

**SR 18 Maple Valley to Issaquah Hobart Road
(MP 16.6 to 19.3) (SR 18 Cedar River Tributary SE 216th
Place) Restoration Site
WIN # A01820C**

USACE IP 200200594

Northwest Region

2014 MONITORING REPORT

Wetlands Program

Issued March 2015



**Washington State
Department of Transportation**

Environmental Services Office

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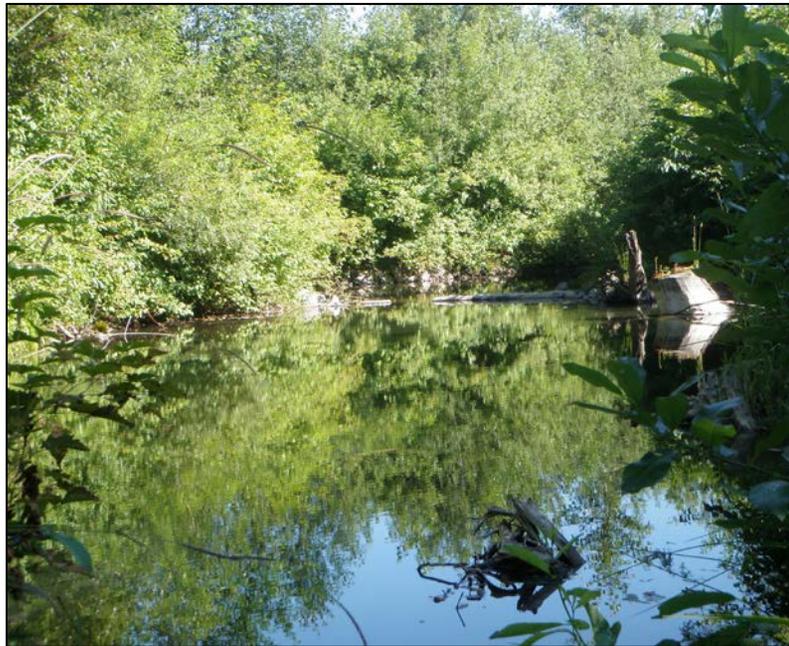
Jennie Husby

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SR 18 Maple Valley to Issaquah Hobart Road (MP 16.6 to 19.3) (Cedar River Tributary SE 216th Place) Restoration Site USACE IP 200200594



General Site Information	
USACE IP Number	200200594
WDFW HPA Number	00000F4792-13
King County Number	L01CG513
Mitigation Location	Located along the Cedar River near the SR 18-SR 169 Interchange in King County
LLID Number	1220419474077
Construction Date	2006-2007
Monitoring Period	2007-2016
Year of Monitoring	8 of 10
Area of Project Impact¹	690 ft Stream Channel
Type of Mitigation	Stream Restoration/Enhancement
Area of Mitigation²	6.83 acres

¹ USACE 2002 . This site partially mitigates for the impacts listed. The remaining impacts are mitigated for at the seven additional stream restoration sites along the SR 18 corridor under the same project: SR 18 Maple Valley to Issaquah Hobart Road (MP 16.6 to 19.3).

²WSDOT 2003

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Summary of Monitoring Results and Management Activities (2014)

Performance Standards	2014 Results	Management Activities
Stream depth monitoring	Channel was unobstructed on each visit.	

Report Introduction

This report summarizes Year-8 monitoring activities at the State Route (SR) 18 Cedar River Tributary SE 216th Stream Realignment. Included are a site description, permit criteria, an explanation of monitoring methods, and an evaluation of site development. Monitoring activities included photo-documentation and stream depth measurements and were conducted on July 17, August 13, and October 9, 2014.

What is the SR 18 Cedar River Tributary 216th Stream Realignment site?

This 6.83-acre site (Figure 1) is a riparian re-vegetation and stream restoration site. The site compensates for impacts to riparian buffer and stream channel due to stream channel realignment and bridge construction associated with road improvements along SR 18.

