

# 2020 WETLAND MONITORING REPORT

## SR 900 78<sup>th</sup> Vicinity to Newport Way Widening Lake Sammamish State Park (LSSP) Compensatory Mitigation Site WIN #A90098V

USACE IP NWS-2007-29-SOD

Northwest Region

Wetlands Program  
*Issued March 2021*



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# Site Summary

SR 900 78th Vicinity to Newport Way Widening

Lake Sammamish State Park (LSSP) Compensatory Mitigation Site

USACE IP NWS-2007-29-SOD

General Site Information			
<b>USACE IP Number</b>	NWS-2007-29-SOD		
<b>Ecology WQC</b>	#5317		
<b>Mitigation Location</b>	Southwest of Issaquah Creek in Lake Sammamish State Park		
<b>LLID Number</b>	1220619475588		
<b>Construction Date</b>	2009–2010		
<b>Monitoring Period</b>	2011–2020		
<b>Year of Monitoring</b>	10 of 10		
<b>Type of Impact</b>	Wetland		Buffer
<b>Area of Project Impact<sup>1</sup></b>	0.75 acre		0.91
<b>Type of Compensation</b>	Wetland Establishment	Wetland Enhancement	Buffer Enhancement
<b>Planned Area of Compensation<sup>2</sup></b>	1.74 acres	0.11 acre	2.23 acres



<sup>1</sup> Impact numbers sourced from WSDOT (2010).

<sup>2</sup> Compensatory Mitigation numbers sourced from WSDOT (2010).



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# 1. Introduction

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## 1.1. Summary

This report summarizes final-year (Year-10) monitoring activities at the 900 Lake Sammamish State Park Compensatory Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site success. Monitoring activities included vegetation surveys, photo-documentation, and a wetland delineation. Vegetation monitoring occurred on August 3, and a wetland delineation was conducted on October 7 in 2020.

## 1.2. Monitoring Results and Management Activities

Performance Standards	2020 Results	Management Activities
Wetland delineation: minimum 1.85 acres wetland	Appendix C	
Minimum 70% fac or wetter woody cover in the wetland	75% (qualitative)	
Minimum 50% woody cover in the buffer	90% (qualitative)	
Maximum 15% cover blackberries	<1% (qualitative)	Blackberry control conducted in March and November, 2020
Knotweed and purple loosestrife will be eradicated	None observed	

## 2. Site Description

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### 2.1. Location

This 4.08-acre compensatory mitigation site is located in Lake Sammamish State Park, Issaquah, WA (Figure 1).

#### **Driving Directions:**

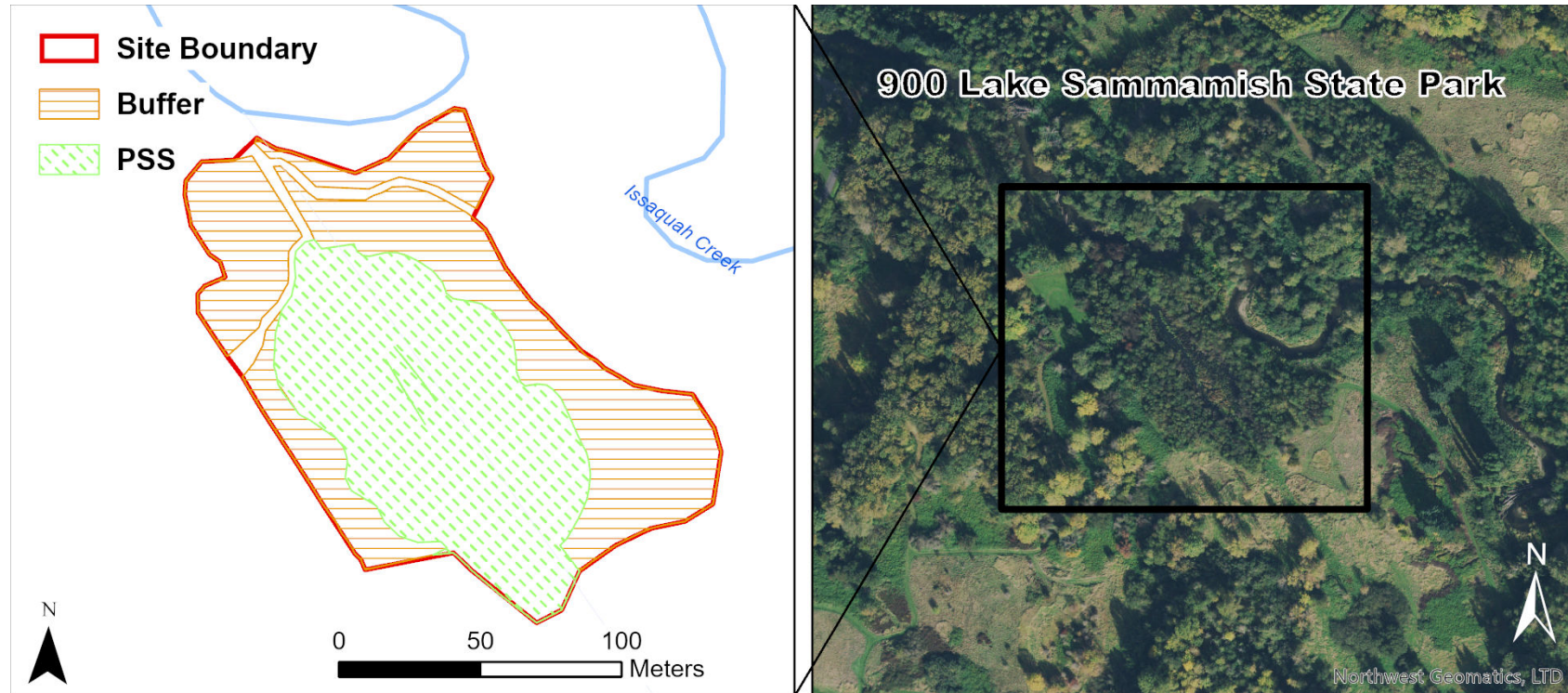
From I-90 East, take Exit 15 for WA-900 West/17th Avenue Northwest. Turn left onto WA-900 East/17th Avenue Northwest. After approximately 0.3 mile, turn left onto Northwest Sammamish Road. After approximately 0.4 mile, turn right into Lake Sammamish State Park. Drive straight to the end of the last parking lot. The trail to the wetland mitigation site starts at the northeast corner of the last parking lot.

### 2.2. Purpose and Description

This site was created to replace acreage and functions lost due to wetland and buffer impacts associated with the widening of SR 900. As a result of the widening project, 0.75 acre of wetland and 0.91 acre of wetland and stream buffer were permanently impacted. Wetland functions that will be mitigated for at this site include flood flow alteration, flood storage, aquatic invertebrate and amphibian habitat, general wildlife habitat, and sediment, nutrient, and toxicant removal.

## 2.3. Study Area

The 900 Lake Sammamish State Park Compensatory Mitigation Site comprises 1.74 acres of wetland establishment, 0.11 acre of wetland enhancement, 1.98 acres of wetland buffer enhancement, and 0.25 acre of riparian buffer enhancement within existing state park property (Figure 1).



**Figure 1. Site Sketch**

## 3. Performance Standards and Methods

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### 3.1. Performance Standards

#### Year 10

##### **Performance Standard 1**

The wetland area at LSSP will be delineated using current methods. The mitigation site will contain 1.74 acres of created wetland and 0.11 acre of enhanced wetland for a total wetland area of 1.85 acres.

