CRITICAL AREA STUDY, BIOLOGICAL SITE ASSESSMENT, AND MITIGATION PLAN

FOR

SNOHOMISH COUNTY PUD NO.1
CAMANO SUBSTATION REBUILD

ISLAND COUNTY, WA

Island County Parcel # R33220-120-1780
Wetland Resources, Inc. Project #22132

Prepared By
Wetland Resources, Inc.
9505 19th Avenue SE, Suite 106
Everett, WA 98208
(425) 337-3174

Prepared For
Snohomish County PUD No.1
Attn: Jacob Dahl
PO Box 1107
Everett, WA 98292

First Submittal: March 3, 2023

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 PROJECT LOCATION 1
1.2 LANDSCAPE SETTING 1
1.3 PROJECT DESCRIPTION 2
1.4 IMPACT ANALYSIS 2

2.0 REGULATORY SETTING 3
2.1 MINIMUM REPORTING REQUIREMENTS 3
2.2 CRITICAL AREAS PRESENCE 3
2.3 PERMITTED ALTERATION 3
2.4 MITIGATION SEQUENCING 5
2.5 MITIGATION RATIO DETERMINATION 5

3.0 CRITICAL AREAS DELINEATION METHODOLOGY 6
3.1 LIMIT OF STUDY 6
3.2 GENERAL CRITICAL AREAS CLASSIFICATION 6
3.3 WETLAND DETERMINATION AND DELINEATION 6
3.4 WETLAND RATING 7
3.5 STREAM DETERMINATION AND DELINEATION 7
3.6 STREAM CLASSIFICATION 7

4.0 WETLAND AND STREAM DELINEATION REPORT 7
4.1 INTRODUCTION 7
4.2 FIELD INVESTIGATION 8
4.3 REVIEW OF EXISTING INFORMATION 8
4.4 WETLAND BOUNDARY DETERMINATION FINDINGS 9
4.5 STREAM BOUNDARY DETERMINATION FINDINGS 11

5.0 MITIGATION PLAN 13
5.1 PROJECT MONITORING PROGRAM 13
5.2 MITIGATION PERFORMANCE STANDARDS 14
5.3 MAINTENANCE PLAN 15
5.4 PLANT INSTALLATION NOTES 16

6.0 USE OF THIS REPORT 20

7.0 REFERENCES 21

LIST OF FIGURES

FIGURE 1 – AERIAL VIEW OF THE SUBJECT PROPERTY (NOT TO SCALE). 1

FIGURE 2 WETLAND A: (FACING SOUTH) 9

FIGURE 3 WETLAND A: (FACING NORTHEAST) 9

FIGURE 4 STREAM A (FACING SOUTH) 11

FIGURE 5 STREAM B (FACING WEST ALONG EAST NORTH CAMANO DR) 12

LIST OF APPENDICES

APPENDIX A: ISLAND COUNTY WETLAND BUFFER WORKSHEET

APPENDIX B: ARMY CORPS WETLAND DETERMINATION DATA FORMS

APPENDIX C: CRITICAL AREA STUDY, BIOLOGICAL SITE ASSESSMENT, AND MITIGATION PLAN MAPS

1.0 INTRODUCTION

1.1 PROJECT LOCATION

The subject property is located at 531 E North Camano Drive (tax parcel identification number R33220-120-1780). Access is from the south via East North Camano Drive.

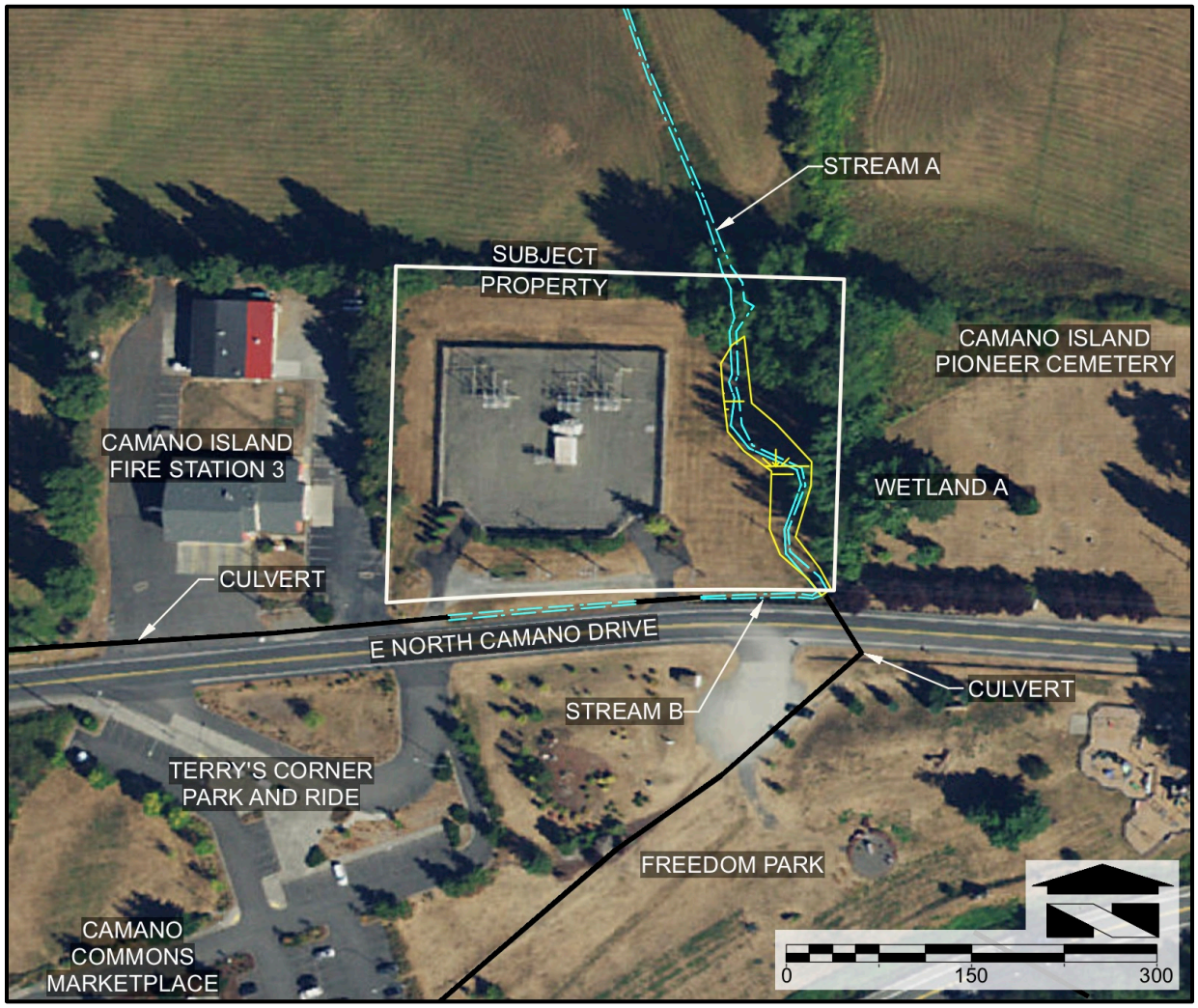


Figure 1 – Aerial view of the subject property (not to scale).

1.2 LANDSCAPE SETTING

Basin: Puget Sound
Sub-Basin: Water Resource Inventory Area (WRIA) 6
Watershed: Whidbey Island
Hydrologic Unit Code: 171100190105 – Whidbey Island-Frontal Admiralty Inlet

The study area is located in a temperate marine climate, receiving approximately 29 inches of average annual precipitation (Sumioka and Bauer, 2004). The USDA/NRCS Web Soil Survey maps one soil unit on the site: Coveland Loam.

Topography of the subject parcel slopes to the south. Surface water drains through an agricultural ditch (Stream A) that forms in a pasture north of the subject property. Stream A flows through the eastern portion of the property and enters a 30-inch diameter culvert in the southeast corner of the property. Stream A flows southwest through a larger 60-inch diameter corrugated metal pipe beneath Freedom Park, Camano Gateway Village, and SR532 before before discharging to an agricultural field in the vicinity of the intersection of N Sunrise Blvd and SR532. Stream A drains directly to Puget Sound in Livingston Bay.

The site is part of the Camano Gateway Village and is surrounded by rural and commercial agricultural uses.

1.3 PROJECT DESCRIPTION

The applicant proposes to expand and upgrade the existing Camano substation. The project is part of the Snohomish County Public Utility District's (PUD) Electric System Capital Program, which is intended to provide reliable electric service to Camano Island. Re-development occurs within the existing impervious footprint to the extent possible. Expansion beyond the existing footprint is necessary to accommodate new electric equipment and meet National Electric Safety Code (NESC) clearance and space requirements. The proposed expansion includes new impervious surfaces to the north of the existing concrete pad, modification of the stormwater network (including installation of two new catch basins), installation of one new pole, replacement/minor re-location of three existing poles, and installation of two new handhole vaults. Due to site encumbrance by one wetland (Wetland A), two streams (Streams A and B), and their associated buffers, the project requires unavoidable impacts to on-site critical area buffers.

The project will impact critical area buffers in the following ways:

- 2,550 square feet of new impervious surface area that replaces existing lawn vegetation in the northern portion of the site
- 2,695 square feet of new impervious surface that replaces existing lawn (2,177 square feet) and existing ornamental landscaping (518 square feet) in the southern portion of the site
- 26 square feet of new structure area (two vaults, two catch basins, and one new pole) that replaces existing lawn in the southern portion of the site
- 4,274 square feet of site grading that will temporarily impact existing ornamental vegetation (392 square feet) and existing lawn (3,882 square feet)

To offset permanent buffer impacts totaling 5,271 square feet, the applicant proposes to enhance the on-site wetland and buffer at a 1:1 ratio. To offset temporary buffer impacts totaling 4,274 square feet, the applicant proposes to restore approximately 2,000 square feet to grass and to install a native landscape plan (prepared by David Evans and Associates) that includes approximately 8,000 square feet of native planting in the buffer.

1.4 IMPACT ANALYSIS

The proposed project will replace 5,271 square feet of wetland/stream buffer with new impervious surfaces and structures. The project will cause the temporary removal of 4,274 square feet of existing lawn/ ornamental vegetation. Lawngrass provides no ecological support to wetlands or streams, and sparse non-native ornamental vegetation provides limited functional support.

