

**Spring Valley Restoration Project Mitigation Site
USACE NWP (27) 200600839**

**Tacoma/Pierce County HOV Program; I-5: Port of Tacoma
Road to King County Line HOV
USACE NWS-2008-1445**

Olympic Region

2015 MONITORING REPORT

Wetlands Program

Issued March 2016



**Washington State
Department of Transportation**

Environmental Services Office

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General Site Information	
USACE Permit Numbers	(27) 200600839 NWS-2008-1445
Mitigation Location	North and South side of South 373 rd Street in Federal Way, King County
LLID Number	1223293472674
Construction Date	2007-2009
Monitoring Period	2009-2018
Year of Monitoring	7 of 10
Area of Project Impact	0.48 acre
Mitigation Site Area	25.26 acres

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Summary of Monitoring Results and Management Activities (2015)

Performance Standards	2015 Results ¹	Management Activities
Cover of woody vegetation in the upland planting areas will be at least 30%	32% cover (CI _{70%} = 25-38%)	Planting in the south buffer area occurred February 25, November 2 and 13, and December 15 in 2015
Cover of woody vegetation in the wetland forest-shrub areas will be at least 50%	Qualitative: 85 to 90%	
If present, eliminate Japanese knotweed (<i>Reynoutria japonica</i>), English ivy (<i>Hedera helix</i>), purple loosestrife (<i>Lythrum salicaria</i>), Scotch broom (<i>Cytisus scoparius</i>), tansy ragwort (<i>Senecio jacobaea</i>), and paleyellow iris (<i>Iris pseudacorus</i>) onsite.	Purple loosestrife present	Weed control performed: March 18, April 20, August 11, August 27-31, Sept 8, September 16, and Oct 5 in 2015

Report Introduction

This report summarizes Year-7 monitoring activities at the Spring Valley Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site development. Monitoring activities included vegetation surveys and photo-documentation on July 20 and 21, 2015.

¹ Estimated values are presented with their corresponding statistical confidence interval. For example, 32% cover (CI_{70%} = 25-38%) means we are 70% confident that the true cover value is between 25% and 38%.

What is the Spring Valley Mitigation Site?

This 25.26-acre mitigation site (Figure 1) is intended to provide advance mitigation for wetland and stream impacts associated with several future WSDOT roadway improvement projects, including but not limited to the Interstate 5 (I-5) high occupancy vehicle (HOV) lane construction project from the Port of Tacoma Road Interchange to the King-Pierce County line and the SR 167 Extension Project from Puyallup to SR 509. The goals of the Spring Valley Mitigation site include restoration of historic hydrologic regimes and connectivity between wetland areas, augmenting wetland and riparian function through reforestation, stream relocation to the vicinity of a former natural alignment, and installing large woody material to enhance wildlife habitat. Mitigation work included excavating, some filling, demolishing structures, removing invasive weeds, installing woody habitat structures, and planting native trees and shrubs.