##### **Performance Standard 2**

Native facultative or wetter woody species will achieve a minimum of 70 percent coverage within the scrub-shrub planting areas. Native colonizing vegetation will be included in these coverage calculations.

##### **Performance Standard 3**

Native woody species will achieve a minimum of 50 percent coverage in the wetland buffer and riparian buffer planting areas. Native colonizing vegetation will be included in this coverage calculation.

##### **Performance Standard 4**

15% maximum cover across the entire mitigation site for blackberry (*Rubus laciniatus* and *R. armeniacus*)

##### **Performance Standard 5**

The presence of Japanese knotweed (*Polygonum cuspidatus* and related species) and purple loosestrife (*Lythium salicaria*) will initiate eradication measures.

Appendix A shows the As Built Planting Plan (WSDOT 2010).

### 3.2. Methods

WSDOT staff performed a wetland delineation using methods described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (USACE 2010) (Performance Standard 1). A Global Positioning System (Trimble Mapping Grade) was used to collect spatial data.

The tables below document sample methods used for all of the remaining performance standards (PS)/performance criteria (PC) required by the mitigation plan or permits. Additional details on our methods are located here: [WSDOT Wetland Mitigation Site Monitoring Methods Paper](#) (WSDOT 2008).

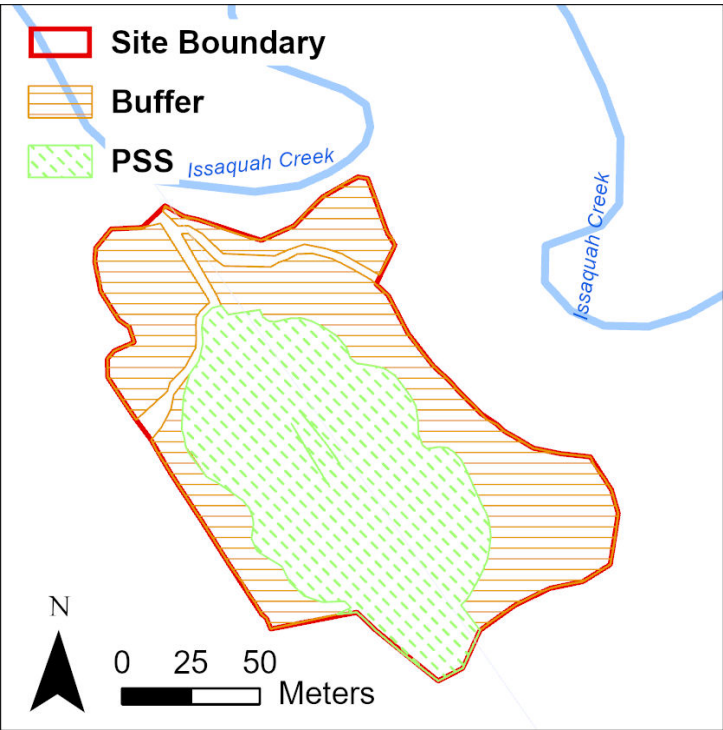


Figure 2. Sample Design

	PS 2, 3	PS 4	PS 5
Attribute	Cover	Cover	Presence/Absence
Target population	Native woody species	Invasive species	Noxious weeds
Zone	Entire site	Entire site	Entire site
Sample method	Qualitative	Qualitative	Qualitative

## 4. Discussion

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### 4.1. Site development

This site is continuing its successful development and is still meeting all of its current and final-year vegetation performance standards, as it has since 2014. The woody plantings continue to develop well and the only areas that are not approaching total woody cover are the areas directly adjacent to the un-named creek where reed canarygrass (*Phalaris arundinacea*) cover dominates, intermingled with a native emergent community that provides habitat for amphibians.

Reed canarygrass (*Phalaris arundinacea*) cover has increased over the last two years, perhaps due to changes in hydrologic regime near the stream from beaver activity. Reed canarygrass lines the stream for the entire length of the site, and has now encroached on the adjacent wetland community that had begun to develop as an emergent community. This area comprises approximately 10% of the total scrub-shrub wetland area. Since most of the site exhibits high cover with low light penetration, reed canarygrass is not expected to spread much more than it already has, unless beaver activity continues to change the site's water regime.

The mapped buffer area from the original as-built plans was impacted by erosion from Issaquah Creek, but there did not appear to be any new significant erosion along the creek bank since the pedestrian trail was relocated through the buffer in 2017.

Beaver continue to actively use the site. At the time of monitoring, the bridge over the unnamed creek had been removed in order to breach a beaver dam that was causing flood damage to the walking trail. Many fresh beaver chews were observed. Other wildlife observations included deer scat and tracks, and sightings of some bird species, including American robin, black-capped chickadee, and song sparrow. The diverse and multilayered plant community in the scrub-shrub wetland and buffer provides suitable habitat for a variety of species.

In addition to wildlife habitat, the dense woody vegetation is likely performing other intended functions by slowing water flow to improve flood storage capacity and facilitating the removal of sediments and toxicants.



## 4.2. Results

### **Performance Standard 1**

(Wetland Delineation)

The site was delineated in fall 2020. See Appendix D for a discussion of the results.

### **Performance Standard 2**

(Minimum 70% cover facultative or wetter woody species in the wetland)

Cover of facultative or wetter woody species in the scrub-shrub wetland is qualitatively estimated at 75%-80% (Photo 1). This exceeds the final year performance standard threshold.

The site has developed more rapidly than anticipated and has been meeting the year-10 final year standard for woody cover for seven years. On April 12, 2016 a request to discontinue quantitative sampling for the wetland was sent to USACE and the Department of Ecology; this request was accepted on April 14, 2016. The final year standards are still currently being met.

Dominant species include Pacific willow (*Salix lasiandra*), Scouler's willow (*Salix scouleriana*), black cottonwood (*Populus balsamifera*), redosier dogwood (*Cornus alba*), and Nootka rose (*Rosa nutkana*).

Approximately 10% of the scrub-shrub wetland near the stream that was originally planted with willow species has developed as an emergent community dominated by reed canarygrass (*Phalaris arundinacea*) (Photo 2). Woody cover in this area is estimated at 15%.



Photo 1. Woody cover in the wetland (August 2020)



Photo 2. Reed canarygrass cover along the stream (August 2020)



### **Performance Standard 3**

(Minimum 50% cover woody species in the buffer)

Woody cover in the buffer is qualitatively estimated at 90% (Photo 3). This exceeds the final year performance standard threshold.

The site has developed more rapidly than anticipated and has been meeting the year-10 final year standard for woody cover for seven years. On April 12, 2016 a request to discontinue quantitative sampling for the wetland and buffer was sent to USACE and the Department of Ecology; this request was accepted on April 14, 2016. The final year standards are still currently being met.

A portion of the buffer on the north east side of the site was eroded by Issaquah Creek in 2016, resulting in the relocation of the pedestrian trail through the buffer (Photo 4). No evidence of new erosion was observed, and the trail has not significantly reduced cover in the buffer.

Dominant species include western red cedar (*Thuja plicata*), black cottonwood (*Populus balsamifera*), Pacific crabapple (*Malus fusca*), snowberry (*Symphoricarpos albus*), and thimbleberry (*Rubus parviflorus*).



*Photo 3. Woody cover in the buffer (August 2020)*



*Photo 4. Relocated trail through the buffer (August 2020)*

**Performance Standard 4**

(Maximum 15% cover blackberries)

Cover by Himalayan blackberry (*Rubus armeniacus*) and cutleaf blackberry (*Rubus laciniatus*) is qualitatively estimated at less than 1% across the site.

