

**Wetland Delineation and Stream
Identification Report
Ueland Tree Farm –
Kitsap Lake Property
Kitsap County, Washington**

Ueland Tree Farm, LLC

June 2007
Parametrix

Wetland Delineation and Stream Identification Report

Ueland Tree Farm - Kitsap Lake Property Kitsap County, Washington

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ACRONYMS

Corps	The U.S. Army Corps of Engineers
CWA	Clean Water Act
DNR	Department of Natural Resources
DP	Data Plot
Ecology	Washington State Department of Ecology
FAC	Facultative Plants
FACW	Facultative Wetland Plants
FWHCA	Fish and Wildlife Habitat Conservation Area
FWS	Fish and Wildlife Service
HGM	Hydrogeomorphic
HPA	Hydraulic Project Approval
KCC	Kitsap County Code
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate Plants
SCS	Soil Conservation Service
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Society
UPL	Upland Plants
WDFW	Washington Department of Fish and Wildlife

1. INTRODUCTION

1.1 PROJECT OVERVIEW

Ueland Tree Farms, LLC (UTF) requested Parametrix to identify and delineate wetlands and describe streams on portions of the 1,716-acre UTF site, located in unincorporated Kitsap County, Washington just west of Kitsap Lake (Figure 1-1). The project site is located in Sections 13, 18, 19, and 24, Township 24N, Ranges 01W and 01E.

Preliminary development plans for the site include two sand and gravel mines and two basalt quarry sites. Under the current proposal for the site, approximately 30 acres (1.7% of the site) would be used for gravel extraction, and approximately 120 acres (7.0% of the site) for quarries.

1.2 PURPOSE OF REPORT

Parametrix has prepared this report to describe wetlands and streams in the project area. Investigation of sensitive areas, including wetlands, is required by Title 19 of the Kitsap County Code (KCC). Other sensitive areas regulated by Kitsap County, such as frequently flooded areas and geologic hazard areas, are not addressed in this report. Wetlands and wetland boundaries presented herein have not been confirmed by Kitsap County or any other regulatory agency as of the date of this report. Information in this report will be used to facilitate project planning and ultimately to support necessary project permits.

An evaluation of any development impacts, permitting requirements, or mitigation requirements is beyond the scope of this report and will be addressed as part of a project specific plan that will be prepared at a later date.

1.2.1 Study Area

The study area for the wetland delineation consisted of the proposed sand and gravel and quarry sites including a 300-foot distance around each of the sites' boundaries.

1.3 APPLICABLE LAWS AND REGULATIONS

Wetlands and streams in the project area are subject to federal, state, and county regulations. At the federal level, wetlands and streams are protected by Section 404 of the Clean Water Act (CWA), which regulates placement of fill in waters of the United States. The U.S. Army Corps of Engineers (Corps) is responsible for implementing permits under Section 404 of the CWA. Activities that affect wetlands and streams may also require a water quality certification (Section 401 of the CWA), which is implemented at the state level by the Washington State Department of Ecology (Ecology). In implementing Section 401, Ecology reviews projects for compliance with state water quality standards, and makes permitting and mitigation decisions based on the nature and extent of impacts, as well as the type and quality of wetlands/streams being affected. Activities that use, divert, obstruct, or change the flow of a water of the state, including some wetlands, typically require a Hydraulic Project Approval (HPA) permit from the state. The Washington Department of Fish and Wildlife (WDFW) is responsible for implementing HPAs under the State Hydraulic Code (WDFW 2003). Under Title 19 of the KCC, Kitsap County designates and regulates activities within critical areas and their buffers, including wetlands. Title 19 describes the County's requirements for the

identification, rating, and categorization of wetlands, buffers, mitigation, and performance standards, as well as the requirements for wetland reports.

2. METHODS

This report is based on a review of existing information and field investigations. The goal of these efforts was to document current site conditions and collect information to support project planning and design.

2.1 REVIEW OF EXISTING INFORMATION

Prior to conducting fieldwork, Parametrix reviewed maps and existing information on soils, hydrology, topography, land use, wetlands, and streams in the study area. Appendix A and B contain copies of the NWI and Soils Map of the property, respectively. Existing data sources that were reviewed for this report included, but were not limited to:

- National Wetlands Inventory (NWI), Bremerton West, Washington quadrangle (U.S. Fish and Wildlife Service [FWS] 1987)
- USGS Topographic Quadrangle Map, Bremerton West, WA (U.S. Geological Survey [USGS] 1981)
- Soil Survey of Kitsap County Area, Washington (McMurphy 1980)
- Salmonid Habitat Limiting Factors WRIA 15 (East) (Haring 2000)
- A Catalog of Washington Streams and Salmon Utilization. Volume 1, Puget Sound Region (Williams et al. 1975)
- Kitsap County Zoning Map (Kitsap County 2006)
- Draft Ueland Tree Farm Sub-Basin Assessment Report (Parametrix 2007)

2.2 FIELD INVESTIGATION

Parametrix performed field investigations and reconnaissance during the months of March and April 2007 on the following days: March 6, March 13, March 16, March 20, March 26 and April 4. These visits included wetland identification and delineation.

2.2.1 Wetland Identification

Wetlands are defined as those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (Environmental Laboratory 1987; KCC 19.200.210). Wetlands in the study area were identified and delineated using methods specified in KCC 19.200.210; the Washington State Wetland Identification and Delineation Manual and the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (Ecology 1997; Environmental Laboratory 1987).

To be considered a wetland, an area must have (1) hydrophytic (wetland) vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that do not support indicators for one or more of these three parameters are generally not jurisdictional wetlands. Parametrix established the boundary between wetland and upland by determining where the three wetland parameters were present or absent. These boundaries were marked with sequentially numbered, pink “wetland delineation” flagging and surveyed by a professional land surveyor. Wetlands were

labeled in the order in which they were encountered in the field, and labeling does not reflect geographic location.

To verify and document the wetland determinations, Parametrix collected data and photographs (Appendix C) at locations representative of the typical wetland conditions or dominant plant communities on the site. At these sampling locations (data plots), Parametrix recorded vegetation, soil, and hydrologic information on data sheets (Appendix D). For comparison purposes, additional data plots were established in adjacent upland areas to document differences in vegetation, soil, and hydrology. Data plots were labeled with blue and white striped flagging and surveyed by a professional land surveyor. The field indicators used to determine the presence of wetland vegetation, hydric soil, and wetland hydrology is described in the following sections.

2.2.1.1 Vegetation

To determine if the vegetation was hydrophytic, the dominant plants in a representative data plot and their wetland indicator status were identified. Hydrophytic vegetation is generally defined as vegetation adapted to inundated or saturated soil conditions. To meet the hydrophytic vegetation criterion, more than 50 percent of the dominant plants must be Facultative (FAC), Facultative Wetland (FACW), or Obligate (OBL) plants, based on the plant indicator status category assigned to each plant species by the FWS (Reed 1997). Table 2-1 lists the definitions of the indicator status categories.

Table 2-1. Key to Plant Indicator Status Categories

Plant Indicator Status Category	Symbol	Definition
Obligate Wetland Plants	OBL	Plants that almost always (> 99% of the time) occur in wetlands, but which may rarely (< 1% of the time) occur in non-wetlands.
Facultative Wetland Plants	FACW	Plants that often (67 to 99% of the time) occur in wetlands, but sometimes (1 to 33% of the time) occur in non-wetlands.
Facultative Plants	FAC	Plants with a similar likelihood (33 to 66% of the time) of occurring in both wetlands and non-wetlands.
Facultative Upland Plants	FACU	Plants that sometimes (1 to 33% of the time) occur in wetlands, but occur more often (67 to 99% of the time) in non-wetlands.
Upland Plants	UPL	Plants that rarely (< 1% of the time) occur in wetlands and almost always (> 99% of the time) occur in non-wetlands.

