NOTICE OF APPLICATION AND
SEPA REVIEW NOTICE OPTIONAL DNS PROCESS

PSE BARNES LAKE SUBSTATION
REBUILD/EXPANSION
TUM-23-1260
April 19, 2024

Description of Proposal: Rebuild and expand the Barnes Lake Substation to extend and increase the capacity and life of the sub-station to meet growing demand in the area.

Applicant: Trevor Lessard, 1140 N 94th St., Seattle, WA 98103.

Representative: Trevor Lessard, 1140 N 94th St., Seattle, WA 98103.

Location of Proposal: 1697 2nd Ave SW, Tumwater, WA 98512. Parcel number 09080011003.

Required Permits/Approvals: The following may be required: Site Plan Review, Shoreline Exemption, Site Development Grading, Building Permit and Environmental Review (SEPA Determination).

Date of Complete Application: April 19, 2024.

Determination of Consistency: At this time, no determination of consistency with City plans or standards has been made. At a minimum, this project will be subject to the following regulations: Tumwater Comprehensive Plan, Zoning Code, Shoreline Master Program, Wetland Protection Ordinance, Fish and Wildlife Habitat Protection Ordinance, Tree Protection Ordinance, and Development Guide (street, utility and storm water standards), and International Building and Fire Codes.

SEPA Review: The Tumwater Community Development Department expects to issue a Determination of Non-Significance (DNS) for the proposal. This project is being reviewed under the optional DNS process in accordance with WAC 197-11-355.

This decision was made after review of a completed environmental checklist and other information on file with the City of Tumwater. This information is available to the public upon request. A copy of the subsequent threshold determination for the proposal may also be obtained upon request. This may be the only opportunity to comment on the environmental impacts of the proposal. The proposal may include mitigation measures under applicable codes, and the project review process may incorporate or require mitigation measures regardless of whether an EIS is prepared.

Tumwater City Hall

555 Israel Road SW

Tumwater WA 98501

Public Hearing: A public hearing is not required for this project as a shoreline exemption is anticipated to be issued

Public Comment Period: The duration of the comment period for this notice is 15 days. Written comments may be submitted to City of Tumwater, Community Development Department, Attn: Alex Baruch, 555 Israel Road SW, Tumwater, WA 98501, or email to abaruch@ci.tumwater.wa.us, and must be received by 5:00 p.m. on May 6, 2024.

If you have any questions or would like additional information, please contact Alex Baruch, Senior Planner, at 360-754-4180

TEMPORARY STOCKPILE NOTES: <3>

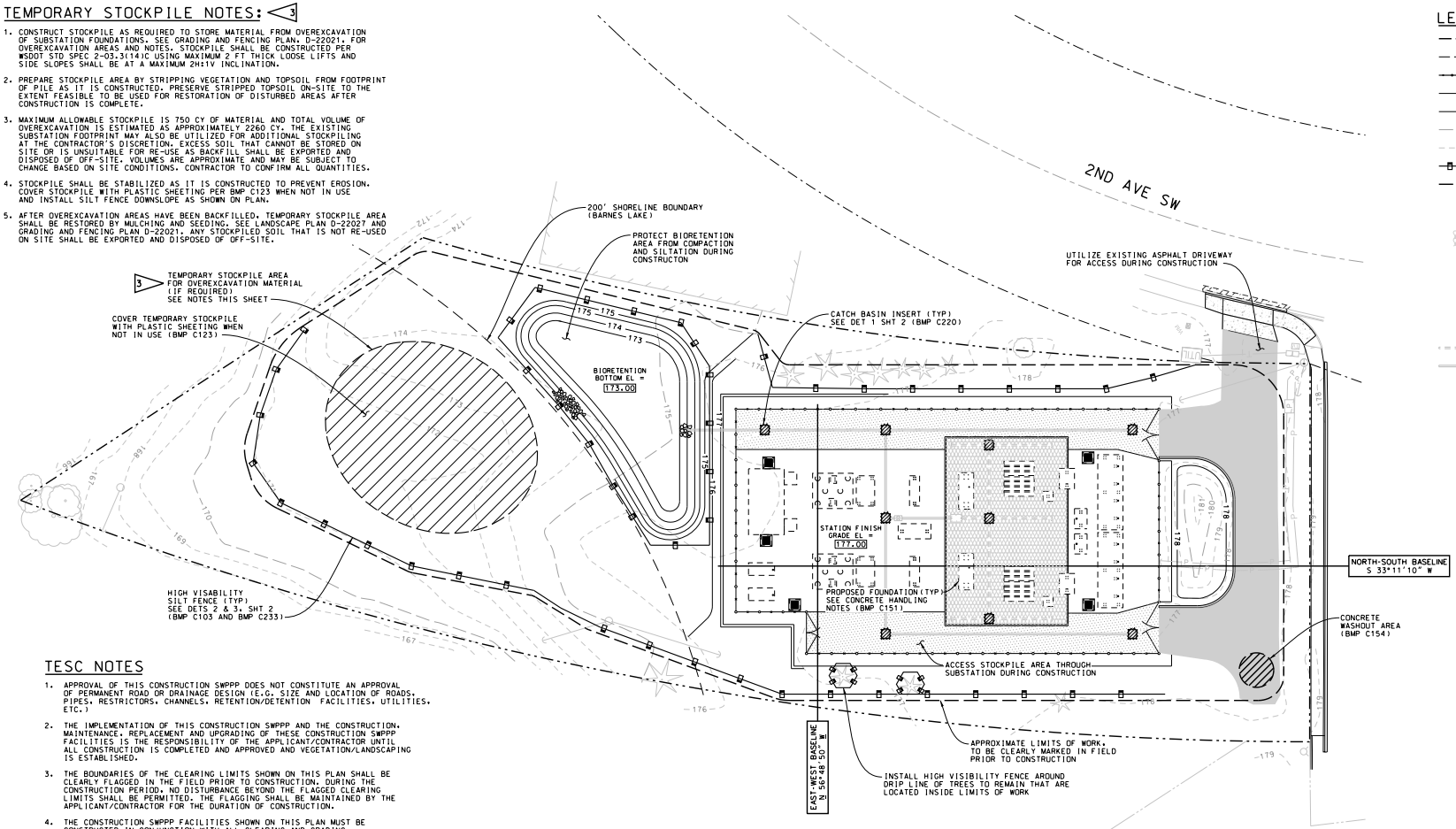
1. CONSTRUCT STOCKPILE AS REQUIRED TO STORE MATERIAL FROM OVEREXCAVATION OF SUBSTATION FOUNDATIONS. SEE GRADING AND FENCING PLAN, D-22021. FOR OVEREXCAVATION AREAS AND NOTES. STOCKPILE SHALL BE CONSTRUCTED PER WSDOT STD SPEC 2-03.3(14)C USING MAXIMUM 2 FT THICK LOOSE LIFTS AND SIDE SLOPES SHALL BE AT A MAXIMUM 2H:1V INCLINATION.

2. PREPARE STOCKPILE AREA BY STRIPPING VEGETATION AND TOPSOIL FROM FOOTPRINT OF PILE AS IT IS CONSTRUCTED. PRESERVE STRIPPED TOPSOIL ON-SITE TO THE EXTENT FEASIBLE TO BE USED FOR RESTORATION OF DISTURBED AREAS AFTER CONSTRUCTION IS COMPLETE.

3. MAXIMUM ALLOWABLE STOCKPILE IS 750 CY OF MATERIAL AND TOTAL VOLUME OF OVEREXCAVATION IS ESTIMATED AS APPROXIMATELY 2260 CY. THE EXISTING SUBSTATION FOOTPRINT MAY ALSO BE UTILIZED FOR ADDITIONAL STOCKPILING AT THE CONTRACTOR'S DISCRETION. EXCESS SOIL THAT CANNOT BE STORED ON SITE OR IS UNSUITABLE FOR RE-USE AS BACKFILL SHALL BE EXPORTED AND DISPOSED OF OFF-SITE. VOLUMES ARE APPROXIMATE AND MAY BE SUBJECT TO CHANGE BASED ON SITE CONDITIONS. CONTRACTOR TO CONFIRM ALL QUANTITIES.

4. STOCKPILE SHALL BE STABILIZED AS IT IS CONSTRUCTED TO PREVENT EROSION. COVER STOCKPILE WITH PLASTIC SHEETING PER BMP C123 WHEN NOT IN USE AND INSTALL SILT FENCE DOWNSLOPE AS SHOWN ON PLAN.

5. AFTER OVEREXCAVATION AREAS HAVE BEEN BACKFILLED, TEMPORARY STOCKPILE AREA SHALL BE RESTORED BY MULCHING AND SEEDING. SEE LANDSCAPE PLAN D-22027 AND GRADING AND FENCING PLAN D-22021. ANY STOCKPILED SOIL THAT IS NOT RE-USED ON SITE SHALL BE EXPORTED AND DISPOSED OF OFF-SITE.



LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- PROPOSED SUBSTATION FENCE
- 175 PROPOSED CONTOURS, MAJOR
- 176 PROPOSED CONTOURS, MINOR
- 175 EXISTING CONTOURS, MAJOR
- 176 EXISTING CONTOURS, MINOR
- HIGH VISIBILITY SILT FENCE
- LIMITS OF WORK
- ASPHALT DRIVEWAY
- GRAVEL DRIVEWAY
- ENVIROGRID
- FOUNDATIONS (REF ONLY)
- CATCH BASIN W/INLET PROTECTION
- GATE VALVE
- GRATE INLET
- VAULT
- PERFORATED SCH 80 PVC PIPE
- SOLID HDPE PIPE
- DECIDUOUS TREE
- CONIFEROUS TREE

TESC NOTES

1. APPROVAL OF THIS CONSTRUCTION SWPPP DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G. SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION/DETENTION FACILITIES, UTILITIES, ETC.)

2. THE IMPLEMENTATION OF THIS CONSTRUCTION SWPPP AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT AND UPGRADING OF THESE CONSTRUCTION SWPPP FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.

3. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE APPLICANT/CONTRACTOR FOR THE DURATION OF CONSTRUCTION.

4. THE CONSTRUCTION SWPPP FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS.

5. THE CONSTRUCTION SWPPP FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE CONSTRUCTION SWPPP FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.

6. THE CONSTRUCTION SWPPP FACILITIES SHALL BE INSPECTED DAILY BY THE APPLICANT/CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.

7. THE CONSTRUCTION SWPPP FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 48 HOURS FOLLOWING A MAJOR STORM EVENT.

8. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN TRAP (OR SUMP). ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT-LADEN WATER INTO THE DOWNSTREAM SYSTEM.

9. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.

CONCRETE HANDLING

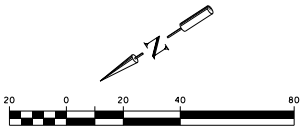
1. CONCRETE TRUCK CHUTES, PUMPS, AND INTERNALS SHALL BE WASHED OUT ONLY INTO AN ECO-PAN.

2. UNUSED CONCRETE REMAINING IN THE TRUCK AND PUMP SHALL BE RETURNED TO THE ORIGINATING BATCH PLANT FOR RECYCLING.

3. HAND TOOLS INCLUDING, BUT NOT LIMITED TO, SCREEDS, SHOVELS, RAKES, FLOATS, AND TROWELS SHALL BE WASHED OFF ONLY INTO AN ECO-PAN.

4. CONTAINED CONCRETE SHALL BE DISPOSED OF IN A MANNER THAT DOES NOT VIOLATE GROUNDWATER OR SURFACE WATER QUALITY STANDARDS, OR THE CONDITIONS OF THE NPDES PERMIT IF APPLICABLE.

5. CONTAINERS SHALL BE CHECKED FOR HOLES IN THE LINER DAILY DURING CONCRETE POURS AND REPAIRED THE SAME DAY.



GRAPHIC SCALE
1" = 20'-0"

REFERENCE DRAWINGS

D-22016	TOPOGRAPHUC SURVEY
D-22020	GRADING AND FENCING PLAN
D-22022	DRAINAGE PLAN
D-22027	LANDSCAPE PLAN

811 Know what's below. Call before you dig.

	DATE
WO NUMBER: 111026539.101139063	
REVISION DESCRIPTION: MODIFIED STOCKPILE AREA REVISED FOR PERMIT REVIEW COMMENTS ISSUED FOR CONSTRUCTION SUBSTATION REBUILD	
CADD	
ENGINEER	
REVIEWED	
APPROVED	

JACKSON R. KNOLL — STATE OF WASHINGTON — 21010915 — REGISTERED PROFESSIONAL ENGINEER

TEMPORARY EROSION/ SEDIMENT CONTROL PLAN BARNES LAKE SUBSTATION

PSE PUGET SOUND ENERGY — SUBSTATION ENGINEERING DEPARTMENT

DRAWING NO D-22017 — REV NO 3

SHEET: 01 OF 2

SCALE: 1" = 20'-0" — CLASS: SITE

CADD NO: D-22017_01.dgn

FILE NO:

CODE: BAR

USER: hwilli 3/27/2024 3:19:21 PM

c:\pwworking\projectwise\hwilli\dms17895\D-22017_01.dgn

INTERNAL USE

CITY OF TUMWATER
555 ISRAEL RD. SW, TUMWATER, WA 98501
Email: cdd@ci.tumwater.wa.us
(360) 754-4180

TUM-24-0589

DATE STAMP

RECEIVED BY: _____

Any person proposing to develop in the incorporated limits of the City of Tumwater is required to submit an environmental checklist unless the project is exempt as specified in WAC 197-11-800 (Categorical Exemptions) of the State Environmental Policy Act Rules. **SUBMITTAL REQUIREMENTS** are as follows:

1. **A COMPLETE ENVIRONMENTAL CHECKLIST.** If the project is located within the Port of Olympia property, the checklist must also be signed by a representative of the Port.
2. **FEE OF $880.00 TO BE PAID UPON SUBMITTAL.** This includes the Public Notice fee.
3. **NAME AND ADDRESS LIST OF PROPERTY OWNERS WITHIN 300 FEET OF THE SUBJECT PROPERTY.**

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization, or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. **You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown.** You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to **all parts of your proposal,** even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for lead agencies

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold

determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B, plus the Supplemental Sheet for Nonproject Actions (Part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in “Part B: Environmental Elements” that do not contribute meaningfully to the analysis of the proposal.

A. Background Find help answering background questions

1. Name of proposed project, if applicable:

Barnes Lake Substation Rebuild and Expansion

2. Name of applicant:

Puget Sound Energy (PSE)

3. Address and phone number of applicant and contact person:

Trevor Lessard
Puget Sound Energy
1140 N. 94th Street
Seattle, WA 98103
206-390-9660

4. Date checklist prepared:

10/31/2023

5. Agency requesting checklist:

City of Tumwater

6. Proposed timing or schedule (including phasing, if applicable):

The project is anticipated to occur in 2024 in one phase after permits have been obtained.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

There are no planned future additions or expansions related to this proposal.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Drainage Report Available by Request

- Wetland Reconnaissance Field Report (GeoEngineers, July 25, 2022)
- Results of 2022 Mazama Pocket Gopher (MPG) Study (West Fork Environmental, September 28, 2022)
- Geotechnical Engineering Services Report (GeoEngineers, April 20, 2023)

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

None Known

10. List any government approvals or permits that will be needed for your proposal, if known.

- Landscape Plan
- Fence Variance
- Shoreline Exemption – temporary stockpile only
- Critical Area Report – evidence of no critical areas present or impacted
- SEPA Checklist
- Formal Site Plan
- Site Development/Grading Permit

Building Permit

11. Give a brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The scope of work includes two components intended to meet the dual goals for the substation project. The first is to replace the damaged and old equipment within the substation to ensure reliable power supply and public safety. The second is to expand the substation, thereby increasing the capacity the substation can provide to the growing service area. Overall, PSE's project will include the replacement of one existing transformer, associated equipment, and concrete foundations for this equipment; the addition of another transformer, associated equipment, and new concrete foundations for said equipment; a bump out of the fence along the backside (north end) of the substation to accommodate the control house relocation; replacing the existing chain link fence with new fencing that is anticlimb and reduces the sightline into the substation; installing a new infiltration pond behind the substation to manage stormwater; and amendments to the landscaping plan to account for the new design proposal, discouragement of trespassers on the property, and future access improvements to the substation.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The location of the project is 1697 (South) 2nd Ave SW, Tumwater, WA 98512
Parcel # 09080011003
T/R/S: 18N / 02W / 29

B. Environmental Elements

1. Earth

a. General description of the site:

The ground surface within the currently fenced substation portion of the site is relatively flat; the ground surface in the undeveloped areas west and north of the substation slopes gently down to the west and north.

Circle or highlight one: Flat, rolling, hilly, steep slopes, mountainous, other:

b. What is the steepest slope on the site (approximate percent slope)?

10 percent (%) slope along the western portion of the property northwest of the existing substation, but typically less than 3%.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them, and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

Based on the geotechnical subsurface explorations, subsurface conditions consist of fill and recessional outwash. The fill generally consists of loose to medium sand with variable silt and gravel content. The underlying recessional outwash generally consists of medium dense to dense sand with variable silt content. (GeoEngineers 2023). Mapped soils in the area consist of Nisqually loamy fine sand (0 to 3% slopes) (USDA Natural Resources Conservation Service, Web Soil Survey on-line mapper).

There is no agricultural land on the site.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Based on the relatively flat grades in the vicinity of the site, the site is not within erosion or landslide hazard areas and there are no indications of unstable soils in the immediate vicinity (GeoEngineers 2023).

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Earthwork (Cubic Yards)	
Total Cut	2,190
Total Fill	2,030
Total Earthwork	4,220
Impervious Surfaces (Square Feet)	

New Impervious Surface	2,550
Replaced Impervious Surface	15,000
Total Impervious Surface	17,550
Disturbed Area (Square Feet)	
Total Disturbed Area	41,300

f. Could erosion occur because of clearing, construction, or use? If so, generally describe.

There could be a temporary increase in erosion as soil is disturbed and stockpiled during construction.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

After improvements, the project site will have 17,550 square feet of impervious surface, compared to the existing 15,000 square feet. After construction, approximately 34 percent% of the parcel will be covered with impervious surface.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any.

Temporary erosion and sedimentation (TESC) best management practices (BMPs) will be installed to prevent erosion and sedimentation, such as a stabilized construction entrance, perimeter silt fence and stockpile covering. Additional concrete handling BMPs will be used and are also referenced in Drawing D-22017.

2. Air Find help answering air questions

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Construction activities may temporarily generate small amounts of dust emissions from excavation, bare soil or general traffic of the vehicles used on site. This increase in activity on site also may temporarily generate carbon dioxide (CO2) emissions from the vehicles and machinery used during construction.

Operation and maintenance may result in infrequent CO2 emissions from vehicles that enter the site.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

There are no off-site sources of emissions that will affect the proposed project.

c. Proposed measures to reduce or control emissions or other impacts to air, if any.

Dust may be controlled with light water spray, if necessary. Construction equipment are expected to meet Washington State Department of Transportation (WSDOT) standards for emissions.

3. Water Find help answering water questions

a. Surface Water: Find help answering surface water questions

1. Is there any surface water body on or in the immediate vicinity of the site (including year-

round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Barnes Lake is approximately 100 feet north of the northernmost extent of the PSE-owned parcel.

2. **Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.**

~~While no work will occur within the 200-foot shoreline buffer of the lake,~~ temporary soil stockpiling is proposed that will spill over into this area. The proposed stockpile within the design is only the maximum proposed extent, it is unlikely PSE will use the entire proposed area for stockpiling, further reducing the actual incursion into the shoreline buffer.

Meets the shoreline exemption criteria due to limited cost of work within the shoreline master program.

3. **Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

Wetlands were not identified in the project vicinity and there will be no fill or dredge material that would be placed in or removed from Barnes Lake.

4. **Will the proposal require surface water withdrawals or diversions? Give a general description, purpose, and approximate quantities if known.**

There are no plans for surface water withdrawals or diversions as part of this proposal.

5. **Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

The proposed project is not located within a 100-year floodplain.

6. **Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

No discharge of waste material will occur to surface waters.

b. Ground Water: Find help answering ground water questions

1. **Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give a general description, purpose, and approximate quantities if known.**

No discharge or withdrawal of groundwater is likely to be necessary during construction. The geotechnical borings found groundwater to be at a depth of at least 16 feet below ground surface.

2. **Describe waste material that will be discharged into the ground from septic tanks or other**

sources, if any (domestic sewage; industrial, containing the following chemicals…; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste material will be discharged.

c. Water Runoff (including stormwater):

a) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Source of runoff may include stormwater runoff from precipitation during construction. It is unlikely that stormwater runoff will need to be collected and disposed of during construction because stormwater readily infiltrates into the permeable site soil.

b) Could waste materials enter ground or surface waters? If so, generally describe.

