**Mitigation Monitoring Report Cover Sheet**
**Oregon Department of State Lands**

**Block 1: Report Information**

DSL Permit Number: 36700-RF COE Permit Number: *Nationwide Permit 27* -#200500622
Permittee: Alton Sullivan
County: Linn Report Date: 12/28/12 Monitoring Year 6
Date Removal-Fill Activity Completed: July 07
Date mitigation was completed Grading: 7/06 Planting: 9/06, 10/06, 2/07-4/07, 10/07, and 2/08.
Report submitted by: Oregon Wetlands LLC – One Horse Wetland Mitigation Bank

**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.
NA 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 Vegetation | 3 of 3 requirements | |
| 2. | Wetland Prairie | 6 of 6 requirements | |
| 3. | Created Tree/Shrub | 6of 6 requirements | |
| 4. | Hydrology – Water Monitoring Tubes | 1 of 1 requirement | Met 2009 |
| 5. | Hydrology - Delineation | 1 of 1 requirement | Met 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: *previously submitted* Yes No
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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**LIST OF ATTACHMENTS**

# 1.0 REGULATORY BACKGROUND

The purpose of this report is to summarize the progress of the One Horse Wetland Mitigation Bank (Bank). The Bank is located on the south side of Payne Rd. in T12S, R2W, Sec. 1 & 36 Lots 201, 2201 and 3900. The letter of approval for the Bank was signed on December 5, 2006 and is permitted as DSL permit # 36700 and COE permit #200500622. The Bank consists of 130.48 acres.

Development of the Bank was through a combination of enhancement of cropped wetland (118.47 acres), and creation of wetlands (11.81acres). A portion (0.20 acres) of the 130.48 total acres is being used as parking and is not included in credit generation of bank credits:

| Type of Credit | Acres | Ratio | Credits |
|---|---|---|---|
| Cropped Wetland Enhancement | 118.47 | 2:1 | 59.235 |
| Creation | 11.81 | 1.5:1 | 7.87 |
| New Parking | 0.20 | | |
| **Total** | **130.48 acres** | | **66.91 credits** |

# 2.0 WORK SUMMARY

As in previous years after initial establishment, February through July restoration activities focused on non native species control. Beginning in early February, efforts concentrated on covering all prairie areas to spot treat unwanted species before native grasses got tall and inhibited detection. All prairie areas were walked at least two times targeting velvet grass, creeping bentgrass, rough-stalk bluegrass, penny royal, and any other non-natives encountered. As spring moved to summer, focus shifted towards spot treating between tree/shrub plantings and patrolling the emergent draw down zones for opportunistic species such as spatula-leaf loosestrife, and penny royal. A spring broadleaf herbicide treated was limited to a 40ft swath around borders to prevent encroachment of non-natives from neighboring parcels.

Approximately 10 acres of additional prairie was prepared for forbs planting in late fall 2011with a broad spectrum herbicide treatment to reduce grass cover. These areas were again treated in April just prior to non-til planting them to a diversity of native forbs. Grass specific herbicide was sprayed in some of the existing forbs areas to reduce grass competition. We continue to experiment with a variety of techniques to incorporate forbs species into grass dominated prairie areas and are gaining a lot of knowledge. One challenge is maintaining 25% cover of Tufted hairgrass (per performance standards) while maintaining a diversity of other grasses and establishing a diversity of forbs. As is evident from the monitoring at both One-Horse and Evergreen in the restored PSS/PFO areas where this is not a requirement, diversity of grasses and forbs are much higher. Site monitoring has occurred on an almost daily basis with follow-up spot treatment and removal of invasive and non-native species. The forbs planting areas were visited much more frequently then the rest of the site, as eliminating existing vegetation while necessary for establishing forbs, also caters to many undesirable species during initial establishment.

In August 2012 all levees and maintenance trails through the prairie areas were mowed. To prevent possible non-native species encroachment and aid in surveillance, a ~ 60ft swath was also mowed around the borders of the site. In addition, several paths were mowed through the forbs areas to compare results of mowing/not mowing side by side.

Mowing has been drastically reduced the last several years to gain additional knowledge of native grass succession, non native species establishment, and its impact on forbs establishment. This also provides an abundance of wintering habitat for a diversity of wildlife species. Emergent draw down zones were spot sprayed through late summer and early fall, targeting Penny royal and any

other non-natives encountered. Borders were spot treated for non natives prior to fall rains. The neighboring railroad right of way was leveled by the owner to allow us access for maintenance. It was sprayed out in late fall, and will be through the 2013 growing season and planted in fall 2013.

Table 1 shows a break down of the restoration actions the sponsors have taken to date from the last monitoring period, which establishes the hydrologic and vegetation conditions required to meet performance standards.

