Mitigation Monitoring Report Cover Sheet
Oregon Department of State Lands

Block 1: Report Information

DSL Permit Number: RF-36703
COE Permit Number: *Nationwide Permit 27* -#200500701
Permittee: *Gilmour*
County: *Benton* Report Date: December 11, 2014 Monitoring Year 8
Date Removal-Fill Activity Completed:
Date mitigation was completed Grading: 10*/06* Planting: *5/07, 10/07*
Report submitted by: Oregon Wetlands LLC

Block 2: Monitoring Report Purpose

This monitoring report is for monitoring a project that includes: (check all that apply):

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

Block 3: Results

	Success Criteria	Met? (Y/N)	Comments/Reasons for Failure*
1.	Emergent Herbaceous	3 of 3 requirements	
2.	Wetgrass Prairie	6 of 6 requirements	
3.	Shrub and Forest Restoration	6 of 6 requirements	
4.	Forest - Enhanced	2 of 2 requirements	Completed
5.	Hydrology - Delineation	1 of 1 requirements	Completed

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): *previously submitted*	Yes	No
Final Monitoring Report?	Yes	No X
Requesting release or partial release of bond/credits	Yes	No X

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LIST OF ATTACHMENTS

1.0 REGULATORY BACKGROUND

The purpose of this report is to summarize the progress of the Evergreen Creek Wetland Mitigation Bank (Bank). The Bank is located on the west side of Bellfountain Road, at the intersection of Bellfountain and 53rd Street in T12S, R5W, Sec. 19, Tax Lot 700. The letter of approval for the Bank was signed on February 27, 2007 and is permitted as ACOE permit #200500701.

The Bank is 174.52 acres, which includes a combination of enhancement of cropped wetland (161.5 acres), enhancement of remnant ash and shrub/scrub riparian area (13.4 acres). The total potential credits produced include:

Type of Credit	Acres	Ratio	Credits
Cropped Wetland Enhancement	161.12	2:1	80.31
Enhancement	13.4	3:1	4.46
Total	174.52 acres		84.77
Credits Used for Graveled Parking Area			(0.25)
Total Credits Produced	**84.52 credits**		

2.0 WORK SUMMARY

Beginning in early March, efforts concentrated on covering all older prairie areas to spot treat unwanted species before native grasses got tall and inhibited detection. All prairie areas were covered with ATV at least one time targeting velvet grass, bent grass, rough-stalk bluegrass, annual blue grass, and any other non-natives encountered. Forbs dominated prairie areas were walked multiples times with backpacks targeting Prickly lettuce, Thistle spp., Tansy, and any other non-native species encountered, which was much less time consuming this year as natives forbs continue to expand. A 60ft band along the South, and West boundaries were broadleaf herbicide treated when conditions were favorable to prevent encroachment from surrounding properties. All tree and shrub plantings were covered with ATV in late spring to spot treat any invading species, Canadian thistles, prickly lettuce, and sow thistles were the primary targets. Since decreasing mowing in the PFO/PSS areas, non-natives have become much less of an issue, and some areas are beginning to get enough canopy cover to eliminate herbaceous species.

The existing forested area was periodically spot treated throughout the season, with St. John's wart and Curly dock being the main targets. The emergent areas were covered in early fall to spot treat any pennyroyal present, and monitor for any other non-natives. Also in early fall, the few Himalayan blackberries that had been encountered within the site throughout the season were treated, which provides the most effective long term control. All borders were spot treated for non-natives to prevent these species from entering the site.

Slightly more mowing was completed this year to test responses from both vegetation and wildlife. Approximately half of the forbs dominated prairie was mowed for the first time, selected based on amount of grass competition and was subsequently sprayed in late fall with grass specific herbicide. These areas were mowed in conjunction with meandering trails throughout the site, to distribute the seed

and provide access through tall vegetation. The water edges of all emergent areas were mowed to provide better conditions during shorebird migrations. All berms were also mowed this year, as they had been avoided for the last several years.

A diverse mix of sedges and rushes totaling 9 species was hand collected from One-Horse Slough throughout the late summer and fall. Also through cleaning out the seed drill after planting several other projects, ~40 species of forbs seed were also collected. All this seed was blended with remaining seed leftover from last year's plantings which was purchased from Heritage Seedlings, and broadcast in the forbs dominated prairies everywhere there was sufficient bare ground for establishment.

Table 1 - Summary of Restoration Activities at Evergreen Mitigation Bank from December 2013 through November 2014

Activity	Location
Site Preparation	Ongoing on borders
Existing forested vegetation treatment	All non-native vegetation treated (on-going)
Prairie seeding (Fall)	A diverse mix of forbs, rushes and sedges was planted in bare areas throughout the prairie.
Spot weed control	100% of mitigation bank area (on going)
Broadleaf weed control	60ft band along south and west borders (spring)
Mowing 2014	Maintenance trails, ½ forbs, emergent edges, berms.

3.0 AS-BUILT PLANS

The as-built plans were submitted within 60 days of grading as specified in the final instrument.

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 Wetland Delineation Manual (1987 Wetland Delineation Manual), will be present in at least 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 lock of hydric soils indicators will not be interpreted as disqualifying a plot as wetland.

4.2 METHODOLOGY:

Water Monitoring Tubes: Ten (number of tubes will be driven by the site conditions, following bank grading) groundwater monitoring tubes will be constructed and monitored to show the duration of saturation. Tube monitoring data shall be collected three times between approximately March 1 and May 30 to demonstrate sufficient duration of wetness to meet the 1987 Wetland Delineation Manual. The monitoring report will also include precipitation date for the monitoring period from the nearest recording station. The locations of the

monitoring tubes will be representative of the hydrological variation on site to prove duration of saturation needed to meet the 87 Manual criteria. These will be included on the as-built drawings.