No.

c) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

No, the proposed project will not significantly alter or otherwise affect drainage patterns in the vicinity of the site. Currently, stormwater generally infiltrates on site because of the permeable soils. The proposed size of the project/new impervious area is triggering the proposed additional biofiltration stormwater facilities that will be installed, but the current drainage pattern of infiltration will be unchanged.

d) Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any.

During construction, the perimeter silt fence will be used to prevent runoff from the site from entering Barnes Lake.

Stormwater and runoff discharge for the completed project will be self-mitigated through installation of the proposed bioretention cell that will provide water quality treatment and stormwater retention/flow abatement.

4. Plants Find help answering plants questions

a. Check the types of vegetation found on the site:

☒ deciduous tree: alder, maple, aspen, other *Oregon white oak*

☒ evergreen tree: fir, cedar, pine, other

☒ shrubs *snowberry, Oregon grape, salal, Scots broom, Himalyan blackberry*

☒ grass *reed canarygrass, sweet vernalgrass*

☐ pasture

☐ **crop or grain**

☐ **orchards, vineyards, or other permanent crops.**

☐ **wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other**

☐ **water plants: water lily, eelgrass, milfoil, other**

☐ **other types of vegetation *English ivy, ribwort, common dandelion, cats ear***

b. What kind and amount of vegetation will be removed or altered?

The project will impact mowed grass for construction of the stormwater pond and existing landscape screening the rear substation fence line will be removed, as well as landscaping vegetation along the existing substation fence line cut back as needed to widen the substation footprint.

c. List threatened and endangered species known to be on or near the site.

No threatened or endangered plant species or critical habitat is known to be on or near the site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any.

Garry Oak will be protected during construction.

Temporarily disturbed areas will likely consist of herbaceous grass areas and will be reseeded and stabilized as needed after construction has been completed. No shrubs or trees will be removed as a result of the project.

e. List all noxious weeds and invasive species known to be on or near the site.

Minor Scots broom was identified on the site, which is listed as a noxious week by the Washington Invasive Species Council. Although not listed as noxious by either the Washington council or the Thurston County Noxious Weed Control Board, Himalayan blackberry can be invasive and was identified within the project area. No other known noxious or invasive weeds have been identified on the project site.

5. Animals

List any birds and other animals that have been observed on or near the site or are known to be on or near the site.

Examples include:

- **Birds: hawk, heron, eagle, songbirds, other:**
- **Mammals: deer, bear, elk, beaver, other:**
- **Fish: bass, salmon, trout, herring, shellfish, other: *Fish are in Barnes Lake to the north***

a. List any threatened and endangered species known to be on or near the site.

No threatened and endangered species are known to be on or near the site.

b. Is the site part of a migration route? If so, explain.

The project corridor is within the Pacific Flyway.

c. Proposed measures to preserve or enhance wildlife, if any.

Areas of temporary buffer disturbance (grassy areas) will be stabilized and seeded. Out of precaution, Puget Sound Energy contracted pocket gopher surveys at the site. West Fork Environmental did not identify evidence of Mazama (Olympia) pocket gophers during surveys conducted in 2022 or in 2023. Additionally, based on communication between PSE and City staff, there are no known gophers or gopher-supporting soils near the project site. Therefore, no measures to preserve or enhance wildlife are proposed.

d. List any invasive animal species known to be on or near the site.

No known invasive animal species are known to be on or near the site.

6. Energy and Natural Resources Find help answering energy and natural resource questions

1. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

The completed project will be an electrical substation and will use electricity.

2. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No, the project will not affect the potential use of solar energy by adjacent properties.

3. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any.

All substation lighting will be LEDs with photocell sensors to trigger operation only during night conditions. This site does not represent a significant energy demand and therefore energy conservation options are extremely limited.

7. Environmental Health Find help with answering environmental health questions

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur because of this proposal? If so, describe.

The proposed expansion of the substation will not create any known environmental health hazards. The facilities will be designed, constructed and operated in accordance with all applicable federal, state and local regulations and safety codes.

1. Describe any known or possible contamination at the site from present or past uses.

Representative soil samples were obtained in July 2022 to characterize potential contaminants typically found on a substation property prior to the proposed site work. Eight composite, shallow soil samples were obtained from the geotechnical borings completed at the four corners of the property. Based on chemical analytical data for the samples, diesel-range petroleum hydrocarbons and polychlorinated biphenyl compounds (PCBs) were not detected. Lube oil-range petroleum hydrocarbons were detected at a concentration less than the MTCA Method A soil cleanup level for

unrestricted site use in the shallow (less than 4 feet) soil sample from the boring completed in the northwest corner of the substation.

On November 11, 2022, approximately 1,000 gallons of mineral oil were released to the soil within the Barnes Lake Substation when a vandal shot a hole in a pad-mounted transformer. A vacuum truck was mobilized to remove the oil that pooled on the surface within the substation and the stained concrete foundation was cleaned. Approximately 2 cubic yards of impacted soil at the surface were excavated and removed from the site for disposal at a permitted facility. PSE intends to complete a cleanup of soil that was impacted by infiltrating mineral oil during the proposed project excavation activities.

2. Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

No known existing hazardous chemicals or conditions might affect the project development or design.

3. Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

The transformer at the substation contains mineral oil. Mineral oil is a regulated contaminant in Washington.

Additionally, machinery or vehicles used for construction use gasoline or diesel for fuel. The fuel of excavating equipment may be from a slip tank installed in the bed of a service truck.

4. Describe special emergency services that might be required.

Special emergency services will likely not be required for the project. Emergency services currently available (emergency medical, fire response and security) will continue to serve this site.

5. Proposed measures to reduce or control environmental health hazards, if any.

There are no environmental health hazards anticipated as a result of the proposed actions and therefore, no measures are proposed.

b. Noise

1. What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

No existing noise will affect the proposed project.

2. What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site)?

A short-term increase in noise will result from construction activities, which will include the use of heavy equipment.

There will be no long-term change in noise from PSE's site use as an electrical substation resulting from the proposed project.

3. Proposed measures to reduce or control noise impacts, if any.

Construction will be completed within normal daytime weekday work hours allowed within city code.

8. Land and Shoreline Use Find help answering land and shoreline use questions

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The site is currently used as an electrical substation. Adjacent properties are commercial in use to the east, west and south, with a condominium complex located northwest of the site. Barnes Lake and surrounding natural shoreline buffer are located north of the site. Because land use is not changing, the proposal will not affect the current land use on nearby or adjacent properties.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses because of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

The site has not been used for working farmlands or working forest lands since 1973 when the substation was constructed. No resource lands, farmland or forest land tax status will be converted as a result of the proposed project.

1. Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how?

No, the project will not affect or be affected by surrounding working farm or forest land business operations.

c. Describe any structures on the site.

The existing substation facility contains existing PSE electrical distribution lines, transformers and poles with an asphalt driveway. A 8 foot by 6 foot, prefabricated control house is also located on the subject property.

d. Will any structures be demolished? If so, what?

The existing substation fencing, concrete foundations and associated electrical structures will be removed.

e. What is the current zoning classification of the site?

GC (General Commercial)

f. What is the current comprehensive plan designation of the site?

Commercial

g. If applicable, what is the current shoreline master program designation of the site?

No proposed work will occur within the 200-foot shoreline buffer of Barnes Lake, which is designated by the City of Tumwater's Shoreline Master Program as a freshwater lake system shoreline (although temporary stockpiling of soil will spill into this area), with a shoreline master program designation of Urban Intensity near the site. A temporary soil stockpile will be located within the Shoreline Master Program but meets the exemption criteria of being under a certain amount of construction cost for a shoreline exemption.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Barnes Lake is over 200 feet north of the project footprint, except for some temporary soil stockpiling during construction. Wetland habitat may occur offsite to the north along the fringe of Barnes Lake; however, wetland or stream habitat has not been observed on the project parcel.

The site is located within a wellhead protection area and is a High Groundwater Review Area.

i. Approximately how many people would reside or work in the completed project?

None

j. Approximately how many people would the completed project displace?

None

k. Proposed measures to avoid or reduce displacement impacts, if any.

Not applicable

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any.

The project aligns with existing and projected land use plans per the City's Comprehensive Plan Land Use Map. In addition, land use is not changing as a result of the project; the site is currently used as an electrical substation and will continue to be used as a substation when the proposed project is completed.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any.

Not applicable; there should be no impacts to agricultural and forest lands as a result of the proposed project.

9. Housing Find help answering housing questions

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

No housing units will be provided.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

No housing units will be eliminated.

c. Proposed measures to reduce or control housing impacts, if any.

Not applicable.

10. Aesthetics Find help answering aesthetics questions

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The tallest component on the property are the two dead end towers located on the north end of the substation, standing at 35 feet in height.

b. What views in the immediate vicinity would be altered or obstructed?

Views in the immediate vicinity will not be altered or obstructed as a result of the proposed project.

c. Proposed measures to reduce or control aesthetic impacts, if any.

No measures are proposed since no aesthetic impacts will result from the project.

11. Light and Glare Find help answering light and glare questions

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

No light or glare produced by the completed project to any adjacent property or roadway will result because of the presence of vegetative screening that will be required.

Will meet regulations in Tumwater Municipal Code.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No, light or glare from the project is not expected to be a safety hazard or interfere with views.

c. What existing off-site sources of light or glare may affect your proposal?

None.

d. Proposed measures to reduce or control light and glare impacts, if any.

None are proposed.

12. Recreation Find help answering recreation questions

a. What designated and informal recreational opportunities are in the immediate vicinity?

There are no known designated or informal recreational opportunities at or adjacent to the proposed project.

b. Would the proposed project displace any existing recreational uses? If so, describe.

No, the project will not displace existing recreational uses.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any.

There should be no impact to recreation resulting from the proposed project; therefore, no measures are proposed.

13. Historic and Cultural Preservation Find help answering historic and cultural preservation questions

a. **Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.**

The proposed PSE Barnes Lake Substation Rebuild and Expansion is located at 1697 (South) 2nd Ave SW, Tumwater, 98512, parcel number 09080011003. A records search undertaken to determine if any buildings, structures or sites are located within the project area or nearby used the Washington Department of Archaeology and Historic Preservation (DAHP) Washington Information System for Architectural and Archaeological Records Data (WISAARD) as well as historical maps and aerial photographs available through on-line search tools. In addition, review of the PSE Archives was completed. There are no historical buildings, structures, or sites known to be within the project boundary. Thirty-four historic properties have been previously recorded within a one-mile radius of the project area. None is within the project footprint, and none was determined eligible for the National Register of Historic Places or Washington Register of Historic Places.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

There are records of eleven cultural resource assessments completed within 1 mile of the Barnes Lake Substation project (Table 1 below).

The closest cemetery is approximately one-half mile southwest of the project site. Union Cemetery, also referred to as Pioneer Calvary Cemetery, is recorded as an archaeological site (TN 298).

TN 470, a historic debris archaeological site, is approximately 0.94-mile northeast of the project area. It contains wood, charcoal, metal, glass and other historic debris that dates prior to 1900.

No other archaeological sites have been recorded within 1 mile of the project site.

The project area is within the traditional territory of the Squaxin Island Tribe and the Nisqually Indian Tribe. There are several significant place names within the traditional territories, but none is in the project area. The nearest are the water ways near Deschutes River, including SpEkwa 'L (Tumwater Falls), and the waters around Puget Sound to the north. The area is significant to both Tribes because of the ancestral uses of the land that connect people to their culture.

In addition, several historic events occurred in the area as non-native immigrants settled the area. Early settlers arrived in the area near Tumwater Falls in 1845. The Donation Land Claim Act (DLCA) played an important role in settlement affecting the project area and immediate prairie areas to the south. Bush Prairie in the immediate vicinity of Barnes Lake Substation was part of the DLCA. The 1850 Donation Land Claim Act excluded all but white men from claiming land. A petition signed by 55 members of the Washington Territorial Legislature led to a bill passed by Congress on April 7, 1855, acknowledging the Bush land Claim (Oldman, posted 2/01/2004, historylink.org, essay 5646, George Bush settles with his family at Bush Prairie near Tumwater in November 1845. - HistoryLink.org).

According to the September 9, 1853 General Land Office (GLO) surveys done in the area, other land claims were also near the project site. In addition, the road to Cowlitz ran just east of the project area and headed north/south. The abundance of prairies noted on the GLO surveys likely supports the fact that native traditional uses of the area were significant prior to settlement and are likely still important today. See Figure 1 below.

Figure 1. 1853 GLO map overlaid on approximate location of substation.

NADB	Author	Title	Resource Identified
1686860	Kate Shantry	Cultural Resources Assessment for the E Street Outfall Project, Tumwater, 2015	TN 470, historic debris
1685337	Jennifer Chambers	Cultural Resources Assessment for the Cleveland Avenue Stormwater Outfall Retrofit Project Olympia, 2014	None
1696495	Bathany Mathews	Cultural Resource Assessment for the Capitol Boulevard Lot 4 Multifamily Development, Tumwater, Thurston County, WA, 2022	None
1690202	Sandra Pentney	Phase I Archaeological Survey of the COL Edith M. Nuttall Army Reserve Center (WA038/53945), Tumwater, 2015	None
1688023	Jana Futch	Revised Draft Archaeological Sensitivity Assessment of Selected Facilities in WA, 88th Regional Support Command, 2014	None
1689526	Carol Schultze	Cultural Resources Inventory for Capitol Boulevard/Trosper Rd Intersection Improvements, City of Tumwater, 2017	None

1687263	Melanie Diedrich	Archaeological Monitoring for the Reclaimed Water Storage Project, Tumwater, 2015	None
1696851	Brain Durkin and Chrisanne Beckner	X St and Capital Blvd CR Report 20220425, 2022	None
1697176	Colin Higashi, et al.	Cultural Resource Assessment for the 5945 Littlerock Road SW Development Project, Tumwater, Thurston County, Washington, 2022	TN 298, Union Cemetery, Pioneer Calvary Cemetery
1697105	Colin Higashi, et al.	Cultural Resource Assessment for the Union-Calvary Pioneer Cemetery Project, Tumwater, Thurston County, Washington, 2022	TN 298, Union Cemetery, Pioneer Calvary Cemetery
1352036	Jennifer Wilson	Results of Burial Identification Investigations at the Union Cemetery/Pioneer-Calvary Cemetery, 2008	TN 298, Union Cemetery, Pioneer Calvary Cemetery

Table 1. Cultural Resource Studies within 1 mile of Project Site.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

The PSE Archaeologist completed a literature review for the project area. This included a search of the WISAARD database for all cultural resource assessment reports, archaeological records, General Land Office maps, probability data, cemetery data, and historic property inventory records data within 1 mile of the project site. The PSE Archaeologist reviewed Squaxin Island Tribe and Nisqually Indian Tribe webpages, Thurston County Maps, historical map tools, university special collections, and BLM GLO databases for relevant information pertaining to the area.

The PSE Archaeologist also conducted a review of the PSE Library and Archives for relevant information related to this project. This includes ethnographic literature in the form of manuscripts, reports, books, and documents as well as Kroll Map Books and other PSE company-related materials relevant to this area.

The PSE Archaeologist reviewed geotechnical data including a report prepared for the project location (GeoEngineers 2023).

The PSE Archaeologist contacted the Squaxin Island Tribe and Nisqually Indian Tribe cultural resource departments to provide information about the project, proposed cultural resource fieldwork, and SEPA checklist process on October 16, 2023.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

PSE conducted a field assessment on November 20, 2023 at the Barnes Lake Substation. PSE sent fieldwork notification via email to the Nisqually and Squaxin cultural resource professionals in order to allow them to join. PSE archaeologist excavated four probes and conducted pedestrian surveys in the expansion area of the substation. PSE archaeologist observed sparse very small pieces of Styrofoam and asphalt and undiagnostic glass fragments in the redeposited silt loam. The survey identified no significant cultural resources.

PSE forwarded a summary of the findings to the Nisqually and Squaxin cultural resource professionals on November 28, 2023. The PSE archaeologist drafted a Cultural Resource Assessment report and plans to submit this for review by DAHP and Tribal cultural resource departments once finalized and prior to any construction work.

PSE archaeologists will also prepare an Inadvertent Discovery Plan and implement it in accordance with applicable regulations, including RCW 68.60, RCW 27.44, and RCW 68.50.

14. Transportation Find help with answering transportation questions

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The project is located along South 2nd Avenue SW, north of Trosper Road SW. The site is accessed via an asphalt driveway from South 2nd Avenue SW.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

According to Google Maps, the closest transit stop is approximately 1 mile north of the project site near the intersection of Linwood Ave SW and South 2nd Avenue SW.

c. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

No new improvements are required as part of this proposal.

d. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The project will not use any water, rail or air transportation.

e. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

The project will not generate any additional vehicular trips than the current substation, which includes infrequent use by operations and maintenance staff using commercial pickup trucks.

f. Will the proposal interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

The project will not interfere with, affect or be affected by the movement of agricultural and forest products.

g. Proposed measures to reduce or control transportation impacts, if any.

No negative transportation impacts are anticipated.

15. Public Services Find help answering public service questions

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

No additional need for public services would result from the project.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Not applicable.

16. Utilities Find help answering utilities questions

a. **Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other:**

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

No new utilities are proposed as part of this project, although the existing facility will be expanded. The scope of work includes two components intended to meet the dual goals for Puget Sound Energy's electrical substation project. The first is to replace the damaged and old equipment within the substation to ensure reliable power supply and public safety. The second is to expand the substation, thereby increasing the capacity the substation can provide to the growing service area. The project will include new stormwater facilities to meet treatment and detention requirements for the new impervious surfaces.

C. Signature Find help about who should sign

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

X Trevor Lessard

Type name of signee: Trevor Lessard

Position and agency/organization: Municipal Land Planner, Puget Sound Energy (PSE)

Date submitted: 03/28/2024

Reviewed By:

Alex Baruch, Senior Planner, City of Tumwater

Date: April 16, 2024

PUGET SOUND ENERGY
The Energy To Do Great Things

Puget Sound Energy
P.O. Box 97034
Bellevue, WA 98009-9734
PSE.com

March 25th, 2024

City of Tumwater
Department of Community Development
555 Israel Rd SW
Tumwater, WA 98501

RE: PSE Barnes Lake Substation Rebuild and Expansion

To Whom It May Concern:

PSE is seeking the following permits for our proposal to rebuild and expand its Barnes Lake Substation, located at 1697 S 2nd Ave SW (Parcel # 09080011003): *building permit, site development/grading permit, shoreline substantial exemption, and SEPA.* In addition to the respective permit applications, this application package also includes the *site plan, landscape plan, drainage report, a frontage improvement exhibit, and lighting plans.*

PSE is proposing to rebuild and expand its Barnes Lake Substation for multiple purposes. First, certain pieces of equipment, including the existing transformer have been damaged and require replacement to avoid potential failure and major outages to our customers. Second, replacing the other aging equipment at this time while the substation is taken offline allows PSE to avoid future outages due to failing equipment. In total, PSE is planning to replace one transformer, associated equipment, and all associated concrete foundations as part of this replacement component.

In addition to replacing the existing substation equipment, PSE is also planning to expand the existing footprint and the capacity of the substation to accommodate growing customer demand in the area. Growing the substation's capacity involves adding a new transformer, associated equipment, and adding associated concrete foundations. This new equipment will be located within the existing footprint of the substation. The substation will be expanded along its north fence line to accommodate the relocated control house, and make room for the rest of the equipment mentioned above. Expanding the substation's capacity is paramount to continue supplying electricity to the quickly growing community the substation supports.

In addition to the components above, PSE will replace the existing 6-foot high, chain link fence with new, 8-foot high, anti-climb fence. This new fence is necessary to prevent theft of PSE equipment and materials and continue to maintain public safety. This new fence type helps reduce site lines into the substation due to its tighter weave compared to a standard chain link fence. This will improving screening of the facility from the public and help guard against trespassing and theft at the facility.

PSE also proposes to add new catch basins within the substation and its driveway as well as a new infiltration pond behind the substation to improve stormwater management. This new stormwater infrastructure will help capture and contain stormwater on the site and help it infiltrate into the ground. This will reduce stormwater runoff from leaving the site and protect city infrastructure as well as nearby waterbodies.

Lastly, PSE is proposing a new landscape plan for this site. This landscape plan is designed to screen the facility from the public, discourage trespassing, and offer stormwater assistance in congruency with the infiltration pond, while allowing for PSE to perform future maintenance and operations on the facility as needed. PSE has accommodated the city's request to maintain as many full grown trees as possible, only removing and replacing landscaping that is necessary due to conflicts with construction.

As part of construction, PSE will utilize a portion of the large lawn behind the substation for temporary stockpiling of materials from the site. The stockpile will be minimized where and when possible to reduce impacts to the 200-foot shoreline buffer of Barnes Lake to the north. Stockpile materials in this area will only include clean fill excavated from the site. While all of the substation and its proposed scope of work occurs outside of this shoreline

designation, the proposed, maxed extent of the stockpile does project into this area. Only this component triggers the need for a shoreline exemption. PSE qualifies for the exemption via WAC 173-27-040(2)(a) which provides exemption for work under a certain dollar amount. PSE is providing an exhibit that shows the total cost PSE predicts will occur within the shoreline designation. PSE will not have any in-water work, stockpile will occur only within the designated area, and will be minimized where and when possible to protect this shoreline buffer.