The post-development condition includes enhancement of a degraded portion of Wetland A totaling 2,179 square feet and buffer enhancement totaling 3,092 square feet. In addition, the applicant's landscape plan will enhance approximately 8,000 square feet of the wetland and stream buffer with native plants.

The applicant's proposal will improve wildlife habitat value by increasing species diversity and abundance, and by providing new cover and forage opportunities. The plan will improve hydrologic control and water quality improvement functions by modestly reducing the velocity of incoming runoff to surface channels. Relative to the existing condition, this project will substantially improve ecological functions at the site.

2.0 REGULATORY SETTING

2.1 MINIMUM REPORTING REQUIREMENTS

Island County Code (ICC) 17.02B.400.C requires that applicants submit a wetland report for all development proposals that contain or are affected by a wetland or wetland buffer. ICC 17.02B.400.A requires that applicants prepare a Biological Site Assessment (BSA) when a development proposal is located within 1,000 feet of habitat for a protected species or a fish and wildlife habitat conservation area (FWHCA) or its buffer. This report meets the minimum requirements for both BSAs and wetland reports, and was prepared by a Qualified Professional (Niels Pedersen, PWS).

2.2 CRITICAL AREAS PRESENCE

One wetland and two streams are located on the subject property. Three off-site wetlands are depicted within 1,000 feet of the subject property based on review of the Island County Critical Areas Interactive Map. All three off-site wetlands are located approximately 800+ feet from the subject property. Application of the maximum buffer for each of the three County-mapped off-site wetlands would not cast protective buffer onto the subject property. For this reason, no additional discussion of off-site features is provided in this report.

2.3 PERMITTED ALTERATION

Pursuant to ICC 17.02B.310.B.3, the proposed project is an allowed activity in a FWHCA or its buffer when it complies with ICC 17.02B.310.B.3.a-j. The following narrative demonstrates compliance with the ICC. Relevant code citations (indented, italicized text) are followed by the applicant's response (normal, justified text).

> *a. Roads and utilities shall be located as far as feasible from fish and wildlife habitat conservation areas and associated buffers. Where avoidance is not feasible, roads and utilities shall, to the extent possible, be located so as to minimize impacts to critical area functions and values.*

To minimize impacts to critical area functions, the proposed expansion has been sited to the north and west of existing development to the extent possible.

> *b. Roads and utilities shall not be located over habitat used for salmonid rearing or spawning or by a species listed as endangered or threatened by the state or federal government unless the Planning Director determines that there is no other feasible crossing site.*

The proposed impact area consists of lawn and ornamental vegetation in the wetland/stream buffer. The project is not located over habitat used for salmonid rearing or spawning or by a species listed as threatened or endangered.

c. Paralleling the stream or following a down-valley route near the stream shall be avoided when possible.
Not applicable. This project is not linear and does not "parallel" the stream.

d. The width of fill and construction activities shall be minimized.
The footprint expansion is the minimum necessary to achieve NESC design standards.

e. Culverts may be installed when necessary to maintain hydrology and fish passage on Type F streams.
Not applicable. This project does not propose to culvert any open channel system.

f. Best management practices shall be employed during construction.
The Stormwater Pollution Prevention Plan (SWPPP) prepared for this project will ensure that best management practices minimize impacts to receiving waters during construction.

g. Mitigation shall be proportionate to the impacts and provided pursuant to section 17.02B.080 and 17.02B.500.
See *Mitigation Ratio Determination* discussion in Section 2.5 below.

h. For purposes of interpreting this section, the term "utilities" does not include septic system components or wells serving individual home sites, except as provided for below in subsection B.6.
Noted.

i. For purposes of interpreting this section, the term "utilities" does not include throughput transmission facilities as defined in chapter 17.03.
Noted.

j. Roads and utilities shall only be permitted to alter a fish and wildlife habitat conservation area or its buffer when the project is needed to serve Island County residents. A project shall be considered needed if it is included in the capital facilities element of the comprehensive plan.
The project is intended to provide reliable electric service for Camano Island, which serves Island County residents.

Pursuant to ICC 17.02B.310.C.3, the proposed project is an allowed activity in a wetland or its buffer when it complies with ICC 17.02B.310.C.3.a-e. Relevant code citations (indented, italicized text) are followed by the applicant's response (normal, justified text).

a. There is no other practical alternative to the proposed development with less impact on the critical areas;
Project design was informed by the need to minimize impacts to critical areas. The current proposal represents the least impact that meets minimum project clearance/safety requirements.

b. The application of this chapter would unreasonably restrict the ability to provide utility services to the public;
Denial of the proposed project would unreasonably reduce electric service quality for the public.

c. The proposal does not pose an unreasonable threat to the public health, safety, or welfare on or off the development proposal site;

The project is a continuation of an existing use that promotes public health and safety off the development site (electric service). The proposed project does not fundamentally change site use and does not pose an unreasonable threat to the public health, safety, or welfare on or off the development proposal site.

d. The proposal attempts to protect and mitigate impacts to the critical area functions and values consistent with the best available science; and

The proposed mitigation plan has been designed in consideration of best available science and adequately protects critical areas and mitigates critical area impacts.

e. The proposal is consistent with other applicable regulations and standards.

The proposal is consistent with all known regulations and standards.

2.4 MITIGATION SEQUENCING

Proposed development cannot occur without modification of the standard buffer associated with Wetland A/Stream A/Stream B. As required by ICC 17.02B.080.B, this project meets defined *Mitigation Sequencing* standards. Project impacts are unavoidable because the existing facility footprint is not large enough to meet safe operation and maintenance standards, and the majority of the site is within a critical area buffer. Impacts have been minimized by locating the proposed expansion away from the nearest critical areas. Mitigation is achieved by providing a 1:1 ratio for both temporary and permanent impacts, which exceeds the ICC requirement for temporary impacts. Additionally, the applicant's landscape plan will provide approximately 8,000 square feet of new native cover in the buffer.

2.5 MITIGATION RATIO DETERMINATION

ICC 17.02B.500.C describes general requirements for mitigating project impacts. ICC 17.02B.510.B.5-6 describes specific requirements for mitigating impacts within the wetland buffer.

Relevant code citations (indented, italicized text) from ICC 17.02B.510.B are followed by the applicant's response (normal, justified text).

5. Mitigation ratios for approved wetland buffer alterations shall be determined by the Planning Director on a case-by-case basis. Generally, the mitigation ratio shall be at a 1:1 ratio but shall be established based on the nature and extent of the buffer intrusion and the wetland type and wetland functions. Mitigation ratios shall be greater than 1:1 in spatial extent (area) when necessary to compensate for temporal losses, uncertainty of performance, and differences in functions and values.

Mitigation for permanent wetland buffer alterations consists of wetland and buffer enhancement at a 1:1 ratio. The impact area consists of maintained lawngrass (4,753 square feet) or non-native ornamental vegetation (518 square feet) that will be replaced with new impervious surface. Maintained lawngrass does not provide critical area buffer support functions and does not require additional consideration of temporal loss. Ornamental vegetation provides limited critical area and buffer support functions and does not require additional consideration of temporal loss. PUD has a verifiable history of good mitigation maintenance practices, and therefore a 1:1 ratio is appropriate.

6. The Planning Director shall also determine, on a case-by-case basis, mitigation ratios for temporary alterations of wetlands or wetland buffers…Generally, these ratios will be one-quarter (1/4)(temporary alteration to one-half (1/2)(conversion to another wetland type) of the ratios for permanent alterations.

The temporary impact area consists of either maintained lawngrass or non-native ornamental vegetation where site grading is necessary. Given the absence of critical area buffer support functions provided by these areas, a 0.25:1 mitigation ratio is expected to be adequate. The applicant's proposal includes restoration in kind (at a 1:1 ratio), and an additional ~8,000 square feet of native planting as proposed in the applicant's landscape plan (prepared by David Evans and Associates). The applicant's proposal far exceeds the standard requirement for temporary impacts and will result in a net increase in critical area functions.

3.0 CRITICAL AREAS DELINEATION METHODOLOGY

3.1 LIMIT OF STUDY

The proposed project occurs within one tax parcel. Lack of legal access to adjacent parcels prevents Wetland Resources, Inc. (WRI) staff from performing routine wetland determinations in much of the area surrounding the subject property. Critical area identification outside of the subject property is estimated using best professional judgment and is based on visual observation from the edge of legal access, including public rights-of-way and spaces.

3.2 GENERAL CRITICAL AREAS CLASSIFICATION

Critical areas were generally classified in accordance with the standards set forth in ICC section 17.02B for FWHCAs, Wetlands, Critical Aquifer Recharge Areas (CARAs), Frequently Flooded Areas, and Geologic Hazard Areas. Identification and code compliance related to CARAs and Geologic Hazard Areas is beyond the scope of this report.

3.3 WETLAND DETERMINATION AND DELINEATION

Wetland boundaries were determined using the routine approach described in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (U.S. Army Corps of Engineers 2010). Under the routine methodology, the process for making a wetland determination is based on three steps:

1.) Examination of the site for hydrophytic vegetation (species present and percent cover);
2.) Examination of the site for hydric soils;
3.) Determining the presence of wetland hydrology

The following criteria must be met to make a positive wetland determination.

Vegetation Criteria

The Corps Manual and 2010 Regional Supplement define hydrophytic vegetation as "*the assemblage of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to influence plant occurrence.*" Field indicators are used to determine whether the hydrophytic vegetation criteria have been met. Examples of these indicators include, but are not limited to, the rapid test for hydrophytic vegetation, a dominance test result of greater than 50%, and/or a prevalence index score less than or equal to 3.0.

Soils Criteria
The 2010 Regional Supplement (per the National Technical Committee for Hydric Soils) defines hydric soils as soils *"that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part."* Field indicators are used to determine whether a given soil meets the definition for hydric soils. Indicators are numerous and include, but are not limited to, presence of a histosol or histic epipedon, a sandy gleyed matrix, depleted matrix, and redoximorphic depressions.

Hydrology Criteria
Wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on the characteristics of vegetation and soils due to anaerobic and chemically reducing conditions, respectively. The strongest indicators include the presence of surface water, a high water table, and/or soil saturation within at least 12 inches of the soil surface.

3.4 WETLAND RATING
Wetland Ratings were prepared in accordance with ICC 17.02B.240.C using the Wetland Classification System Field Indicators Worksheet contained in the Island County Wetland Identification Guide.