**Performance Standard 5**

(Knotweeds and purple loosestrife will be eradicated)

No knotweeds or purple loosestrife were observed at the time of monitoring.

### **4.3. Adaptive Management**

This site met all permit requirements and could close out. Until the Corps sends the letter of close out, WSDOT will maintain the site with four weeding and trash pickups in 2021. When the site officially closes out it will transfer to Washington State Parks and they will maintain it in perpetuity.

## 5. References

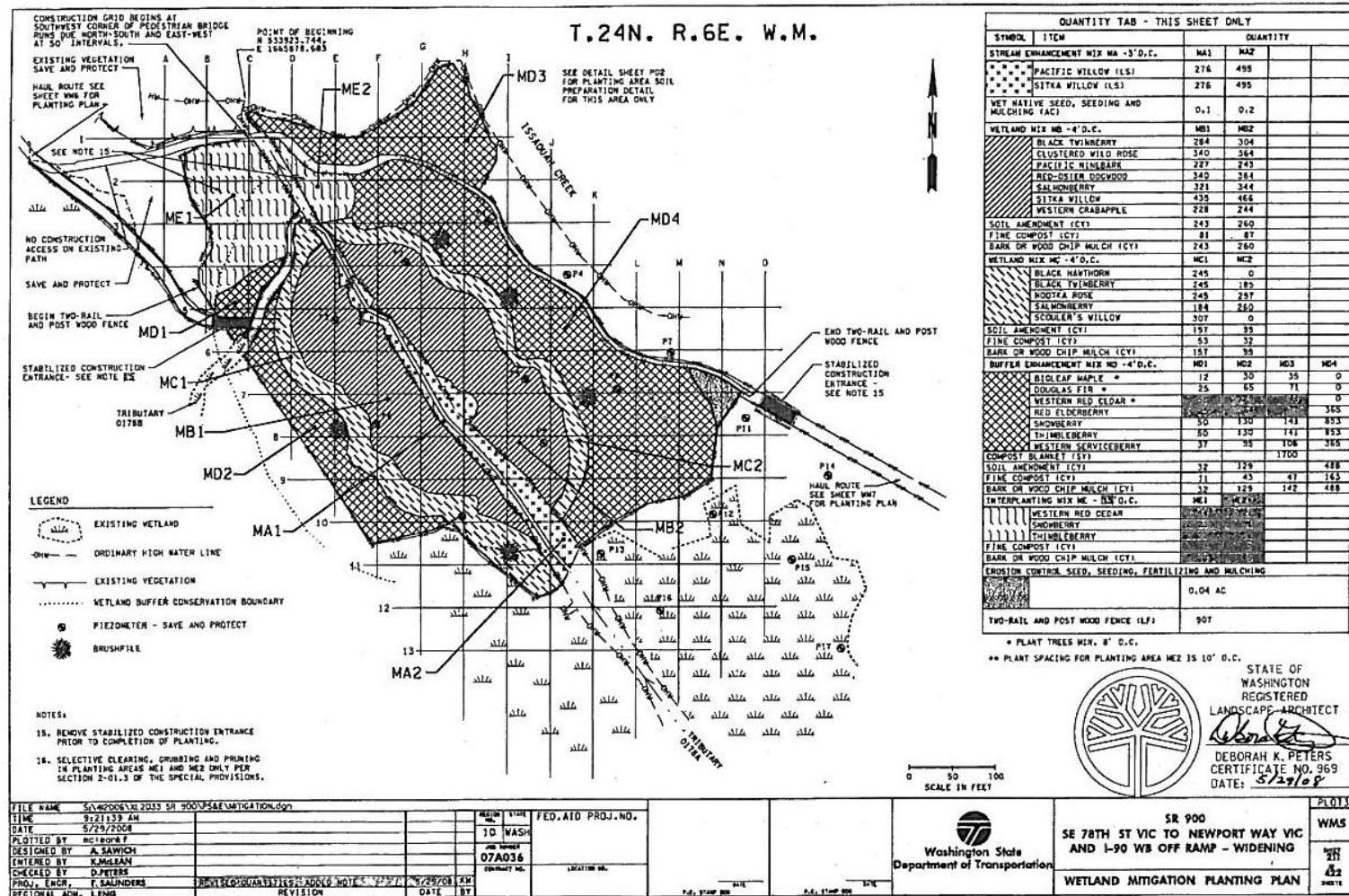
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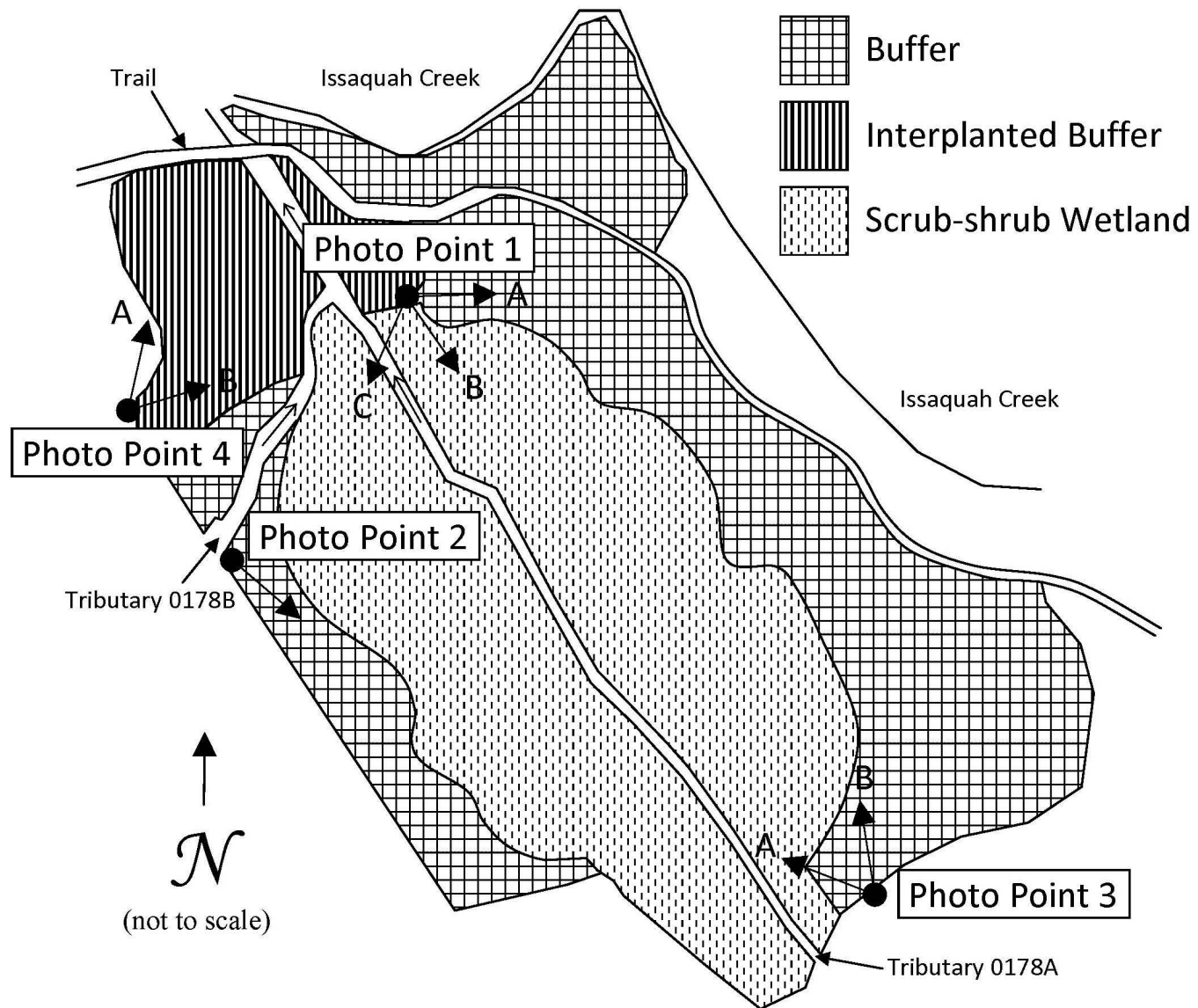
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# Appendix A. Planting Plan and Photo Point Locations

(from WSDOT 2010)







## Appendix B. Photo Points

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The photographs below were taken from permanent photo-points on August 3, 2020 and document current site success.



