

**SR 900 78<sup>th</sup> Vicinity to Newport Way Widening  
Lake Sammamish State Park (LSSP) Wetland Mitigation Site  
and Tributary B Stream Mitigation Site  
WIN #A90098V**

**USACE IP NWS-2007-29-SOD**

**Northwest Region**

**2015 MONITORING REPORT**

**Wetlands Program**

*Issued March 2016*



**Washington State  
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# SR 900 78<sup>th</sup> Vicinity to Newport Way Widening Lake Sammamish State Park (LSSP) Wetland Mitigation Site and Tributary B Stream Mitigation Site

## USACE IP NWS-2007-29-SOD



| General Site Information          |   |                     |                    |
|-----------------------------------|---|---------------------|--------------------|
| <b>USACE IP Number</b>            | NWS-2007-29-SOD   |                     |                    |
| <b>Mitigation Location</b>        | Southwest of Issaquah Creek in Lake Sammamish State Park                  |                     |                    |
| <b>LLID Number</b>                | LSSP Wetland Site: 1220619475588<br>Tributary B Stream Site:1220625475351 |                     |                    |
| <b>Construction Date</b>          | 2009–2010   |                     |                    |
| <b>Monitoring Period</b>          | 2011–2020   |                     |                    |
| <b>Year of Monitoring</b>         | 5 of 10   |                     |                    |
| <b>Type of Impact<sup>1</sup></b> | Wetland   |                     | Buffer             |
| <b>Area of Project Impact</b>     | 0.75 acre   |                     | 0.91               |
| <b>Type of Mitigation</b>         | Wetland Establishment   | Wetland Enhancement | Buffer Enhancement |
| <b>Planned Area of Mitigation</b> | 1.74 acres  | 0.11 acre           | 2.81 acres         |

<sup>1</sup>Impact and mitigation numbers come from the as-built report (WSDOT 2010).

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## Summary of Monitoring Results and Management Activities (2015)

| Performance Standards   | 2015 Results <sup>2</sup>  | Management Activities  |
|---|--|--|
| <b>LSSP Wetland Mitigation Site</b>   |  |  |
| Wetland hydrology will be present for at least 10% of the growing season  | Not present in all intended areas (see Appendix 3, Tables 1, 2, and 3) |  |
| 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.                                    | 1.52 acres (see Appendix 4)  |  |
| Native facultative or wetter woody species will achieve a minimum of 35% coverage within the scrub-shrub planting areas. <b>(70% Year 10)</b>                               | 78% cover (CI <sub>80%</sub> = 71-86%)                                 |  |
| No more than 30% cover by non-native invasive species as listed in Table 10 (Table 4 in this report) in the wetland areas.  | 4% cover across the entire site  | Herbicide weed control occurred five times and manual control seven times in 2015  |
| Native woody species will achieve a minimum of 30% coverage in the wetland buffer and riparian buffer planting areas. <b>(50% Year 10)</b>                                  | 64% cover (CI <sub>80%</sub> = 58-71%)                                 |  |
| No more than 30% cover by non-native invasive species as listed in Table 10 (Table 4 in this report) in the buffer areas.   | 4% cover across the entire site  | Weed control efforts targeted reed canarygrass; see above for number of times      |
| 15% maximum cover across the entire mitigation site for blackberry ( <i>Rubus laciniatus</i> and <i>R. armeniacus</i> ).  | 4% cover   | Weed control efforts targeted blackberry; See above for number for number of times |
| The presence of Japanese knotweed ( <i>Reynoutria japonica</i> and related species) and purple loosestrife ( <i>Lythrum salicaria</i> ) will initiate eradication measures. | None observed  | Will review site for any signs of knotweed and purple loosestrife                  |
| <b>Tributary B Stream Mitigation Site</b>   |  |  |
| Native woody species will achieve a minimum of 30% coverage in the riparian buffer planting area.   | 81% cover (CI <sub>80%</sub> = 70-92%)                                 |  |

|   |               |  |
|---|---------------|--|
| No more than 30% cover by non-native invasive species as listed in Table 10 (Table 4 in this report) in the buffer areas. | 5% cover      | Herbicide weed control occurred once and manual control two times in 2015          |
| 15% maximum cover across the entire mitigation site for blackberry.   | 3% cover      | Weed control efforts targeted blackberry; See above for number for number of times |
| The presence of Japanese knotweed (and related species) and purple loosestrife will initiate eradication measures.        | None observed | Will review site for any signs of knotweed and purple loosestrife                  |

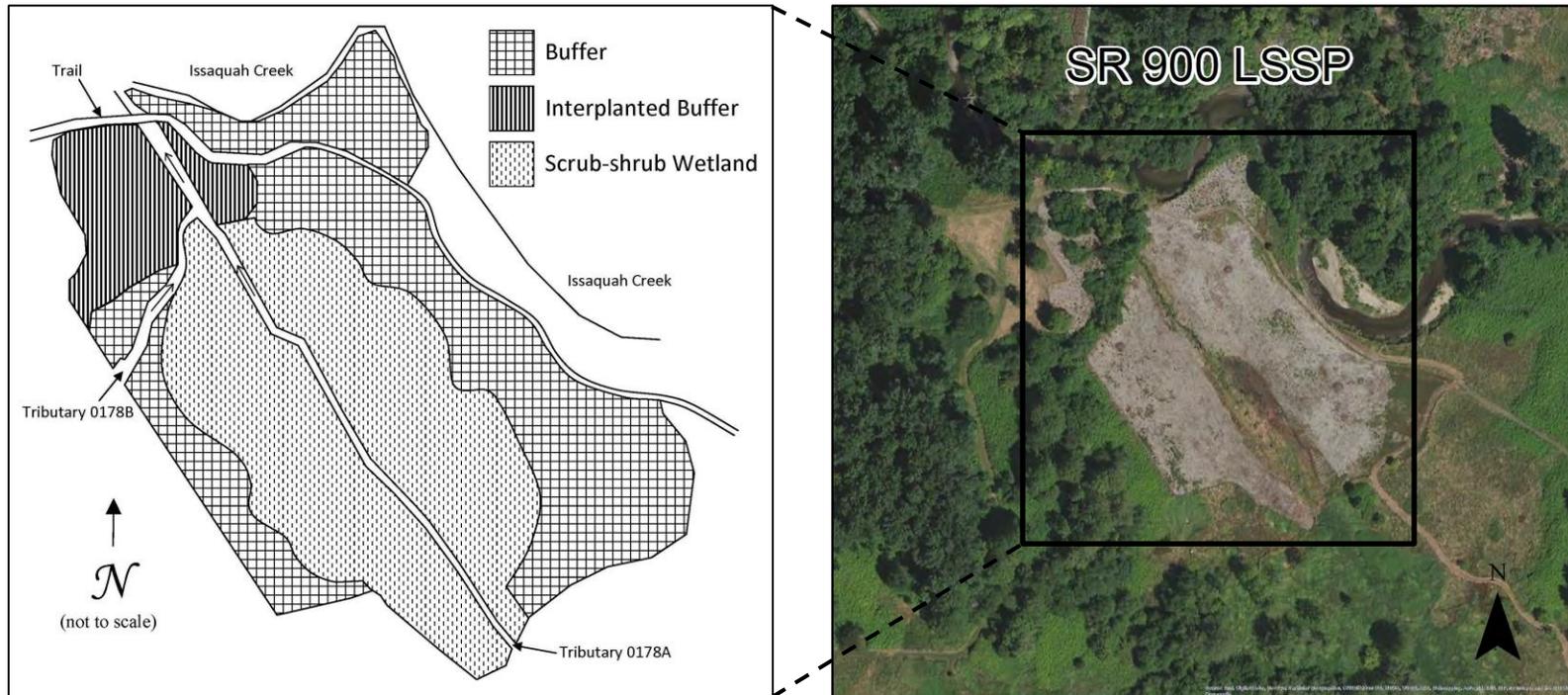
<sup>2</sup> Estimated values are presented with their corresponding statistical confidence interval. For example, 78% (CI<sub>80%</sub> = 71-86% cover) means we are 80% confident that the true cover value is between 71% and 86%.

## Report Introduction

This report summarizes fifth-year (final-year for Tributary B Site) (Year-5) monitoring activities at the State Route (SR) 900 LSSP Wetland Mitigation Site and the SR 900 Tributary B Stream Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site development/success. Monitoring activities in 2015 included vegetation surveys, photo-documentation, assessments of wetland hydrology, and a wetland delineation. Vegetation monitoring and photo-documentation at LSSP took place on August 17-19, hydrology visits occurred on March 10 and 24, and April 8, and a wetland delineation occurred on March 10, 2015. Vegetation monitoring and photo-documentation at Tributary B occurred on August 5, 2015.

## What is the Lake Sammamish State Park (LSSP) Wetland Mitigation Site?

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

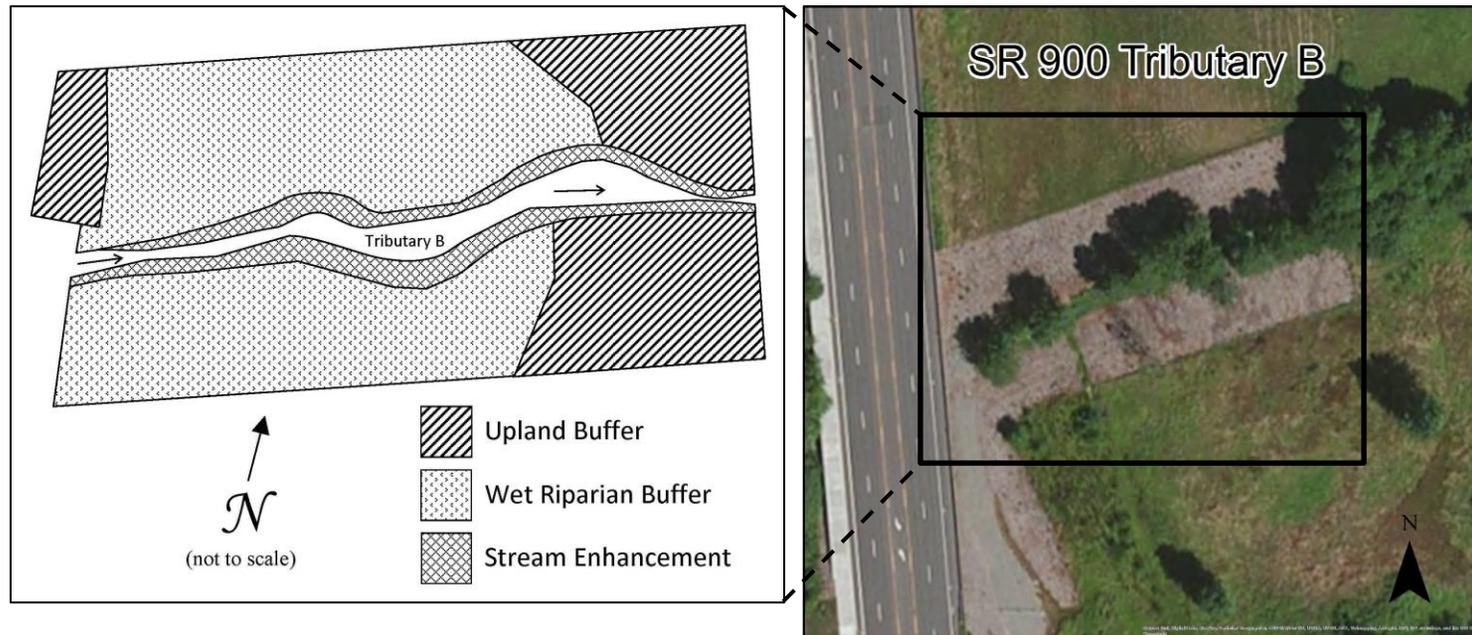


**Figure 1 LSSP Site Sketch**

The SR 900 LSSP Wetland Mitigation Site contains a scrub-shrub wetland along a tributary to Issaquah Creek within Lake Sammamish State Park. Appendix 2 includes site directions.