3.5 STREAM DETERMINATION AND DELINEATION
The site was investigated using the methodology described in the Washington State Department of Ecology document Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State (Ecology Publication 16-06-029).

3.6 STREAM CLASSIFICATION
Stream classification is in accordance with Washington Administrative Code (WAC) section 222-016-030, as required by ICC 17.02B.200.2.a.

4.0 WETLAND AND STREAM DELINEATION REPORT

4.1 INTRODUCTION
WRI was contracted by the applicant to delineate wetlands and watercourses within the project area. One wetland (Wetland A) and two streams (Streams A and B) were observed. All on-site critical areas were delineated in the field during the June 8, 2022 site visit. Delineated boundaries were surveyed and are depicted in the attached Critical Area Study, Biological Site Assessment, and Mitigation Plan Maps (Appendix C). The following table summarizes all observed critical areas within the project area.

Critical Area Name	Island County Classification	Wetland Outlet	Land Use Intensity	Required Buffer
Wetland A	Category B	Yes	High	110'
Stream A	Type F	N/A	N/A	100'
Stream B	Type F	N/A	N/A	100'

4.2 FIELD INVESTIGATION

Field delineation occurred on June 8, 2022. Sample plot information for wetland and upland areas are provided in Appendix B (US Army Corps of Engineers Wetland Determination Data Forms). Data entered in these forms supports the wetland determinations made for this project in terms of vegetation, soils, and hydrology.

4.3 REVIEW OF EXISTING INFORMATION

Prior to conducting the on-site investigations, public resources information was reviewed to gather background information on the project study area and surrounding areas related to wetlands, streams, and other critical areas.

USFWS National Wetlands Inventory

The NWI Wetland Mapper depicts the following features in the project area:

Wetland Type	Approximate Location
Riverine Intermittent, Streambed	Stream A
Palustrine Unconsolidated Bottom	Approximately. 1,000 feet NW of subject property

Soils

The Natural Resources Conservation Service (NRCS) web soil survey and the 2014 National Hydric Soil List by State were used to identify soil types on the subject site. One soil type is mapped within the subject property: Coveland loam. Coveland loam is likely to meet the hydric soil definition because it is listed in the 2014 NRCS Hydric Soils List for Island County. The following table describes the hydric component percentages found in the mapped soil type. The likelihood that a given map unit is a hydric soil is partly based on the percentage of hydric components found in the soil type.

Map Unit Name (percent slope)	Hydric Component	Component Percentage
Coveland loam	Coveland	80%
	Coupeville	10%

Fish Presence

The Washington Department of Fish and Wildlife (WDFW), Pacific States Marine Fisheries Commission (PSMFC), and the Washington Dept. of Natural Resources (WADNR) are the primary agencies that provide publicly available information used for making fish presence determinations consistent with the water typing rules set forth in WAC 222-16-030. The following information represents the findings from each source.

WDFW SalmonScape Map Tool

SalmonScape is an online GIS database that contains publicly available resource information for fish population studies and general species distribution (both documented and modeled presence). No fish presence is documented or modeled in the vicinity of the project area. Stream A is depicted as intermittent/ephemeral non-fish habitat.

PSMFC StreamNet Map Tool
StreamNet is a fish distribution database maintained by the PSMFC as a regional clearinghouse for fish data. No fish presence is documented or modeled in the vicinity of the project area.

WDNR Forest Practices Application Mapping Tool (FPAMT)
FPAMT Map Tool is an online GIS database that aids the process of submitting a Forest Practices permit application. The tool is useful for the purposes of this study because WADNR models fish presence. Stream A is mapped as a Type F stream that drains to the Puget Sound in the western portion of Livingston Bay.

Island County Critical Areas Interactive Map
Three wetlands are mapped approximately 800 feet west of the subject property, on the west side of N Sunrise Blvd. Stream A is mapped as fish habitat. The regulatory floodplain is mapped in the agricultural pastures north of Livingston Bay. No other features are depicted on or near the subject property.

WDFW Priority Habitat and Species (PHS) Maps
PHS depicts a portion of an NWI-mapped wetland on the south side of E North Camano Drive. No other priority habitats are mapped on or near the project area.

4.4 Wetland Boundary Determination Findings

Wetland A
Cowardin Classification: Palustrine Emergent
Island County Rating: Type B, Outlet: Yes,
Island County Habitat Score: 8 points
Island County Buffer Requirement: 110 feet (Type B/High Intensity/Outlet)


Figure 2 Wetland A: (Facing South)


Figure 3 Wetland A: (Facing Northeast)

Wetland A is a 5,470 square-foot wetland that exists entirely within the Camano substation property.

This wetland received an overall score of 8 points using the Island County Wetland Rating System. Wetlands with scores less than 22 points are classified based on the presence of priority features. Due to the direct connection between Wetland A and the agricultural ditches that drain to Puget Sound in Livingston Bay, Wetland A is correctly classified as an Anadromous Fish Wetland (Class B). The required buffer width is 110 feet for Class B for wetlands with outlets adjacent to high intensity land use.

The primary source of hydrology to Wetland A is from an agricultural drainage ditch (Stream A) that originates in off-site areas to the north. Water enters the wetland as overbank flooding from the open channel, and also as shallow sub-surface flow. A buried pipe that drains the impervious portion of the existing substation conveys minor additional hydrology to the wetland. Observations from sample point B-2, located near the west edge of the wetland boundary, met primary hydrology indicator A2 (High Water Table), A3, (Saturation), and C3 (oxidized rhizospheres along living roots).

Vegetation within Wetland A is comprised entirely of maintained lawn and invasive herbs. Vegetation within Wetland A is problematic. Following the procedure set forth in Chapter 5 of the WMVC Regional Supplement, a positive wetland determination was made based on indicators of hydric soil and wetland hydrology and using best professional judgment.

Soils within sample pit B-2 were black (10YR 2/1) to a depth of eight inches below the mineral soil surface. Redoximorphic features were observed as concentrations within the matrix in underlying soils, from eight to at least fifteen inches. Soils from within sample pit B-2 met hydric soil indicator F3 (Depleted Matrix).

4.5 STREAM BOUNDARY DETERMINATION FINDINGS

Stream A
Cowardin Classification: Riverine, Intermittent
WAC Classification (Section 222-16-030): Type F
Island County Buffer Requirement: 100 feet

Figure 4 Stream A (Facing South)

Stream A is located within the Camano substation parcel. The stream originates within a forested area on the adjacent parcel to the north of the substation (tax parcel ID 163361). Flows travel south through a maintained agricultural drainage channel onto the substation property. Stream A meanders south through the eastern portion of the substation property before entering a 30-inch diameter culvert that conveys flows beneath E North Camano Drive. In the vicinity of the substation parcel, Stream A is approximately two feet wide with a vegetated bed.

Based on downstream analysis conducted by PUD staff, Stream A flows beneath Freedom Park, Camano Gateway Village, and SR532 before discharging onto a hillslope between the road prism of SR532 and the toe of the agricultural fields north of Livingston Bay. Surface channels on the west side of the agricultural fields convey Stream A directly to the Puget Sound by way of two tidegates.

The Puget Sound contains several state and federally listed threatened and endangered species (bull trout, Chinook, and steelhead). Although it is likely that the network of culverts beneath Freedom Park represent a total barrier to fish passage, these features do not meet the natural barrier standard provided in WAC 222-16-031 (see WA Dept. of Natural Resources Forest Practices Board Manual). Therefore, Stream A is correctly classified as a Type F stream.

In Island County, stream buffer widths are based on ICC 17.02B.420. Stream A is a Type F stream because it is at least two feet wide on average, meets fish use criteria related to channel gradient, and is connected to known fish-bearing waters. Type F streams require 100-foot protective buffers in Island County.

Stream B
Cowardin Classification: Riverine, Intermittent
WAC Classification (Section 222-16-030): Type F
Island County Buffer Requirement: 100 feet

Figure 5 Stream B (Facing West along East North Camano Dr)

Stream B is located within the right-of-way of East North Camano Drive, directly in front of the Camano substation. The stream originates west of the Camano Island Fire Station 3 and flows east along the north side of E North Camano Drive. The primary source of hydrology to Stream B is stormwater runoff. Stream B enters Stream A just upstream of a large-diameter culvert inlet on the north side of East North Camano Drive.

Stream B is an artificial channel that meets WAC parameters for classification as a stream. The channel is approximately two feet wide with a vegetated bed. Stream B drains to the Puget Sound via Stream A. Due to the direct connection to Puget Sound and the absence of natural fish passage barriers, Stream B is correctly classified as a Type F stream and requires a 100-foot protective buffer.

5.0 MITIGATION PLAN

The proposed project will result in permanent buffer impacts totaling 5,271 square feet, and temporary impacts totaling 4,274 square feet. Permanent impacts will be mitigated by a combination of wetland enhancement and wetland buffer enhancement totaling 5,271 square feet. This approach is preferred due to the opportunity for enhancement presented by the dominance of invasive herbaceous plants within Wetland A. Temporary impacts for site grading will be restored at a 1:1 ratio (in kind). In addition to 1:1 mitigation for temporary impacts, the applicant proposes to install ~8,000 square feet of native landscape planting along the frontage. The DEA landscape plan is provided as a separate document and is not subject to any monitoring, mitigation performance standards, or maintenance requirements described in this section.

Buffer Enhancement Planting Plan (3,092 sq. ft.)

Common Name	Latin Name	Size	Spacing	Qty.
Cascara	*Rhamnus purshiana*	1.5" Caliper	22'	4
Shore pine	*Pinus contorta*	72" Height	22'	3
Vine maple	*Acer circinatum*	48" Height	4.5'	4
Serviceberry	*Amelanchier alnifolia*	48" Height	4.5'	5
Oceanspray	*Holodiscus discolor*	48" Height	4.5'	4
Mock orange	*Philadelphus lewisii*	48" Height	4.5'	4
Pacific rhododendron	*Rhododendron macrophyllum*	48" Height	4.5'	13
Tall Oregon grape	*Mahonia aquifolium*	36" Height	4.5'	25
Dwarf Oregon grape	*Mahonia nervosa*	18" Height	4.5'	33
Red flowering currant	*Ribes sanguineum*	18" Height	4.5'	5
Evergreen huckleberry	*Vaccinium ovatum*	18" Height	4.5'	20
Snowberry	*Symphoricarpos albus*	18" Height	4.5'	20
Sword fern	*Polystichum munitum*	18" Height	4'	58

Wetland Enhancement Planting Plan (2,179 sq. ft.)

