SR 518 SeaTac Airport to I-5/I-405 Interchange Stream (Gilliam Creek) Mitigation Site

USACE # 200600651

Northwest Region

2014 MONITORING REPORT

Wetlands Program

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General Site Information			
USACE Number	200600651		
Mitigation Location	Gilliam Creek sub-basin between North Airport Expressway Interchange and the I-5/I405 interchange in Tukwila, King County		
LLID Number	1222849474625		
Construction Date	2008-2009		
Monitoring Period	2010-2014		
Year of Monitoring	5 of 5		
Area of Project Impact	Wetland	Stream Channel	Stream Buffer
	0.951 acre	518 ft	1.152 acre
Type of Mitigation	Wetland Establishment	Stream Channel Re-alignment	Stream Bank/Buffer Planting
Area of Mitigation[1]	0.807 credits	518ft	1.152 acre

[1]To fully compensate for these wetland impacts, WSDOT debits 0.807 wetland mitigation credits from the Springbrook Bank credit ledger. Source of impact acreage (USACE 2007), mitigation acreage source (Herrera 2006).

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Summary of Monitoring Results and Management Activities (2014)

Performance Criteria	2014 Results	Management Activities
Performance Standard		
Within the planted buffer areas, a minimum of 66 percent of the total cover will include planted shrubs and trees.	• Southwest Tributary: Present • Unnamed Tributary 1: Present • Unnamed Tributary 2: Present	
Within the planted buffer areas, woody vegetation (shrubs and trees) will have four shoots per 100 square feet in year 3 and 35 percent cover by year five.	• Southwest Tributary: 65% cover ($CI_{80\%}$ = 56-73%) • Unnamed Tributary 1: 85% cover (visual estimate) • Unnamed Tributary 2: 85% cover (visual estimate)	
All root wads and instream woody debris will be visually inspected on an annual basis to ensure that they have remained in place.	All root wads and instream woody debris remain in place.	
Coir fabric will remain in place to prevent bank erosion. Coir fabric and stream banks will be visually inspected on an annual basis.	Coir fabric in place, no apparent stream bank erosion.	
Stream channels will be visually inspected on an annual basis for evidence of breaching.	No apparent evidence of breaching.	
Permit Requirement		
Reed canarygrass and Scot's broom will not exceed 20 percent aerial cover in the stream mitigation sites	• Southwest Tributary: 3% cover • Unnamed Tributary 1: 1% cover • Unnamed Tributary 2: 1% cover	
Japanese Knotweed shall not be present at the stream mitigation sites.	• Southwest Tributary: absent • Unnamed Tributary 1: absent • Unnamed Tributary 2: absent	

Report Introduction

This report summarizes final-year (Year-5) monitoring activities at the State Route (SR) 518 Sea Tac Airport to I-5/I-405 Interchange Stream Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site success. Monitoring activities included vegetation surveys and photo-documentation. Vegetation surveys occurred on September 8, 2014.

What is the SR 518 Gilliam Creek Tributaries Stream Mitigation Site?

This 1.15-acre stream mitigation site (Figures 1, 2 and 3) consists of stream re-alignment on three tributaries to Gilliam Creek and the associated buffer restoration south of SR 518. This site was created to compensate for the relocation of 518 linear feet of stream channel due to road improvements along SR 518. Stream channels relocated are equivalent to the area of permanently impacted stream channels, and lost functions will be replaced, including fish habitat (southwest tributary of Gilliam Creek), water quality improvement, and input of organic materials.