**Table 1. Summary of Restoration Activities at One Horse Slough Mitigation Bank December 2010 – October 2011**

| Activity | Location |
|---|---|
| Site preparation | Ongoing on borders |
| Existing forested vegetation treatment | All Non-native vegetation treated (on-going) |
| Forbs seeding | ~ 10 ac. of wet prairie (spring 2012) |
| Spot weed control | 100% of mitigation bank area (on-going) |
| Broadcast weed control | 60ft swath along sections of the borders in spring 2012(broadleaf) ~5 acres of previously planted forbs(grass specific) ~10 ac. prairie for 2012 forbs planting (broad spectrum) |
| Mowing | All levees, 60ft swath around borders, maintenance trails, and ~10 ac of wet prairie. |

# 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 a d 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**: At least six (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 measure.

### *4.3 Results*

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

## 5.0 VEGETATION PERFORMANCE STANDARDS AND METHODOLOGY

### *5.1 Performance Measures*

**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 standards 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 measures for emergent herbaceous wetlands as stated above.

### *5.2 Methodology*

A stratified, systematic plot method was used to conduct vegetation sampling in all areas. Vegetation data was

collected at each of 71 original sample points that had been pre-determined and plotted along 6 transects. One additional plot (#72) was added to the upper PSS area in 2007 for a better representation of this area. Four additional emergent plots (#73 - #76) were added in between existing plots to get a better sample of this habitat type, and flatten out the species area curve. These points were randomly selected from the monitoring map in ArcGIS, then uploaded to a handheld GPS, and marked in the field. The monitoring point location map is included as Attachment 1. Each original 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 1-meter quadrants, and tree and shrub data was collected in 30'diameter plots.

## *5.3 Vegetation Monitoring Results*

Vegetation monitoring was conducted on June 15, 2012 by Ray Fiori and Marvin Gilmour for the wet prairie and PFO/PSS plots. Due to the hydrology and late draw down of emergent areas, the emergent sampling was completed on August 31, 2012 by Ray Fiori and Marvin Gilmour. Attachment 2 includes spread sheets with the results of the monitoring. The spread sheets include a complete listing of all plant species identified in the monitoring plots. Several species that are still present on site but didn't make the monitoring plots this year were left on the list. Seventy-six monitoring plots were examined. The data spread sheets include the botanical names, common names, indicator status, origin (native or non-native) and prevelance index.

During the 2011 monitoring, 50 plant species were identified in the monitoring plots. Of the species present, 49 were native and 21 are on the prairie cohort list. In 2012, 53 plant species were identified in the monitoring plots. Of the species present, 51 were native and 24 are on the prairie cohort list. The low occurrence and cover of invasive and non-native species on site is a reflection of the effectiveness of site preparation, monitoring, establishment care and spot treatment that has occurred over the past 6 years. The Bank sponsors continue to treat problem areas and introduction a diversity of native forbs to boost the habitat complexity of the site, far above and beyond regulatory requirements.

### 5.3.1 Emergent Vegetation

Herbaceous native canopy cover averaged 95.18% throughout the emergent marsh area. Open water and bare ground comprised 7.68% and 3.39% respectively. As in the previous 4 years, emergent monitoring occurred 2 months later than 2008, allowing significant draw down to occur and the vegetation to respond. The recorded vegetation cover was 98.04% native species. The only non-native species present was Spatulaleaf loosestrife (*Lythrum portula),* which occurred with an average cover of only 1.43% over the entire emergent area.

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

Required: At least 55% of the mean plant cover (including bare soil) will be comprised of native species – Met; the emergent vegetation plots have a relative percent native cover of 95.18%.

Required: No more that 15% of the mean plant cover will be comprised of non-native invasive species. –***Met;*** *with 1.43 % of non-native species, with no non-native invasives.*

Required: The wetlands moisture index is less than 3 –***Met;*** *with an average weighted moisture index of 1.00.*

### 5.3.2 Wetland Prairie

Herbaceous native canopy cover averaged 80.68% throughout the wetland prairie areas. Non-native canopy cover (including bareground) averaged 19.32% of which 18.11% was bareground. In past years, there was only one non-native invasive species present; which was Annual ryegrass. No Annual ryegrass was present this year, and the only two non-natives were Spatulaleaf loosestrife and Prickly lettuce, which accounted for 0.95% and .27% cover respectively. Bareground accounted for 18.11% cover this year. Of the vegetation itself in the wet prairie, 99.05% was native, while 0.95% is non-native species. Forbs/sedge/rush cover has increased to 17.84% this year, while grass cover has dropped to 64.05% cover.

As succession moves forward, diversity will decrease as early seral species are out competed. To counteract this process certain prairie areas will be selected each year to set back the existing vegetation and introduce additional diversity. This has taken approximately 4 years to complete, but it will load up the seed bank with a diversity of native seeds as they reproduce, so over the long run, the site can naturally adapt to disturbance. This will not affect the long-term management costs, as this will be completed as part of the active management by the sponsors.