Common Name	Latin Name	Size	Spacing	Qty.
Pacific willow	*Salix lucida*	Whip	3'	93
Red osier dogwood	*Cornus sericea*	Whip	3'	100
Black twinberry	*Lonicera involucrata*	Whip	3'	50

5.1 PROJECT MONITORING PROGRAM

Requirements for monitoring project:
1. Initial compliance/as-built report
2. Annual site inspection for five years
3. Annual reports for five years (one report submitted during the fall of each monitored year)

Purpose for Monitoring

The purpose for monitoring this mitigation project shall be to evaluate its success. Success will be determined if definitions of success stated below are met at the end of the monitoring period. The property owner shall grant access to the mitigation area for inspection and maintenance to the contracted landscape and/or wetland specialist and Island County during the monitoring period or until the project is evaluated as successful.

Monitoring Period
Monitoring shall be conducted annually for five years in accordance with the approved Mitigation Plan. The monitoring period will begin upon County acceptance of the as-built letter, which will confirm that the mitigation plan has been correctly installed.

Monitoring Methodology
Due to the small overall planting area, vegetation monitoring will be conducted by a hand count. Vegetation monitoring will occur once per monitored year, and will include the following data: survivorship, invasive species cover, and areal cover. Buffer enhancement and wetland enhancement findings will be reported separately.

Photo Documentation
No less than three permanent photo points shall be established within the mitigation areas. Photographs will be taken from these points to visually record condition of the enhancement area. Photos shall be taken annually between May 15 and September 30 (prior to leaf drop), unless otherwise specified.

Monitoring Report Contents
Monitoring reports shall be submitted by December 31 of each year during the monitoring period. As applicable, monitoring reports must include descriptions / data for:

1. Site plan and vicinity map
2. Historic description of project, including date of installation, current year of monitoring, re-statement of mitigation / restoration goals, and performance standards
3. Installed species survivorship and areal coverage (survivorship: hand count, cover: qualitative assessment)
4. Invasive species cover (qualitative assessment)
5. Wetland and buffer conditions, e.g., surrounding land use, use by humans, and/or wild and domestic creatures
6. Assessment of nuisance / exotic biota and recommendations for management
7. Color photographs taken from permanent photo-points that shall be depicted on the monitoring report map

5.2 MITIGATION PERFORMANCE STANDARDS

Criteria for Success
Upon installation of the proposed enhancement plan, an inspection by a qualified biologist will be made to determine plan compliance. A compliance report will be supplied to Island County within 30 days after the completion of planting. A landscape professional or wetland professional will perform condition monitoring of the plantings annually in the fall. A written report describing the monitoring results will be submitted to the County after each site inspection. Final inspection will occur five years after completion of this project. The contracted consultant will prepare a report as to the success of the project.

Definition of Success

The buffer enhancement planting area shall meet the following performance standards to be deemed successful. Naturally occurring (pioneer) tree, shrub, and groundcover species shall count toward the areal cover and survivorship standards.

Buffer Enhancement Performance Standards

Success Standard	Year 1	Year 2	Year 3	Year 4	Year 5
Survivorship	100%	80%	80%	80%	80%
Invasive Species Cover	<10%	<10%	<10%	<10%	<10%
Areal Cover	-	-	25%*	35%*	45%**

*Installed species must comprise at least 15 percent of total areal cover

**Installed species must comprise at least 25 percent of total areal cover

The wetland enhancement planting area shall meet the following performance standards to be deemed successful. Naturally occurring (pioneer) shrubs and tree species shall count toward the areal cover standard. Invasive species cover standards shall exclude canarygrass due to its persistence and vigor; the goal of the plan is to provide passive invasive species control over time by establishing a dense canopy at shrub and tree height.

Wetland Enhancement Performance Standards

Success Standard	Year 1	Year 2	Year 3	Year 4	Year 5
Survivorship	100%	100%	90%	80%	80%
Invasive Species Cover	<25%*	<25%*	<25%*	<15%*	<15%*
Areal Cover	-	-	40%	50%	70%

*Invasive Species Cover excludes reed canarygrass

5.3 MAINTENANCE PLAN

The mitigation areas will require periodic maintenance to remove undesirable species and replace vegetation mortality. Maintenance shall occur in accordance with the approved plans. Chemical control, only if approved by County staff, shall be applied by a licensed applicator following all label instructions.

Duration and Extent

In order to achieve performance standards, the permittee shall have the mitigation area regularly maintained for the duration of the five-year monitoring period. Maintenance will include watering, weeding around the base of installed plants, pruning, replacement, re-staking, removal of all classes of noxious weeds (see Washington State Noxious Weeds List, WAC 16-750-005) as well as Himalayan blackberry, and any other measures needed to ensure plant survival. The landscape designer and/or wetland professional shall direct all maintenance.

Survival

The permittee shall be responsible for the health of 100% of all newly installed plants for *one growing season* after installation has been accepted by Island County. This determination will be based on a hand count of all installed species. A growing season for these purposes is defined as occurring from spring to spring (March 15 to March 15 of the following year). For fall installation (often required), the growing season will begin the following spring. The permittee shall replace any plants that are:

failing, weak, defective in manner of growth, or dead during this growing season, as directed by the landscape designer, wetland professional, and/or Island County staff.

Installation Timing for Replacement Plants
Replacement plants shall be installed between September 15 and January 15, unless otherwise determined by the landscape designer, wetland professional, and/or Island County staff.

Standards for Replacement Plants
Replacement plants shall meet the same standards for size and type as those specified for the original installation, unless otherwise directed by the landscape designer, wetland professional, and/or Island County staff.

Replanting
Plants that have settled in their planting pits too deep, too shallow, loose, or crooked shall be replanted as directed by the landscape designer, wetland professional, and/or Island County staff.

Wetland Enhancement Maintenance Guidelines
Invasive species removal should occur in the planting area and within 15 feet of the planting area.

Contingency Plan
If 20% of the plants are severely stressed during any of the inspections, or it appears 20% may not survive, additional plantings of the same species may be added to the planting area. Elements of a contingency plan may include but will not be limited to more aggressive weed control, pest control, mulching, replanting with larger plant material, species substitution, fertilization, soil amendments, and/or irrigation.

5.4 PLANT INSTALLATION NOTES

Pre-Construction Meeting
Mitigation projects are typically more complex to install than to describe in plans. Careful monitoring by a wetland professional for all portions of this project is strongly recommended. Construction timing and sequencing is important to the success of this type of project. There will be a pre-construction meeting on this site between the Permittee, the consulting wetland professional, and contracted landscaper. The objective will be to verify the location of erosion control facilities, verify the location of mitigation areas, and to discuss project sequencing.

Wetland Enhancement Planting Guidelines
Whips shall be planted in rows to facilitate invasive species removal throughout the monitoring period. The rows shall be spaced wide enough to allow control work.

Pre-Planting Meeting
Prior to control of invasive species or installation of mitigation plantings, a site meeting between the contracted landscaper and the consulting wetland professional shall occur to resolve any questions that may arise. During this meeting a discussion regarding plant spacing and locations of plant species including wetland versus buffer species shall occur between the landscape contractor and the consulting wetland professional.

Handling
Plants shall be handled so as to avoid all damage, including breaking, bruising, root damage, sunburn, drying, freezing or other injury. Plants must be covered during transport. Plants shall not be bound with wire or rope in a manner that could damage branches. Protect plant roots with shade and wet soil in the time period between delivery and installation. Do not lift container stock by trunks, stems, or tops. Do not remove from containers until ready to plant. Water all plants as necessary to keep moisture levels appropriate to the species horticultural requirements. Plants shall not be allowed to dry out. All plants shall be watered thoroughly immediately upon installation. Soak all containerized plants thoroughly prior to installation. Bare root plants are subject to the following special requirements and shall not be used unless planted between November 1 and March 1, and only with the permission of the landscape designer, wetland professional, and County staff. Bare root plants must have enough fibrous root to ensure plant survival. Roots must be covered at all times with mud and/or wet straw, moss, or other suitable packing material until time of installation. Plants whose roots have dried out from exposure will not be accepted at installation inspection.

Storage
Plants stored by the Permittee for longer than one month prior to planting shall be planted in nursery rows and treated in a manner suitable to those species' horticultural requirements. Plants must be re-inspected by the wetland professional and/or landscape designer prior to installation.

Damaged plants
Damaged, dried out, or otherwise mishandled plants will be rejected at installation inspection. All rejected plants shall be immediately removed from the site.

Plant Names
Plant names shall comply with those generally accepted in the native plant nursery trade. Any question regarding plant species or variety shall be referred to the landscape designer, wetland professional, or County staff. All plant materials shall be true to species and variety and legibly tagged.

Quality and condition
Plants shall be normal in pattern of growth, healthy, well-branched, vigorous, with well-developed root systems, and free of pests and diseases. Damaged, diseased, pest-infested, scraped, bruised, dried out, burned, broken, or defective plants will be rejected. Plants with pruning wounds over 1-inch in diameter will be rejected.

Roots
All plants shall be balled and burlapped (B &B), containerized, or whips, unless explicitly authorized by the landscape designer and/or wetland professional. Rootbound plants or B&B plants with damaged, cracked, or loose rootballs (major damage) will be rejected. Immediately before installation, plants with minor root damage (some broken and/or twisted roots) must be root-pruned. Matted or circling roots of containerized plantings must be pruned or straightened, and the sides of the root ball must be roughened from top to bottom to a depth of approximately half an inch in two to four places. Bare root plantings of woody material are allowed only with permission from the landscape designer, wetland professional and/or County staff.

Sizes
Plant sizes shall be as indicated in the approved plant schedule. Larger stock may be acceptable provided that it has not been cut back to the size specified, and that the root ball is proportionate to the size of the plant. Measurements, caliper, branching, and balling and burlapping shall conform to the American Standard of Nursery Stock by the American Association of Nurserymen (latest edition).

Form
Evergreen trees shall have single trunks and symmetrical, well-developed form. Deciduous trees shall be single trunked unless specified as multi-stem in the plant schedule. Shrubs shall have multiple stems and be well-branched. Whips should be at minimum 18 inches in length.

Timing of Planting
Unless otherwise approved by County staff, all planting shall occur between November 1 and March 1. Overall, the earlier plants go into the ground during the dormant period, the more time they have to adapt to the site and extend their root systems before the water demands of spring and summer.

