

Mitigation Monitoring Report Cover Sheet
Oregon Department of State Lands

Block 1: Report Information

DSL Permit Number: 35866-RF	COE Permit Number: <i>Nationwide Permit 27 - 200400726</i>	
Permittee: <i>Gilmour</i>		
County: <i>Benton</i>	Report Date: <i>12/12/17</i>	Monitoring Year <i>10</i>
Date Removal-Fill Activity Completed:		
Date mitigation was completed Grading: <i>8/06</i> Planting: <i>4/07</i>		
Report submitted by: <i>Marvin and Cindy Gilmour (Mid-Valley Phase 2)</i>		

Block 2: Monitoring Report Purpose

- This monitoring report is for monitoring a project that includes: (check all that apply):
- G Compensatory **freshwater** wetland mitigation for permanent wetland impacts.
 - G Compensatory **estuarine** wetland mitigation for permanent wetland impacts.
 - G **Only non-wetland** compensatory mitigation.
 - G **Only mitigation for temporary** impacts that has a monitoring requirement.
 - G Voluntary wetland enhancement, creation or restoration (General authorization or individual permit) not funded with money from our wetland mitigation revolving fund.
 - G Voluntary wetland enhancement, creation or restoration (General authorization or individual permit) funded with money from **our wetland mitigation revolving fund.**
 - X **Mitigation Bank** Report
 - G Other: _____

Block 3: Results

	Success Criteria	Met? (Y/N)	Comments/Reasons for Failure*
1.	Emergent Vegetation	3 of 3 requirements	
2.	Wetgrass Prairie	8 of 8 requirements	
3.	Buffer	2 of 2 requirements	
4.	Hydrology - Water Monitoring Tubes	1 of 1 requirements	Completed, Met for 3 consecutive years
5.	Hydrology - Delineation	1 of 1 requirements	Completed in 2009

Remedial work recommended	Yes	No X
Deed Restriction or other protection instrument attached (noted: if a filed deed restriction was a required as a permit condition, please attach a copy: <i>previously submitted</i>)	Yes	No X
Final Monitoring Report?	Yes	No X
Requesting release or partial release of bond/credits	Yes	No X

*see report for detailed information

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1.0 REGULATORY BACKGROUND

The purpose of this report is to summarize the progress of Phase 2 of the Mid-Valley Wetland Mitigation Bank (Bank). The Bank is located approximately one mile east of Independence Highway and one and one-half miles south of Springhill Drive in T10S, R4W, Sec. 15, Tax Lot 800. The letter of approval for the Bank was signed in January 2007 and is permitted as ACOE permit #2004-000726 and DSL Permit Number: 35866-RF. Phase 2 of the Bank consists of 12.22 acres.

Development of the Bank was through a combination of restoration of previously drained wetlands (7.61 acres) and buffer management (4.61 acres). Anticipated Bank credits:

<u>Type of Credit</u>	<u>Acres</u>	<u>Ratio</u>	<u>Credits</u>
Cropped Wetland Enhancement	7.61	2:1	3.805
Buffer Management	4.61	5:1	0.922
Total	12.22 acres		4.727 credits

2.0 WORK SUMMARY

Beginning in early March efforts once again concentrated on covering all wet prairie areas to spot treat unwanted species before native grasses got tall and inhibited detection. All areas were covered at least two times targeting the few non-natives encountered through the spring and summer. Grass-specific herbicide was utilized in areas with increasing grass cover to benefit the forb, sedge, and rush community. Limited mowing was performed in late May, to provide travel routes for maintenance work and tours. Additional mowing in late July concentrated on the outside borders, where new weeds are most likely to move in, forbs dominated areas on the Western portion of the site. In September, all borders and buffers were spot herbicide treated for non-natives.

**Table 1: Restoration Activities Summary Mid-Valley Mitigation Bank (Phase 2)
December 2016 – November 2017**

Activity	Location
Spot weed control	100% of mitigation bank area covered
Mowing	Maintenance trails, borders, Western half
Grass-specific Treatments	Select forbs areas with increasing grass cover

3.0 AS-BUILT PLANS

The as-built plans were submitted in June 2006. The as-built was submitted prior to the final Bank approval.

