plan
Appendix A. Report Limitations and Guidelines for Use

One electronic copy submitted

N

0 2,000

Feet

Vicinity Map

DuPont 243
DuPont, Washington

GeoEngineers

Figure 1

Source(s):
- ESRI

Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet

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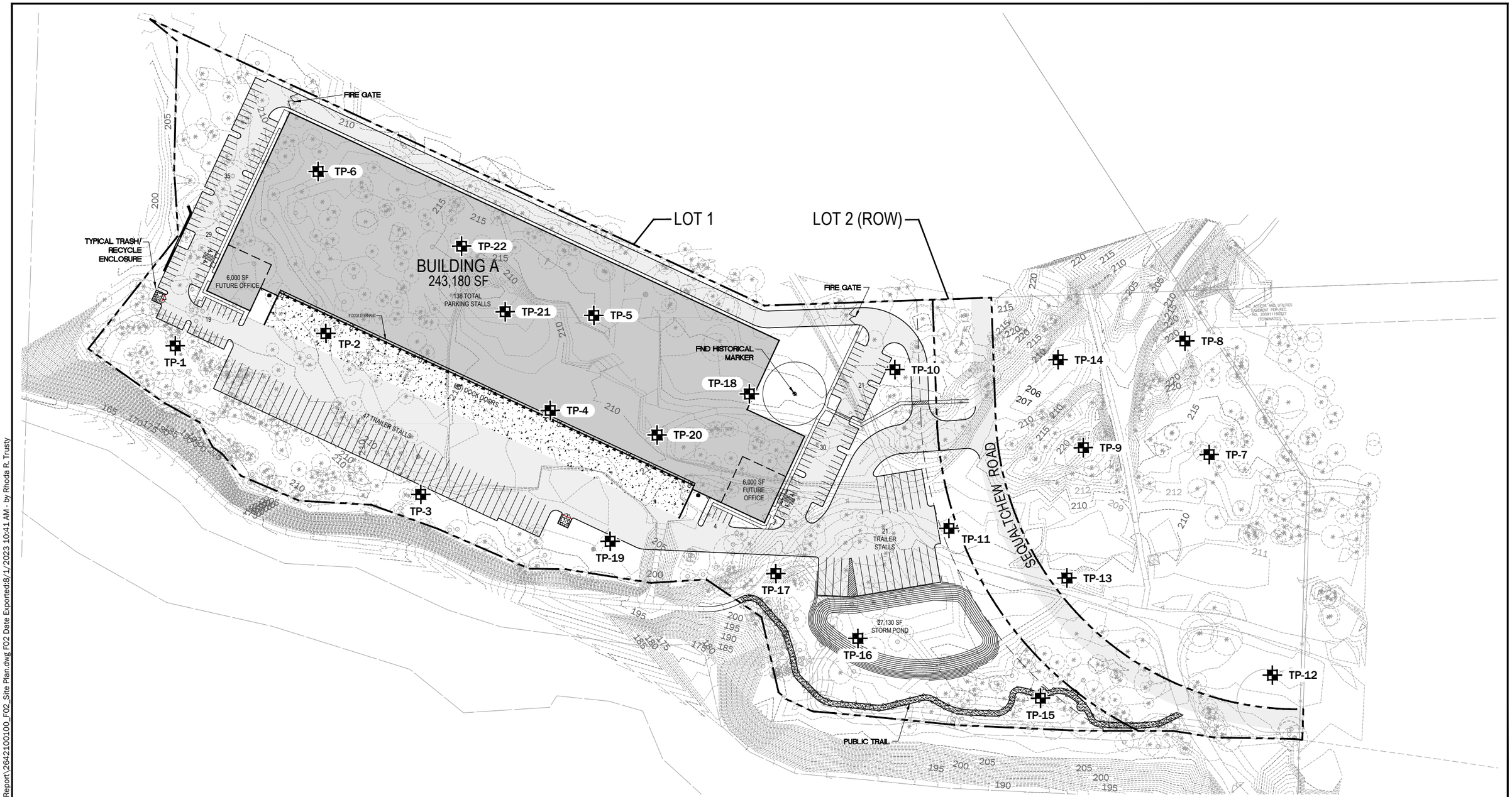

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Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Existing Grade Surface from Barghausen Consulting Engineers, Inc dated 6/5/2018.
Designs from Innova Architechts dated 7/17/2023.

Projection: NAD83 Washington State Planes, South Zone, US Foot

Legend

TP-1 Test Pit by GeoEngineers, Inc., 2011

N W E S

150 0 150
Feet

Site Plan

DuPont 243
DuPont, Washington

GeoEngineers

Figure 2

APPENDIX A
Report Limitations and Guidelines for Use

APPENDIX A
REPORT LIMITATIONS AND GUIDELINES FOR USE[4]

This appendix provides information to help you manage your risks with respect to the use of this report.

