

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

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

**Northwest Region**

**2017 MONITORING REPORT**

**Wetlands Program**

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# SR 900 78<sup>th</sup> Vicinity to Newport Way Widening Lake Sammamish State Park (LSSP) Wetland 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 Tributary B Stream Site:1220625475351		
<b>Construction Date</b>	2009–2010		
<b>Monitoring Period</b>	2011–2020		
<b>Year of Monitoring</b>	7 of 10		
<b>Type of Impact</b>	Wetland		Buffer
<b>Area of Project Impact<sup>1</sup></b>	0.75 acre		0.91
<b>Type of Mitigation</b>	Wetland Establishment	Wetland Enhancement	Buffer Enhancement
<b>Planned Area of Mitigation<sup>1</sup></b>	1.74 acres	0.11 acre	2.23 acres



<sup>1</sup> Impact and mitigation acreages were referenced from the as-built report (WSDOT 2010).

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## Summary of Monitoring Results and Management Activities (2017)

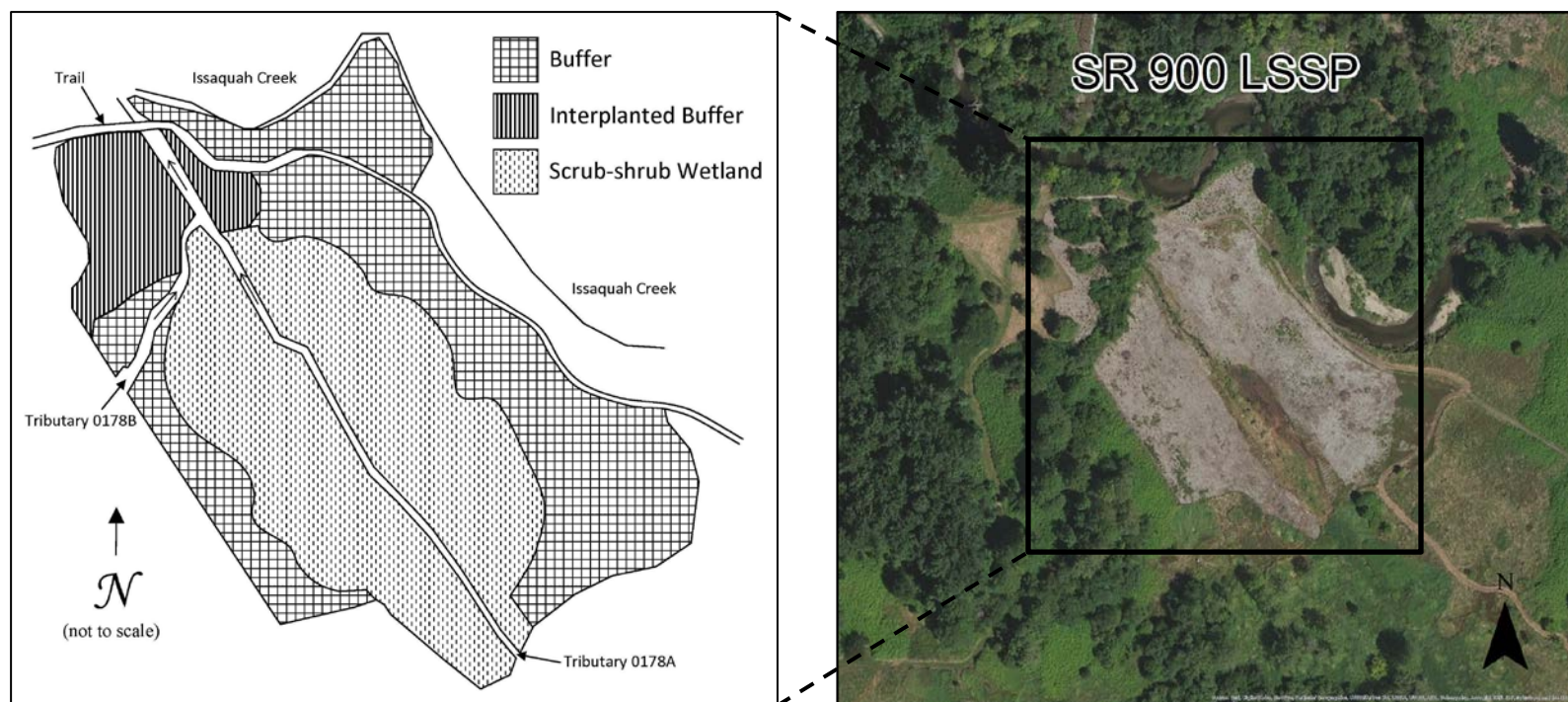
Performance Standards	2017 Results	Management Activities
Wetland hydrology will be present	See results section	
50% cover of native FAC or wetter woody species in the PSS	80% cover	
Less than 30% cover of specified invasive species in the wetland areas	<1% cover	2016: 8 weed control visits 2017: 7 weed control visits
Less than 15% cover of non-native blackberries ( <i>Rubus</i> species) across the site	<1% cover	
The presence of Japanese knotweed ( <i>Reynoutria japonica</i> ) and purple loosestrife ( <i>Lythrum salicaria</i> ) will initiate eradication measures	None observed	
40% cover of native woody species in the buffer areas	90% cover	
Less than 30% cover of specified invasive species in the buffer areas	<1% cover	See above