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 in spring 2008 with John Marshall (USFWS), it was agreed upon to include the vernal pool species from this same source in the 10 required species, as this was the original intent. ***Met**; thirteen wet grass prairie and vernal pool species were identified within the prairie plots, with twenty species found throughout the monitoring plots.*

Required: Tufted hairgrass (*Deschampsia cespitosa*) is represented by 25% or greater mean cover. - ***met;** Tufted hairgrass represented 38.51%.*

Required: At least 55% of the relative plant cover (including bare soil) will be comprised of native species- ***Met;** the overall relative native plant cover was 80.68%.*

Required: No more that 15% of the mean plant cover will be comprised of non-native invasive species –***Met;** with no non-native invasive species. Non native plant cover was 1.22%.*

Required: The wetland prairie moisture index is between 2.0 and 3.0 – ***Met**; the prevelance index is 2.13.*

Required: The prairie has no more than 5% relative plant cover comprised of shrubs or trees. ***Met**; this has not been an issue. Very few trees have been observed in the prairie. With increased disturbance to introduce forbs, shrubs and trees will likely try to colonize these areas when there is little cover to compete with. They will be monitored, and mowed if necessary to keep them in check.*

### 5.3.3 Forest and Scrub/Shrub Creation

Four plots were picked at random in the reference site which is directly adjacent to the bank, and represent both the open and closed canopy sections of this relatively undisturbed forested wetland. Many areas had extensive Himalayan blackberry thickets and were avoided as reference plots. These plots are representative of other forested wetlands in the area, although the shrub density seems to be higher than other sites. Every tree stem over 18" and every shrub stem over 1" diameter was counted to compute the stem density. Although this would be too time consuming on a large scale, with a relatively small site this seemed the best way to quantify stem density and compare it to the restored areas. An analysis of the original reference site data was conducted with the results included in Table 2.

Monitoring plots were surveyed in a similar way as the reference site. Based on comments from the 2009 monitoring report, plant counts were used to quantify shrub species, rather than stem counts. Tree species over 18" tall (2 to3 yrs old) were counted as in the reference site. A 30ft diameter sampling plot was used from the original monitoring date, as all but one plot contained both tree and shrub species. This same sampling protocol has been followed in subsequent years to be consistent, and the 30ft diameter plot has been utilized in all the emergent and wet prairie sample plots to quantify encroachment of woody vegetation into these habitats. Many new trees and shrubs are taking hold through natural recruitment from adjacent areas as well as from planted individuals in these areas and will take several years to fully establish. This year's data is included in table 3.

Required: Year 2 performance measure. Meet or exceed 75% of the species richness of the reference site excluding non native invasive species. ***Met**; 13 woody species were identified with only seven species in the reference site.*

Required: Year 2 performance measure. Plant density will be at least 80% of the reference site with FAC or wetter species. ***Met**; with an average 706 stems/plants per acre of FAC or wetter species. An analysis of the original reference site data was conducted with the results included in Table 2.*

**Table 2 - Reference Site Analysis Summary**

| Reference Site Species | Native/Non | Indictor Status | Reference Site Stem/Acre |
|---|---|---|---|
| Oregon Ash | Native | FAC | 200 |
| Pacific crabapple | Native | FACW | 30 |
| Nootka rose | Native | FAC | 222 |
| Sweetbriar rose | **Non** | FACW | 87 |
| Service berry | Native | **FACU** | 65 |
| Snowberry | Native | **FACU** | 65 |
| English hawthorne | **Non** | FAC | 65 |
| Total stems per acre of FAC or wetter and native | | | 452 |

* **Items in bold** do not meet bank performance standards

*The analysis showed that of the seven species in the reference site only three species (Oregon ash, pacific crabapple and nootka rose) were both FAC or wetter and native species. The other four species were either non-native or FACU species. The original stem density calculations for the reference site included all of the species, even those that do not count toward the Bank's performance standard (FAC or wetter and native). It was determined that of the suitable species on the reference site, the stem density is 452 stems per acre. Using this analysis information, the reference site usable stem densities would be 80% of 452 stems/per acre which is 362 stems per acre.*

*A similar analysis was done of the 13 species that were found in the created shrub/forest wetlands within the Bank. All of the Bank species are native and of the 13 species, 7 are FAC or wetter. The results are included on Table 3.*

