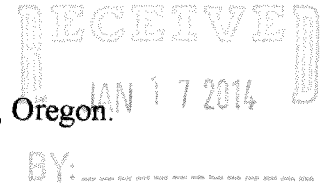


2013 Monitoring Report: Muddy Creek Wetland Mitigation Bank, Monroe, Oregon.



Section I. Project Overview:

1. ACOE permit # 2005-714
2. Western Stewardship Services: May 22-24, 2013
3. Muddy Creek Wetland Mitigation Bank is 108 acres that will generate 60.33 mitigation credits when fully restored. 101 acres are projected to become wet prairie and palustrine emergent habitats. 7 acres are riparian forest-shrub habitat.
4. The bank is located west of Hwy 99 between McFarland and Dawson Roads, 3 miles north of Monroe, in Benton County. Legal description for Bank location is T14 R5W Section 9, tax lot 300.
5. Bank was authorized by DSL to sell credits August 17, 2007. The 5th credit release of 10.48 credits was granted on April 8, 2013, for a total release of 43.01 credits to date. There will be a credit release request following the release of this report.
6. This is year 6 monitoring report.
7. Vegetation monitoring is reported by habitat for Phases 1 and 2 through a series of data tables (Section III, Tables a-f). Summaries of results are reported for each phase by habitat. Vegetation compliance with Bank instrument performance standards reported in Section II, Tables II b and II c.
8. Hydrologic monitoring and compliance with performance standard is reported in Section II, Table II a.
9. This is the sixth monitoring report submission. There are no additional, or corrective activities to report.
10. There have been no corrective or remedial actions associated with the Bank.

Section II. Monitoring Protocol and Compliance with Bank Instrument Performance Standards:

Hydrologic Monitoring Protocol:

Hydrology monitoring data is collected to validate compliance with 1987 manual soil saturation standard. 26 monitoring wells were initially established throughout the Bank. 20 of the 26 wells are located in areas originally delineated as uplands in the 2006 wetland delineation. 4 additional wells were drilled in the winter of 2012 in the northeast corner of Phase 2 North Block to substantiate the conversion of uplands.

In December 2012, 12 additional wells were drilled on creation ground uplands in the South Block of Phase 2 to substantiate hydrologic/saturation conditions on the newly converted uplands, (monitoring well locations for the 12 new wells are displayed on Figure IV a.).

Saturation/soil water depth was measured 9 times on 3-4 day time intervals from March 11 through April 12, 2013.

Vegetation Monitoring Protocol:

For Wetland Prairie and Emergent Wetland habitats, vegetative condition is monitored through a series of south-to-north trending transects spaced approximately 250-feet apart. A total of 12 transects were established in these two habitats. The location of the first sample plot along the

transect line is randomly placed, and then the remaining plot locations follow at roughly 150 foot intervals.

For the Planted Forest wetland habitat; six-125x75 feet rectangular plots describe tree and shrub information. Within each plot herbaceous vegetation was recorded from a randomly located 1m² quadrat.

For the Enhanced Forest wetland habitat; four, randomly-located 50-foot circular plots record tree, shrub and understory information.

Detailed vegetation monitoring information is provided in Section III, Tables a-f.

Hydrology Compliance with Bank Instrument Performance Standards:

Well log data summary, at the bottom of Table II a, shows all Phase 1 wells meeting hydrologic saturation standards.

Well log data shows all Phase 2 North-block monitoring wells meeting hydrologic/saturation standards.

Well log data for Phase 2 South-block shows all but one well (#34, see accompanying well location map) meeting hydrologic/saturation standards.

Vegetation Compliance with Bank Instrument Performance Standards:

Phase 1:

Creation Ground (Wetland Prairie Habitat):

All final instrument performance standards are meeting compliance (detailed results for Phase 1 are shown in Table II b). The vegetation moisture index is 1.81, which is lower than the 2.0-3.0 level listed in the instrument, and continues the trend of lower vegetation moisture index than was anticipated; however, since the index is “wetter” than the listed performance standard I’m assuming that this would not require remedial action.

Enhancement Ground (Emergent Wetland Habitat):

All final instrument performance standards are meeting compliance.

Planted Wetland Forest Habitat:

All final instrument performance standards are meeting compliance. Supplemental tree and shrub plantings in the winter of 2012-2013 have essentially doubled rootstock density. These plantings were encased with grow tubes which should lessen mortality associated with rodent girdling, and hopefully plant survival rate will continue to exceed vegetation standard.

Enhanced Wetland Forest Habitat:

All final instrument performance standards are meeting compliance.

Vegetation Compliance: Phase 2

Creation Ground (Wetland Prairie Habitat):

All final instrument standards are meeting compliance for the north block of phase 2, (detailed results for Phase 2 habitats are shown in Table II c.)