## Report Introduction

This report summarizes seventh-year (Year 7) monitoring activities at the 900 Lake Sammamish State Park Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site success. Monitoring activities in 2017 included vegetation surveys, photo-documentation, and assessments of wetland hydrology. Hydrology monitoring visits occurred on March 6, March 21, and April 4. Vegetation monitoring was conducted on August 7.

## 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 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 are the performance standards for this site?

### Year 7

#### Performance Standard 1

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

Native facultative or wetter woody species will achieve a minimum of 50 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** in the wetland areas

#### Performance Standard 4

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

#### Performance Standard 5

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

#### Performance Standard 6

Native woody species will achieve a minimum of 40 percent coverage in the wetland buffer and riparian buffer planting areas. Native colonizing vegetation will be included in this coverage calculation.

#### Performance Standard 7

No more than 30 percent cover by non-native invasive species as listed in **Table 10** in the buffer areas

## **Year 10**

### **Performance Standard 8**

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 9**

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.

### **Invasive Species Applicable to Performance Standards 3, 7, 11, and 15 (shown as Table 10 in the mitigation report)**

<b>Scientific Name</b>	<b>Common Name</b>
<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</i> (and related species and hybrids)	Japanese knotweed
<i>Prunus laurocerasus</i>	English laurel
<i>Rubus laciniatus</i>	evergreen blackberry
<i>Rubus armeniacus</i> (discolor)	Himalaya or Armenian blackberry

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



## How were the performance standards evaluated?

WSDOT staff collected hydrology data using methods described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (USACE 2010) (Performance Standards 1).

The site has developed more rapidly than anticipated and has been meeting final-year (Year 10) performance standards for woody cover (Performance Standards 8 and 12) since 2014 (Year 4). On April 12, 2016 a request to discontinue quantitative sampling for woody cover in the buffer and wetland was sent to the USACE and the Department of Ecology. This request was accepted by the USACE on April 13, 2016 and by Ecology on April 14, 2016.

In 2017, all vegetation performance standards (Performance Standards 2–13) were addressed using qualitative methods and visual estimates. For additional details on the methods see the [WSDOT Wetland Mitigation Site Monitoring Methods Paper](#) (WSDOT 2008).

## How is the site developing?

This site is continuing its very successful development and is still meeting all of its current and final-year vegetation performance standards, as it has since 2014. The woody plantings continue to develop well and the only areas that are not approaching total woody cover are the areas directly adjacent to the un-named creek where sparser woody cover mixes with a robust mostly native emergent community.

The new pedestrian trail installed through the buffer area (due to the previous erosion along the adjacent banks of Issaquah Creek) is now in place and in use, and there did not appear to be any new significant erosion along the creek bank.

Wildlife observations in 2017 include coyotes, evidence of deer and beaver, and sightings of many bird species including Belted Kingfisher, Mallard, Golden-crowned Kinglet, Rufous Hummingbird, Willow Flycatcher, American Goldfinch, Black-capped Chickadee, Song Sparrow, Spotted Towhee, and American Robin.

Results for Performance Standard 1  
(Wetland hydrology will be present):

Hydrology monitoring visits were conducted on March 6, March 21, and April 4 in 2017. During these visits inundation or surface saturation was observed in about a quarter to a third of the intended wetland area (Photo 1). There were three shallow groundwater monitoring wells on this site, however, during the first visit in 2017, Well 2 was found broken and has not been replaced. Of the other two wells on-site, one had water within 12 inches below the soil surface during all three visits and the other during only the first two visits. See Appendix 1 for well locations and Appendix 3, Table 1 for a summary of hydrology observations.