**Table 3 – One Horse Shrub/Forest Analysis Summary**

| Bank Species | Native/Non | Indictor Status | Stem/Acre |
|---|---|---|---|
| Douglas hawthorne | native | FAC | 90 |
| Oregon ash | native | FACW | 342 |
| Ponderosa pine | native | **FACU** | 6 |
| Black cotton wood | native | FAC | 39 |
| Service berry | native | **FACU** | 6 |
| Red osier dogwood | native | FACW | 6 |
| Pacific ninebark | native | FACW | 6 |
| Red flowering current | native | **FACU** | 22 |
| Nootka rose | native | FAC | 84 |
| Clustered rose | native | FAC | 95 |
| Pacific willow | native | FACW | 34 |
| Douglas spirea | native | FAC | 39 |
| Snowberry | native | **FACU** | 67 |
| Total stems per acre of FAC or wetter and native | | | 706 |

***Items in bold** do not meet bank performance standards

Required: Year 2 performance measure. There will be no more than 15% aerial coverage of non-native invasive species*. ***Met;*** *with 0% non-native invasive species found within in the plots.*

The herbaceous layer in the shrub and forest area will meet or exceed the following year 2 emergent habitat performance measures.

Required: At least 55% of the mean plant cover (including bare soil) will be comprised of native species – ***Met;*** *Native plant cover was 93.18%, while non-native cover (including bareground) was 6.82%*

Required: No more that 15% of the mean plant cover will be comprised of non-native invasive species – ***Met;*** *with 0 % of non-native invasive species found in the plots.*

Required: The wetlands moisture index is less than 3 –***Met;*** *mean prevelance index of the herbaceous layer is 2.16.*

## 6.0 PHOTO POINT MONITORING

Photos from the photo points are included as Attachment 3. Photos were taken on June 15, 2012.

# 7.0 CREDIT SALES SUMMARY

An initial 17.8 credits (30% of enhancement credits) were released in December 2006. Following the 2007 MBRT site visit Release #2 was approved pending submission of the monitoring report. The 2008 Monitoring Report was submitted and release #2 and a partial release #3 were issued by DSL on 09/09/08 and by the Corps on 08/14/08 for 19.11 credits. The remainder of release #3 and a partial release of #4 was issued by DSL on 1/26/2010 for 15.99 credits and by the Corps on 1/25/2010 for 7.72 credits. A combination of releases by both agencies yielded a total credit release of 52.9 credits on 1/26/10. On 7/7/11 7.31 credits were released by both agencies, resulting in 90% of the total credits available being released, for a total of 60.21 credits released Table 4 is a summary of the credit sales to date.

**Release 1** (Fall/Winter 2006): Up to 30 percent (of the enhancement areas until a hydrology delineation occurs on the creation areas), 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 (of the enhancement areas until a hydrology delineation occurs on the creation areas) 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).
**Completed**

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

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

**Release 5** (end of the 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 reviewed and approved by the MBRT.

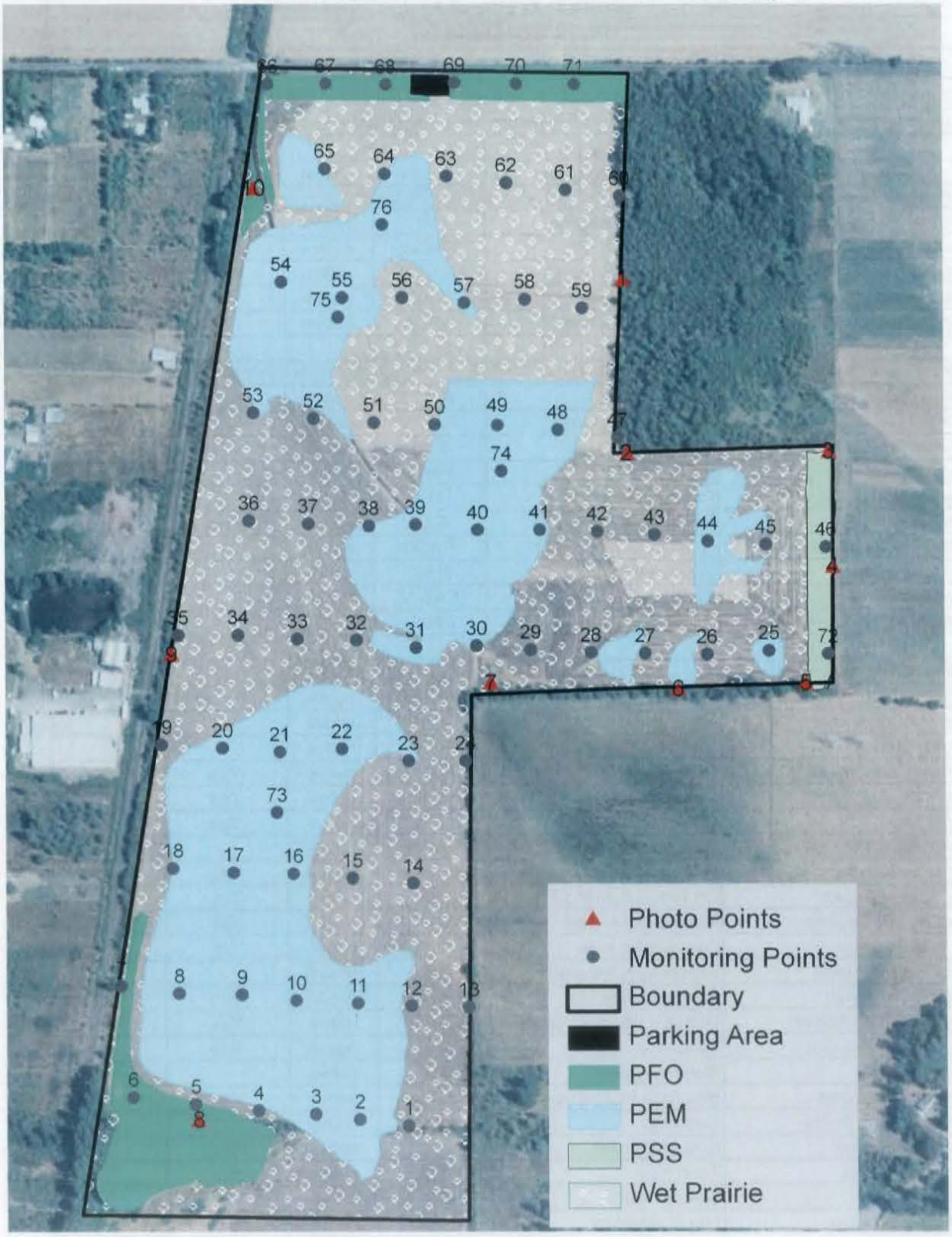
**Table 4: One Horse Credit Sales Summary**