During construction, PSE will employ all necessary Construction Stormwater BMPs on the site to reduce impacts off the site during work. BMPs include marking off the project work area, silt fencing around the project's perimeter, marking trees for protection, reducing exposed soils where and when possible, and covering all exposed soils after construction is complete and revegetation according to the proposed landscape plan. Construction is planned to occur between the months of April and September 2024. This largely places the majority of work within Western Washington's dry season, further reducing stormwater impacts for most of the project duration.

If you have any questions, please feel free to contact me at trevor.lessard@pse.com or 206-390-9660.

Sincerely,

Trevor Lessard
Municipal Land Planner
PUGET SOUND ENERGY

Geotechnical Engineering Services

Barnes Lake Substation Improvements
Tumwater, Washington

for
Puget Sound Energy

April 20, 2023

GeoEngineers
Earth Science + Technology

Geotechnical Engineering Services

Barnes Lake Substation Improvements
Tumwater, Washington

for
Puget Sound Energy

April 20, 2023

GeoEngineers

2101 4th Avenue, Suite 950
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206.728.2674

Geotechnical Engineering Services

Barnes Lake Substation Improvements
Tumwater, Washington

File No.

April 20, 2023

Prepared for:

Puget Sound Energy
35131 SE Center Street SQE-OTC
Snoqualmie, Washington 98065

Attention: Jackson Knoll, PE and Jason Henry, PE

Prepared by:

GeoEngineers, Inc.
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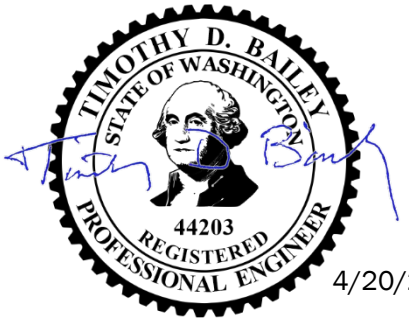

Timothy D. Bailey, PE
Senior Geotechnical Engineer

4/20/23

David S. Phelps, PE
Principal Geotechnical Engineer

TDB:DSP:leh

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APPENDICES

1.0 INTRODUCTION

This report summarizes the results of our geotechnical services associated with the proposed improvements to the existing Puget Sound Energy (PSE) Barnes Lake Substation. The site is located on Thurston County parcel 09080011003 on 2nd Avenue SW in Tumwater, Washington and is shown in relation to the surrounding area on the Vicinity Map, Figure 1. The site is about 200 feet north of the intersection of 2nd Avenue SW and Trosper Road SW. Existing features are shown on the Site Plan, Figure 2.

Our understanding of the current project is based on discussions with Jason Henry and review of drawings showing the existing substation and proposed improvements. We understand there is maintenance replacement planned at the existing substation, with a replacement control house, transformer, and circuit switcher. As part of the maintenance, the substation will be prepared for a future second bank of equipment in addition to the current single bank. The existing substation has experienced significant settlement (up to ½-foot settlement in areas), and we have discussed potential options for mitigating settlement. We provided conceptual options to PSE for deep foundations or overexcavation. We understand PSE has decided to complete overexcavation below the area of the replacement equipment.

GeoEngineers previously prepared a geotechnical report for this site dated January 12, 2007. We also prepared a final version of this report dated August 30, 2022. This report incorporates and supersedes our previous reports. GeoEngineers prepared a separate environmental soil characterization report for this site.

2.0 SCOPE OF SERVICES

Our services were completed in accordance with our proposal dated May 9, 2022. Our scope of services includes:

- Completing four borings at the site;
- Completing laboratory testing on selected soil samples from the borings;
- Providing geotechnical conclusions and recommendations for the proposed improvements; and
- Preparing this report.

3.0 FIELD EXPLORATIONS AND LABORATORY TESTING

3.1. Field Explorations

Subsurface conditions at the site were evaluated by completing four exploratory borings (GEI-1-22 through GEI-4-22) to depths of 26½ to 51½ feet below the ground surface (bgs). A description of the field exploration program and summary boring logs are presented in Appendix A. The boring locations are shown on the Site Plan, Figure 2.

3.2. Laboratory Testing

Soil samples were obtained during the recent exploration program and taken to GeoEngineers' Redmond laboratory for further evaluation. Selected samples were tested for the determination of moisture content and grain-size distribution (sieve analysis). A description of the laboratory testing and the test results are presented in Appendix A or on the boring logs.

3.3. Previous Explorations

Subsurface conditions at the site were previously evaluated by completing four exploratory borings (1, 2A, 2B and 3) to depths of 2½ to 26½ feet bgs as part of our geotechnical study in 2007 (GeoEngineers 2007). These previous boring logs and supporting laboratory data are presented in Appendix B. The boring locations are shown on the Site Plan, Figure 2.

4.0 SITE CONDITIONS

4.1. Geology

We reviewed available geologic maps, including the geologic map of the Tumwater quadrangle (Walsh 2003). Surficial soils in the project vicinity are mapped on the geologic map as Vashon recessional sand and minor silt (Qgos).

Surficial soils are shown on the United States Department of Agriculture (USDA) soils mapping as Nisqually loamy fine sand, 0 to 3 percent slopes, per (Thurston County GIS).

4.2. Geologically Hazardous Areas

We reviewed the geologically hazardous area definitions presented in City of Tumwater Municipal Code Section 16.20.040. Based on the relatively flat grades in the vicinity of the site, the site is not within erosion or landslide hazard areas. Based on the sandy saturated soils below the site, which have a moderate to high risk of liquefaction, it is our opinion the site is within a seismic liquefaction hazard area and therefore potential liquefaction should be considered in design of the proposed improvements. Based on the United States Geological Survey (USGS) fault database, the site is not located within or near a mapped fault.

Based on Thurston County mapping, the site is located within a wellhead protection area. The site is mapped within a zone that is a 5-year-flow distance from a potable water well. Proposed activities on this site should not adversely affect aquifer recharge.

The proposed work is located within the footprint of the existing substation and therefore it is our opinion there are no permanent impacts to geologically hazardous areas.

4.3. Surface Conditions

The site (Thurston County Parcel No. 09080011003) is on the north side of 2nd Avenue SW, with commercial buildings to the east, south, and west and an undeveloped parcel and Barnes Lake to the north. The site is accessed by a paved road off 2nd Avenue SW.

The ground surface within the fenced portion of the existing substation is relatively level. The ground surface slopes down gently on the west and north sides of the substation. Vegetation around the perimeter of the substation generally consists of shrubs and low trees.

4.4. Subsurface Conditions

Based on our subsurface explorations, subsurface conditions consist of fill and recessional outwash extending to the depths explored. The fill generally consists of loose to medium sand with variable silt and gravel content extending to depths of 8½ to 19½ bgs in the current and previous borings. The underlying recessional outwash generally consists of medium dense to dense sand with variable silt content.

The soils encountered the subsurface explorations are generally classified as sand per the USDA textural triangle.

4.5. Groundwater

Groundwater was observed at a depth of between 16 to 19 feet bgs in the current borings and at 21 to 22 feet in the previous borings. Groundwater levels are anticipated to vary as a function of precipitation, season, and other factors.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1. General

Based on our explorations, testing, and evaluation, it is our opinion that the site can be improved as proposed provided that the considerations and recommendations presented in this report are incorporated in the project design and construction. A summary of geotechnical considerations is provided below.

- Settlement of portions of the substation appears to be due to the presence of voids located near the contact between the fill and the native soils. There may have been vegetation (such as trees or brush) that were left in place during fill placement. Overexcavation of the area of proposed improvements and replacement with structural fill is recommended, with overexcavation depths varying depending on the equipment settlement sensitivity.
- The site is underlain by potentially liquefiable soils, and the proposed overexcavation and replacement with structural fill, along with the addition of a geogrid will provide a stiffer layer that will help mitigate potential seismic liquefaction-induced settlement at the ground surface.
- Shallow or mat foundations constructed on new fill placed and compacted in overexcavated areas are suitable for support of equipment.
- Infiltration is feasible on site outside the existing substation footprint.

This summary is presented for introductory purposes only and should be used in conjunction with the complete recommendations presented in this report.

5.2. Earthquake Engineering

5.2.1. 2018 IBC Seismic Design Information

We recommend the 2018 International Building Code (IBC) parameters for Soil Profile Type, short period spectral response acceleration (S_S), 1-second period spectral response acceleration (S_1), and Seismic Coefficients F_A and F_V presented in Table 1.

TABLE 1. 2018 IBC PARAMETERS

2018 IBC Parameter	Recommended Value
Soil Profile Type	D
Short Period Spectral Response Acceleration, S_S (percent g)	139.4
1-Second Period Spectral Response Acceleration, S_1 (percent g)	52.1
Seismic Coefficient, F_A	1.2
Seismic Coefficient, F_V	1.78
Site Modified Peak Ground Acceleration, PGA_M (percent g)	72.1

Note:

The above spectral response accelerations are based on data from American Society of Civil Engineers (ASCE) 7-16 seismic maps, which is the basis of IBC 2018 seismic parameters.

5.2.2. Liquefaction and Liquefaction-Induced Settlement

Liquefaction refers to the condition when vibration or shaking of the ground, usually from earthquake forces, results in the development of excess pore pressures in saturated soils with subsequent loss of strength in the deposit of soil so affected. In general, soils that are susceptible to liquefaction include very loose to medium dense clean to silty sands and some silts that are below the water table. Liquefaction usually results in loss of bearing capacity, resulting in settlement of structures that are supported on foundations within or above the liquefied soils.

We evaluated the liquefaction potential of the site using the Simplified Procedure (Youd et al. 2001). The Simplified Procedure is based on comparing the cyclic resistance ratio (CRR) of a soil layer (the cyclic shear stress required to cause liquefaction) to the cyclic stress ratio (CSR) induced by an earthquake. The factor of safety against liquefaction is determined by dividing the CRR by the CSR. Liquefaction hazards, including settlement and related effects, were evaluated when the factor of safety against liquefaction was calculated as less than 1.2.

Based on our liquefaction analysis, it is our opinion that there is moderate to high potential for liquefaction of the loose to medium dense sand below the groundwater table during the design earthquake (magnitude 7.75 with peak ground acceleration [PGA_M] of 0.721g). We anticipate that this liquefaction could result in up to 11 inches of settlement. This settlement could occur unevenly, but it is our opinion the 20-foot-layer of non-liquefiable material below the substation site will significantly reduce and mitigate the risk of differential settlement at the ground surface.

5.3. Earthwork

5.3.1. Overexcavation and Geogrid

For areas of the substation supporting settlement-sensitive structures, we recommend overexcavation to remove voids and unsuitable fill, with the slope geometry as discussed in the Temporary Slopes section.

- Below the transformer and circuit switch structures (for both the current bank and the proposed future second bank), we recommend the overexcavation extend to a depth of 8 feet bgs, with the zone of overexcavation extending laterally a distance of 8 feet from the edges of the proposed foundations. This depth of overexcavation is based on voids encountered in previous borings 1 and 3 (both boring logs show a void at 7½ feet).
- Below the switch stand foundations and below the proposed control house, we recommend the overexcavation extend to a depth of 2 feet below the bottom of these foundations, with the zone of overexcavation extending laterally a distance of 2 feet from the edges of the proposed foundations.

We recommend the base of the overexcavation be evaluated by GeoEngineers to confirm unsuitable soils and debris have been removed. The base of the overexcavation should be compacted with a vibratory roller and a reinforcing geogrid should be placed on the compacted subgrade prior to placement of structural fill within the excavation. As discussed above in the Liquefaction and Liquefaction-Induced Settlement section, there is a risk of differential settlement under seismic conditions.

The purpose of the geogrid is to provide a stiff layer to help redistribute loads and mitigate settlement in the event of seismic liquefaction-induced settlement. We recommend the geogrid consist of a high strength biaxial material suitable for foundation reinforcement (Tensar Biaxal Geogrid BX1100 or approved equivalent). We recommend the geogrid be placed at the base of overexcavation for all foundation areas noted above.

5.3.2. Reuse of On-site Soils

We anticipate excavated sandy soils can be reused as structural fill to backfill the excavation, provided the soils are free of organics and provided the soils are not contaminated. Unsuitable materials should be removed from the excavated soil prior to stockpiling soil for reuse. We understand excavated soils will be stockpiled on the adjacent undeveloped portion of this parcel. Soil stockpiles should be covered to protect the soil from becoming wet from rainfall. Refer to the Weather Considerations section below for additional recommendations. Refer to our separate environmental soil characterization report for additional details regarding soil reuse on site.

5.3.3. Structural Fill

5.3.3.1. Materials

Materials used for support of structures or pavements or for utility trench backfill are classified as structural fill. Structural fill material quality varies depending upon its use as described below:

1. On-site soils will likely be suitable for reuse as structural fill, although cobbles and boulders larger than 6 inches in diameter should be removed prior to reuse as structural fill, along with any organics.
2. Imported gravel borrow for structural fill should conform to PSE Base Course Aggregate Specification 1275.1310 as described in Table 2 below:

TABLE 2. PSE BASE COURSE AGGREGATE SPECIFICATION

U.S. Standard Sieve Size	Percent Passing (by weight)
3 inch	100
¾ inch	70-90
⅜ inch	60-80
¼ inch	50-70
U.S. No. 40	< 30
U.S. No. 200	< 5

3. Structural fill placed as yard surfacing material should be angular crushed rock conforming to PSE Yard Course Crushed Aggregate Specification 1275.1330 as described in Table 3 below:

TABLE 3. PSE YARD COURSE CRUSHED AGGREGATE SPECIFICATION

U.S. Standard Sieve Size	Percent Passing (by weight)
1½ inch	100
1 inch	60 to 100
¾ or ⅝ inch	0 to 35
⅜ inch	0 to 5

5.3.3.2. Fill Placement and Compaction Criteria

Structural fill should be mechanically compacted to a firm, non-yielding condition. In general, structural fill should be placed in loose lifts not exceeding 8 to 10 inches in thickness. Each lift should be conditioned to

the proper moisture content and compacted to the specified density before placing subsequent lifts. Structural fill should be compacted to the following criteria:

- Structural fill for the yard area should be compacted to 95 percent of the maximum dry density (MDD) (ASTM International [ASTM] D 1557).

We recommend that a representative from our firm be present during probing of the exposed subgrade soils prior to the placement of structural fill and during the placement of structural fill. Our representative would evaluate the adequacy of the subgrade soils and identify areas needing further work, perform in-place moisture-density tests in the fill to evaluate if the work is being done in accordance with the compaction specifications, and advise on any modifications to procedures that may be appropriate for the prevailing conditions.

5.3.4. Erosion and Sedimentation Control

Potential sources or causes of erosion and sedimentation depend upon construction methods, slope length and gradient, amount of soil exposed and/or disturbed, soil type, construction sequencing and weather.

Temporary erosion protection should be used and maintained in areas with exposed or disturbed soils to help reduce the potential for erosion and reduce transport of sediment to adjacent areas and receiving waters. Permanent erosion protection should be provided by re-establishing vegetation or surfacing with rock.

Until the permanent erosion protection is established, and the site is stabilized, site monitoring should be performed by qualified personnel to evaluate the effectiveness of the erosion control measures and repair and/or modify them as appropriate. Provisions for modifications to the erosion control system based on monitoring observations should be included in the project erosion and sedimentation control plan.

5.3.5. Weather Considerations

The on-site soils contain a sufficient percentage of fines (silt) to be moderately moisture sensitive. If the moisture content of these soils is appreciably above the optimum moisture content, these soils could become unstable. During wet weather, operation of equipment on these soils will be difficult, and it may be difficult to meet the required compaction criteria.

The wet weather season generally begins in early November and continues through March in Western Washington; however, periods of wet weather may occur during any month of the year. The optimum earthwork period for these types of soils is typically July through October. If wet weather earthwork is unavoidable, we recommend that the ground surface in and around the work area be sloped so that surface water is directed away from the work area. The ground surface should be graded such that areas of ponded water do not develop. Stockpiles should be covered. Exposed surfaces should be compacted to reduce the amount of water infiltration. Measures should be taken by the contractor to prevent surface water from collecting in excavations and trenches. Measures should be implemented to remove surface water from the work area.

5.3.6. Temporary Slopes

In our opinion, soils encountered at the site are classified as Type C soil, in accordance with the provisions of Title 296 WAC (Washington Administrative Code), Part N, "Excavation, Trenching and Shoring." We

recommend that temporary slopes in excess of 4 feet in height excavated in the on-site soils be inclined no steeper than 2H:1V (horizontal to vertical) due to the relatively low fines content. Flatter slopes may be necessary if localized sloughing occurs. For open cuts at the site we recommend that:

- No traffic, construction equipment, stockpiles or material storage be allowed at the top of the cut slopes within a horizontal distance of at least 5 feet from the top of the cut.
- Exposed soil along the slope be protected from surface erosion using waterproof tarps or plastic sheeting.
- Construction activities be scheduled so that the length of time the temporary cut is left open is kept as short as possible.
- Erosion control measures be implemented as appropriate such that runoff from the site is reduced to the extent practical.
- Surface water is diverted away from the excavation.
- The condition of the slopes be observed periodically by a geotechnical engineer to confirm adequate stability.

Because the contractor has control of the construction operations, the contractor should be made responsible for the stability of cut slopes, as well as the safety of the excavations. All shoring and temporary slopes must conform to applicable local, state, and federal safety regulations.

5.4. Shallow and Mat Foundations

5.4.1. General

We recommend that conventional shallow or mat foundations be supported on a minimum of 2 feet of compacted structural fill.

5.4.2. Bearing Pressure

Allowable Stress Design. Shallow and mat foundations supported on structural fill as recommended may be designed using an allowable soil bearing pressure of 6,000 pounds per square foot (psf). The allowable soil bearing pressures apply to the total of dead and long-term live loads and may be increased by up to one-third for transient loads such as wind or seismic forces.

A subgrade modulus of 200 pounds per cubic inch (pci) may be used for the design of mat foundations. These values incorporate a factor of safety of approximately 2. The Allowable Stress Design (ASD) bearing pressure will not correspond directly to the Load and Resistance Factor Design (LRFD) bearing pressure due to the difference in design approach between these methods.

Load and Resistance Factor Design. A bearing capacity chart for shallow foundations is presented in Figure 3. The chart is based on a square footing of varying sizes. We recommend the LRFD resistance factors listed in Table 4 below be used when evaluating strength, service, and extreme limit states for shallow foundations. The chart was developed in accordance with American Association of State and Highway Transportation Officials (AASHTO) methods, in conjunction with Washington State Department of Transportation (WSDOT) standards, as summarized in the WSDOT Geotechnical Design Manual.

TABLE 4. LRFD SPREAD FOOTING RESISTANCE FACTORS

Limit State	Resistance Factor ϕ		
	Shear Resistance to Sliding	Bearing	Passive Pressure Resistance to Sliding
Strength	0.8	0.45	0.5
Service	1.0	1.0	1.0
Extreme	0.9	0.9	0.9

5.4.3. Embedment

We recommend that the bottom of foundations be embedded at least 12 inches below the lowest adjacent grade for frost protection, per Thurston County design criteria.

5.4.4. Settlement

Provided all loose soil is removed and the subgrade is prepared as recommended below, we estimate that the post-construction settlement of shallow foundations will be on the order of ½ to 1 inch. Differential settlements between comparably loaded foundations are expected to be less than 1 inch.

5.4.5. Lateral Resistance

Lateral foundation loads may be resisted by passive resistance on the sides of foundations and by friction on the base of the foundations. For foundations supported on native soils or on structural fill placed and compacted in accordance with our recommendations, the allowable frictional resistance may be computed using a coefficient of friction of 0.45 applied to vertical dead-load forces.

The allowable passive resistance may be computed using an equivalent fluid density of 300 pounds per cubic foot (pcf) (triangular distribution) if these elements are poured directly against native soils or surrounded by compacted structural fill. The structural fill should extend out from the face of the foundation element for a distance at least equal to three times the height of the element and be compacted to at least 95 percent of the MDD.

The above coefficient of friction and passive equivalent fluid density values incorporate a factor of safety of approximately 1.5.

5.5. Stormwater Management

We understand stormwater will be infiltrated on site using a biofiltration swale located north of the proposed substation fence. As noted previously, the site is within a wellhead protection area. The proposed stormwater facility location is outside the limits of known or suspected contamination around the existing substation equipment and groundwater flow is likely towards the north, away from the substation and towards Barnes Lake.