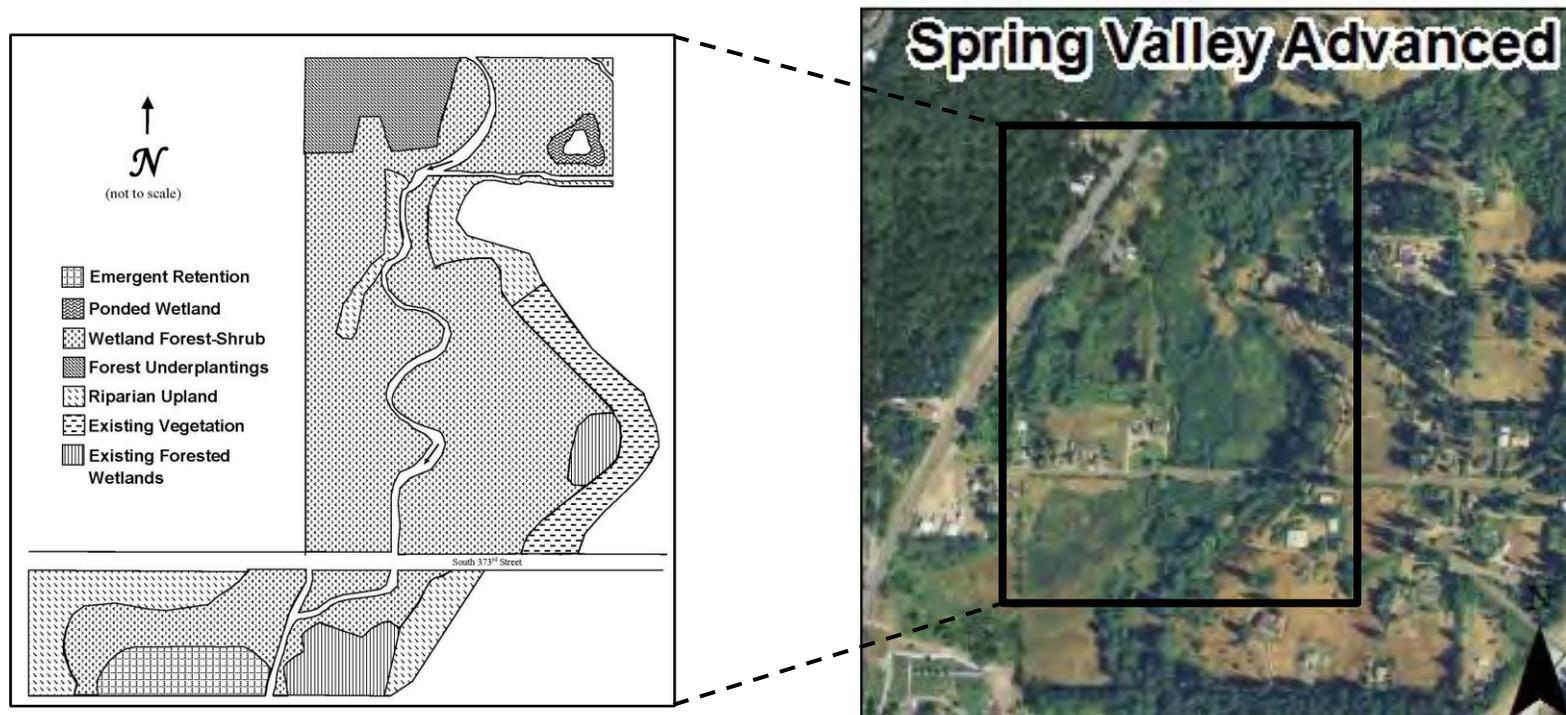


Figure 1 Site Sketch

I-5 Spring Valley Mitigation Site includes forest/shrub habitat, forest underplantings, and ponded wetlands. There are additional emergent areas not shown on this sketch. See As-built map in Appendix 1 for locations. Appendix 2 includes driving directions.

What are the performance standards for this site?

Year-5

Performance Standard 1

In Year 5, woody vegetation within the upland planting areas will each provide at least 30 percent aerial cover.

Year-7

Performance Standard 2

In Year 7, woody vegetation within the wetland forest-shrub planting areas will provide at least 60 percent aerial cover. (75 percent in Year 10).

Performance Standard 3

In Years 1 through 10, identify and take immediate action with the intent of eliminating Japanese knotweed, English ivy, purple loosestrife, Scot's broom, tansy ragwort, and paleyellow iris onsite.

Appendix 1 shows the as built planting plan (WSDOT 2009).

How were the performance standards evaluated?

The table below documents the sampling methodology used for the performance standards as required by the mitigation plan or permits. For additional details on the methods see the [WSDOT Wetland Mitigation Site Monitoring Methods Paper](#) (WSDOT 2008).

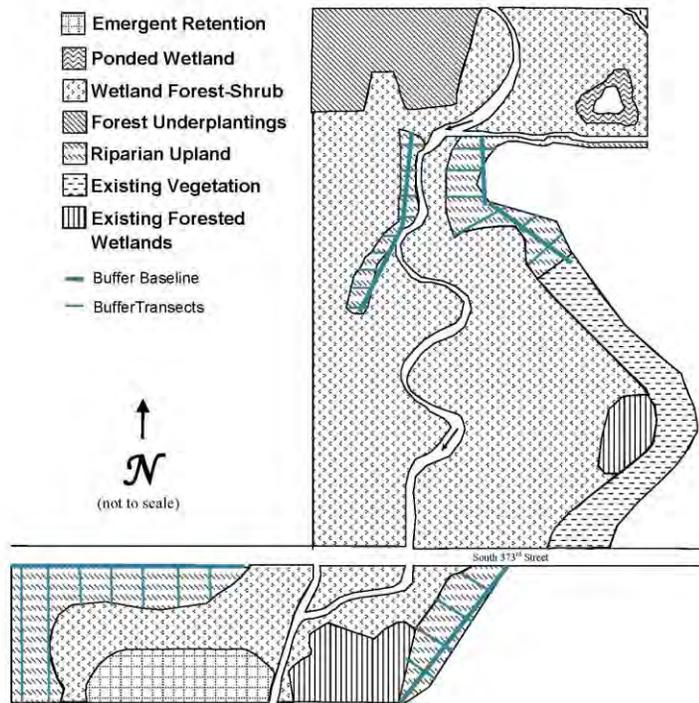


Figure 2 Site Sampling Design (2015)

Placement of Baseline: The baseline had six segments that spanned the buffer zone in each area. The total length was 468-meters.

Segmented Baseline: Length 64m Transects 1-4
 Length 75m Transects 5-9
 Length 82m Transects 10-14
 Length 31m Transects 15-16
 Length 77m Transects 17-21
 Length 139m Transects 22-29

	PS 1	PS 2	PS 3
Attribute	Cover	Cover	Presence/ Absence
Target pop.	Native Woody	Native Woody	Noxious Weeds/ Invasive sp.
Zone	Buffer	SS/PFO	Entire site
Sample method	Line Intercept	Qualitative	Qualitative
SU length	8 meters	N/A	N/A
SU width	N/A	N/A	N/A
Points per SU	N/A	N/A	N/A
Total # of SU	29	N/A	N/A

How is the site developing?