## What is the Tributary B Stream Mitigation Site?

This 0.58-acre mitigation site (Figure 2) was created to mitigate for the combined 139 linear feet of perennial stream that was placed in a culvert as a result of the SR 900 widening project. Two hundred and thirty-three linear feet of Tributary B was enhanced in order to replace lost functions. The stream mitigation site will increase habitat for salmonids by providing high flow refuge. The riparian buffer plantings will contribute screening, shading, organic debris and large woody debris recruitment to the stream. The site will provide increased wildlife habitat by improving the quality of the riparian buffer, as well as increase the area and food resources available for aquatic invertebrates and amphibians, which in turn will lead to increased food resources for salmonids.



**Figure 2 Tributary B Site Sketch**

The SR 900 Tributary B Stream Mitigation Site consists of 233 linear feet of stream enhancement and 0.58 acre of riparian buffer enhancement along Tributary B as it emerges from the newly lengthened culvert under SR 900. Appendix 2 includes site directions.

## What are the performance standards for this site?

### Year 5

#### Performance Standard 1 (LSSP)

The soils will be saturated to the surface, or standing water will be present at 12 inches below the surface or less, for a consecutive number of days greater than or equal to 10 percent of the growing season in years when rainfall meets or exceeds the 30-year average.

#### Performance Standard 2 (LSSP)

The wetland areas will be delineated using current methods. The mitigation site will contain 1.74 acres of created wetland and 11.0 acre of enhanced wetland for a total wetland area of 1.85 acres.

#### Performance Standard 3 (LSSP)

Native facultative or wetter woody species will achieve a minimum of 35 percent coverage within the scrub-shrub planting areas. Native colonizing vegetation will be included in these coverage calculations.

#### Performance Standard 4 (LSSP)

No more than 30 percent cover by non-native invasive species as listed in Table 10 (Table 4 in this report) in the wetland areas.

#### Performance Standard 5 (LSSP)

Native woody species will achieve a minimum of 30 percent coverage in the wetland buffer and riparian buffer planting areas. Native colonizing vegetation will be included in this coverage calculation.

#### Performance Standard 6 (LSSP)

No more than 30 percent cover by non-native invasive species as listed in Table 10 (Table 4 in this report) in the buffer areas.

#### Performance Standard 7 (LSSP)

Fifteen percent maximum cover across the entire mitigation site for blackberry.

#### Performance Standard 8 (LSSP)

The presence of Japanese knotweed (and related species) and purple loosestrife will initiate eradication measures.

Performance Standard 9 (Tributary B)

Native woody species will achieve a minimum of 30 percent coverage in the riparian buffer planting area. Native colonizing vegetation will be included in this coverage calculation.

Performance Standard 10 (Tributary B)

No more than 30 percent cover by non-native invasive species as listed in Table 10 (Table 4 in this report) in the buffer areas.

Performance Standard 11 (Tributary B)

Fifteen percent maximum cover across the entire mitigation site for blackberry.

Performance Standard 12 (Tributary B)

The presence of Japanese knotweed (and related species) and purple loosestrife will initiate eradication measures.

**Year 10 (LSSP only)**

Performance Standard 1

The wetland areas at LSSP will be delineated using current methods. The mitigation site will contain 1.74 acres of created wetland and 11.0 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

No more than 30 percent cover by non-native invasive species as listed in Table 10 (Table 4 in this report) in the wetland areas.

Performance Standard 4

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 5

No more than 30 percent cover by non-native invasive species as listed in Table 10 (Table 4 in this report) in the buffer areas.

Performance Standard 6

Fifteen percent maximum cover across the entire mitigation site for blackberry.

Performance Standard 7

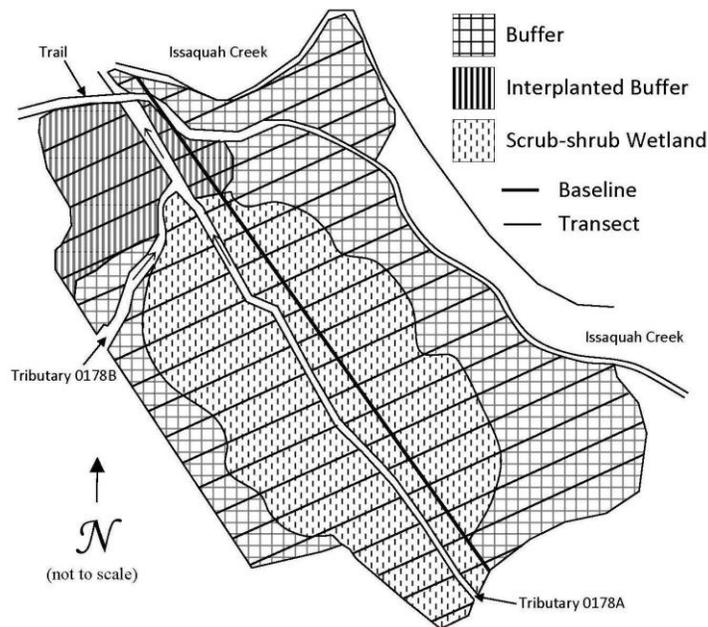
The presence of Japanese knotweed (and related species) and purple loosestrife will initiate eradication measures.

Appendix 1 shows the As-built planting plan (WSDOT 2010).

## How were the performance standards evaluated?

WSDOT staff collected hydrology data and 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) and a Global Positioning System (Trimble Mapping Grade) (Performance Standards 1 and 2).

The tables below document the sampling methodology utilized for Performance Standards (PS) 3 and 5 as required by the mitigation plan. For additional details on the methods see the [WSDOT Wetland Mitigation Site Monitoring Methods Paper](#) (WSDOT 2008). When addressing both of these sets of standards, the riparian buffer was combined with the scrub-shrub wetland instead of the upland buffer. This adjustment was made because the vegetation community composition and hydrologic conditions of the scrub-shrub wetland and the riparian buffer are much more similar than the riparian buffer and the upland buffer.

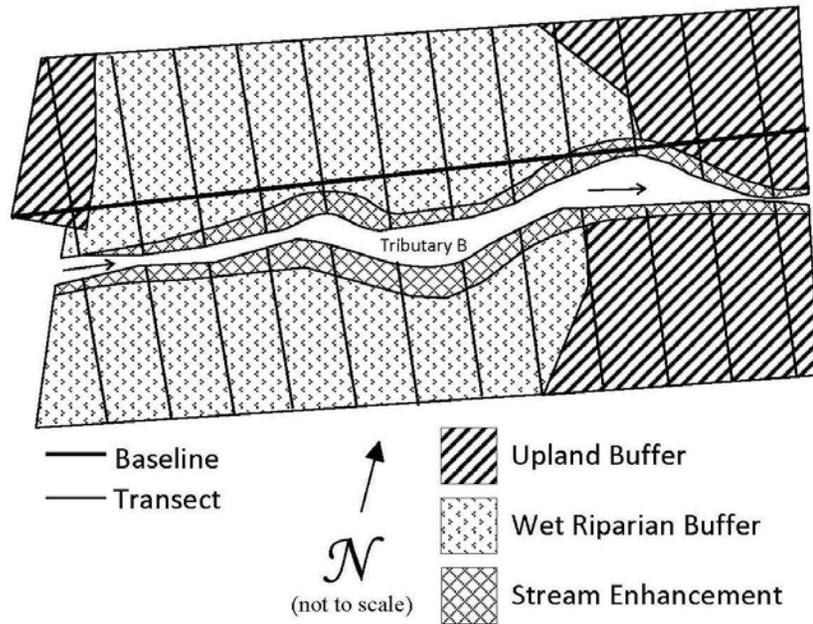


**Figure 3 LSSP Site Sampling Design (2015)**

**Placement of Baseline at LSSP:** Parallel to Tributary 0178A through the center of the site (Figure 3).

Length: 166m Transects: 16.

|                      | PS 3                | PS 5           |
|----------------------|---------------------|----------------|
| <b>Attribute</b>     | Cover               | Cover          |
| <b>Target pop.</b>   | Native Woody        | Native Woody   |
| <b>Zone</b>          | Scrub-shrub wetland | Buffer         |
| <b>Sample method</b> | Line-intercept      | Line-intercept |
| <b>SU length</b>     | 10m                 | 10m            |
| <b>SU width</b>      | NA                  | NA             |
| <b>Points per SU</b> | NA                  | NA             |
| <b>Total # of SU</b> | 26                  | 27             |



**Figure 4 Tributary B Site Sampling Design (2015)**

**Placement of Baseline at Tributary B:** Through the center of the site, parallel to Tributary B stream (Figure 4).  
 Length: 80m Transects: 10

| <b>PS 9</b>          |                |
|----------------------|----------------|
| <b>Attribute</b>     | Cover          |
| <b>Target pop.</b>   | Native Woody   |
| <b>Zone</b>          | Buffer         |
| <b>Sample method</b> | Line-intercept |
| <b>SU length</b>     | 9m             |
| <b>SU width</b>      | NA             |
| <b>Points per SU</b> | NA             |
| <b>Total # of SU</b> | 10             |

## **How is the LSSP site developing?**

This site is not yet meeting the hydrology performance standards. Groundwater, influences of fine textured soils on water retention, and precipitation are likely the main source of hydrology. The LSSP wetland appears to store water well during rain events, and then quickly loses it. Despite 2015 being a normal year for precipitation, well readings indicate that standing water was only present within 12 inches of the soil surface near the intended wetland edge after periods of heavier precipitation (see Appendix 3, Tables 1, 2, and 3). The delineated wetland fell slightly short of the intended acreage; however no rain fell in the 10 days prior to this visit. It is possible that the wetland is providing the intended hydrologic functions despite these measurements. Hydrology will continue to be monitored in 2016.

This site is meeting all final-year (Year 10) vegetation performance standards in Year 5 (see Appendix 3, Table 5). Cover of planted woody species is high and cover of invasive species is low.

Bullfrogs were observed upstream of the beaver dam. Rabbits, deer, animal scat, snakes, belted kingfishers, song sparrows, Canada geese, American goldfinches, spotted towhees, black capped chickadees, American robins, barn swallows, tree swallows, barn owls, great blue herons, and osprey were also observed at the time of monitoring.

## **Is the Tributary B site a success?**

This site is meeting all final-year (Year 5) performance standards. Cover of native woody species is high and cover of invasive species is low. Swallows were observed aerial feeding adjacent to the site and a red-tailed hawk was observed flying overhead at time of monitoring.

Results for Performance Standard 1 (LSSP)  
(Wetland hydrology):

Wetland hydrology was not observed in all intended areas on the first and third visits, but was present on the second visit (Appendix 3, Tables 1, 2, and 3) (Photo 1). Records indicate heavier precipitation in the 10 days prior to the second visit than the others.

Results for Performance Standard 2 (LSSP)  
(1.74 acres of created wetland and 0.11 acre of enhanced wetland for a total of 1.85 acres of wetland):

A delineation conducted on March 10, 2015 indicated wetland acreage was 1.52 acres (0.33 acre less than planned). See Appendix 4.



**Photo 1**  
**Surface saturation in the scrub-shrub wetland**  
**(March 2015)**

Results for Performance Standard 3 (LSSP)

(35% cover native facultative or wetter woody species in the scrub-shrub planting areas) (70% in Year 10):

Native facultative or wetter woody cover in the scrub-shrub planting areas and riparian buffer is estimated at 78 percent (CI<sub>80%</sub>= 71-86%). This value exceeds the performance standard target. Dominant species include willows (*Salix spp.*), twinberry honeysuckle (*Lonicera involucrata*), and roses (*Rosa spp.*). (Photo 2)

Results for Performance Standard 4 (LSSP)

(Less than 30% non-native invasive species in the wetland):

Invasive cover across the mitigation site is qualitatively estimated at four percent. This value is below the performance standard threshold. One butterfly bush (*Buddleja davidii*) was observed in the scrub-shrub wetland. Although not on the list of target species, reed canarygrass (*Phalaris arundinacea*) is becoming well established in the stream due to a beaver dam slowing the velocity.