Enhancement Ground (Emergent Wetland Habitat):

All final bank instrument standards are in compliance,

Section III. Summary Vegetation Monitoring data:

Table III a. Vegetation monitoring data table for emergent wetland- Phase 1

Table III b. Vegetation monitoring data table for wetland prairie- Phase 1

Table III c. Vegetation monitoring data table for planted forest-Phase 1

Table III d. Vegetation monitoring data table for enhanced forest-Phase 1

Table III e. Vegetation monitoring data table for emergent wetland-Phase 2

Table III f. Vegetation monitoring data table for wetland prairie-Phase 2

Section IV. Maps and plans: included with document

Figure IV a. Map of monitoring well locations and location of 2013 construction

Section V. Conclusions:

Credit Sales:

2013 credit sale transactions in totaled 2.2358 credits.

Management activities: Phase 1

Enhanced forest wetland habitat:

1. Continued selective spot spraying for invasive species, nightshade and reed canary grass.
2. Continue to infill areas of minimal establishment with supplemental plantings of slough sedge divisions and shrubs.

Planted forest wetland habitat:

1. Continue spraying around grow tubes.
2. Continue selective spraying for invasive species.
3. Continue supplemental planting of trees and shrubs in areas of poor establishment.

Enhancement Ground/Emergent wetland habitat:

1. Continue selective spraying for non-native grasses and forbs.
2. Continue spot spraying of the targeted invasives, reed canary grass, pennyroyal, bull and Canadian thistle.

Creation Ground/Wetland prairie habitat:

1. Fall of 2013-initiated a spraying regime of Reward, (a grass-specific herbicide) to evaluate effectiveness for control of rattail fescue.
2. Collected and propagated seed of camas and lupine from various locations within the bank property. Seeds were sown in 1-gallon pots to be transplanted in spring of 2014.
3. Continue selective spraying for invasives, primarily Queen Anne's lace and thistle spp.
4. Initiate late season mowing of habitat.

Management activities: Phase 2

Well log monitoring:

1. Continue monitoring established wells in the north block of Phase 2.
2. Continue monitoring previously established and provisional wells drilled in the south block of Phase 2 to establish a hydrologic saturation baseline, as well as, evaluate effectiveness of 2012/13 restoration/grading.

Emergent wetland habitat:






1. Selective spraying for invasives (some reed canary grass and pennyroyal) continues.

Wetland Prairie: North Block:

1. Selective spraying for non-natives and invasives continues.
2. Continue late summer mowing.
3. Late winter/early spring transplant grow outs of big pod lupine and camas.
4. Broadcast spray grass-specific herbicide to control non-native grasses

Wetland Prairie: South Block

1. Broadcast sprayed with glyphosate herbicide in the fall of 2013 for weed maintenance.
2. Continue broadcast spraying of glyphosate in preparation for 2014 forb and grass seed planting,
3. Excavated and re-graded a portion of the southern-most upland (around monitoring well # 34) into a shallow basin to retain water and facilitate establishment of wetland prairie vegetation.

- Legend**
-  Culverts
 -  Constructed Berm
 -  Cut and Fill Berm
 -  Existing Roads
 -  Muddy Creek Tautot