Source: Environmental Laboratory (1987).

Scientific and common plant names follow currently accepted nomenclature. Most names are consistent with Flora of the Pacific Northwest (Hitchcock and Cronquist 1973) and the PLANTS Database (U.S. Department of Agriculture, Natural Resources Conservation Service [USDA, NRCS] 2004). During the field investigation, dominant plant species were observed and recorded on data sheets for each data plot (Appendix D).

2.2.1.2 Soils

Soils were observed in the field by excavating sample pits to a depth of at least 18 inches to examine the soil profiles, colors, and textures. Soil descriptions were recorded for soil profiles at each data plot to determine whether hydric soil indicators were present. Hydric soil forms when the soil is saturated or ponded long enough during the growing season to develop anaerobic conditions in the upper part. Biological activities in saturated soil result in reduced oxygen concentrations. Over time, anaerobic biological processes result in certain soil color patterns, which are used as indicators of hydric soil. Typically, low-chroma colors are formed in the soil matrix. Bright-colored redoximorphic features form within the matrix by oxidizing iron or manganese during fluctuating water levels. Other indicators include the presence of high organic content in the surface horizon, organic matter staining in the subsurface, and a reduced sulfidic odor. Munsell color charts (Greytage Macbeth 2000) were used to describe soil colors.

2.2.1.3 Hydrology

The study area was examined for evidence of hydrology. An area is considered to have wetland hydrology when soils are ponded or saturated for at least 12.5 percent (in some cases 5 percent) of the growing season. In Kitsap County (i.e., the Bremerton area) the growing season generally lasts from the end of February (February 28) to the beginning of December (December 10); therefore, ponding or saturation must be present for approximately 14 consecutive days. Primary indicators of hydrology include surface inundation and saturated soils. Secondary indicators of hydrology include drainage patterns, watermarks on vegetation, drift lines, sediment deposits, water-stained leaves, and oxidized root channels.

2.2.2 Wetland Classification and Rating

Wetlands within the study area were classified according to the FWS Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979) and the hydrogeomorphic (HGM) classification (Brinson 1993 as modified by Hruby 2004). Wetlands were rated using the Washington State Wetland Rating System for Western Washington, Revised (Hruby 2004) as specified in KCC 19.200.210 (Appendix E). Buffer widths assigned to wetlands reflect the County's requirements (KCC 19.200.220).

2.2.3 Wetland Function Assessment

Parametrix staff assessed the functions of individual wetlands qualitatively based upon the presence of certain environmental characteristics. For example, an area of open water in a wetland is characteristic of a wetland that provides habitat for waterfowl or aquatic animals. The upland habitats and buffers surrounding wetlands were also considered in the evaluation because these contribute to overall wildlife lifecycles and ecosystem sustainability.

Functions considered most relevant to this site are grouped broadly into three categories: hydrology, water quality, and habitat. Hydrological functions include groundwater recharge and discharge, baseflow support, and flood flow alteration (storage and desynchronization). Water quality functions include water quality protection and enhancement through sedimentation, erosion protection, and nutrient retention/transformation. Habitat functions include providing fish, avian species, and other wildlife access to food, cover, breeding, and rearing opportunities.

2.3 STREAMS

According to KCC 19.150.635, "Streams" mean those areas in Kitsap County where the surface water flows are sufficient to produce a defined channel or bed. A defined channel or bed is an area which demonstrates clear evidence of the passage of water and includes, but is not limited to, bedrock channels, gravel beds, sand and silt beds, and defined-channel swales. The channel or bed need not contain water year-round. This definition is not meant to include irrigation ditches, canals, storm or surface water runoff devices or other artificial watercourses unless they are used by fish or used to convey streams naturally occurring prior to construction.

2.3.1 Field Methods

Parametrix performed a field investigation and reconnaissance on March 16 and May 16, 2007, that included the identification of intermittent streams. The study area was visually inspected for evidence of the passage of water, including defined channels, swales, and beds.

2.3.2 Stream Classifications

According to KCC 19.300.310, streams are classified pursuant to the Washington Department of Natural Resources (DNR). The DNR Water Typing System, which identifies streams as Type S, F, Np or Ns waters, are set forth in WAC 222-16-030. According to KCC 19.800, Type S streams are those surface waters that are inventoried as "Shorelines of the State" under the Shoreline Management Master Program for Kitsap County, pursuant to RCW Chapter 90.58. Type S waters contain salmonid fish habitat. Type F streams are those surface waters that contain habitat for salmonid fish, game fish and other anadromous fish. Type Np streams are those surface waters that do not contain fish habitat. Type Ns streams are those surface waters that are areas of perennial or intermittent seepage, ponds, and drainage ways having short periods of spring or storm runoff. Type Ns waters do not contain fish.

3. RESULTS

This section summarizes general site characteristics of the project area, as well as detailed information on the sixteen wetlands located on the property. Information summarized here includes watershed, topography, soils, vegetation, and wildlife based on existing information review and field investigation.

3.1 SUMMARY OF EXISTING INFORMATION

An investigation of the study area using the USGS topographic map and the NWI Wetlands Online Mapper program revealed two mapped creeks, Dickerson Creek and its main unnamed tributary, plus 20 mapped wetlands of various classifications. These wetlands were mapped throughout the project site, but were mostly concentrated in the middle of the property where topographic swales and seasonal streams occur. Location of NWI wetlands are shown on wetland figures.

According to the Kitsap County Soil Survey (McMurphy 1980) and hydric soils list (USDA, NRCS 2001) four hydric soils (McKenna gravelly loam, Harstine gravelly loam, Alderwood very gravelly sandy loam, and Indianola loamy sand) are mapped in this area (Appendix C). Additional information on soils is provided in Section 3.3.1.

3.2 WATERSHED AND LAND USE

The project area resides within the Chico and Gorst Creek watersheds with the majority of the property in the Dickerson Creek sub-basin. This sub-basin is located in the Chico Creek watershed (WRIA 15) (Williams et al. 1975). Water flowing from this basin ultimately drains into Dyes Inlet in Puget Sound. Portions of the proposed quarry area drain to an unnamed intermittent stream that discharges to Alexander Lake, which drains to Gorst Creek and Sinclair Inlet. For more detailed information on the sub-basins, refer to the Ueland Tree Farm Kitsap Lake Property Draft Sub-Basin Assessment (Parametrix 2007).

The topography on the property varies with an elevation of roughly 200 feet in the northeast section rising to over 1,000 feet in the west and southwest. A series of logging roads traverse the property with the primary access to the site from the northeast border via Lebers Lane.

Land use on the property is currently zoned as Rural Wooded and Long-Term Forestry by Kitsap County. The property and the surrounding forested areas have been managed for commercial forestry, and the majority of the land is forested with third conifer growth. The natural wooded environment has long been used by recreationalists for activities such as hiking, biking, camping, hunting, and wildlife viewing.

3.3 GENERAL SITE CHARACTERISTICS

3.3.1 Soils

The project area contains eleven mapped soil types: Alderwood very gravelly sandy loam 0 to 6 percent slopes; Alderwood very gravelly sandy loam 6 to 15 percent slopes; Dystric Xerothents 45 to 70 percent slopes; Harstine gravelly sandy loam 30 to 45 percent slopes; Indianola loamy sand 15 to 30 percent slopes; Kilchis very gravelly sandy loam 15 to 30 percent slopes; Kilchis very gravelly sandy loam 30 to 70 percent slopes; Kilchis-Shelton complex 30 to 50 percent slopes; McKenna gravelly loam; Neilton gravelly loam sand 0 to 3

percent slopes; and, Schneider very gravelly sandy loam 15 to 30 percent slopes (NCSS Web Soil Survey, 2007).