This site is generally successful despite the upland buffer's delayed development. The stream realignment and general structure of the site has contributed to the hydrologic functions intended for this site. The stream braids throughout the site and the vegetation slows water velocity. Grading and plant establishment activities have likely enhanced the performance of these functions.

The site was intended to provide wildlife habitat and it appears that this function is supported. Several species of birds were observed during monitoring this summer. Deer sign was observed on the site, and rodents and birds have been observed using the habitat structures. Garter snakes and rabbits have also been observed during monitoring visits. Beaver are active on the site and when needed, the dams are removed to protect infrastructure.

Remedial efforts have occurred in the upland buffer areas in order to help the vegetation to become established. Replanting has occurred, specifically in the buffer area on the south side of the road. Grass was cleared around new plantings to reduce competition while the new plants become established. The dry and hot summer took a toll on the buffer this year but despite the weather, the buffer area did increase slightly in cover.

Results for Performance Standard 1

(Year 5- Cover of woody vegetation in the upland planting areas will be at least 30%):

Cover of woody species in the upland buffer is 32 percent (CI_{70%} = 25-38%) (Photo 1). Woody species establishment and growth in this zone has been slow. The result from quantitative monitoring in 2013 was 25 percent cover (CI_{53%} = 20-30%). This area was monitored again in 2015 because this standard was not met in 2013.

The current result of 32 percent shows improvement from previous years. The region restoration crew planted additional plants in February of 2015. The zone continues to develop and with continued maintenance, should meet the Year 10 standard of 50 percent cover.

Results for Performance Standard 2

(Cover of woody vegetation in the wetland forest-shrub areas will be at least 50%):

Cover of woody species in the wetland is qualitatively estimated at 85 to 90 percent. The site has developed rapidly and has been meeting the Year 10 final year standard for wetland woody cover for two years. On June 24, 2015, a request to discontinue quantitative sampling for wetland woody cover was sent to USACE and the Department of Ecology, this request was accepted on July 14, 2015. The final year standards are still currently being met.



Photo 1
Woody cover in the Upland Buffer (July 2015)



Photo 2
Woody Cover in the Wetland (July 2015)

Results for Performance Standard 3

(If present, eliminate Japanese knotweed, English ivy, purple loosestrife, Scot's broom, tansy ragwort, and paleyellow iris onsite.):

Purple loosestrife was observed in the northeast portion of the site near the pond. This information was relayed to the site managers in order to eliminate this species from the area.

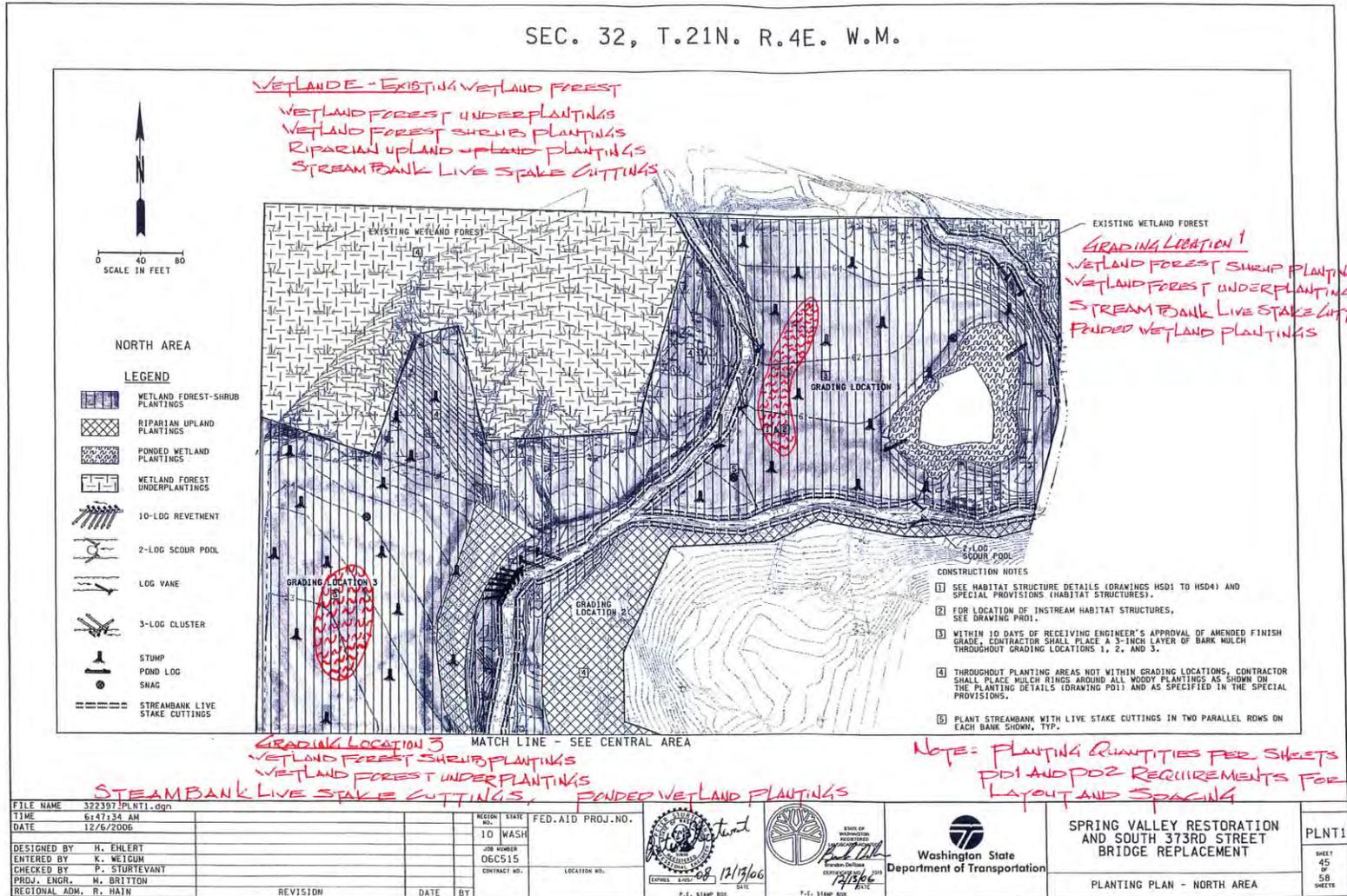
In earlier monitoring years, paleyellow iris was observed choking the creek bed. It appears that this species has been successfully eradicated from the site. None were observed this year.