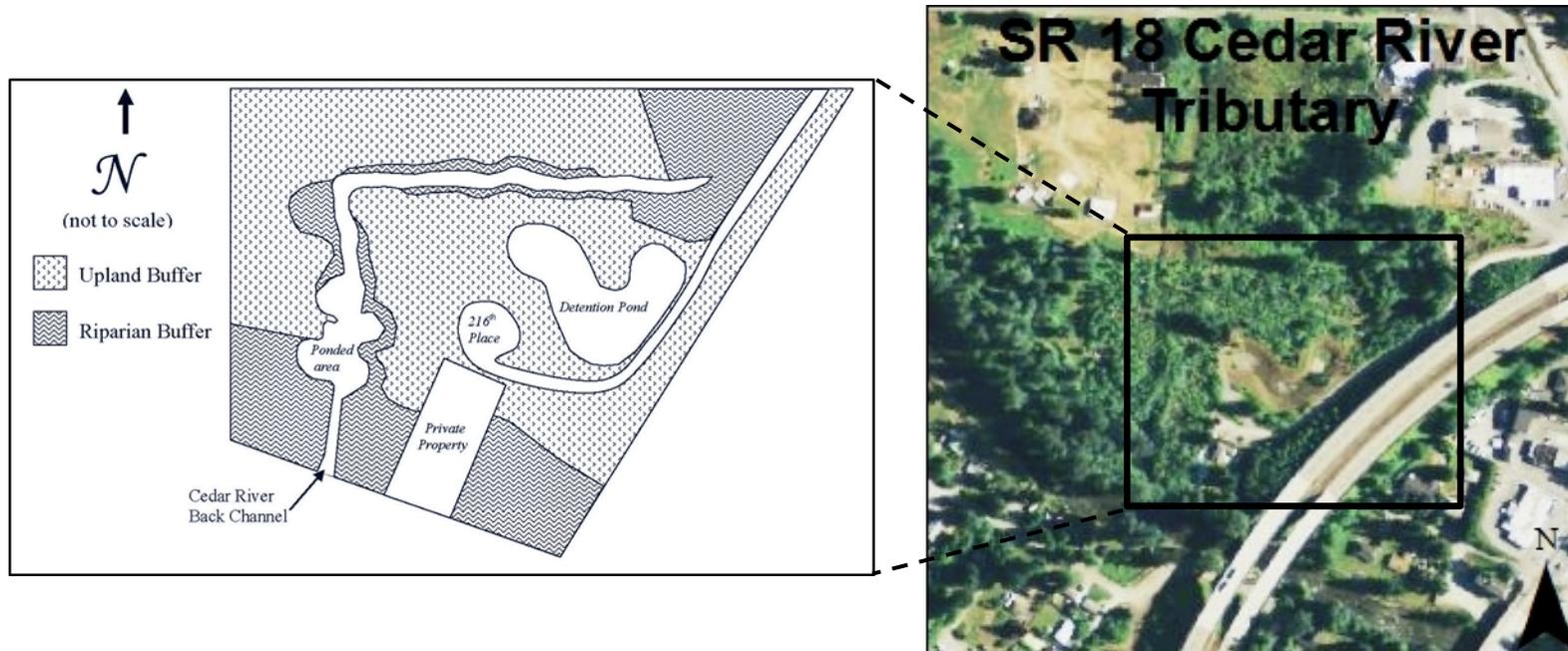


Figure 1 Site Sketch

The SR 18 Cedar River Tributary SE 216th Place Restoration Site includes a large upland buffer area that extends east across a private drive and up a steep slope to SR 18. The riparian buffer runs northeast, along the steeply banked backwater channel and ponded areas. A detention pond and a preservation area occupy the center of the site. Appendix 1 includes site directions.

What is the Permit Criterion for this site?

Year 8

USACE Permit Requirement

- 1) Three monitoring events will be completed each year, once per month between mid-July and late September, for 10 years following construction of the new stream.
- 2) A minimum of three locations must be tested, with a minimum of four water depth measurements taken at each location.
- 3) Consistent measurements of less than 4-inches of water depth over a one year period may be cause to require modification of the project, and may require removal of the build-up or modification of the stream design. ‘Consistent’ is defined as three out of four of the measurements at each of the three locations.
- 4) At the same time as the water depth testing, visual evaluation will be made of any gravel buildup at the mouth of the realignment. A brief anecdotal report must be submitted with the water monitoring report. Buildup of gravel sufficient to reduce water flows such that fish may be stranded within the stream, may require that some or all of the buildup material be removed.