2013 PHASE 2 : SOUTH BLOCK MONITORING WELLS
 2013 EXCAVATED POOL AREA

Table II-a																								
2013 Muddy Creek Mitigation Bank Hydrology Wells Monitoring Data																								
0.0 = water at/or above ground level																								
12 new wells were established in 2013 in the south block of Phase 2 to document hydrologic condition with ongoing restoration																								
	phs-1	phs-1	phs-1	phs-1	phs-1	phs-1	phs-1	phs-1	phs-1	phs-1	phs-1		phs-2	phs-2	phs-2	phs-2	phs-2	phs-2	phs-2	phs-2	phs-2	phs-2		
well #	1	2	3	4	5	6	7	8	9	10a	10b		11	12	13	14	15	16	17a	17b	17c	17d	18a	18b
2013																								
3/11/13	1.5	3.5	2.5	0.0	5.0	0.0	3.0	2.5	0.0	0.0	2.0		0.0	3.0	2.5	6.5	0.0	0.0	4.0	2.5	3.0	0.0	4.0	1.0
3/15/13	1.5	3.5	2.0	0.0	5.5	0.0	4.0	2.5	0.0	1.0	2.0		0.0	3.0	3.5	7.0	0.0	0.0	4.0	3.0	3.0	0.0	4.0	1.0
3/18/13	2.0	4.0	2.0	0.0	6.0	1.0	4.0	2.5	0.0	1.0	2.0		0.0	3.0	4.5	7.0	0.0	0.0	5.0	3.0	3.0	0.0	6.0	1.0
3/20/13	1.0	0.0	0.0	0.0	1.5	0.0	1.5	0.0	0.0	0.0	0.0		0.0	1.0	0.0	2.5	0.0	0.0	1.5	0.0	1.0	0.0	2.5	0.0
3/22/13	1.5	2.0	1.0	0.0	2.5	2.0	2.0	0.0	0.0	1.0	0.0		0.0	2.0	1.0	3.5	0.0	0.0	2.0	1.0	1.5	0.0	3.5	1.0
3/26/13	1.5	3.0	1.0	0.0	3.0	3.0	2.0	2.5	0.0	1.0	1.0		0.0	2.0	2.0	6.0	0.0	0.0	2.0	2.0	2.0	0.0	4.0	2.0
3/29/13	2.0	4.5	2.0	0.0	3.0	2.0	4.0	2.0	0.0	2.0	1.5		0.0	3.5	2.0	6.0	1.0	0.0	3.5	3.0	3.0	0.0	5.0	4.0
4/3/13	2.0	5.5	3.5	0.0	4.5	3.0	4.5	4.0	0.0	2.5	2.5		0.0	5.0	5.5	7.5	1.0	0.0	5.0	3.0	5.5	2.0	7.0	4.0
4/12/13	3.5	7.5	5.0	0.0	6.5	5.0	6.5	4.0	0.0	3.0	4.0		1.0	6.5	6.0	9.0	1.0	0.0	5.0	4.5	6.0	3.0	8.0	5.0
meets criteria	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Phase 2 South Block																								
well #	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37					
2013																								
3/11/13	4.0	5.5	1.5	6.0	5.0	3.5	4.0	7.0	2.5	7.0	3.5	0.0	0.0	4.0	7.5	11.0	3.0	6.5	2.0					
3/15/13	4.5	5.5	1.0	6.5	5.0	4.0	5.0	7.5	2.5	8.0	3.5	1.0	0.0	4.0	9.0	13.0	4.0	7.0	3.0					
3/18/13	5.5	6.0	2.0	7.0	5.5	5.5	6.5	8.0	3.0	8.0	3.5	1.5	0.0	4.0	9.5	13.0	4.5	7.5	3.0					
3/20/13	1.5	2.0	0.0	3.0	3.0	2.0	4.0	3.5	0.0	5.5	1.0	0.0	0.0	1.5	4.5	6.5	1.0	3.0	0.0					
3/22/13	2.5	3.0	1.0	4.5	3.0	3.0	5.0	5.0	0.0	5.0	1.0	0.0	0.0	2.0	5.0	8.0	2.0	3.0	1.0					
3/26/13	4.0	3.5	1.0	6.0	4.5	4.0	5.5	6.5	1.0	6.0	2.0	1.0	0.0	2.5	6.5	10.0	3.5	4.5	2.5					
3/29/13	4.0	5.0	2.0	7.0	6.0	3.5	5.5	6.0	2.0	5.5	3.5	1.0	0.0	4.0	6.5	11.0	5.0	4.0	3.5					
4/3/13	7.0	5.0	2.5	9.5	6.0	4.5	7.0	8.5	3.5	7.5	5.0	2.5	0.0	3.5	8.0	13.0	5.5	5.5	5.0					
4/12/13	8.5	7.0	4.0	10.0	7.5	5.0	9.0	8.0	3.5	9.5	5.0	1.5	0.0	5.0	10.0	13.0	7.0	6.5	5.0					
meets criteria	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	yes					

Table II b.			
2013 Phase 1 Vegetation Standards Assessment:			
All habitats required to meet final bank instrument performance standards	Habitat Score	Met Standard?	
Creation Ground/Wetland Prairie Habitat Standards			
At least 60% relative plant cover is comprised of native species.	84.80%	yes	
Tufted hair grass at least 25% relative plant cover.	26.47%	yes	
At least 5 native species with 5% relative plant cover each*	6 species > 5%; 4 grass, 2 herb.	yes	
No more than 15% relative plant cover comprised of invasive species**.	0.47%	yes	
Wetgrass prairie vegetation moisture index is between 2 and 3 .	1.81	yes	
No more than 5% relative plant cover by trees or shrubs.	0%	yes	
At least 10 wet prairie cohort species	12 wetland prairie community species	yes	
Enhancement Ground/Emergent Wetland Habitat Standards			
A minimum of 55% relative plant cover is comprised of native species.	89.20%	yes	
At least 25% relative cover of native grass or grass-like species.	49.60%	yes	
A minimum of 5 native herbaceous species.	10 native herbaceous species	yes	
Less than 15% relative plant cover is comprised of invasive species**	0.63%	yes	
Vegetation moisture index is less than 3.0 .	1.39	yes	
Planted Wetland Forest Habitat Standards			
A min. of 2 native tree species maintained to a density of 200 stems per acre.	7 Native Tree species-395 stems per acre	yes--yes	
A minimum of 55% relative plant cover is comprised of native species.	74.7%	yes	
A min. of 3 native shrub species maintained to a density of 240 stems per acre.	7 Native shrub species-331 Stems per acre	yes--yes	
Less than 15% relative plant cover is comprised of invasive species.**	0.70%	yes	
Vegetation moisture index is less than 3.0	2.87	yes	
Enhanced Wetland Forest Habitat Standards			
A min. of 2 native shrub species maintained to density of 240 stems per acre.	2.5 species plot avg--349.7 stems per acre	yes--yes	
A minimum of 20% relative plant cover slough sedge (<i>Carex obnupta</i>).	36.25%	yes	
Less than 30% relative plant cover of invasive species**.	6%	yes	
Minimum of 55% relative plant cover is comprised of native species.	75%	yes	
* Alopecurus geniculatus, Deschampsia caespitosa, Eleocharis palustris, Glyceria occidentalis, Downingia elegans, Lotus pinnatus > 5% cover			
** references MBRT list of invasive species			