Delineation: Paired plots concentrating along the wetland boundary, for any plots dominated by upland vegetation, and in any high areas will be utilized to indicate the exact location of the wetland boundary. The paired plots will be evaluated using soil probes or pits. This will be done to document that wetland hydrology has been achieved throughout the site. In addition to plot data, these areas will be visually documented with photographs to show a dominance of wetland species. The wetland boundary will then be displayed on a site map to confirm acreage achieving the performance standard.

4.3 RESULTS

This provision has been met for at least three years and is no longer being monitored

5.0 VEGETATION PERFORMANCE STANDARDS, METHODOLOGY AND RESULTS

5.1. Performance Standards

Emergent Herbaceous

1. A minimum of 55% of the relative plant cover (including bare soil) is comprised of native species.
2. No more that 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*), and Japanese knotweed (*Polygonum cuspidatum*), Eurasion water milfoil (*Myriophyllum spicatum*), climbing nightshade (*solanium 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.

Wetland Prairie

The above performance standard 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, *supplied by John Marshall (USFWS) author of "Draft Guidance on Vegetation Performance Standard and Monitoring Protocols for Reference Sites and Mitigation Sites"* to enhance Appendix II of this document.
2. Tufted hairgrass (*Deschampsia cespitosa*) is represented by 25% or greater relative plant cover.
3. At least 50% of the relative plant cover (including bare soil) is comprised of native species.
4. No more that 15% of the relative plant cover is comprised of non-native invasive species as define above.
5. The prairie's moisture index is between 2.0 and 3.0.
6. No more than 5% relative plant cover by shrubs or trees.

Shrub and Forest - Restoration

By the end of the second growing season, the newly planted shrub and forest component of the wetland will meet or exceed 75% of the species richness of the reference site (excluding non-native invasive species). The plant density in forested and shrub/scrub wetlands will be at least 80% of the reference site, of species that are rated FAC or wetter, excluding FAC- species. This must be achieved by the end of the second growing season following planting and maintained through the end of the monitoring period until trees and shrubs are established and free to grow. There will be no more than 15% aerial coverage of non-native

invasive species*. These densities will be a combination of planted individuals and natural recruitment.

In addition, the herbaceous layer in the forest and shrub areas, will meet or exceed the performance standards for emergent herbaceous wetlands as stated above.

Forest and scrub/shrub - Enhanced

Year five performance standard for the enhanced forested wetland will be to maintain the existing wetland forest and scrub/shrub layers while managing for no more than 15% of non-native invasive species*.

5.2 Methodology

A stratified, systematic plot method was used to conduct vegetation sampling in all areas except the enhanced forest. Vegetation data was collected at each of 103 sample points that had been pre-determined and plotted along 6 transects. The monitoring point location map is included as Attachment 2. Each transect crosses the entire wetland (north to south) and they are located approximately 400 feet apart (north-south). Sampling plots were then located at 200 foot intervals along each transect. Herbaceous data was collected using one meter quadrants on the NW corner of each plot, and tree and shrub data was collected in 30ft diameter around plots. In the enhanced forest areas, four 50 ft square plots were marked, with the percent cover of non-native invasive species determined. The four plots were picked at random, two on each side of the Evergreen Creek. Extensive knowledge of the forested areas by the monitoring crew confirms that these four plots were representative of the entire area.

5.3 VEGETATION MONITORING RESULTS

Vegetation monitoring was conducted by Ray Fiori. On June 4, 2014 all WP, PFO, PSS, and existing forested areas were monitored. The PEMC was monitored on August 14, 2014 to allow for significant plant growth following adequate drawdown. Attachment 1 includes spread sheets with the results of the sampling. The spread sheets include a complete listing of all plant species identified in the monitoring plots. 103 monitoring plots were examined. The data spread sheets include the botanical names, common names, indicator status, origin (native or non-native), moisture index, and percent cover for each species. In 2013 63 plant species were identified within the plots, of these 59 were native. In 2014 62 plant species were identified within the monitoring plots, of these, 57 were native. Several new species were present in the plots this year, but several others that were present in previous years did not show up. Attachment 1 shows all species that have been present in the plots at one point, with a total of 68 native species. The low occurrence and cover of invasive and non-native species on site is a reflection of the continued effectiveness of site preparation, monitoring, establishment, care and spot treatment that the Bank sponsors continue. The increase in diversity is a direct result of allocating substantial resources to far exceed performance measures by continuing to incorporate new species to create diverse habitats as well as eliminating non-natives to encourage natural recruitment.

5.3.1 Emergent Vegetation

The native herbaceous cover (including open water) averaged 97.50% in 2013 and was similar at 98.75% in 2014. There were no non-native invasive species and only 1.25% non-native cover. The amount of open water was the similar as last year at 0.8% and bare ground was 0% with slightly later monitoring. The open water/bareground percentages

will vary widely depending on the timing of the monitoring and spring precipitation timing and intensity. As the monitoring date has been delayed for this habitat, it has allowed for full establishment of vegetation.

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

Required: At least 55% of the relative plant cover (including bare soil) is comprised of native species -- ***Met****, with 98.75% of the relative plant cover including open water as native species.*

Required: No more than 15% of the relative plant cover is comprised of non-native invasive species –***Met,*** *with no non-native invasive species.*

Required: The wetland's moisture index is less than 3 –***Met,*** *with an average weighted moisture index of 1.09.*

5.3.2 Wetland Prairie

Native herbaceous cover averaged 89.59% (not including bareland) throughout the wet prairie area and of the vegetation itself, 98.99% were native species in 2014. Bareland represented 9.49% cover in 2014, which is mostly organic litter. There was no non-native, invasive cover, while other non-natives represented 0.92%. As work continues to diversify the prairie habitat, this year 42.24% cover was by forbs/sedges/rushes, 48.27% cover was grasses, and 9.49% cover was bare substrate.

The performance criteria for **wetland prairie** were met for 6 of the 6 requirements.