**Photo Point 1a**



**Photo Point 1b**



**Photo Point 1c**



**Photo Point 2**





**Photo Point 3a**



**Photo Point 3b**



**Photo Point 4a**



**Photo Point 4b**



## **Appendix C. Wetland Delineation**

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# **WETLAND DELINEATION REPORT UPDATE**

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## **VERIFICATION OF WETLAND BOUNDARY**

### **SR 900 Lake Sammamish State Park Compensatory Mitigation Site**

**SR 900: 78<sup>th</sup> Vicinity to Newport Way Widening  
(MP 29.09 to MP 29.10)**

**USACE (IP) NWS-2007-29-SOD  
Ecology WQC Order 5317**

**King County, Washington**

**Prepared by:**

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**Olympia, Washington**

**February 2021**




**Washington State  
Department of Transportation**

# Introduction

This report was prepared by the Washington State Department of Transportation (WSDOT) to describe the wetland boundary delineation for the SR 900 Lake Sammamish State Park Compensatory Mitigation Site (Compensation Site). Field work was conducted by WSDOT wetland biologists Tatiana Dreisbach and Jocelyn Munoz, on October 7, 2020. The delineation identifies 1.74 acres of wetland within the mitigation site boundaries and an additional 0.08 acre occurring in intended upland buffer areas of the site.

The wetland was previously delineated in March 2015 (WSDOT 2016). The purpose of the 2020 field work was to reevaluate the prior wetland boundary and document any wetland boundary modifications if necessary. The 2020 delineation resulted in wetland boundary amendments in several locations and biologists elected to delineate the entire wetland boundary instead of amending sections of the previously delineated 2015 wetland boundary.

General Information for the SR 900 Lake Sammamish State Park Compensation Site			
Location:		S20, T24N, R6E. King County. (Vicinity map, Figure 1)	
	USACE NWP IP Number		NWS-2007-2-SOD
	Ecology WQC Order Number		5317
	Long./Lat. ID Number		1220619475588
	Land Resource Region (LRR)		A
	Major Land Resource Area (MLRA)		2
	Construction Date		2009-2010
	Monitoring Period		2011-2020
	Year of Monitoring		10 of 10 (in 2020)
Area of Project Impact <sup>1</sup>		0.75 acre	
Type of Mitigation		Required Acreage <sup>1</sup>	2020 Delineated Acreage
Wetland Establishment		1.74 acres	1.33
Wetland Enhancement		0.11 acre	0.10
Stream Enhancement		0.31 acre	0.31
Totals		2.16 acres	1.74
Total Delineated Wetland Area		In addition to 1.74 acres of wetland occurring within the required establishment and enhancement areas, an additional 0.08 acres of wetland is present in upland buffer areas. <b>The total delineated wetland area within the study area is 1.82 acres</b> (Figure 2).	

<sup>1</sup> Project impact and required acreages from USACE Individual Permit (USACE 2008)/Final Wetland Mitigation Plan (WSDOT 2006).

# Location

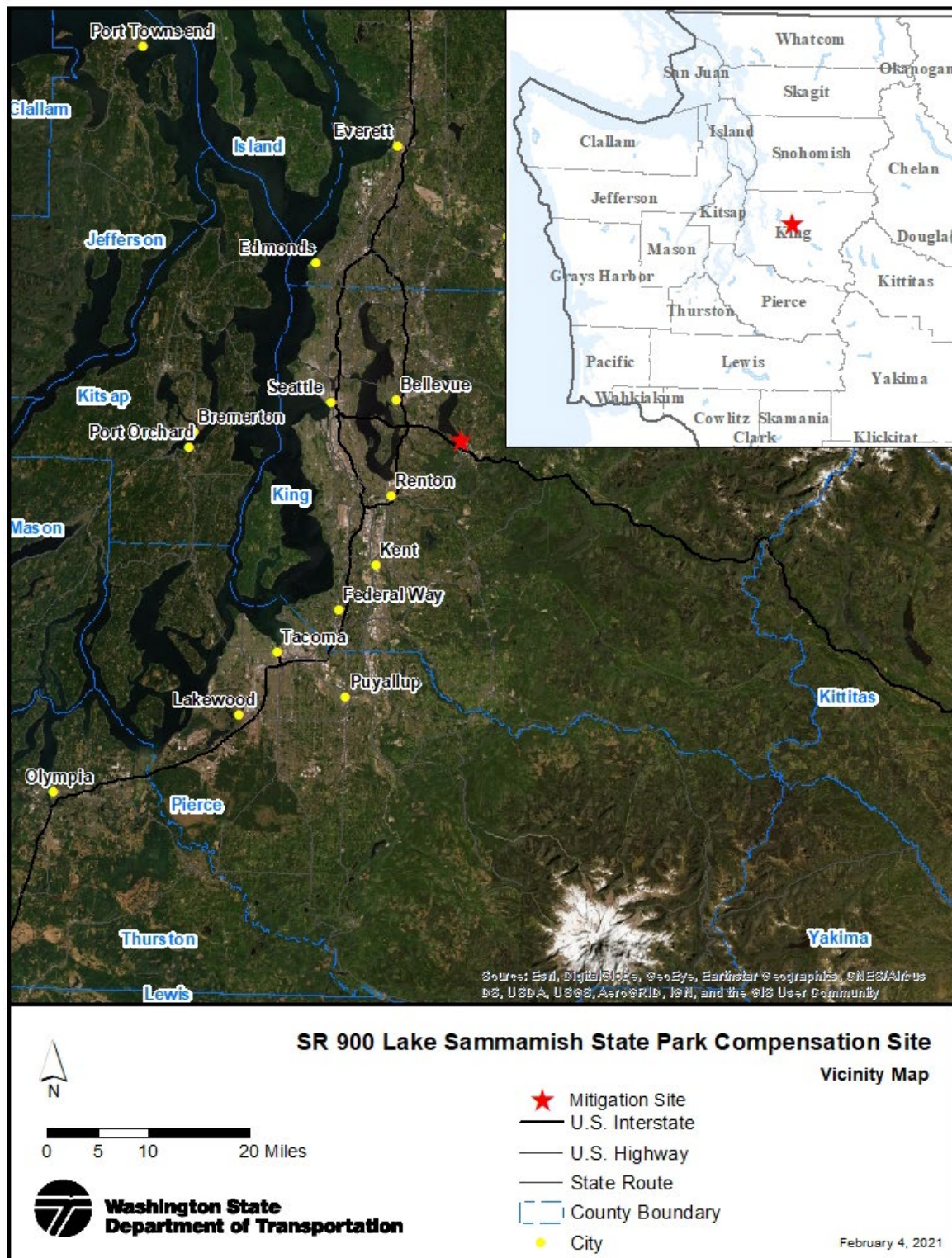


Figure 1. Vicinity Map

# Methods

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The Year 5 (2015) wetland boundary within the SR 900 Lake Sammamish State Park Compensation Site was compared to current conditions observed in Year 10 (2020). Biologists determined that establishing a new wetland boundary, instead of amending the previous Year 5 boundary, was most applicable method to document conditions observed in Year 10. Biologists used routine methods described in:

- Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987),
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (USACE 2010)

Wetland boundaries were delineated based on on-site observations of hydrology, soils, and plant communities, in conjunction with background information.