Weeding
Existing and exotic vegetation in the mitigation areas will be hand-weeded from around all newly installed plants at the time of installation and on a routine basis throughout the monitoring period. No chemical control of vegetation on any portion of the site is recommended.

Site conditions
The contractor shall immediately notify the landscape designer and/or wetland professional of drainage or soil conditions likely to be detrimental to the growth or survival of plants. Planting operations shall not be conducted under the following conditions: freezing weather, when the ground is frozen, excessively wet weather, excessively windy weather, or in excessive heat.

Planting Pits
Planting pits shall be circular or square with vertical sides and shall be 6" deeper and 12" larger in diameter than the root ball of the plant. Break up the sides of the pit in compacted soils. Set plants upright in pits. Burlap shall be removed from the planting pit. Backfill shall be worked back into holes such that air pockets are removed without adversely compacting down soils.

Staking
Most shrubs and many trees DO NOT require any staking. If the plant can stand alone without staking in a moderate wind, do not use a stake. If the plant needs support, then strapping or webbing should be used as low as possible on the trunk to loosely brace the tree with two stakes. Do not brace the tree tightly or too high on the trunk. If the tree is unable to sway, it will further lose the ability to support itself. Do not use wire in a rubber hose for strapping as it exerts too much pressure on the bark. As soon as supporting the plant becomes unnecessary, remove the stakes. All stakes must be removed within two (2) years of installation.

Plant Location
Colored surveyor ribbon or other appropriate marking shall be attached to the installed plants to assist in locating the plants while removing the competing non-native vegetation and during the monitoring period.

Arrangement and Spacing
The plants shall be arranged in a pattern with the appropriate numbers, sizes, species, and distribution that are required in accordance with the approved plans. The actual placement of individual plants shall mimic natural, asymmetric vegetation patterns found on similar undisturbed sites in the area. Spacing of the plantings may be adjusted to maintain existing vegetation with the agreement of the landscape designer, wetland professional, and/or County staff.

Inspection(s)
A wetland professional shall be present on site to inspect the plants prior to planting. Minor adjustments to the original design may be required prior to and during construction.

Woodchip Mulch
After buffer enhancement plant installation, three inches of organic/untreated wood chip mulch shall be installed within the planting area. Woodchips shall be kept at least 2 inches from the trunks and stems of woody plants. Woodchips are not necessary in the wetland enhancement planting area.

Decompaction/Soil Amendment
Soils shall be decompacted to no less than one foot below existing native soils or as described in the DEA plan. Soil amendments shall consist of three inches of premium topsoil (at least 15 percent organic content) tilled into the top 12 inches of existing soil or as described in the DEA plan.

Temporary Irrigation
A temporary irrigation system shall feed the 3,092 square-foot buffer enhancement planting area for at least two years or as directed by the project biologist. Appropriate water volume delivery will be determined by DEA. Irrigation should <u>not</u> be provided to the 2,179 square-foot wetland enhancement planting area.

6.0 USE OF THIS REPORT

This Critical Area Study, Biological Site Assessment, and Mitigation Plan is supplied to Snohomish County PUD No.1 as a means of determining the presence of on-site and nearby critical areas, as required by Island County. This report is based largely on readily observable conditions and, to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions.

The laws applicable to critical areas are subject to varying interpretations and may be changed at any time by the courts or legislative bodies. This report is intended to provide information deemed relevant in the applicant's attempt to comply with the laws now in effect.

This report conforms to the standard of care employed by wetland ecologists. No other representation or warranty is made concerning the work or this report and any implied representation or warranty is disclaimed.

Wetland Resources, Inc.

Niels Pedersen
Senior Ecologist, PWS

7.0 REFERENCES

Anderson, P.S., Meyer, S., Olson, P., and E. Stockdale. 2016. *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State.* Washington State Department of Ecology. Publication #16-06-029.

Brinson, M.M. 1993. *A Hydrogeomorphic Classification for Wetlands.* Technical Report WRPDE-4. US Army Engineers Waterways Experiment Station, Vicksburg, MS.

Cowardin, et al., 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Department of the Interior. FWS/OBS-79/31. December 1979.

Environmental Laboratory. 1987. *Corps of Engineers Wetland Delineation Manual.* Technical Report Y-87-1. Environmental Laboratory, Department of the Army, Corps Waterways Experiment Station, Vicksburg, MS.

Island, County of. 2021. Chapter 17.02B - *Island County Critical Area Regulations.* Title XVII - Zoning. Island County Code.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C Melvin. 2016. *Western Mountains, Valleys, and Coast 2016 Regional Wetland Plant List.* Phytoneuron 2016-30: 1-17.

Munsell Color. 2012. *Munsell Soil Color Book.* Munsell Color, Grand Rapids, MI.

NRCS. *Web Soil Survey*. United States Department of Agriculture. http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

U.S. Department of Agriculture (USDA). 1958. Soil Survey of Island County Washington. Soil Conservation Service.

Sumioka, S.S. and Bauer, H.H. August 2004. *Estimating Ground-Water Recharge from Precipitation on Whidbey and Camano Islands, Island County, Washington, Water Years 1998 and 1999.* USGS Water-Resources Investigations Report 03-4101, prepared in cooperation with Island County Health Department. Version 1.20. Tacoma, Washington.

U.S. Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0).* Vicksburg, MS

U.S. Fish & Wildlife Service (USFWS). 2020. *National Wetlands Inventory (NWI) Online Mapper*. http://www.fws.gov/wetlands/Data/Mapper.html.

Washington State. *Section 222-16-030 Water Typing System*. Chapter 222-16 Definitions. Title 222 Forest Practices Board. Washington Administrative Code (WAC).

WA Department of Fish & Wildlife (WDFW). 2021a. *Priority Habitat and Species (PHS) Interactive Map*. http://apps.wdfw.wa.gov/phsontheweb/

WA Department of Fish & Wildlife (WDFW). 2021b. *SalmonScape Online Mapping Application*. http://apps.wdfw.wa.gov/salmonscape/map.html

WA Department of Natural Resources (DNR). 2021. *Forest Practices Activity Mapping Tool (FPAMT)*. http://fortress.wa.gov/dnr/app1/fpars/viewer.htm.

Appendix A

Island County Wetland Buffer Worksheet
Wetland A

Island County Planning and Community Development
WETLAND BUFFER WORKSHEET

This Wetland Buffer Worksheet must be submitted with any development proposal related to a Single Family Home that involves property containing or affected by a wetland; or, at the single family homeowner's option, a Wetland Report including the elements of this Worksheet can be prepared by a Wetland Professional hired by the Single Family homeowner/applicant. A wetland report containing the elements of this worksheet, and prepared by a private wetland professional, will be required of all other applicants (non-residential or commercial) when the proposed development is on land that contains or is affected by a wetland or wetland buffer.

The following questions are designed to help you identify important characteristics of the wetland and the area surrounding it. Your answers should apply to the **entire wetland**, not just the part that is on your property. This Worksheet, along with information from the Land Use Intensity Worksheet, will help County planners determine the buffer width for your wetland. A buffer is the vegetated area adjacent to the boundary of a wetland that protects it from disturbance and inputs to protect water quality and habitat.

Project Information

PUD-Camano Substation Rebuild	
Wetland Name: Wetland A	Land Use Intensity: High
Wetland Type: B	Outlet: Yes

Applicant Name (please print): Snohomish County PUD No.1 **Date:** 6.8.22

Habitat Score: 8 (from Page WBW:7 of this Worksheet)

Wetland Buffer: 110 feet

For County Use Only

Confirmation Date: _____ **Confirmed By:** _____

Describe and Score the Wetland and Its Surroundings

1. High Priority Wetland Type

Does all or part of your wetland meet the definition of any of the following wetland types? Maps showing known locations of these types are available from the County. However, not all locations are known, so you should evaluate your wetland independently to see if it meets these definitions.

____ **Bog**: A relatively undisturbed Wetland with at least seventy percent (70%) ground cover of mosses; or with water with a pH of less than 5.0; or with more than thirty percent (30%) cover of Sitka Spruce, Western Red Cedar, Western Hemlock or Lodgepole Pine; and a preponderance of plants that are listed as bog species in Table 3 of the *2004 Wetland Rating System* prepared by the Washington State Department of Ecology; and having Peat or Muck soils at least sixteen (16) inches deep. Many Bogs are fed largely by precipitation. County maps identify the location of some but not all Bogs. *See* also Relict Bog. *If the criteria are met, put an "X" the space at the beginning of this definition.* Many Bogs have acidic conditions, low nutrient levels; soils classified as peat or muck; and are fed largely by precipitation.

____ **Coastal Lagoon Wetland:** A wetland located within a shallow water body adjacent to marine waters that is partly or completely separated from Puget Sound by a barrier beach. A Coastal Lagoon receives periodic influxes of salt water which may occur from storm surges or flow through porous beach sediments. The water in a Coastal Lagoon is saline or brackish (>0.5 ppt measured near the bottom) during most of the year. *If the criteria are met, put an "X" in the space at the beginning this definition.*

____ **Delta Estuary Wetland:** An Estuarine wetland located directly adjacent to or within a Delta Estuary. These wetlands are located on the north end of Camano Island adjacent to the mouth of the Skagit and Stillaguamish Rivers. *If the criteria are met, put an "X" in the space at the beginning of this definition.*

____ **Estuarine Wetland:** A tidal wetland containing emergent vegetation that is usually semi-enclosed by land but has open or partly obstructed access to Puget Sound. *If the criteria are met, put an "X" in the space at the beginning of this definition.*

If the wetland meets one of the above, your buffer can be determined from the chart below; if not, please continue to the remaining questions.