The Alderwood series is moderately well-drained and formed in glacial till on broad uplands. The Harstine series is also a moderately well drained soil formed in sandy glacial tills on uplands. The Indianola series is a very deep, somewhat excessively drained soil formed in sandy glacial drift on terraces, terrace escarpments, eskers, and kames at elevations of near sea level to 1,000 feet. The Kilchis series is a shallow, well drained soil that formed in loamy colluvium and residuum weathered from basalt and other basic igneous rocks. The McKenna series consists of moderately deep to dense till, poorly drained soils formed in glacial drift depressions and drainageways. The Neilton series consists of very deep, excessively drained soils that formed in glacial outwash, and are found on terraces and terrace escarpments. The Schneider series is a deep, well drained soil formed in colluvium from basalt or andesite and volcanic ash, and is found on foothills and mountains. The Shelton series consists of moderately deep, moderately well drained soils that formed in glacial till, and are found on undulating to rolling glacial moraines. According to the USDA, NRCS list of the hydric soils for the state of Washington, only the Alderwood, Harstine, Indianola, and McKenna series are considered hydric. Descriptions of soils examined during the field investigation are presented in Section 3.4.

3.3.2 Vegetation and Wildlife

Vegetation on the property reflects commercial forest activity with a mosaic of different forest age classes and land cover. The upland forest is predominately coniferous and occurs throughout a majority of the property. This vegetation type is dominated by Douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), red alder (*Alnus rubra*), evergreen huckleberry (*Vaccinium ovatum*), salal (*Gaultheria shallon*), and salmonberry (*Rubus spectabilis*) with lesser amounts of oceanspray (*Holodiscus discolor*), Indian plum (*Oemleria cerasiformis*), trailing blackberry (*Rubus ursinus*), bracken fern (*Pteridium aquilinum*), and sword fern (*Polystichum munitum*). The wetland areas consist of three vegetation communities: forested, scrub-shrub, and emergent (discussed in detail in Section 3.4).

Wildlife observed on the site include several species of birds that are common throughout the Puget Sound lowlands, including: bufflehead (*Bucephala albeola*), great blue heron (*Ardea herodias*), bald eagle (*Haliaeetus leucocephalus*), red-tailed hawk (*Buteo jamaicensis*), osprey (*Pandion haliaetus*), black-capped chickadee (*Poecile atricapillus*), winter wren (*Troglodytes troglodytes*), dark-eyed junco (*Junco hyemalis*), American robin (*Turdus migratorius*), northern flicker (*Colaptes auratus*), rufous hummingbird (*Selasphorus rufus*), and white-crowned sparrow (*Zonotrichia leucophrys*). Two black bears (*Ursus americanus*) were sighted during one field visit. Deer (*Odocoileus* spp.) sightings throughout the property and recent beaver (*Castor canadensis*) activity in some of the wetlands were also noted. Reptiles and amphibians encountered in the field include the common garter snake (*Thamnophis sirtalis*) and the Pacific tree frog (*Pseudacris regilla*). Because the property is relatively large and is relatively undisturbed by human activity, the potential for a wide variety of birds, mammals, reptiles and amphibians to occur on the property is high; therefore, the list of species that may reside and/or use the property is quite large. A preliminary list of wildlife that may use the site is provided in Appendix F of this report.

3.4 WETLANDS

Parametrix identified and delineated sixteen wetlands within the study area (Wetlands 1-3, 5-15, 17, and 19). Wetland locations are shown in Figures 3-1, 3-2, 3-3, and 3-4. Note that due to the process by which wetlands were numbered in the field, no wetlands were assigned numbers 4, 16, or 18. General wetland characteristics of Wetlands 1-19 are summarized in Table 3-1 and are discussed in greater detail below. Determination of the wetland edge was based on the presence of hydric soils, wetland vegetation, and wetland hydrology. Specific information for each of the data plots is provided in Appendix D. The wetland rating forms, including wetland functions, are located in Appendix E.

Table 3-1. Wetland Summary for UTF Property Study Area

Wetland	Ecology Rating	Kitsap County Rating	Area (ac)	FWS Classification	Intensity of Use ¹	Base Buffer Width Requirement (feet)	Habitat Score ²	Additional Land Use Buffer Width for Intensity ^{1,2}	Total Buffer Width
1	III	III	1.19	Palustrine Forested/Scrub-Shrub/Emergent	High	50	27	100	150
2	III	III	0.02	Palustrine Forested	High	50	18	30	80
3	III	III	0.10	Palustrine Scrub-Shrub	High	50	18	30	80
5	III	III	0.04	Palustrine Emergent/Scrub-Shrub	High	50	19	30	80
6 Complex	II	II	3.46	Palustrine Forested/Scrub-Shrub/Emergent	High	100	30	100	200
7	III	III	0.19	Palustrine Scrub-Shrub	High	50	18	30	80
8	III	III	0.03	Palustrine Forested	High	50	17	30	80
9	III	III	1.27	Palustrine Scrub-Shrub	High	50	18	30	80
10	III	III	0.05	Palustrine Forested	High	50	19	30	80
11	III	III	3.07	Palustrine Scrub-Shrub	High	50	18	30	80
12	III	III	0.07	Palustrine Forested	High	50	18	30	80
13	III	III	1.79	Palustrine Forested	High	50	24	100	150
14	III	III	0.06	Palustrine Scrub-Shrub	High	50	17	30	80
15	III	III	1.55	Palustrine Open Water	High	50	21	100	150
17	III	III	0.12	Palustrine Scrub-Shrub	High	50	18	30	80
19	III	III	0.40	Palustrine Scrub-Shrub	High	50	18	30	80

¹ Mining considered "High Intensity Use"² Habitat scores 20-28 require an additional 100-foot buffer width. Habitat score less than 20 feet require an additional 30-foot buffer width.

3.4.1 Wetland 1

Watershed: Chico Creek

Sub-Basin: Dickerson Creek

FWS Classification: Palustrine Forested/Scrub-Shrub/Emergent

HGM Classification: Depressional/Riverine

Ecology Rating: Category III

Kitsap County Rating: Category III

Wetland 1 is a palustrine forested/scrub-shrub/emergent wetland that is located in the eastern portion of the proposed quarry area. Wetland 1 is a long linear wetland that covers approximately 1.19 acres (51,706 square feet). Under the HGM classification, Wetland 1 is a depressional/riverine wetland.

Wetland 1 contains multiple vegetation classes: forested, scrub-shrub, and emergent. Wetland 1 is dominated by a red alder (*Alnus rubra*), western hemlock (*Tsuga heterophylla*), and Douglas fir (*Pseudotsuga menziesii*) overstory that is rooted near the boundaries of the wetland. The understory is comprised primarily of salmonberry (*Rubus spectabilis*), slough sedge (*Carex obnupta*), and water parsley (*Oenanthe sarmentosa*). Other common plants include coltsfoot (*Petasites palmatus*), devil's club (*Oplopanax horridus*), sword fern (*Polystichum munitum*) (on hummocks), and hardhack (*Spiraea douglasii*).

Soil examined in the northern portion of the wetland (DP W1-3) consisted of a very dark gray (10YR 3/1) silt loam upper horizon with organic debris. This horizon was over a very dark grayish brown (10YR 3/2) gravelly silt loam. Soil examined in the southern portion of the wetland (DP W1-4) consisted of a black (10YR 2/1) muck over a very dark grayish brown (2.5Y 3/2) horizon with strong brown (7.5YR 4/6) mottles. Below these horizons was a black (10YR 2/1) muck with (10YR 5/8) mottles. Hydric soil indicators include high organic content in the surface layer, low chroma matrix colors, and redoximorphic features.