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) (Date, 2008) it was agreed upon to include the vernal pool species from this same source in the 10 required species, and this is reflected in the wetland prairie cohort species list as well. ***Met****. Twenty wetgrass prairie and vernal pool species were identified within the prairie plots.*

Required: Tufted hairgrass (*Deschampsia cespitosa*) is represented by 25% or greater relative plant cover**.** ***Met as discussed*** *Tufted hairgrass represented an average cover of 11.02%.* **As discussed during the annual site visits, this provision needs removed, as its 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: At least 50% of the relative plant cover (including bare soil) is comprised of native species. ***Met****. Non-natives and non-native invasives combined for 0.92%, bare soil was 9.49%, with native cover at 89.59%.*

Required: No more that 15% of the relative plant cover is comprised of non-native invasive species. ***Met****, with no non-native invasive species.*

Required: The wetland prairie moisture index is between 2.0 and 3.0. ***Met***. *The mean prevelance index 2.15.*

Required: No more than 5% relative plant cover is comprised of shrubs or trees. ***Met***. *Plots # 51 and #87 contained planted and volunteer tree and shrub species, but represent less than 1% cover. Plots # 51 is at the edge of the wet prairie and forested portions so the forested area fell within the 30ft diameter tree/shrub sampling. Plot #87 is in an area where we are working to increase forbs abundance/diversity. Anytime significant bareground and moisture are present when trees are dispersing seeds, they will get established, which often happens in emergent drawdown zones. The area will be mowed periodically to set back the woody plants.(Mowed in 2014)*

5.3.3 Forest Enhanced

Required: Year five performance standard. The existing stem density of the native wetland forest and shrub species will be maintained. ***Met. N****o native wetland trees or shrubs have been removed intentionally. The stem/plant count has declined since the initial survey. Reconnecting evergreen creek to its historic forested floodplain has greatly increased the frequency of flood events and increased duration of saturation, which has directly taken out some trees as well as increased windfall. These are natural events that will contribute to the long term health of this habitat.*

Required: Year five performance standard. There will be no more than 15% aerial coverage of non-native invasive species. ***Met,*** *with no non-native invasive species.*

5.3.4 Shrub and Forest Restoration

This area continues to thrive. Planting took place in February of 2007, making this the 8th growing season. Initial planting survival was excellent, and through effect weed control, natural recruitment was also significant. Although initial stocking density was low compared to many current projects, in a relatively short period of time many areas have a closed canopy, herbaceous shade tolerant species have expanded, and large patches of shrub dominated areas continue to expand. Although maintenance was high in the early stages of establishment when this was basically a prairie with initial tree/shrub encroachment, it has declined to occasional spot checks in the shrub dominated areas that are accessible with an open canopy.

Species richness for woody plants exceeded the reference site. Eleven species were found in the reference site and 13 were found in the restoration area. Ponderosa pine (*Pinus ponderosa*) exists on site; however, it is not documented in a monitoring plot.

The reference site stem density is 635 trees and shrubs per acre. The planted plots showed an average stem density of 7.8 trees per plot and 14.85 shrubs per plot (Fac or wetter). This equates to a stocking density of 1396 stems per acre. Plot 13 was added to the scrub/shrub sampling in 2009, as the small area (.25 acres) around this plot is being managed for that habitat to increase the habitat complexity on the site. This plot is 100% aerial coverage of Pacific willow, which equates to a stem count of 150 which skews the overall stem count. If this plot is left out of the equation, average shrubs per plot drops to 9.44 which equates to an overall stocking density of 1063 stems per acre (FAC or wetter).

Required: The shrub and forest component will meet or exceed 75% of the species richness of the reference site (excluding non native invasive species). ***Met,*** *with 13 overstory and shrub species identified in the bank, compared to 11 in the reference site.*

Required: Plant density will be at least 80% of the reference site with FAC or wetter. ***Met****, FAC or wetter woody stem density is 1063 stems per acre, (excluding #13) which exceeds 80% of the reference site which has 635 stems per acre (635 x 80% = 508).*

Required: There will be no more than 15% aerial coverage of non-native invasive species. **Met,** *with no non-native invasive species.*

The herbaceous layer in the shrub and forest restoration area will meet or exceed the emergent habitat performance standards.

Required: At least 55% of the relative plant cover (including bare soil) is comprised of native species. **Met**, *with an average of 67.88% native herbaceous plant cover. Bare ground represented 30.77% this year, mostly due to canopy closure. As is evident through eight years of monitoring, as canopy cover increases, herbaceous vegetation decreases.*

Required: No more that 15% of the relative plant cover is comprised of non-native invasive species. **Met,** *with no non-native invasive species.*

Required: The wetland's moisture index is less than 3. **Met**, *with an average weighted moisture index of 2.5.*

6.0 PHOTO POINT MONITORING

Photos from the photo points are included as Attachment 3; a map of photo point locations is located in Attachment 2. Photos were taken on 06/04/2014

7.0 CREDIT SALES SUMMARY

An initial 25.4 credits (30%) were released in February 2007, due to meeting all the requirements for Release #1.

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

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 (if weather conditions are close to normal).*

Release 3 *(Spring/Summer 2008): Up to 20 percent upon demonstration of all performance measures being.*

An additional 29.62 credits (35%) were released in September 2008, due to meeting all the

requirements for a total release of 55.02 credits (65%).

> ***Release*** *4 (Spring/Summer 2009): Up to 20 percent upon demonstration of all performance measures being.*

An additional 21.05 credits (25%) were released in March 2010, due to meeting all the requirements for a total release of 76.07 credits (90%).

> ***Release*** *5 (End of 5th year monitoring or 5 years after replanting for those areas replanted)): All remaining credits (10%) upon demonstration of all performance standards being achieved. In addition, the long term management plan and funding must be received and approved by the MBRT.*

Table 2 below contains all credit sales to date. Should any credit sales occur between submission of this report and 12/31/14, an updated spreadsheet will be sent to both agencies to reflect the calendar year credit sales.