The type of wetland you marked above gives a preliminary determination of the width of the buffer that may be recommended for a new Development Proposal. Select the largest applicable buffer from Table 1 below. **You are then done with this assessment.**

Table 1

Intensity Level (Intensity Worksheet)	**Bog**	**Coastal Lagoon wetland**	**Delta Estuary wetland**	**Estuarine**
Low	125 ft	100 ft	40 ft	30 ft
Moderate	190 ft	150 ft	90 ft	55 ft
High	250 ft	200 ft	125 ft	90 ft

2. Vegetation Forms (maximum of 4 points):

Which kinds of plant forms cover more than 10% of the wetland's vegetated area? *Mark each kind with a "1" in the line next to it.*

Aquatic Plants (e.g., coontail, pond lily) _____
Herbs (e.g., grasses, wildflowers, ferns) 1
Shrubs (e.g., willow, elderberry, alder, salmon berry) _____
Trees (e.g., cedar, sitka spruce, hemlock) _____

Sum the numbers and insert here (Maximum of 4 points): 1

---

3. Non-native Plant Cover (maximum of 6 points)

Are non-native plants present <u>in</u> your wetland? *Check all that apply.*

Non-native Shrubs and Vines (a partial list):

___ Himalayan Blackberry
___ Evergreen Blackberry
___ Holly
___ Others. List: _____

Non-Native Herbs (a partial list):

___ Reed Canary Grass
✔ Velvetgrass
✔ Creeping Buttercup
___ Yellow Iris
___ Hairy Willow-herb
___ English Ivy
___ Canada Thistle, Bull Thistle
___ Eurasian Milfoil
___ Others. List: _____

* Note: This list is not comprehensive. You may wish to consult *Flora of the Pacific Northwest* (C. Leo Hichcock and Arthur Cronquist, University of Washington Press)

*Now estimate the approximate percent of the entire wetland's **vegetated area** covered by non-native species:*

___ Less than 5% (6 points; put "6" in the space to the left)
3 From 5 to 50% (3 points; put "3" in the space to the left)
___ More than 50% (0 points; put "0" in the space to the left)

Insert the point value here (Maximum of 6 points): 3

---

4. Dead Wood (maximum of 2 points):

What kind of dead wood is found in the wetland? *Insert the points at the beginning of all lines where applicable.*

___ Multiple large fallen logs greater than 4 inches in diameter at their base and longer than 6 ft (1 point)
___ Multiple large standing dead trees greater than 4 inches in diameter at chest height (1 point)
✔ Neither of the above (0 points)

Sum the numbers and insert here (Maximum of 2 points): 0

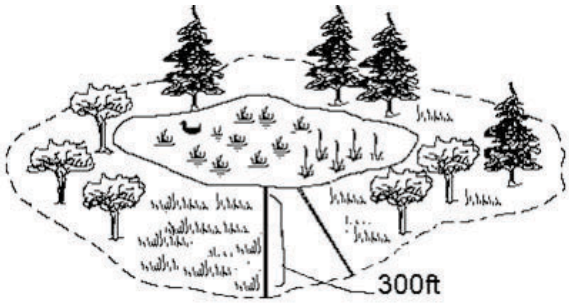
The following questions describe how wetlands on your property are connected with other natural areas. These questions are important because they help describe how your wetlands fit into larger ecosystems, and that in turn partly determines their importance to wildlife and plants. Maps and aerial photographs available online or at the counter of the Planning Department can assist you in answering these questions.

5. Surrounding Vegetation (Maximum of 10 Points):

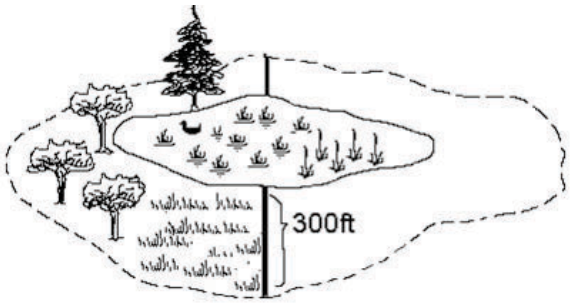
How much of the area surrounding the wetland is "naturally vegetated"?

"Naturally vegetated" means no pavement, buildings, lawns, bare soil, tilled soil, bedrock, or heavily-grazed pasture. Lightly-grazed or infrequently-mowed pasture is OK (mowed fewer than 4 times a year). Vegetation does not need to consist of native species.

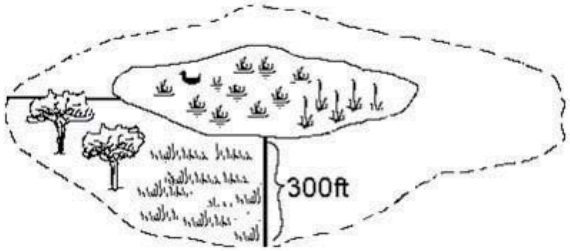
*Circle the diagram below that best describes the **surrounding vegetation** of your wetland. If more than one diagram applies choose the one with the higher point score.* ***If none apply, give the wetland a 0.*** Maps and aerial photographs available online or at the counter of the Planning Department can assist you in answering this question.



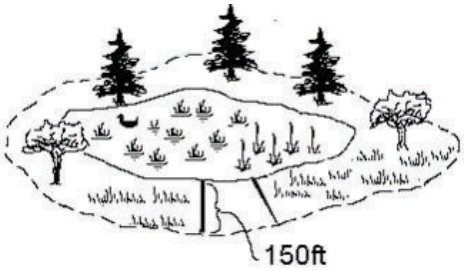
95% of 300ft upland area is naturally vegetated: 10 points



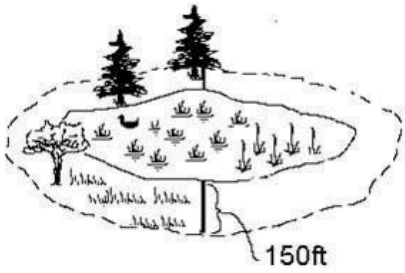
50% of 300ft upland area is naturally vegetated: 8 points



25% of 300ft upland area is naturally vegetated: 6 points

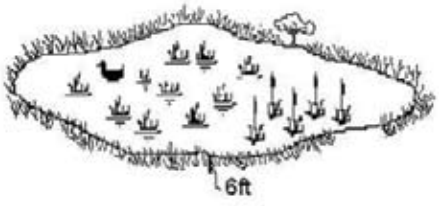


95% of 150ft upland area is naturally vegetated: 8 points



50% of 150ft upland area is naturally vegetated: 6 points

95% of 80ft upland area is naturally vegetated: 4 points



95% of 6ft upland area is naturally vegetated: 1 point

Insert the point value here (Maximum of 10 points): 0

6. Large Woodlands (Maximum of 10 Points):

"Woodlands" are areas of trees or shrubs.
"Connected to" includes areas that are separated from each other or from the wetland by distances less than 100 ft. Include wooded areas within the wetland when summing the acreage.

a. How much woodland is connected to your wetland? *Ignore all Roads*

More than 100 acres (5 points) _____
Greater than 9 to 100 acres (3 points) _____
From 1 to 9 acres (1 point) _____
None of the above/any other condition (0 points) ✔

b. Assess this again, but this time consider roads as a disconnection. *Roads don't include private driveways.*

More than 100 acres (5 points) _____
Greater than 9 to 100 acres (3 points) _____
From 1 to 9 acres (1 point) _____
None of the above/any other condition (0 points) ✔

The above two questions can be answered most easily by consulting maps and aerial photographs at the Planning Department.

Add up the points from (a) and (b) and insert here (maximum of 10 points): 0

---

7. Distance to Lake or Saltwater (maximum of 5 points):

How far is this wetland from the nearest lake or saltwater area? *Select only the one condition with the highest score.*

___ Within 300 ft (5 points)
___ Between 300 ft and ½ mile (3 points)
✔ More than ½ mile (0 points)

This can be answered most easily by consulting maps and aerial photographs at the Planning Department

Insert the point value here (Maximum of 5 points): 0

8. Nearby Wetlands (maximum of 5 points):

How many other County-mapped wetlands are within ½ mile of your wetland? This can be answered most easily by consulting maps and aerial photographs at the Planning Department. Insert the points on the line next to the one condition that gives the highest applicable points.

___ three or more, and **none** are separated from this wetland by paved roads, lawns, bare soil, tilled soil, or heavily-grazed pasture (5 points)
✔ three or more, but **some** are separated from this wetland by paved roads, lawns, bare soil, tilled soil, or heavily-grazed pasture (4 points)
___ one or two, and **none** are separated from this wetland by paved roads, lawns, bare soil, tilled soil, or heavily-grazed pasture (3 points)
___ one or two, but **some** are separated from this wetland by paved roads, lawns, bare soil, tilled soil, or heavily-grazed pasture (1 point)
___ none (0 points)

Insert the point value here (Maximum of 5 points): 4

---

9. Water Persistence and Pattern (maximum of 6 points):

Check and complete the section that describes your wetland in a normal year. Then add the additional points immediately beneath it if applicable.

More than 10% of wetland (or more than ¼ acre) contains more than 4 inches of standing water during the **entire year**. (4 points)
Add 2 points if:
☐ Water is mostly scattered throughout the wetland in multiple patches and most of it floods herbs, grasses, or the thin stems of shrubs during the growing season.

More than 10% of wetland (or more than ¼ acre) contains more than 4 inches of standing water for **part of the year, but not year-round**. (2 points)
Add 1 point if:
☐ Water is mostly scattered throughout the wetland and most of it floods herbs, grasses, or thin stems of shrubs during the growing season.

✔ Other. (0 points)

Insert the total point value here (Maximum of 6 points): 0

Now add the points from questions 2 through 9 and record the total HERE: 8 . This is your Habitat Score.

Are the points 22 or greater?

___ Yes. Answer the Wetland Outlet question below and proceed to *Table 2 below to make a preliminary determination of the width of the buffer that may be recommended for a new Development Proposal. You are then done with this assessment.*

✔ No. Answer the Wetland Outlet question below and proceed to question #**10**.

Wetland Outlet?

An outlet is a location where there is visible evidence of the discharge of surface water from a wetland at any season of the year. Although the presence or lack of an outlet does not affect habitat directly, wetlands without outlets tend to be more sensitive because any pollution that reaches them becomes confined and is not diluted significantly. If the presence of an outlet is unclear or uncertain, the wetland should be presumed to not have an outlet.

Does the wetland have an outlet? *Select one:*

_____No
✔ Yes

Table 2

Intensity Level (Land Use Intensity Worksheet)	**Wetland Outlet**	**Habitat Score** (Wetland Buffer Worksheet)			
		40 or higher	**32-39**	**29-31**	**22-28**
Low	Yes	125 ft	75 ft	75 ft	75 ft
	No	150 ft	125 ft	100 ft	75 ft
Moderate	Yes	200 ft	110 ft	110 ft	110 ft
	No	225 ft	175 ft	150 ft	110 ft
High	Yes	250 ft	150 ft	150 ft	150 ft
	No	300 ft	200 ft	175 ft	150 ft

10. Other Priority Wetland Types

Does all or part of the wetland meet the definition of any of the following wetland types? Maps showing known locations of some of these types are available from the County. However, not all locations are known, so you should evaluate your wetland independently to see if it meets these definitions.