4.0 HYDROLOGY PERFORMANCE STANDARDS, METHODOLOGY, AND RESULTS

4.1 *Performance Standards:*

Wetland hydrology, sufficient to meet the criteria defined in the 1987 Corps of Engineers Wetlands Delineation Manual (1987 Wetland Delineation Manual), will be present in three out of five years if the weather records are close to normal and no irrigation is supplied.

Water depth and depth of saturation will be evaluated throughout the site using a combination of monitoring wells and a one-time hydrology and vegetation delineation designed to meet the requirements of the 1987 Wetland Delineation Manual. The soil parameter is expected to be disturbed by the proposed grading, therefore lack of hydric soil indicators will not be interpreted as disqualifying a plot as wetland.

4.2 *Methodology:*

Water Monitoring Tubes: Three groundwater monitoring tubes were constructed and monitored to show the duration of saturation. Tube monitoring data was collected at least three times between approximately March 1 and May 30 to demonstrate sufficient duration of wetness to meet the 1987 Wetland Delineation Manual.

Delineation: Paired plots concentrating along any high areas will be utilized to show that all areas of the Bank are wetland. In addition to plot data, these areas were visually documented with photographs to show a dominance of wetland species.

4.3 *Results*

Water Monitoring Tubes .—*Met in 2010 – wetland hydrology was met in three consecutive years of monitoring tube data analysis and is no longer being monitored.*

Delineation: Completed 2009

5.0 VEGETATION PERFORMANCE STANDARDS AND METHODOLOGY

5.1. *Performance Standards*

Emergent Herbaceous

1. A minimum of 55% of the relative plant cover is comprised of native species.
2. No more than 15% of the relative plant cover is comprised of non-native invasive species as define below.
3. The wetland's moisture index is less than 3.0.

*Non-native invasive species to be included: reed canary grass (*Phalaris arundinacea*), purple loosestrife (*Lythrum salicaria*), Himalayan blackberry (*Rubus discolor*), Japanese knotweed (*Polygonum cuspidatum*), Eurasian water milfoil (*Myriophyllum spicatum*), climbing nightshade (*Solanum dulcamara*) (and yellow-flag iris (*Iris pseudacorus*), Anne's lace (*Daucus carota*), Canadian thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), orchard grass (*Dactylis glomerata*) and annual ryegrass (*Lolium multiflorum*) or others as determined by the MBRT.

Wet grass Prairie

The above performance measures along with the following:

1. At least 10 wetgrass prairie species are present as listed in "Species Composition for Willamette Valley Vegetation Types" by Kathy Pendergrass, August 2003, (*cited as Appendix II of the Instrument*) by John Marshall (USFWS), December 19, 2004 author of "Draft Guidance on Vegetation Planning and Monitoring in Western Oregon Wetlands and Riparian Areas.
2. Tufted hairgrass (*Deschampsia cespitosa*) is represented by 25% or greater relative plant cover.
3. At least 50% of the relative plant cover is comprised of native species.
4. No more than 15% of the relative plant cover is comprised of non-native invasive species as defined above.
5. The prairie's moisture index is between 2.0 and 3.0.
6. No more than 5% relative plant cover is composed of shrubs or trees.

Buffer Area

1. No more than 15% of the relative plant cover is comprised of non-native invasive species as define above.
2. Excluding open water, at least 50% of the relative plant cover is comprised of native species.