Table II c.		
2013 Phase 2 Vegetation Standards Assessment:		
Enhancement Ground/Emergent wetland habitat required to meet final bank instrument standards.		
Creation Ground/Wetgrass prairie:(north block only) required to meet final standards		
Creation Ground/Wetgrass prairie: south block scheduled for planting in 2014		
	Habitat Score	Met Standard?
Creation Ground/Wetgrass Prairie Habitat Standards-Final instrument standards required for north block		
At least 60% relative plant cover is comprised of native species.	79.9%	yes
Tufted hair grass at least 25% relative plant cover.	33.7%	yes
At least 5 native species with 5% relative plant cover each.*	6 Native Species: 3 grass 3 herb > 5%	yes
No more than 15% relative plant cover comprised of invasive species**.	2.3%	yes
Wetgrass prairie vegetation moisture index is between 2 and 3.	2.48	yes
No more than 5% relative plant cover by trees or shrubs.	0%	yes
At least 10 wet prairie cohort species	15 native wet prairie community species	yes
Enhancement Ground/Emergent Wetland Habitat Standards- Final instrument standards required		
A minimum of 55% relative plant cover is comprised of native species.	97.8%	yes
At least 25% relative cover of native grass or grass-like species.	91.6%	yes
A minimum of 5 native herbaceous species.	9 Native Herbaceous Species	yes
No more than 15% relative plant cover comprised of invasive species**.	0.34%	yes
Vegetation moisture index is less than 3.0.	1.68	yes
* Downingia elegans, Gnaphalium uliginosum, Plagiobothrys figuratus, Alopecurus geniculatus, Deschampsia elongata, D. caespitosa		
** references the MBRT list of invasive species		

25	26	27	28	29	30	31	32	33	34	35	36	37	2013	2013	2012	2011
													row total	row avg	row avg.	row avg.
								10	65	5			992	26.81	15.51	15.83
													2	0.05	nr	0.19
1	10	2			75	95		5				15	208	5.62	0.13	0.13
													0	nr	nr	0.54
													0	nr	0.03	0.11
													0	nr	nr	0.03
													1	0.03	0.11	0.22
													0	nr	0.13	1.22
3		55	60	65	25			25					234	6.32	6.40	4.24
													9	0.24	3.02	2.59
													0	nr	nr	0.03
													0	nr	nr	0.24
													0	nr	nr	0.03
													0	nr	nr	0.03
													0	nr	4.70	4.56
													1	0.03	0.05	1.40
													0	nr	nr	0.22
													0	nr	nr	0.03
													10	0.27	nr	0.67
													5	0.14	1.89	1.48
													5	0.14	0.27	0.03
													0	nr	nr	0.03
45	80	40	20	35									306	8.27	9.43	4.83
								10	15			15	247	6.68	10.00	10.21
													7	0.19	0.05	0.46
													0	nr	0.11	0.11
													40	1.08	0.03	0.03
							10				80	70	245	6.62	3.03	4.48
													0	nr	1.92	4.64
50								5					286	7.73	nr	0.19
								25	1	95			532	14.38	28.97	21.54
													26	0.70	0.03	0.43
							30						60	1.62	0.11	0.92
													0	nr	1.27	0.70

							5						5	0.14	0.05	nr
													1	0.03	nr	0.05
													10	0.27	nr	nr
								1					1	0.03	nr	nr
													0	nr	1.05	0.08
													5	0.14	nr	0.03
													15	0.41	0.05	0.59
													0	nr	0.05	0.08
													0	nr	0.56	0.73
													15	0.41	1.05	1.18
							5						5	0.14	nr	0.19
							5						5	0.14	nr	0.16
													20	0.54	nr	0.03
													0	nr	nr	0.27
										15			19	0.51	1.22	1.17
													0	nr	0.05	0.08
1	10		20					15					60	1.62	6.48	4.19
										4			5	0.14	nr	0.03
							45						140	3.78	0.29	0.29
													0	nr	nr	0.03
													0	nr	0.13	0.19
							5						6	0.16	0.71	3.46
										1			13	0.35	0.19	0.22
													0	nr	nr	0.05
													5	0.14	nr	nr
0	0	3	0	0	0	5			18							
100	100	100	100	100	100	100	100	100	100	100	100	100			Habitat	
															Averages	
99	90	97	80	100	100	95	45	80	82	100	95	85	3301		89.2	
95	80	40	20	35	0	0	45	40	16	95	95	70	1835		49.6	
0	0	0	0	0	0	0	0	5	0	0	1	0	24		0.6	
1	20	40	20	0	0	0	55	15	0	0	4	15	339		9.2	
5	3	3	3	2	2	1	6	8	4	2	4	3	130		3.5	
8	5	5	5	3	4	2	15	11	5	2	7	7	187.5		5.1	
1.60	1.67	1.67	1.67	1.50	2.00	2.00	2.50	1.38	1.25	1.00	1.75	2.33	51.50		1.39	