___ **Mature Forested Wetland:** A Wetland one (1) acre or larger in size in which the tree canopy within the vegetated part of the Wetland is comprised predominantly of trees having diameters eighteen (18) inches or larger measured at 4.5 feet above ground level or the oldest trees are 80-200 years old; crown cover may be less than 100%; and, decay, decadence, number of snags and quantity of downed material is generally less than found in old-growth forests. County maps will identify Mature Forested Wetlands as they are located through review of Development Proposals. If the criteria are met, put a "**A**" in the space that began this definition.

___ **Large Ponded Wetland**: A non-Estuarine Wetland with visible evidence of at least five (5) acres of standing surface water in any part of the Wetland during most of the Growing Season for a normal year. If the criteria are met, put a "**B**" in the space that began this definition.

___ **Wetland Associated With a Bog, Coastal Lagoon, or Delta Estuary:** A Wetland that has a wetland outlet that connects the Wetland directly to a Bog, Coastal Lagoon or Delta Estuary, or is within 500 feet of a Bog, Coastal Lagoon or Delta Estuary in a n uphill direction and within the same Contributing Area. If the criteria are met, put a "**B**" in the space that began this definition.

B **Anadromous Fish Stream Wetland:** A Wetland that has a Wetland Outlet that connects the Wetland directly to an Anadromous Fish Stream or is within 500 feet of an Anadromous Fish Stream in an uphill direction and within the same Watershed. If the criteria are met, put a "**B**" in the space that began this definition.

___ **Resident Salmonid Stream Wetland:** A Wetland that has a Wetland Outlet that connects the Wetland directly to an Resident Salmonid Stream or is within 500 feet of an Resident Salmonid Stream in an uphill direction and within the same Watershed. If the criteria are met, put a "**C**" in the space that began this definition.

___ **Mosaic Wetland:** A group of two or more Wetlands, each less than one (1) acre in size; located, on average, less than one hundred (100) feet apart; and at least fifty percent (50%) of the surface area of Wetland and upland, taken together, is comprised of Wetlands. The group of Wetlands, including the upland area between the Wetlands, will be regulated as one Wetland. If the criteria are met, put a "**C**" in the space that began this definition.

___ **Small Ponded Wetland:** A non-Estuarine Wetland with visible evidence of water forming a contiguous surface area of at least one (1) acre in any part of the Wetland during most of the Growing Season for a normal year. If the criteria are met, put a "**D**" in the space that began this definition.

___ **Native Plant Wetland:** A Wetland with visible evidence that at least a majority of its vegetated surface area is covered by Native Species at some time of the year. If your wetland received a score of "6" or "3" for question 3 and if the criteria are met, put a "**D**" in the space that began this definition.

___ **(None of the Above).** Put an "**E**" in the space to the left.

11. Using Table 3 below, do a preliminary determination of the width of the buffer for a new Development Proposal. Do so by considering its Wetland Type (from question 10), whether it has an outlet, and the assessment you did using the Land Use Intensity Worksheet. If more than one letter (column headings) applies, select the one resulting in the largest buffer.

Table 3

Intensity Level (Intensity Worksheet)	**Wetland Outlet**	**Wetland Type Category** (from question 10)				
		A	**B**	**C**	**D**	**E**
Low	Yes	40 ft	35 ft	30 ft	25 ft	20 ft
	No	75 ft	50 ft	40 ft	35 ft	25 ft
Moderate	Yes	90 ft	65 ft	55 ft	45 ft	30 ft
	No	105 ft	90 ft	75 ft	60 ft	40 ft
High	Yes	125 ft	✔110 ft	90 ft	65 ft	40 ft
	No	175 ft	150 ft	125 ft	90 ft	50 ft

---

12. For Development Proposals on lots that are sloped between the proposed development and the wetland, increase the buffer recommendation in Table 3 using the multipliers in Table 4. However, a buffer wider than 300 feet will not be required.

Table 4

Slope Gradient	**Additional Buffer Multiplier**
5-14%	1.3
15-40%	1.4
>40%	1.5

Buffers may be decreased, averaged or increased based upon the buffer's condition and ability to perform its functions. The buffer as initially determined from the Land Use Intensity and Wetland Buffer Worksheets is subject to confirmation by the County.

If the wetland and/or buffer size leaves no room for the use of the property, there are options available to make sure that the wetland can be protected and still make your land usable for uses allowed under the zoning code. If this is your situation, please contact the Island County Critical Areas Planner to discuss your options.

Appendix B

Army Corps of Engineers Wetland Determination Data Forms
S1-S2

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: PUD StanCam/525 E North Camano Drive City/County: Island County Sampling Date: 6/8/22

Applicant/Owner: Snohomish County PUD No.1/Same State: WA Sampling Point: S1

Investigator(s): Niels Pedersen Section, Township, Range: 20, 32N, 3E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 15%

Subregion (LRR): A Lat: 48°14'35.34"N Long: 122°27'11.18"W Datum: WGS84

Soil Map Unit Name: Coveland loam, cool, 0 to 5 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☑, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☑ No ☐ Hydric Soil Present? Yes ☐ No ☑ Wetland Hydrology Present? Yes ☐ No ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 5m^2			
1. N/A			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m^2			
1. N/A			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot size: 1m^2			
1. Agrostis sp.*	90%	Y	FAC
2. Ranunculus repens	5%	N	
3. Trifolium sp.	5%	N	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100%	= Total Cover	
Woody Vine Stratum (Plot size: 3m^2			
1. N/A			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☑ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☑ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

*Agrostis could not be identified to species. For the purpose of this vegetation assessment, it is conservatively presumed FAC

SOIL

Sampling Point: S1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-11"	10 YR 2/1	100%					Sandy loam	
11-18"	10 YR 4/3	100%					Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:_____

Depth (inches):_____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: PUD StanCam/525 E North Camano Drive City/County: Island County Sampling Date: 6/8/22

Applicant/Owner: Snohomish County PUD No.1/Same State: WA Sampling Point: S2

Investigator(s): Niels Pedersen Section, Township, Range: 20, 32N, 3E

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 5%

Subregion (LRR): A Lat: 48°14'35.31"N Long: 122°27'11.11"W Datum: WGS84

Soil Map Unit Name: Coveland loam, cool, 0 to 5 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☑, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☑ No ☐ Hydric Soil Present? Yes ☑ No ☐ Wetland Hydrology Present? Yes ☑ No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m^2)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m^2)			
1. N/A			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot size: 1m^2)			
1. Agrostis sp.*	40%	Y	FAC
2. Ranunculus repens	40%	Y	FAC
3. Holcus lanatus	20%	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100%	= Total Cover	
Woody Vine Stratum (Plot size: 3m^2)			
1. N/A			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	0	x 3 =	0
FACU species		x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☑ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

*Agrostis could not be identified to species. For the purpose of this vegetation assessment, it is conservatively presumed FAC.

SOIL

Sampling Point: S2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8"	10 YR 2/1	100%					Sandy loam	
8-15"	10 YR 4/2	85%	10 YR 4/4	15%	C	M	Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:_____

Depth (inches):_____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☑ No ☐ Depth (inches): 8"

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): surface - 8"

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix C

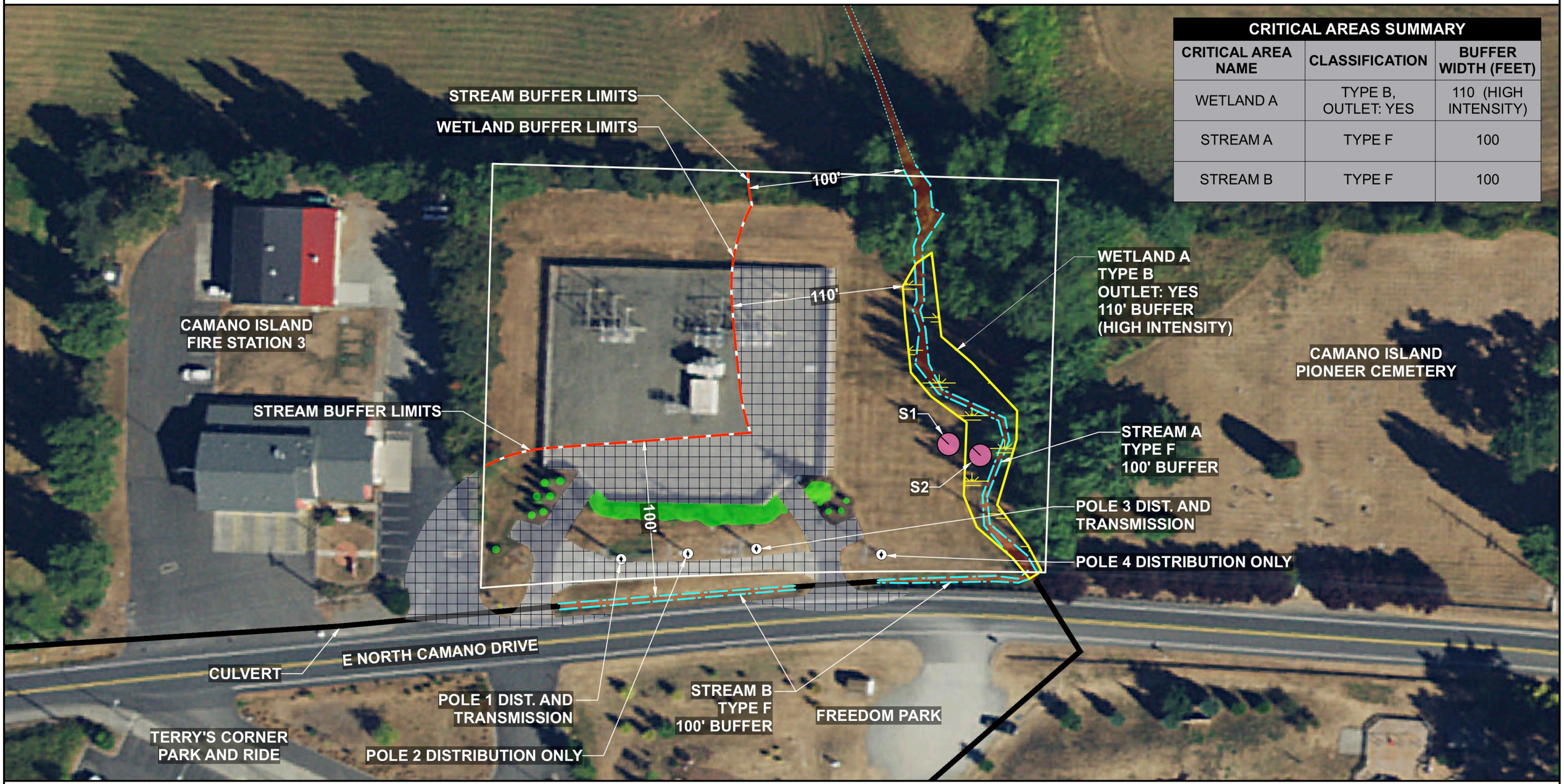
Critical Area Study and Biological Site Assessment Maps
Existing Conditions, Site Plan - Project Impacts and Mitigation