Results for Performance Standard 2 and 8  
(50% cover [**70% in Year 10**] of native FAC or wetter woody species in the PSS):

Cover of native facultative or wetter woody species in the scrub-shrub wetland (Photo 2) was visually estimated at 80 percent. This exceeds the final-year performance standard target. Dominant species in these areas were Sitka willow (*Salix sitchensis*) and Pacific willow (*Salix lasiandra*).



**Photo 1**  
**Inundation in the wetland (April 2017)**



**Photo 2**  
**Woody cover in the scrub-shrub wetland (August 2017)**

### Results for Performance Standard 3

(Less than 30% cover of specified invasive species in the wetland areas):

Cover of applicable invasive species in the wetland areas was visually estimate at less than one percent. This is below the performance standard threshold. The applicable species observed in these areas were Himalayan blackberry (*Rubus armeniacus*) and cutleaf blackberry (*Rubus laciniatus*).

### Results for Performance Standard 4

(Less than 15% cover of non-native blackberries across the site):

Cover of non-native blackberries across the site was visually estimate at less than one percent. This is below the performance standard threshold.

### Results for Performance Standard 5

(The presence of Japanese knotweed and purple loosestrife will initiate eradication measures):

These species were not observed anywhere on-site.

### Results for Performance Standard 6 and 9

(40% cover [**50% in Year 10**] of native woody species in the buffer areas):

Cover of native woody species in the buffer (Photo 3) was visually estimated at 90 percent. This exceed the final-year performance standard target. Dominant species in these areas were snowberry (*Symphoricarpos albus*), thimbleberry (*Rubus parviflorus*), black cottonwood (*Populus balsamifera*), and western red cedar (*Thuja plicata*).



**Photo 3**  
**Woody cover in the buffer (August 2017)**

### Results for Performance Standard 7

(Less than 30% cover of specified invasive species in the buffer areas):

Cover of applicable invasive species in the buffer areas was visually estimate at less than one percent. This is below the performance standard threshold. The applicable species observed in these areas were Himalayan blackberry, cutleaf blackberry, and Robert geranium (*Geranium robertianum*).