5.2 Methodology

Emergent and Wet grass Prairie - Monitoring within the herbaceous portions was conducted using a stratified systematic plot method for the sampling points. Transects were laid out in a stratified arrangement along one baseline with equal distance between each transect (approximately 250'). The transects will cross the entire wetland and buffer areas. The sampling plots will be predetermined and systematically plotted on each transect at 100-foot intervals from each other. The herbaceous sample plots were one meter quadrants, located at the northwest corner of each point nested within a ten-foot square shrub sampling plot starting at the same point. When needed, a 30-foot diameter forest sample plot was placed with its center at the plot center point encompassing both the herbaceous and shrub sampling plots. The starting point of the sample plots on each transect line was staggered in order to cover a broader area. The sampling points were evaluated and it was determined in 2009 that an additional emergent monitoring plot was needed so plot #5a was included in the monitoring. The sample plots are permanently identified and are plotted on a site map (Attachment 1).

Prior to concluding monitoring, the number of sample plots was evaluated to determine if this number of plots was sufficient, using a species area curve. Using the plot data, the species-area curve was developed. It was predetermined that after the curve flattens out it would be deemed a sufficient number of plots when there are three plots in a row with one or fewer new species.

Established site photo points were established, and will continue to be used in each of the monitoring years to provide a visual record of the overall health and diversity of the wetland

vegetation. Four photo station locations are included on the Site map (Attachment 1), with their corresponding photos in Attachment 3.

Buffer – Three monitoring points are included within the buffer and were monitored as above.

5.3 Vegetation Monitoring Results

Vegetation monitoring was conducted on June 23, 2017 by Marvin Gilmour and Ray Fiori. Attachment 1 includes the monitoring results. The Monitoring Plot Location Map is included as Attachment 2. A total of 18 monitoring plots were examined, 11 in the wet prairie, 4 in emergent areas and 3 in the buffer. Both the botanical and common names are included as well as the indicator status, origin (native or non-native) and moisture index.

The wet prairie portion is composed of 56.36% forbs/sedge/rush species and 41.36% grass species, with 15 prairie cohort species. Wet prairie portions of the Bank were dominated by Tufted hairgrass (*Deschampsia cespitosa*), Cusick's checkermallow (*Sidalcea cusickii*), Slough sedge (*Carex obnupta*), and Selfheal (*Prunella vulgaris*). The emergent areas were dominated by American sloughgrass (*Beckmania syzigachne*), Gumweed (*Grindelia integrifolia*), and Tufted hairgrass (*Deschampsia cespitosa*). As with Phase 1 of the Bank, Phase 2 is also dominated by native species.

5.3.1 Emergent Vegetation

All three of the performance criteria for **emergent herbaceous** vegetation were met.

Required: A minimum of 55% of the relative plant cover is comprised of native species.--*Met. Plots 4, 5a, 8 and 12 are the planned emergent vegetation plots, which have 97.5% relative plant cover of native species.*

Required: No more than 15% of the relative plant cover is comprised of non-native invasive species as defined above. --*Met with 0% of non-native invasive species.*

Required: The wetland's moisture index is less than 3.0. --*Met with an average weighted moisture index of 1.45.*

5.3.2 Wet grass Prairie

The performance criteria for **wet grass prairie** were met for 8 of the 8 requirements.

Required: At least of 50% of the relative plant cover is comprised of native species. --**Met.** *95.91% native cover, 2.27% bareland and 1.82% non-natives.*

Required: No more than 15% of the relative plant cover is comprised of non-native

invasive species. -- **Met** with 0% of non-native invasive species.

Required: At least 10 wetgrass prairie species are present as listed in "Species Composition for Willamette Valley Vegetation Types" by Kathy Pendergrass. In conversations with John Marshall (USF&W) (April, 2008) it was agreed upon to include the vernal pool species from this same source in the 10 required species. -- **Met**. *Fifteen wet grass prairie/vernal pool species were identified within the prairie plots, with one additional species in the emergent plots.*

Required: Tufted hairgrass (*Deschampsia cespitosa*) is represented by 25% or greater relative cover.--**Met**. *Tufted hairgrass represented 22.27% relative cover. As discussed during the annual site visits, this provision needs removed, as it's been the biggest factor in reducing diversity. As seen with all Oregon Wetlands LLC banks, the reduction in cover of tufted hairgrass is directly correlated to an increase in diversity (i.e. forbs/sedge/rush cover).*

Required: The prairie's moisture index is between 2.0 and 3.0.--**Met**. *Average weighted moisture index of the prairie plots is 2.19.*

Required: No more than 5% relative plant cover is composed of shrubs or trees. -- **Met**. *In the 11 prairie plots there were no trees. This standard will be more closely reviewed as the shrub and tree components begin to grow and age.*

5.3.3 Buffer

The performance criteria for **buffer** were met for 2 of the 2 requirements.