What is planned for this site?

The Region has plans to continue working on eradication of purple loosestrife (*Lythrum salicaria*) and treat the remaining noxious weeds observed on site.

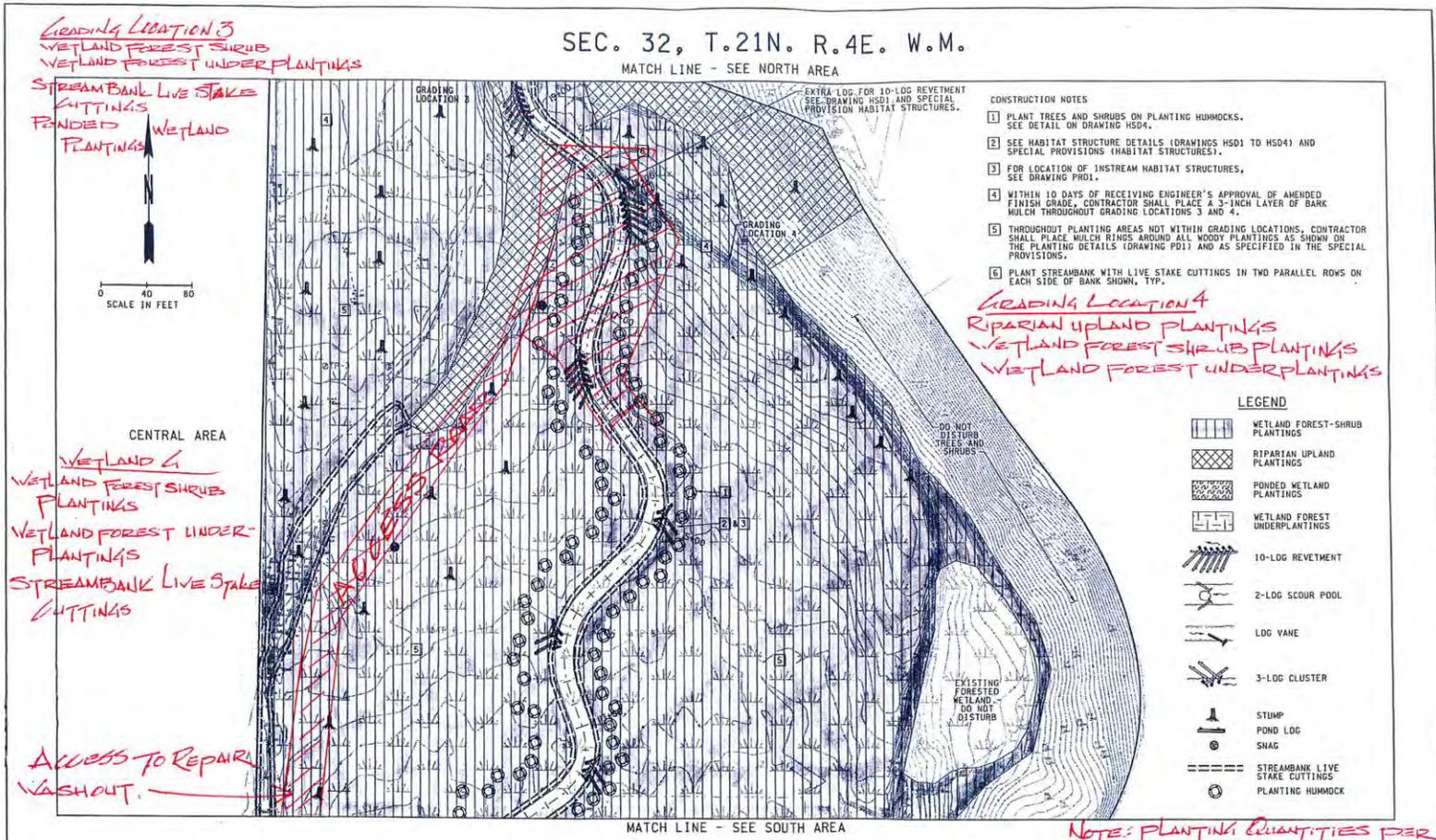
Appendix 1 – As-Built and Site Sketch With Photopoints

(from WSDOT 2009)



SEC. 32, T.21N. R.4E. W.M.