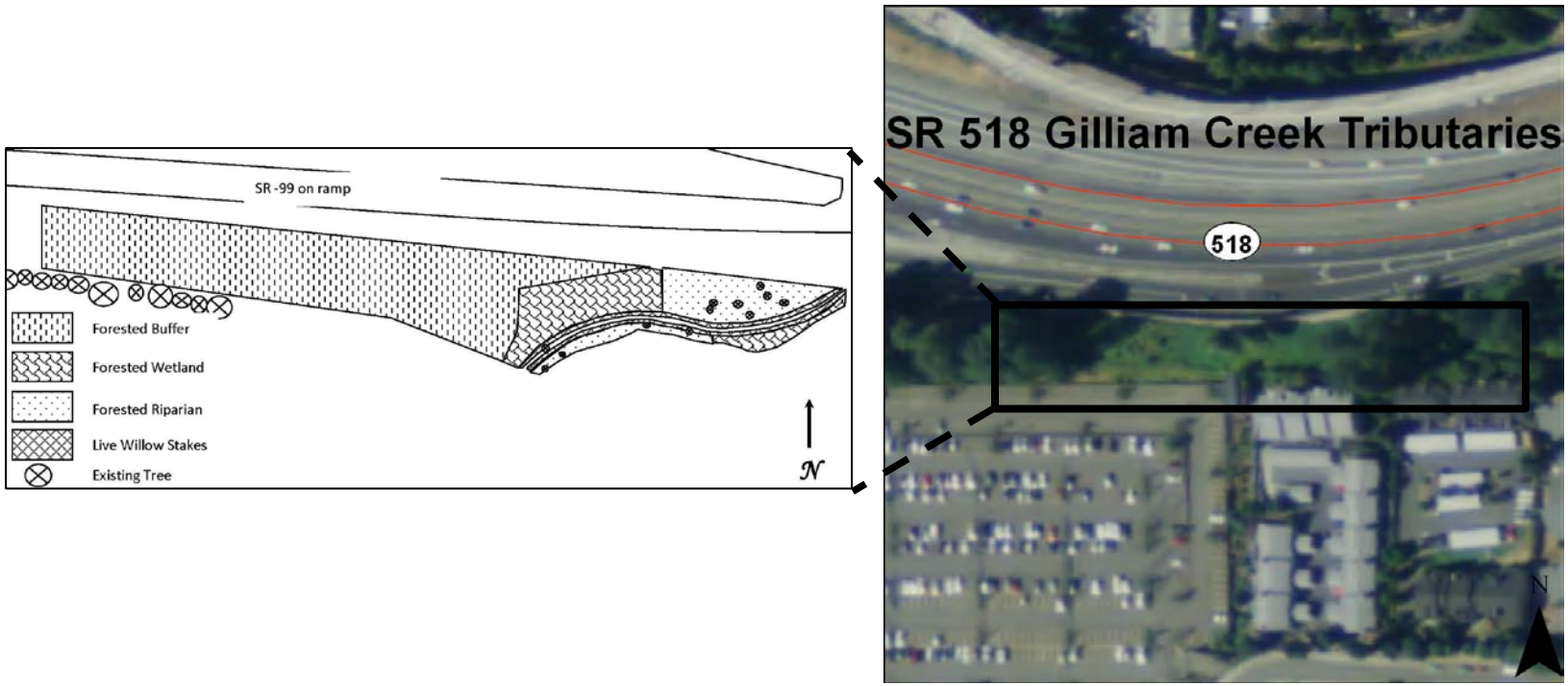


Figure 1 Site Sketch

The SR 518 Gilliam Creek Tributaries Stream Mitigation Site contains three new stream channels to offset lost functions of water quality treatment and organic inputs. Appendix 2 includes site directions.