Required: No more than 15% of the relative plant cover is comprised of non-native invasive species as define above. -- **Met**. *There are no non-native invasive species.*

Required: Excluding open water, at least 50% of the relative plant cover is comprised of native species. -- **Met** with 93.33% relative native plant cover. *The percentage of open water (6.67%) will change from year to year based on spring rains and timing of monitoring.*

6.0 PHOTO POINT MONITORING

Photo monitoring from the photo points are included as Attachment 3, and taken on June 23, 2017.

7.0 CREDIT SALES SUMMARY

Credit release 1 was released on January 5, 2007 for 1.42 credits from both agencies. Credit release 2, 3, and 4 for 2.85 credits was released by the Corps on August 15, 2008. Credit

release 2 for 0.95 credits was released by DSL on August 14, 2008. Credit release 3 and 4 for 1.89 credits was released by DSL of December 22nd, 2009. Credit sales to date are included in table 2.

Release 1 (Fall 2006): Up to 30 percent, upon submission of the grading as-built, Restrictive Covenant, submission of financial assurance and the MBRT conducts a field inspection. **COMPLETED**

Release 2 (Spring/Summer 2007): Up to 20 percent upon demonstration of all performance measures being achieved and delineation of acreage meeting the 1987 Wetland Delineation Manual hydrology and vegetation indicators (if weather conditions are close to normal). **COMPLETED**

Release 3 (Fall 2007): Up to 20 percent upon demonstration of all performance measures being achieved. **COMPLETED**

Release 4 (Spring/Summer 2008): Up to 20 percent upon demonstration of all performance measures being achieved. **COMPLETED**

Release 5 (end of the 5th year monitoring or 5 years after replanting for those areas replanted): All buffer credits plus remaining credits (10%) upon demonstration of all performance measures being achieved. In addition, the long term management plan, funding and identification of a suitable long term steward, must be reviewed and approved by the MBRT.