Read These Provisions Closely

It is important to recognize that the geoscience practices (geotechnical engineering, geology and environmental science) rely on professional judgment and opinion to a greater extent than other engineering and natural science disciplines, where more precise and/or readily observable data may exist. To help clients better understand how this difference pertains to our services, GeoEngineers includes the following explanatory "limitations" provisions in its reports. Please confer with GeoEngineers if you need to know more how these "Report Limitations and Guidelines for Use" apply to your project or site.

Geotechnical Services are Performed for Specific Purposes, Persons and Projects

This report has been prepared for Avenue 55, LLC for the Project(s) specifically identified in the report. The information contained herein is not applicable to other sites or projects.

GeoEngineers structures its services to meet the specific needs of its clients. No party other than the party to whom this report is addressed may rely on the product of our services unless we agree to such reliance in advance and in writing. Within the limitations of the agreed scope of services for the Project, and its schedule and budget, our services have been executed in accordance with our agreement with Avenue 55, LLC authorized October 17, 2022 and generally accepted geotechnical practices in this area at the time this report was prepared. We do not authorize, and will not be responsible for, the use of this report for any purposes or projects other than those identified in the report.

A Geotechnical Engineering or Geologic Report is based on a Unique Set of Project-Specific Factors

This report has been prepared for the proposed DuPont 243 project located in DuPont, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, it is important not to rely on this report if it was:

- Not prepared for you,
- Not prepared for your project,
- Not prepared for the specific site explored, or
- Completed before important project changes were made.

[4] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

For example, changes that can affect the applicability of this report include those that affect:

- The function of the proposed structure;
- Elevation, configuration, location, orientation or weight of the proposed structure;
- Composition of the design team; or
- Project ownership.

If changes occur after the date of this report, GeoEngineers cannot be responsible for any consequences of such changes in relation to this report unless we have been given the opportunity to review our interpretations and recommendations. Based on that review, we can provide written modifications or confirmation, as appropriate.

Environmental Concerns are Not Covered

Unless environmental services were specifically included in our scope of services, this report does not provide any environmental findings, conclusions, or recommendations, including but not limited to, the likelihood of encountering underground storage tanks or regulated contaminants.

Information Provided by Others

GeoEngineers has relied upon certain data or information provided or compiled by others in the performance of our services. Although we use sources that we reasonably believe to be trustworthy, GeoEngineers cannot warrant or guarantee the accuracy or completeness of information provided or compiled by others.

Subsurface Conditions Can Change

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by man-made events such as construction on or adjacent to the site, new information or technology that becomes available subsequent to the report date, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. If more than a few months have passed since issuance of our report or work product, or if any of the described events may have occurred, please contact GeoEngineers before applying this report for its intended purpose so that we may evaluate whether changed conditions affect the continued reliability or applicability of our conclusions and recommendations.

Geotechnical and Geologic Findings are Professional Opinions

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies the specific subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied its professional judgment to render an informed opinion about subsurface conditions at other locations. Actual subsurface conditions may differ, sometimes significantly, from the opinions presented in this report. Our report, conclusions and interpretations are not a warranty of the actual subsurface conditions.

Geotechnical Engineering Report Recommendations are Not Final

We have developed the following recommendations based on data gathered from subsurface investigation(s). These investigations sample just a small percentage of a site to create a snapshot of the subsurface conditions elsewhere on the site. Such sampling on its own cannot provide a complete and accurate view of subsurface conditions for the entire site. Therefore, the recommendations included in this report are preliminary and should not be considered final. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for the recommendations in this report if we do not perform construction observation.

We recommend that you allow sufficient monitoring, testing and consultation during construction by GeoEngineers to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes if the conditions revealed during the work differ from those anticipated, and to evaluate whether earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective means of managing the risks associated with unanticipated conditions. If another party performs field observation and confirms our expectations, the other party must take full responsibility for both the observations and recommendations. Please note, however, that another party would lack our project-specific knowledge and resources.

A Geotechnical Engineering or Geologic Report Could Be Subject to Misinterpretation

Misinterpretation of this report by members of the design team or by contractors can result in costly problems. GeoEngineers can help reduce the risks of misinterpretation by conferring with appropriate members of the design team after submitting the report, reviewing pertinent elements of the design team's plans and specifications, participating in pre-bid and preconstruction conferences, and providing construction observation.

Do Not Redraw the Exploration Logs

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. The logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Photographic or electronic reproduction is acceptable but separating logs from the report can create a risk of misinterpretation.

Give Contractors a Complete Report and Guidance

To help reduce the risk of problems associated with unanticipated subsurface conditions, GeoEngineers recommends giving contractors the complete geotechnical engineering or geologic report, including these "Report Limitations and Guidelines for Use." When providing the report, you should preface it with a clearly written letter of transmittal that:

- Advises contractors that the report was not prepared for purposes of bid development and that its accuracy is limited; and
- Encourages contractors to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer.

Contractors are Responsible for Site Safety on Their Own Construction Projects

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and adjacent properties.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants, and no conclusions or inferences should be drawn regarding Biological Pollutants as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria and viruses, and/or any of their byproducts.

A Client that desires these specialized services is advised to obtain them from a consultant who offers services in this specialized field.