Results for Performance Standard 5 (LSSP)

(30% cover native woody species in the wetland buffer and riparian buffer planting areas (50% in Year 10)):

Native woody cover in the upland and inter-planted buffer is estimated at 64 percent (CI<sub>80%</sub>= 58-71%). This value exceeds the performance standard target. Dominant species include snowberry (*Symphoricarpos albus*), black cottonwood (*Populus balsamifera*), thimbleberry (*Rubus parviflorus*), and willows. (Photo 3)



**Photo 2**  
**Native woody cover in the scrub-shrub wetland (August 2015)**



**Photo 3**  
**Native woody cover in the upland buffer (August 2015)**

Results for Performance Standard 6 (LSSP)

(Less than 30% non-native invasive species in the buffer):

Invasive cover across the mitigation site is qualitatively estimated at four percent (see results for Performance Standard 4). This value is below the performance standard threshold. Himalayan blackberry (*Rubus armeniacus*) is scattered throughout the wetland buffer.

Results for Performance Standard 7 (LSSP)

(Less than 15% cover blackberry across the entire mitigation site):

The cover of blackberry is qualitatively estimated at four percent across the entire mitigation site. This value is below the performance standard threshold.

Results for Performance Standard 8 (LSSP)

(No Japanese knotweed or purple loosestrife):

No Japanese knotweed or purple loosestrife was observed at the time of monitoring.

Results for Performance Standard 9 (Tributary B)  
(30% cover native woody species in the riparian buffer planting area):

Cover of native woody species in the riparian buffer planting area is estimated at 81% ( $CI_{80\%} = 70-92\%$ ). This value exceeds the performance standard target. Dominant species include willows and red alder (*Alnus rubra*). (Photo 4)

Results for Performance Standard 10 (Tributary B)  
(Less than 30% non-native invasive species in the riparian buffer):

Cover of all invasive species in the riparian buffer is qualitatively estimated at five percent. This value is below the performance standard threshold.

Results for Performance Standard 11 (Tributary B)  
(Less than 15% cover blackberry across the entire mitigation site):

Cover of blackberries across the site is qualitatively estimated at three percent. This value is below the performance standard threshold.

Results for Performance Standard 12 (Tributary B)  
(No Japanese knotweed or purple loosestrife):

No Japanese knotweed or purple loosestrife was observed at the time of monitoring.



**Photo 4**  
**Woody cover in the riparian buffer planting area**  
**(August 2015)**

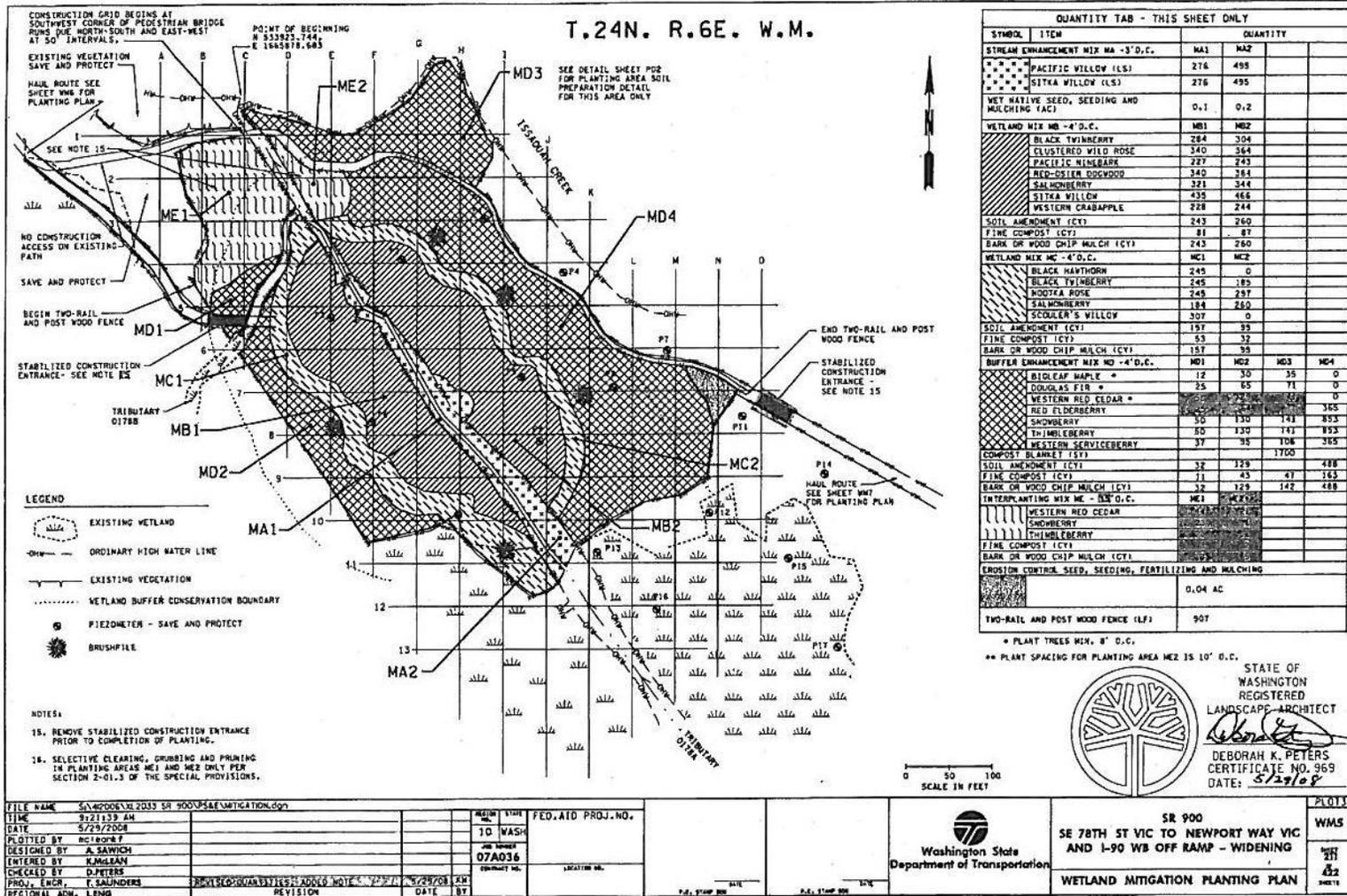
### **What is planned for these sites?**

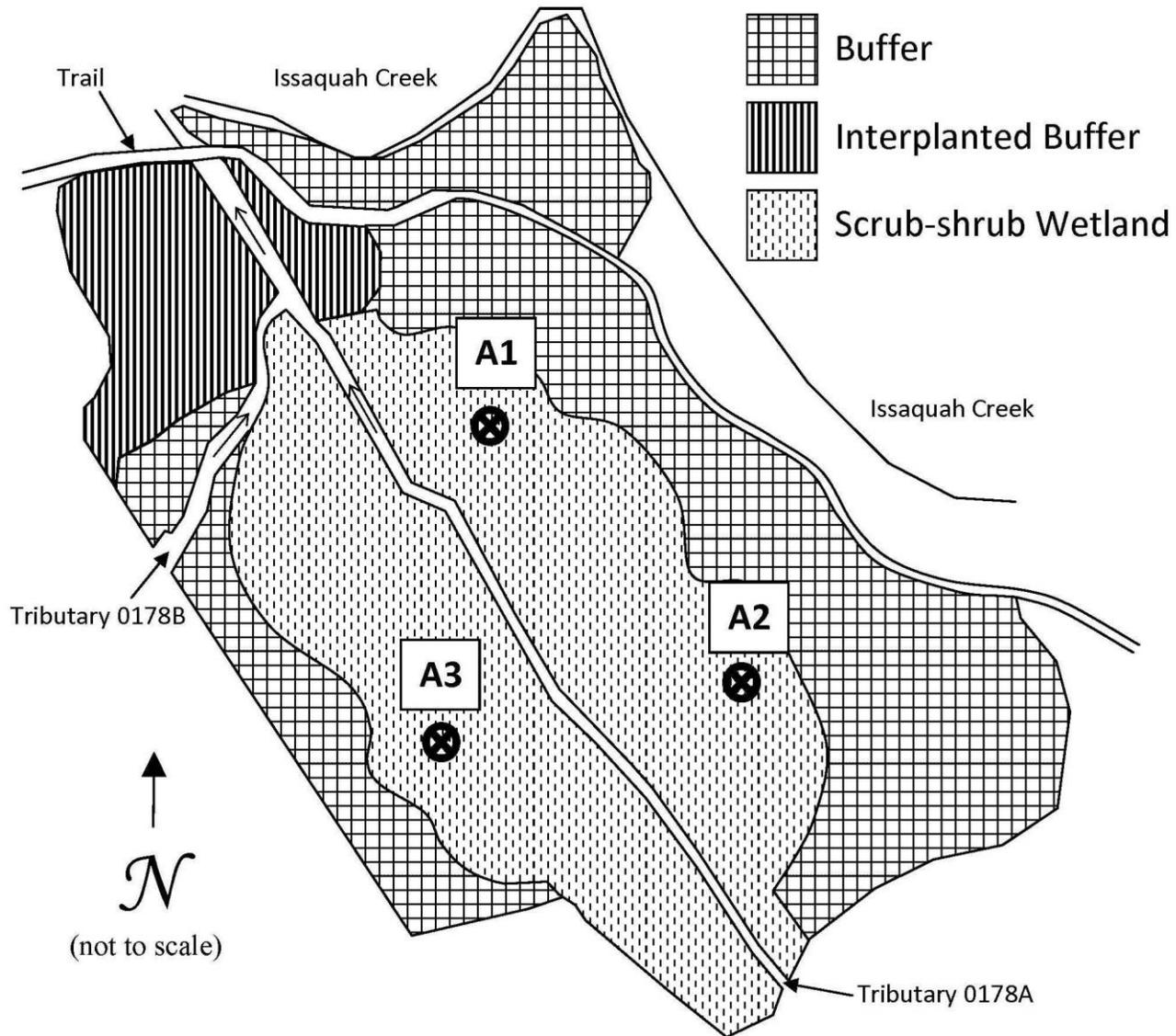
Continue ongoing weed control as necessary.

# Appendix 1 – As-Built Planting Plan and LSSP Well Locations

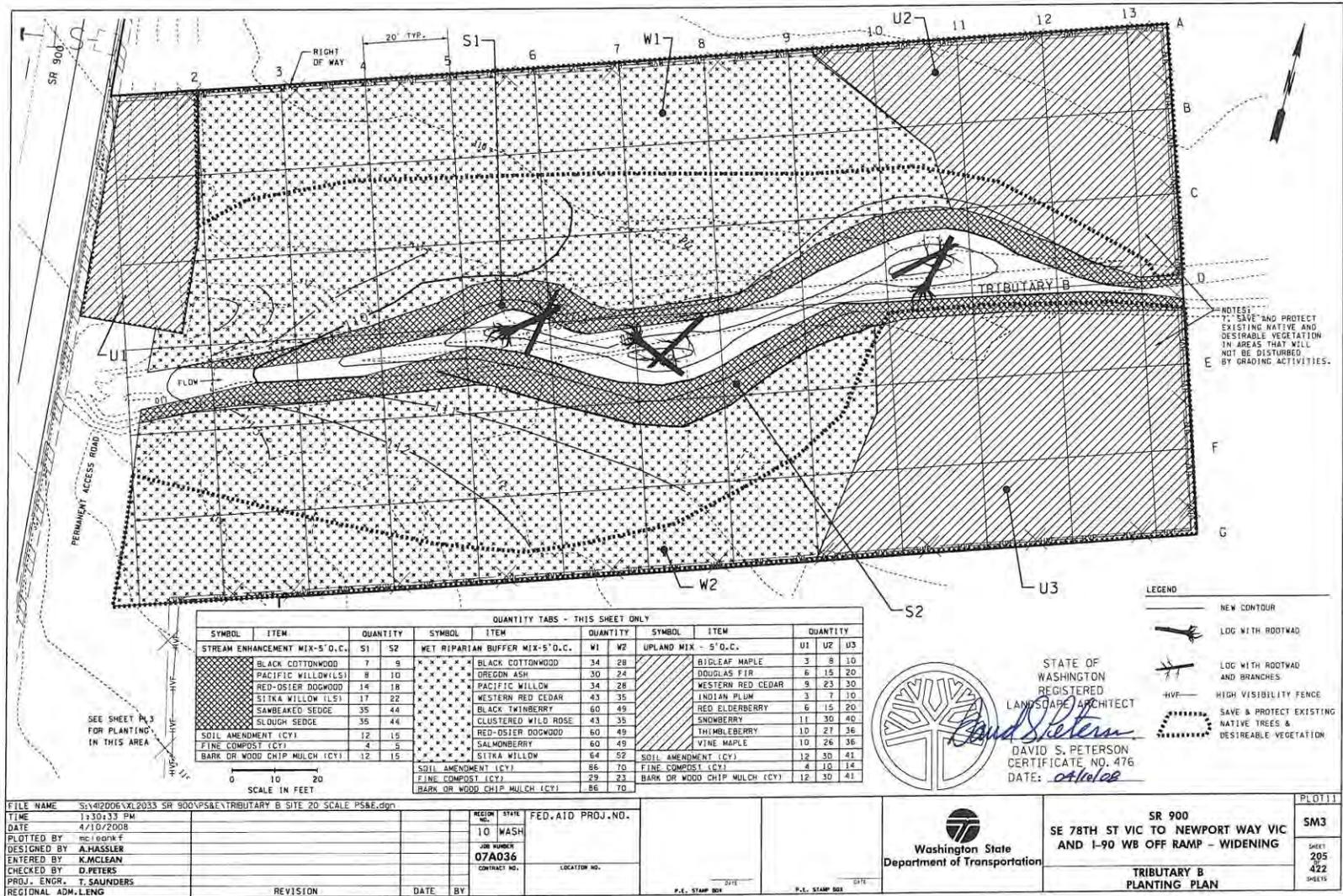
(from WSDOT 2010)

## LSSP





# Tributary B



## Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on August 19 (LSSP) and August 5 (Tributary B) in 2015 and document current site development.