Appendix 1 shows the planting plan (WSDOT 2007).

How were the performance standards evaluated?

To conduct stream depth monitoring, a baseline was placed between the lower pool and the Cedar River. Three transects were randomly placed perpendicular to the baseline. Four points were randomly selected along each transect. Water depth was measured at each point (Permit Requirement). This was repeated a total of three times as the permit dictates. Due to a scheduling error, the last visit did not occur until early October.

How is the site developing?

The channel was unobstructed during each monitoring visit in 2014. Dense native vegetation shades the new channel and the edges of the pond.

Results for Permit Requirement

(Stream depth greater than or equal to four inches at each monitoring location; note gravel buildup at the mouth of realignment):

The created channel met the permit requirement criteria in 2014. No transect had three or more depth measurements of less than four inches (Appendix 2, Table 1). The average depth of the channel thalweg was at least twelve inches on each visit. Minor accumulations of sediment were present along both sides of the channel (Photo 1). Despite evidence of high winter flows (Photo 2), the connection to the Cedar River was unobstructed during summer low-water conditions.



Photo 1 Created channel looking towards Cedar River (August 2014)



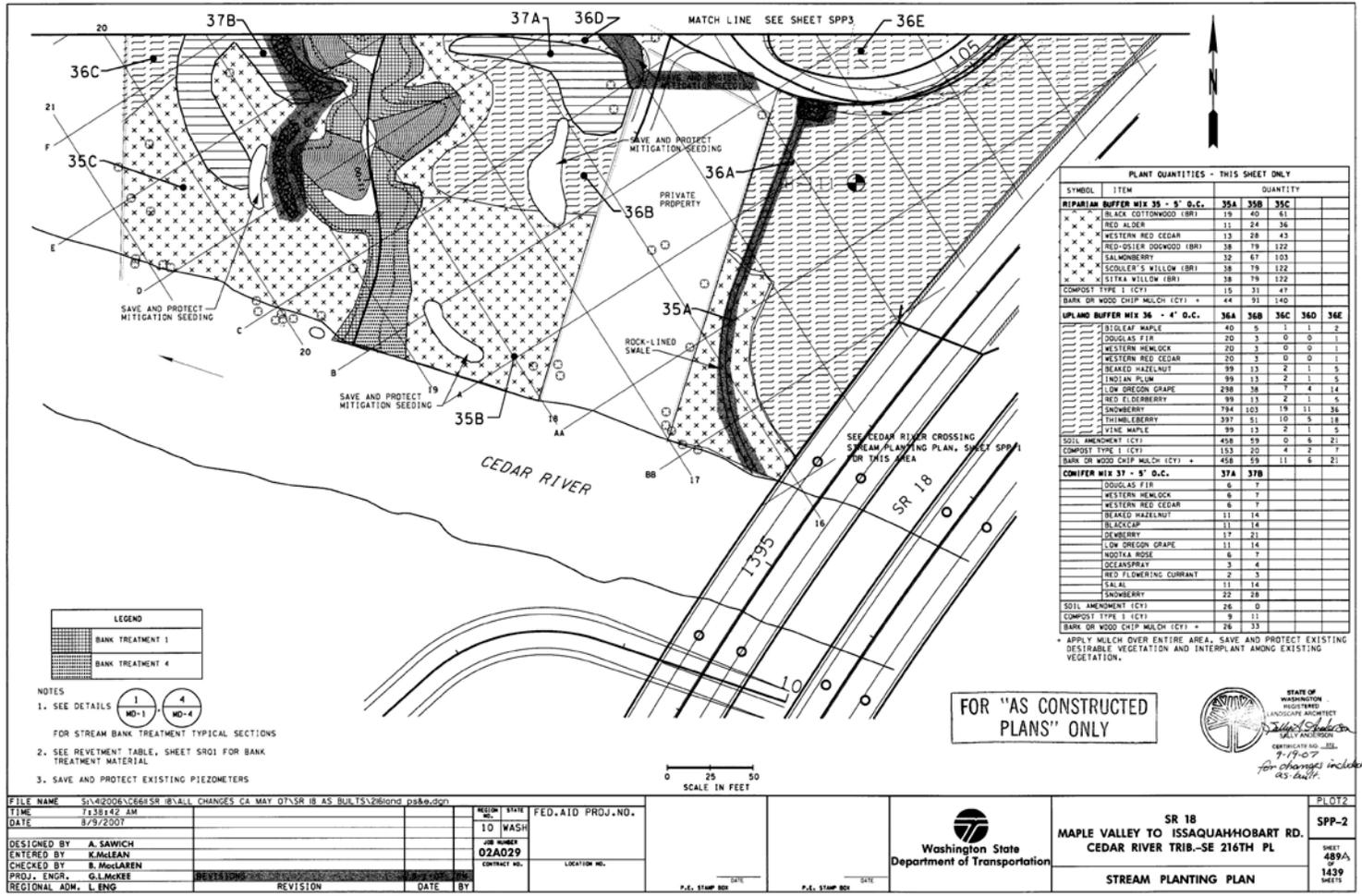
Photo 2 Connection to Cedar River (July 2014)