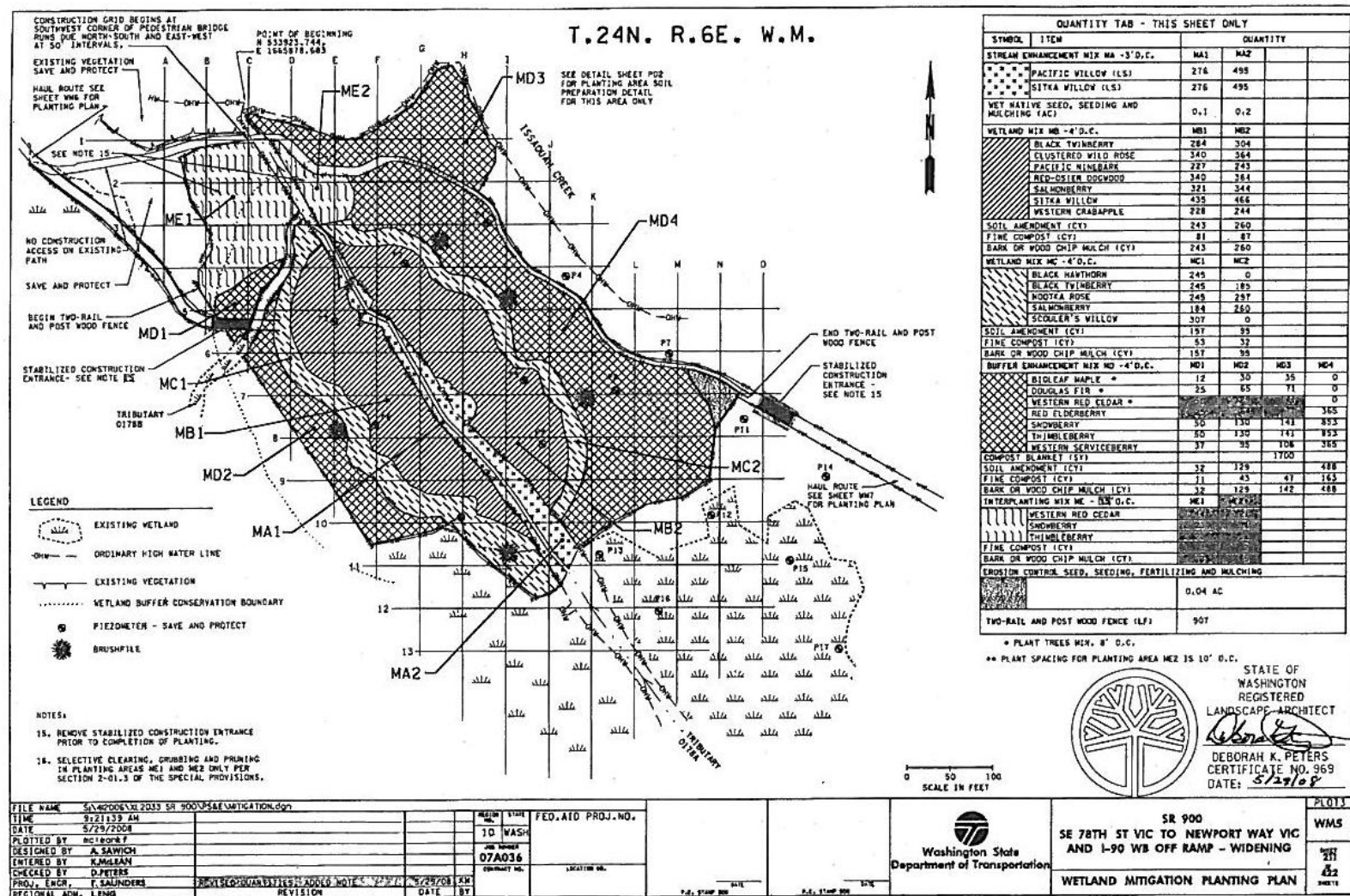
### **What is planned for this site?**

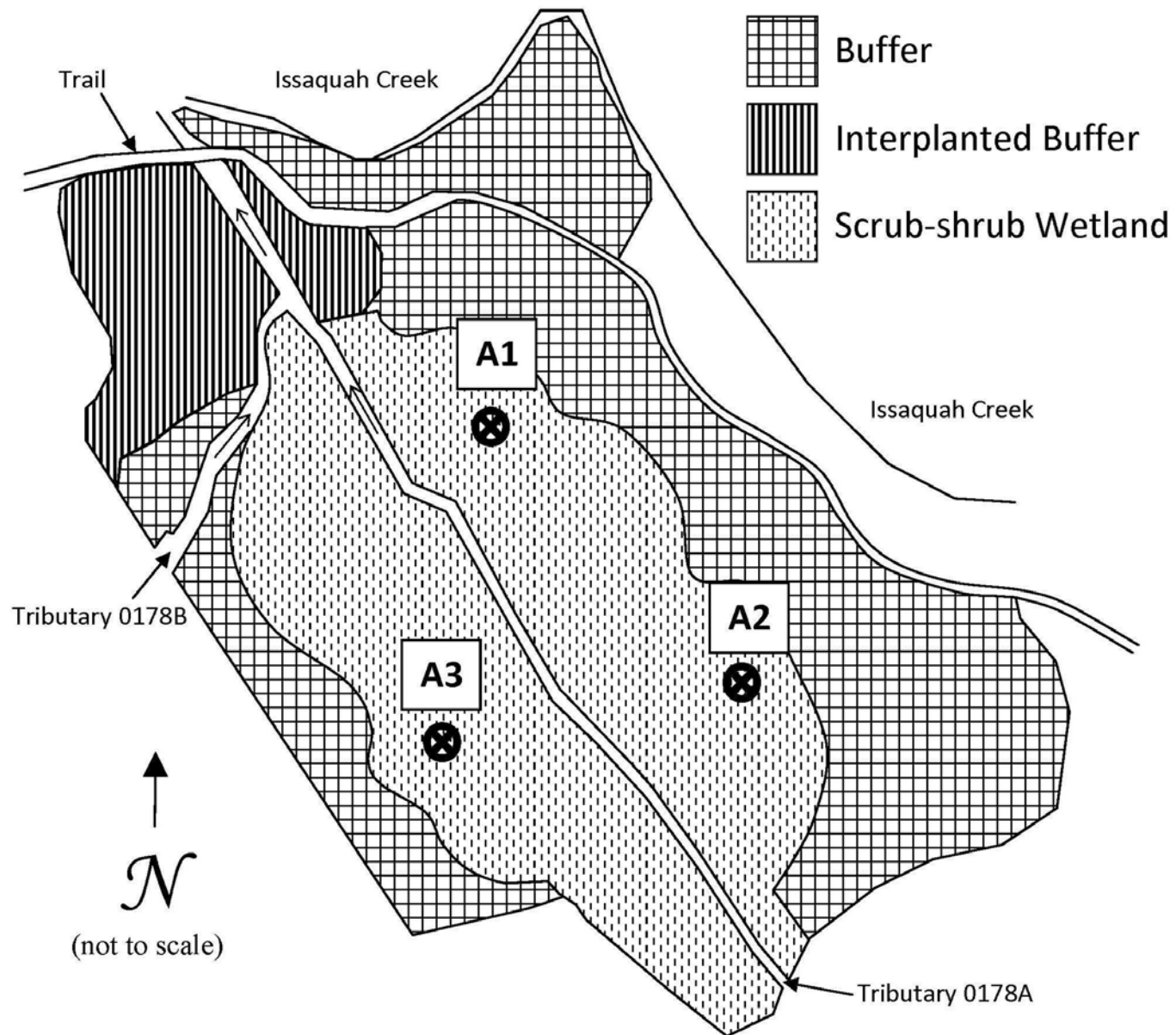
Ongoing regular weed control will continue.