Table 2 - Evergreen Credit Sales Summary

DATE	*NAME*	*LOCATION*	*DSL*	*CORP*	*ADDED*	*SOLD*	*BALANCE*
2/27/07	**CORPS/DSL INITIAL RELEASE-30%**		**Permit Number**		**25.4**		**25.4**
3/20/07	WSS, LLC	Hill Street Subdivision, Albany	37470	2006-910			**21.5**
5/7/07	DR Horton	Benton Woods	37557-RF	2006-930		2.5	**19**
9/27/07	City of Albany	COA 53rd Ave Park	39021-RF	2007-751		0.14	**18.86**
5/10/07	Greater Albany Public School	Knox Butte Road School Site	38849-RF	2007-582		1.26	**17.6**
12/10/07	Weirich Drive Development, LLC	Weirich Drive	39237-RF			0.1	**17.503**
3/20/08	ODOT	Wren Hill	730	199400929		1	**16.503**
3/24/08	Greater Albany Public School	Knox Butte Road School Site	38849-RF	2007-0582		0.34	**16.163**
4/1/08	Greater Albany Public School	Knox Butte Road School Site	38849-RF	2007-0582		0.04	**16.123**
9/8/08	**CORPS/DSL 2nd & 3rd RELEASE-35%**				**29.62**		**45.743**
4/29/09	Hyland Business Park LLC	Intersection of 31st St and Commercial St, Springfield	31129-FP & FP-7343	1997-00294		1.9	**43.843**
9/29/09	Junction City Prison Project	Lane County, ~ 3.5 miles south of Junction City, Oregon	41791-RF	2008-378		20	**23.843**

11/2/09	Lane-Wendson No 1	T18, R 6W, sect 10	43512	2009-580		0.22	**23.623**
3/10/10	**CORPS/DSL 4th RELEASE 25%**				**21.05**		**44.673**
8/17/11	OSU	SW 15th st & Philomath BLVD	46865-RF	2011-181		0.53	**44.143**
5/15/12	Grain Millers	~3.5mi South of Junction City, OR	47997	2009-00036/1		17.98	**26.163**
9/6/12	American towers, AT&T	T11S, R3W, Sect. 16 Tax lot 1801	46538-RF	NWP-2011-92		0.09	**26.073**
6/10/2013	Cascade Pacific Pulp	T14S, R4W, Sect. 06 & T14S, R5W Sect. 01	50674-RF	2000-486/3		0.30	**25.773**
5/5/14	Hayden Homes, Applegate	Lat.44.04078°N , Long. -123.35919°W	34856-RF	NWP-2005-430		0.56	**25.231**
5/22/14	TEC Equipment	91317 Cobourg industrial Way, Cobourg, OR 97408	5981-ENF	None		0.5	**24.713**
11/13/14	Hayden Homes, Applegate 3	Lat.44.04078°N , Long. -123.35919°W	56711	NWP-2005-430-2		0.14	**24.573**
12/1/14	Junction City Prison Project	3.5 miles south of Junction City, Oregon	41791-RF	2008-378		0.16	**24.413**
Total Sold						**51.657**	