MATCH LINE - SEE NORTH AREA



- CONSTRUCTION NOTES
- 1 PLANT TREES AND SHRUBS ON PLANTING HUMMOCKS. SEE DETAIL ON DRAWING HSD4.
 - 2 SEE HABITAT STRUCTURE DETAILS (DRAWINGS HSD1 TO HSD4) AND SPECIAL PROVISIONS (HABITAT STRUCTURES).
 - 3 FOR LOCATION OF INSTREAM HABITAT STRUCTURES, SEE DRAWING PDI1.
 - 4 WITHIN 10 DAYS OF RECEIVING ENGINEER'S APPROVAL OF AMENDED FINISH GRADE, CONTRACTOR SHALL PLACE A 3-INCH LAYER OF BARK MULCH THROUGHOUT GRADING LOCATIONS 3 AND 4.
 - 5 THROUGHOUT PLANTING AREAS NOT WITHIN GRADING LOCATIONS, CONTRACTOR SHALL PLACE MULCH RINGS AROUND ALL WOODY PLANTINGS AS SHOWN ON THE PLANTING DETAILS (DRAWING PDI1) AND AS SPECIFIED IN THE SPECIAL PROVISIONS.
 - 6 PLANT STREAMBANK WITH LIVE STAKE CUTTINGS IN TWO PARALLEL ROWS ON EACH SIDE OF BANK SHOWN, TYP.

Grading Location 4
 Riparian Upland Plantings
 Wetland Forest Shrub Plantings
 Wetland Forest Underplantings

- LEGEND
- WETLAND FOREST-SHRUB PLANTINGS
 - RIPARIAN UPLAND PLANTINGS
 - PONDED WETLAND PLANTINGS
 - WETLAND FOREST UNDERPLANTINGS
 - 10-LOG REVETMENT
 - 2-LOG SCOUR POOL
 - LOG VANE
 - 3-LOG CLUSTER
 - STUMP
 - POND LOG
 - SNAG
 - STREAMBANK LIVE STAKE CUTTINGS
 - PLANTING HUMMOCK

NOTE: PLANTING QUANTITIES PER SHEETS PDI1 AND PDI2 REQUIREMENTS FOR LAYOUT AND SPACING

FILE NAME	322397_PLNT2.dgn	REGION	10	STATE	WASH	FED-AID PROJ. NO.	
TIME	6:48:04 AM	JOB NUMBER	06C515	CONTRACT NO.		LOCATION NO.	
DATE	12/6/2006	DESIGNED BY	H. EHLERT	ENTERED BY	K. WEIGUM	CHECKED BY	P. STURTEVANT
		PROJ. ENGR.	M. BRITTON	REGIONAL ADM.	R. HAIN	REVISION	DATE