A Global Positioning System (GPS) equipped Panasonic Toughpad paired with a Trimble R2 Global Navigation Satellite System (GNSS) Receiver mapping grade unit was used to

- navigate to 2015 delineation boundary
- record 2020 sampling point locations and
- record the 2020 wetland boundary (Figure 2).

Wetland mitigation types were georeferenced by digitizing the compensation site planting plan in ArcGIS 10.6.1. Inherent in both GPS and georeferencing are minute errors, resulting in slight inaccuracies in both boundary line placement and acreage calculations. These tools represent the best available methods at the time of the study and report preparation.

## Wetland Delineation and Study Area

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### Study Area

Wetlands described in this report were assessed only within the wetland compensation site boundary (Figure 2). The wetland on the compensation site is contiguous with off-site wetland areas occurring beyond the compensation site boundary. Wetland areas beyond the compensation site boundary were not included in this delineation.

### Wetland Changes Since 2015

The SR 900 Lake Sammamish State Park compensation site remains in similar condition as documented in 2015. Wetland area within the site boundary has increased from 1.53 acres in 2015 to 1.82 acres in 2020.

Beaver are present in the watershed and have influenced site conditions, primarily water levels. At one time a beaver dam appeared to increase water levels, however the

dam was not functioning to create ponding conditions during the 2020 site visit. Woody vegetation did not show significant observable beaver signs.

The vegetation community has continued to develop with increased height, cover, and structure. Palustrine emergent (PEM) wetland vegetation is established within the stream channel in some locations. Part of the palustrine scrub-shrub (PSS) community has developed as an emergent wetland due to beaver activity. Additionally, the vegetation along the edge of the palustrine-scrub-shrub developed into a palustrine forested area. The vegetation interspersed with large woody debris and channel sinuosity, combined with variation in hydroperiods and Cowardin classes provide habitat complexity on the compensation site.

#### Wetland Boundary Verification

The 2020 delineation verification determined 1.74 acres of wetland were present within the wetland establishment and enhancement areas, with an additional 0.08 acre present in the adjacent upland buffer area, totaling 1.82 acres present on the site. Moderate wetland boundary amendments were made in 2020 from conditions documented in 2015, and an entirely new wetland boundary was collected to document the 2020 wetland boundary.

Delineation data were collected at three sampling points and recorded on wetland determination data forms (Appendix A). Paired wetland and upland sample points were used to define the wetland edge and were placed in locations documenting where the wetland boundary required adjustment. An additional sample point characterized conditions found in the interior of the wetland.

Data recorded on wetland determination data forms characterize typical wetland and upland conditions observed on site. Vegetation, soils, and hydrology were examined in many additional sampling locations to determine the wetland boundary.

#### Precipitation

The Regional Delineation Supplement Version 2.0 (USACE 2010) recommends using methods described in Chapter 19 in *Engineering Field Handbook* (NRCS 2015) to determine if precipitation occurring in the three full months prior to the site visit was normal, drier than normal, or wetter than normal. Actual rainfall is compared to the normal range of the 30-year average. When considering the three prior months as a whole, normal precipitation conditions were present prior to field work. The two months prior to field work were within the normal range, and the third prior month was drier than normal (Appendix B-1).

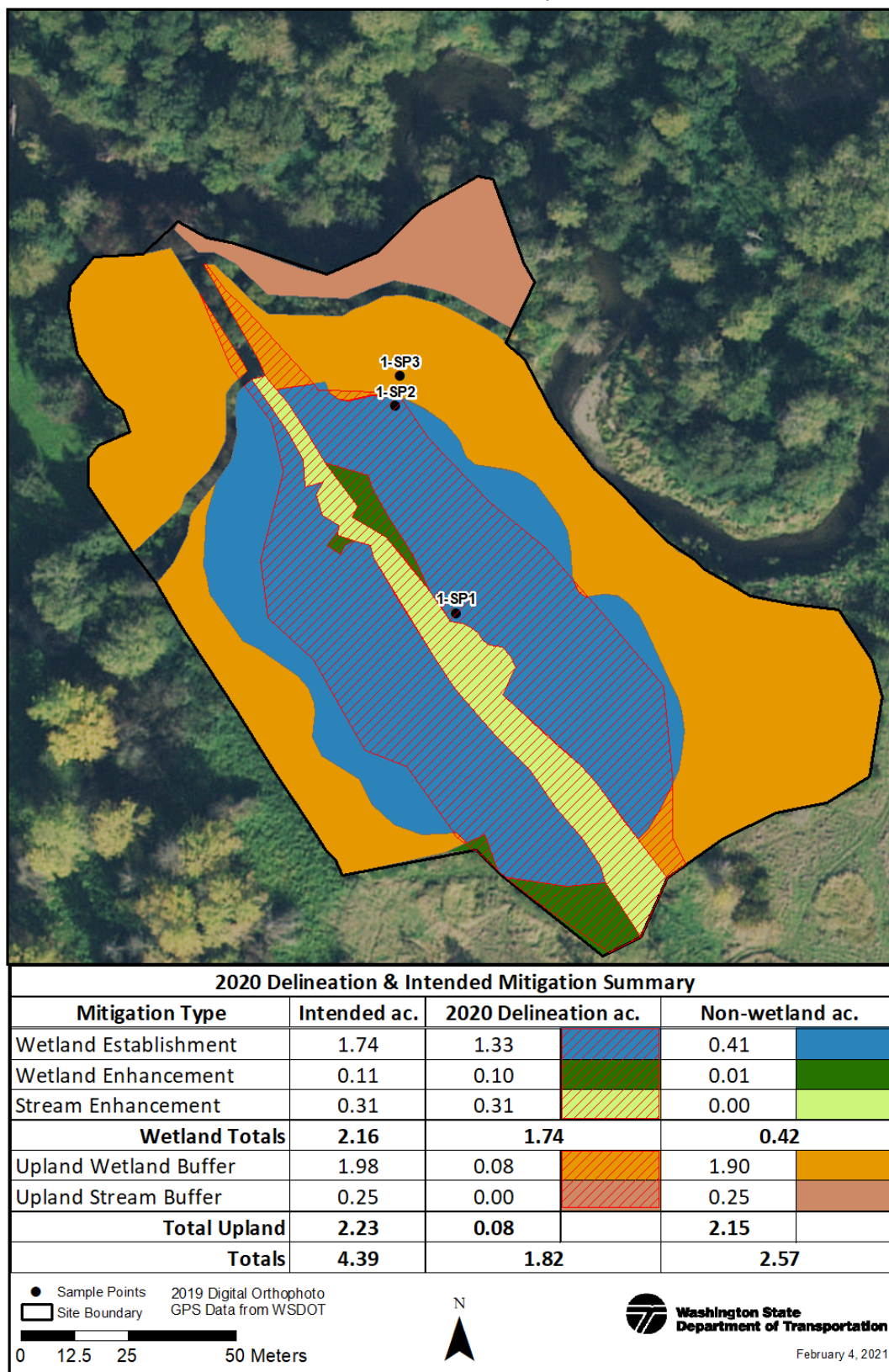
No precipitation was recorded in the ten days preceding field work (Appendix B-2).