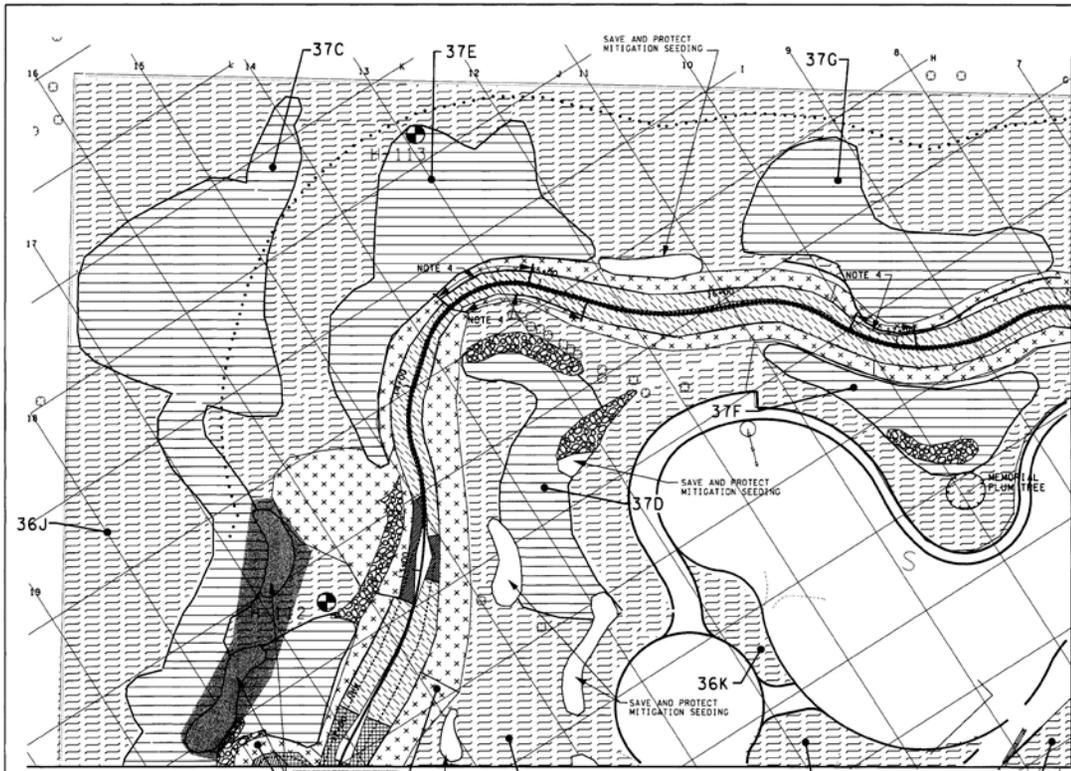
What is planned for this site?

Stream monitoring will continue in 2015 and any noxious weeds will be removed from the remainder of the mitigation site.