The soils at the site are Type A sandy soils and based on the borings, groundwater is approximately 16 to 22 feet below existing grade. Both these conditions are favorable for infiltration.

The sandy soils have negligible cation exchange capacity (CEC) and do not meet the requirements for stormwater treatment. CEC testing was not completed, but based on our experience, the low fines content and lack of organics is consistent with low CEC.

We estimated the initial saturated hydraulic conductivity (K_{sat}) of the Type A sandy soils underlying this area using the equation provided in the City of Tumwater Drainage Design and Erosion Control Manual Volume V, Appendix V-A.3. Based on this equation, K_{sat} is estimated at 0.01 to 0.03 cm/s (10 to 38 in/hr). Applying safety factors with $F_{testing}$ = 0.4 for grain size analysis, $F_{geometry}$ = 1.0, $F_{plugging}$ = 0.8 for fine sands and loamy sands, the resulting design rate is estimated at 3.2 to 12. 2 inches per hour.

We recommend using a design rate of 3 inches per hour, to be confirmed if required during construction with a pilot infiltration test at the proposed stormwater facility location.

5.6. Pavement Design Recommendations

For the access drive, we recommend the following hot mix asphalt (HMA) pavement section, if required. Additionally, we recommend a WSDOT Superpave asphalt binder grade of PG 58-22. This pavement section assumes infrequent passenger vehicle and truck traffic. Please contact us if specific traffic loading should be considered in the pavement design.

- 3 inches HMA, Class B or similar
- 1.5 inches top course
- 4.5 inches base course

6.0 LIMITATIONS

We have prepared this report for the exclusive use of PSE and their authorized agents for the proposed Barnes Lake Substation Improvements in Tumwater, Washington.

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 report was prepared. No warranty or other conditions, express or implied, should be understood.

Please refer to Appendix C, Report Limitations and Guidelines for Use, for additional information pertaining to use of this report.

7.0 REFERENCES

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

City of Tumwater Drainage Design and Erosion Control Manual Volume V Stormwater BMPs, July 2022.

City of Tumwater Municipal Code, accessed August 16, 2022 from web site: https://www.codepublishing.com/QA/Tumwater/#!/Tumwater16/.

GeoEngineers, Inc. January 12, 2007, "Geotechnical Engineering Services, Settlement Investigation and Mitigation, Barnes Lake Substation, Tumwater, Washington."

International Code Council, 2018, "International Building Code."

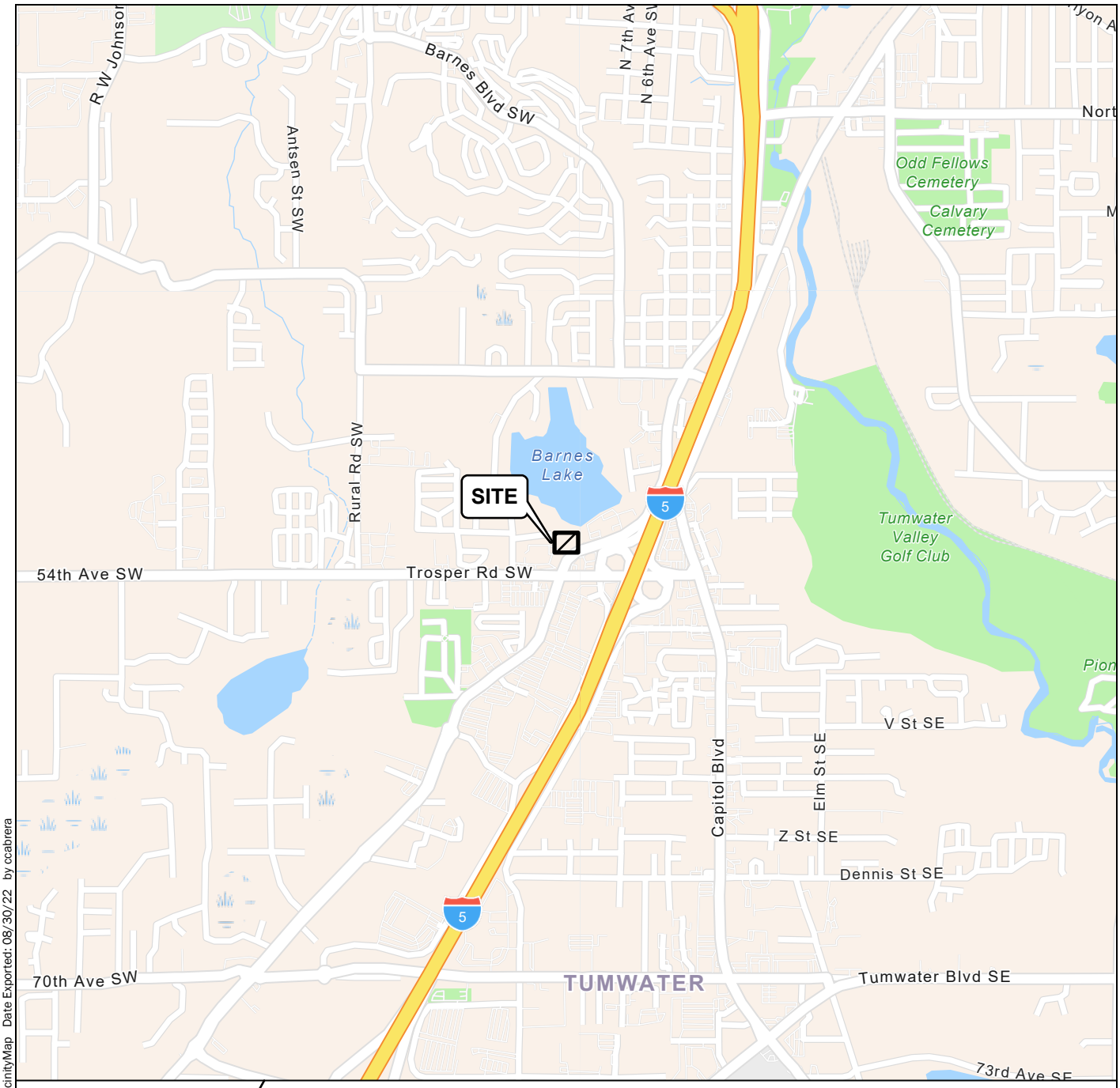
Thurston County Permitting Map, accessed August 16, 2022 from web site: https://map.co.thurston.wa.us/Html5Viewer/Index.html?viewer=Permitting.Main.

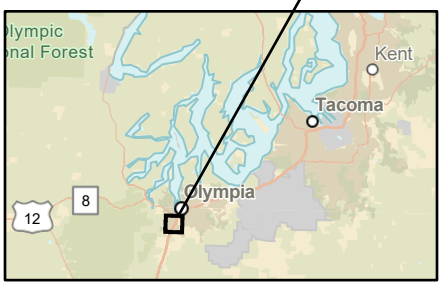
U.S. Geological Survey, Quaternary fault and fold database of the United States, accessed August 16, 2022, from web site: https://www.usgs.gov/programs/earthquake-hazards/faults.

Walsh, T.J. et al, 2003, "Geologic map of the Tumwater 7.5-minute quadrangle, Thurston County, Washington," Washington Division of Geology and Earth Resources Open File Report 2003-25.

FIGURES

GeoEngineers





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Feet

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: ESRI

Projection: NAD 1983 UTM Zone 10N

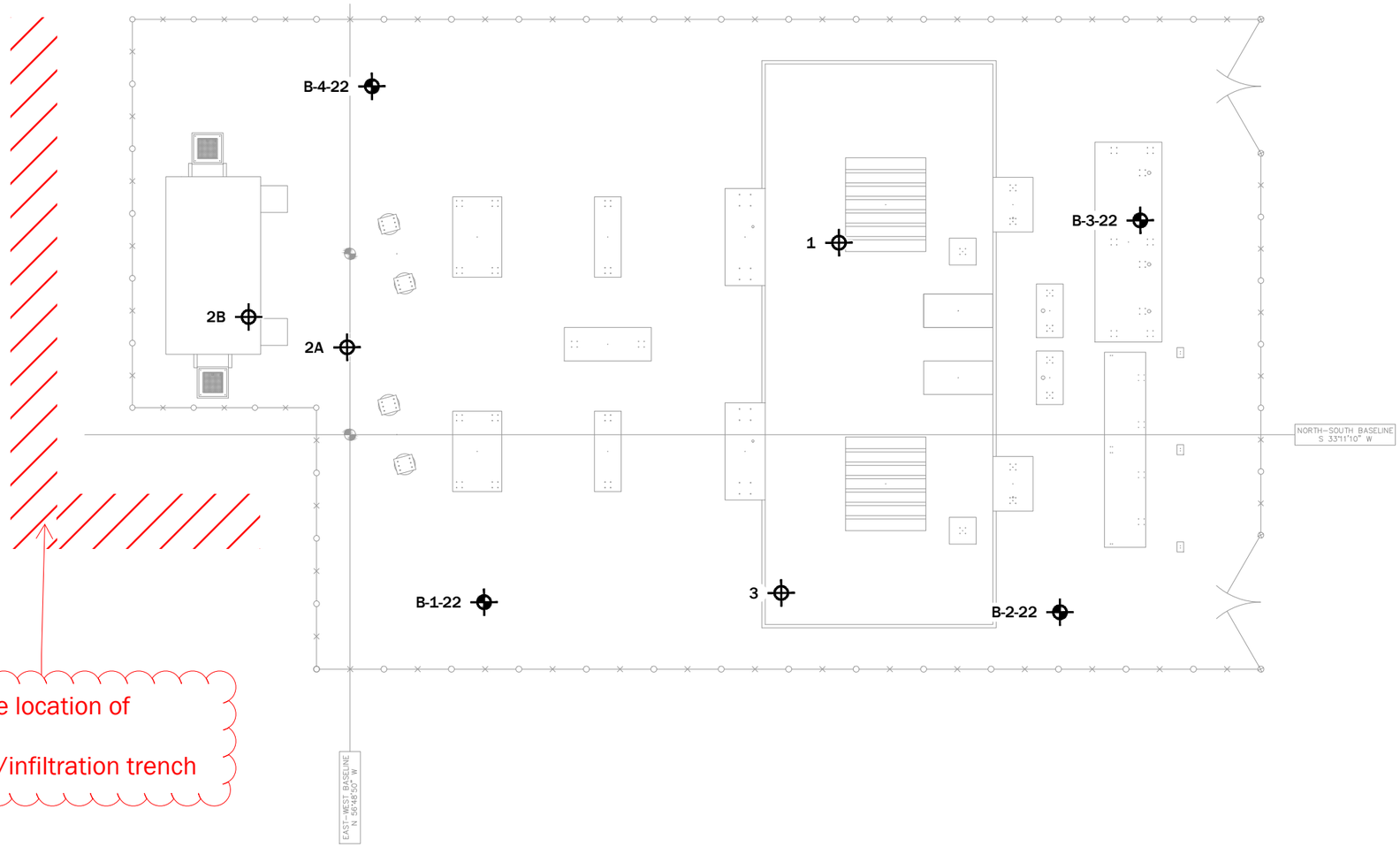
Vicinity Map

Barnes Lake Substation Improvements
Tumwater, Washington

GeoEngineers

Figure 1

P:\0\0186685\GIS\186685_Project\186685_Project.aprx\0186685_F01_VicinityMap Date Exported: 08/30/22 by ccabrera



Legend

1 Boring Completed by GeoEngineers, Inc., 2006

B-1-22 Boring by GeoEngineers, Inc., 2022

20 0 20

Feet

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.

Site Plan

Barnes Lake Substation Improvements
Tumwater, Washington

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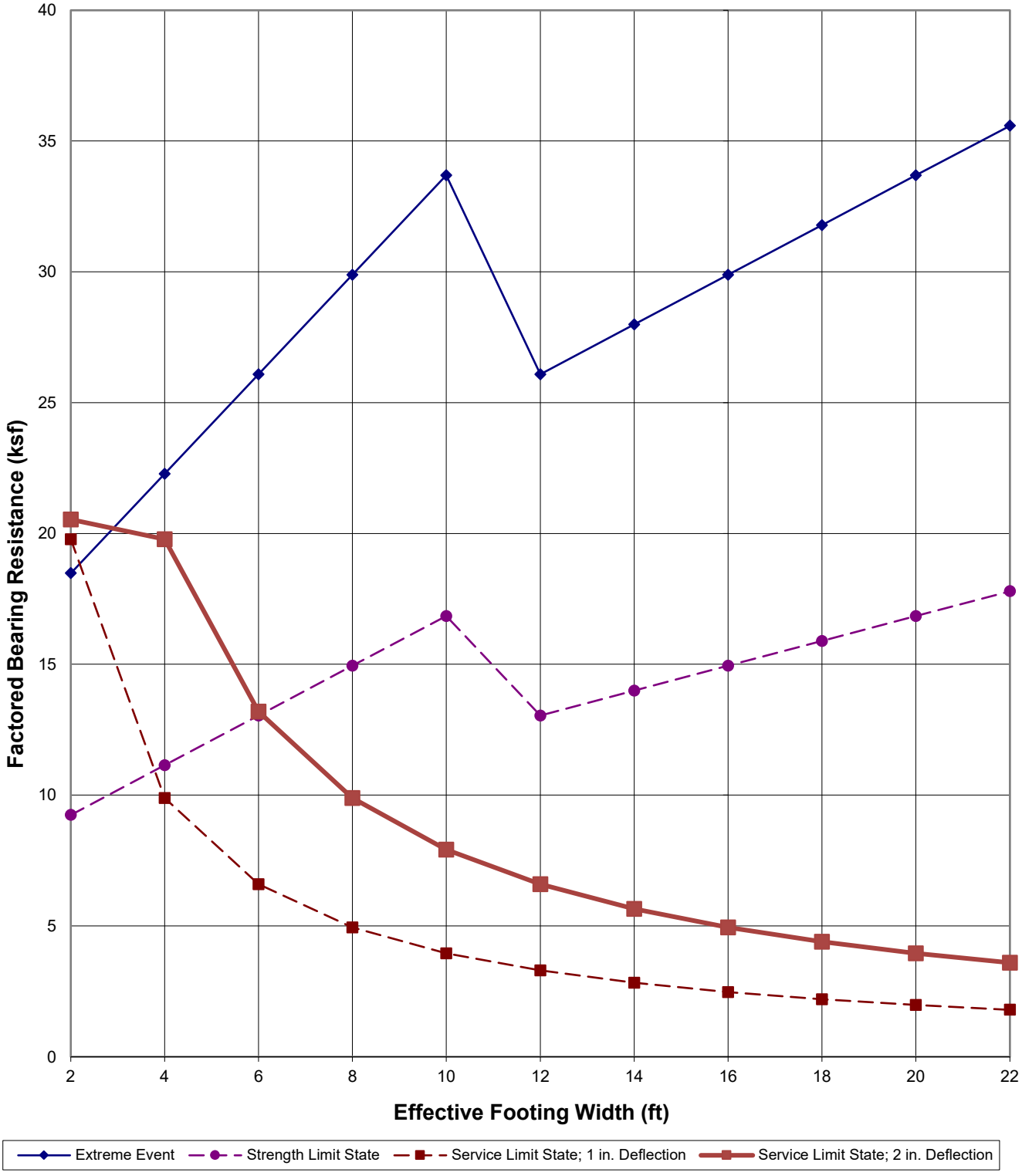
Figure 2

PSE Barnes Lake Substation Improvements

AASHTO LRFD Bearing Resistance



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Earth Science + Technology

Shallow Foundation Design

Figure 3

APPENDICES

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APPENDIX A
Field Explorations and Laboratory Testing

APPENDIX A
FIELD EXPLORATIONS AND LABORATORY TESTING

Field Explorations

Subsurface conditions at the site were evaluated by completing four borings (GEI-1-22 through GEI-4-22). The borings were completed by Cascade Drilling of Bothell, Washington, on April 14, 2022. The approximate exploration locations are shown on the Site Plan, Figure 2.

Borings

The borings were completed with hollow-stem auger drilling methods using a track-mounted drill rig, with sampling completed using a downhole hammer with a 2.4-inch inner diameter, 3-inch outer diameter sampler. Blowcounts were adjusted to equivalent standard penetration test (SPT) N-values. The borings were continuously observed by one of our geologists who examined and classified the soils encountered, obtained representative soil samples, observed groundwater conditions during drilling and prepared a detailed log of each boring.

Soils encountered in the borings were visually classified in accordance with the classification system described in Figure A-1. A key to the exploration log symbols is also presented in Figure A-1. The logs of the borings are presented in Figures A-2 through A-5. The logs reflect our interpretation of the field conditions and the results of laboratory testing and evaluation of samples. They also indicate the depths at which the soil types or their characteristics change, although the change might actually be gradual. The ground surface elevations shown on the logs were estimated from the base map provided and used on the Site Plan, Figure 2.

The borings were backfilled by the driller in accordance with Washington State Department of Ecology standards.

Groundwater Conditions

Observations of groundwater conditions were made during drilling and are noted on the exploration logs; these observations represent a short-term condition that may not be representative of the long-term groundwater conditions at the site. Groundwater conditions observed during drilling should be considered approximate.

Laboratory Testing

Soil samples obtained from the field explorations were transported to our laboratory and examined to confirm or modify field classifications, as well as to evaluate index properties of the soil samples. Representative samples were selected for laboratory testing consisting of the determination of grain-size distribution (sieve analysis). The tests were performed in general accordance with test methods of the ASTM International (ASTM) procedures.

Sieve Analyses

Sieve analyses were performed on selected samples in general accordance with ASTM D 6913 to determine the sample grain-size distribution. The wet sieve analysis method was used to determine the percentage of soil greater than the U.S. No. 200 mesh sieve. The results of the sieve analyses were plotted, were classified in general accordance with the Unified Soil Classification System (USCS) and are presented in Figure A-6.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata

Approximate contact between soil strata

Material Description Contact

Contact between geologic units

Contact between soil of the same geologic unit

Sampler Symbol Descriptions

2.4-inch I.D. split barrel / Dames & Moore (D&M)

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PL	Point lead test
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
UU	Unconsolidated undrained triaxial compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

Key to Exploration Logs

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Figure A-1

Drilled Start 7/26/2022 End 7/26/2022	Total Depth (ft) 51.5	Logged By NJO Checked By TDB	Driller Cascade Drilling	Drilling Method Hollow-stem Auger	
Surface Elevation (ft) 180 Vertical Datum NAVD88		Hammer Data Rope & Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment CME 55 Track Rig	
Easting (X) 1037793 Northing (Y) 617463		System Datum WA State Plane South NAD83 (feet)		See "Remarks" section for groundwater observed	

Notes: Blowcounts converted to equivalent SPT values, 3-inch sampler used

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0						RX	4 inches yard rock			Hand dug to 2½ feet
							SP-SM	Brown fine sand with silt and occasional gravel (loose to medium dense, moist) (fill)			
		12	18	1					NS		
175	5	18	8	2				Grades to loose	NS		
		18	18	3				Grades to medium dense	NS		
170	10	18	22	4			SM	Brown silty fine sand with trace organic matter (medium dense, moist) (recessional outwash)	NS		Oxidation staining
							SP-SM	Brownish gray fine sand with silt (medium dense, moist to wet)			
		18	23	5					NS		
165	15	18	18	6					NS		
								Grades to wet			Groundwater observed at approximately 16½ feet below ground surface during drilling
160	20	18	18	7					NS		
							SP-SM	Gray fine to medium sand (medium dense to dense, wet)			
155	25	18	12	8	MC; SA				NS		% Fines = 4, % Moisture = 21
150	30	18	19	9					NS		
145	35										

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Google Earth.

Date:8/18/22 Path:P:\0\0186685\GINT\018668501.GPJ DBLibrary:LibraryGEOENGINEERS_DF_STD_US_JUNE_2017.GLB/GEI8_ENVIRONMENTAL_STANDARD_NO_GW

Log of Boring B-1-22

GeoEngineers

Project: PSE Barnes Lake Substation
Project Location: Tumwater, Washington
Project Number: 0186-685-01

Figure A-2
Sheet 1 of 2

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	FIELD DATA: Blows/foot	FIELD DATA: Collected Sample	FIELD DATA: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	35	18	10		10				NS		Water added due to heaving sand, blowcount no representative due to heave
140	40	18	12		11				NS		Water added due to heaving sand, blowcount no representative due to heave
135	45	12	44		12			Grades to dense	NS		
130	50	12	22		13			Grades to medium dense	NS		

Log of Boring B-1-22 (continued)

GeoEngineers

Project: PSE Barnes Lake Substation
Project Location: Tumwater, Washington
Project Number: 0186-685-01

Figure A-2
Sheet 2 of 2

Drilled: Start 7/27/2022 End 7/27/2022	Total Depth (ft) 26.5	Logged By NJO Checked By TDB	Driller Cascade Drilling	Drilling Method Hollow-stem Auger	
Surface Elevation (ft) 180 Vertical Datum NAVD88	Hammer Data Rope & Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment CME 55 Track Rig			
Easting (X) 1037742 Northing (Y) 617393	System Datum WA State Plane South NAD83 (feet)	See "Remarks" section for groundwater observed			

Notes: Blowcounts converted to equivalent SPT values, 3-inch sampler used

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0						RX	4 inches yard rock			Hand dug to 2½ feet
							SP-SM	Brown fine sand with silt (medium dense, moist) (fill)			
175		18	11		1				NS		
	5	18	11		2				NS		
		18	14		3				NS		
170	10	0	31		4		SM	Brown silty fine sand (dense, moist) (recessional outwash)	NS		
							SP-SM	Brownish gray fine sand with silt (medium dense, moist to wet)			
		18	29		5 MC; SA				NS		% Fines = 8, % Moisture = 9
165	15	0	25		6				NS		
								Grades to wet			Groundwater observed at approximately 19 feet below ground surface during drilling
160	20	18	26		7				NS		
155	25	18	23		8				NS		

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Google Earth.