#### Growing Season


The delineation occurred at the very end of the growing season. Most observed herbaceous plants were identifiable to species such as woolgrass (*Scirpus cyperinus*), creeping buttercup (*Ranunculus repens*), and reed canarygrass (*Phalaris arundinacea*). Woody species were identifiable to species.



## SR 900 Lake Sammamish State Park, GPS Data: 10/07/2020



**Figure 2. 2020 Delineation and Mitigation Types Map.**

SR 900 Lake Sammamish State Park Compensatory Mitigation Site – Wetland Delineation Summary		
Total Delineated Wetland Area		1.82 acres
	Wetland Determination Data Forms	Appendix A; Sampling Points W1-SP1 and W1-SP2
	Upland Determination Data Form	Appendix A; Sampling Point W1-SP3
	Delineators	Tatiana Dreisbach Jocelyn Munoz
	Delineation Date	October 7, 2020
Vegetation	<p>Trees – black cottonwood (<i>Populus balsamifera</i>), red alder (<i>Alnus rubra</i>) Pacific willow (<i>Salix lasiandra</i>)</p> <p>Shrubs – twinberry honeysuckle (<i>Lonicera involucrata</i>), Nootka rose (<i>Rosa nutkana</i>), black cottonwood saplings</p> <p>Herbs – reed canarygrass, broadleaf cattail (<i>Typha latifolia</i>), woolgrass, giant horsetail (<i>Equisetum telmateia</i>)</p>	
Soils	<p>Soils examined to a depth of 20 inches exhibited hydric characteristics. Matrix colors of 10YR 4/2, 5Y 6/2, and 5Y 7/2 were observed. Redoximorphic concentrations and depletions were observed throughout the soil profile. Indicator Depleted Matrix (F3) met.</p>	
Hydrology	<p>A high groundwater appears to be the main source of hydrology, though it was not observed during the October 2020 field visit, which occurred at the end of the dry season. Overbank flooding associated with the tributary to Issaquah Creek, occasionally flow through the wetland, as indicated by the presence of drift deposits. Precipitation also contributes to the hydrologic regime of this wetland. Beaver have been active near the outlet on the southern site boundary. A dam at one point likely ponded water in the interior of the site, however during the October 2020 site visit, the dam was not functioning to pond water on the site. The following indicators were observed: Drift Deposits (B3), Surface Soil Cracks (B6), Geomorphic Position (D2), and FAC-Neutral Test (D5).</p>	
Rationale for Delineation	<p>Positive indicators of all three wetland criteria are present. Placement of boundary determined by vegetation indicators and topographic break. Hydrology and soil indicators were not helpful in informing placement of the boundary. In many places near the wetland boundary hydric soil indicators were present in adjacent upland areas. Concentrations had sharp boundaries in upland areas, while diffuse boundaries were present in adjacent wetland areas indicating presence of soil saturation or inundation during other parts of the year.</p>	



# Limitations

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This wetland delineation report documents the investigation, best professional judgment, and conclusions of WSDOT based on the site conditions encountered at the time of this study. The wetland delineation was performed in compliance with accepted standards for professional wetland biologists and applicable federal, state, and local laws and ordinances, and WSDOT policies and guidance. It is correct and complete to the best of our knowledge. It should be considered a preliminary jurisdictional determination of wetlands and other waters until it has been reviewed and approved in writing by the appropriate jurisdictional authorities.

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10. [WSDOT] Washington State Department of Transportation. 2006. Final Wetland and Stream Mitigation Report SR 900: 78<sup>th</sup> Vicinity to Newport Way Widening (MP 20.09 to MP 21.08). Seattle (WA): Washington State Department of Transportation, Northwest Region.
11. [WSDOT] Washington State Department of Transportation. 2021. Wetland and Stream Assessment [Internet]. Olympia (WA): Environmental Services Office. [cited 2021 Feb 03]. Available at:  
<https://www.wsdot.wa.gov/environment/technical/disciplines/wetlands/policies-procedures/recon-assess>

# **Appendix A —Wetland Determination Data Forms**

Wetland Delineation Data Forms for:

W1-SP1

W1-SP2

W1-SP3

Wetland polygons, sampling point locations, and wetland names shown in Figure 2.

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

Project/Site: 900 Lake Sammamish City/County: Issaquah/King Sampling Date: 10/7/2020  
 Applicant/Owner: WSDOT State: WA Sampling Point: W1-SP1  
 Investigator(s): Tatiana Dreisbach, Jocelyn Munoz Section, Township, Range: S 20, T24N, R 6E  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 5  
 Subregion (LRR): A Lat: 122.0581153W Long: 47.5568317 N Datum: NAD83HARN  
 Soil Map Unit Name: Sammamish Silt Loam 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? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soil Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is the Sampled Area within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No
Remarks:	

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>20ft x 20ft</u> )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)														
2. _____	_____	_____	_____	_____															
3. _____	_____	_____	_____	_____															
4. _____	_____	_____	_____	_____															
_____ = Total Cover																			
Sapling/Shrub Stratum (Plot size: <u>15ft x 15ft</u> )					Prevalence Index worksheet:  <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>30</u></td> <td>x 1 = <u>30</u></td> </tr> <tr> <td>FACW species <u>78</u></td> <td>x 2 = <u>156</u></td> </tr> <tr> <td>FAC species <u>6</u></td> <td>x 3 = <u>18</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>114</u></td> <td>(A) <u>204</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.789</u>	Total % Cover of:	Multiply by:	OBL species <u>30</u>	x 1 = <u>30</u>	FACW species <u>78</u>	x 2 = <u>156</u>	FAC species <u>6</u>	x 3 = <u>18</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>114</u>	(A) <u>204</u> (B)
Total % Cover of:	Multiply by:																		
OBL species <u>30</u>	x 1 = <u>30</u>																		
FACW species <u>78</u>	x 2 = <u>156</u>																		
FAC species <u>6</u>	x 3 = <u>18</u>																		
FACU species <u>0</u>	x 4 = <u>0</u>																		
UPL species <u>0</u>	x 5 = <u>0</u>																		
Column Totals: <u>114</u>	(A) <u>204</u> (B)																		
1. _____	_____	_____	_____	_____															
2. _____	_____	_____	_____	_____															
3. _____	_____	_____	_____	_____															
4. _____	_____	_____	_____	_____															
5. _____	_____	_____	_____	_____															
_____ = Total Cover																			
Herb Stratum (Plot size: <u>5ft x 5ft</u> )					Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0¹ <input type="checkbox"/> 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation¹ (Explain)  ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. <u>Phalaris arundinacea</u>	<u>70</u>	<u>Y</u>	<u>61.4</u>	<u>FACW</u>															
2. <u>Typha latifolia</u>	<u>20</u>	<u>N</u>	<u>17.5</u>	<u>OBL</u>															
3. <u>Scirpus cyperinus</u>	<u>10</u>	<u>N</u>	<u>8.8</u>	<u>OBL</u>															
4. <u>Juncus effusus</u>	<u>2</u>	<u>N</u>	<u>1.8</u>	<u>FACW</u>															
5. <u>Epilobium ciliatum</u>	<u>2</u>	<u>N</u>	<u>1.8</u>	<u>FACW</u>															
6. <u>Lotus corniculatus</u>	<u>2</u>	<u>N</u>	<u>1.8</u>	<u>FAC</u>															
7. <u>Equisetum telmateia</u>	<u>2</u>	<u>N</u>	<u>1.8</u>	<u>FACW</u>															
8. <u>Alnus rubra</u>	<u>2</u>	<u>N</u>	<u>1.8</u>	<u>FAC</u>															
9. <u>Salix lasiandra</u>	<u>2</u>	<u>N</u>	<u>1.8</u>	<u>FACW</u>															
10. <u>Salix scouleriana</u>	<u>2</u>	<u>N</u>	<u>1.8</u>	<u>FAC</u>															
11. _____	_____	_____	_____	_____															
114 = Total Cover																			
Woody Vine Stratum (Plot size: <u>5ft x 5ft</u> )																			
1. _____	_____	_____	_____	_____															
2. _____	_____	_____	_____	_____															
_____ = Total Cover																			
% Bare Ground in Herb Stratum <u>0</u>																			