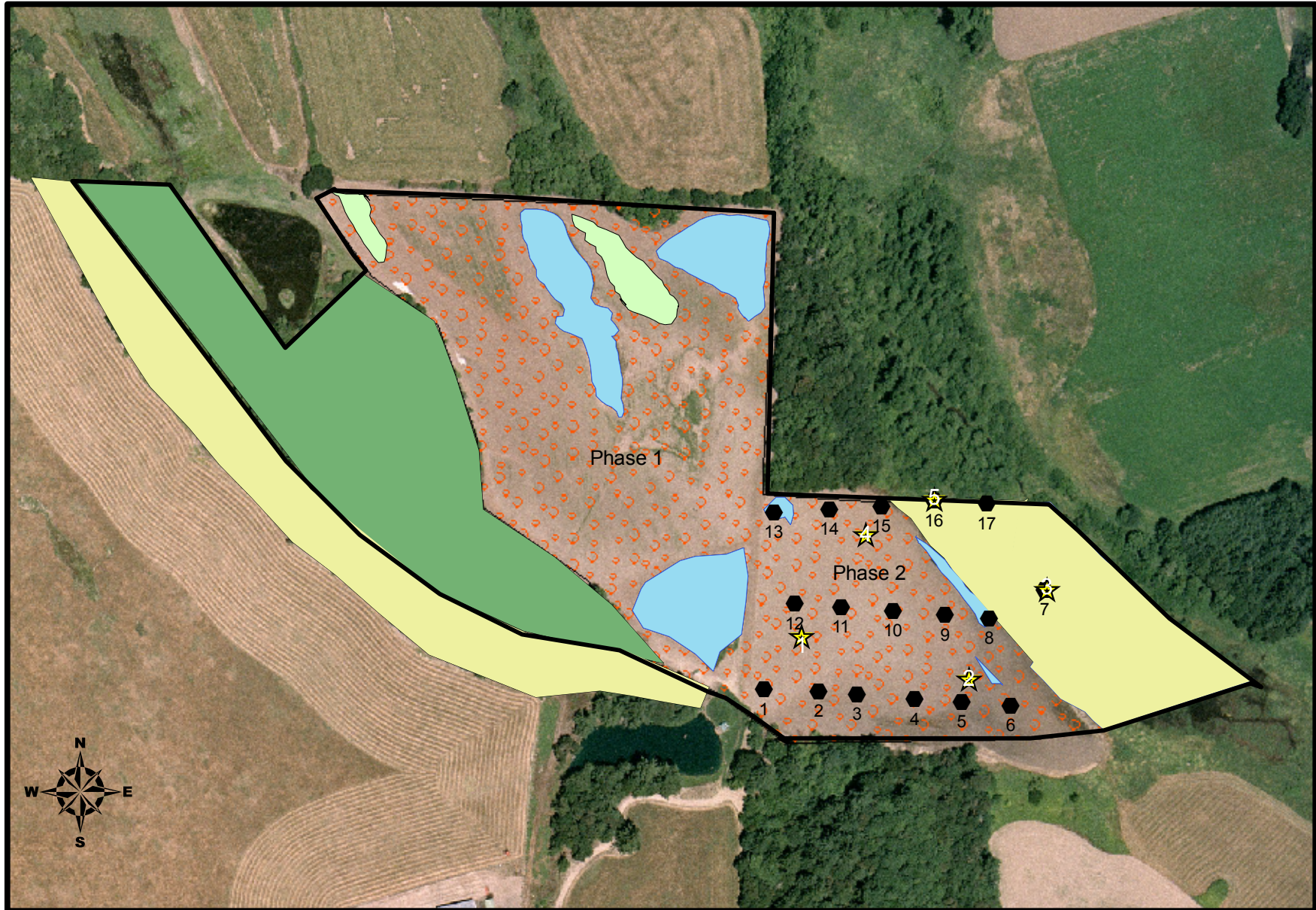
Table 2: Credit Sales Summary

<i>DATE</i>	<i>NAME</i>	<i>LOCATION</i>	<i>DSL PERMIT</i>	<i>CORP PERMIT</i>	<i>SOLD</i>	<i>DSL</i>	<i>DSL BALANCE</i>	<i>CORP</i>	<i>CORP BALANCE</i>
1/5/07	DSL & CORP INITIAL RELEASE - 30% CREDITS					1.42	1.42	1.42	1.42
8/15/08	CORP -2ND, 3rd 4th RELEASE - 60% CREDITS						1.42	2.85	4.27
8/14/08	DSL - 2ND RELEASE- 20% Credits					0.95	2.37		4.27
12/29/10	DSL - 3rd and 4th Release 40%					1.89	4.26		4.27
9/7/2011	D.R. Horton	Benton Woods Development	37557-RF	2006-930	0.24		4.02		4.03
1/18/12	Transfer from Phase 1 ledger	Accounting error from 2008 DSL credit purchase				.89	4.91	.89	4.92
4/19/12	Selmet INC	Seven Mile Ln Albany, OR	48490-RF	NWP-2011-522	0.48		4.43		4.44
1/18/14	Michael Pattle	3961 Mirror Pond Way, Eugene	54631-RF	NWP-2003-258/3	0.23		4.2		4.21
10/21/14	DR Horton	Benton Woods 3	56719-RF	NWP-2006-930/2	0.18		4.02		4.03
1/19/15	DR Horton	Benton Woods 3	56719-RF	NWP-2006-930/2	0.15		3.87		3.88
2/5/15	Legend Homes	Corvallis	56622-RF	NWP-2014-257	0.42		3.45		3.46
3/3/15	Cooper creek LLC	Cooper creek vineyard	56240-RP	NWP-2008-641	0.1		3.35		3.36
4/7/15	GP	Halsey	7460 ENF	NWP 2014-238	3.35		0		.01
Total Sold				5.15					