CRITICAL AREA STUDY, BIOLOGICAL SITE ASSESSMENT, AND MITIGATION PLAN MAPS

CAMANO SUBSTATION REBUILD

EXISTING CONDITIONS

CRITICAL AREAS SUMMARY		
CRITICAL AREA NAME	CLASSIFICATION	BUFFER WIDTH (FEET)
WETLAND A	TYPE B, OUTLET: YES	110 (HIGH INTENSITY)
STREAM A	TYPE F	100
STREAM B	TYPE F	100



Scale 1" = 60'

0 30 60 90 120

LEGEND

DELINEATED WETLAND	DELINATED STREAM	PROPERTY BOUNDARY	EX. IMPERVIOUS IN BUFFER	ORNAMENTAL VEG. IN BUFFER
BUFFER	ESTIMATED STREAM	CULVERT	DATA SITES	EXISTING POLE

Wetland Resources, Inc.
Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance
9505 19th Avenue S.E. Suite 106 Everett,Washington 98208
Phone: (425) 337-3174
Fax: (425) 337-3045
Email: mailbox@wetlandresources.com

CAS, BSA, and Mitigation Plan Maps

Camano Substation Rebuild

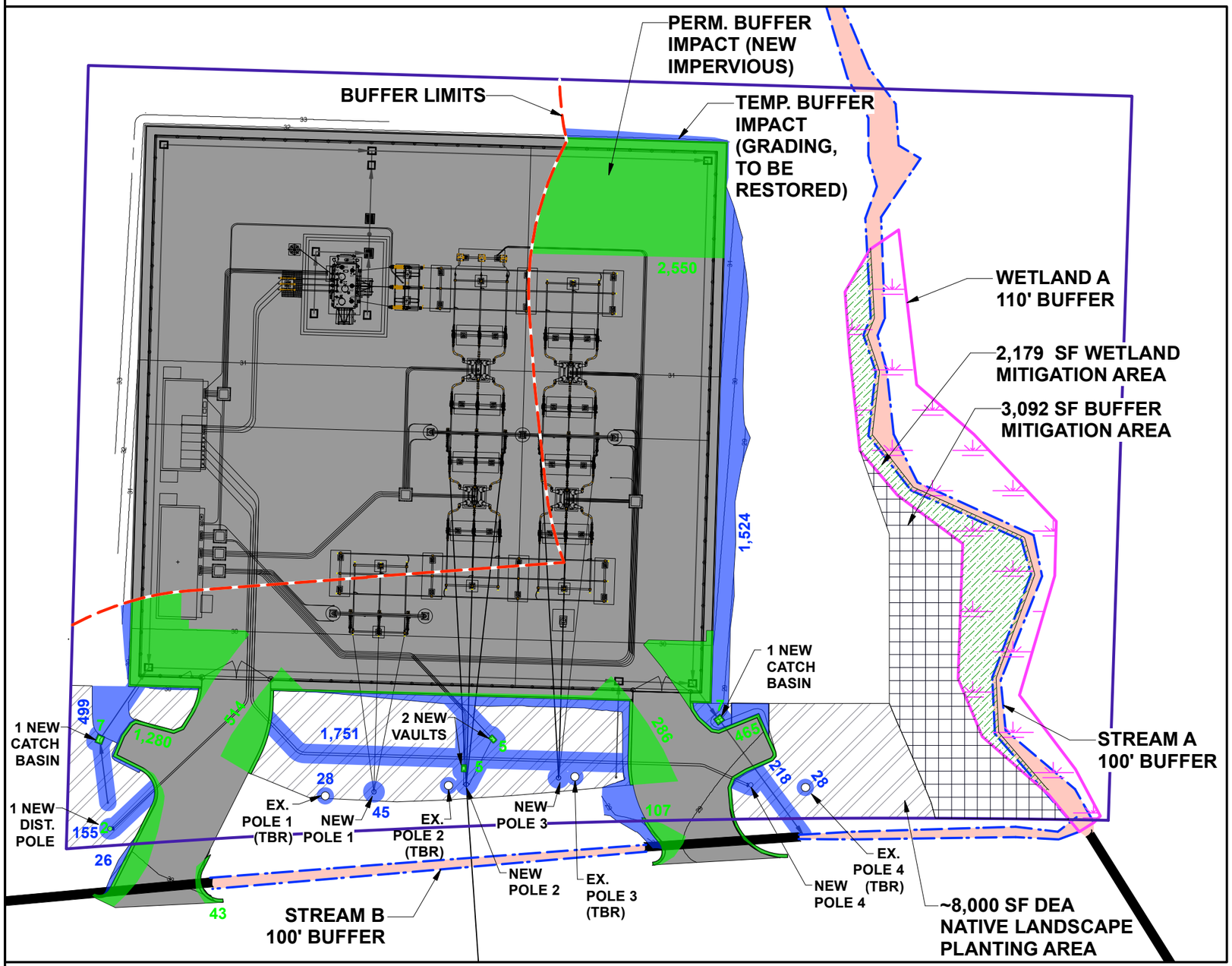
Snohomish County PUD
Attn: Jacob Dahl
PO Box 1107
Everett, WA 98292

Sheet 1/2
WRI Project: 22132
Drawn by:NP
Date: 3/3/2023

CRITICAL AREA STUDY, BIOLOGICAL SITE ASSESSMENT, AND MITIGATION PLAN MAPS

CAMANO SUBSTATION REBUILD

SITE PLAN - PROJECT IMPACTS AND MITIGATION



PERMANENT BUFFER IMPACTS SUMMARY				
IMPACT AREA (SF)	VEGETATION TYPE	MITIGATION RATIO	MITIGATION AREA (SF)	MITIGATION TYPE
5,271	ORNAMENTAL/ LAWN	1:1	5,271	ENHANCEMENT

TEMPORARY BUFFER IMPACTS SUMMARY				
IMPACT AREA (SF)	VEGETATION TYPE	MITIGATION RATIO	MITIGATION AREA (SF)	MITIGATION TYPE
4,274	ORNAMENTAL/ LAWN	1:1	4,274	RESTORATION

Buffer Enhancement Planting Plan (3,092 sq. ft.)

Common Name	Latin Name	Size	Spacing	Qty.
Cascara	*Rhamnus purshiana*	1.5" Caliper	22'	4
Shore pine	*Pinus contorta*	72" Height	22'	3
Vine maple	*Acer circinatum*	48" Height	4.5'	4
Serviceberry	*Amelanchier alnifolia*	48" Height	4.5'	5
Oceanspray	*Holodiscus discolor*	48" Height	4.5'	4
Mock orange	*Philadelphus lewisii*	48" Height	4.5'	4
Pacific rhododendron	*Rhododendron macrophyllum*	48" Height	4.5'	13
Tall Oregon grape	*Mahonia aquifolium*	36" Height	4.5'	25
Dwarf Oregon grape	*Mahonia nervosa*	18" Height	4.5'	33
Red flowering currant	*Ribes sanguineum*	18" Height	4.5'	5
Evergreen huckleberry	*Vaccinium ovatum*	18" Height	4.5'	20
Snowberry	*Symphoricarpos albus*	18" Height	4.5'	20
Sword fern	*Polystichum munitum*	18" Height	4'	58

Wetland Enhancement Planting Plan (2,179 sq. ft.)

Common Name	Latin Name	Size	Spacing	Qty.
Pacific willow	*Salix lucida*	Whip	3'	93
Red osier dogwood	*Cornus sericea*	Whip	3'	100
Black twinberry	*Lonicera involucrata*	Whip	3'	50

PROJECT NOTES

TEMPORARY BUFFER IMPACTS INCLUDE ALL GRADING IN EXISTING LAWN AND ORNAMENTAL VEGETATION. TEMPORARY IMPACTS WILL BE RESTORED IN KIND.

PERMANENT BUFFER IMPACTS INCLUDE ALL NEW IMPERVIOUS SURFACE (OUTSIDE OF EXISTING IMPERVIOUS SURFACE).

THE ICC REQUIRES MITIGATION RATIOS FOR BUFFER IMPACTS ON A CASE-BY-CASE BASIS. THE APPLICANT ASSERTS THAT:
-1:1 ENHANCEMENT ADEQUATELY OFFSETS ALL PERMANENT BUFFER IMPACTS
-1:1 RESTORATION ADEQUATELY OFFSETS ALL TEMPORARY BUFFER IMPACTS
-THIS PROJECT ENSURES NO NET LOSS OF FUNCTIONS BY A COMBINATION OF THE PROPOSED MITIGATION PLAN AND THE APPLICANT'S ~8,000 SQUARE-FOOT NATIVE LANDSCAPE PLAN.

Scale 1" = 40'

0 20 40 60 80

LEGEND

WETLAND
STREAM
STANDARD BUFFER
PROPERTY BOUNDARY
TEMP. BUFFER IMPACT
PERM. BUFFER IMPACT
WETLAND ENHANCEMENT
BUFFER ENHANCEMENT
IMPERVIOUS SURFACE
NATIVE LANDSCAPE PLAN (DEA)

Wetland Resources, Inc.
Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance
9505 19th Avenue S.E. Suite 106 Everett,Washington 98208
Phone: (425) 337-3174
Fax: (425) 337-3045
Email: mailbox@wetlandresources.com

CAS, BSA, and Mitigation Plan Maps
Camano Substation Rebuild

Snohomish County PUD
Attn: Jacob Dahl
PO Box 1107
Everett, WA 98292

Sheet 2/2
WRI Project: 22132
Drawn by:NP
Date: 3/3/2023