**Photo Point 1a**



**Photo Point 1b**



**Photo Point 1c**



**Photo Point 2**



**Photo Point 3a**



**Photo Point 3b**



**Photo Point 4a**



**Photo Point 4b**



**Photo Point 5a**



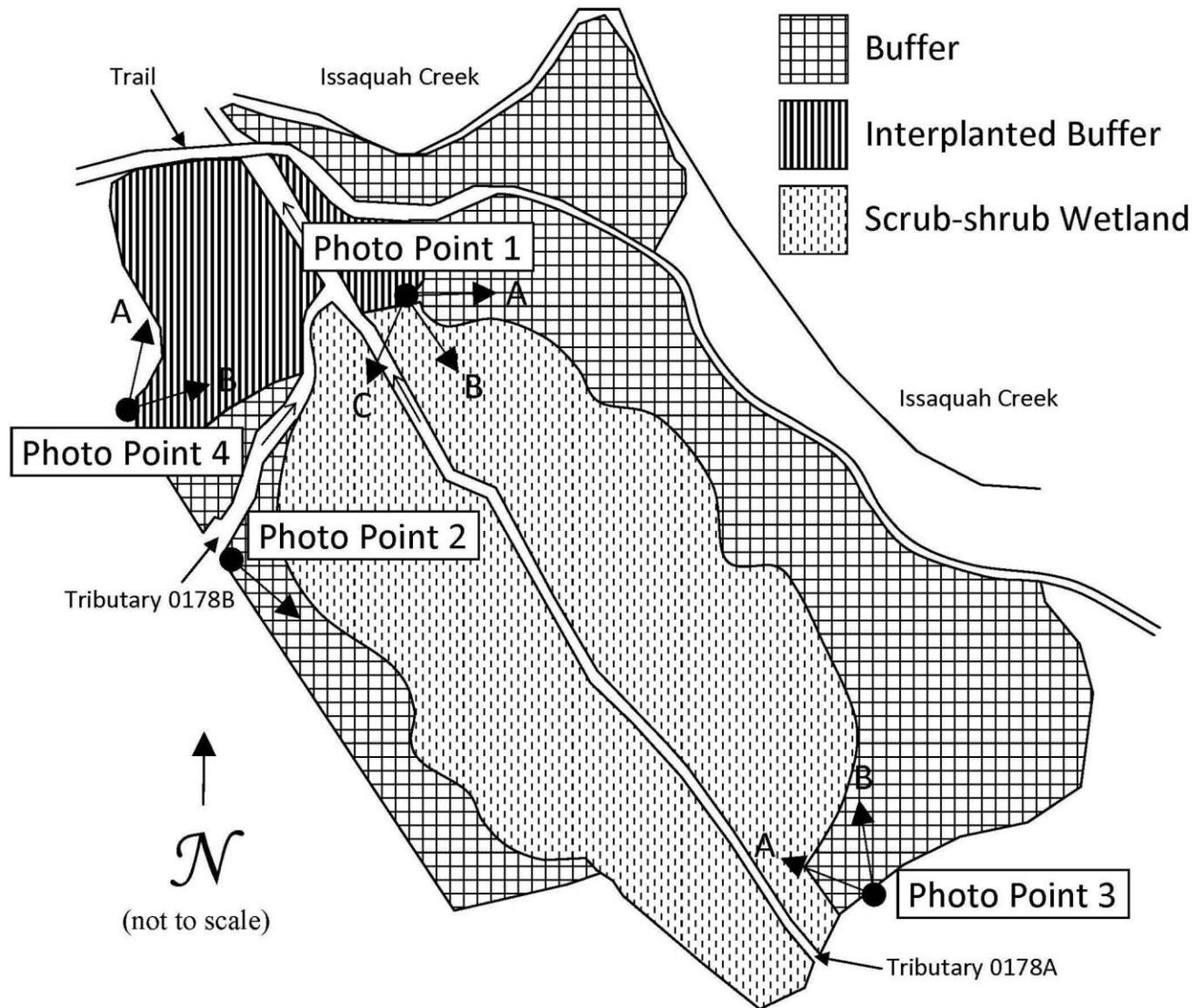
**Photo Point 5b**



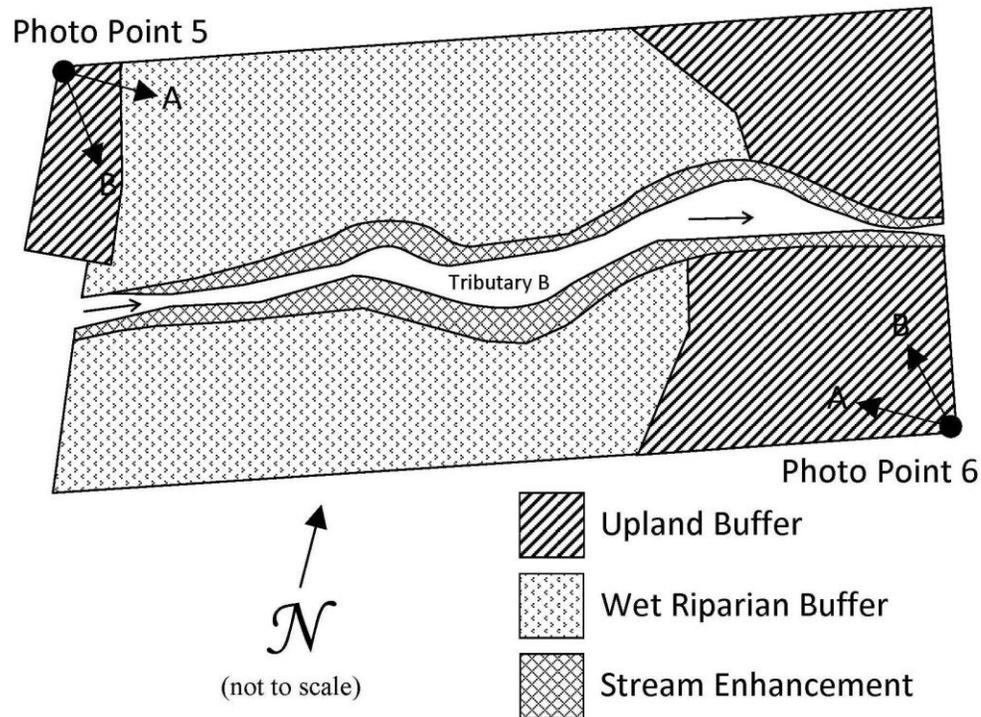
**Photo Point 6a**



**Photo Point 6b**



**LSSP**



## Tributary B

### 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.

To get to the Tributary B site, go back to WA-900/17th Avenue Northwest and head south for approximately one mile. Turn left on Southeast 75th Street, then immediately take another left into the mitigation site.

## Appendix 3 – Data Tables

Table 1. Hydrology Observations.

| Date           | Surface Observations   | Well ID # | Water Level (inches below soil surface unless otherwise noted) |
|----------------|--|-----------|--|
| March 10, 2015 |  | 1         | 18   |
|                |  | 2         | 13.5   |
|                |  | 3         | 17   |
| March 24, 2015 | Drift deposits and surface saturation present with pockets of inundation along the stream. | 1         | 2  |
|                |  | 2         | 3  |
|                |  | 3         | 3.5  |
| April 8, 2015  | Riparian buffer inundated.   | 1         | 17.5   |
|                |  | 2         | 12.5   |
|                |  | 3         | 15   |

Table 2. Comparison of Observed and Normal Precipitation (NRCS 1997)

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 | Feb.                                    | 2.86                   | 4.47    | 5.39                   | 6.41                                    | W               | 3                  | 3                               | 9                      |
| 2 <sup>nd</sup> prior month | Jan.                                    | 3.89                   | 5.30    | 6.23                   | 3.23                                    | D               | 1                  | 2                               | 2                      |
| 3 <sup>rd</sup> prior month | Dec.                                    | 4.14                   | 5.81    | 6.87                   | 3.74                                    | D               | 1                  | 1                               | 1                      |
| <b>Sum</b>                  |   |                        |         |                        |   |                 |                    | <b>12</b>                       |                        |

<sup>a</sup> NRCS 2015

<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 on March 10, 2015.

Table 3. Daily Precipitation 10 days preceding field work, Kent, Washington

| Prior to March 10 visit |   | Prior to March 24 visit |   | Prior to April 8 visit |   |
|-------------------------|---|-------------------------|---|------------------------|---|
| Date (2015)             | Daily Precipitation (inches) <sup>a</sup> | Date (2015)             | Daily Precipitation (inches) <sup>a</sup> | Date (2015)            | Daily Precipitation (inches) <sup>a</sup> |
| March 9                 | 0.00                                      | March 23                | unavailable                               | April 7                | 0.02                                      |
| March 8                 | 0.00                                      | March 22                | 0.05                                      | April 6                | 0.05                                      |
| March 7                 | 0.00                                      | March 21                | 0.23                                      | April 5                | 0.00                                      |
| March 6                 | 0.00                                      | March 20                | 0.02                                      | April 4                | 0.00                                      |
| March 5                 | 0.00                                      | March 19                | 0.00                                      | April 3                | 0.10                                      |
| March 4                 | 0.00                                      | March 18                | unavailable                               | April 2                | 0.00                                      |
| March 3                 | 0.00                                      | March 17                | 0.01                                      | April 1                | 0.07                                      |
| March 2                 | 0.00                                      | March 16                | 0.00                                      | March 31               | 0.08                                      |
| March 1                 | 0.00                                      | March 15                | unavailable                               | March 30               | 0.00                                      |
| Feb 28                  | 0.00                                      | March 14                | 0.69                                      | March 29               | 0.00                                      |
| <b>Total:</b>           | <b>0.00</b>                               | <b>Total:</b>           | <b>1.00</b>                               | <b>Total:</b>          | <b>0.32</b>                               |

<sup>a</sup>NRCS 2015

Table 4. Non-native invasive species.

| Scientific Name   | Common Name                     |
|---|---------------------------------|
| <i>Buddleia alternifolia</i>                                  | fountain butterfly bush         |
| <i>Cytisus scoparius</i>                                      | Scot's broom                    |
| <i>Geranium robertianum</i>                                   | herb Robert                     |
| <i>Ilex aquifolium</i>  | English holly                   |
| <i>Iris pseudacorus</i>                                       | yellow flag iris                |
| <i>Lythrum salicaria</i>                                      | purple loosestrife              |
| <i>Polygonum cuspidatum (and related species and hybrids)</i> | Japanese knotweed               |
| <i>Prunus laurocerasus</i>                                    | English laurel                  |
| <i>Rubus laciniatus</i>                                       | evergreen blackberry            |
| <i>Rubus armeniacus (discolor)</i>                            | Himalaya or Armenian blackberry |