STATE OF WASHINGTON
 DEPARTMENT OF TRANSPORTATION
 DENNIS R. SPYER 12/19/06
 P.E. STAMP BOX DATE

Washington State
 Department of Transportation

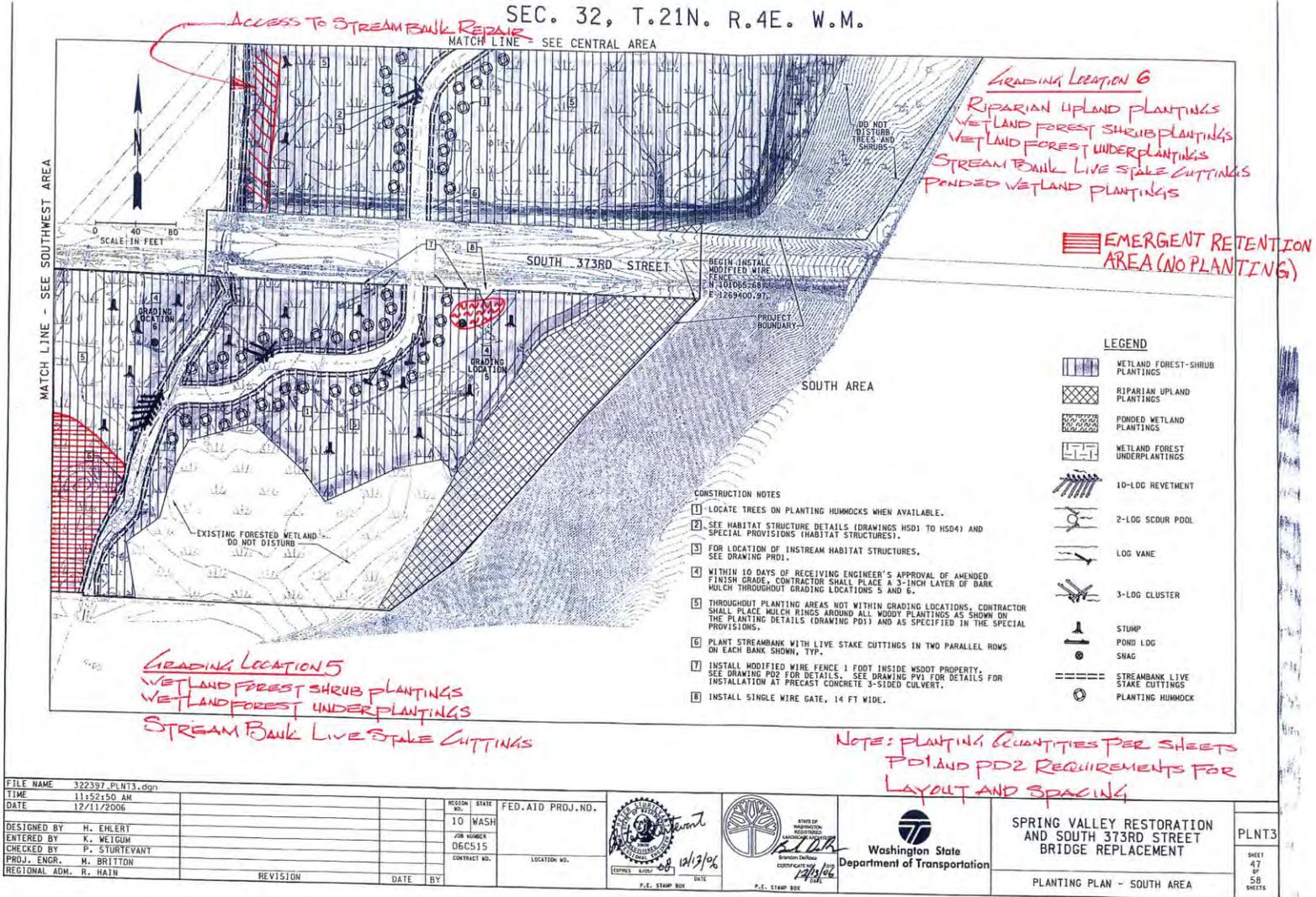
SPRING VALLEY RESTORATION AND SOUTH 373RD STREET BRIDGE REPLACEMENT

PLANTING PLAN - CENTRAL AREA

PLNT2

SHEET 46 OF 58 SHEETS

SEC. 32, T.21N. R.4E. W.M.



Grading Location 5
Wetland Forest Shrub Plantings
Wetland Forest Underplantings
Stream Bank Live Stake Cuttings

Grading Location 6
Riparian Upland Plantings
Wetland Forest Shrub Plantings
Wetland Forest Underplantings
Stream Bank Live Stake Cuttings
Pondered Wetland Plantings

EMERGENT RETENTION AREA (NO PLANTING)

- CONSTRUCTION NOTES**
1. LOCATE TREES ON PLANTING HUMMOCKS WHEN AVAILABLE.
 2. SEE HABITAT STRUCTURE DETAILS (DRAWINGS HSD1 TO HSD4) AND SPECIAL PROVISIONS (HABITAT STRUCTURES).
 3. FOR LOCATION OF INSTREAM HABITAT STRUCTURES, SEE DRAWING PROJ1.
 4. WITHIN 10 DAYS OF RECEIVING ENGINEER'S APPROVAL OF AMENDED FINISH GRADE, CONTRACTOR SHALL PLACE A 3-INCH LAYER OF BARK MULCH THROUGHOUT GRADING LOCATIONS 5 AND 6.
 5. THROUGHOUT PLANTING AREAS NOT WITHIN GRADING LOCATIONS, CONTRACTOR SHALL PLACE MULCH RINGS AROUND ALL WOODY PLANTINGS AS SHOWN ON THE PLANTING DETAILS (DRAWING PDI) AND AS SPECIFIED IN THE SPECIAL PROVISIONS.
 6. PLANT STREAMBANK WITH LIVE STAKE CUTTINGS IN TWO PARALLEL ROWS ON EACH BANK SHOWN, TYP.
 7. INSTALL MODIFIED WIRE FENCE 1 FOOT INSIDE WSDOT PROPERTY. SEE DRAWING PD2 FOR DETAILS. SEE DRAWING PVI FOR DETAILS FOR INSTALLATION AT PRECAST CONCRETE 3-SIDED CULVERT.
 8. INSTALL SINGLE WIRE GATE, 14 FT WIDE.