Log of Boring B-2-22

GeoEngineers

Project: PSE Barnes Lake Substation
Project Location: Tumwater, Washington
Project Number: 0186-685-01

Figure A-3
Sheet 1 of 1

Drilled: Start 7/27/2022 End 7/27/2022	Total Depth (ft) 26.5	Logged By NJO Checked By TDB	Driller Cascade Drilling	Drilling Method Hollow-stem Auger	
Surface Elevation (ft) 180 Vertical Datum NAVD88		Hammer Data Rope & Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment CME 55 Track Rig	
Easting (X) 1037783 Northing (Y) 617350		System Datum WA State Plane South NAD83 (feet)		See "Remarks" section for groundwater observed	

Notes: Blowcounts converted to equivalent SPT values, 3-inch sampler used

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0						RX	4 inches yard rock			Hand dug to 5 feet
							SP-SM	Brown fine sand with silt (loose to medium dense, moist) (fill)			
				1					NS		
175	5	18	8	2					NS		
		18	11	3	MC; SA			Grades to medium dense	NS		% Fines = 42, % Moisture = 20
170							SM	Brown silty fine sand (medium dense, moist) (recessional outwash)			
	10	18	19	4					NS		
							SP-SM	Brownish gray fine sand with silt (medium dense, moist to wet)			
		18	22	5					NS		
165	15	18	19	6					NS		
								Grades to wet			Groundwater observed at approximately 19 feet below ground surface during drilling
160	20	18	21	7					NS		
155	25	18	17	8					NS		

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Google Earth.

Log of Boring B-3-22

GeoEngineers

Project: PSE Barnes Lake Substation
Project Location: Tumwater, Washington
Project Number: 0186-685-01

Figure A-4
Sheet 1 of 1

Drilled Start 7/27/2022 End 7/27/2022	Total Depth (ft) 26.5	Logged By NJO Checked By TDB	Driller Cascade Drilling	Drilling Method Hollow-stem Auger	
Surface Elevation (ft) 180 Vertical Datum NAVD88		Hammer Data Rope & Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment CME 55 Track Rig	
Easting (X) 1037865 Northing (Y) 617432		System Datum WA State Plane South NAD83 (feet)		See "Remarks" section for groundwater observed	

Notes: Blowcounts converted to equivalent SPT values, 3-inch sampler used

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0						RX	4 inches yard rock			Hand dug to 2½ feet
							SP-SM	Brown fine sand with silt and trace organic matter (medium dense, moist) (fill)			
		18	12	1					NS		
175	5	18	10	2			SP-SM	Brown fine sand with silt and trace organic matter (medium dense, moist) (fill)	NS		
		18	16	3					NS		
170	10	18	26	4	MC; SA		ML	Brown silt (very stiff, moist) (recessional outwash)	NS		% Fines = 93, % Moisture = 28
							SP-SM	Brownish gray fine sand with silt (medium dense, moist to wet)			
		18	19	5					NS		
165	15	18	25	6					NS		
								Grades to wet			Groundwater observed at approximately 19 feet below ground surface during drilling
160	20	18	23	7					NS		
155	25	18	27	8					NS		

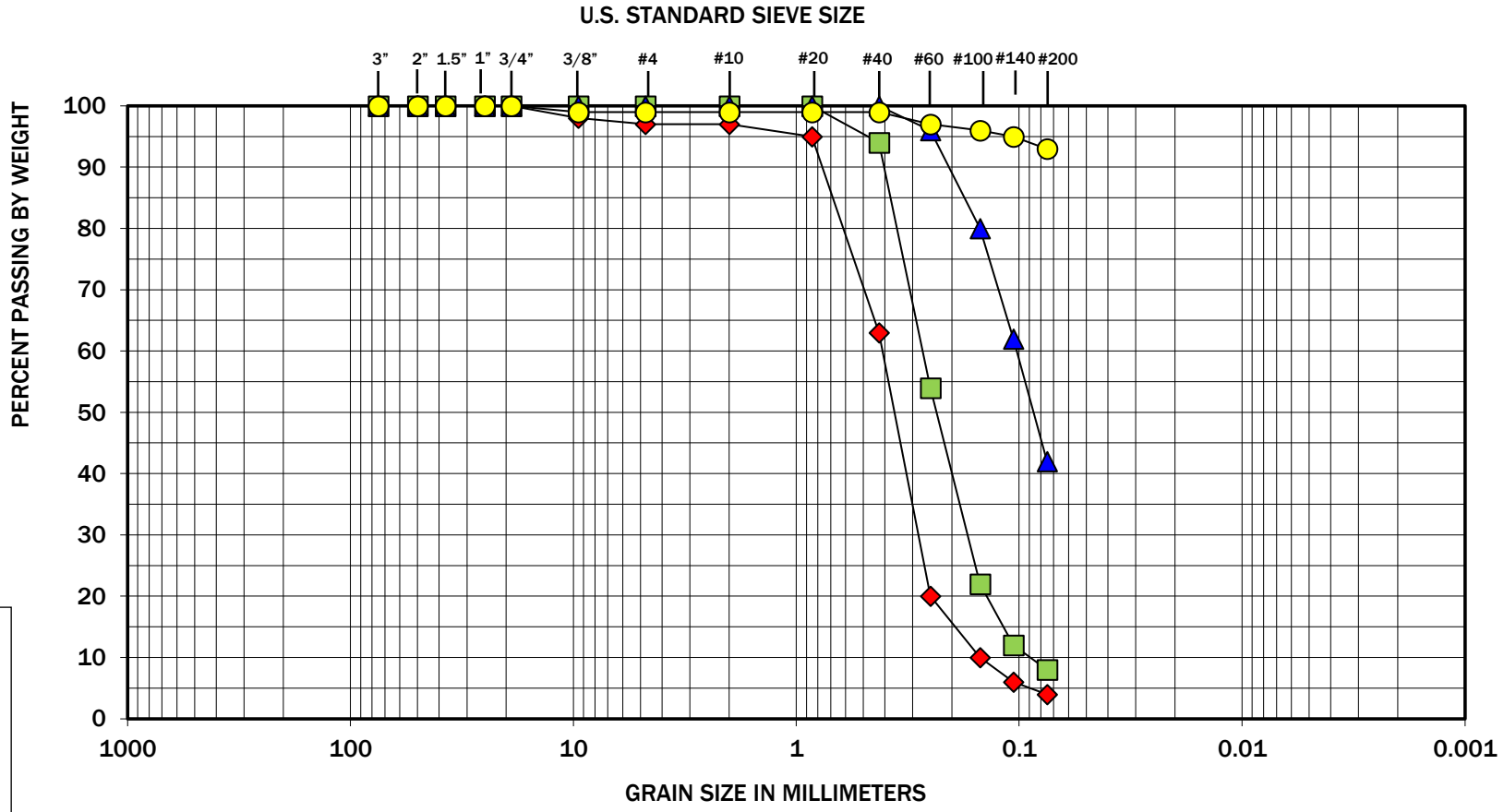
Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Google Earth.

Log of Boring B-4-22

GeoEngineers

Project: PSE Barnes Lake Substation
Project Location: Tumwater, Washington
Project Number: 0186-685-01

Figure A-5
Sheet 1 of 1



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Symbol	Boring Number	Depth (feet)	Moisture (%)	Soil Description
◆	B-1	25	21	Poorly graded fine to medium sand (SP)
■	B-2	12.5	9	Poorly graded fine sand with silt (SP-SM)
▲	B-3	7.5	20	Silty fine sand (SM)
●	B-4	10.5	28	Silt (ML)

GeoEngineers

Figure A-6

PSE Barnes Lake Substation
Tumwater, Washington

Sieve Analysis Results

AASHTO ACCREDITED

The grain size analysis results were obtained in general accordance with ASTM C 136. GeoEngineers 17425 NE Union Hill Road Ste 250, Redmond, WA 98052

APPENDIX B
Previous Explorations

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	CC	Cement Concrete
	AC	Asphalt Concrete
	CR	Crushed Rock/ Quarry Spalls
	TS	Topsoil/ Forest Duff/Sod

Measured groundwater level in exploration, well, or piezometer

Groundwater observed at time of exploration

Perched water observed at time of exploration

Measured free product in well or piezometer

Stratigraphic Contact

Distinct contact between soil strata or geologic units

Gradual change between soil strata or geologic units

Approximate location of soil strata change within a geologic soil unit

Sampler Symbol Descriptions

2.4-inch I.D. split barrel

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

A "P" indicates sampler pushed using the weight of the drill rig.

Laboratory / Field Tests

%F	Percent fines
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
OC	Organic content
PM	Permeability or hydraulic conductivity
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen
NT	Not Tested

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

KEY TO EXPLORATION LOGS

GeoEngineers

FIGURE A-1

Date(s) Drilled	09/21/06	Logged By	NER	Checked By	SWH
Drilling Contractor	Geologic Drill	Drilling Method	SPT	Sampling Methods	Grab & SPT
Auger Data	2-1/4 inch ID	Hammer Data	140 lb hammer/30 in drop	Drilling Equipment	Acker Portable Rig
Total Depth (ft)	26.5	Surface Elevation (ft)	173	Groundwater Elevation (ft)	152
Vertical Datum		Datum/ System		Easting(x): Northing(y):	

Elevation feet	Depth feet	SAMPLES: Interval	Recovered (in)	Blows/foot	Sub-Sample Sample Number	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Moisture Content %	Dry Unit Weight, lbs/ft^3	OTHER TESTS AND NOTES
	0							GP	Gray coarse gravel ballast (loose, dry)			
		⊠			1			SP-SM	Brown fine sand with silt and organics (loose, moist) (fill)			Hand cleared
170					2							
			12	4	3							
	5											
			18	6	4							
										9		SA
165			12	0	5				Void at 7.5 feet (1-foot deep)			
	10							SP/SM	Brown fine to medium sand with silt and occasional organics (loose to medium dense, moist) (fill)			
			12	11	6			SP-SM	Brown to gray fine sand with silt (medium dense, moist) (Recessional Outwash) (native)			
160			18	14	7							
	15		12	13	8							
155			18	11	9					8		SA
	20		12	14	10	▼						
150												
	25		12	14	11			SP	Gray fine to medium sand with gravel (medium dense, wet) (Recessional Outwash)			Rough drilling
145												
	30											
140												
	35											

Note: See Figure A-1 for explanation of symbols.

V6_GTBORING P:\0\0186685\00\FINALS\0186685500.GPJ GEIV6_1.GDT 11/16/06

LOG OF BORING 1

GeoEngineers

Project: Barnes Lake Substation
Project Location: Tumwater, Washington
Project Number: 0186-685-00

Figure A-2
Sheet 1 of 1

Date(s) Drilled	09/21/06	Logged By	NER	Checked By	SWH
Drilling Contractor	Geologic Drill	Drilling Method	SPT	Sampling Methods	Grab
Auger Data	2-1/4 inch ID	Hammer Data	140 lb hammer/30 in drop	Drilling Equipment	Acker Portable Rig
Total Depth (ft)	2.5	Surface Elevation (ft)	173	Groundwater Elevation (ft)	Not Encountered
Vertical Datum		Datum/ System		Easting(x): Northing(y):	

Elevation feet	Depth feet	SAMPLES: Interval Recovered (in)	SAMPLES: Blows/foot	SAMPLES: Sub-Sample Sample Number	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Moisture Content %	Dry Unit Weight, lbs/ft^3	OTHER TESTS AND NOTES
170	0			1			GP SW-SM	Gray coarse gravel ballast (loose, dry) (fill) Dark brown fine to coarse sand with silt and occasional gravel (medium dense, moist) (fill)			Encountered concrete slab at 2.5 feet bgs
165	5										
160	10										
155	15										
150	20										
145	25										
140	30										
35											

Note: See Figure A-1 for explanation of symbols.

LOG OF BORING 2A

GeoEngineers

Project: Barnes Lake Substation
Project Location: Tumwater, Washington
Project Number: 0186-685-00

Figure A-3
Sheet 1 of 1

V6_GTBORING P:\0\0186685\00\FINALS\0186685500.GPJ GEIV6_1.GDT 11/16/06

Date(s) Drilled	09/21/06	Logged By	NER	Checked By	SWH
Drilling Contractor	Geologic Drill	Drilling Method	SPT	Sampling Methods	Grab & SPT
Auger Data	2-1/4 inch ID	Hammer Data	140 lb hammer/30 in drop	Drilling Equipment	Acker Portable Rig
Total Depth (ft)	23	Surface Elevation (ft)	173	Groundwater Elevation (ft)	151
Vertical Datum		Datum/ System		Easting(x): Northing(y):	

Elevation feet	Depth feet	SAMPLES: Interval	Recovered (in)	Blows/foot	Sub-Sample	Sample Number	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Moisture Content %	Dry Unit Weight, lbs/ft^3	OTHER TESTS AND NOTES
170	0								WD	Woody bark (fill)			
									SW-SM	Dark brown fine to coarse sand with silt and occasional gravel (loose, moist) (fill)			
	5		12	3		1 2							Hand cleared
			18	6		3			SP-SM	Brown fine sand with silt and occasional gravel (loose, moist) (fill)			
165			18	3		4							
	10		6	2		5				Wood debris			
160			18	2		6							
	15		12	3		7				Occasional wood debris			
155			18	9		8				Glass fragments			
	20		14	9		9	▼		SP-SM	Gray fine sand with silt (loose, moist) (Recessional Outwash) (native)	8		SA
150													
	25												
145													
	30												
140													
	35												

Note: See Figure A-1 for explanation of symbols.

LOG OF BORING 2B

GeoEngineers

Project: Barnes Lake Substation
Project Location: Tumwater, Washington
Project Number: 0186-685-00

Figure A-4
Sheet 1 of 1

V6_GTBORING P:\00186685\00\FINALS\018668500.GPJ GEIV6_1.GDT 11/16/06

Date(s) Drilled	09/21/06	Logged By	NER	Checked By	SWH
Drilling Contractor	Geologic Drill	Drilling Method	SPT	Sampling Methods	Grab & SPT
Auger Data	2-1/4 inch ID	Hammer Data	140 lb hammer/30 in drop	Drilling Equipment	Acker Portable Rig
Total Depth (ft)	17.5	Surface Elevation (ft)	173	Groundwater Elevation (ft)	Not Encountered
Vertical Datum		Datum/ System		Easting(x): Northing(y):	

Elevation feet	Depth feet	SAMPLES: Interval	Recovered (in)	Blows/foot	Sub-Sample Sample Number	Water Level	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Moisture Content %	Dry Unit Weight, lbs/ft^3	OTHER TESTS AND NOTES
170	0							GP	Gray coarse gravel ballast (loose, dry) (fill)			
					1			SW-SM	Dark brown fine to coarse sand with silt, occasional gravel and asphalt debris (soft, moist) (fill)			Hand cleared
			20	5	2							
	5							SP-SM	Dark brown fine sand with silt and occasional organics (loose, moist) (fill)			
			18	6	3							
165								SM	Light brown silty fine sand (loose, moist) (fill)			
			18	7	4				Void at 7.5 feet (1-foot deep)	13		SA
	10								Grades to medium dense			
			12	11	5							
160			18	15	6			SP	Gray medium sand (medium dense, moist) (Recessional Outwash) (native)			
	15		12	13	7							
155												
	20											
150												
	25											
145												
	30											
140												
	35											

Note: See Figure A-1 for explanation of symbols.

LOG OF BORING 3

GeoEngineers

Project: Barnes Lake Substation
Project Location: Tumwater, Washington
Project Number: 0186-685-00

Figure A-5
Sheet 1 of 1

V6_GTBORING P:\0\0186685\00\FINALS\0186685500.GPJ GEIV6_1.GDT 11/16/06

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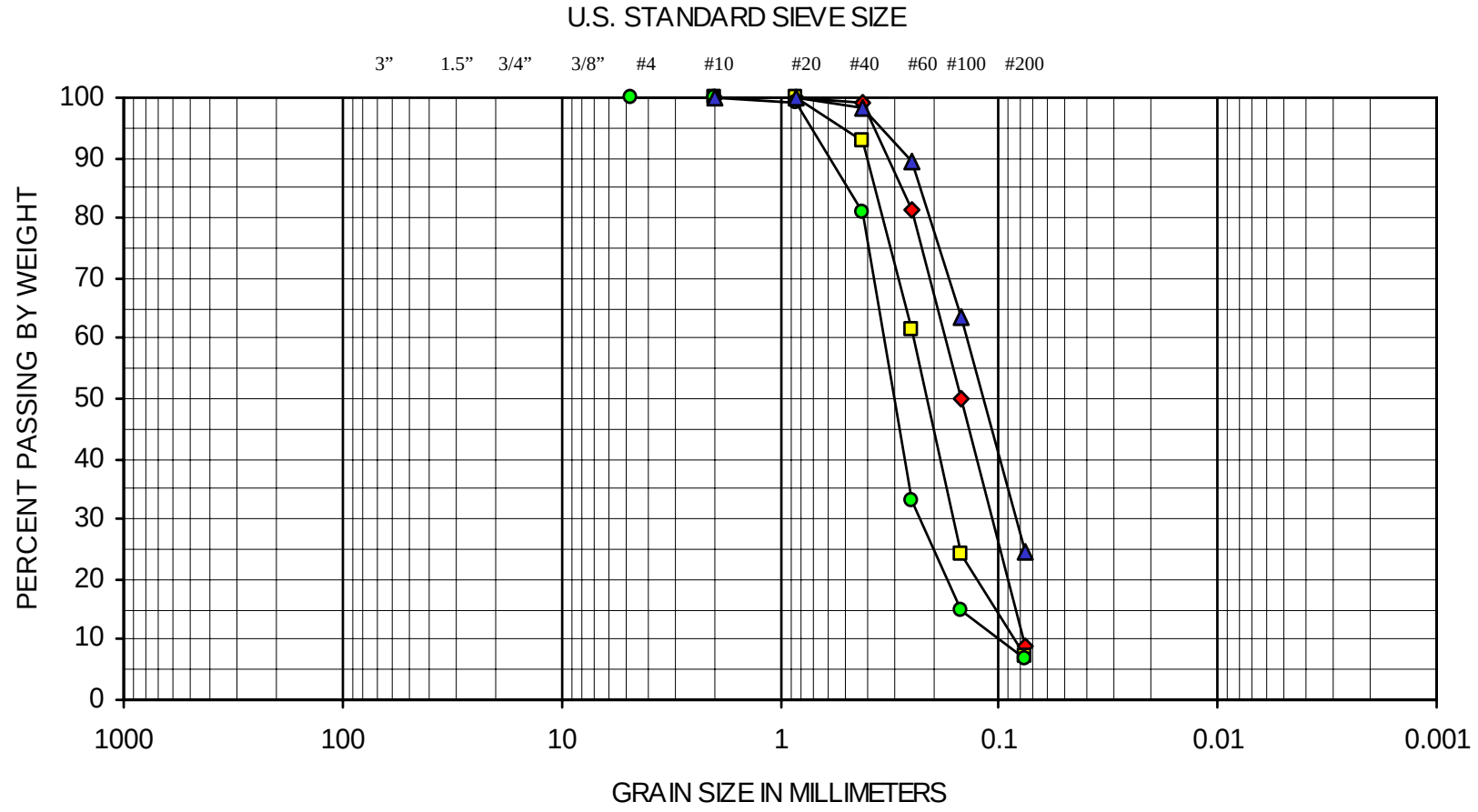
GEOENGINEERS

FIGURE A-6

SIEVE ANALYSIS RESULTS



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SYMBOL	EXPLORATION NUMBER	DEPTH (ft)	SOIL CLASSIFICATION
◆	1	7	Brown sand with silt (SP-SM)
■	1	18	Brown sand with silt (SP-SM)
●	2B	22	Brown sand with silt (SP-SM)
▲	3	8	Brown silty sand (SM)

APPENDIX C
Report Limitations and Guidelines for Use

APPENDIX C
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

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

Geotechnical Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of Puget Sound Energy and their authorized agents. This report may be made available to prospective contractors for their bidding or estimating purposes, but our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Because each geotechnical or geologic study is unique, each geotechnical engineering or geologic report is unique, prepared solely for the specific client and project site. Our report is prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with which there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted geotechnical practices in this area at the time this report was prepared. This report should not be applied for any purpose or project except the one originally contemplated.