Table 5. Year 10 performance standards met in Years 4 and 5 at LSSP

| Performance Standards (Year-10)   | Year 4 (2014) Qualitative Results                          | Year 5 (2015) Results                  |
|---|--|--|
| Native facultative or wetter woody species will achieve a minimum of 70% coverage within the scrub-shrub planting areas.  | 75% cover (scrub-shrub and riparian buffer zones combined) | 78% cover (CI <sub>80%</sub> = 71-86%) |
| No more than 30% cover by non-native invasive species as listed in Table 10 (Table 4 in this report) in the wetland areas.  | 5% cover across the entire site                            | 4% cover across the entire site        |
| Native woody species will achieve a minimum of 50% coverage in the wetland buffer and riparian buffer planting areas.   | 65% cover (upland and inter-planted buffer zones)          | 64% cover (CI <sub>80%</sub> = 58-71%) |
| No more than 30% cover by non-native invasive species as listed in Table 10 (Table 4 in this report) in the buffer areas.   | 5% cover across the entire site                            | 4% cover across the entire site        |
| 15% maximum cover across the entire mitigation site for blackberry ( <i>Rubus laciniatus</i> and <i>R. armeniacus</i> ).  | 5% cover across the entire site                            | 4% cover across the entire site        |
| The presence of Japanese knotweed ( <i>Reynoutria japonica</i> and related species) and purple loosestrife ( <i>Lythrum salicaria</i> ) will initiate eradication measures. | None observed  | None observed                          |

# **Appendix 4 – Wetland Delineation Report**

# **WETLAND DELINEATION REPORT**

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

**SR 900: 78th 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:  
Tatiana Dreisbach  
WSDOT Environmental Services Office  
Olympia, Washington**

**February 2016**



**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 mitigation site. Field work was conducted by WSDOT wetland biologists Tatiana Dreisbach and Sean Patrick, on March 10, 2015. The delineation identifies 1.52 acres of wetland within the mitigation site boundaries and an additional 0.01 acre occurring in intended upland buffer areas of the site.

| General Information for the SR 900 Lake Sammamish State Park mitigation site       |   |                                |
|--|---|--------------------------------|
| <b>Location:</b>   | S20, T24N, R6E. King County. (Vicinity map, Figure 1) |                                |
|  | <b>USACE NWP IP Number</b>                            | NWS-2007-29-SOD                |
|  | <b>Ecology WQC Order Number</b>                       | 5317                           |
|  | <b>Long./Lat. ID Number</b>                           | 1220619475588                  |
|  | <b>Land Resource Region (LRR)</b>                     | A                              |
|  | <b>Major Land Resource Area (MLRA)</b>                | 2                              |
|  | <b>Construction Date</b>                              | 2009 - 2010                    |
|  | <b>Monitoring Period</b>                              | 2011 - 2020                    |
|  | <b>Year of Monitoring</b>                             | 5 of 10 (in 2015)              |
| <b>Area of Project Impact<sup>1</sup></b>  | 0.75 acre   |                                |
| <b>Mitigation Types</b>  | <b>Required Acreage</b>                               | <b>2015 Delineated Acreage</b> |
| <b>Wetland Establishment</b>   | 1.74 acres  | 1.10 acres                     |
| <b>Wetland Enhancement</b>   | 0.11 acre   | 0.11 acre                      |
| <b>Stream Enhancement</b>  | 0.31 acre   | 0.31 acre                      |
| <b>Totals</b>  | 2.16 acres  | 1.52 acres                     |

<sup>1</sup> Project impact numbers from Washington State Department of Ecology Water Quality Certification Order 5317 with 0.75 acre impacts (Ecology 2008).

# Location

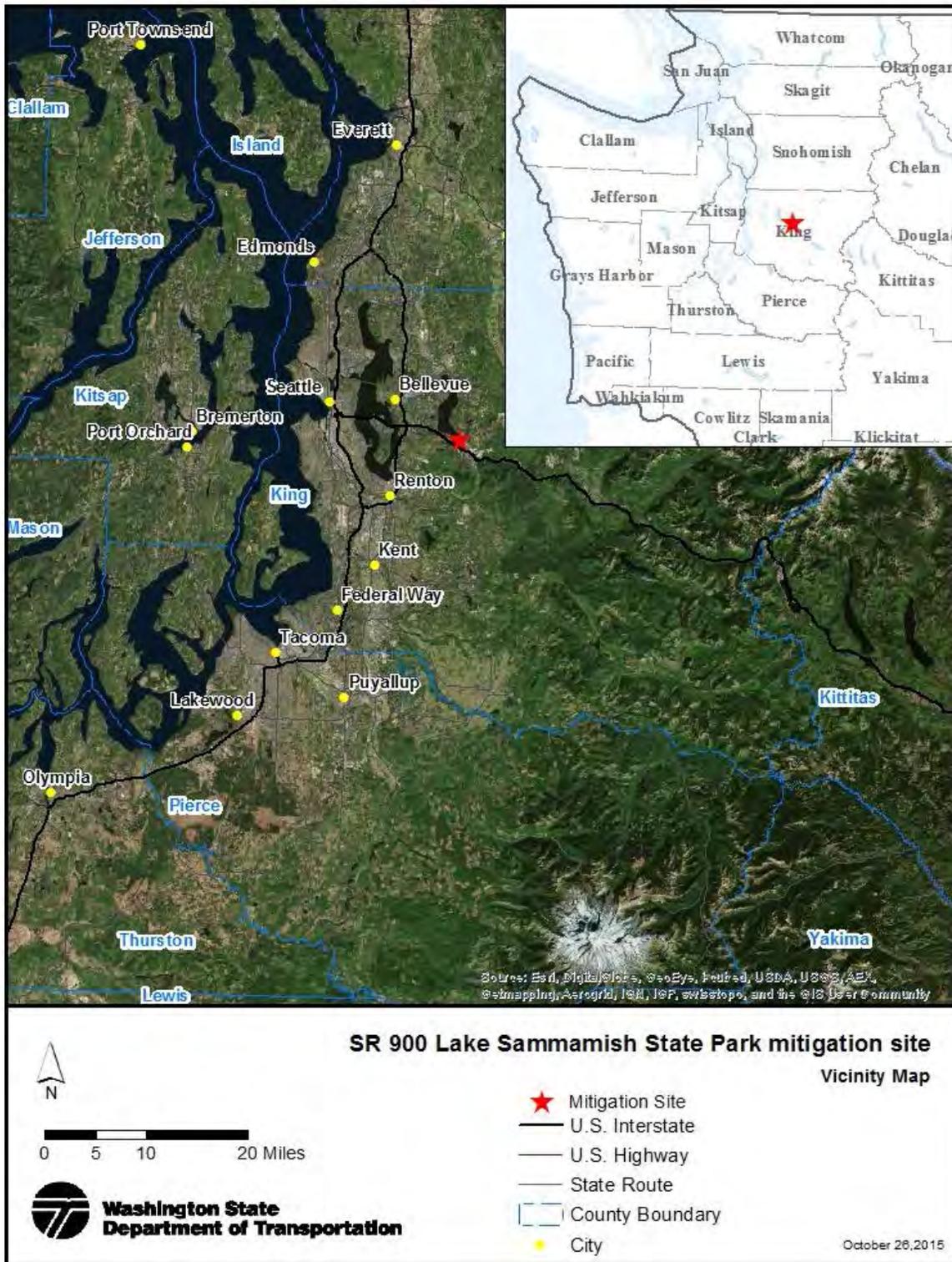


Figure 1. Vicinity Map

# Methods

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Wetland boundaries within the SR 900 Lake Sammamish State Park mitigation site were delineated using routine 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)

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) Trimble GeoXT mapping grade unit was used to record the wetland boundaries and sampling point locations (Figure 2). Wetland boundary points were recorded at regular intervals and at any change in direction along the boundary. Wetland mitigation types (Figure 2) were georeferenced by digitizing the mitigation site planting plan in ArcGIS 10.2.2. 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 mitigation site boundary (Figure 2). The wetland on the mitigation site is contiguous with wetland areas beyond the mitigation site boundary. Wetland areas beyond the mitigation site boundary were not included in this delineation.

### Wetlands

The SR 900 Lake Sammamish State Park mitigation site has depressional and riverine wetland areas with multiple Cowardin classes. Palustrine emergent (PEM) and palustrine scrub-shrub (PSS) communities characterize the wetland vegetation on the mitigation site. Some PSS communities will likely develop into palustrine forested areas as vegetation continues to establish. Emergent wetland vegetation is established within the stream channel in some locations. This vegetation interspersed with large woody debris and channel sinuosity, combined with variation in hydroperiods and Cowardin classes provide habitat complexity on the mitigation site.

The delineation determined 1.52 acres of wetland were present within the SR 900 Lake Sammamish State Park mitigation site, with an additional 0.01 acre occurring in intended upland buffer areas. Delineation data were collected at five sampling points

and recorded on wetland determination data forms (Appendix A). Paired wetland and upland sample points were used to define the wetland edge. Additional wetland sample points characterize various wetland vegetation communities. 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 1997) 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 whole, normal precipitation conditions were present prior to field work. The first prior month was wetter than normal and the second and third prior months were both drier than normal (Appendix B-1).

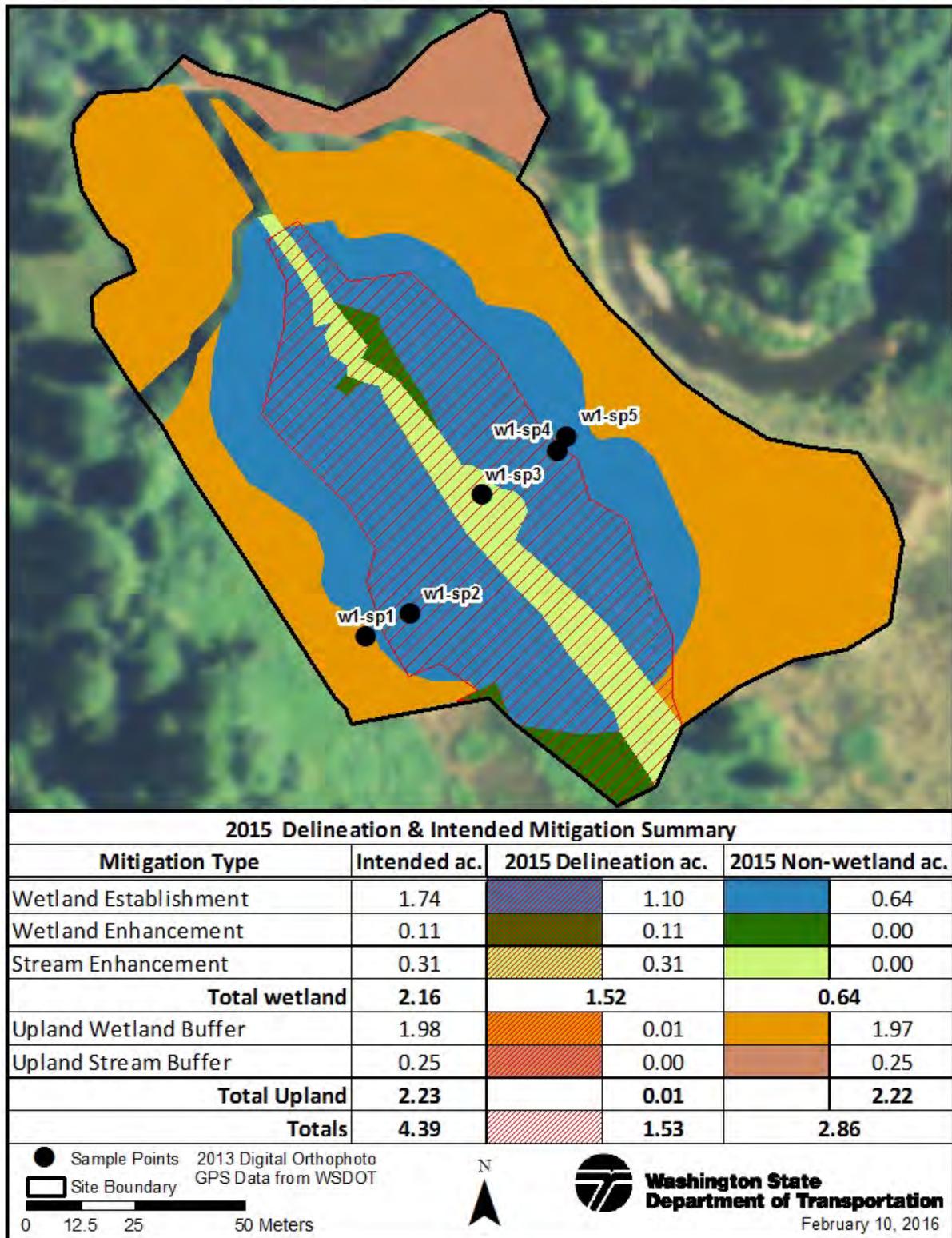
No recordable precipitation was in the ten days preceding field work (Appendix B-2).