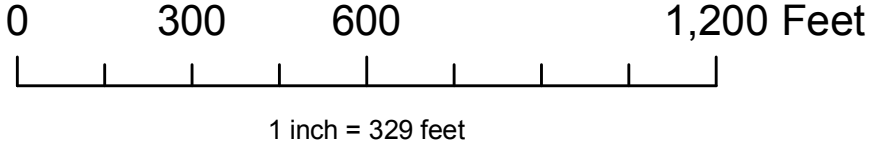
Attachment 1: Sample Plot Monitoring Data

Mid-Valley Mitigation Bank - Phase 2																									
Sample Plot Monitoring Results - June 23, 2017																									
Species Observed				Wet Prairie/	Moisture	Average Cover																			
Botanical Name	Common Name	Status	Origin	Vernal Pool	Index	Each Species	1	2	3	4	5	5a	6	7	8	9	10	11	12	13	14	15	16	17	
				Species																					
Overstory Species/Shrub. - stem count (*denotes within 30' Diameter)						Wet Prairie/	Emergent																		
<i>Salix lasiandra</i>	Pacific willow	FACW	native		2												5						5	2	
Herbaceous Species - percent cover (1 meter square sample plots)																									
<i>Achillea millefolium</i>	Yarrow	FACU	native		4	0.45	0.00														5				
<i>Alisma gramineum</i>	Narrow leaf water plantain	OBL	native		1	0.00	0.00																		
<i>Alisma triviale</i>	Northern water plantain	OBL	native		1	0.00	0.00																		
<i>Asclepias speciosa</i>	showy milkweed	FAC	native		3	0.91	0.00																10		
<i>Camassia quamash</i>	Common camas	FACW	Native	Yes	2	0.45	0.00			5															
<i>Carex obnupta</i>	Slough sedge	OBL	native		1	9.09	0.00			100															
<i>Carex unilateralis</i>	One-sided sedge	FACW	native	Yes	2	2.27	5.00	5												20		20			
<i>Cicuta douglasii</i>	Western water-hemlock	OBL	Native		1	0.00	0.00																100		
<i>Downingia elegans</i>	Showy downingia	OBL	Native	Yes	1	0.45	0.00														5				
<i>Epilobium densiflorum</i>	Dense spike-primrose	FACW	native	Yes	2	0.45	0.00																	5	
<i>Epilobium ciliatum</i>	Fringed willowherb	FACW	native	Yes	2	0.45	0.00																	5	
<i>Eleocharis ovata</i>	Ovoid spike rush	OBL	native	Yes	1	0.00	0.00																		
<i>Eleocharis palustris</i>	Creeping spike rush	OBL	native		1	0.45	7.50	5				30													
<i>Eriophyllum lanatum</i>	Oregon sunshine	NOL	native	Yes	5	0.91	0.00													10					
<i>Gnaphalium palustre</i>	Cudweed	FAC	native	Yes	3	0.00	0.00																		
<i>Gratiola ebracteata</i>	Bractless hedgehyssop	OBL	native	Yes	1	0.00	0.00																		
<i>Grindelia integrifolia</i>	Gumweed	FACW	native	Yes	2	9.09	17.50																		
<i>Juncus bufonius</i>	Toad rush	FACW	native	Yes	2	0.00	0.00																		
<i>Juncus effusus</i>	Soft rush	FACW	native		2	0.00	0.00																		
<i>Kickxia elatine</i>	Sharp point fleveillin	FAC	non		3	0.00	0.00																		
<i>Lemna minor</i>	Common duckweed	OBL	native		1	0.00	0.00																	10	
<i>Lythrum hyssopifolium</i>	Hyssop loosestrife	OBL	non		1	0.00	2.50													10					
<i>Lythrum portula</i>	Spatulaleaf loosestrife	OBL	non		1	0.00	0.00																		
<i>Mimulus guttatus</i>	Common monkey-flower	OBL	native	Yes	1	0.00	0.00																		
<i>Myosotis laxa</i>	Small flowered forget-me-not	OBL	native		1	0.00	0.00																		
<i>Navarretia intertexta</i>	Navarretia	FACW	native	Yes	2	0.00	0.00																		
<i>Parentucellia viscosa</i>	Parentucellia	FAC	non		3	0.45	0.00			5															
<i>Plagiobothrys figuratus</i>	Fragrant popcornflower	FACW	native	Yes	2	0.00	0.00																		
<i>Plagiobothrys scouleri</i>	Scouler's popcorn flower	FACW	native	Yes	2	0.00	0.00																		
<i>Polygonum amphibium</i>	Water smartweed	OBL	native		1	0.00	0.00																		
<i>Potamogeton natans</i>	Floating-leaved pondweed	OBL	native		1	0.00	0.00																	50	
<i>Potenilla gracilis</i>	Slender cinquefoil	FAC	native	Yes	3	0.91	0.00																10		
<i>Prunella vulgaris</i>	Common selfheal	FACU	native	Yes	4	10.91	0.00	40														10	5		
<i>Ranunculus occidentalis</i>	Western buttercup	FACW	native	Yes	2	4.55	0.00															20	30		
<i>Rorippa curvisiliqua</i>	Western yellowcress	OBL	native	Yes	1	0.00	0.00																		
<i>Sagittaria latifolia</i>	Wapato	OBL	native		1	0.00	0.00																	20	
<i>Sidalcea campestris</i>	Meadow sidalcea	FACU	native		4	0.00	0.00																		
<i>Sidalcea cusickii</i>	Cusick's checkermallow	FACW	native	Yes	2	14.09	0.00	50		30												40	35		
<i>Veronica peregrina var. xalapensis</i>	Hairy purlane speedwell	OBL	native	Yes	1	0.00	0.00																		
<i>Vicia hirsuta</i>	Hairy vetch	NOL	non		5	0.45	0.00																		
						56.36	32.50																		
Grass Species - percent cover (1 meter square sample plots)																									
<i>Agrostis exarata</i>	Spike bentgrass	FACW	native	Yes	2	7.73	0.00			10												20	40	10	5
<i>Alopecurus geniculatus</i>	Water foxtail	OBL	native		1	0.00	0.00																		