Remarks:

# SOIL

Sampling Point: W1-SP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)										
Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)	%		Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4	10YR	4/2	95	7.5YR	4/4	5	C	M	Silt Loam	concentration is distinct
4-12	5Y	6/2	83	5Y	6/1	10	D	M	Silty Clay Loam	
				7.5YR	5/8	2	C	PL		concentration is prominent
				7.5YR	5/6	5	C	M		concentration is prominent
12-19	5Y	6/2	80	7.5YR	5/6	20	C	M	Sandy Loam	concentration is prominent

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):	Hydric Soil Present?
Type: _____ Depth (inches): _____	<input checked="" type="radio"/> Yes <input type="radio"/> No

Remarks:

# HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)	

Field Observations:	Wetland Hydrology Present?
Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ (includes capillary fringe)	<input checked="" type="radio"/> Yes <input type="radio"/> No

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

Remarks:  
Delineated at the end of the dry season with little recharge happening in the ground system.

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

Project/Site: 900 Lake Sammamish City/County: Issaquah/King Sampling Date: 10/7/2020  
 Applicant/Owner: WSDOT State: WA Sampling Point: W1-SP2  
 Investigator(s): Tatiana Dreisbach, Jocelyn Munoz Section, Township, Range: S 20, T 24N, R 6E  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 10  
 Subregion (LRR): A Lat: 122.0583141 W Long: 47.5572634 N Datum: NAD83HARN  
 Soil Map Unit Name: Sammamish Silt Loam NWI Classification: PSS

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? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soil Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Is the Sampled Area within a Wetland?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No
Remarks:	

## VEGETATION – Use scientific names of plants.

<p><u>Tree Stratum</u> (Plot size: <u>20ft x 20ft</u> )</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Absolute % Cover</th> <th style="text-align: center;">Dom. Sp.?</th> <th style="text-align: center;">Relative % Cover</th> <th style="text-align: center;">Indicator Status</th> </tr> </thead> <tbody> <tr><td>1. <u>Populus balsamifera</u></td><td style="text-align: center;">40</td><td style="text-align: center;">Y</td><td style="text-align: center;">66.7</td><td style="text-align: center;">FAC</td></tr> <tr><td>2. <u>Alnus rubra</u></td><td style="text-align: center;">10</td><td style="text-align: center;">N</td><td style="text-align: center;">16.7</td><td style="text-align: center;">FAC</td></tr> <tr><td>3. <u>Salix lasiandra</u></td><td style="text-align: center;">10</td><td style="text-align: center;">N</td><td style="text-align: center;">16.7</td><td style="text-align: center;">FACW</td></tr> <tr><td>4. _____</td><td></td><td></td><td></td><td></td></tr> <tr><td colspan="5" style="text-align: right;">60 = Total Cover</td></tr> </tbody> </table> <p><u>Sapling/Shrub Stratum</u> (Plot size: <u>20ft x 20ft</u> )</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Absolute % Cover</th> <th style="text-align: center;">Dom. 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Sp.?</th> <th style="text-align: center;">Relative % Cover</th> <th style="text-align: center;">Indicator Status</th> </tr> </thead> <tbody> <tr><td>1. <u>Equisetum telmateia</u></td><td style="text-align: center;">10</td><td style="text-align: center;">Y</td><td style="text-align: center;">50.0</td><td style="text-align: center;">FACW</td></tr> <tr><td>2. <u>Epilobium ciliatum</u></td><td style="text-align: center;">2</td><td style="text-align: center;">Y</td><td style="text-align: center;">10.0</td><td style="text-align: center;">FACW</td></tr> <tr><td>3. <u>Rumex crispus</u></td><td style="text-align: center;">2</td><td style="text-align: center;">Y</td><td style="text-align: center;">10.0</td><td style="text-align: center;">FAC</td></tr> <tr><td>4. <u>Geranium robertianum</u></td><td style="text-align: center;">2</td><td style="text-align: center;">Y</td><td style="text-align: center;">10.0</td><td style="text-align: center;">FACU</td></tr> <tr><td>5. <u>Geum macrophyllum</u></td><td style="text-align: center;">2</td><td style="text-align: center;">Y</td><td style="text-align: center;">10.0</td><td style="text-align: center;">FAC</td></tr> <tr><td>6. <u>Agrostis capillaris</u></td><td style="text-align: center;">2</td><td style="text-align: center;">Y</td><td style="text-align: center;">10.0</td><td style="text-align: center;">FAC</td></tr> <tr><td>7. _____</td><td></td><td></td><td></td><td></td></tr> <tr><td>8. _____</td><td></td><td></td><td></td><td></td></tr> <tr><td>9. _____</td><td></td><td></td><td></td><td></td></tr> <tr><td>10. _____</td><td></td><td></td><td></td><td></td></tr> <tr><td>11. _____</td><td></td><td></td><td></td><td></td></tr> <tr><td colspan="5" style="text-align: right;">20 = Total Cover</td></tr> </tbody> </table> <p><u>Woody Vine Stratum</u> (Plot size: <u>5ft x 5ft</u> )</p> <table style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td>1. _____</td><td></td><td></td><td></td><td></td></tr> <tr><td>2. _____</td><td></td><td></td><td></td><td></td></tr> <tr><td colspan="5" style="text-align: right;">_____ = Total Cover</td></tr> </tbody> </table> <p>% Bare Ground in Herb Stratum <u>80</u></p>		Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	1. <u>Populus balsamifera</u>	40	Y	66.7	FAC	2. <u>Alnus rubra</u>	10	N	16.7	FAC	3. <u>Salix lasiandra</u>	10	N	16.7	FACW	4. _____					60 = Total Cover						Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	1. <u>Lonicera involucrata</u>	40	Y	47.1	FAC	2. <u>Rosa nutkana</u>	40	Y	47.1	FAC	3. <u>Populus balsamifera</u>	5	N	5.9	FAC	4. _____					5. _____					85 = Total Cover						Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	1. <u>Equisetum telmateia</u>	10	Y	50.0	FACW	2. <u>Epilobium ciliatum</u>	2	Y	10.0	FACW	3. <u>Rumex crispus</u>	2	Y	10.0	FAC	4. <u>Geranium robertianum</u>	2	Y	10.0	FACU	5. <u>Geum macrophyllum</u>	2	Y	10.0	FAC	6. <u>Agrostis capillaris</u>	2	Y	10.0	FAC	7. _____					8. _____					9. _____					10. _____					11. _____					20 = Total Cover					1. _____					2. _____					_____ = Total Cover					<p><b>Dominance Test worksheet:</b></p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>9</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>88.9%</u> (A/B)</p> <p><b>Prevalence Index worksheet:</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Total % Cover of:</th> <th style="text-align: left;">Multiply by:</th> </tr> </thead> <tbody> <tr><td>OBL species <u>0</u></td><td>x 1 = <u>0</u></td></tr> <tr><td>FACW species <u>22</u></td><td>x 2 = <u>44</u></td></tr> <tr><td>FAC species <u>141</u></td><td>x 3 = <u>423</u></td></tr> <tr><td>FACU species <u>2</u></td><td>x 4 = <u>8</u></td></tr> <tr><td>UPL species <u>0</u></td><td>x 5 = <u>0</u></td></tr> <tr><td>Column Totals: <u>165</u> (A)</td><td><u>475</u> (B)</td></tr> </tbody> </table> <p>Prevalence Index = B/A = <u>2.879</u></p> <p><b>Hydrophytic Vegetation Indicators:</b></p> <p><input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation</p> <p><input checked="" type="checkbox"/> 2 - Dominance Test is &gt;50%</p> <p><input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0<sup>1</sup></p> <p><input type="checkbox"/> 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)</p> <p><input type="checkbox"/> 5 - Wetland Non-Vascular Plants<sup>1</sup></p> <p><input type="checkbox"/> Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</p> <p><sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p> <p><b>Hydrophytic Vegetation Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No</p>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>22</u>	x 2 = <u>44</u>	FAC species <u>141</u>	x 3 = <u>423</u>	FACU species <u>2</u>	x 4 = <u>8</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>165</u> (A)	<u>475</u> (B)
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4. <u>Geranium robertianum</u>	2	Y	10.0	FACU																																																																																																																																																												
5. <u>Geum macrophyllum</u>	2	Y	10.0	FAC																																																																																																																																																												
6. <u>Agrostis capillaris</u>	2	Y	10.0	FAC																																																																																																																																																												
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## SOIL