### Growing Season

The following evidence of the growing season was observed at the time of the delineation:

- new vegetative growth was present on some herbaceous plants
- leaves on Sitka willow (*Salix sitchensis*) and twinberry honeysuckle (*Lonicera involucrata*), were partially or fully emerged
- redosier dogwood (*Cornus alba*) was in flower.

## SR 900 Lake Sammamish State Park, GPS Data: 3/10/2015



**Figure 2. Study area/ site boundary in black and wetland boundary in red.**

| SR 900 Lake Sammamish State Park mitigation site – Wetland Delineation Summary    |  |   |
|---|--|---|
| <b>Total Delineated Wetland Area</b>  | 1.52 acres, with an additional 0.01 acre in intended upland buffer areas   |   |
|  | <b>Wetland Determination Data Forms</b>  | Appendix A; Sampling Point W1-SP2, W1-SP3, W1-SP4 |
|   | <b>Upland Determination Data Forms</b>   | Appendix A; Sampling Point W1-SP1 and W1-SP5      |
|   | <b>Delineators</b>   | Tatiana Dreisbach<br>Sean Patrick                 |
|   | <b>Delineation Date</b>  | March 10, 2015                                    |
| <b>Vegetation</b>   | Trees – none<br>Shrubs – Pacific willow ( <i>Salix lasiandra</i> ), Sitka willow, hardhack ( <i>Spiraea douglasii</i> ), Nootka rose ( <i>Rosa nutkana</i> ), black cottonwood ( <i>Populus balsamifera</i> ), twinberry honeysuckle<br>Herbs – colonial bentgrass ( <i>Agrostis capillaris</i> ), spike bentgrass ( <i>Agrostis exarata</i> ), soft rush ( <i>Juncus effusus</i> ), broadleaf cattail ( <i>Typha latifolia</i> ), fringed willowherb ( <i>Epilobium ciliatum</i> ), reed canarygrass ( <i>Phalaris arundinacea</i> ), bird's-foot trefoil ( <i>Lotus corniculatus</i> ), common velvetgrass ( <i>Holcus lanatus</i> ) |   |
| <b>Soils</b>  | Soils examined to a depth of 20 inches exhibited hydric characteristics. Matrix colors of 10YR 2/2, 10YR 5/1, 10YR 5/4, 2.5Y 4/1, and N 5/0 were observed. Redoximorphic concentrations and depletions were observed in some layers. Indicators Depleted Below Dark Surface (A11) and Depleted Matrix (F3) met.  |   |
| <b>Hydrology</b>  | Groundwater and the influences of fine textured soils on water retention appear to be the main source of hydrology. Flows associated with the tributary to Issaquah Creek, flowing through the wetland, and precipitation also contribute to the hydrologic regime of this wetland. Water in the observation pits ranged from 0 inches (at the soil surface) to 11 inches below the surface. Surface water less than one-inch deep and algal mats were observed in some areas.   |   |
| <b>Rationale for Delineation</b>  | Positive indicators of all three wetland criteria were present. Hydric soils and hydrophytic vegetation were present in both wetland and adjacent upland areas. Hydrology indicators helped inform the delineation. Placement of boundary determined by presence/absence of observed hydrology indicators.   |   |

## Limitations

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 ordinances. 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.

# References

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9. [WSDOT] Washington State Department of Transportation. 2006. Final Wetland and Stream Mitigation Report SR 900: 78<sup>th</sup> Vicinity to Newport Way Widening (MP20.09 to MP 21.08). Seattle (WA): Washington State Department of Transportation, Northwest Region.

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

Wetland Delineation Data Forms for:

W1-SP1

W1-SP2

W1-SP3

W1-SP4

W1-SP5

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-Mar-15  
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp1  
 Investigator(s): Tatiana Dreisbach, Sean Patrick Section, Township, Range: S 20 T 24N R 6E  
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope: 10.0 % / 5.7 °  
 Subregion (LRR): LRR A Lat.: 47.556 Long.: -122.058 Datum: NAD83HARN  
 Soil Map Unit Name: Puget silty clay loam NWI classification: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.**

|   |   |
|---|---|
| Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/><br>Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/><br>Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/> | Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/> |
|---|---|

Mapped hydric soils are present in this location and landscape position is in historic Lake Sammamish lake bed. These features help explain why hydric are present in upland areas. This upland location lacks wetland hydrology.  
 Growing season: new vegetative shoots on grass, Cornus alba blooming, Lonicera involucrata and Salix sitchensis beginning to leaf out.

**VEGETATION - Use scientific names of plants.**

| Stratum  | Absolute % Cover | Rel. Strat. Cover                         | Indicator Status | Dominance Test worksheet:   |
|--|------------------|---|------------------|---|
| <b>Tree Stratum</b> (Plot size: <u>20 x 20 feet</u> )          |                  |   |                  | Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>4</u> (B)<br><br>Percent of dominant Species That Are OBL, FACW, or FAC: <u>75.0%</u> (A/B)   |
| 1. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |   |
| 2. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |   |
| 3. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |   |
| 4. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |   |
| <b>= Total Cover</b>   |                  |   |                  |   |
| <b>Sapling/Shrub Stratum</b> (Plot size: <u>15 x 15 feet</u> ) |                  |   |                  | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br><b>OBL species</b> <u>0</u> x <b>1</b> = <u>0</u><br><b>FACW species</b> <u>0</u> x <b>2</b> = <u>0</u><br><b>FAC species</b> <u>66</u> x <b>3</b> = <u>198</u><br><b>FACU species</b> <u>13</u> x <b>4</b> = <u>52</u><br><b>UPL species</b> <u>0</u> x <b>5</b> = <u>0</u><br><b>Column Totals:</b> <u>79</u> (A) <u>250</u> (B)<br><br>Prevalence Index = B/A = <u>3.165</u>   |
| 1. <u>Thuja plicata</u>  | 15               | <input checked="" type="checkbox"/> 46.9% | FAC              |   |
| 2. <u>Pseudotsuga menziesii</u>                                | 10               | <input checked="" type="checkbox"/> 31.3% | FACU             |   |
| 3. <u>Populus balsamifera</u>                                  | 5                | <input type="checkbox"/> 15.6%            | FAC              |   |
| 4. <u>Symphoricarpos albus</u>                                 | 1                | <input type="checkbox"/> 3.1%             | FACU             |   |
| 5. <u>Rosa nutkana</u>   | 1                | <input type="checkbox"/> 3.1%             | FAC              |   |
| <b>= Total Cover</b>   |                  |   |                  |   |
| <b>Herb Stratum</b> (Plot size: <u>5 ft x 5 ft</u> )           |                  |   |                  | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> 1 - Rapid Test for Hydrologic Vegetation<br><input checked="" type="checkbox"/> 2 - Dominance Test is > 50%<br><input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup><br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 1. <u>Agrostis capillaris</u>                                  | 20               | <input checked="" type="checkbox"/> 42.6% | FAC              |   |
| 2. <u>Holcus lanatus</u>                                       | 20               | <input checked="" type="checkbox"/> 42.6% | FAC              |   |
| 3. <u>Cardamine oligosperma</u>                                | 5                | <input type="checkbox"/> 10.6%            | FAC              |   |
| 4. <u>Medicago lupulina</u>                                    | 1                | <input type="checkbox"/> 2.1%             | FACU             |   |
| 5. <u>Plantago lanceolata</u>                                  | 1                | <input type="checkbox"/> 2.1%             | FACU             |   |
| 6. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |   |
| 7. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |   |
| 8. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |   |
| 9. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |   |
| 10. _____  | 0                | <input type="checkbox"/> 0.0%             | _____            |   |
| 11. _____  | 0                | <input type="checkbox"/> 0.0%             | _____            |   |
| <b>= Total Cover</b>   |                  |   |                  |   |
| <b>Woody Vine Stratum</b> (Plot size: <u>5 x 5 feet</u> )      |                  |   |                  | <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="radio"/> No <input type="radio"/>  |
| 1. _____   |                  | <input type="checkbox"/> 0.0%             | _____            |   |
| 2. _____   |                  | <input type="checkbox"/> 0.0%             | _____            |   |
| <b>= Total Cover</b>   |                  |   |                  |   |
| <b>% Bare Ground in Herb Stratum:</b> <u>53</u>                |                  |   |                  |   |

Remarks:

<sup>1</sup>Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

**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> |   |           |                            |
| 0-6            | 10YR          | 4/2 | 100 |                |     |                   |                  |   | Silt Loam |                            |
| 6-20           | 2.5Y          | 6/2 | 90  | 7.5YR          | 4/4 | 10                | C                | M | Silt 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

|  |  |   |
|--|--|---|
| <b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> |  | <b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> |
| <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 in MLRA 1) | <input type="checkbox"/> Other (Explain in Remarks)         |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                                   | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                    |   |
| <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 Muck 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.

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?**    Yes     No

Remarks:

**Hydrology**

**Wetland Hydrology Indicators:**

|   |   |  |
|---|---|--|
| <b>Primary Indicators (minimum of one required: check all that apply)</b> |   | <b>Secondary Indicators (minimum of two required)</b>                      |
| <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 on Living Roots (C3)               | <input type="checkbox"/> Geomorphic Position (D2)                          |
| <input 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 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 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)          |   |  |

**Field Observations:**

|  |   |   |   |
|--|---|---|---|
| Surface Water Present?                             | Yes <input type="radio"/> No <input checked="" type="radio"/> | Depth (inches): <input type="text"/>            | <b>Wetland Hydrology Present?</b> Yes <input type="radio"/> No <input checked="" type="radio"/> |
| Water Table Present?                               | Yes <input checked="" type="radio"/> No <input type="radio"/> | Depth (inches): <input type="text" value="20"/> |   |
| Saturation Present?<br>(includes capillary fringe) | Yes <input checked="" type="radio"/> No <input type="radio"/> | Depth (inches): <input type="text" value="17"/> |   |

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

Remarks:  
 Water table and saturation below 12 inches in growing season.

**WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region**

Project/Site: 900 Lake Sammamish City/County: Issaquah/King Sampling Date: 10-Mar-15  
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp2  
 Investigator(s): Tatiana Dreisbach, Sean Patrick Section, Township, Range: S 20 T 24N R 6E  
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope: 5.0 % / 2.9 °  
 Subregion (LRR): LRR A Lat.: 47.557 Long.: -122.058 Datum: NAD83HARN  
 Soil Map Unit Name: Puget silty clay 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? Yes <input checked="" type="radio"/> No <input type="radio"/><br>Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/><br>Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/> |
|---|---|

**VEGETATION - Use scientific names of plants.**

| Stratum  | Absolute % Cover | Rel. Strat. Cover                         | Indicator Status | Dominance Test worksheet:  |
|--|------------------|---|------------------|--|
| <b>Tree Stratum</b> (Plot size: <u>15 x 15 feet</u> )          |                  |   |                  | Number of Dominant Species That are OBL, FACW, or FAC: <u>5</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>5</u> (B)<br><br>Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)   |
| 1. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 2. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 3. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 4. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| <b>= Total Cover</b>   |                  |   |                  |  |
| <b>Sapling/Shrub Stratum</b> (Plot size: <u>15 x 15 feet</u> ) |                  |   |                  | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br><b>OBL species</b> <u>0</u> x <b>1</b> = <u>0</u><br><b>FACW species</b> <u>17</u> x <b>2</b> = <u>34</u><br><b>FAC species</b> <u>112</u> x <b>3</b> = <u>336</u><br><b>FACU species</b> <u>0</u> x <b>4</b> = <u>0</u><br><b>UPL species</b> <u>0</u> x <b>5</b> = <u>0</u><br><b>Column Totals:</b> <u>129</u> (A) <u>370</u> (B)<br>Prevalence Index = B/A = <u>2.868</u>  |
| 1. <u>Rosa nutkana</u>   | 10               | <input checked="" type="checkbox"/> 23.8% | FAC              |  |
| 2. <u>Populus balsamifera</u>                                  | 10               | <input checked="" type="checkbox"/> 23.8% | FAC              |  |
| 3. <u>Salix lasiandra</u>                                      | 15               | <input checked="" type="checkbox"/> 35.7% | FACW             |  |
| 4. <u>Salix sitchensis</u>                                     | 2                | <input type="checkbox"/> 4.8%             | FACW             |  |
| 5. <u>Lonicera involucrata</u>                                 | 5                | <input type="checkbox"/> 11.9%            | FAC              |  |
| <b>= Total Cover</b>   |                  |   |                  |  |
| <b>Herb Stratum</b> (Plot size: <u>5 x 5 feet</u> )            |                  |   |                  | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> 1 - Rapid Test for Hydrologic Vegetation<br><input checked="" type="checkbox"/> 2 - Dominance Test is > 50%<br><input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup><br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 1. <u>Agrostis capillaris</u>                                  | 65               | <input checked="" type="checkbox"/> 74.7% | FAC              |  |
| 2. <u>Holcus lanatus</u>                                       | 20               | <input checked="" type="checkbox"/> 23.0% | FAC              |  |
| 3. <u>Cardamine oligosperma</u>                                | 2                | <input type="checkbox"/> 2.3%             | FAC              |  |
| 4. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 5. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 6. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 7. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 8. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 9. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 10. _____  | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 11. _____  | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| <b>= Total Cover</b>   |                  |   |                  |  |
| <b>Woody Vine Stratum</b> (Plot size: <u>5 x 5 feet</u> )      |                  |   |                  | <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="radio"/> No <input type="radio"/>   |
| 1. _____   |                  | <input type="checkbox"/> 0.0%             | _____            |  |
| 2. _____   |                  | <input type="checkbox"/> 0.0%             | _____            |  |
| <b>= Total Cover</b>   |                  |   |                  |  |
| <b>% Bare Ground in Herb Stratum:</b> <u>13</u>                |                  |   |                  |  |

Remarks:

<sup>1</sup>Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

**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> |      |                 |                            |
| 0-3            | 10YR          | 2/2 | 100 |                |     |                   |                  |      | Silt Loam       |                            |
| 3-19           | 2.5Y          | 4/1 | 65  | 7.5YR          | 5/6 | 15                | C                | M    | Silty Clay Loam | Concentration is prominent |
|                |               |     |     | 5YR            | 3/4 | 20                | C                | M/PI |                 | Concentration is distinct  |
|                |               |     |     |                |     |                   |                  |      |                 |                            |
|                |               |     |     |                |     |                   |                  |      |                 |                            |
|                |               |     |     |                |     |                   |                  |      |                 |                            |
|                |               |     |     |                |     |                   |                  |      |                 |                            |
|                |               |     |     |                |     |                   |                  |      |                 |                            |

<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> |  | <b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> |
| <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 in MLRA 1) | <input type="checkbox"/> Other (Explain in Remarks)         |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                                   | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                    |   |
| <input checked="" 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 Muck 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.

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes  No

Remarks:

**Hydrology**

**Wetland Hydrology Indicators:**

|   |   |  |
|---|---|--|
| <b>Primary Indicators (minimum of one required: check all that apply)</b> |   | <b>Secondary Indicators (minimum of two required)</b>                      |
| <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 checked="" type="checkbox"/> High Water Table (A2)                 | <input type="checkbox"/> Salt Crust (B11)   | <input type="checkbox"/> Drainage Patterns (B10)                           |
| <input checked="" 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 on Living Roots (C3)               | <input type="checkbox"/> Geomorphic Position (D2)                          |
| <input 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 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 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)          |   |  |

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches):

Water Table Present? Yes  No  Depth (inches):

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

**Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitor 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-Mar-15  
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp3  
 Investigator(s): Tatiana Dreisbach, Sean Patrick Section, Township, Range: S 20 T 24N R 6E  
 Landform (hillslope, terrace, etc.): creek fringe Local relief (concave, convex, none): concave Slope: 2.0 % / 1.1 °  
 Subregion (LRR): LRR A Lat.: 47.557 Long.: -122.058 Datum: NAD83HARN  
 Soil Map Unit Name: Sammamish silt loam NWI classification: PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.**

|   |   |
|---|---|
| Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/><br>Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/><br>Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/> |
|---|---|

**VEGETATION - Use scientific names of plants.**

| Stratum  | Absolute % Cover | Rel.Strat. Cover                           | Indicator Status | Dominance Test worksheet:  |
|--|------------------|--|------------------|--|
| <b>Tree Stratum</b> (Plot size: <u>15 x 15 feet</u> )          |                  |  |                  | Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>3</u> (B)<br><br>Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)   |
| 1. _____   | 0                | <input type="checkbox"/> 0.0%              | _____            |  |
| 2. _____   | 0                | <input type="checkbox"/> 0.0%              | _____            |  |
| 3. _____   | 0                | <input type="checkbox"/> 0.0%              | _____            |  |
| 4. _____   | 0                | <input type="checkbox"/> 0.0%              | _____            |  |
| <b>= Total Cover</b>   |                  |  |                  |  |
| <b>Sapling/Shrub Stratum</b> (Plot size: <u>15 x 15 feet</u> ) |                  |  |                  | <b>Prevalence Index worksheet:</b><br>Total % Cover of:      Multiply by:<br><b>OBL species</b> <u>15</u> x 1 = <u>15</u><br><b>FACW species</b> <u>70</u> x 2 = <u>140</u><br><b>FAC species</b> <u>2</u> x 3 = <u>6</u><br><b>FACU species</b> <u>0</u> x 4 = <u>0</u><br><b>UPL species</b> <u>0</u> x 5 = <u>0</u><br><b>Column Totals:</b> <u>87</u> (A) <u>161</u> (B)<br><br>Prevalence Index = B/A = <u>1.851</u>  |
| 1. <u>Salix lasiandra</u>                                      | 10               | <input checked="" type="checkbox"/> 100.0% | FACW             |  |
| 2. _____   | 0                | <input type="checkbox"/> 0.0%              | _____            |  |
| 3. _____   | 0                | <input type="checkbox"/> 0.0%              | _____            |  |
| 4. _____   | 0                | <input type="checkbox"/> 0.0%              | _____            |  |
| 5. _____   | 0                | <input type="checkbox"/> 0.0%              | _____            |  |
| <b>= Total Cover</b>   |                  |  |                  |  |
| <b>Herb Stratum</b> (Plot size: <u>5 x 5 feet</u> )            |                  |  |                  | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> 1 - Rapid Test for Hydrologic Vegetation<br><input checked="" type="checkbox"/> 2 - Dominance Test is > 50%<br><input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup><br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 1. <u>Juncus effusus</u>                                       | 25               | <input checked="" type="checkbox"/> 32.1%  | FACW             |  |
| 2. <u>Agrostis exarata</u>                                     | 25               | <input checked="" type="checkbox"/> 32.1%  | FACW             |  |
| 3. <u>Typha latifolia</u>                                      | 10               | <input type="checkbox"/> 12.8%             | OBL              |  |
| 4. <u>Epilobium ciliatum</u>                                   | 5                | <input type="checkbox"/> 6.4%              | FACW             |  |
| 5. <u>Phalaris arundinacea</u>                                 | 5                | <input type="checkbox"/> 6.4%              | FACW             |  |
| 6. <u>Carex spp.</u>   | 1                | <input type="checkbox"/> 1.3%              | _____            |  |
| 7. <u>Scirpus microcarpus</u>                                  | 5                | <input type="checkbox"/> 6.4%              | OBL              |  |
| 8. <u>Juncus tenuis</u>  | 2                | <input type="checkbox"/> 2.6%              | FAC              |  |
| 9. _____   | 0                | <input type="checkbox"/> 0.0%              | _____            |  |
| 10. _____  | 0                | <input type="checkbox"/> 0.0%              | _____            |  |
| 11. _____  | 0                | <input type="checkbox"/> 0.0%              | _____            |  |
| <b>= Total Cover</b>   |                  |  |                  |  |
| <b>Woody Vine Stratum</b> (Plot size: <u>5 x 5 feet</u> )      |                  |  |                  | <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="radio"/> No <input type="radio"/>   |
| 1. _____   |                  | <input type="checkbox"/> 0.0%              | _____            |  |
| 2. _____   |                  | <input type="checkbox"/> 0.0%              | _____            |  |
| <b>= Total Cover</b>   |                  |  |                  |  |
| % Bare Ground in Herb Stratum: <u>22</u>                       |                  |  |                  |  |

Remarks:

\*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

**Soil**

Sampling Point: W1-SB3

**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> |            |                            |
| 0-6            | 10YR          | 5/1 | 80  | 7.5YR          | 4/6 | 20 | C                 | M/PL             | Clay Loam  | concentration is prominent |
| 6-15           | 10YR          | 5/4 | 95  | 10YR           | 4/6 | 5  | C                 | M                | Sandy Loam | concentration is distinct  |
| 15-18          | N             | 5/0 | 100 |                |     |    |                   |                  | Sandy Loam |                            |
|                |               |     |     |                |     |    |                   |                  |            |                            |
|                |               |     |     |                |     |    |                   |                  |            |                            |
|                |               |     |     |                |     |    |                   |                  |            |                            |
|                |               |     |     |                |     |    |                   |                  |            |                            |
|                |               |     |     |                |     |    |                   |                  |            |                            |

<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> |  | <b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> |
| <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 in MLRA 1) | <input type="checkbox"/> Other (Explain in Remarks)         |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                                   | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                    |   |
| <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 Muck 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.

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?**    Yes     No

Remarks:

**Hydrology**

**Wetland Hydrology Indicators:**

|   |   |  |
|---|---|--|
| <b>Primary Indicators (minimum of one required: check all that apply)</b> |   | <b>Secondary Indicators (minimum of two required)</b>                      |
| <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 checked="" type="checkbox"/> High Water Table (A2)                 | <input type="checkbox"/> Salt Crust (B11)   | <input type="checkbox"/> Drainage Patterns (B10)                           |
| <input checked="" 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 on Living Roots (C3)               | <input type="checkbox"/> Geomorphic Position (D2)                          |
| <input 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 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)          |   |  |

**Field Observations:**

|  |   |  |   |
|--|---|--|---|
| Surface Water Present?                             | Yes <input type="radio"/> No <input checked="" type="radio"/> | Depth (inches): <input type="text"/>           | <b>Wetland Hydrology Present?</b> Yes <input checked="" type="radio"/> No <input type="radio"/> |
| Water Table Present?                               | Yes <input checked="" type="radio"/> No <input type="radio"/> | Depth (inches): <input type="text"/>           |   |
| Saturation Present?<br>(includes capillary fringe) | Yes <input checked="" type="radio"/> No <input type="radio"/> | Depth (inches): <input type="text" value="0"/> |   |

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

Remarks:  
 episaturated and perched water table 0-6 inches, then soil texture change from loam with with high clay content to sandy loam. the sandy loam is only moist.

**WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, and Coast Region**

Project/Site: 900 Lake Sammamish City/County: Issaquah/King Sampling Date: 10-Mar-15  
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp4  
 Investigator(s): Tatiana Dreisbach, Sean Patrick Section, Township, Range: S 20 T 24N R 6E  
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope: 10.0 % / 5.7 °  
 Subregion (LRR): LRR A Lat.: 47.557 Long.: -122.058 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? Yes <input checked="" type="radio"/> No <input type="radio"/><br>Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/><br>Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/> |
|---|---|

**VEGETATION - Use scientific names of plants.**

| Stratum  | Absolute % Cover | Rel. Strat. Cover                         | Indicator Status | Dominance Test worksheet:  |
|--|------------------|---|------------------|--|
| <b>Tree Stratum</b> (Plot size: <u>15 x 15 feet</u> )          |                  |   |                  | Number of Dominant Species That are OBL, FACW, or FAC: <u>4</u> (A)  |
| 1. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            | Total Number of Dominant Species Across All Strata: <u>4</u> (B)   |
| 2. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 3. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 4. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| <b>= Total Cover</b>   |                  |   |                  |  |
| <b>Sapling/Shrub Stratum</b> (Plot size: <u>15 x 15 feet</u> ) |                  |   |                  | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br>OBL species <u>0</u> x 1 = <u>0</u><br>FACW species <u>72</u> x 2 = <u>144</u><br>FAC species <u>30</u> x 3 = <u>90</u><br>FACU species <u>0</u> x 4 = <u>0</u><br>UPL species <u>0</u> x 5 = <u>0</u><br><b>Column Total s:</b> <u>102</u> (A) <u>234</u> (B)<br>Prevalence Index = B/A = <u>2.294</u>  |
| 1. <u>Salix lasiandra</u>                                      | 40               | <input checked="" type="checkbox"/> 55.6% | FACW             |  |
| 2. <u>Salix sitchensis</u>                                     | 20               | <input checked="" type="checkbox"/> 27.8% | FACW             |  |
| 3. <u>Spiraea douglasii</u>                                    | 5                | <input type="checkbox"/> 6.9%             | FACW             |  |
| 4. <u>Rosa nutkana</u>   | 5                | <input type="checkbox"/> 6.9%             | FAC              |  |
| 5. <u>Cornus alba</u>  | 2                | <input type="checkbox"/> 2.8%             | FACW             |  |
| <b>= Total Cover</b>   |                  |   |                  |  |
| <b>Herb Stratum</b> (Plot size: <u>5 x 5 feet</u> )            |                  |   |                  | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> 1 - Rapid Test for Hydrologic Vegetation<br><input checked="" type="checkbox"/> 2 - Dominance Test is > 50%<br><input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup><br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 1. <u>Lotus corniculatus</u>                                   | 10               | <input checked="" type="checkbox"/> 33.3% | FAC              |  |
| 2. <u>Holcus lanatus</u>                                       | 5                | <input type="checkbox"/> 16.7%            | FAC              |  |
| 3. <u>Agrostis capillaris</u>                                  | 10               | <input checked="" type="checkbox"/> 33.3% | FAC              |  |
| 4. <u>Juncus effusus</u>                                       | 5                | <input type="checkbox"/> 16.7%            | FACW             |  |
| 5. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 6. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 7. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 8. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 9. _____   | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 10. _____  | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| 11. _____  | 0                | <input type="checkbox"/> 0.0%             | _____            |  |
| <b>= Total Cover</b>   |                  |   |                  |  |
| <b>Woody Vine Stratum</b> (Plot size: <u>5 x 5 feet</u> )      |                  |   |                  | <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="radio"/> No <input type="radio"/>   |
| 1. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |  |
| 2. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |  |
| <b>= Total Cover</b>   |                  |   |                  |  |
| <b>% Bare Ground in Herb Stratum:</b> <u>70</u>                |                  |   |                  |  |

Remarks:

<sup>1</sup>Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

**Soil**

Sampling Point: **w1-sp4**

**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> |            |                            |
| 0-13           | 2.5Y          | 5/1 | 85 | 7.5YR          | 5/8 | 10 | C                 | M                | Clay Loam  | Concentration is prominent |
|                |               |     |    | 5YR            | 4/6 | 5  | C                 | M/PL             |            | Concentration is prominent |
| 13-20          | 10YR          | 4/3 | 93 | 5YR            | 4/6 | 5  | C                 | M                | Sandy Loam | Concentration is distinct  |
|                |               |     |    | 10Y            | 5/1 | 2  | 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

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

|  |  |   |
|--|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                            | <b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> |
| <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 in MLRA 1) |   |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                    |   |
| <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 Muck 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.

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?**    Yes     No

Remarks:

**Hydrology**

**Wetland Hydrology Indicators:**

|   |   |   |
|---|---|---|
| <b>Primary Indicators (minimum of one required: check all that apply)</b> |   | <b>Secondary Indicators (minimum of two required)</b>                                 |
| <input type="checkbox"/> Surface Water (A1)                               | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input checked="" type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input checked="" type="checkbox"/> High Water Table (A2)                 | <input type="checkbox"/> Salt Crust (B11)   | <input checked="" type="checkbox"/> Drainage Patterns (B10)                           |
| <input checked="" 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 on Living Roots (C3)               | <input type="checkbox"/> Geomorphic Position (D2)                                     |
| <input type="checkbox"/> Drift deposits (B3)                              | <input type="checkbox"/> Presence of Reduced Iron (C4)                            | <input type="checkbox"/> Shallow Aquitard (D3)  |
| <input checked="" 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 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)          |   |   |

**Field Observations:**

|  |   |   |   |
|--|---|---|---|
| Surface Water Present?                             | Yes <input type="radio"/> No <input checked="" type="radio"/> | Depth (inches): <input type="text"/>            | <b>Wetland Hydrology Present?</b> Yes <input checked="" type="radio"/> No <input type="radio"/> |
| Water Table Present?                               | Yes <input checked="" type="radio"/> No <input type="radio"/> | Depth (inches): <input type="text" value="10"/> |   |
| Saturation Present?<br>(includes capillary fringe) | Yes <input checked="" type="radio"/> No <input type="radio"/> | Depth (inches): <input type="text" value="7"/>  |   |

Describe Recorded Data (stream gauge, monitor 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-Mar-15  
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp5  
 Investigator(s): Tatiana Dreisbach, Sean Patrick Section, Township, Range: S 20 T 24N R 6E  
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope: 10.0 % / 5.7 °  
 Subregion (LRR): LRR A Lat.: 47.557 Long.: -122.058 Datum: NAD83HARN  
 Soil Map Unit Name: Sammamish silt loam NWI classification: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.**

|   |   |
|---|---|
| Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/><br>Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/><br>Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/> | Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/> |
|---|---|

Mapped hydric soils are present in this location and landscape position is in historic Lake Sammamish lake bed. These features help explain why hydric are present in upland areas. This upland location lacks wetland hydrology.  
 Growing season: new vegetative shoots on grass, Cornus alba blooming, Lonicera involucrata and Salix sitchensis beginning to leaf out

**VEGETATION - Use scientific names of plants.**

|  | Absolute % Cover | Rel.Strat. Cover                          | Indicator Status | Dominance Test worksheet:   |
|--|------------------|---|------------------|---|
| <b>Tree Stratum</b> (Plot size: <u>15 x 15 feet</u> )          |                  |   |                  | Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>4</u> (B)<br><br>Percent of dominant Species That Are OBL, FACW, or FAC: <u>75.0%</u> (A/B)   |
| 1. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
| 2. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
| 3. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
| 4. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
|  | 0                | = Total Cover                             |                  |   |
| <b>Sapling/Shrub Stratum</b> (Plot size: <u>15 x 15 feet</u> ) |                  |   |                  | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br>OBL species <u>0</u> x 1 = <u>0</u><br>FACW species <u>0</u> x 2 = <u>0</u><br>FAC species <u>27</u> x 3 = <u>81</u><br>FACU species <u>15</u> x 4 = <u>60</u><br>UPL species <u>0</u> x 5 = <u>0</u><br><b>Column Totals:</b> <u>42</u> (A) <u>141</u> (B)<br><br>Prevalence Index = B/A = <u>3.357</u>  |
| 1. <u>Thuja plicata</u>  | 5                | <input checked="" type="checkbox"/> 22.7% | FAC              |   |
| 2. <u>Symphoricarpos albus</u>                                 | 15               | <input checked="" type="checkbox"/> 68.2% | FACU             |   |
| 3. <u>Rosa nutkana</u>   | 2                | <input type="checkbox"/> 9.1%             | FAC              |   |
| 4. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
|  | 22               | = Total Cover                             |                  |   |
| <b>Herb Stratum</b> (Plot size: <u>5 x 5 feet</u> )            |                  |   |                  | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> 1 - Rapid Test for Hydrologic Vegetation<br><input checked="" type="checkbox"/> 2 - Dominance Test is > 50%<br><input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup><br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 1. <u>Agrostis capillaris</u>                                  | 10               | <input checked="" type="checkbox"/> 50.0% | FAC              |   |
| 2. <u>Holcus lanatus</u>                                       | 10               | <input checked="" type="checkbox"/> 50.0% | FAC              |   |
| 3. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
| 4. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
| 5. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
| 6. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
| 7. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
| 8. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
| 9. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
| 10. _____  | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
| 11. _____  | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
|  | 20               | = Total Cover                             |                  |   |
| <b>Woody Vine Stratum</b> (Plot size: <u>5 x 5 feet</u> )      |                  |   |                  | <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="radio"/> No <input type="radio"/>  |
| 1. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
| 2. _____   | _____            | <input type="checkbox"/> 0.0%             | _____            |   |
|  | 0                | = Total Cover                             |                  |   |
| % Bare Ground in Herb Stratum: <u>80</u>                       |                  |   |                  |   |

Remarks:

<sup>1</sup>Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

**Soil**

Sampling Point: w1-sp5

**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> |         |  |
| 0-6            | 10YR          | 2/1 | 100 |                |     |                   |                  | Loam    |  |
| 6-20           | 2.5Y          | 6/2 | 85  | 7.5YR          | 4/6 | 15                | C                | M/PL    | Concentration is prominent. boundaries are |
|                |               |     |     |                |     |                   |                  |         |  |
|                |               |     |     |                |     |                   |                  |         |  |
|                |               |     |     |                |     |                   |                  |         |  |
|                |               |     |     |                |     |                   |                  |         |  |
|                |               |     |     |                |     |                   |                  |         |  |

<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> |  | <b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> |
| <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 in MLRA 1) | <input type="checkbox"/> Other (Explain in Remarks)         |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                                   | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                    |   |
| <input checked="" 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 Muck 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.

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?**    Yes     No

Remarks:

**Hydrology**

**Wetland Hydrology Indicators:**

|   |   |  |
|---|---|--|
| <b>Primary Indicators (minimum of one required: check all that apply)</b> |   | <b>Secondary Indicators (minimum of two required)</b>                      |
| <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 on Living Roots (C3)               | <input type="checkbox"/> Geomorphic Position (D2)                          |
| <input 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 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 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)          |   |  |

**Field Observations:**

|  |   |                                      |   |
|--|---|--------------------------------------|---|
| Surface Water Present?                             | Yes <input type="radio"/> No <input checked="" type="radio"/> | Depth (inches): <input type="text"/> | <b>Wetland Hydrology Present?</b> Yes <input type="radio"/> No <input checked="" type="radio"/> |
| Water Table Present?                               | Yes <input type="radio"/> No <input checked="" type="radio"/> | Depth (inches): <input type="text"/> |   |
| Saturation Present?<br>(includes capillary fringe) | Yes <input type="radio"/> No <input checked="" type="radio"/> | Depth (inches): <input type="text"/> |   |

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

Remarks:

# Appendix B — Precipitation Data

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## Appendix B-1. Comparison of Observed and Normal Precipitation (NRCS 1997)

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 | Feb                    | 2.86                                    | 4.47                   | 5.39 | 6.41                   | W                                       | 3               | 3                  | 9                               |
| 2 <sup>nd</sup> prior month | Jan                    | 3.89                                    | 5.30                   | 6.23 | 3.23                   | D                                       | 1               | 2                  | 2                               |
| 3 <sup>rd</sup> prior month | Dec                    | 4.14                                    | 5.81                   | 6.87 | 3.74                   | D                                       | 1               | 1                  | 1                               |
| <b>Sum</b>                  |                        |   |                        |      |                        |   |                 | <b>12</b>          | <b>12</b>                       |

<sup>a</sup>NRCS 2015

<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

| Date (2015) | Daily Precipitation (inches) <sup>a</sup> |
|-------------|---|
| March 9     | 0.00                                      |
| March 8     | 0.00                                      |
| March 7     | 0.00                                      |
| March 6     | 0.00                                      |
| March 5     | 0.00                                      |
| March 4     | 0.00                                      |
| March 3     | 0.00                                      |
| March 2     | 0.00                                      |
| March 1     | 0.00                                      |
| Feb 28      | 0.00                                      |

<sup>a</sup>NRCS 2015

# Literature Cited

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