| *DATE* | **NAME** | **LOCATION** | **DSL** | **CORP** | **ADDED** | **SOLD** | **BALANCE** |
|---|---|---|---|---|---|---|---|
| **12/5/06** | **INITIAL 30% RELEASE** | | **Permit Number** | | **17.8** | | **17.8** |
| 12/28/06 | City of Lebanon | T12S; R2W; Sec 16; DA; Lot 300 | 37235-RF | 2006-00825 | | 0.71 | **17.09** |
| 12/28/06 | Pace American | T12S; R2W; Sec 16; DA; Lot 301 | 37233-RF | 2006-00737 | | 5.02 | **12.07** |
| 12/28/06 | David Hunter | T12S; R2W; Sec 16; DA; Lot 302 | 36777-RF | 2006-00462 | | 1.38 | **10.69** |
| 12/28/06 | RC Ventures | T12S; R2W; Sec 16; DA; Lot 303 | 36799-RF | 2006-00462 | | 2.08 | **8.61** |
| 12/28/06 | Lane Manufacturing | T12S; R2W; Sec 16; DA; Lot 304 | 37302-RF | 2006-00786 | | 1.1 | **7.51** |
| 3/19/07 | RC Ventures | T12S; R2W; Sec 16; DA; Lot 305 | 36799-RF | 2006-00462 | | 0.046 | **7.464** |
| 3/20/07 | Lepman Properties | Sweet Home | 37745-RF | NA | | 0.2 | **7.264** |
| 4/3/07 | Linn County Paks Dept | Calkins Park Boating Facility | 37424-RF | 2006-00851 | | 0.154 | **7.11** |
| 7/11/07 | Western Warehousing, LLC | Lebanon | 38585-RF | NA | | 0.56 | **6.55** |
| 5/12/08 | Ralph Nauman | Thornton Lake Drive, Albany | 37957-RF | 2007-148 | | 0.15 | **6.4** |
| 7/21/08 | LCD Partners LLC | Lebanon; 2900 S. Main Road | 39960-RF | 2008-125 | | 0.31 | **6.09** |
| 7/25/08 | Pacific Cast Technologies | 2008 expansion –Pacific Cast T | 40084 | 2008-154 | | 0.28 | **5.81** |
| 8/5/08 | Benton Co. Public Works | 53rd Street | 34015-NP | NA | | .06 | **5.75** |
| 8/12/08 | Gilbert LLC | T12S, R2W, Sec 16; TL 808 &900 | 40946-RF | 2008-388 | | 1.92 | **3.83** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 8/25/08 | City of Lebanon | Lebanon Railroad Rdoad Facility | 41028 | 2008-439 | | 0.86 | **2.97** |
| **9/9/08** | **RELEASE #2 & part of #3** | | **Permit Number** | | **19.11** | | **22.08** |
| 10/29/08 | City of Lebanon | NW Industrial Improvements | 6392-ENF | NA | | 0.27 | **21.81** |
| 10/20/09 | First Creek, Lebanon | T12S, R1W, Sect. 4&5 | 43062-RF | 2009-457 | | 1.22 | **20.59** |
| **1/26/10** | **RELEASE #3 & part of #4** | | **Permit Number** | | **15.99** | | **36.58** |
| 7/1/11 | City of Lebanon | Stoltz Hill Rd. Lebanon, OR | 44572-RF | 2011-181-1 | | 0.68 | **35.9** |
| **7/11/11** | **RELEASE #4 (90%)** | | **Permit Number** | | **7.31** | | **43.21** |
| 10/15/11 | Lowe's | Oak St. & 9th, Albany, OR | 45917-RF | 2005-00045-2 | | 2.59 | **40.62** |
| 1/9/12 | Albany-Lebanon Investments LLC | T12S R02W Sections 3 & 4, Tax Lots 1900 & 2000 | 39843-RF | NWP-2007-00571 | | 3.32 | **37.3** |
| 6/18/12 | Evergreen Hospice | T11SR03Wsect20 tax lot AC00200 | 16749-FP | NA | | 0.63 | **36.67** |
| 7/18/12 | Linn Co. Rd Department | T10S, R2W, SEC 27 | 50629-GP | NWP-2012-2007-971/2 | | .033 | **36.637** |
| 9/10/12 | Western Warehousing LLC | T12S, R02W, SECT 3&10, Tax lot 100 | 38585-RF | NA | | 1.5 | **35.137** |
| 12/28/12 | CPF Inc | T13S, R01E, SECT 33&34, Tax lots 600, 601, & 5700 | 37003-RF | 2006-00525 | | 1.1 | **34.037** |
| **Total Sold** | | | | | | *26.173* | |