Mid-Valley Mitigation Bank Phase 2 Monitoring Points



- ★ Phase 2 Photo Points
- Phase 2 Monitoring Points
- Buffer
- PFO
- PEMC
- PSS
- Wet Prairie



Mid-Valley Phase 2 Mitigation Bank 2017 Photo Monitoring

Photo Point 1 North



Photo Point 1 East



Photo Point 1 South



Photo Point 1 West



Photo Point 2 North



Photo Point 2 East



Photo Point 2 South



Photo Point 2 West



Photo Point 3 North



Photo Point 3 East



Photo Point 3 South



Photo Point 3 West



Attachment 3: Photo Point Monitoring Photos

Photo Point 4 North



Photo Point 4 East

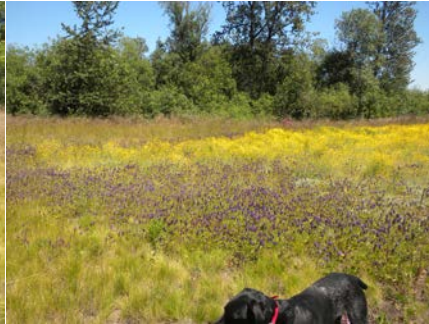


Photo Point 4 South



Photo Point 4 West



Photo Point 5 North



Photo Point 5 East



Photo Point 5 South



Photo Point 5 West