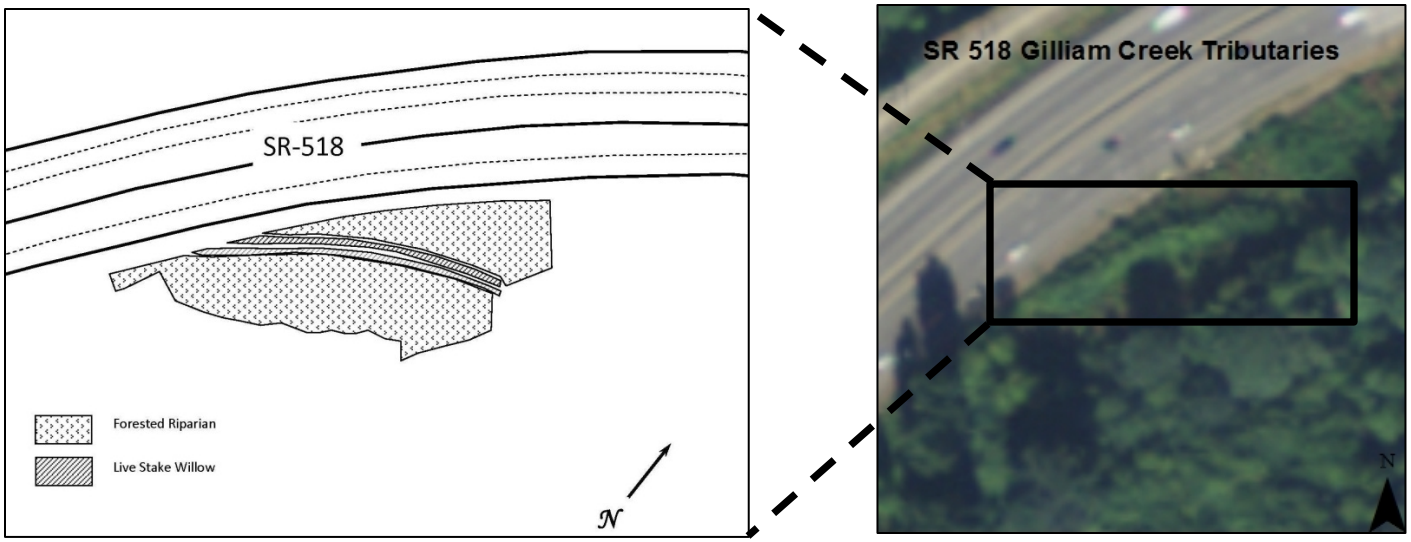


Figure 2 Site Sketch Unnamed Tributary 1 to Gilliam Creek

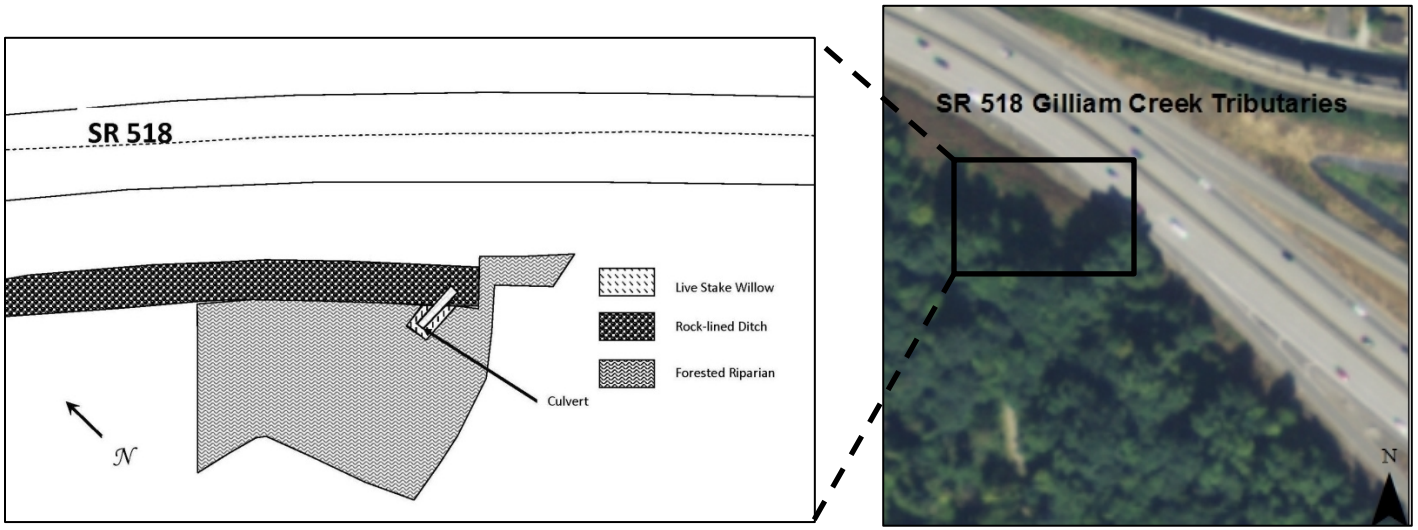


Figure 3 Site Sketch Unnamed Tributary 2 to Gilliam Creek

Appendix 1 shows the planting plan (Herrera 2006).

What are the performance standards for this site?

Year 5

Performance Standard 1
Within the planted buffer areas, a minimum of 66 percent of the total cover will include planted shrubs and trees.

Performance Standard 2
Within the planted buffer areas, woody vegetation (shrubs and trees) will have four shoots per 100 square feet in year 3 and 35 percent cover by year 5.

Performance Standard 3
All rootwads and instream woody debris will be visually inspected on an annual basis to ensure that they have remained in place.

Performance Standard 4
Coir fabric will remain in place to prevent bank erosion. Coir fabric and stream banks will be visually inspected on an annual basis.

Performance Standard 5
Stream channels will be visually inspected on an annual basis for evidence of breaching.

USACE Permit Requirement 1
Reed canarygrass and Scot's broom will not exceed 20 percent aerial cover in the stream mitigation sites. If this cover threshold is exceeded, weed eradication or control measures will be implemented as part of the contingency plan.

USACE Permit Requirement 2