Attachment 1: Sample Plot Monitoring Data

Evergreen Wetland Mitigatigation Bank

Wet Prairie (WP) Plot Data

June 4, 2014

Species Observed				Wet Prairie		Ave.																										
				Cohort	Moisture	Cover																										
Botanical Name	**Common Name**	**Status**	**Origin**	**Species**	**Index**	**ea. Species**	**16**	**20**	**21**	**30**	**32**	**33**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**53**	**54**	**55**	**56**	**57**	**58**	**59**
Oversory Species. - stem count within 30' Diameter (over 18" tall)																																
Alnus rhombifolia	White alder	FAC	native		3																			1								
Fraxinus latifolia	Oregon ash	FACW	native		2																			1								
Malus fusca	Flowering crabapple	FACW	native		2																			2								
Populus trichocarpa	Black cottonwood	FAC	native		3																			3								
Rosa nutkana	Nootka rose	FAC	native	Yes	3																											
Salix lasiandra	Pacific Willow	FACW	native		2																											
Herbaceous Species - percent cover																																
Achillea millefolium	Yarrow	FACU	native		4	0.00																										
Alisma triviale	Northern water plantain	OBL	native		1	0.00																										
Carex unilateralis	One-sided sedge	FACW	native	Yes	2	1.53		5							30		10			30												
Centaurium erythraea	Centaury	FAC	non		3	0.31																	5		5							
Eleocharis ovata	Ovate spike rush	OBL	native	Yes	1	0.00																										
Eleocharis palustris	Creeping spike rush	OBL	native		1	0.82	5																									
Epilobium angustifolium	Fireweed	FACU	native		4	0.71																		35								
Epilobium ciliatum	Fringed willoweed	FACW	native	Yes	2	2.65	5	5	15	10		5		15	10	10		5	10			5	5			5		5	5	5	5
Epilobium densiflorum	Dense spike-primrose	FACW	native	Yes	2	2.65		5		5	5	15			30	5				5		20										
Eriophyllum lanatum	Oregon sunshine	NOL	native	Yes	5	1.73				15		10							5							30				5		
Galium trifidum var. pacificum	Small bedstraw	FACW	native		2	0.61																	30									
Gratiola ebracteata	Bractless hedgehyssop	OBL	native	Yes	1	0.00																										
Gnaphalium palustre	Cudweed	FAC	native	Yes	3	0.41			5																				5	10		
Grindelia integrifolia	Gumweed	FACW	native	Yes	2	0.20																							5	5		
Juncus bufonius	Toad rush	FACW	native	Yes	2	1.53			5				5	5					5										5	5		
Juncus effusus	Soft rush	FACW	native		2	0.00																										
Juncus tenuis	Slender rush	FACW	native	Yes	2	0.31						5																				
Lupinus bicolor	Two-colored lupine	NOL	native		5	0.00																										
Lupinus rivularis	Stream-side lupine	FAC	native		3	0.00																										
Lupinus polyphyllus	Bigleaf lupine	FAC	native	Yes	3	0.00																										
Lythrum portula	Spatulaleaf loosestrife	OBL	non		1	0.51							5																			
Mimulus guttatus	Common monkey-flower	OBL	native	Yes	1	0.10																										
Plagiobothrys figuratus	Fragrant popcorn flower	FACW	native	Yes	2	1.63		5													55											
Plagiobothrys scouleri	Scouler's popcorn flower	FACW	native	Yes	2	0.10																										
Potentilla gracilis	Northwest cinqufoil	FAC	native	Yes	3	0.00																										
Prunella vulgaris	Common selfheal	FACU	native	Yes	4	7.35		5							10	20				40					30	45						
Rorippa curvisiliqua	Western yellowcress	OBL	native	Yes	1	0.82	5											5	5													
Sidalcea cusickii	Cusick's checkermallow	FACW	native	Yes	2	18.16	25	75		70	70	65			20	10	5	25	10	15	10	15	55		50	20	90	85		10	5
Veronica peregrina var. xalapensis	Hairy purlane speedewell	OBL	native	Yes	1	0.10																										
						42.24																										
Grass Species - percent cover																																
Agrostis exarata	Spike bentgrass	FACW	native	Yes	2	14.18	30						50	50		35	45	10	25	5	10	15								30	20
Alopecurus aequalis	Short-awned foxtail	OBL	native		1	0.00																										
Alopecurus geniculatus	Water foxtail	OBL	native		1	1.53	10						15																30	10		
Beckmania syzigachne	Slough grass	OBL	native	Yes	1	3.67	20						10				30				10	30										
Deschampsia cespitosa	Tufted hairgrass	FACW	native	Yes	2	11.02			25				15			10		10			10				5							40
Deschampsia danthonioides	Annual hairgrass	FACW-	native	Yes	2	0.10																5										
Deschampsia elongata	Slender hairgrass	FACW	native	Yes	2	0.00																										
Glyceria occidentalis	Western mannagrass	OBL	native		1	0.00																										
Hordeum brachyantherm	Meadow barley	FACW	native	Yes	2	17.65			30		25			10		10		20	25	5	5	10	5	50	10		10	10	25	10	10
Lolium multiflorum	Annual rye grass	FACU	non		4	0.00																										
Poa trivialis	Rough-stalk bluegrass	FAC	non		3	0.10																										
						48.27																										
Bareground (Organic Litter: all plots except 57&58= Recent Forbs planti		Mean =	**9.49**						20					20			10	25	15					15					25	10	20
Relative % non-native cover, includes bareground:		Mean=	**10.41**				0	0	20	0	0	0	5	20	0	0	10	25	15	0	0	0	5	15	5	0	0	0	25	10	20
Relative % native cover,		Mean=	**89.59**				100	100	80	100	100	100	95	80	100	100	90	75	85	100	100	100	95	85	95	100	100	100	75	90	80
Relative % non-native invasive canopy cover :		Mean=	**0.00**				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Total Vegetation that is Native:	**98.99**	Percent of Total Vegetation that is Non-native				**1.01**																										
Sample plot weighted moisture index (herbaceous layer only)		Mean=	**2.15**				1.6	2.1	2.06	2.45	2	2.3	1.7	2	2.2	2.4	1.67	1.93	2.12	2.8	1.9	1.7	2.05	2.82	2.65	3.8	2	2	1.67	2.17	2
Total # of native Species: 28																																
Total Sample Size = 49	# of Wet Prairie Cohort Species = 20																															

Attachment 1: Sample Plot Monitoring Data

60	61	62	71	72	73	74	78	79	80	83	84	85	86	87	89	90	91	92	93	96	97	98	99
														6									
														5									
								35															
5																							
5													30	5									
	20																						
									5		5		5	5	15								10
											10												
								5	10		5												
														5									
								20															
											5												
70	70				20								30	20									
								20						5									
15	10	60			20								20	35									
																							5
			80	40	30	20			30		25	30		5		30	40		20			20	
																							10
						20		20	20	15							5						
			10	10	10	25	10		20	30	30	30	10		60	30	55		5			30	60
5		40	10	10	10	35	20			40		20	5		5	30		70	75	100	90	30	
														5									
				40	10		70		15	15	20	20		10	20	10		30			10	20	15
0	0	0	0	40	10	0	70	5	25	15	25	20	0	20	20	10	0	30	0	0	10	20	15
100	100	100	100	60	90	100	30	95	75	85	75	80	100	80	80	90	100	70	100	100	90	80	85
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	4	2	2	2	2.44	1.8	2	1.2	1.65	1.82	1.94	2	2.6	2.44	2	2	1.95	2	2	2	2	2	1.82

Attachment 1: Sample Plot Monitoring Data

Evergreen Wetland Mitigatigation Bank
Emergent Marsh (PEMC) Plot Data - August 14, 2014