Attachment 1: Monitoring Map

# One Horse Slough Mitigation Bank
# Photo and Vegetation Monitoring Points




N

0 400 800 1,600 Feet

1 inch equals 466 feet

Attachment 2: Monitoring Data

| One Horse Slough Wetland Mitigation Bank | | | | | |
|---|---|---|---|---|---|
| **Plant Species List** | | | | | |
| **June-12** | | | | | |
| Includes only species identified in monitored plots (some species were found last year, but not this year, but remain on the list because they are still present just didn't make the monitoring plot). | | | | | |
| Botanical Name | Common Name | Status | Origin | Wet Prairie Species | Moisture Index |
| **Overstory Species** | | | | | |
| *Crataegus douglasii* | Douglas hawthorne | FAC | native | | 3 |
| *Fraxinus latifolia* | Oregon ash | FACW | native | | 2 |
| *Malus fusca* | Flowering crabapple | FACW | native | | 2 |
| *Pinus ponderosa* | Ponderosa pine | FAC | native | | 3 |
| *Populus angustifolia* | Black cottonwood | FACW | native | | 2 |
| | | | | | |
| **Scrub/shrub Species** | | | | | |
| *Amelanchier alnifolia* | Service berry | FACU | native | | 4 |
| *Cornus sericea* | Red osier dogwood | FACW | native | | 2 |
| *Douglas spirea* | Spiraea douglasii | FAC | native | | 3 |
| *Oemlaria cerasiformis* | Indian plum | FACU | native | | 4 |
| *Physocarpus capitatus* | Pacific ninebark | FACW | native | | 2 |
| *Rosa nutkana* | Nootka rose | FAC | native | Yes | 3 |
| *Ribies sanquineum* | Red flowering current | FACU | native | | 4 |
| *Rosa pisocarpa* | Clustered rose | FAC | native | | 3 |
| *Salix lasiandra* | Pacific willow | FACW | native | | 2 |
| *Symphoricarpos albus* | Snowberry | FACU | native | | 4 |
| | | | | | |
| **Herbaceous Species** | | | | | |
| *Achillea millefolium* | Yarrow | FACU | native | | 4 |
| *Alisma gramineum* | Narrow leaf water plantain | OBL | native | | 1 |
| *Alisma triviale* | Northern Water plantain | OBL | native | | 1 |
| *Camassia quamash* | Camas | FACW | native | Yes | 2 |
| *Carex densa* | Dense sedge | OBL | native | Yes | 1 |
| *Carex feta* | Green-sheath sedge | FACW | native | Yes | 2 |
| *Carex stipata* | Saw-beaked sedge | FACW | native | | 2 |
| *Carex unilateralis* | One-sided sedge | FACW | native | Yes | 2 |
| *Downingia elegans* | Common downingia | OBL | native | Yes | 1 |
| *Eleocharis acicularis* | Needle spike-rush | OBL | native | yes | 1 |
| *Eleocharis ovata* | Ovoid spike rush | OBL | native | Yes | 1 |
| *Eleocharis palustris* | Creeping spike rush | OBL | native | | 1 |
| *Epilobium ciliatum* | Fringed willoweed | FACW | native | Yes | 2 |
| *Epilobium densiflorum* | Dense spike-primrose | FACW | native | Yes | 2 |
| *Eriophyllum lanatum* | Oregon sunshine | NOL | native | Yes | 5 |
| *Gilia capitata* | Bluefield gilia | NOL | native | | 5 |
| *Gratiola ebracteata* | Bractless hedgehyssop | OBL | native | Yes | 1 |
| *Gnaphalium palustre* | Cudweed | FAC | native | Yes | 3 |
| *Juncus bolanderi* | Bolanders rush | OBL | native | Yes | 1 |
| *Juncus bufonius* | Toad rush | FACW | native | Yes | 2 |
| *Juncus tenuis* | Slender rush | FACW | native | Yes | 2 |
| *Ludwigia palustris* | Marsh seedbox | OBL | native | | 1 |