A Geotechnical Engineering or Geologic Report Is Based on a Unique Set of Project-Specific Factors

This report has been prepared for the proposed improvements to the Barnes Lake Substation located on 2nd Avenue SW in Tumwater, 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, do not 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.

[1] 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 important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

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 manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying a report to determine if it remains applicable.

Most 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 subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Geotechnical Engineering Report Recommendations Are Not Final

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from GeoEngineers' professional judgment and opinion. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for this report's recommendations if we do not perform construction observation.

Sufficient monitoring, testing and consultation by GeoEngineers should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

A Geotechnical Engineering or Geologic Report Could Be Subject to Misinterpretation

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having GeoEngineers confer with appropriate members of the design team after submitting the report. Also retain GeoEngineers to review pertinent elements of the design team's plans

and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having GeoEngineers participate in pre-bid and preconstruction conferences, and by 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. To prevent errors or omissions, the logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognize that separating logs from the report can elevate risk.

Give Contractors a Complete Report and Guidance

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

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 to adjacent properties.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory “limitations” provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these “Report Limitations and Guidelines for Use” apply to your project or site.

Geotechnical, Geologic and Environmental Reports Should Not Be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

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.

If Client desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.

GeoEngineers

Technical Memorandum

To:	Trevor Lessard, PSE; Jessica Jackson, PSE
From:	Ian Welch, HDR
Date:	November 8, 2023
Subject:	Barnes Lake Substation Pocket Gopher Survey

1.0 Introduction

Puget Sound Energy (PSE) has requested that HDR conduct a Mazama pocket gopher (MPG) (*Thomomys mazama*) protocol survey for the Barnes Lake Substation Rebuild Project and prepare a memo to report the results. This technical memo provides documentation of methods and findings of the Mazama pocket gopher protocol surveys that were conducted on the project property, in August, September, and October 2023.

The project is located in the city of Tumwater, in Thurston County, Washington. The project is situated on an approximately 1.7 acre parcel with approximately 0.4 acres of the property currently covered by the existing substation and paved driveway. The remaining grass and vegetated areas on the parcel were surveyed.

2.0 Methods

Existing information on the soils, land use, and any documented MPG occurrence in the project corridor and surrounding area were reviewed prior to conducting the field surveys using Thurston County GIS soil data, aerial imagery, and Washington State Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) online database (WDFW 2023).

Biologists from HDR trained and certified for MPG protocol surveys by USFWS conducted the survey to determine occupancy. Survey methodology followed the Mazama pocket gopher screening protocol outlined in the 2018 USFWS “Guidance for Assessing Potential Take of Mazama Pocket Gophers in Thurston and Pierce Counties”. Due to the presence of preferred soils for MPG, 3 surveys were required at least 30 days apart unless gopher mounds were detected, in which case subsequent surveys would not be required.

The entire property outside the fenced area of the existing substation was surveyed during all three surveys.

3.0 Results

The entire property is mapped as having ‘more preferred’ soils for MPG. Habitat in the project corridor matches what is shown in aerial imagery and was comprised of mowed grass with some areas of dense Himalayan blackberry (*Rubus armeniacus*) near the north and northeast end, and trees and shrubs along the perimeter of the property. The northern edge of the property borders on a small depression wetland which is not suitable habitat for MPG. The open grassy area where the proposed project would occur provides suitable MPG habitat and is within preferred soils.

The results of the protocol surveys were that no MPG mounds were observed during any of the three surveys. As a result of these surveys, it is determined that MPG is not currently present on the property. This result is valid for 1 year following the surveys, and therefore extends to October 31, 2024. If work is slated to occur after this period, the survey protocol would need to be repeated.

4.0 References

U.S. Fish and Wildlife Service. 2018. Guidance for Assessing Potential Take of Mazama Pocket Gophers in Thurston and Pierce Counties. April 20, 2018.

Washington Department of Fish and Wildlife (WDFW). 2023. Priority Habitats and Species Mapper. Available online at https://wdfw.wa.gov/mapping/phs/. Accessed August 2023.

Subject: Results of 2022 Mazama Pocket Gopher Study
Report Date: September 28, 2022
Landowner: Puget Sound Energy
Site Address: No site address
Consultant: West Fork Environmental (Heidy Barnett)

1.0 Study Purpose

A Mazama pocket gopher (MPG) study was requested to support permitting for potential earthwork stockpiling related to the substation. On July 25, August 25, and September 26, 2022, West Fork Environmental conducted a survey to detect activity of MPG on parcel 09080011003 (1.2 acres) in Tumwater, Washington (Figure 1).

2.0 Methods

2.1 MPG Method and Soil Type

The parcel currently has a cement parking lot, fenced and graveled substation and a small routinely mowed lawn area. The parcel is maintained and operated by Puget Sound Energy.

Survey methods followed the survey guidance provided by United States Fish and Wildlife Service (USFWS April 2018).

- The soil type on the parcel was Nisqually loamy fine sand, 0 to 3% slopes (more preferred by MPG), based on the data obtained from Thurston County GeoData (Figure 1, Table 2).
- The WDFW PHS database did not show MPG detections within 600 feet of the parcel (Figure 5).

During the survey West Fork Environmental staff waled transects across all open areas of the parcel looking for mounds as described under the USFWS recommended MPG survey protocol (Figure 2-4). We did not have access to the secured substation area, but heavy gravel is present throughout and no potential MPG habitat was observed within the fence (see photos).

3.0 Results

3.1 Mazama Pocket Gopher

During the surveys, no MPG mounds were identified on the parcel (see datasheets). Many mole mounds and likely mole mounds were observed on all surveys. Mole mounds were identified by circular shape, clumpy soils, linear pattern across the ground, and vertical entrance tunnels. Likely mole mounds were older and weathered but had a circular shape.

3.2 Vegetation

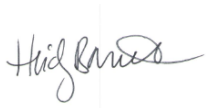
Plant species observed on the subject parcel included. One Oregon oak tree (*Quercus garryana*) is located at the front of the substation along S Second Avenue.

Common Name	*Scientific Name*	Common Name	*Scientific Name*
Douglas-fir	*Pseudotsuga menziesii*	Ribwort	*Plantago lanceolata*
Western redcedar	*Thuja plicata*	Common dandelion	*Taraxacum officinale*
Oregon white oak	*Quercus garryana*	Catsear	*Hypochaeris radicata*
Snowberry	*Symphoricarpos albus*	Himalayan blackberry	*Rubus armeniacus*
Oregon grape	*Mahonia aquifolium*	Scots broom	*Cytisus scoparius*
Salal	*Gaultheria shallon*	Reed canarygrass	*Phalaris arundinacea*
English ivy	*Hedera helix*	Sweet vernalgrass	*Anthoxanthum odoratum*

4.0 Conclusions

No MPG mounds were observed on the parcel on either site visit. The results of this survey are based on standardized methodologies and follow guidance provided by the USFWS and the Washington Department of Fish and Wildlife provided during June 2018 training. All findings presented within this report are subject to the final review and approval of the City of Tumwater pocket gopher review. If you have any questions regarding the information provided within this document, please contact our office at (360) 753-0485.

Sincerely,



Heidy Barnett
Sr. Biologist

Attachments: Representative site photos, survey transects, datasheets

Site Photos


Front of parcel along Trosper Road with Oregon oak tree (left) and fenced substation (right).


Oregon oak canopy at front of parcel (left) and Oregon oak on parcel to the west with dripline along parcel boundary (right).


Substation.


Stormwater drainage on northwest side of parcel (left) and grassy field at the north end of the parcel (right, looking south towards substation).




Representative mole mounds.

Figure 1. Parcel location and soil types.

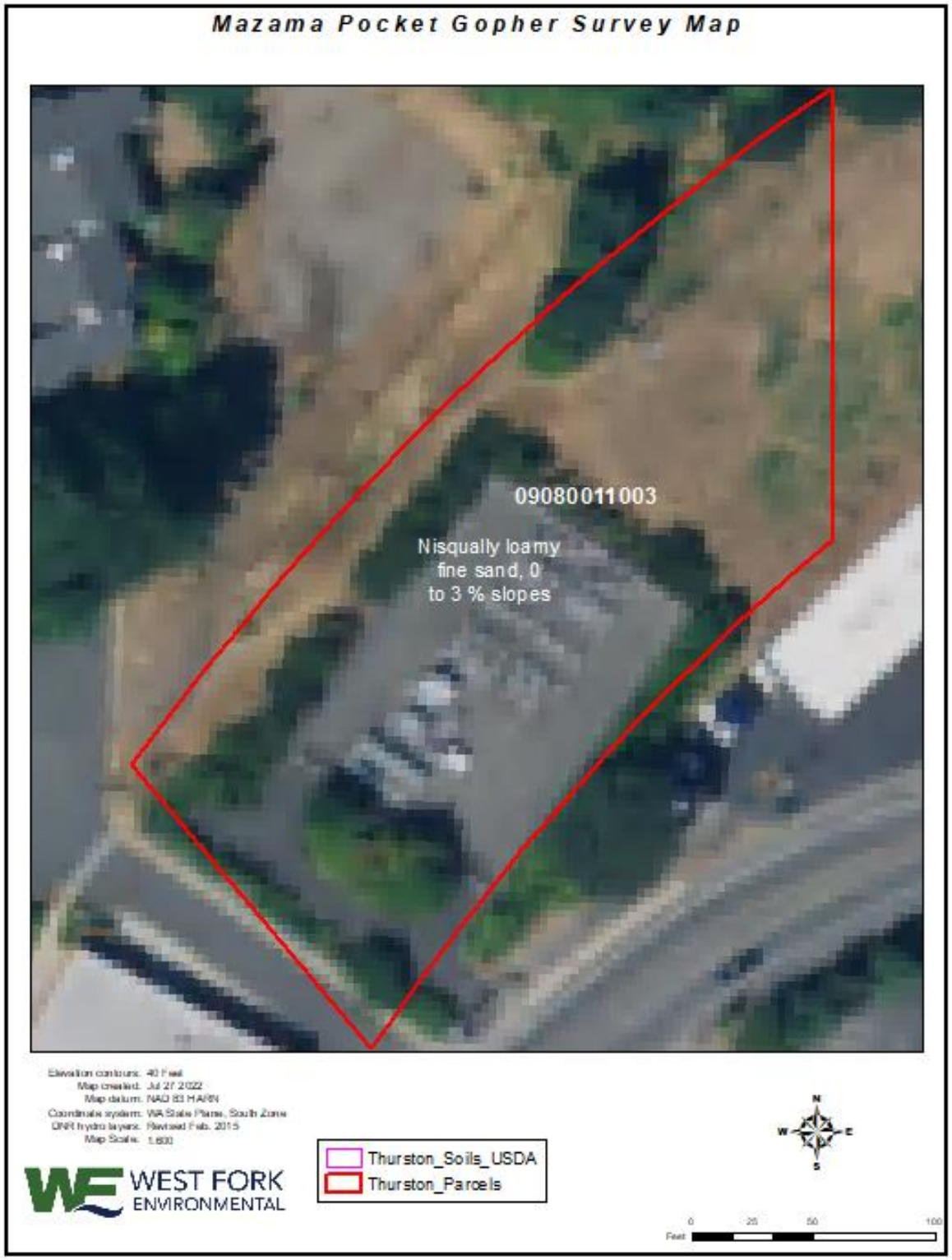


Table 2. Pocket gopher and prairie soil list requiring survey as provided by the Thurston County Planning review guidance.

SCS_Code	Soil Type	Gopher Review	Prairie Review
1	Alderwood gravelly sandy loam, 0 to 3% slopes	Less preferred	
2	Alderwood gravelly sandy loam, 3 to 15% slopes	Less preferred	
5	Baldhill very stony sandy loam, 0 to 3% slopes		X
6	Baldhill very stony sandy loam, 3 to 15% slopes		X
7	Baldhill very stony sandy loam, 15 to 30% slopes		X
8	Baldhill very stony sandy loam, 30 to 50% slopes		X
20	Cagey loamy sand	More preferred	X
32	Everett very gravelly sandy loam, 0 to 3% slopes	Less preferred	X
33	Everett very gravelly sandy loam, 3 to 15% slopes	Less preferred	X
42	Grove very gravelly sandy loam, 3 to 15% slopes		X
46	Indianola loamy sand, 0 to 3% slopes	More preferred	X
47	Indianola loamy sand, 3 to 15% slopes	Less preferred	X
51	Kapowsin silt loam, 3 to 15% slopes	Less preferred	
65	McKenna gravelly silt loam, 0 to 5% slopes	Less preferred	
73	Nisqually loamy fine sand, 0 to 3% slopes	More preferred	X
74	Nisqually loamy fine sand, 3 to 15% slopes	More preferred	X
75	Norma fine sandy loam	Less preferred	
76	Norma silt loam	Less preferred	
109	Spana gravelly loam	Less preferred	X
114	Spanaway-Nisqually complex, 2 to 10% slopes	More preferred	X
110	Spanaway gravelly sandy loam, 0 to 3% slopes	More preferred	X
111	Spanaway gravelly sandy loam, 3 to 15% slopes	More preferred	X
112	Spanaway stony sandy loam, 0 to 3% slopes	Less preferred	X
113	Spanaway stony sandy loam, 3 to 15% slopes	Less preferred	X
126	Yelm fine sandy loam, 0 to 3% slopes	Less preferred	
127	Yelm fine sandy loam, 3 to 15% slopes	Less preferred	
117	Tenino gravelly loam, 3 to 15% slopes		X

Figure 2. Survey tracks from July 25, 2022.

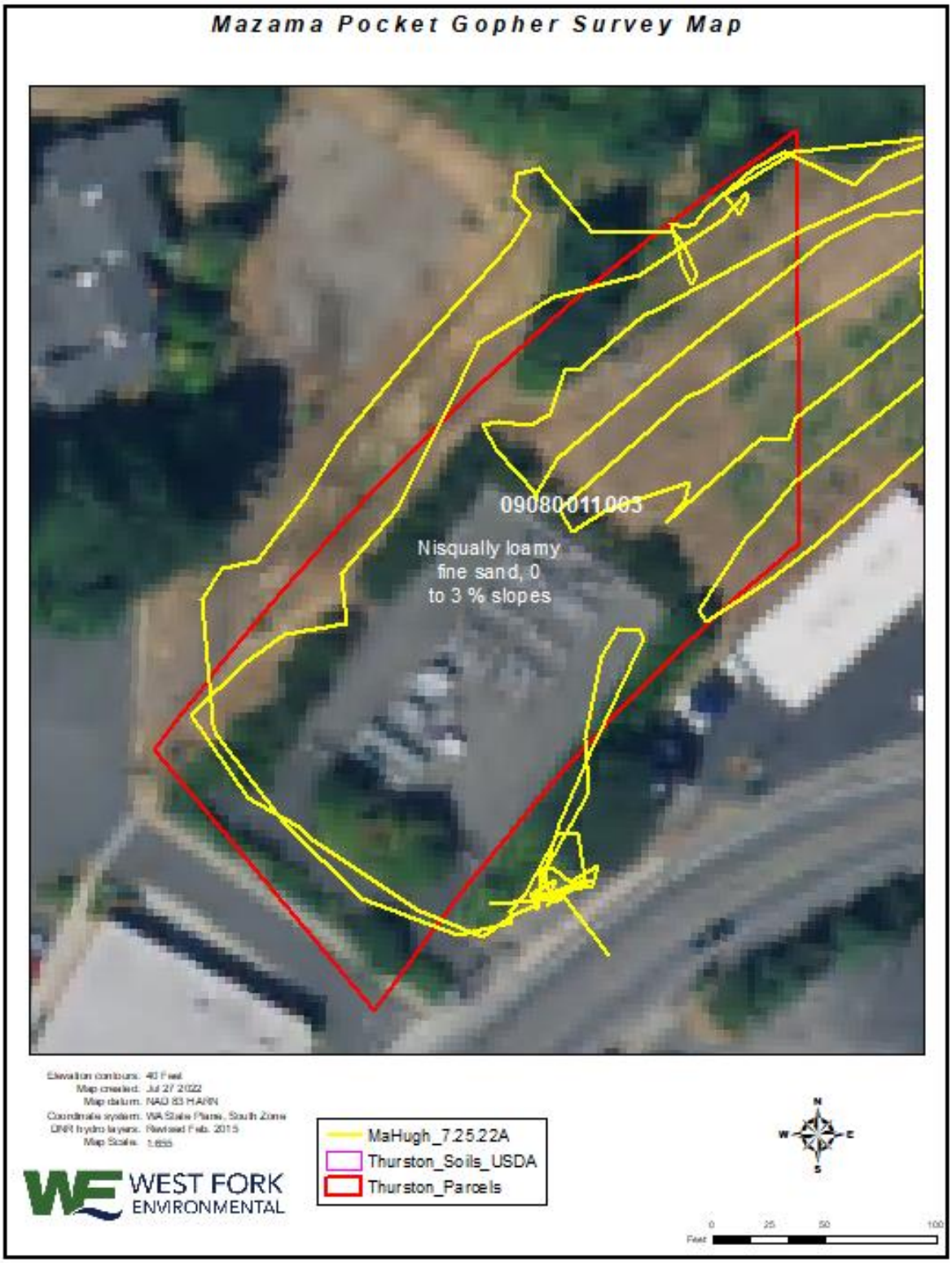


Figure 3. Survey tracks from August 25, 2022.

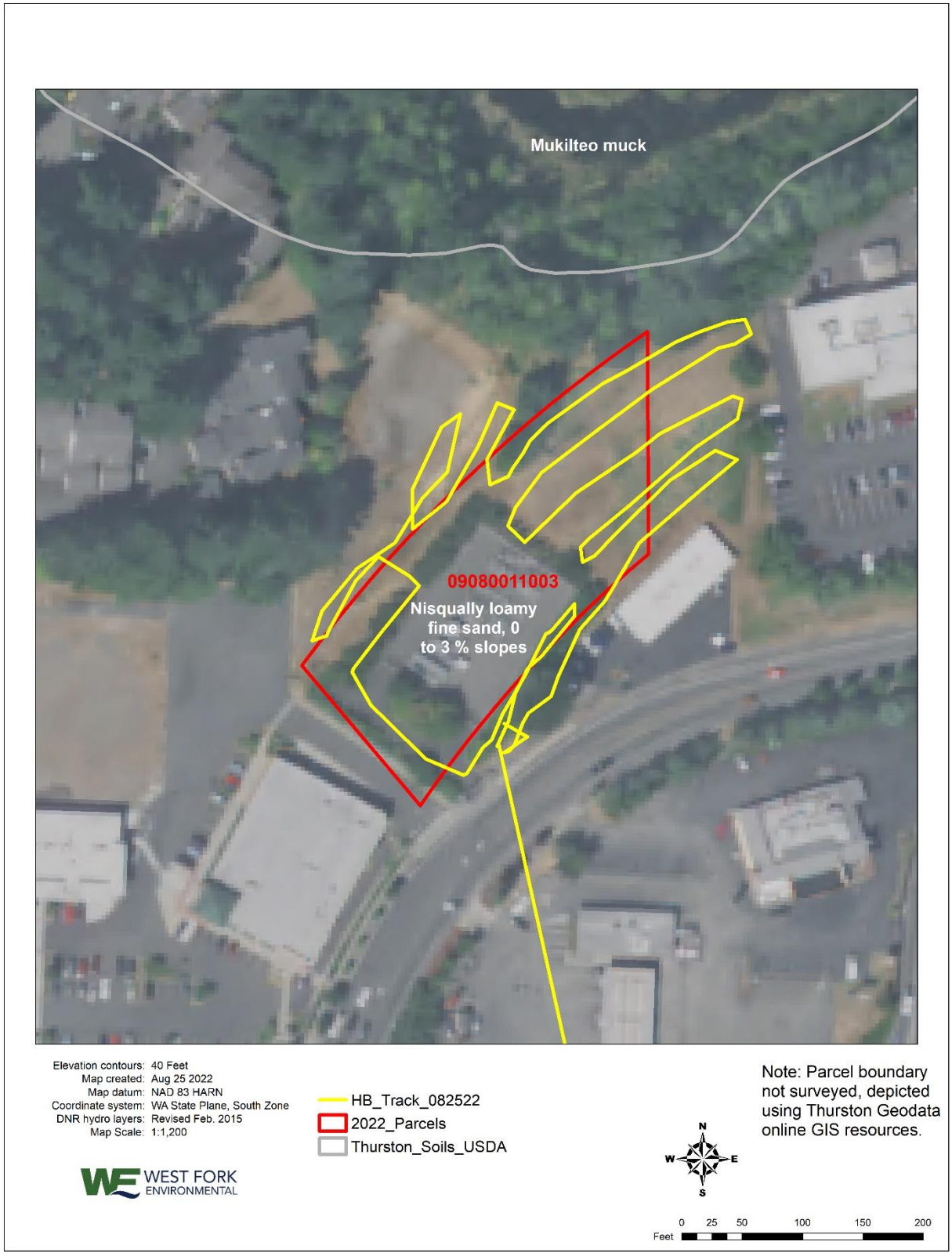


Figure 4. Survey tracks from September 25, 2022.