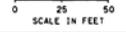
Appendix 1 – Planting Plan

(WSDOT 2007)

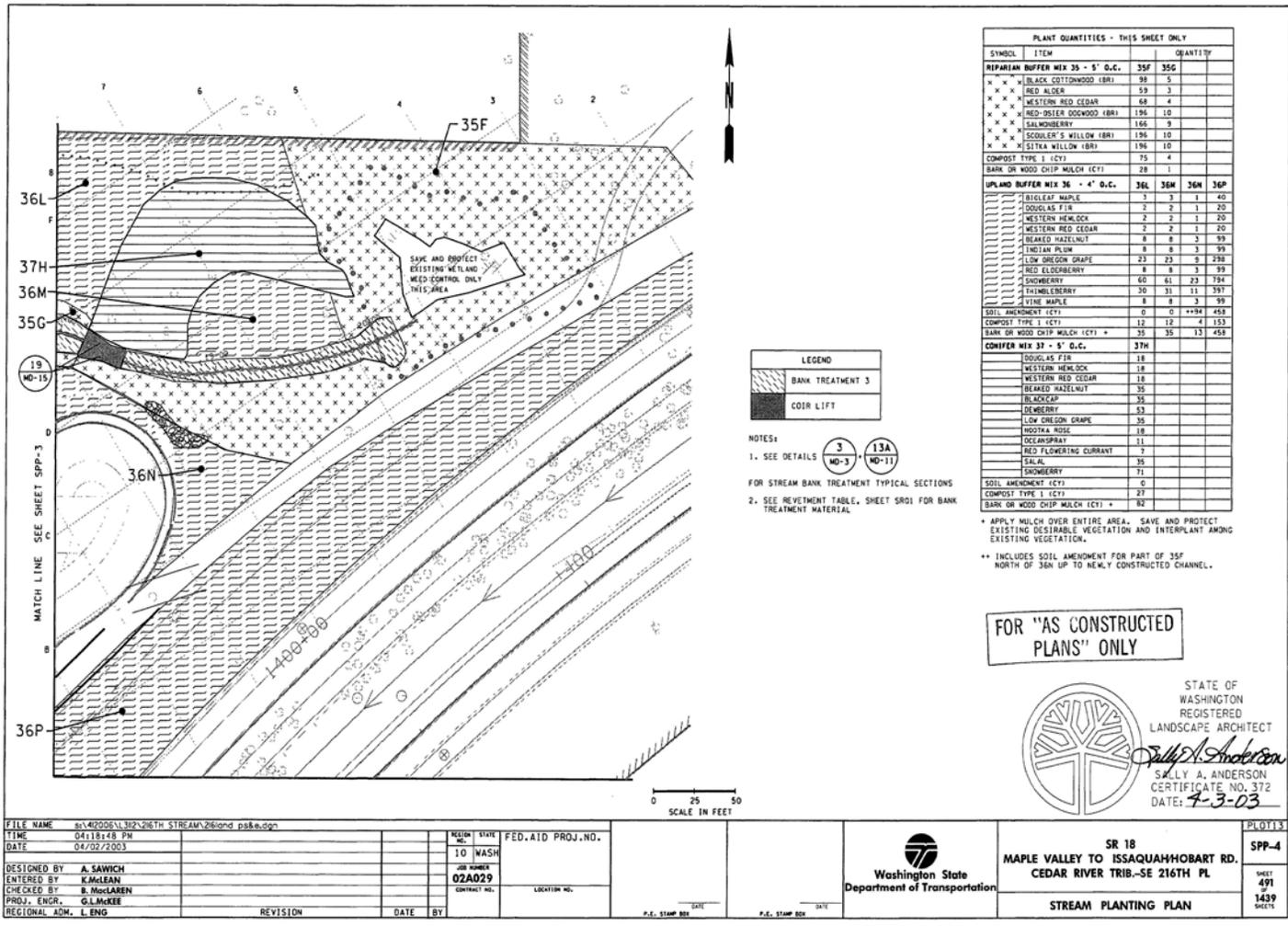




NOTES:
 1. SEE DETAILS (1) (2) (3) (4) (13A) (13B) (13C) (13D) (13E) (13F) (13G) (13H) (13I) (13J) (13K) (13L) (13M) (13N) (13O) (13P) (13Q) (13R) (13S) (13T) (13U) (13V) (13W) (13X) (13Y) (13Z) FOR STREAM BANK TREATMENT TYPICAL SECTIONS.
 2. SEE REVEITEMT TABLE, SHEET SR01 BANK TREATMENT MATERIAL.
 3. SAVE AND PROTECT EXISTING PIEZOMETERS.
 4. SLOPES ARE 2:1 IN THIS AREA ONLY.