Japanese Knotweed shall not be present at the stream mitigation sites. If it is discovered during monitoring eradication methods will be implemented immediately.

Appendix 1 shows the planting plan (Herrera 2006).

How were the performance standards evaluated?

To evaluate standards for vegetative cover at the Southwest Tributary, a baseline was established parallel to the retaining wall (Figure 2). Thirteen sampling transects were randomly placed perpendicular to the baseline. The line intercept method was used to determine woody cover. Woody cover was qualitatively estimated at Unnamed Tributary 1 and 2 (Performance Standard 1 and 2).

The stream was visually inspected for breeching, for movement, and for the location of rootwads and in-stream woody debris (Performance Standards 3, 4, and 5).

Invasive cover was estimated qualitatively at all three tributaries (Permit Requirements 1 and 2).

For additional details on the methods, see the WSDOT Wetland Mitigation Site Monitoring Methods Paper (WSDOT 2008).

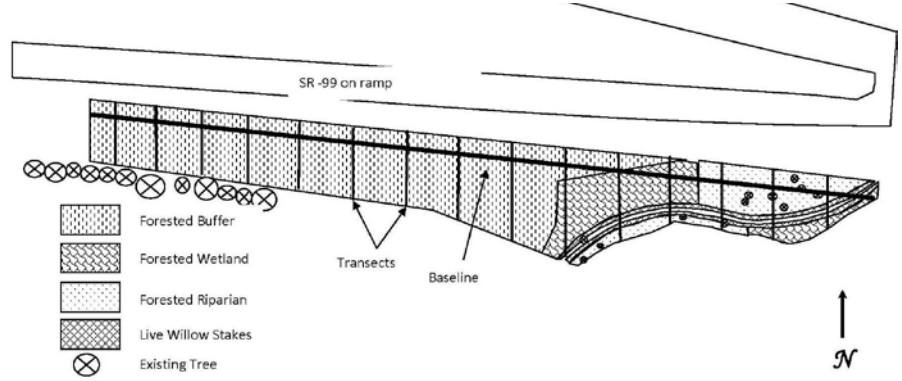


Figure 2 Site Sampling Design (2014)

Is this site a success?

Each of the tributaries is meeting all the final year year-five performance standards. The re-vegetated stream channels are providing the following functions that were lost during construction shading, water quality (temperature regulation), and the import of organic material.