Table III b.																					
2013 Monitoring plot data: PHASE 1 Wetland Prairie Habitat (Creation Ground): Planted in 2009																					
data collected: May 22, 2013																					
plots 1,2,4,6,7,12,14,15 re-read on July 5 to re-assess vegetation with changed bare soil/water condition																					
	Vegetative	Moisture	Plot															2013	2013	2012	2011
	Form	index	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	row	row	row	row
Native Vegetation																		total	average	average	average
Alisima plantago-aquatica	Herb.	1						10										10	0.67	0.40	0.20
Bidens cernua	Herb.	2	10															10	0.67	0.27	0.33
Boisduvalia densa	Herb.	2.5																0	nr	0.13	nr
Boisduvalia stricta	Herb.	2.5						5									5	10	0.67	0.13	nr
Downingia elegans	Herb.	1				80	65	5									10	160	10.67	12.93	0.06
Epilobeum ciliatum	Herb.	2.5	5					10										15	1.00	0.67	nr
Epilobeum glandulosum	Herb.	2.5																0	nr	0.06	nr
Gnaphalium uliginosum	Herb.	2.5	25	15														41	2.73	0.60	1.46
Lotus pinnatus	Herb.	2		35					60	3		3	5	30				136	9.07	6.46	4.06
Lupinus bicolor	Herb.	3.5																0	nr	nr	0.60
Myosotis laxa	Herb.	1																0	nr	nr	0.13
Plagiobothrys figuratus	Herb.	2																0	nr	0.13	0.93
Plagiobothrys scouleri	Herb.	2				3												3	0.20	nr	0.06
Rorippa curvisiliqua	Herb.	1							1									1	0.07	0.27	0.33
Veronica peregrina	Herb.	1																0	nr	nr	0.20
Agrostis exarata	Grass	3																0	nr	0.67	nr
Alopecurus geniculatus	Grass	1			40	4			3					25	85	25	10	192	12.80	28.73	27.33
Beckmannia syzigachne	Grass	1																3	0.20	0.27	0.20
Carex unilateralis	Grass	2																0	nr	nr	0.13
Deschampsia cespitosa	Grass	2	50		25				30	1	40	95	95	40	1		20	397	26.47	26.06	17.80
Deschampsia elongata	Grass	2.5	4						5									9	0.60	5.87	24.60
Eleocharis acicularis	Grass-like	1		15	25													40	2.67	0.13	nr
Eleocharis palustris	Grass-like	1				2	30	65										98	6.53	5.20	3.13
Glyceria occidentalis	Grass	1																115	7.67	5.33	nr
Hordeum brachyantherum	Grass	2.5	5						3	4				5	10			27	1.80	1.47	1.93
Juncus bufonius	Grass-like	2																0	nr	nr	2.33
Juncus nevadensis	Grass-like	2			5													5	0.33	0.20	0.20
Non-Native Vegetation																					
Castilleja tenuis	Herb.	4.5																0	nr	nr	0.13
Cerastium glomeratum	Herb.	4																0	nr	0.27	0.53
Geranium molle	Herb.	4							2	1								3	0.20	nr	0.13
Hypochaeris radicata	Herb.	not							15									15	1.00	0.73	nr
Lactuca serriola	Herb.	4																0	nr	nr	0.20
Matricaria discoidea	Herb.	4																0	nr	0.06	1.00
Navarettia intertexta	Herb.	2		1														1	0.07	nr	0.13
Parentucellia viscosa	Herb.	3																0	nr	0.27	1.73

Table III c.									
2013 monitoring data: planted forest habitat.									
Data collection 5/27/2013									
Tree/shrub monitoring plots (MP) are 125 by 75 feet. Multiplier for stems per acre is 4.65.									
				MP-1	MP-2	MP-3	MP-4	MP-5	MP-6
Trees	Status	Origin	Index						
Crataegus douglasii	FAC	native	3	6	4	4	3	4	
Fraxinus latifolia	FACW	native	2	31	32	79	41	53	54
Pinus ponderosa	FACU-	native	4.5	2	5	3			3
Populus tricocarpa	FAC	native	3	14	17	23	19	22	19
Pseudotsuga menziesii	FACU	native	4	1	3			2	3
Rhamnus purshiana	FAC	native	3	3	3	2		1	
Pyrus fusca	FAC+	native	3.5	5	7	5	3	6	3
Quercus garryana	NOL	native	nol	4	4	1	2	2	6
Thuja plicata	FAC	native	3	2	1		2	1	
Trees: stem count total				68	76	117	70	91	88
Shrubs									
Amelanchier alnifolia	FACU	native	3	2	1	2	2		1
Cornus sericea	FACW	native	2	5	15	3	8	12	28
Oemlaria cerasiformus	FAC	native	3	8	15	7	4	1	5
Physocarpus capitatus	FACW-	native	2.5	6	7	5		1	
Rosa pisioarpa	FAC	native	3	14	12	10	25	38	26
Sambucus racemosa	FACU	native	4						
Salix scouleriana	FAC	native	3	9	14	2	9	7	24
Spiraea douglasii	FACW	native	2	4		6	10	5	
Symphoricarpus albus	FACU	native	4	8	27	34	2	4	
Shrubs: stem count total				56	91	69	60	68	84
stem counts per plot				124	167	186	130	159	172
Herb. Species-% cover	Status	Origin	Index						
Cerastium glomeratum	FAC	non-native	3			5		1	1
Epilobeum glandulosum	FAC	native	3				5	5	
Hypericum radicata	FACU	non-native	4		5	5		10	35
Lotus pinnatus	FACW	native	2			5	1		
Mentha puligeum	OBL	invasive	1			3	1		
Sonchus asper	FAC-	non-native	3.5				3		1
Tanacetum vulgare	FAC	non-native	3				10	15	