PLANT QUANTITIES - THIS SHEET ONLY		
SYMBOL	ITEM	QUANTITY
RIPARIAN BUFFER MIX 35 - 5' O.C.		
35D	35E	
***	BLACK COTTONWOOD (FBI)	38 36
***	RED ALDER	23 21
***	WESTERN RED CEDAR	27 25
***	RED-BELLIED DOGWOOD (FBI)	76 72
***	SALMONBERRY	64 61
***	SCOUER'S WILLOW (FBI)	76 72
***	SLYKA WILLOW (FBI)	76 72
	SOIL AMENDMENT (CY)	0 82
	COMPOST TYPE 1 (CY)	29 28
	BARK OR WOOD CHIP MULCH (CY) *	87 82
UPLAND BUFFER MIX 36 - 4' O.C.		
36F	36G	36H
	36J	36K
	36L	36M
	36N	36O
	36P	36Q
	36R	36S
	36T	36U
	36V	36W
	36X	36Y
	36Z	
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	65I	65J



PLANT QUANTITIES - THIS SHEET ONLY

SYMBOL	ITEM	QUANTITY
REPARIAN BUFFER MIX 35 - 5' O.C.		
35F	35G	
XX	BLACK COTTONWOOD (BR)	99 5
XX	RED ALDER	59 3
XX	WESTERN RED CEDAR	68 4
XX	RED-OSIER DOGWOOD (BR)	196 10
XX	SALMOBERRY	166 9
XX	SCOUER'S WILLOW (BR)	196 10
XX	SITKA WILLOW (BR)	196 10
	COMPOST TYPE 1 (CY)	75 4
	BARK OR WOOD CHIP MULCH (CY)	28 1
UPLAND BUFFER MIX 36 - 4' O.C.		
36L	36M	36N
	PIEPLAF MAPLE	3 3 1 40
	DOUGLAS FIR	2 2 1 20
	WESTERN HEMLOCK	2 2 1 20
	WESTERN RED CEDAR	2 2 1 20
	BEARDED HAZELNUT	8 8 3 99
	INDIAN PLUM	8 8 3 99
	LOW OREGON GRAPE	23 23 9 298
	RED ELOBERRY	8 8 3 99
	CHIMBERRY	60 61 29 794
	THIMLEBERRY	30 31 11 397
	VINE MAPLE	8 8 3 99
	SOIL AMENDMENT (CY)	0 0 **34 458
	COMPOST TYPE 1 (CY)	12 12 4 153
	BARK OR WOOD CHIP MULCH (CY) *	35 35 13 458
CONIFER MIX 37 - 5' O.C.		
37H		
	DOUGLAS FIR	18
	WESTERN HEMLOCK	18
	WESTERN RED CEDAR	18
	BEARDED HAZELNUT	35
	TRUCKEE	35
	DEMERRY	53
	LOW OREGON GRAPE	35
	HOOHA WOOD	18
	OSLAMPRAV	11
	RED FLOWERING CURRANT	7
	SALAL	35
	SCHEMBERY	71
	SOIL AMENDMENT (CY)	0
	COMPOST TYPE 1 (CY)	27
	BARK OR WOOD CHIP MULCH (CY) *	82

LEGEND

BANK TREATMENT 3

COIR LIFT

NOTES:

1. SEE DETAILS 3 MD-3 13A MD-11

FOR STREAM BANK TREATMENT TYPICAL SECTIONS

2. SEE REVETMENT TABLE, SHEET SR01 FOR BANK TREATMENT MATERIAL

FOR "AS CONSTRUCTED PLANS" ONLY

STATE OF WASHINGTON REGISTERED LANDSCAPE ARCHITECT

Sally A. Anderson

SALLY A. ANDERSON
CERTIFICATE NO. 372
DATE: 7-3-03

FILE NAME: sr18000\132-216TH STREAM\216and ps&e.dgn	REGION: 10	STATE: WASH	FED. AID PROJ. NO.				PLOT 13
TIME: 04:18:48 PM	CONTRACT NO.: 02A029	DR NUMBER:					SPP-4
DATE: 04/02/2003	LOCATION NO.:						SHEET 491
DESIGNED BY: A. SAWCH							1459
ENTERED BY: E. McLEARN							DATE:
CHECKED BY: B. McLEARN							
PROJ. ENGR.: G.L. McKEE							
REGIONAL ADM.: L. ENG	REVISION	DATE	BY	P.E. STAMP BOX	DATE	P.E. STAMP BOX	