Attachment 2: Monitoring Data

| | | | | | |
|---|---|---|---|---|---|
| *Lupinus rivularis* | Stream-side lupine | FAC | native | | 3 |
| *Lythrum portula* | Spatulaleaf loosestrife | OBL | non | | 1 |
| *Mimulus guttatus* | Common monkey-flower | OBL | native | Yes | 1 |
| *Najas guadalupensis* | Common water-nymph | OBL | native | | 1 |
| *Navarretia intertexta* | Naverretia | FACW | native | Yes | 2 |
| *Plagiobothrys figuratus* | Fragrant popcorn flower | FACW | native | Yes | 2 |
| *Plagiobothrys scouleri* | Scouler's popcorn flower | FACW | native | Yes | 2 |
| *Persicaria hydropiperoides* | Waterpepper | OBL | native | | 1 |
| *Prunella vulgaris* | Common selfheal | FACU | native | Yes | 4 |
| *Rorippa curvisiliqua* | Western yellowcress | OBL | native | Yes | 1 |
| *Potamogeton natans* | Floating-leaved pondweed | OBL | native | | 1 |
| *Sagittaria latifolia* | Wapato | OBL | native | | 1 |
| *Sidalcea cusickii* | Cusick's checkermallow | FACW | native | Yes | 2 |
| *Sisyrinchium angustifolium* | Blue-eyed grass | FACW | native | Yes | 2 |
| *Sparganium emersum* | Simple-stem bur-reed | OBL | native | | 1 |
| *Typha latifolia* | Common cattail | OBL | native | | 1 |
| *Veronica peregrina var. xalap* | Hairy purlane speedewell | OBL | native | Yes | 1 |
| | | | | | |
| ***Grass Species*** | | | | | |
| *Agrostis exarata* | Spike bentgrass | FACW | native | Yes | 2 |
| *Alopecurus aequalis* | Short-awned foxtail | OBL | native | | 1 |
| *Alopecurus geniculatus* | Water foxtail | OBL | native | | 1 |
| *Beckmania syzigachne* | American Sloughgrass | OBL | native | Yes | 1 |
| *Deschampsia cespitosa* | Tufted hairgrass | FACW | native | Yes | 2 |
| *Deschampsia danthonioides* | Annual hairgrass | FACW- | native | Yes | 2 |
| *Deschampsia elongata* | Slender hairgrass | FACW | native | Yes | 2 |
| *Elymus glaucus* | Blue wildrye | FACU | native | | 4 |
| *Glyceria borealis* | Floating mannagrass | OBL | native | | 1 |
| *Glyceria occidentalis* | Western mannagrass | OBL | native | | 1 |
| *Hordeum brachyantherm* | Meadow barley | FACW | native | Yes | 2 |
| *Leersia oryzoides* | Rice cut-grass | OBL | native | | 1 |
| *Lolium multiflorum* | Annual rye grass | FACU | non | | 4 |
| *Panicum capillare* | Common witchgrass | FACU | native | Yes | 4 |
| *Poa trivialis* | Rough-stalk bluegrass | FAC | non | | 3 |
| *Vulpia myuros* | Rattail fescue | FAC | non | | 3 |