Grasses- % Cover										
Agrostis stolonifera	FAC	non-native	3	5	15	1	5		5	
Alopecurus geniculatus	OBL	native	1	40		1			3	
Deschampsia caespitosa	FACW	native	2	20	70	65	30	60	55	
Hordeum brachyantherum	FACW	native	2	35	10	5	25	5		
Vulpia myuros	FAC	non-native	3				20	4		
PERFORMANCE SUMMARY									Habitat Averages	
% cover native:				95%	80%	75%	61%	70%	67%	74.66%
% cover IRT listed invasive species				0%	0%	3%	1%	0%	0%	0.66%
Native tree species-count				9	9	7	6	8	6	7.5
Stems per acre				316	353	544	325	423	409	395
#native shrubs--stems per acre				8	7	8	7	7	5	7
Stems per acre				260	422	321	279	316	391	332
moisture index				2.82	3.02	2.76	2.59	2.77	3.26	2.87

Table III d.										
2013 monitoring data: Enhanced Forest wetland habitat.										
Data Collection: May 29, 2013										
Data plots are 50-foot diameter circles; Multiplier for stem count per acre is 22.2										
Shrub rootstock and Carex planted in 2008 with supplemental plantings 2009, 2013.										
								moisture		% Cover
Overstory Tree- % cover	Origin	form	index	ef-1	ef-2	ef-3	ef-4	Average		
Fraxinus latifolia	native	T	2	85	85	95	85	86.25		
Understory Tree % cover										
Fraxinus latifolia	native	T	2	3	10		2	3.75		
Shrub Species--stem count								Stem Count	Stem Count per acre	
Amelanchier alnifolia	native	S	4				5	5	111.00	
Cornus sericea	native	S	2		9		2	11	244.20	
Pyrus fusca	native	S	2		2		3	5	111.00	
Rosa pisiocarpa	native	S	3		1		39	40	888.00	
Salix sitchensis	native	S	2	1		1		2	44.40	
								% Cover		
Herbaceous Species-% cover										
Alisma plantago-aquatica	native	H	1		5		1	1.50		
Bidens cernua	native	H	1.5	1	1	1	3	1.50		
Bidens frondosa	native	H	1.5	1	3	1	5	2.50		
Oenanthe sarmentosa	native	H	1				5	1.25		
Rumex salicifolius	native	H	2		1		1	0.50		
Solanum dulcamara	invasive	H	3	1	3	2	3	2.25		
								% Cover		
Grasses % Cover										
Carex obnupta	native	GL	1	60	35	30	20	35.00		
Glyceria elata	native	G	1	1	1		1	0.75		
Phalaris arundinacea	invasive	G	1	2	10	2	2	4.00		
								% Cover		
Performance Summary								Habitat Averages		
% cover native overstory:				85%	85%	95%	85%	87.50%		
% cover native understory:				66%	68%	32%	87%	63.25%		
% cover Carex obnupta:				60%	35%	30%	20%	36.25%		
% cover invasives:				3%	13%	4%	5%	6.25%		
number of native shrub species				1	3	1	4	2.5		
stems per acre shrubs:				22.2	266.4	22.2	1087.8	349.7		

Table III e.