Driving Directions:

From I-5 take Exit 142 heading east on SR 18. Exit at SR 169 and head north (turn right at the end of the exit ramp and left at the first light. Turn left on 216th SE. Follow to the end. Park in front of the gate. A key should be obtained from region personnel.

Appendix 2 – Data Table

Table 1 – Stream Depth Measurements (in)

Date	Transect	Measurements (in)			
		1	2	3	4
17 June 2014	1	4.5	2.5	3.5	9.0
	2	4.5	10.0	3.0	12.0
	3	2.0	11.0	13.0	16.0
13 Aug 2014	1	11.5	12.0	10.0	8.5
	2	8.0	3.0	11.5	9.0
	3	12.0	16.0	2.0	16.0
09 Oct 2014	1	11.0	12.0	10.5	10.0
	2	8.0	6.5	9.5	18.0
	3	19.0	3.0	12.0	16.0



Stream Channel, July 16, 2013

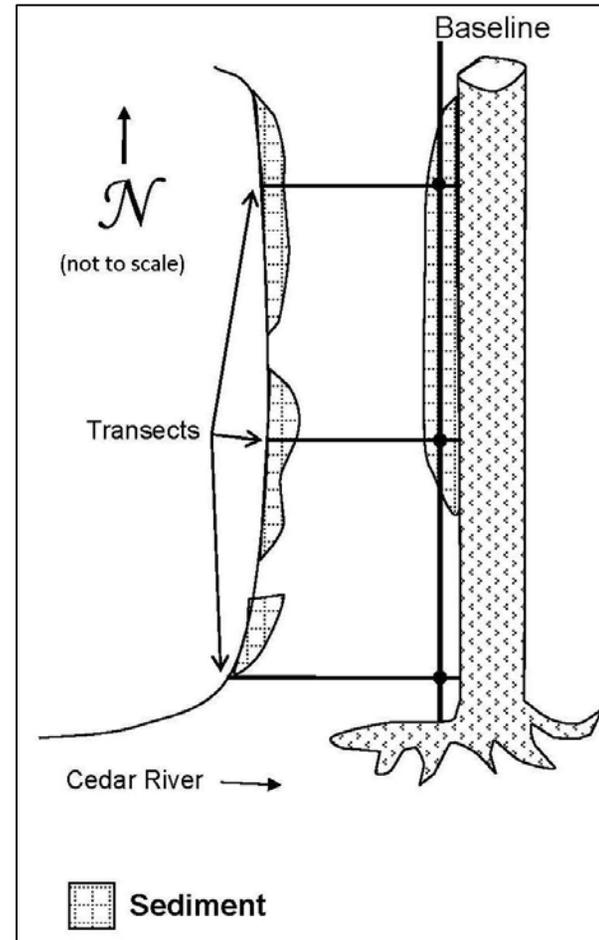


Figure 2.

The stream channel that connects the Cedar River and the mitigation site pond has some sediment buildup along the sides. Some sediment is present along both sides of the new channel as shown in the photo and the sketch.

Literature Cited

1. [USACE] US Army Corps of Engineers. 2002. Department of the Army Individual Permit Number 200200594.
2. [WSDOT] Washington State Department of Transportation. 2003. Final Wetland Mitigation Report SR 18 Maple Valley to Issaquah-Hobart Road; (MP 16.6 to MP 19.3). Seattle (WA): Washington State Department of Transportation, Northwest Region.
3. [WSDOT] Washington State Department of Transportation. 2007. SR 18 Maple Valley to Issaquah/Hobart Rd. SR 18 Cedar River Tributary SE 216th Place Stream Planting Plan.
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>