The primary source of wetland hydrology is groundwater discharge resulting from a seasonally high groundwater table. Soils were inundated or saturated in the upper 12 inches. The lower end of the wetland had a defined channel, with flowing water and evidence of overbank flow. Wetland 1 discharges to Stream S13 at its northern tip. The southern end of the wetland was inundated with approximately three feet of water at the time of the delineation.

The wetland is bordered by forested uplands to the east and logged uplands to the west. The uplands adjoining Wetland 1 are comprised primarily of western hemlock, Douglas fir, oceanspray (*Holodiscus discolor*), salal (*Gaultheria shallon*), evergreen huckleberry (*Vaccinium ovatum*), and sword fern (*Polystichum munitum*). Soils sampled in the upland, west of Wetland 1 (DP W1-5) were a dry, dark yellowish brown (10YR 4/6) sandy loam to a depth of 18 inches. No wetland hydrology or hydric soil indicators were observed.

Wetland 1 is rated a Category III (in accordance with Kitsap County Code (KCC)19.200.210) using the Washington State Wetland Rating System for Western Washington, Revised (Hruby 2004). Wetland 1 scored 41 points on the rating form (6 points for water quality functions, 8 points for hydrologic functions, and 27 points for habitat functions) (Appendix E). Under KCC 19.200.220, Category III wetlands require a 50-foot base buffer. Additionally, Category III wetlands that have a high intensity of use with a habitat score between 20-28 points require an extra 100-foot buffer according to KCC 19.200.220 (D), making the total buffer requirement for Wetland 1 150-feet.

3.4.2 Wetland 2

Watershed: Chico Creek
Sub-Basin: Dickerson Creek
FWS Classification: Palustrine Forested
HGM Classification: Depressional
Ecology Rating: Category III
Kitsap County Rating: Category III

Wetland 2 is a palustrine forested wetland located in the southeastern portion of the proposed quarry area just west of Wetland 1 and east of Wetland 12. Wetland 2 covers approximately 0.02 acre (91,042 square feet) on the property. Under the HGM classification, Wetland 2 is a depressional wetland.

Wetland 2 contains one vegetation community: forested. The forested area is dominated by a red alder overstory. The understory is primarily comprised of Dewey's sedge (*Carex deweyana*), salal, and Pacific water parsley.

Soil examined in the northern portion of the wetland (DP W2-1) consisted of a black (10YR 2/1) soil. Hydric soil indicators included low chroma matrix colors and redoximorphic features.

The primary source of wetland hydrology is groundwater discharge resulting from a seasonally high groundwater table. Soils were inundated or saturated in the upper 12 inches, and Wetland 2 had standing water approximately two feet deep at the time of delineation.

The wetland is bordered by forested uplands comprised primarily of western hemlock, evergreen huckleberry, salal, and sword fern. Soils sampled in the upland, southwest of Wetland 2 (DP W2-2) consisted of a one inch duff layer over a dry, dark brown (7.5YR 3/3) gravelly sandy loam to a depth of 18 inches. No wetland hydrology or hydric soil indicators were observed.

Wetland 2 is rated a Category III, scoring 35 points on the rating form (7 points for water quality functions, 10 points for hydrologic functions, and 18 points for habitat functions) (Appendix E). Category III wetlands require a 50-foot base buffer. Additionally, Category III wetlands that have a high intensity of use with a habitat score less than 20 points require an extra 30-foot buffer according to KCC 19.200.220(D), making the total buffer requirement for Wetland 2 80-feet.

3.4.3 Wetland 3

Watershed: Chico Creek
Sub-Basin: Dickerson Creek
FWS Classification: Palustrine Scrub-shrub
HGM Classification: Depressional
Ecology Rating: Category III
Kitsap County Rating: Category III

Wetland 3 is palustrine scrub-shrub wetland located in the eastern portion of the proposed quarry area just west of Wetland 1 and north of Wetland 2. Wetland 3 is a small wetland that covers approximately 0.10 acre (4,269 square feet). Under the HGM classification, Wetland 3 is a depressional wetland.

Wetland 3 contains one vegetation class: scrub-shrub. Wetland 3 is dominated by willow (*Salix* spp.) and buckwheat (*Polygonum* spp.). Other plants within the wetland include Douglas fir, salal, and bracken fern (*Pteridium aquilinum*).

Soil examined in the western portion of the wetland (DP W3-1) consisted of one uniform horizon of very dark grayish brown (10YR 3/2) sandy loam soil. Hydric soil indicators included low chroma matrix colors and redoximorphic features.

The primary source of wetland hydrology is groundwater discharge resulting from a seasonally high groundwater table. Soils were inundated or saturated in the upper 12 inches, and most of Wetland 3 had standing water approximately three feet deep at the time of delineation.

The wetland is surrounded by upland shrubs that include red huckleberry (*Vaccinium parvifolium*), evergreen huckleberry, and oceanspray. Soils sampled in the upland, northeast of Wetland 3 (DP W3-2) were a dry, dark yellowish brown (10YR 4/6) sandy loam to a depth of 18 inches. No wetland hydrology or hydric soil indicators were observed.

Wetland 3 is rated a Category III, scoring 38 points on the rating form (8 points for water quality functions, 12 points for hydrologic functions, and 18 points for habitat functions) (Appendix E). Category III wetlands require a 50-foot base buffer, plus an additional 30-foot habitat buffer, making the total buffer requirements for Wetland 3 80-feet.

3.4.4 Wetland 5

Watershed: Chico Creek

Sub-Basin: Dickerson Creek

FWS Classification: Palustrine Emergent/Scrub-shrub

HGM Classification: Depressional

Ecology Rating: Category III

Kitsap County Rating: Category III

Wetland 5 is a palustrine emergent/scrub-shrub wetland located near the middle of the proposed quarry area just west of Wetland 3 and north of Wetland 7. Wetland 5 is a small wetland that covers approximately 0.04 acre (1,873 square feet). Under the HGM classification, Wetland 5 is a depressional wetland.

Wetland 5 contains two vegetation classes: emergent and scrub-shrub. Wetland 5 is dominated by emergent vegetation that includes bentgrass (*Agrostis* spp.), Pacific water parsley, slough sedge, and common rush (*Juncus effusus*). Shrubs present in the wetland include hardhack (*Spirea douglasii*) and willow, which were generally under three feet tall. A high percentage of downed logs and debris were noted within the wetland.

Soil examined in the western portion of the wetland (DP W5-1) consisted of a black (10YR 2/1) silt gravel loam upper horizon. This horizon was over yet another black (10YR 2/1) silt gravel loam with dark yellowish brown (10YR 4/6) inclusions. Soils were disturbed within this wetland. Hydric soil indicators included low chroma matrix colors, high sulfuric odor, and redoximorphic features.

The primary source of wetland hydrology is groundwater discharge resulting from a seasonally high groundwater table. Soils were inundated, and most of the wetland had one to two feet of standing water at the time of delineation. The water is confined in a linear swale that extends in an east to west direction.

The wetland is surrounded by clear-cut areas with signs of early successional vegetation that includes Douglas fir saplings, western hemlock, oceanspray, salal, sword fern, dull Oregon-grape (*Mahonia nervosa*), trailing blackberry (*Rubus ursinus*), evergreen huckleberry, and a trace amount of slough sedge. Soils sampled in the upland, northeast of Wetland 5 (DP W5-2) contained a duff layer over a dry, dark brown (7.5YR 3/4) gravelly loam to a depth of 16 inches. No wetland hydrology or hydric soil indicators were observed.

Wetland 5 is rated a Category III, scoring 39 points on the rating form (8 points for water quality functions, 12 points for hydrologic functions, and 19 points for habitat functions) (Appendix E). Category III wetlands require a 50-foot base buffer, plus an additional 30-foot habitat buffer, making the total buffer requirements for Wetland 5 80-feet.