The willow plantings along the creek on the Tributary 1 site were inadvertently cut by Area Maintenance in April of 2014, but despite this overall native woody cover is still quite high across the site. Woody cover across the rest of the site is estimated at 95 percent, but along the creek channel it is now only about five percent.

2013

2014

Creek Channel (2014)

Results for Performance Standard 1
(Within the planted buffer areas, a minimum of 66 percent of the total cover will include planted shrubs and trees.):

The total cover of planted trees and shrubs at each of the planting areas is estimated at 90 percent.

Results for Performance Standard 2
(Within the planted buffer areas, woody vegetation (shrubs and trees) will have 35 percent cover by year 5.):

Native woody cover at the southwest tributary is estimated at 65% cover ($CI_{80\%}$ = 56-73%) (Photo 1), thus meeting the requirement. Native woody cover at unnamed tributary 1 (Photo 2) is estimated at 85 percent and at unnamed tributary 2 (Photo 3) cover is estimated at 85 percent.

Photo 1
Woody cover at the southwest tributary (September 2014)

Results for Performance Standard 3
(All root wads and instream woody debris will be visually inspected on an annual basis to ensure that they have remained in place):

An inspection of the stream determined that that there has been no movement of root wads or in-stream woody debris (Photo 4).

Results for Performance Standard 4
(Coir fabric will remain in place to prevent bank erosion. Coir fabric and stream banks will be visually inspected on an annual basis):

There was no visible movement of the coir fabric and no visual bank erosion.

Results for Performance Standard 5
(Stream channels will be visually inspected on an annual basis for evidence of breaching):

A visual inspection revealed no evidence of stream breaching.

Photo 2
Woody cover at unnamed tributary 1 (September 2014)

Photo 3
Woody cover at unnamed tributary 2 (September 2014)

Results for Permit Requirement 1
(Reed canarygrass and Scot's broom will not exceed 20 percent aerial cover in the stream mitigation sites):

Cover of reed canarygrass (*Phalaris arundinacea*) and Scotch broom (*Cytisus scoparius*) is qualitatively assessed at three percent on the Southwest Tributary, less than one percent at Unnamed Tributary1, and none at Unnamed Tributary 2. This is composed of entirely reed canary grass. Scotch broom was not observed on any of the three stream realignment planting areas.

Results for Permit Requirement 2
(Japanese Knotweed shall not be present at the stream mitigation sites):

Japanese Knotweed was not observed on any of three stream realignment planting areas during monitoring activities.

Photo 4
Root wad in-stream placement (September 2014)