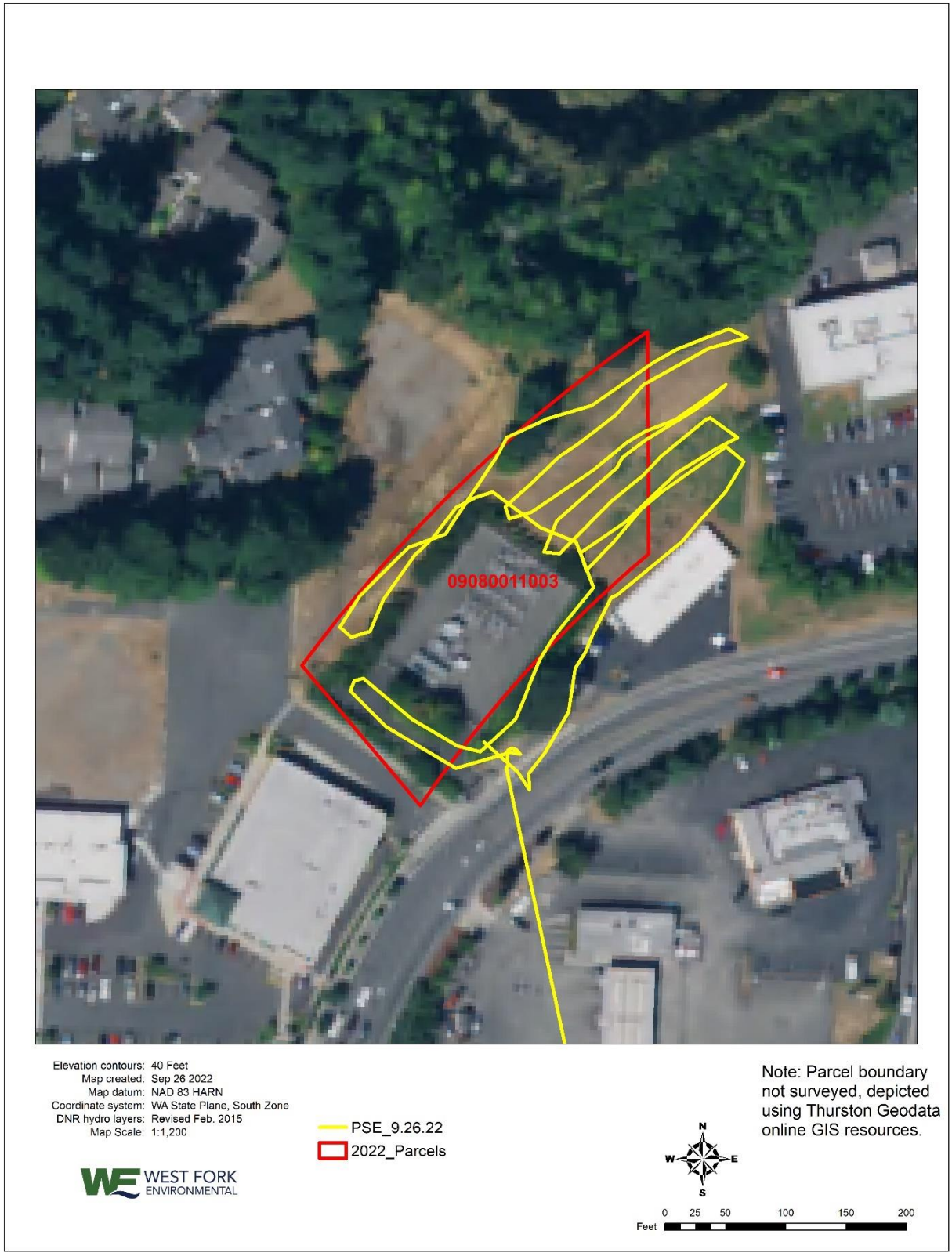
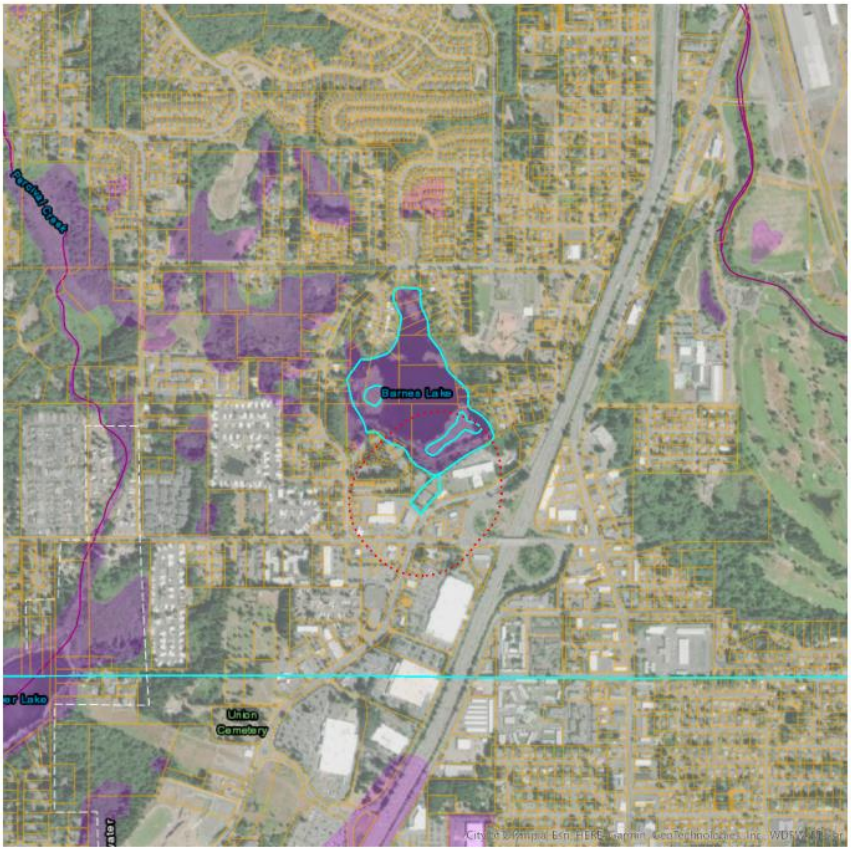


Figure 5. Results of Washington Department of Fish and Wildlife Prioirty Habitats and Species database report (areas withing 600 feet of the parcel).

Priority Habitats and Species on the Web



Buffer radius: 600 Feet

Report Date: 07/27/2022, Parcel ID: 09080011003

PHS Species/Habitats Overview:

Occurence Name	Federal Status	State Status	Sensitive Location
Freshwater Emergent Wetland	N/A	N/A	No
Lake	N/A	N/A	No
Big brown bat	N/A	N/A	Yes
Little Brown Bat	N/A	N/A	Yes
Yuma myotis	N/A	N/A	Yes

Datasheets

2021 Thurston County Mazama Pocket Gopher Screening Field Form Site Visit Date: 7-25-22

Site Name and Parcel #	Parcel #: 9080011003 Project #: _____ Site/Landowner: PSE
How were the data collected? (circle the method for each)	Transect: Trimble (Garmin) Aerial Mounds Trimble (Garmin) Aerial Notes: continuous tracks recorded
Field Team Personnel: (Indicate all staff present, CIRCLE who filled out form)	(Name: Heidy Barneto) Name: Name:
Others onsite (name/affiliation)	Courtney Stoker (GeoEngineers)
Site visit # (CIRCLE all that apply)	(1st) 2nd Unable to screen Notes:
Do onsite conditions preclude the need for further visits?	Yes (No) Dense woody cover that encompasses the entire site (trees/shrubs) that appears to preclude any potential MPG use. Impervious Compacted Graveled Flooded Other _____ Notes:
Describe visibility for mound detection:	Poor Fair (Good) Notes:
Request mowing? (CIRCLE and DESCRIBE WHERE MOWING IS NEEDED and SHOW ON AERIAL PHOTO	Yes (No) N/A Notes: Site mowed 2 weeks ago.

Page 1 of 2

7-25-22
(09080011003)

Mounds observed over the whole site are characteristic of:	MPG Mounds	Likely MPG Mounds	Indeterminate	Likely Mole Mounds	Mole Mounds
Quantify or describe amount of each type and approx. # of mounds *Group = 3 mounds or more*	0	0	0	16	30
	No MPG mounds (circle)				
MPG mounds in GPS? (CIRCLE and DESCRIBE) If MPG mounds present, entered in GPS?	None All Most Some Notes: No MPG mounds observed. Yes No N/A				
Does woody vegetation onsite match aerial photo?	Yes No - describe differences and show on parcel map/aerial:				
What portion(s) of the property was screened? (CIRCLE and DESCRIBE)	All Part - describe and show on parcel map/aerial: Did not survey gravel area of substation, fenced & gated				
Notes -	Describe, and show on parcel map/aerial if applicable:				
Team reviewed and agreed to data recorded on form? (CIRCLE, and EXPLAIN if "No")	Yes No Reviewed by initials: TTB ____ ____ ____ Notes:				

Information provided by Thurston County Government

Page 2 of 2

2021 Thurston County Mazama Pocket Gopher Screening Field Form Site Visit Date: 8-25-22

Site Name and Parcel #	Parcel #: 09080011003 Project #: _____ Site/Landowner: PGE
How were the data collected? (circle the method for each)	Transect: Trimble (Garmin) Aerial Mounds Trimble (Garmin) Aerial Notes: continous tracks recorded
Field Team Personnel: (Indicate all staff present, CIRCLE who filled out form)	Name: Hilary Barnett Name: Name:
Others onsite (name/affiliation)	—
Site visit # (CIRCLE all that apply)	1st (2nd) Unable to screen Notes:
Do onsite conditions preclude the need for further visits?	Yes (No) Dense woody cover that encompasses the entire site (trees/shrubs) that appears to preclude any potential MPG use. Impervious Compacted Graveled Flooded Other _____ Notes:
Describe visibility for mound detection:	Poor Fair (Good) Notes:
Request mowing? (CIRCLE and DESCRIBE WHERE MOWING IS NEEDED and SHOW ON AERIAL PHOTO	Yes (No) N/A Notes:

Page 1 of 2

8-25-22

Mounds observed over the whole site are characteristic of:	MPG Mounds	Likely MPG Mounds	Indeterminate	Likely Mole Mounds	Mole Mounds
Quantify or describe amount of each type and approx. # of mounds *Group = 3 mounds or more*	0	0	0	19	7

No MPG mounds (circle)

MPG mounds in GPS? (CIRCLE and DESCRIBE)	None All Most Some Notes: No MPG mounds observed.
If MPG mounds present, entered in GPS?	Yes No N/A
Does woody vegetation onsite match aerial photo?	Yes No - describe differences and show on parcel map/aerial:
What portion(s) of the property was screened? (CIRCLE and DESCRIBE)	All Part - describe and show on parcel map/aerial:
Notes -	Describe, and show on parcel map/aerial if applicable:
Team reviewed and agreed to data recorded on form? (CIRCLE, and EXPLAIN if "No")	Yes No Reviewed by initials: HB ____ ____ ____ Notes:

Information provided by Thurston County Government

Page 2 of 2

2021 Thurston County Mazama Pocket Gopher Screening Field Form **Site Visit Date:** 9.26.22

Site Name and Parcel #	**Parcel #:** 09080011003 **Project #:** **Site/Landowner:** PSE
How were the data collected? (circle the method for each)	**Transect:** Trimble (Garmin) Aerial **Mounds** Trimble (Garmin) Aerial **Notes:** Continuous tracks recorded
Field Team Personnel: (Indicate all staff present, CIRCLE who filled out form)	**Name:** Hilary Burnett **Name:** **Name:**
Others onsite (name/affiliation)	—
Site visit # (CIRCLE all that apply)	1st 2nd (3rd) Unable to screen **Notes:**
Do onsite conditions preclude the need for further visits?	Yes (No) Dense woody cover that encompasses the entire site (trees/shrubs) that appears to preclude any potential MPG use. Impervious Compacted Graveled Flooded Other _____ Notes:
Describe visibility for mound detection:	Poor Fair (Good) Notes:
Request mowing? (CIRCLE and DESCRIBE WHERE MOWING IS NEEDED and SHOW ON AERIAL PHOTO	Yes (No) N/A Notes:

Page 1 of 2

9-26-22

Mounds observed over the whole site are characteristic of:	MPG Mounds	Likely MPG Mounds	Indeterminate	Likely Mole Mounds	Mole Mounds
Quantify or describe amount of each type and approx. # of mounds *Group = 3 mounds or more*	0	0	0	+9 +5 ~~HHT~~ (19)	~~HH~~ ~~IIII~~ +7 +3 (20)
	No MPG mounds (circle)			circular · corridor · vertical entrance · linear pattern	
MPG mounds in GPS? (CIRCLE and DESCRIBE) If MPG mounds present, entered in GPS?	None All Most Some Notes: No MPG mounds observed. Yes No N/A				
Does woody vegetation onsite match aerial photo?	Yes	No - describe differences and show on parcel map/aerial:			
What portion(s) of the property was screened? (CIRCLE and DESCRIBE)	All	Part - describe and show on parcel map/aerial: · Did not survey gravel fence Substation area			
Notes -	Describe, and show on parcel map/aerial if applicable:				
Team reviewed and agreed to data recorded on form? (CIRCLE, and EXPLAIN if "No")	Yes	No	Reviewed by initials: HS		
	Notes:				

Page 2 of 2

provided by Thurston County Government

GeoEngineers

1101 Fawcett Avenue, Suite 200
Tacoma, Washington 98402
253.383.4940

Field Report

File Number:	
0186-685-01	

Project:		Date:
Barnes Lake Substation		7.25.2022
Owner:	**Time of Arrival:**	**Report Number:**
Puget Sound Energy	9:30	1
Prepared by:	**Location:**	**Time of Departure:**	**Page:**
Courtney Stoker	PSE Barnes Lake Substation	10:15	1 of 3
Purpose of visit:	**Weather:**	**Travel Time:**	**Permit Number:**
Wetland reconnaissance	Clear 80 F	1 hr r/t	

Upon arrival to the site I assessed personal safety hazards: ☒ Yes or ☐ Referred to Site Safety Plan and Safety Tailgate if applicable

Safety Hazards Were Addressed by : ☒ Staying Alert to Construction and Equipment Hazards ☐ Other (describe)

One GeoEngineers biologist met on-site with Heidy Barnett from West Fork Environmental to conduct wetland habitat reconnaissance of Parcel Number 09020011003 in Thurston County, Washington. The parcel contains a PSE substation at the southern end and a mowed field with undulating topography that gently slopes to the north. Barnes Lake occurs offsite to the north. Representative site photographs are provided below.

Observations:

During the site reconnaissance, the parcel was investigated for observations of wetland habitat including dominance of hydrophytic vegetation, hydrologic indicators, and hydric soils. Habitat near the substation at the southern end of the parcel contained predominantly upland vegetation including cultivated cedar trees, maple (*Acer sp.*) saplings, Himalayan blackberry (*Rubus armenaicus*), and salal (*Gaultheria shallon*). North of the substation, the parcel is undeveloped containing a field of mowed grasses generally sloping north towards Barnes Lake. No hydrophytic vegetation or indicators of hydrology were observed within the mowed field portion of the parcel.

A fence and posts with Wetland Protection signs were observed northwest of the mowed area, with unmowed grasses and shrubs occurring on the north side of the signs. The Wetland Protection signs are assumed to be associated the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapped emergent wetland occurring on the fringe of Barnes Lake. No hydrophytic grasses were observed within the unmowed portion, and soils appeared light brown in color with no observed redoximorphic features. The shrub fringe occurring northeast of the unmowed grasses consisted of predominantly Facultative Upland (FACU) species such as snowberry (*Symphoricarpos albus*), oceanspray (*Holodiscus discolor*), and Oregon grape (*Mahonia nervosa*), with an oak (*Quercus garryana*) canopy. Soils appeared light brown in color with no observed redoximorphic features. No signs of wetland hydrologic indicators were identified in either the unmowed grass or shrub areas.

Wetland habitat may occur offsite to the north along the fringe of Barnes Lake, however wetland habitat was not observed to extend onto the project parcel.

Summary:

No wetland habitat was identified within the project parcel. A lake fringe wetland may occur offsite to the north, and the associated regulated wetland buffer may extend onto the project parcel.

	FIELD REPRESENTATIVE	DATE
☐ **THIS FIELD REPORT IS PRELIMINARY** A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those indicated in a preliminary report.	Courtney Stoker	7/25/2022
X THIS FIELD REPORT IS FINAL A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**REVIEWED BY** Shawn Mahugh	**DATE** 7/25/2022

Attachments:

Distribution:

Figure 1. Project parcel from the north end looking south toward the substation

Figure 2. Shrub fringe at northern edge of parcel, with Wetland Protection sign visible

Figure 3. Typical vegetation within the shrub fringe area- showing snowberry, oceanspray, and oak, with Barnes Lake visible in the background.

Figure 4. Wetland Protection sign with unmowed grasses and a shrub fringe occurring beyond the sign.

WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) Form[1,2] [help]

US Army Corps of Engineers ®
Seattle District

USE BLACK OR BLUE INK TO ENTER ANSWERS IN THE WHITE SPACES BELOW.

AGENCY USE ONLY

Date received:

Agency reference #: _____

Tax Parcel #(s): _____

Part 1–Project Identification

1. Project Name (A name for your project that you create. Examples: Smith's Dock or Seabrook Lane Development) [help]
PSE Barnes Lake Substation Rebuild & Expansion

Part 2–Applicant

The person and/or organization responsible for the project. [help]

2a. Name (Last, First, Middle)			
Trevor Lessard			
2b. Organization (If applicable)			
Puget Sound Energy			
2c. Mailing Address (Street or PO Box)			
1140 N 94th St			
2d. City, State, Zip			
Seattle, WA 98103			
2e. Phone (1)	**2f.** Phone (2)	**2g.** Fax	**2h.** E-mail
206-390-9660			Trevor.Lessard@pse.com

[1]Additional forms may be required for the following permits:
- If your project may qualify for Department of the Army authorization through a Regional General Permit (RGP), contact the U.S. Army Corps of Engineers for application information (206) 764-3495.
- Not all cities and counties accept the JARPA for their local Shoreline permits. If you need a Shoreline permit, contact the appropriate city or county government to make sure they accept the JARPA.

[2]To access an online JARPA form with [help] screens, go to http://www.epermitting.wa.gov/site/alias__resourcecenter/jarpa_jarpa_form/9984/jarpa_form.aspx.

For other help, contact the Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043 or help@oria.wa.gov.

Part 3–Authorized Agent or Contact

Person authorized to represent the applicant about the project. (Note: Authorized agent(s) must sign 11b of this application.) [help]

3a. Name (Last, First, Middle)			
Trevor Lessard			
3b. Organization (If applicable)			
Puget Sound Energy			
3c. Mailing Address (Street or PO Box)			
1140 N 94th St			
3d. City, State, Zip			
Seattle, WA 98103			
3e. Phone (1)	**3f.** Phone (2)	**3g.** Fax	**3h.** E-mail
206-390-9660			Trevor.Lessard@pse.com

Part 4–Property Owner(s)

Contact information for people or organizations owning the property(ies) where the project will occur. Consider both **upland and aquatic** ownership because the upland owners may not own the adjacent aquatic land. [help]

☑ Same as applicant. (Skip to Part 5.)

☐ Repair or maintenance activities on existing rights-of-way or easements. (Skip to Part 5.)

☐ There are multiple upland property owners. Complete the section below and fill out JARPA Attachment A for each additional property owner.

☐ Your project is on Department of Natural Resources (DNR)-managed aquatic lands. If you don't know, contact the DNR at (360) 902-1100 to determine aquatic land ownership. If yes, complete JARPA Attachment E to apply for the Aquatic Use Authorization.

4a. Name (Last, First, Middle)			
4b. Organization (If applicable)			
4c. Mailing Address (Street or PO Box)			
4d. City, State, Zip			
4e. Phone (1)	**4f.** Phone (2)	**4g.** Fax	**4h.** E-mail

Part 5–Project Location(s)

Identifying information about the property or properties where the project will occur. [help]

☐ There are multiple project locations (e.g. linear projects). Complete the section below and use JARPA Attachment B for each additional project location.