3.4.5 Wetland 6

Watershed: Chico Creek

Sub-Basin: Dickerson Creek

FWS Classification: Palustrine Forested/Scrub-shrub/Emergent

HGM Classification: Depressional

Ecology Rating: Category II

Kitsap County Rating: Category II

Wetland 6 is a palustrine forested/scrub-shrub/emergent wetland that is located in the western portion of the proposed quarry area. Wetland 6 is a complex long and linear wetland that covers approximately 3.46 acres (150,849 square feet). Under the HGM classification, Wetland 6 is a depressional wetland.

Wetland 6 contains multiple vegetation classes: forested, scrub-shrub, and emergent. The southern portion of the wetland is a predominately open system with emergent vegetation such as skunk cabbage (*Lysichiton americanum*), Pacific water parsley, false lily of the valley (*Maianthemum dilatatum*), lady fern (*Athyrium filix-femina*), and bulrush (*Scirpus microcarpus*). The shrub community is comprised primarily of red alder saplings, devil's club, and salmonberry. Salal was also found growing on hummocks within the wetland. Moving northward along Wetland 6, patches of devil's club become predominant in places as well as slough sedge, in addition to the emergent and scrub-shrub vegetation found in the southern end of the wetland. Downed woody debris and large snags become more predominant in the middle of Wetland 6. In the northern most section of the wetland, red alder becomes the dominant species. American brooklime (*Veronica americana*), giant horsetail (*Equisetum telmateia*), devil's club (*Oplopanax horridus*), Pacific water parsley, deer fern (*Blechnum spicant*), bulrush (*Scirpus microcarpus*), and skunk cabbage become the prevailing wetland vegetation in this portion of the wetland. Sword fern and salal are also found growing on hummocks within the wetland boundary as well as rooted outside the wetland.

Soil examined in the southern portion of the wetland (DP W6-1) consisted of a black (10YR 2/1) muck with organic debris to a depth of eighteen inches. In the middle of the wetland (DP W6A-1), soil examined here consisted of a black (10YR 2/1) mucky loam with few, small and prominent dark yellowish brown (10YR 5/8) mottles to a depth of twelve inches. Below this horizon was a very dark grayish brown black (10YR 3/2) silt loam with few, medium-sized and prominent dark yellowish brown (10YR 4/6) mottles. Organic streaking was noted in the lower horizon of this soil profile. At the northern end of the wetland (DP W6C-1), a black (10YR 2/1) sandy muck was observed to a depth of eighteen inches. This horizon had strong brown (10YR 5/8) mottles that were few, fine and distinct. Hydric soil indicators

include high organic content in the surface layer, low chroma matrix colors, and redoximorphic features.

The primary source of wetland hydrology is an intermittent stream from the north fed by precipitation and sustained by a high groundwater table. Depending on the topography, this stream runs either north or south, and is topographically confined to a ravine that widens and narrows throughout the course of the wetland. Soils were inundated or saturated in the upper 12 inches, and most of Wetland 6 had flowing water. The southern end of the wetland was dammed by old beaver activity while the northern section of the wetland ended in a large body of ponded water at least three to five feet deep with signs of recent beaver activity (Figure 3-2).

The entire wetland is bordered mostly by forested uplands. However, in some places, the wetland is surrounded by active clear-cut areas and remnants of previous logging activity, most notably in the western arm of the wetland where the boundary has been estimated. The upland areas are comprised primarily of western hemlock, red cedar (*Thuja plicata*), salal, evergreen huckleberry, red huckleberry, trailing blackberry, salmonberry, bracken fern, and sword fern. Upland species found in the northern part of the wetland include Pacific bleeding heart (*Dicentra formosa*), thistle (*Cirsium* spp.), and elderberry (*Sambucus racemosa*). Soils sampled in the upland, in the middle of the wetland to the north of Wetland 6 (DP6A-2) had a two inch duff layer over a dry, dark brown (10YR 3/3) silty loam to a depth of six inches. This horizon contained few, small, but distinct dark yellowish brown (10YR 4/6) mottles. Beneath this horizon to a depth of twelve inches was a moist soil of exactly the same characteristics of the previous horizon. Further soil exploration was unattainable at this point due to the fact that a log was encountered at the twelve inch mark. In the northeastern section of Wetland 6, soils sampled in the upland consisted of a dark brown (7.5YR 3/2) loam with no mottles to a depth of six inches. Following this horizon was a strong brown (7.5YR 4/6) sandy gravelly loam to a depth of eighteen inches. No wetland hydrology or hydric soil indicators were observed in these upland areas.

Wetland 6 provides high biologic functions due to its large size, location in the landscape, and vegetative complexity. The wetland merits a high rating for amphibian habitat due to its prevalence of thin-stemmed emergent vegetation and relatively stable hydrology required for amphibian breeding. This wetland also provides a source of water to a variety of wildlife during the fall, winter and spring. The surrounding forested upland is suitable habitat for many species of songbirds, and the open water feature at the northern end of the wetland provides breeding and foraging habitat for waterfowl species. Downed logs provide habitat for woodpeckers, and snags provide habitat for cavity nesting species such as chickadees, flickers, and wood duck.

Wetland 6 is rated a Category II and scored 53 points on the rating form (11 points for water quality functions, 12 points for hydrologic functions, and 30 points for habitat functions) (Appendix E). Additionally, Category II wetlands that have a high intensity of use with a habitat score between 29 and 36 points require an extra 100-foot buffer according to KCC 19.200.220(E), making the total buffer requirement for Wetland 6 200-feet.

3.4.6 Wetland 7

Watershed: Chico Creek
Sub-Basin: Dickerson Creek
FWS Classification: Palustrine Scrub-shrub
HGM Classification: Depressional
Ecology Rating: Category III
Kitsap County Rating: Category III

Wetland 7 is palustrine scrub-shrub wetland located just south of Wetland 5, and covers approximately 0.19 acre (8,276 square feet). Under the HGM classification, Wetland 7 is a depressional wetland.

Wetland 7 contains one vegetation class: scrub-shrub. This wetland is dominated by hardhack, slough sedge, red alder saplings, and Pacific water parsley. Areas of peat moss (*Sphagnum* spp.) give this wetland a bog-like appearance. Many downed logs are found within the wetland with salal, and sword fern growing on them and on surrounding hummocks.

Soil examined in the southern portion of the wetland (DP W7-1) consisted of a black (10YR 2/1) mucky upper horizon. This horizon was over another black (10YR 2/1) mucky soil with few, but large and distinct yellowish brown (10YR 5/6) mottles. Beneath this layer was very dark grayish brown (10YR 3/2) silty loam with many common and prominent brownish yellow (10YR 3/8) mottles. Hydric soil indicators included organic streaking within the bottom soil horizon, low chroma matrix colors, and redoximorphic features.

The primary source of wetland hydrology is groundwater discharge resulting from a seasonally high groundwater table. Wetland 7 is within a topographic swale that transitions to a topographic depression at the southern end of the wetland. Soils were inundated or saturated in the upper 12 inches, and most of Wetland 7 had approximately one to two feet of standing water.

The wetland is bordered by logged uplands which include vegetation such as salal, sword fern, devil's club, bracken fern, cascara (*Rhamnus purshiana*), salmonberry, trailing blackberry, sitka willow (*Salix sitchensis*), and creeping bentgrass (*Agrostis stolonifera*). Soils sampled in the upland, north of Wetland 7 (DP W7-2) were a dark yellowish brown (10YR 3/4) sandy loam to a depth of 18 inches. The upland area was saturated to the surface; however, the saturation is seasonal, and the area is not likely saturated long enough to develop hydric soils.