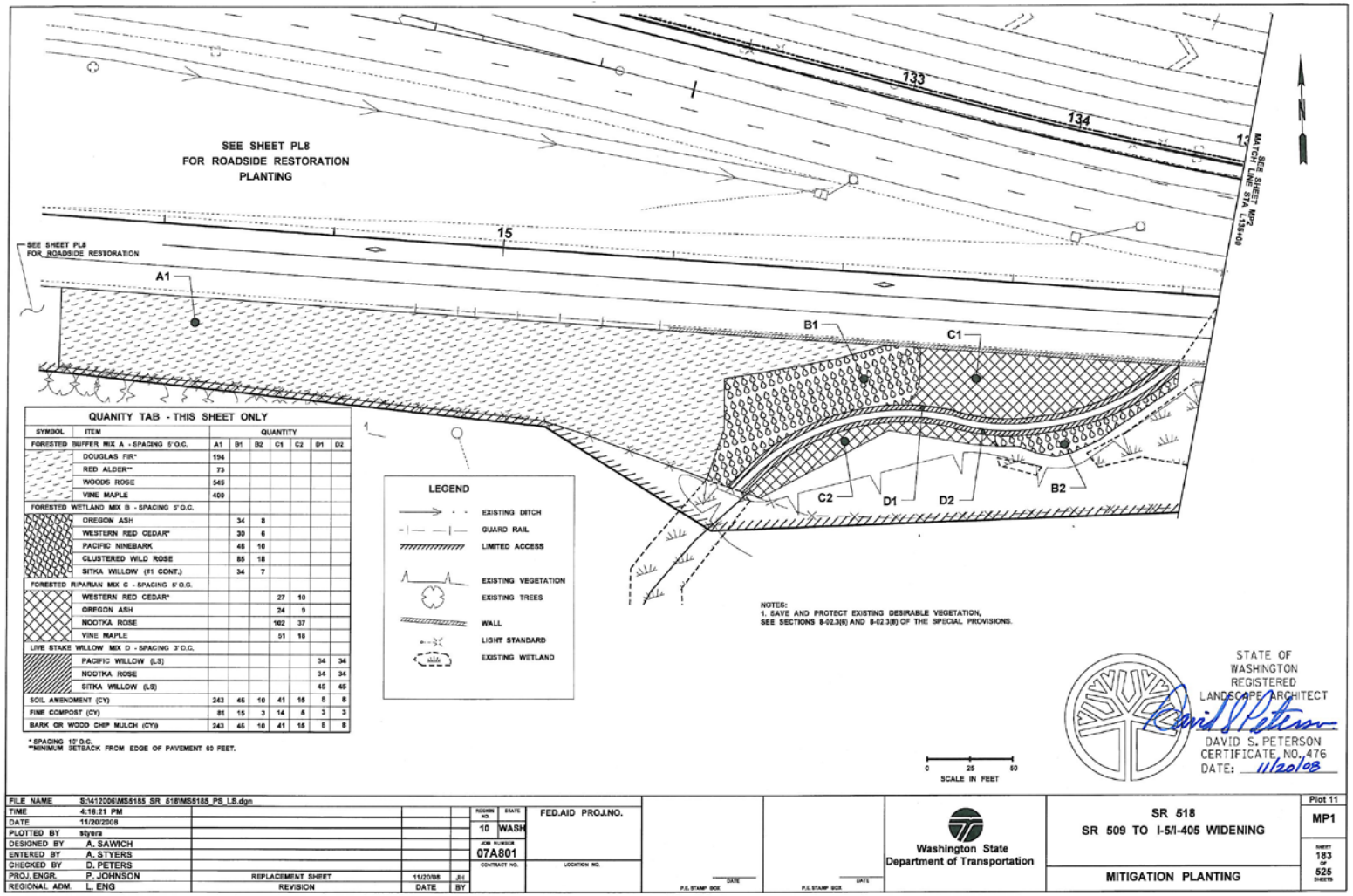
What is planned for this site?

Weed control will continue as needed and plans to restore Tributary 1 are currently in development.