Species Observed							Sample Plot Number																							
				Wet Prairie	Moisture	Ave.																								
Botanical Name	Common Name	Status	Origin	Cohort	Index	Cover	11	12	14	15	17	18	19	22	23	24	25	26	27	28	29	34	35	36	37	38	39	75	77	81
				Species		ea. Species																								
Scrub/Shrub Species -stem count within 30' radius																														
Populus trichocarpa	Black cottonwwod	FACW	native		2																									
Salix lasiandra	Pacific willow	FACW+	native		2		3										2				2									
Herbaceous Species - percent cover																														
Alisma gramineum	Narrow leaf water plantain	OBL	native		1	7.50	30	20	10	50	20					10		15	20		5									
Alisma triviale	Northern water plantain	OBL	native		1	20.63	30	30	15	50	60	30	25			70	10	65	60		30			15				5		
Bidens cemua	Nodding beggarticks	FACW+	native		2	0.00																								
Cyperus strigosus	Strawcolored flat sedge	FACW	native		2	1.04							25																	
Downingia elegans	Common downingia	OBL	native	Yes	1	0.83																				20				
Eleocharis ovata	Ovate spike rush	OBL	native	Yes	1	1.25																				30				
Eleocharis palustris	Creeping spike rush	OBL	native		1	14.38			25					30			10			80	30	70	20					80		70
Epilobium ciliatum	Fringed willoweed	FACW	native	Yes	2	0.00																								
Gnaphalium palustre	Cudweed	FAC+	native	Yes	3	2.08							5											40	5					
Juncus bufonius	Toad rush	FACW	native	Yes	2	0.00																								
Ludwigia palustris	Marsh seedbox	OBL	native		1	6.25		15	20		15		15		40	20		10			15									
Lythrum portula	Spatulaleaf loosestrife	OBL	non		1	0.83					5		5														10			
Polygonum hydropiperoides	Water smartweed	OBL	native		1	6.67			30			70	10		10			10	20							10				
Rorippa curvisiliqua	Western yellowcress	OBL	native	Yes	1	0.42																					10			
Sagittaria latifolia	Wapato	OBL	native		1	0.00																								
Sparganium emersum	Simple-stem bur-reed	OBL	native		1	1.67	20	20																						
Typha latifolia	Common cattail	OBL	native		1	3.33									50							30								
Grass Species - percent cover																														
Agrostis exarata	Spike bentgrass	FACW	native	Yes	2	2.50																	60							
Alopecurus aequalis	Short-awned foxtail	OBL	native		1	0.00																								
Alopecurus geniculatus	Water foxtail	OBL	native		1	12.08								70									20	35	35	30			100	
Beckmania syzigachne	Slough grass	OBL	native	Yes	1	3.96																					80	15		
Deschampsia cespitosa	Tufted hairgrass	FACW	native	Yes	2	0.00																								
Echinochloa crus-galli	Large barnyard-grass	FAC	non		3	0.42																		10						
Glyceria borealis	Floating manna grass	OBL	native		1	0.63		15																						
Glyceria occidentalis	Western mannagrass	OBL	native		1	2.29							15												40					30
Hordeum brachyantherm	Meadow barley	FACW	native	Yes	2	0.00																								
Leersia oryzoides	Rice cut-grass	OBL	native		1	6.25											80			20	20				20	10				
Panicum capillare	Common witchgrass	FAC	native	Yes	3	0.00																								
Bareground (*-due to recent inundation or age) Mean =		**0.0**																												
Open Water Mean=	**0.8**						20																							
Relative % native cover includes bareground:		**Mean =**	**98.75**				100	100	100	100	95	100	95	100	100	100	100	100	100	100	100	100	100	90	100	100	90	100	100	100
Relative % non-native cover :		**Mean =**	**1.25**				0	0	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	10	0	0	10	0	0	0
Relative non-native invasive cover:		**Mean =**	**0.00**																											
Percent of Total Vegetation that is Native:		**Mean =**	**98.68**																											
Percent of Total Vegetation that is Non-native:		**Mean =**	**1.32**																											
Sample plot weighted moisture index (herbaceous layer o		**Mean =**	**1.09**				1.00	1.00	1.00	1.00	1.00	1.00	1.35	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.60	2.00	1.10	1.00	1.00	1.00	1.00	1.00
Total # of Native Species	20																													
Total Sample points	24																													