Sampling Point: W1-SP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)										
Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4	10YR	4/2	85	10YR	6/6	5	C	M	Silt Loam	concentration is prominent
				2.5Y	5/2	10	D	M		
4-16	5Y	7/2	85	7.5YR	4/6	5	C	M	Silty Clay Loam	concentration is prominent
				7.5YR	5/8	5	C	PL		concentration is prominent
				7.5YR	4/4	5	C	M		concentration is prominent

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)		
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)		
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)		
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)			
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)			
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)			

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>  Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> ● Yes      ○ No
Remarks: _____ _____ _____	

## HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			
<b>Field Observations:</b> Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No      Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No      Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No      Depth (inches): _____ (includes capillary fringe)		<b>Wetland Hydrology Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> 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: 900 Lake Sammamish City/County: Issaquah/King Sampling Date: 10/7/2020  
 Applicant/Owner: WSDOT State: WA Sampling Point: W1-SP3  
 Investigator(s): Tatiana Dreisbach, Jocelyn Munoz Section, Township, Range: S 20, T24N, R 6E  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 10  
 Subregion (LRR): A Lat: 122.0583022 W Long: 47.5573272 N Datum: NAD83HARN  
 Soil Map Unit Name: Sammamish Silt Loam NWI Classification: PSS

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? <input type="radio"/> Yes <input checked="" type="radio"/> No Hydric Soil Present? <input type="radio"/> Yes <input checked="" type="radio"/> No Wetland Hydrology Present? <input type="radio"/> Yes <input checked="" type="radio"/> No	<b>Is the Sampled Area within a Wetland?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
Remarks:	

## VEGETATION – Use scientific names of plants.

<p><b>Tree Stratum</b> (Plot size: <u>20ft x 20ft</u> )</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dom. Sp.?</th> <th>Relative % Cover</th> <th>Indicator Status</th> </tr> </thead> <tbody> <tr> <td>1. <u><i>Populus balsamifera</i></u></td> <td><u>80</u></td> <td><u>Y</u></td> <td><u>100.0</u></td> <td><u>FAC</u></td> </tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td></td> <td><u>80</u></td> <td colspan="3">= Total Cover</td> </tr> </tbody> </table> <p><b>Sapling/Shrub Stratum</b> (Plot size: <u>15ft x 15ft</u> )</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dom. 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# SOIL

Sampling Point: W1-SP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)										
Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
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				10YR	5/2	20	D	M		

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Redox Depressions (F8)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)  <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
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<b>Restrictive Layer (if present):</b>  Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
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Remarks:  
Soil matrix chroma "too bright" (3) to meet a hydric soil indicator.

# HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one required; check all that apply)</u>				<u>Secondary Indicators (2 or more required)</u>	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)			
<b>Field Observations:</b>  Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No      Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No      Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No      Depth (inches): _____ (includes capillary fringe)			<b>Wetland Hydrology Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					

# Appendix B — Precipitation Data

## Appendix B-1. Comparison of Observed and Normal Precipitation (NRCS 2015)

The Regional Delineation Supplement Version 2.0 (USACE 2008 OR 2010) recommends using methods described in Chapter 19 in Engineering Field Handbook (NRCS 2015) to determine if precipitation occurring in the three full months prior to the site visit was normal, drier than normal, or wetter than normal. Actual rainfall is compared to the normal range of the 30-year average. The following table shows this information.

### Monthly precipitation data for Kent, Washington.

		Long-term rainfall records <sup>a</sup>			Rain fall <sup>a</sup>	Condition dry, wet, normal <sup>b</sup>	Condition Value	Month weight value	Product of previous two columns
	Month	3 yrs. in 10 less than	Average	3 yrs. in 10 more than					
1 <sup>st</sup> prior month	Sep	0.66	1.70	1.95	1.86	N	2	3	6
2 <sup>nd</sup> prior month	Aug	0.42	1.18	1.42	0.55	N	2	2	4
3 <sup>rd</sup> prior month	Jul	0.49	0.90	1.08	0.33	D	1	1	1
Sum									11

<sup>a</sup>NRCS 2019

<sup>b</sup> Conditions are considered normal if they fall within the low and high range around the average.

Note: If sum is

- 6 - 9 then prior period has been drier than normal
- 10 - 14 then period has been normal
- 15 - 18 then period has been wetter than normal

Condition value:

- Dry (D) =1
- Normal (N) =2
- Wet (W) =3

Conclusions: Normal precipitation conditions were present prior to the field visit.

## Appendix B-2. Daily Precipitation 10 days preceding field work, Kent, Washington

To determine if light, moderate, or heavy precipitation occurred in the 10 days prior to field work, the 10 day total is compared to 1/3 of the monthly average precipitation for the month evaluated (NRCS 2020).

### Daily precipitation data preceding the October 7, 2020 field visit for Kent, Washington.

Date (2020)	Daily Precipitation (inches) <sup>a</sup>
October 6	0.00
October 5	0.00A
October 4	S
October 3	0.00
October 2	0.00
October 1	0.00
September 30	M
September 29	0.00
September 28	0.00
September 27	0.00
<b>Sum</b>	<b>0.00</b>

<sup>a</sup> NRCS 2019

"S" This data value failed one of NCDC's quality control tests.

"M" values indicate missing data.

"A" values indicate a multiday total, accumulated since the last measurement.

Conclusions: No precipitation was recorded in the ten days preceding field work.