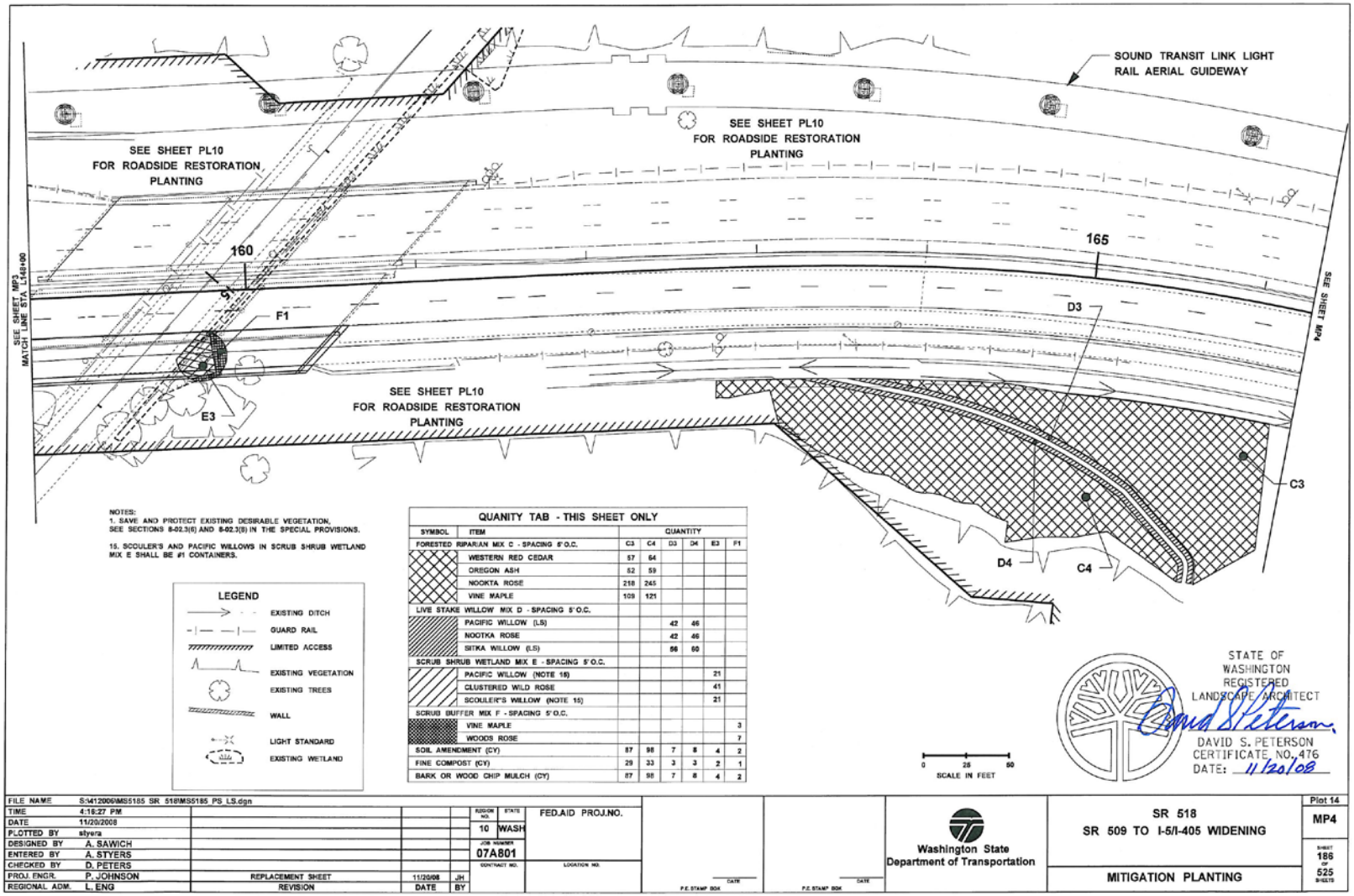
Appendix 1 – Planting Plan

(from Herrera 2006)