Attachment 1: Sample Plot Monitoring Data

Evergreen Wetland Mitigatigation Bank

Forested (PFO) Plot Data

June 4, 2014

Species Observed				Wet Prairie	Moisture	Ave																										
Botanical Name	**Common Name**	**Status**	**Origin**	**Cohort**	**Index**	**Cover**	**1**	**2***	**3***	**4**	**5***	**6***	**7**	**8**	**9***	**10****	**13***	**31**	**52***	**63***	**64**	**65****	**66***	**67**	**68***	**69***	**70**	**76***	**82***	**88****	**94***	**95**
				Species		**ea. Species**																										
Oversory Species. - stem count within 30' Diameter (over 18" tall)																																
Alnus rhombifolia	White alder	FAC	native		3			1										1	1									2				
Crataegus douglasii	Douglas Hawthorn	FAC	native		3					1	1		1					1					1						2		2	1
Fraxinus latifolia	Oregon ash	FACW	native		2			1		1	1	2			8	9		30	8							1	11	23	8	12	18	30
Malus fusca	Flowering crabapple	FACW	native		2		3	1												3	2		1	2			1					
Populus trichocarpa	Black cotton wood	FACW	native		2					1		4		1					4										1		1	
Total # of Plos: 26																																
Total Stems per plot	**Mean=**	7.8					3	3	0	3	2	6	1	1	8	9	0	32	13	3	2	0	2	2	0	1	12	25	11	12	21	31
Average Stems per Plot (FAC or Wetter)		7.8					3	3	0	3	2	6	1	1	8	9	0	32	13	3	2	0	2	2	0	1	12	25	11	12	21	31
Mean trees/Acre	481																															
Amelanchier alnifolia	Service berry	FACU	native		4																			1		2						
Cornus sericea	Red osier dogwood	FACW+	native		2		2	1						1												1		2				
Oemlaria cerasiformis	Indian plum	FACU	native		4																											
Physocarpus capiaus	Pacific ninebark	FACW-	native		2		1													1				2	7	2	1					
Rosa nukana	Nooka rose	FAC	native	Yes	3		1	5	2	3	2		1	2	1			1			1	1	3			1	2				1	
Rosa pisocarpa	Clustered rose	FAC	native		3			1	3	3	1		3	3					1			2		2		2	3					1
Salix lasiandra	Pacific willow	FACW+	native		2			4	3	9	3	15	3	11	3		150	10	13			3									2	12
Spirea douglasii	Douglas spiraea	FAC	native		3		5	7	4		12		7								3	3	9	4	3	14	1					
Symphoricarpos albus	Snowberry	FACU	native		4		5													3			1	2								
Total # of Plots: 26																																
Total Stems per plot	**Mean=**	15.4					14	18	12	15	18	15	14	17	4	0	150	11	14	4	4	9	13	11	10	22	7	2	0	0	3	13
Average Stems per Plot (FAC or Wetter)		14.85					9	18	12	15	18	15	14	17	4	0	150	11	14	1	4	9	12	8	10	20	7	2	0	0	3	13
Mean Shrubs/Acre (FAC or Wetter)		915																														
Average Stems per Plot (FAC or Wetter) W/O #13		9.44																														
Mean Shrubs/Acre (FAC or Wetter) W/O #13		582																														
																													10			
Herbaceous Species - percent cover																																
Achillea millefolium	Yarrow	FACU	native		4	0.00																										
Alisma triviale	Northern water plantain	OBL	native		1	0.19										5																
Camassia quamash	Camas	FACW	native	Yes	2	0.58																					15					
Carex obnupta	Slough sedge	OBL	native		1	0.19										5																
Carex unilateralis	One-sided sedge	FACW	native	Yes	2	0.38										10																
Centaurium erythraea	Centaury	FAC	non		3	0.38																								10		
Epilobium ciliatum	Fringed willoweed	FACW	native	Yes	2	7.12	5	5	25	40	5	5	20	20													5	15	10	15	15	
Epilobium densiflorum	Dense spike-primrose	FACW	native	Yes	2	0.00																										
Eriophyllum lanatum	Oregon sunshine	NOL	native	Yes	5	8.65	90											5						80	10	40						
Geum macrophyllum	Large leaf avens	FACW-	native		2	1.35																					15				10	10
Gnaphalium palusre	Cudweed	FAC+	native	Yes	3	0.38			10																							
Gratiola ebracteata	Bractless hedgehyssop	OBL	native	Yes	1	0.00																										
Juncus bufonius	Toad rush	FACW	native	Yes	2	0.58				10						5																
Juncus effusus	Soft rush	FACW	native		2	1.54													30													10
Juncus tenuis	Slender rush	FACW	native	Yes	2	1.35										10												10				15
Lupinus bicolor	two-colored lupine	NOL	native		5	0.00																										
Lupinus polyphyllus	Bigleaf lupine	FAC	native	Yes	3	0.00																										
Lythrum portula	Spatulaleaf loosestrife	OBL	non		1	0.38			5							5																
Kickxia elatine	Sharp point flevellin	NOL	non		5	0.00																										
Madia salva	Coast tarweed	NOL	native		5	0.00																										
Poenilla gracilis	Northwest cinquefoil	FAC	native	Yes	3	7.88								5				85		30	30				10	20						25
Polygonum amphibium	Water smartweed	OBL	native		1	0.00																										
Rorippa curvisiliqua	Western yellowcress	OBL	native	Yes	1	0.19			5																							
Sidalcea campestris	Meadow checkermallow	FACU	native		4	2.88												5	25		30						15					
Sidalcea cusickii	Cusick's checkermallow	FACW	native	Yes	2	6.35				10				5								70	20				30	5				25
Veronica peregrina var. xalape	Hairy purlane speedew	OBL	native	Yes	1	0.19			5																							
						40.58																										
Grass Species - percent cover																																
Agrosis exaraa	Spike bentgrass	FACW	native	Yes	2	5.19		10	30	15			25	10	5	10							20							10		
Alopecurus geniculatus	Water foxtail	OBL	native		1	1.35						30				5																
Beckmania syzigachne	Slough grass	OBL	native	Yes	1	0.38										10																
Deschampsia cespitosa	tufted hairgrass	FACW	native	Yes	2	3.08													15		20		15					20		10		
Deschampsia danthonioides	Annual hairgrass	FACW-	native	Yes	2	0.00																										
Deschampsia elongata	Slender hairgrass	FACW	native	Yes	2	4.42				20			40	5				5		30												15
Elymus glaucus	Blue wildrye	FACU	native		4	0.00																										
Glyceria occidentalis	Western mannagrass	OBL	native		1	0.00																										
Hordeum brachyantherm	Meadow barley	FACW	native	Yes	2	13.08	5	10			5		15	45	10	10				20	20	20	20	20			20	40	10	30	40	
Poa palustris	Fowl bluegrass	FAC	native		3	0.19									5																	
Poa trivialis	Rough-stalk bluegrass	FAC	non		3	0.77				5				10														5				
Vulpia myuros	Rattail fescue	FAC	non		3	0.38																								10		
						28.85																										
Bareground (*-due to canopy closure, ** Organic Litter)					**Mean=**	**30.77**		75	20		90	65			80	30	100		30	20		10	25		80	40		5	80	15	35	
Relative % native cover, excluding bareground (herbaceous layer only):					**Mean=**	**67.88**	100	25	75	95	10	35	100	90	20	70	0	100	70	80	100	90	75	100	20	60	100	90	20	75	65	100
Relative % non-native invasive cover (herbaceous layer only):					**Mean=**	**0**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sample plot weighted moisture index (herbaceous layer only)					**Mean=**	**2.50**	4.70	2.00	1.94	2.05	2.00	1.14	2.00	2.15	2.25	1.60		3.10	2.71	2.38	2.90	2.00	2.00	4.40	4.00	4.33	2.30	2.05	2.00	2.24	2.00	2.25
# of Wet Prairie Cohort Species = 15																																
Total # of Native Species = 33		Total Sample points = 26																														