Wetland 7 is rated a Category III, scoring 41 points on the rating form (15 points for water quality functions, 8 points for hydrologic functions, and 18 points for habitat functions) (Appendix E). Category III wetlands require a 50-foot base buffer, plus an additional 30-foot habitat buffer, making the total buffer requirements for Wetland 7 80-feet.

3.4.7 Wetland 8

Watershed: Chico Creek
Sub-Basin: Dickerson Creek
FWS Classification: Palustrine Emergent
HGM Classification: Depressional
Ecology Rating: Category III
Kitsap County Rating: Category III

Wetland 8 is a palustrine emergent wetland located just south of Wetland 12 and west of Wetland 10, which covers approximately 0.03 acre (1,394 square feet). Under the HGM classification, Wetland 8 is a depressional wetland.

Wetland 8 contains one vegetation class: emergent. This wetland is dominated by slough sedge and hardhack. Evergreen huckleberry and salal were observed on hummocks in and around the wetland boundary.

Soil examined in the eastern portion of the wetland (DP W8-2) consisted of a very dark grayish brown (10YR 3/2) silty loam upper horizon with small, few but distinct yellowish brown (10YR 5/8) mottles. This horizon was over another very dark grayish brown (10YR 3/2) silt loam. Beneath this horizon to a depth of ten inches was a black (10YR 2/1) silty loam soil. Soil samples were taken in an inundated area; therefore, making soil examination past ten inches impossible. Hydric soil indicators included low chroma matrix colors and redoximorphic features.

The primary source of wetland hydrology is precipitation and groundwater discharge resulting from a seasonally high groundwater table. Soils were inundated or saturated in the upper 12 inches, and most of Wetland 8 had approximately two feet of standing water. Fairy shrimp (*Eubranchipus* spp.) were observed in the wetland.

The wetland is bordered by a logged forest dominated by western hemlock. Many downed logs were observed in the upland area. Other upland plants include salal, red huckleberry, and dull Oregon-grape. Soils sampled in the upland, east of Wetland 8 (DP W8-2), contained a black (10YR 2/1) organic duff layer on top of a dry, yellowish brown (10YR 5/6) gravel sandy loam soil. No wetland hydrology or hydric soil indicators were observed.

Wetland 8 is rated a Category III, scoring 34 points on the rating form (7 points for water quality functions, 10 points for hydrologic functions, and 17 points for habitat functions) (Appendix E). Category III wetlands require a 50-foot base buffer, plus an additional 30-foot habitat buffer, making the total buffer requirements for Wetland 8 80-feet.

3.4.8 Wetland 9

Watershed: Chico Creek
Sub-Basin: Dickerson Creek
FWS Classification: Palustrine Scrub-Shrub
HGM Classification: Depressional
Ecology Rating: Category III
Kitsap County Rating: Category III

Wetland 9 is a palustrine scrub-shrub wetland located just north of Wetland 11, and covers approximately 1.27 acre (55,147 square feet). Under the HGM classification, Wetland 9 is a depressional wetland.

Wetland 9 contains one vegetation class: scrub-shrub. This wetland is dominated by a mostly homogenous thicket of hardhack rooted inside the wetland. Willow, evergreen huckleberry, and Pacific water parsley were also found in Wetland 9.

Soil examined in the southern portion of the wetland (DP W9-1) consisted of a top, two inch thick organic layer over a reddish black (2.5YR 2.5/1) muck with peat and decomposing wood to a depth of 18 inches. Hydric soil indicators included high organic content in the surface layer, low chroma matrix colors, and redoximorphic features.

The primary source of wetland hydrology is precipitation and groundwater discharge resulting from a seasonally high groundwater table. The wetland is located in a topographic swale. Soils were inundated or saturated in the upper 12 inches, and most of Wetland 9 had at least one foot of standing water. Wetland 9 is likely seasonally linked to Wetland 19 to the north, as evidenced by water marks on the vegetation and drainage patterns (Figure 3-2).

The wetland is bordered by a mature coniferous forest that consists of Douglas fir, western hemlock, salal, and sword fern. No wetland hydrology or hydric soil indicators were observed in the upland.

Wetland 9 is rated a Category III, scoring 46 points on the rating form (16 points for water quality functions, 12 points for hydrologic functions, and 18 points for habitat functions) (Appendix E). Category III wetlands require a 50-foot base buffer, plus an additional 30-foot habitat buffer, making the total buffer requirements for Wetland 9 80-feet.

3.4.9 Wetland 10

Watershed: Chico Creek
Sub-Basin: Dickerson Creek
FWS Classification: Palustrine Scrub-shrub
HGM Classification: Depressional
Ecology Rating: Category III
Kitsap County Rating: Category III

Wetland 10 is a palustrine scrub-shrub wetland located just south of Wetland 2 and east of Wetland 8. This small wetland covers approximately 0.05 acre (2010 square feet). Under the HGM classification, Wetland 10 is a depressional wetland.

Wetland 10 contains one vegetation class: scrub-shrub. This wetland is dominated by hardhack, slough sedge, and Pacific water parsley. A small clump of willow was found in the center of the wetland.

Soil examined in the western portion of the wetland (DP W10-1) consisted of a very dark grayish brown (10YR 3/2) gravelly loam upper horizon. This horizon was over a very dark brown (10YR 3/3) gravelly loam. Hydric soil indicators included low chroma matrix colors and redoximorphic features.

The primary source of wetland hydrology is precipitation and groundwater discharge resulting from a seasonally high groundwater table. Soils were inundated or saturated in the upper 12 inches, and most of Wetland 10 had at least two feet of standing water. Many downed logs were also observed in the wetland.

The wetland is bordered by a mature forested upland that is comprised primarily of Douglas fir. Other upland plants observed in the surrounding area include salal, sword fern, and bracken fern. Soils sampled in the upland, north of Wetland 10 (DP W10-2) had a two inch layer of duff over a very dark grayish brown (10YR 3/2) gravelly loam followed by a dark yellowish brown (10YR 3/4) gravelly loam to a depth of 16 inches. This last horizon had few, small, but distinct dark yellowish brown (10YR 4/6) mottles. No wetland hydrology or hydric soil indicators were observed.

Wetland 10 is rated a Category III, scoring 39 points on the rating form (8 points for water quality functions, 12 points for hydrologic functions, and 19 points for habitat functions) (Appendix E). Category III wetlands require a 50-foot base buffer, plus an additional 30-foot habitat buffer, making the total buffer requirements for Wetland 10 80-feet.

3.4.10 Wetland 11

Watershed: Gorst Creek

FWS Classification: Palustrine Scrub-shrub

HGM Classification: Depressional

Ecology Rating: Category III

Kitsap County Rating: Category III

Wetland 11 is a palustrine scrub-shrub wetland located just south of Wetland 9, and covers approximately 3.07 acres (133,728 square feet). Under the HGM classification, Wetland 11 is a depressional wetland.

Wetland 11 contains one vegetation class: scrub-shrub. This wetland is dominated by hardhack, willow, Pacific water parsley, bentgrass, and lady fern.

Soil examined in the south eastern portion of the wetland (DP W11-1) consisted of a black (7.5YR 2.5/1) silty loam upper horizon. This horizon was over a brown (7.5YR 4/2) gravelly silty loam with many fine, but faint concretions. Hydric soil indicators included low chroma matrix colors, concretions and redoximorphic features.

The primary source of wetland hydrology is groundwater discharge resulting from a seasonally high groundwater table and a seasonal stream (S8) that flows through the wetland. The inlet for this wetland is a culvert along a road that borders the western tip of the wetland. Wetland 11 discharges into the seasonal stream. Soils were inundated or saturated in the upper 12 inches, and most of Wetland 11 had standing water of approximately one to two feet.