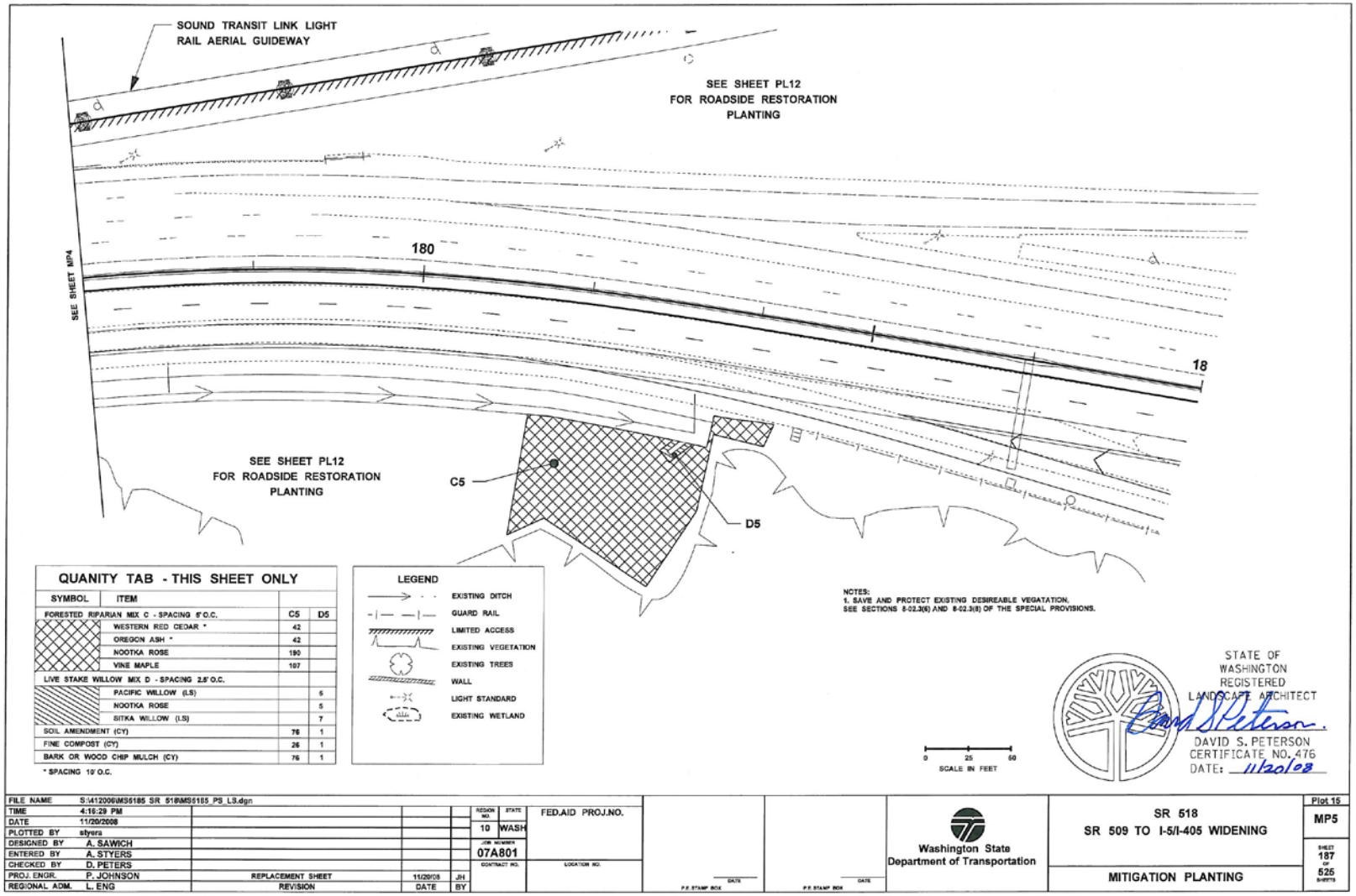
Southwest Tributary



Unnamed Tributary 1



Unnamed Tributary 2



Appendix 2 – Photo Points

The photographs below were taken on September 8, 2014 and document current site development.

Photo Point

Photo Point

Photo Point

Photo Point

Driving Directions: Take I-5 North to exit 152A. Follow SR 518 west. Take exit for 99 South. At the first light past SR 518, take a left onto 160th St. Take a left onto S158th St. Follow to 42nd Ave S, park on left side of road before crossing under SR 518. From parking area to access the SW Tributary to Gilliam Creek walk down the west side of 42nd St go under SR518 go around the end of the fence line at the first house, go back under 518 follow south side of 518 to site. To access unnamed tributaries 1 and 2, at 518 overpass head east to site.

Literature Cited

1. Herrera Environmental Consultants, Inc. 2006. SR 518 SeaTac Airport to I5/I405 Interchange Stream Mitigation Plan.
2. [USACE] US Army Corps of Engineers. 2007. Department of the Army Permit Number 200600651.
3. [WDFW] Washington State Department of Fish and Wildlife. 2007. Hydraulic Project Approval Permit Number 105508-3.
4. [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