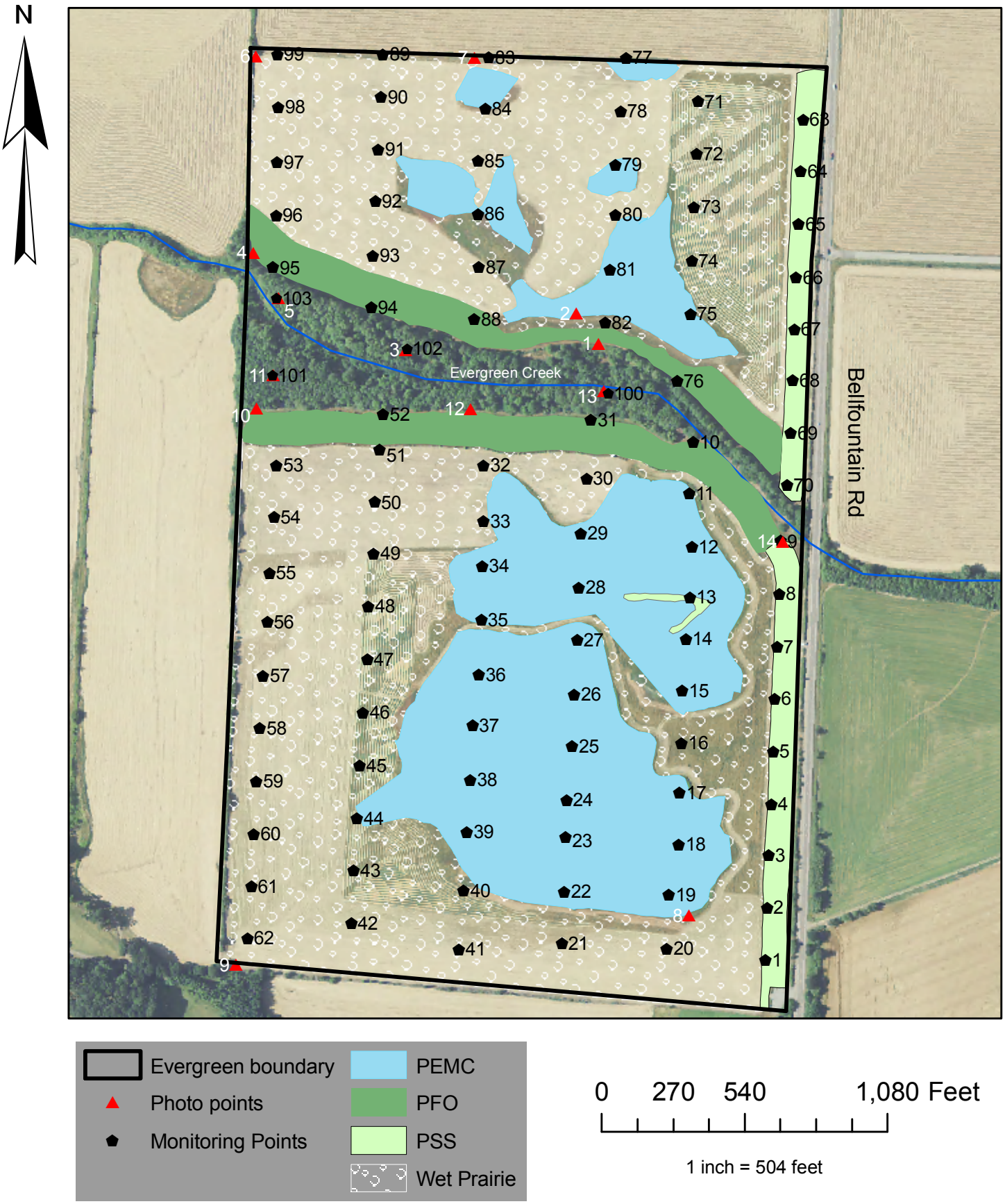
Attachment 1: Sample Plot Monitoring Data

Evergreen Mitigation Bank								
Existing and Enhanced Shrub/Forest (PFOE) Sample Plot Monitoring Results 2014								
				Moisture				
Common Name	**Botanical Name**	**Status**	**Origin**	**Index**	**100 - SE**	**101 - SW**	**102 - NE**	**103 - NW**
Overstory Species. - stem count within 50' square								
Douglas Hawthorne	*Crataegus douglassi*	FAC	native	3	10	2	16	7
Oregon ash	*Fraxinus latifolia*	FACW	native	2	23	29	6	25
Scrub/Shrub Species -stem count within 50' square								
Cascara	Rhamnus purshiana	FAC-	native	3	10	1	3	5
Himalayan blackberry	*Rubis discolor*	FACU	non	4				
Nootka rose	*Rosa nutkana*	FAC	native	3	4	1		1
Snowberry	*Symphoricarpos albus*	FACU	native	4	10	5	10	40
Douglas spiraea	*Spirea douglasii*	FAC	native	3			4	
Trailing blackberry	*Rubus ursinus*	NL	native		24	10	30	40

* Mowing, non-native species control, flooding, and wind damage eliminated some Ash trees, while allowing the shrub layer to prosper.

Attachment 2: Monitoring Map

Evergreen Mitigation Bank Vegetation and Photo Monitoring Points



Evergreen Mitigation Bank 2014 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

Photos Taken June 4, 2014

Attachment 3: 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

Photo Point 6 North

Photo Point 6 East

Photo Point 6 South

Photo Point 6 West

Photos Taken June 4, 2014

Attachment 3: Monitoring Photos

Photo Point 7 North

Photo Point 7 East

Photo Point 7 South

Photo Point 7 West

Photo Point 8 North

Photo Point 8 East

Photo Point 8 South

Photo Point 8 west

Photo Point 9 North

Photo Point 9 East

Photo Point 9 South

Photo Point 9 West

Photos Taken June 4, 2014

Attachment 3: Monitoring Photos

Photo Point10 North

Photo Point 10 East

Photo Point 10 South

Photo Point 10 West

Photo Point11 North

Photo Point11East

Photo Point11 South

Photo Point 11 West

Photo Point 12 North

Photo Point12 East

Photo Point12 South

Photo Point 12 West

Photos Taken June 4, 2014

Attachment 3: Monitoring Photos

Photo Point 13 North

Photo Point 13 East

Photo Point 13 South

Photo Point 13 West

Photo Point 14 North

Photo Point 14 East

Photo Point 14 South

Photo Point 14 West

Photos Taken June 4, 2014