LEGEND

	WETLAND FOREST-SHRUB PLANTINGS
	RIPARIAN UPLAND PLANTINGS
	PONDERED WETLAND PLANTINGS
	WETLAND FOREST UNDERPLANTINGS
	10-LOG REVETMENT
	2-LOG SCOUR POOL
	LOG VANE
	3-LOG CLUSTER
	STUMP
	POND LOG
	SNAG
	STREAMBANK LIVE STAKE CUTTINGS
	PLANTING HUMMOCK

NOTE: PLANTING QUANTITIES PER SHEETS PD1 AND PD2 REQUIREMENTS FOR LAYOUT AND SPACING

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TIME	11:52:50 AM	10	WASH						
DATE	12/11/2006						Washington State Department of Transportation	SHEET 47 OF 58 SHEETS	
DESIGNED BY	H. EHLERT							PLANTING PLAN - SOUTH AREA	
ENTERED BY	K. WEIGUM								
CHECKED BY	P. STURTEVANT								
PROJ. ENGR.	M. BRITTON								
REGIONAL ADM.	R. HAIN								
		REVISION		DATE	BY				

SEC. 32, T.21N. R.4E. W.M.

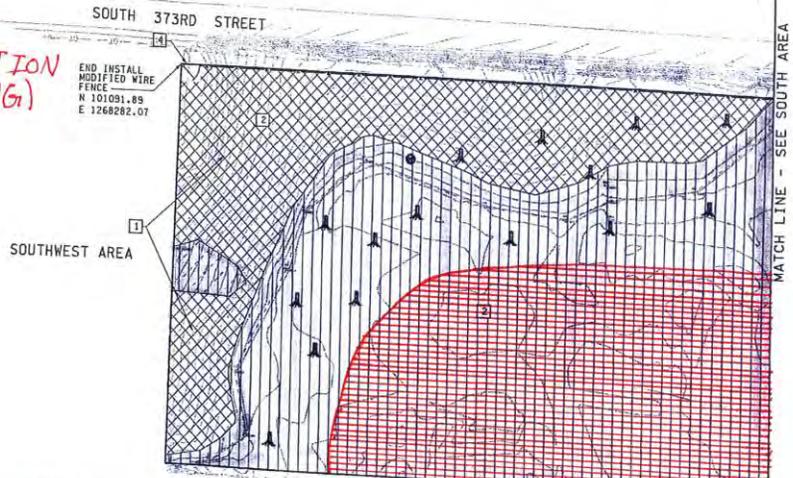


CONSTRUCTION NOTES

- 1] SPECIAL TREE SETBACK FROM FENCE LINE REQUIRED WITHIN 50 FEET OF THE WESTERN PROPERTY LINE. SEE DETAIL ON DRAWING PDZ.
- 2] THROUGHOUT PLANTING AREAS NOT WITHIN GRADING LOCATIONS, CONTRACTOR SHALL PLACE MULCH RINGS AROUND ALL WOODY PLANTINGS AS SHOWN ON THE PLANTING DETAILS (DRAWING PD1) AND AS SPECIFIED IN THE SPECIAL PROVISIONS.
- 3] INSTALL MODIFIED WIRE FENCE 1 FOOT INSIDE WSDOT PROPERTY. SEE DRAWING PDZ FOR DETAILS.
- 4] INSTALL SINGLE WIRE GATE, 14 FT WIDE.

EMERGENT RETENTION AREA (NO PLANTING)

- LEGEND**
- WETLAND FOREST-SHRUB PLANTINGS
 - RIPARIAN UPLAND PLANTINGS
 - PONDED WETLAND PLANTINGS
 - WETLAND FOREST UNDERPLANTINGS
 - 10-LOG REVETMENT
 - 2-LOG SCOUR POOL
 - LOG VANE
 - 3-LOG CLUSTER
 - STUMP
 - POND LOG
 - SNAG
 - STREAMBANK LIVE
 - LIVE STAKE CUTTINGS



WETLAND A & B
WETLAND FOREST SHRUB PLANTINGS
WETLAND FOREST SHRUB-UNDERPLANTINGS
STREAMBANK LIVE STAKE CUTTINGS

NOTE: PLANTING QUANTITIES PER SHEETS PD1 AND PD2 REQUIREMENTS FOR LAYOUT AND SPACING

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 TIME 6:49:23 AM
 DATE 12/6/2006