2013 Monitoring plot data: **Phase 2 Enhancement Ground:**(Emergent Wetland Habitat): Planted in 2009

Sampled 5/22/2013

		Vegetative Moisture																						2013 row	2013 row	2012 row	2011 row				
Native Vegetation	Form	index	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	total	average	average	average		
Alisima plantago-aquatica	Herb.	1	5		2	15			3										1	1		2				29	1.26	1.39	0.17		
Bidens cernua	Herb.	2				1																				1	0.04	0.04	nr		
Boisduvalia stricta	Herb.	2.5										1														1	0.04	0.04	nr		
Downingia elegens	Herb.	1			3	1	10		2				15	2				1			1					35	1.52	1.52	1.21		
Epilobium ciliatum	Herb.	2.5				1	5						2													8	0.35	nr	0.04		
Epilobium glandulosum	Herb.	2.5										25	1		10	5								1		42	1.83	1.82	0.22		
Gnaphalium uliginosum	Herb.	2	1		2		2					2		3												10	0.43	0.43	0.04		
Lotus pinnatus	Herb.	2																								0	nr	nr	0.04		
Plagiobothrys scouleri	Herb.	2	1	4			1							1							1					8	0.35	0.34	0.17		
Ranunculus uncinatus	Herb.	2																								0	nr	nr	0.04		
Rorippa curvisiliqua	Herb.	1	1									3	1	2				1							1	9	0.39	0.30	0.43		
Rumex salicifolius	Herb.	2																								0	nr	nr	0.04		
Scirpus validus	Herb.	1																								0	nr	nr	0.04		
Veronica americana	Herb.	1																								0	nr	nr	0.09		
Alopecurus geniculatus	Grass	1	40	20	90		30	75	60			15	5	70		10	10	25	3	10	73			1	537	23.35	23.30	27.34			
Beckmannia syzigachne	Grass	1				5	2					40		10		1	5	2	3	1					25	96	4.17	3.96	3.87		
Bromus carinatus	Grass	not													1											2	0.09	0.13	nr		
Carex densa	Grass-like	1															3									3	0.13	0.13	nr		
Deschampsia caespitosa	Grass	2						20		95	95		75	1	55	81	80		90			25		91	95	85	888	38.61	39.17	37.95	
Deschampsia elongata	Grass	2.5										5		25												35	1.52	1.52	2.52		
Eleocharis acicularis	Grass-like	1					1		1																	2	0.09	0.09	0.17		
Eleocharis palustris	native	1	50	75		73	45		30									70		85		73				501	21.78	22.00	2.69		
Glyceria occidentalis	Grass	1										1		10	1	1					2					15	0.65	0.65	2.52		
Hordeum brachyantherum	Grass	2.5								3	1	1	1	1			2						5	1	4	19	0.83	0.78	11.39		
Juncus bufonius	Grass-like	1.5										3				2										5	0.22	0.30	nr		
Juncus nevadensis	Grass-like	2						3																		3	0.13	0.13	0.09		
Non-Native Vegetation																															
Parentucellia viscosa	Herb.	3.5													2									1		3	0.13	0.04	nr		
Rumex crispus	Herb.	2.5													1											1	0.04	nr	0.3		
Trifolium dubium	Herb.	3																							1	1	0.04	nr	nr		
Trifolium repens	Herb.	3													1											1	0.04	nr	1.08		
Agrostis stolonifera	Grass	3									1	4			1										1	7	0.30	0.13	0.09		
Briza minor	Grass	3									1															1	0.04	0.04	nr		
Holcus lanatus	Grass	3													1									2		3	0.13	0.09	nr		
Poa annua	Grass	3						2																		2	0.09	0.09	nr		
Invasive Vegetation																															
Lythrum portula	Herb.	1					3		3									1		1						8	0.35	0.35	nr		
Lolium multiflorum	Grass	4																						4	1	5	0.22	nr	0.43		
% cover bare ground and/or water			2	1	3	4	1		1			4								3											
			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100					

PERFORMANCE SUMMARY																								Habitat Averages				
% cover native species		98	99	97	96	96	98	96	98	96	96	100	100	94	100	100	99	97	99	100	100	97	96	97	2249	97.8		
% cover native grass or grass-like species		90	95	90	78	78	98	91	98	96	65	81	92	84	95	100	97	96	96	100	98	97	96	95	2106	91.6		
% cover IRT-listed invasive species		0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	8	0.35		
% cover non-native species		0	0	0	0	0	2	0	2	4	0	0	0	6	0	0	0	0	0	0	0	3	0	2	19	0.83		
species count		6	3	4	6	9	4	6	4	3	10	7	9	11	6	5	6	4	7	3	3	5	3	9				
		8	4	5	8.5	12.5	8	6	11	7.5	17.5	12.5	14	24	9	7.5	6	5	8	4	3	11	8.5	21.5				
moisture index		1.33	1.33	1.25	1.42	1.39	2.00	1.00	2.63	2.5	1.75	1.79	1.50	2.18	1.50	1.50	1.00	1.25	1.14	1.33	1.33	2.20	2.83	2.39	38.55	1.68		