5a. Indicate the type of ownership of the property. (Check all that apply.) [help]

☑ Private
☐ Federal
☐ Publicly owned (state, county, city, special districts like schools, ports, etc.)
☐ Tribal
☐ Department of Natural Resources (DNR) – managed aquatic lands (Complete JARPA Attachment E)

5b. Street Address (Cannot be a PO Box. If there is no address, provide other location information in 5p.) [help]

1669 S 2nd Ave SW

5c. City, State, Zip (If the project is not in a city or town, provide the name of the nearest city or town.) [help]

Tumwater, WA 98512

5d. County [help]

Thurston

5e. Provide the section, township, and range for the project location. [help]

¼ Section	Section	Township	Range
	65	T18	R02W

5f. Provide the latitude and longitude of the project location. [help]

- Example: 47.03922 N lat. / -122.89142 W long. (Use decimal degrees - NAD 83)

47.000773 N lat. / -122.915724 W long.

5g. List the tax parcel number(s) for the project location. [help]

- The local county assessor's office can provide this information.

09080011003

5h. Contact information for all adjoining property owners. (If you need more space, use JARPA Attachment C.) [help]

Name	Mailing Address	Tax Parcel # (if known)
Tumwater RH LLC	845 106th Ave NE STE 100 Bellevue, WA 98004	09080010000
WSDOT	PO Box 47365 Olympia, WA 98504	09080011002
Grimm Enterprises LLC	1677 S 2nd Ave SW Tumwater, WA 98512	09080091001
702 Trosper Road Venture LLC	PO Box 2195 Ketchum, ID 83340	09080088102

5i. List all wetlands on or adjacent to the project location. [help]

None

5j. List all waterbodies (other than wetlands) on or adjacent to the project location. [help]

Barnes Lake

5k. Is any part of the project area within a 100-year floodplain? [help]

☐ Yes ☑ No ☐ Don't know

5l. Briefly describe the vegetation and habitat conditions on the property. [help]

The largest portion of the property consists of managed, grass lawn. Landscape trees surround the substation for visual screening while coniferous and deciduous trees buffer Barnes Lake to the north.

5m. Describe how the property is currently used. [help]

Electrical Substation.

5n. Describe how the adjacent properties are currently used. [help]

Commercial businesses to south and east. WSDOT facility to the northeast. Barnes Lake to the north.

5o. Describe the structures (above and below ground) on the property, including their purpose(s) and current condition. [help]

The property consists of PSE's Barnes Lake electric substation, with necessary equipment to facilitate electricity delivery to customers within the region.

5p. Provide driving directions from the closest highway to the project location, and attach a map. [help]

From I-5, take exit 102 onto Trosper Rd SW and head west. Turn right onto S 2nd Ave SW, then destination is on the left in 72 feet.

Part 6–Project Description

6a. Briefly summarize the overall project. You can provide more detail in 6b. [help]

PSE is proposing to rebuild and expand its Barnes Lake substation. All existing equipment in the substation will be replaced with new equipment and a new perimeter fence. PSE will bump out the backend of the substation to make room for a second transformer and bus equipment to expand the capacity of the substation. A stormwater pond will be created behind the substation to provide for stormwater management.

6b. Describe the purpose of the project and why you want or need to perform it. [help]

The purpose of the rebuild and expansion is re replace old and damaged equipment with new materials and extend the life of the substation. The expansion is necessary to increase capacity of the substation to better meet the growing demand of the region.

Note, the substation rebuild and expansion sections, along with the stormwater pond occur outside of the 200-ft shoreline buffer. PSE is only proposing a temporary stockpile within the shoreline buffer which will be removed to restored to its original condition after work is complete.

6c. Indicate the project category. (Check all that apply) [help]

☐ Commercial ☐ Residential ☐ Institutional ☐ Transportation ☐ Recreational

☑ Maintenance ☐ Environmental Enhancement

6d. Indicate the major elements of your project. (Check all that apply) [help]

☐ Aquaculture	☐ Culvert	☐ Float	☐ Retaining Wall (upland)
☐ Bank Stabilization	☐ Dam / Weir	☐ Floating Home	☐ Road
☐ Boat House	☐ Dike / Levee / Jetty	☐ Geotechnical Survey	☐ Scientific Measurement Device
☐ Boat Launch	☐ Ditch	☐ Land Clearing	☐ Stairs
☐ Boat Lift	☐ Dock / Pier	☐ Marina / Moorage	☐ Stormwater facility
☐ Bridge	☐ Dredging	☐ Mining	☐ Swimming Pool
☐ Bulkhead	☐ Fence	☐ Outfall Structure	☑ Utility Line
☐ Buoy	☐ Ferry Terminal	☐ Piling/Dolphin	
☐ Channel Modification	☐ Fishway	☐ Raft	

☑ Other: Electric Substation

6e. Describe how you plan to construct each project element checked in 6d. Include specific construction methods and equipment to be used. [help]

- Identify where each element will occur in relation to the nearest waterbody.
- Indicate which activities are within the 100-year floodplain.

For all work within the shoreline buffer of Barnes Lake, PSE will have a temporary stockpile that will extend from the back end of the existing substation toward the lake. However no portion of the stockpile will extend beyond the existing grassy area.

6f. What are the anticipated start and end dates for project construction? (Month/Year) [help]

- If the project will be constructed in phases or stages, use JARPA Attachment D to list the start and end dates of each phase or stage.

Start Date: Start of Q2 2024 End Date: End of Q3 2024 ☐ See JARPA Attachment D

6g. Fair market value of the project, including materials, labor, machine rentals, etc. [help]

$9.76M

6h. Will any portion of the project receive federal funding? [help]

- **If yes**, list each agency providing funds.

☐ Yes ☑ No ☐ Don't know

Part 7–Wetlands: Impacts and Mitigation

☐ Check here if there are wetlands or wetland buffers on or adjacent to the project area.
(If there are none, skip to Part 8.) [help]

7a. Describe how the project has been designed to avoid and minimize adverse impacts to wetlands. [help]

☐ Not applicable

7b. Will the project impact wetlands? [help]

☐ Yes ☐ No ☐ Don't know

7c. Will the project impact wetland buffers? [help]

☐ Yes ☐ No ☐ Don't know

7d. Has a wetland delineation report been prepared? [help]

- **If Yes**, submit the report, including data sheets, with the JARPA package.

☐ Yes ☐ No

7e. Have the wetlands been rated using the Western Washington or Eastern Washington Wetland Rating System? [help]

- **If Yes**, submit the wetland rating forms and figures with the JARPA package.

☐ Yes ☐ No ☐ Don't know

7f. Have you prepared a mitigation plan to compensate for any adverse impacts to wetlands? [help]

- **If Yes**, submit the plan with the JARPA package and answer 7g.
- **If No, or Not applicable**, explain below why a mitigation plan should not be required.

☐ Yes ☐ No ☐ Don't know

7g. Summarize what the mitigation plan is meant to accomplish, and describe how a watershed approach was used to design the plan. [help]

7h. Use the table below to list the type and rating of each wetland impacted, the extent and duration of the impact, and the type and amount of mitigation proposed. Or if you are submitting a mitigation plan with a similar table, you can state (below) where we can find this information in the plan. [help]

Activity (fill, drain, excavate, flood, etc.)	Wetland Name[1]	Wetland type and rating category[2]	Impact area (sq. ft. or Acres)	Duration of impact[3]	Proposed mitigation type[4]	Wetland mitigation area (sq. ft. or acres)

[1] If no official name for the wetland exists, create a unique name (such as "Wetland 1"). The name should be consistent with other project documents, such as a wetland delineation report.
[2] Ecology wetland category based on current Western Washington or Eastern Washington Wetland Rating System. Provide the wetland rating forms with the JARPA package.
[3] Indicate the days, months or years the wetland will be measurably impacted by the activity. Enter "permanent" if applicable.
[4] Creation (C), Re-establishment/Rehabilitation (R), Enhancement (E), Preservation (P), Mitigation Bank/In-lieu fee (B)

Page number(s) for similar information in the mitigation plan, if available: _____

7i. For all filling activities identified in 7h, describe the source and nature of the fill material, the amount in cubic yards that will be used, and how and where it will be placed into the wetland. [help]
7j. For all excavating activities identified in 7h, describe the excavation method, type and amount of material in cubic yards you will remove, and where the material will be disposed. [help]

Part 8–Waterbodies (other than wetlands): Impacts and Mitigation

In Part 8, “waterbodies” refers to non-wetland waterbodies. (See Part 7 for information related to wetlands.) [help]

☑ Check here if there are waterbodies on or adjacent to the project area. (If there are none, skip to Part 9.)

8a. Describe how the project is designed to avoid and minimize adverse impacts to the aquatic environment. [help]
☐ Not applicable
PSE does not have any construction proposed within the aquatic environment. PSE has only planned for the maximum extent of an onsite stockpile to potentially expand into the 200 foot buffer of Barnes Lake. The stockpile will extend only into the existing, managed lawn of the substation property. PSE will perform most of the construction work during Q2 and Q3 of 2024, which are typically the drier months of the year. PSE will also install temporary erosion/sediment controls around the stockpile to prevent impacts to the nearby lake. Once the stockpile is no longer needed, PSE will seed and cover any disturbed areas of the lawn with hay, allowing grass to reestablish cover.
8b. Will your project impact a waterbody or the area around a waterbody? [help]
☐ Yes ☑ No

8c. Have you prepared a mitigation plan to compensate for the project's adverse impacts to non-wetland waterbodies? [help]

- **If Yes**, submit the plan with the JARPA package and answer 8d.
- **If No, or Not applicable,** explain below why a mitigation plan should not be required.

☐ Yes ☑ No ☐ Don't know

PSE plans for a temporary stockpile expansion into the shoreline buffer only. This disturbance is minimal, will be properly managed, and temporary.

8d. Summarize what the mitigation plan is meant to accomplish. Describe how a watershed approach was used to design the plan.

- If you already completed 7g you do not need to restate your answer here. [help]

NA – See above.

8e. Summarize impact(s) to each waterbody in the table below. [help]

Activity (clear, dredge, fill, pile drive, etc.)	Waterbody name[1]	Impact location[2]	Duration of impact[3]	Amount of material (cubic yards) to be placed in or removed from waterbody	Area (sq. ft. or linear ft.) of waterbody directly affected
NA					

[1] If no official name for the waterbody exists, create a unique name (such as "Stream 1") The name should be consistent with other documents provided.
[2] Indicate whether the impact will occur in or adjacent to the waterbody. If adjacent, provide the distance between the impact and the waterbody and indicate whether the impact will occur within the 100-year flood plain.
[3] Indicate the days, months or years the waterbody will be measurably impacted by the work. Enter "permanent" if applicable.

8f. For all activities identified in 8e, describe the source and nature of the fill material, amount (in cubic yards) you will use, and how and where it will be placed into the waterbody. [help]

NA – no fill will occur within the waterbody.

8g. For all excavating or dredging activities identified in 8e, describe the method for excavating or dredging, type and amount of material you will remove, and where the material will be disposed. [help]

NA – no excavation or dredging will occur within the waterbody.

8h. Have you prepared a Water Quality Monitoring Plan (WQMP) for all in-water work (below ordinary high water), over water work or discharges to waters of the state?

☐ Yes ☑ No

If NO describe the monitoring that you will be conducting including parameters, equipment and locations, or explain why monitoring will not be necessary. [help]

NA – no in water work will occur and temporary erosion and sediment controls will be in place to prevent stormwater from leaving PSE's construction area.

Part 9–Additional Information

Any additional information you can provide helps the reviewer(s) understand your project. Complete as much of this section as you can. It is ok if you cannot answer a question.

9a. If you have already worked with any government agencies on this project, list them below. [help]

Agency Name	Contact Name	Phone	Most Recent Date of Contact
City of Tumwater	Alex Baruch	360-754-4180	12/11/2023

9b. Are any of the wetlands or waterbodies identified in Part 7 or Part 8 of this JARPA on the Washington Department of Ecology's 303(d) List? [help]

- **If Yes,** list the parameter(s) below.
- If you don't know, use Washington Department of Ecology's Water Quality Assessment tools at: https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Assessment-of-state-waters-303d.

☑ Yes ☐ No

70682 – Total Phosphorus

9c. What U.S. Geological Survey Hydrological Unit Code (HUC) is the project in? [help]

- Go to http://cfpub.epa.gov/surf/locate/index.cfm to help identify the HUC.

17110016

9d. What Water Resource Inventory Area Number (WRIA #) is the project in? [help]

- Go to https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-availability/Watershed-look-up to find the WRIA #.

13 - Deschutes

9e. Will the in-water construction work comply with the State of Washington water quality standards for turbidity? [help]

- Go to https://ecology.wa.gov/Water-Shorelines/Water-quality/Freshwater/Surface-water-quality-standards/Criteria for the standards.

☐ Yes ☐ No ☑ Not applicable

9f. If the project is within the jurisdiction of the Shoreline Management Act, what is the local shoreline environment designation? [help]

- If you don't know, contact the local planning department.
- For more information, go to: https://ecology.wa.gov/Water-Shorelines/Shoreline-coastal-management/Shoreline-coastal-planning/Shoreline-laws-rules-and-cases.

☑ Urban ☐ Natural ☐ Aquatic ☐ Conservancy ☐ Other: _____

9g. What is the Washington Department of Natural Resources Water Type? [help]

- Go to http://www.dnr.wa.gov/forest-practices-water-typing for the Forest Practices Water Typing System.

☑ Shoreline ☐ Fish ☐ Non-Fish Perennial ☐ Non-Fish Seasonal

9h. Will this project be designed to meet the Washington Department of Ecology's most current stormwater manual? [help]

- **If No**, provide the name of the manual your project is designed to meet.

☑ Yes ☐ No

Name of manual: _____

9i. Does the project site have known contaminated sediment? [help]

- **If Yes**, please describe below.

☑ Yes ☐ No

There is a potential oil spill on site due to recent damage to PSE's facility. No contaminated soils is expected within the shoreline buffer. PSE plans to test all soils excavated during work for contamination. All contaminated soils well be segregated and removed from site and disposed of properly. Only clean soil will be allowed for reuse during civil work.

9j. If you know what the property was used for in the past, describe below. [help]

Electric Substation.

9k. Is the project located in or adjacent to a designated state or federal contaminated site or clean-up site. (e.g. MTCA or CERCLA)? [help]

- **If Yes**, provide any additional details below.

☐ Yes ☑ No

9l. Has a cultural resource (archaeological) survey been performed on the project area? [help]

- **If Yes**, attach it to your JARPA package.

☑ Yes ☐ No

9m. Name each species listed under the federal Endangered Species Act that occurs in the vicinity of the project area or might be affected by the proposed work. [help]
None
9n. Name each species or habitat on the Washington Department of Fish and Wildlife's Priority Habitats and Species List that might be affected by the proposed work. [help]
None

Part 10–SEPA Compliance and Permits

Use the resources and checklist below to identify the permits you are applying for.

- Online Project Questionnaire at http://apps.oria.wa.gov/opas/.
- Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043 or help@oria.wa.gov.
- For a list of addresses to send your JARPA to, click on agency addresses for completed JARPA.

10a. Compliance with the State Environmental Policy Act (SEPA). (Check all that apply.) [help] • For more information about SEPA, go to https://ecology.wa.gov/regulations-permits/SEPA-environmental-review.
☐ A copy of the SEPA determination or letter of exemption is included with this application.
☑ A SEPA determination is pending with Tumwater (lead agency). The expected decision date is part of PSE application.
☐ I am applying for a Fish Habitat Enhancement Exemption. (Check the box below in 10b.) [help]
☐ This project is exempt (choose type of exemption below). ☐ Categorical Exemption. Under what section of the SEPA administrative code (WAC) is it exempt? _____ ☐ Other: _____
☐ SEPA is pre-empted by federal law.

10b. Indicate the permits you are applying for. (Check all that apply.) [help]

LOCAL GOVERNMENT

Local Government Shoreline permits:

☐ Substantial Development ☐ Conditional Use ☐ Variance

☑ Shoreline Exemption Type (explain): WAC 173-27-040(2)(a) – Cost Exemption

Other City/County permits:

☐ Floodplain Development Permit ☐ Critical Areas Ordinance

STATE GOVERNMENT

Washington Department of Fish and Wildlife:

☐ Hydraulic Project Approval (HPA) ☐ Fish Habitat Enhancement Exemption – Attach Exemption Form

Washington Department of Natural Resources:

☐ Aquatic Use Authorization

Complete JARPA Attachment E and submit a check for $25 payable to the Washington Department of Natural Resources. **Do not send cash.**

Washington Department of Ecology:

☐ Section 401 Water Quality Certification

☐ Authorization to impact waters of the state, including wetlands (Check this box if the proposed impacts are to waters not subject to the federal Clean Water Act)

FEDERAL AND TRIBAL GOVERNMENT

United States Department of the Army (U.S. Army Corps of Engineers):

☐ Section 404 (discharges into waters of the U.S.) ☐ Section 10 (work in navigable waters)

United States Coast Guard:

For projects or bridges over waters of the United States, contact the U.S. Coast Guard at:

☐ Bridge Permit: D13-SMB-D13-BRIDGES@uscg.mil

☐ Private Aids to Navigation (or other non-bridge permits): D13-SMB-D13-PATON@uscg.mil

United States Environmental Protection Agency:

☐ Section 401 Water Quality Certification (discharges into waters of the U.S.) on tribal lands where tribes do not have treatment as a state (TAS)

Tribal Permits: (Check with the tribe to see if there are other tribal permits, e.g., Tribal Environmental Protection Act, Shoreline Permits, Hydraulic Project Permits, or other in addition to CWA Section 401 WQC)

☐ Section 401 Water Quality Certification (discharges into waters of the U.S.) where the tribe has treatment as a state (TAS).

Part 11–Authorizing Signatures

Signatures are required before submitting the JARPA package. The JARPA package includes the JARPA form, project plans, photos, etc. [help]

11a. Applicant Signature (required) [help]

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities, and I agree to start work only after I have received all necessary permits.

I hereby authorize the agent named in Part 3 of this application to act on my behalf in matters related to this application. ___TL_____ (initial)

By initialing here, I state that I have the authority to grant access to the property. I also give my consent to the permitting agencies entering the property where the project is located to inspect the project site or any work related to the project. ___TL_____ (initial)

Trevor Lessard		3/25/2024
Applicant Printed Name	Applicant Signature	Date

11b. Authorized Agent Signature [help]

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities and I agree to start work only after all necessary permits have been issued.

Trevor Lessard		3/25/2024
Authorized Agent Printed Name	Authorized Agent Signature	Date

11c. Property Owner Signature (if not applicant) [help]

Not required if project is on existing rights-of-way or easements (provide copy of easement with JARPA).

I consent to the permitting agencies entering the property where the project is located to inspect the project site or any work. These inspections shall occur at reasonable times and, if practical, with prior notice to the landowner.

Trevor Lessard (on behalf of PSE)		3/25/2024
Property Owner Printed Name	Property Owner Signature	Date

18 U.S.C §1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than 5 years or both.

If you require this document in another format, contact the Governor's Office for Regulatory Innovation and Assistance (ORIA) at (800) 917-0043. People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call (877) 833-6341. ORIA publication number: ORIA-16-011 rev. 09/2018

Project: Barnes Lake Substation - Stockpiling Value Estimate

	Estimated Price	Unit	Quantity	Estimated Value
Materials				
Silt Fence	$ 1.50	LF	254	$381
Plastic Covering	$ 0.07	SF	7753	$543
Hydroseeding	$ 0.65	SY	983	$639

ESC Total: $1,563

	Quantity	Unit	
Construction Time Required within Shoreline			
Stockpile Volume	750	CY	
Equipment Haul Volume	5.25	CY	- JD 544 Mid Size Wheel Loader
Number of Trips Required in Shoreline	143	-	
Travel Distance (total round trip distance)	130	ft	- Distance traveled within shoreline area
Travel Speed	10	mph	
Travel Speed	14.7	ft/s	
Travel Time per Round Trip	8.84	seconds	
Total Travel Time	1263	seconds	
Total Travel Time	21.06	hours	
Dump Cycle Time	2.20	seconds	
Number of Round Trips Required in Shoreline	143	-	
Total Dump Cycle Time	314.29	seconds	
Total Dump Cycle Time	5.24	hours	
Total Time Required within Shoreline	26.29	hours	

	Unit Price	Unit	Quantity	Cost	
Equipment and Labor					
Equipment	$ 56.73	HR	26.29	$1,492	- Source: Johansen Construction PSE Equipment Rates
Operator	$ 105.97	HR	26.29	$2,786	- Source: Johansen Construction PSE Labor Rates

Grading Total: $4,278

SUMMARY OF COSTS			
I	**Erosion Sediment Control**		**$1,563**
III	**Equipment and Labor**		**$4,278**

$5,841