The wetland is bordered by forested uplands except at its western tip where it abuts a road. The uplands adjoining Wetland 11 are comprised primarily of western hemlock, oceanspray, salal, and bracken fern. Soils sampled in the upland, east of Wetland 11 (DP W11-2) had a

two inch deep duff layer over a dry, dark yellowish brown (10YR 3/4) gravelly sandy loam to a depth of 18 inches. No wetland hydrology or hydric soil indicators were observed.

Wetland 11 is rated a Category III, scoring 43 points on the rating form (15 points for water quality functions, 10 points for hydrologic functions, and 18 points for habitat functions) (Appendix E). Category III wetlands require a 50-foot base buffer, plus an additional 30-foot habitat buffer, making the total buffer requirements for Wetland 11 80-feet.

3.4.11 Wetland 12

Watershed: Chico Creek
Sub-Basin: Dickerson Creek
FWS Classification: Palustrine Scrub-shrub
HGM Classification: Depressional
Ecology Rating: Category III
Kitsap County Rating: Category III

Wetland 12 is a palustrine scrub-shrub wetland located just north of Wetland 8 and west of Wetland 2 and covers approximately 0.07 acre (3,136 square feet). Under the HGM classification, Wetland 12 is a depressional wetland.

Wetland 12 contains one vegetation class: scrub-shrub. This wetland is dominated mostly by sitka willow with patches of slough sedge.

Soil examined in the southern portion of the wetland (DP W12-1) consisted of a black (10YR 2/1) mucky horizon with organic debris. This horizon was over a very dark grayish brown (10YR 3/2) gravelly silty loam. The bottom horizon consisted of a black (10YR 2/1) mucky soil with organic matter. Hydric soil indicators included high organic content in the top and bottom horizons, a strong sulfuric odor, reducing conditions and low chroma matrix colors.

The primary source of wetland hydrology is precipitation and groundwater discharge resulting from a seasonally high groundwater table. Soils were inundated or saturated in the upper 12 inches, and most of Wetland 12 had standing water approximately eight to twelve inches deep.

The wetland is bordered by forested uplands which are comprised primarily of western hemlock and salal. Soils sampled in the upland, south of Wetland 12 (DP W12-2) contained a three inch duff/bark layer over a dry, yellowish brown (10YR 5/6) gravelly sandy loam to a depth of 16 inches. No wetland hydrology or hydric soil indicators were observed.

Wetland 12 is rated a Category III, scoring 38 points on the rating form (8 points for water quality functions, 12 points for hydrologic functions, and 18 points for habitat functions) (Appendix E). Category III wetlands require a 50-foot base buffer, plus an additional 30-foot habitat buffer, making the total buffer requirements for Wetland 12 80-feet.

3.4.12 Wetland 13

Watershed: Gorst Creek
FWS Classification: Palustrine Forested
HGM Classification: Depressional
Ecology Rating: Category III
Kitsap County Rating: Category III

Wetland 13 is a palustrine forested wetland located in the southern portion of the property east of Wetland 15 and covers approximately 1.79 acre (78,060 square feet). Under the HGM classification, Wetland 13 is a depressional wetland.

Wetland 13 contains one vegetation class: forested. This wetland is dominated by red alder with patches of Pacific water parsley growing in the wetland.

Soil examined in the northern portion of the wetland (DP W13-1) consisted of a very dark brown (10YR 2/2) gravely silty loam horizon with organic debris to a depth of eighteen inches. Black (10YR 2/1) concretions were observed throughout the horizon. Hydric soil indicators included high organic content throughout the profile, concretions, and low chroma matrix colors.

The primary source of wetland hydrology is a seasonal stream that flows from Wetland 15 to Wetland 13, and continues as an outlet from Wetland 13. Precipitation and groundwater discharge resulting from a seasonally high groundwater table are likely contributing factors to the wetland hydrology. Soils were inundated or saturated in the upper 12 inches, and most of Wetland 13 had at least three feet of standing water.

The wetland is bordered by forested uplands comprised primarily of western hemlock. Additional upland vegetation includes salal, evergreen huckleberry, red huckleberry, salmonberry, and red alder. Soils sampled in the upland, north of Wetland 13 (DP W13-2) contained a four inch duff layer over a very dark brown (10YR 2/2) sandy gravelly loam. Under this horizon was a dark yellowish brown (10YR 3/4) sandy gravelly loam. No wetland hydrology or hydric soil indicators were observed.

Wetland 13 is rated a Category III, scoring 43 points on the rating form (7 points for water quality functions, 12 points for hydrologic functions, and 24 points for habitat functions) (Appendix E). Category III wetlands require a 50-foot base buffer, plus an additional 100-foot habitat buffer, making the total buffer requirement for Wetland 13 150-feet.

3.4.13 Wetland 14

Watershed: Chico Creek
Sub-Basin: Dickerson Creek
FWS Classification: Palustrine Scrub-Shrub
HGM Classification: Depressional
Ecology Rating: Category III
Kitsap County Rating: Category III

Wetland 14 is a palustrine scrub-shrub wetland located just east of the Wetland 6 complex and covers approximately 0.06 acre (2,483 square feet). Under the HGM classification, Wetland 14 is a depressional wetland.

Wetland 14 contains one vegetation class: scrub-shrub. This wetland is dominated by two willow species, Pacific willow (*Salix lucida* spp. *lasiandra*) and sitka willow, as well as hardhack. Small patches of slough sedge are also found within the wetland. Conditions within this wetland are similar to those found in Wetland 6.

The primary source of wetland hydrology is precipitation and groundwater discharge resulting from a seasonally high groundwater table. Soils were inundated or saturated in the upper 12 inches, and most of Wetland 14 had standing water of twelve or more inches. Many downed logs were found throughout the wetland.

Wetland 14 is bordered by forested uplands that are comprised primarily of Douglas fir, western red cedar, salal, red huckleberry (*Vaccinium parvifolium*), and evergreen huckleberry. No wetland hydrology was observed in the upland area.

Wetland 14 is rated a Category III, scoring 42 points on the rating form (15 points for water quality functions, 10 points for hydrologic functions, and 17 points for habitat functions) (Appendix E). Category III wetlands require a 50-foot base buffer, plus an additional 30-foot habitat buffer, making the total buffer requirements for Wetland 14 80-feet.

3.4.14 Wetland 15

Watershed: Gorst Creek

FWS Classification: Palustrine Open Water

HGM Classification: Depressional

Ecology Rating: Category III

Kitsap County Rating: Category III

Wetland 15 is palustrine open water wetland located in the southern portion of the property just west of Wetland 13 and covers approximately 1.55 acre (67,605 square feet). Under the HGM classification, Wetland 15 is a depressional wetland.

Wetland 15 contains one vegetation class: open water. This wetland is dominated by a red alder (*Alnus rubra*) with overhanging vegetation that includes hardhack, salal, sword fern, and trailing blackberry. Sparse aquatic vegetation such as Pacific water parsley and herbaceous vegetation such as bentgrass was rooted within the wetland.

Soil examined in the northern portion of the wetland (DP W15-1) consisted of a dark brown (10YR 3/3) sandy gravelly loam horizon to a depth of eighteen inches. Soils along the fringes of the wetland are more representative of the nearby upland because of sloughing and past beaver activity. Obtaining a soil sample from inside the wetland was near impossible due to the steep banks and the depth of the water within the wetland. It was determined that the hydric soil criterion was met because of the observation of extensive inundation and best professional judgment.

Wetland 15 is a large open body of water that has standing water of approximately thirteen inches at the fringe, and at its deepest reaches approximately three to six feet. Water levels appear to be static based on the vegetation lines. Downed logs and snags are also found within the wetland.