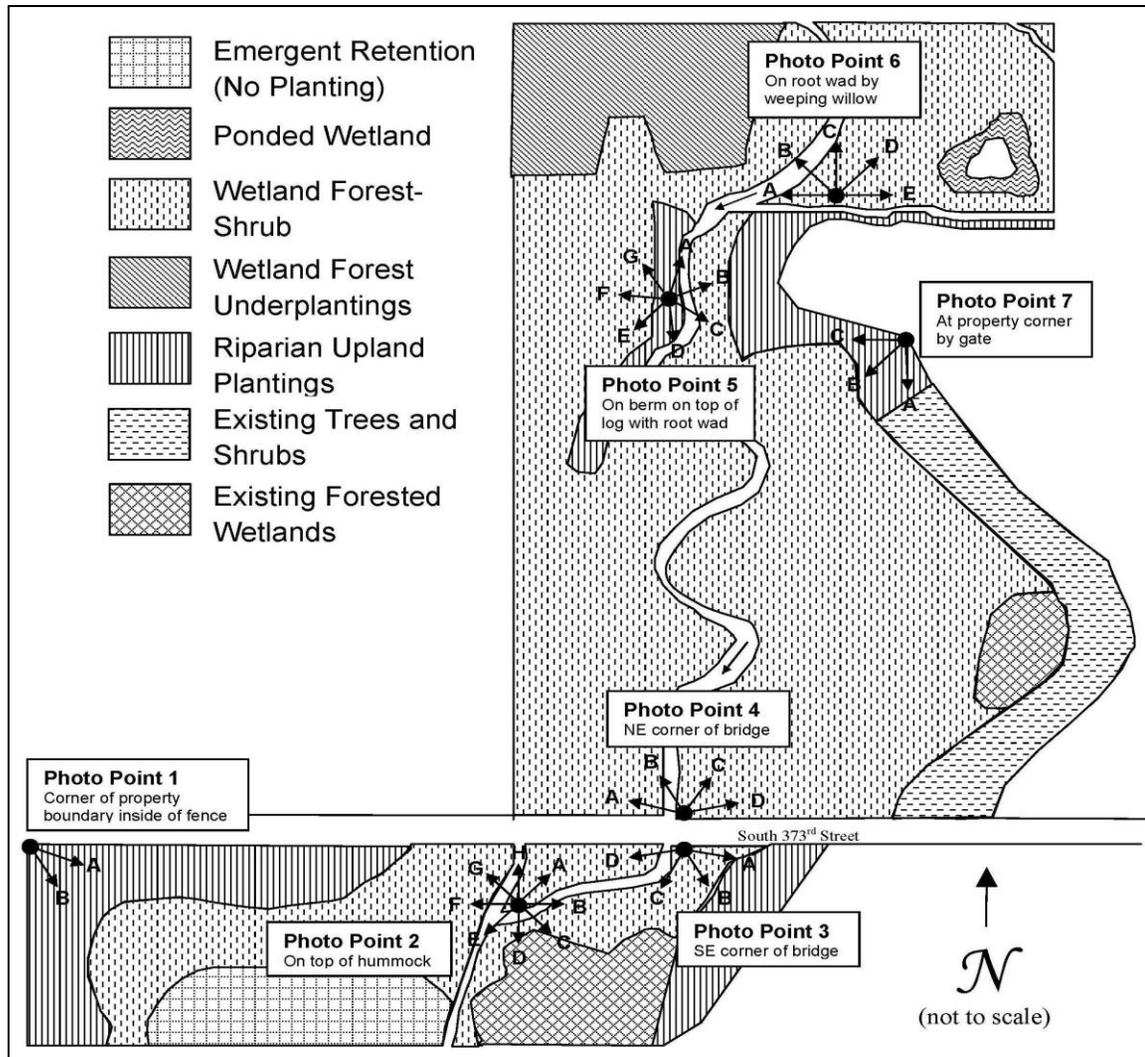
DESIGNED BY H. EHLERT
 ENTERED BY K. WEIGUM
 CHECKED BY P. STURTEVANT
 PROJ. ENGR. M. BRITTON
 REGIONAL ADM. R. HAIN

REVISION	DATE	BY

REGION STATE
 10 WASH
 FED. AID PROJ. NO.
 JOB NUMBER
 06C515
 CONTRACT NO.
 LOCATION NO.



SPRING VALLEY RESTORATION AND SOUTH 373RD STREET BRIDGE REPLACEMENT
 PLNT4
 SHEET 48 OF 58 SHEETS
 PLANTING PLAN - SOUTHWEST AREA



Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on July 21, 2015 and document current site development.



Photo Point 1a



Photo Point 1b



Photo Point 2a



Photo Point 2b



Photo Point 2c



Photo Point 2d



Photo Point 2e



Photo Point 2f



Photo Point 2g



Photo Point 2h



Photo Point 3a



Photo Point 3b



Photo Point 3c



Photo Point 3d



Photo Point 4a



Photo Point 4b



Photo Point 4c



Photo Point 4d



Photo Point 5a



Photo Point 5b



Photo Point 5c



Photo Point 5d



Photo Point 5e



Photo Point 5f



Photo Point 5g



Photo Point 6a



Photo Point 6b



Photo Point 6c



Photo Point 6d



Photo Point 6e



Photo Point 7a



Photo Point 7c



Photo Point 7b

Driving Directions:

Take I-5 North from Olympia to Fife. Take Exit 137/WA-99 N/Milton staying on the 54th Avenue east ramp. The ramp will take you under the overpass and around to the other side. At the Stop sign, take a right onto 54th Avenue and cross over the highway. Take the first right onto Pacific Hwy E/WA-99. Travel north on 99 until you reach South 373rd Street. Take a right onto 373rd Street. The site will be on your left. There is a white fence and the site is on the north and south sides of the street. There are several places to pull off and park on the shoulder. A key should be obtained from region personnel to open the gate.

Literature Cited

1. CH2MHILL (prepared for [WSDOT] Washington State Department of Transportation). 2006. Spring Valley Restoration Project Mitigation Report.
2. [USACE] US Army Corps of Engineers. 2006. Department of the Army Nationwide Permit Number (27) 200600839.
3. [USACE] US Army Corps of Engineers. 2009. Department of the Army Permit Number NWS-2008-1445.
4. [WSDOT] Washington State Department of Transportation. 2009. Spring Valley Restoration Project As-built Plan.
5. [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>