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

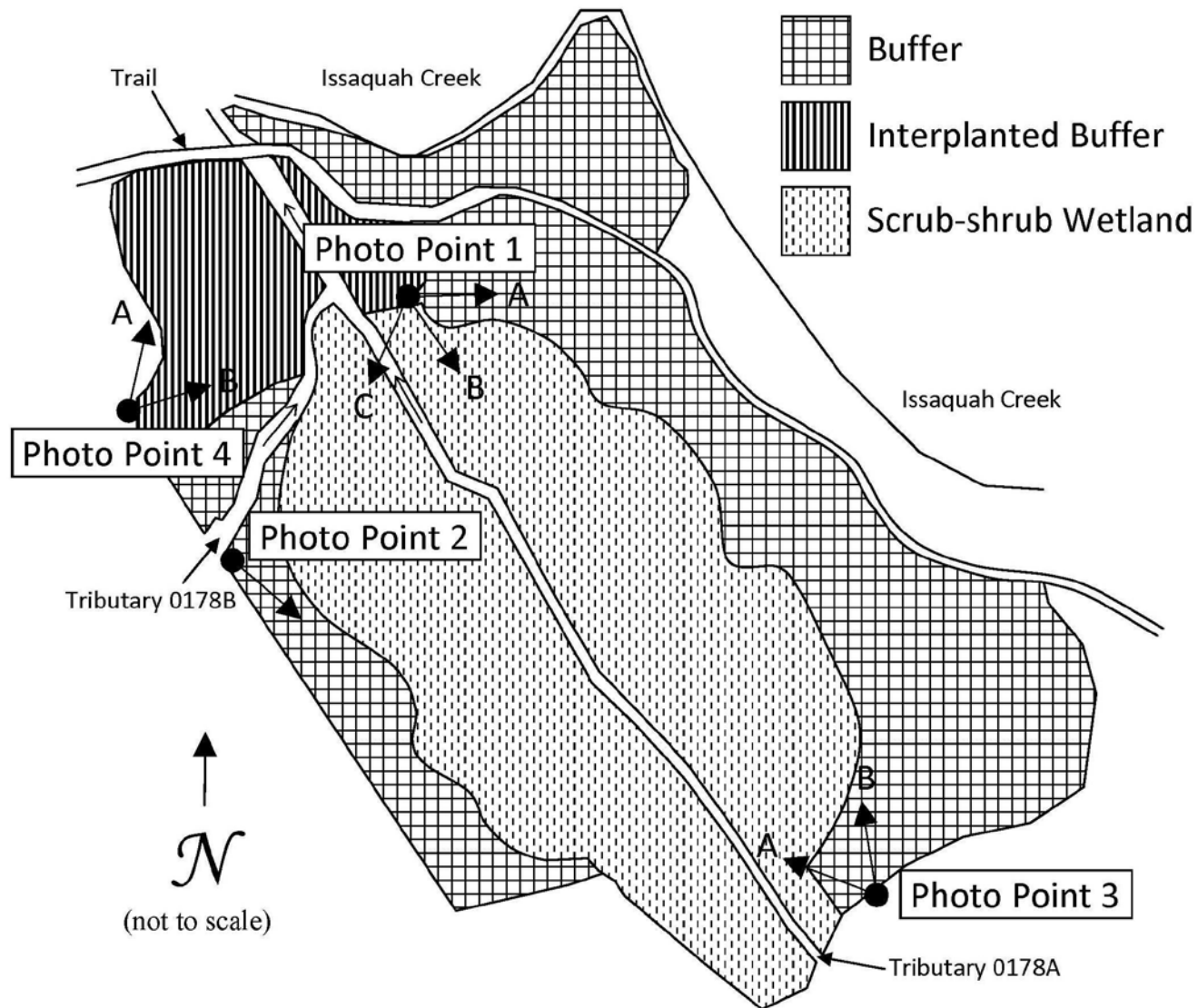
(from WSDOT 2010)





## Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on August 7, 2017 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**

**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.

## Appendix 3 – Data Tables

**Table 1. Hydrology Observations.**

Date	Surface Observations	Well ID #	Water Level (inches below soil surface unless otherwise noted)
March 6, 2017	Surface water present in about 1/4 of the intended wetland.	1	11.5"
		2	Well #2 broken
		3	7"
March 21, 2017	Inundated or saturated along the tributary, particularly in the southern portion of the site.	1	9.5"
		2	Well #2 broken
		3	Saturated to the soil surface
April 4, 2017	Inundation and saturation around south end of stream. ~1/3 of site	1	Dry to bottom of well
		2	Well #2 broken
		3	10"

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	2.89	4.42	5.31	9.27	Wet	3	3	9
2 <sup>nd</sup> prior month	Jan	3.98	5.40	6.33	3.81	Dry	1	2	2
3 <sup>rd</sup> prior month	Dec	4.12	5.72	6.75	3.57	Dry	1	1	1
<b>Sum</b>								<b>12</b>	

<sup>a</sup> NRCS 2017

<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 leading up to the hydrology field visits.

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

Prior to March 6 visit		Prior to March 21 visit		Prior to April 4 visit	
Date (2017)	Daily Precipitation (inches) <sup>a</sup>	Date (2017)	Daily Precipitation (inches) <sup>a</sup>	Date (2017)	Daily Precipitation (inches) <sup>a</sup>
March 5	0.27A	March 20	0.00	April 3	M
March 4	M	March 19	T	April 2	M
March 3	S	March 18	0.83	April 1	0.08
March 2	0.05A	March 17	0.34	March 31	0.00
March 1	S	March 16	1.00A	March 30	T
February 28	0.02	March 15	S	March 29	0.50
February 27	0.16	March 14	0.25	March 28	0.11
February 26	0.22	March 13	0.81	March 27	0.45
February 25	0.00A	March 12	M	March 26	0.05
February 24	S	March 11	0.27	March 25	0.05
<b>Total:</b>	<b>0.72</b>	<b>Total:</b>	<b>3.5</b>	<b>Total:</b>	<b>1.24</b>

<sup>a</sup> NRCS 2017

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

"T" values indicate a TRACE value was recorded.

"M" values indicate missing data.

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



## Literature Cited

1. Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Vicksburg (MS): US Army Engineer Waterways Experiment Station. Technical Report Y-87-1. Available at: <http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf>
2. [NRCS] Natural Resources Conservation Service [Internet]. 2017. Field Office Technical Guide - Climate Data. US Department of Agriculture. Available at: <https://efotg.sc.egov.usda.gov/>
3. [USACE] US Army Corps of Engineers. 2007. Department of the Army Individual Permit Number USACE IP NWS-2007-29-SOD.
4. [USACE] US Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), Wakeley JS, Lichvar RW, Noble CV, editors. Vicksburg (MS): US Army Engineer Research and Development Center. ERDC/EL TR-10-3. Available at: [http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg\\_supp/west\\_mt\\_finalsupp.pdf](http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/west_mt_finalsupp.pdf)
5. [WSDOT] Washington State Department of Transportation. 2008. Final Wetland and Stream Mitigation Report SR 900: 78th Vicinity to Newport Way Widening (MP 20.09 to MP 21.08). Seattle (WA): Washington State Department of Transportation, Northwest Region.
6. [WSDOT] Washington State Department of Transportation. 2008. WSDOT Wetland Mitigation Site Monitoring Methods. <http://www.wsdot.wa.gov/NR/rdonlyres/C211AB59-D5A2-4AA2-8A76-3D9A77E01203/0/MethodsWhitePaper052004.pdf>
7. [WSDOT] Washington State Department of Transportation. 2010. Wetland Mitigation Site As Built Report SR 900 SE 78th St to Newport Way Vicinity and I-90 WB Off Ramp - Widening. Seattle (WA): Washington State Department of Transportation, Northwest Region.