Wetland 15 contains a seasonal stream (S9) that connects to Wetland 13. This stream, along with precipitation and groundwater discharge resulting from a seasonally high groundwater table are the primary sources of wetland hydrology. Wetlands 13 and 15 provide the hydrology for the seasonal stream that flows through both wetlands and exits the eastern side

of Wetland 13. Soils were inundated or saturated in the upper 12 inches, and water marks on the vegetation were present as well as drainage patterns within the wetland.

Wetland 15 is bordered by forested uplands that are comprised primarily of western hemlock. Shrub species such as salal and dull Oregon-grape are also present in the upland. Soils sampled in the upland, north of Wetland 15 (DP W2-15) contained a two inch organic layer over a dark brown (10YR 3/3) sandy gravelly loam to nine inches. Beneath this horizon was a dark yellowish brown (10YR 3/4) sandy gravelly loam to a depth of eighteen inches. No wetland hydrology or hydric soil indicators were observed.

Wetland 15 is rated a Category III, scoring 41 points on the rating form (6 points for water quality functions, 14 points for hydrologic functions, and 21 points for habitat functions) (Appendix E). Category III wetlands require a 50-foot base buffer, plus an additional 100-foot habitat buffer, making the total buffer requirement for Wetland 13 150-feet.

3.4.15 Wetland 17

Watershed: Chico Creek

Sub-Basin: Dickerson Creek

FWS Classification: Palustrine Scrub-shrub

HGM Classification: Depressional

Ecology Rating: Category III

Kitsap County Rating: Category III

Wetland 17 is a palustrine scrub-shrub wetland located north of Wetland 19 and covers approximately 0.12 acre (5,227 square feet). Under the HGM classification, Wetland 17 is a depressional wetland.

Wetland 17 contains one vegetation class: scrub-shrub. This wetland is dominated by willow that are approximately twenty feet high. Downed woody debris is found scattered throughout the wetland.

The primary source of wetland hydrology is precipitation and groundwater discharge resulting from a seasonally high groundwater table. Wetland 17 appears to be hydrologically connected to Wetlands 9 and 19 during the winter season. Soils were inundated or saturated in the upper 12 inches.

The wetland is bordered by forested uplands that are comprised mainly of western hemlock and Douglas fir. Other upland vegetation includes oceanspray, salal, evergreen huckleberry, swordfern, and Nootka rose (*Rosa nutkana*).

Wetland 17 is rated a Category III, scoring 46 points on the rating form (16 points for water quality functions, 12 points for hydrologic functions, and 18 points for habitat functions) (Appendix E). Category III wetlands require a 50-foot base buffer, plus an additional 30-foot habitat buffer, making the total buffer requirements for Wetland 17 80-feet.

3.4.16 Wetland 19

Watershed: Chico Creek
Sub-Basin: Dickerson Creek
FWS Classification: Palustrine Scrub-shrub
HGM Classification: Depressional
Ecology Rating: Category III
Kitsap County Rating: Category III

Wetland 19 is a palustrine scrub-shrub wetland located north of Wetland 9 and covers approximately 0.40 acre (17,381 square feet). Under the HGM classification, Wetland 19 is a depressional/riverine wetland.

Wetland 19 contains one vegetation class: scrub-shrub. This wetland is very similar to Wetland 9 as it is dominated by hardhack and willow.

The primary source of wetland hydrology is precipitation and groundwater discharge resulting from a seasonally high groundwater table. Wetland 19 appears to be hydrologically connected to Wetlands 9 and 17 during the winter season. Soils were inundated or saturated in the upper 12 inches, and most of the wetland had standing water of one to two feet.

The wetland is bordered by forested uplands that are comprised primarily of western hemlock and Douglas fir. Salal borders the wetland, making a sharp boundary line between the upland vegetation and the hardhack wetland vegetation.

Wetland 19 is rated a Category III, scoring 46 points on the rating form (16 points for water quality functions, 12 points for hydrologic functions, and 18 points for habitat functions) (Appendix E). Category III wetlands require a 50-foot base buffer, plus an additional 30-foot habitat buffer, making the total buffer requirements for Wetland 19 80-feet.

3.5 STREAMS

A total of thirteen streams of various types have been identified on the UTF property (Figures 3-1 to 3-4). These streams have been typed according to the WAC 222-16 and KCC 19.300.315. A summary of water typing and KCC Critical Areas Ordinance (CAO) buffers is shown in Table 3-2.

Table 3-2. Summary of Water Typing

Permanent Water Typing	Buffer Width	Minimum Building Setback	Definition
Type "S"	200 feet	15 feet beyond buffer	All waters, within their bankfull width, as inventoried as "shorelines of the state" under chapter 90.58 RCW.
Type "F"	150 feet	15 feet beyond buffer	Segments of natural waters other than type S Waters, which are within the bankfull widths of defined channels and periodically inundated areas of their associated wetlands, or within lakes, ponds, or impoundments having a surface area of 0.5 acre or greater at seasonal low water and which in any case contain fish habitat.
Type "Np"	50 feet	15 feet beyond buffer	All segments of natural waters within the bankfull width of defined channels that are perennial nonfish habitat streams. Perennial streams are flowing waters that do not go dry any time of a year of normal rainfall and include the intermittent dry portions of the perennial channel below the uppermost point of perennial flow.
Type "Ns"	50 feet	15 feet beyond buffer	All segments of natural waters within the bankfull width of the defined channels that are not Type S, F, or Np Waters. These are seasonal, nonfish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall and are not located downstream from any stream reach that is a Type Np Water. Ns Waters must be physically connected by an above-ground channel system to Type S, F, or Np Waters.

Source: WAC 222-16-030 & KCC 19.300.315

Streams on the UTF property are labeled S1 through S13 (Figures 3-1 through 3-4). Their courses were extracted from the hydrology layer of the GIS Kitsap County database with the exception of S8 and S10, which were adjusted in length based on field investigation. A summary of these streams, their types, and buffer requirements are found in Table 3-3.

Table 3-3. Stream Summary in Ueland Tree Farm Kitsap Lake Property Study Area

Stream Number	Stream Type	Buffer Requirement (feet)
Dickerson Creek	F/Np	150/50
S1	Ns	50
S2	Ns	50
S3	Ns	50
S4	Ns	50
S5	Ns	50
S6	Ns	50
S7	Np	50
S8	Ns	50
S9	Ns	50
S10	Ns	50
S11	Ns	50
S12	Ns	50
S13	Ns	50

Three intermittent streams (S2, S3, and S4) in the northern section of the property and S6, which originates in the western section of the parcel and flows into Dickerson Creek. S13 flows out of Wetland 1 and is located within the proposed project footprint. All five of these creeks are Type Ns and require a 50-foot buffer according to KCC 19.300.315.

Dickerson Creek is the primary stream that flows through the property, with one unnamed tributary (S5) flowing in the northern section of the property and the other unnamed tributary (S7) flowing from the Wetland 6 complex. Most of Dickerson Creek is permanently flowing and has high fish, wildlife, and human values; therefore, it rates as a Type F stream due to the presence of salmonids up to a natural fall barrier, and requires a 150-foot buffer per KCC 19.300.315. Beyond the barrier to the south, Dickerson Creek becomes a Type Np creek due to the lack of fish presence and requires a 50-foot buffer (Figure 3-2).

The remaining streams (S8-S12) are located in the southern section of the property. Stream 8 feeds into the western portion of Wetland 11 and subsequently flows out of the wetland at its southeastern side. Stream 8 has several tributaries that flow into it: S9, S10, S11 and S12. Stream 9 flows in a northerly direction and connects Wetlands 13 and 15. An ordinary high water mark determination was made for the connection of S9 between the two wetlands. All four of these streams are a Type Ns and require a 50-foot buffer per KCC 19.300.315.

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