Table III f.																					
2013 Monitoring data: Phase 2 Creation Ground (Wetgrass Prairie)--North Block.																					
data collected: may 21, 2013																					
plots 12,13,15,21,22,34,35 re-read on June 28, to re-assess water/bare ground condition																					
	vegetative	plot																2013 row	2013 row	2012 row	2011 row
Native Vegetation	form	index	4	5	11	12	13	14	15	21	22	23	24	25	34	35	36	total	average	average	average
<i>Bidens cernua</i>	Herb.	2	2															2	0.13	nr	0.13
<i>Boisduvalia densiflora</i>	Herb.	2												1				1	0.07	0.06	nr
<i>Boisduvalia stricta</i>	Herb.	2.5				15												15	1.00	0.13	nr
<i>Downingia elegans</i>	Herb.	1	1	3			45		1		15			3	10	10		88	5.87	2.40	0.06
<i>Epilobium ciliatum</i>	Herb.	2.5													1			1	0.07	0.06	11.33
<i>Epilobeum glandulosum</i>	Herb.	2.5											1	1				2	0.13	0.13	1.06
<i>Gnaphalium uliginosum</i>	Herb.	2.5	5	1		15	5		15		40		5	2		5	2	95	6.33	2.33	4.40
<i>Lupinus bicolor</i>	Herb.	3.5			5	3		2									2	12	0.80	0.80	4.13
<i>Lotus pinnatus</i>	Herb.	2				1								2				3	0.20	0.13	nr
<i>Cardamine penduliflora</i>	Herb.	3				1	1											2	0.13	0.13	1.93
<i>Plagiobothrys figuratus</i>	Herb.	2	70	20			3				6	1						100	6.67	6.46	3.27
<i>Plagiobothrys scouleri</i>	Herb.	2									5							5	0.33	0.33	0.47
<i>Rorippa curvisiliqua</i>	Herb.	1	5	1			2				1							9	0.60	0.60	0.06
<i>Veronica peregrina</i>	Herb.																	0	nr	nr	0.40
<i>Alopecurus geniculatus</i>	Grass	1	2	22		10	3	1	5		20	5		2	10	2	2	84	5.60	4.73	1.07
<i>Bechmania syzigachne</i>	Grass	1									2					25		27	1.80	1.80	nr
<i>Deschampsia elongata</i>	Grass	2.5		2	10	5		5	15	10		15	47	45			5	159	10.60	11.06	9.33
<i>Deschampsia cespitosa</i>	Grass	2	3	35	48	20	20	42	44	55		35	25	22	68	25	59	501	33.40	33.06	nr
<i>Eleocharis acicularis</i>	Grass-like	1	1	1														2	0.13	0.13	nr
<i>Glyceria occidentalis</i>	Grass	1		1														1	0.07	0.06	4.66
<i>Hordeum brachyantherum</i>	Grass	2.5		3	2	1	10	2	2	2		3	2	2		5		34	2.27	2.26	0.73
<i>Juncus bufonius</i>	Grass	2	3	2		5		10	3	5	2					15	10	55	3.67	2.47	4.40
Non-Native Vegetation																					
<i>Anthemis cotula</i>	Herb.	nol				1												1	0.07	0.06	nr
<i>Cerastium glomeratum</i>	Herb.	5			10	2		3		1	3		3		1	2	2	27	1.80	1.80	0.47
<i>Geranium molle</i>	Herb.	4			10	10		2				1	2	2	2		3	32	2.13	2.06	0.93
<i>Hypericum perforatum</i>	Herb.	4													1			1	0.07	0.06	nr
<i>Lactuca serriola</i>	Herb.	4			2					1	1		5					9	0.60	0.60	0.13
<i>Medicago lupulina</i>	Herb.	3			3	3		5	3	10		5		10			3	42	2.80	2.68	0.47
<i>Naverettia intertexta</i>	Herb.	2												1				1	0.07	0.13	0.06
<i>Parentucellia viscosa</i>	Herb.	3			2	1				1			1					5	0.33	0.33	nr
<i>Polygonum aviculare</i>	Herb.	4									1							1	0.07	0.06	nr

Rumex acetosella	Herb.	4.5		1													1	0.07	0.06	nr	
Sonchus asper	Herb.	3.5				2			1		2		2			2	9	0.60	0.60	0.80	
Tragopogon spp	Herb.	nol			1	1			2		1						5	0.33	0.33	nr	
Trifolium repens	Herb.	3.5						20	1		2		1	1			25	1.67	1.66	0.33	
Vicia villosa	Herb.																0	nr	nr	0.13	
Avena fatua	Grass	nol							1								1	0.07	0.06	nr	
Agrostis solonifera	Grass	3			1	3		2				2				2	10	0.67	0.66	nr	
Holcus lanatus	Grass	3												2			2	0.13	0.13	nr	
Hordeum commercial	Grass	nol															0	nr	nr	4.66	
Poa annua	Grass	3		1	2	2	2	1	2		1	25	2	3			41	2.73	2.87	7.80	
Vulpia myuros	Grass	3							2			3			3		8	0.53	nr	nr	
Invasive Vegetation																					
Lythrum portula	Herb.	1	5	7			5		2					1			20	1.33	0.93	nr	
Lolium multiflorum	Grass	4			5			3				2				5	15	1.00	1.00	1.53	
Bare Ground and/or Water			3			1	1	4	5	9	3		5	1		11	3				
plot total			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100				
																		Habitat			
																		Averages			
PERFORMANCE SUMMARY																					
% relative cover native species			92	91	65	76	89	62	85	72	91	59	80	80	89	87	80	1198.00	79.9		
tufted hair grass relative plant cover			3	40	48	20	20	42	44	55	0	35	25	22	68	25	59	506.00	33.7		
% cover IRT-listed invasive species			5	7	5	0	5	3	2	0	0	2	0	0	1	0	5	35.00	2.3		
%cover non-native			0	2	30	23	5	31	8	19	6	39	15	19	10	2	12	221.00	14.7		
Species Count			10	14	12	19	11	12	12	12	12	13	11	15	11	8	12	184	12.3		
Species sum by moist. Indx			15.5	27.0	36.5	48.0	22.0	36.0	27.0	30.5	28.5	34.0	34.0	37.0	30.0	17.0	36.0	459.0			
Plot Moisture Index			1.55	1.93	3.04	2.53	2.00	3.00	2.25	2.54	2.38	2.62	3.09	2.47	2.73	2.13	3.00	37.24	2.48		
% cover by trees and shrubs			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0.00		