Attachment 2: Monitoring Data

## One Horse Slough Wetland Mitigation Bank

### Wetland Prairie Plot Data

### June 15, 2012

| Species Observed | | | | Wet/Prairie | | Ave. % | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Botanical Name | Common Name | Status | Origin | Vernal Pool Species | Moisture Index | Cover ea. Species | 1 | 4 | 12 | 13 | 14 | 15 | 16 | 19 | 23 |
| No Scrub/Shrub Species found in vegetation plots | | | | | | | | | | | | | | | |
| **Herbaceous Species - percent cover** | | | | | | | | | | | | | | | |
| *Achilea millefolium* | Yarrow | FACU | native | | 4 | 0.41 | | | | | | | | | |
| *Alisma gramineum* | Narrow leaf water plantain | OBL | native | | 1 | 0.00 | | | | | | | | | |
| *Camassia quamash* | Camas | FACW | native | Yes | 2 | 0.00 | | | | | | | | | |
| *Carex stipata* | Saw-beaked sedge | FACW | native | | 2 | 0.00 | | | | | | | | | |
| *Eleocharis ovata* | Ovoid spike rush | OBL | native | Yes | 1 | 0.00 | | | | | | | | | |
| *Eleocharis palustris* | Creeping spike rush | OBL | native | | 1 | 0.00 | | | | | | | | | |
| *Epilobium ciliatum* | Fringed willoweed | FACW | native | Yes | 2 | 0.41 | | | 5 | | | 5 | | | |
| *Epilobium densiflorum* | Dense spike-primrose | FACW | native | Yes | 2 | 3.38 | | | | | | | | | |
| *Eriophyllum lanatum* | Oregon sunshine | NOL | native | Yes | 5 | 0.41 | | | | | | | | | |
| *Gnaphalium palustre* | Cudweed | FAC | native | Yes | 3 | 1.62 | | | | | | | | 5 | |
| *Juncus bolanderi* | Bolanders rush | OBL | native | Yes | 1 | 0.00 | | | | | | | | | |
| *Juncus bufonius* | Toad rush | FACW | native | Yes | 2 | 3.38 | 5 | | 10 | 5 | | | | | |
| *Juncus tenuis* | Slender rush | FACW | native | Yes | 2 | 0.41 | | | | | | 5 | | | |
| *Lactuca serriola* | Prickly lettuce | FACU | non | | 4 | 0.27 | | | | | | | | | |
| *Lythrum portula* | Spatulaleaf loosestrife | OBL | non | | 1 | 0.95 | | | 10 | | | | | 5 | |
| *Mimulus guttatus* | Common monkey-flower | OBL | native | Yes | 1 | 0.14 | | | | | | | | | |
| *Navarretia intertexta* | Naverretia | FACW | native | Yes | 2 | 0.14 | | | | | | | | | |
| *Plagiobothrys figuratus* | Fragrant popcorn flower | FACW | native | Yes | 2 | 0.81 | | | 10 | | | | | | |
| *Plagiobothrys scouleri* | Scouler's popcorn flower | FACW | native | Yes | 2 | 0.54 | | | 5 | 5 | | | | | |
| *Prunella vulgaris* | Common selfheal | FACU | native | Yes | 4 | 1.22 | | | | | | | | | |
| *Rorippa curvisiliqua* | Western yellowcress | OBL | native | Yes | 1 | 0.95 | | | | | | | | 5 | |
| *Sidalcea cusickii* | Cusick's checkermallow | FACW | native | Yes | 2 | 2.70 | | | 15 | 10 | | | | | |
| *Veronica peregrina var. xala* | Hairy purlane speedewell | OBL | native | Yes | 1 | 0.14 | | | | | | | | | |
| **Grass Species** | | | | | | | | | | | | | | | |
| *Agrostis exarata* | Spike bentgrass | FACW | native | Yes | 2 | 12.03 | 20 | 10 | 20 | 10 | 45 | 30 | 20 | 15 | 20 |
| *Alopecurus aequalis* | Short-awned foxtail | OBL | native | | 1 | 0.00 | | | | | | | | | |
| *Alopecurus geniculatus* | Water foxtail | OBL | native | | 1 | 0.14 | | | | | | | | | |
| *Beckmania syzigachne* | American Sloughgrass | OBL | native | Yes | 1 | 0.14 | | | | | | | | | |
| *Deschampsia cespitosa* | Tufted hairgrass | FACW | native | Yes | 2 | 38.51 | 30 | 40 | 25 | 70 | 25 | 40 | 65 | 40 | 60 |
| *Deschampsia danthonioides* | Annual hairgrass | FACW- | native | Yes | 2 | 0.00 | | | | | | | | | |
| *Deschampsia elongata* | Slender hairgrass | FACW | native | Yes | 2 | 0.81 | | | | | | 5 | | | |
| *Glyceria occidentalis* | Western mannagrass | OBL | native | | 1 | 0.00 | | | | | | | | | |
| *Hordeum brachyantherm* | Meadow barley | FACW | native | Yes | 2 | 9.59 | 30 | 15 | | | 10 | | | 10 | |
| *Leersia oryzoides* | Rice cut-grass | OBL | native | | 1 | 0.00 | | | | | | | | | |
| *Lolium multiflorum* | Annual rye grass | FACU | non | | 4 | 0.00 | | | | | | | | | |
| *Panicum capillare* | Common witchgrass | FACU | native | Yes | 4 | 2.84 | | 10 | | | | | | | |
| *Poa trivialis* | Rough-stalk bluegrass | FAC | non | | 3 | 0.00 | | | | | | | | | |
| *Vulpia myuros* | Rattail fescue | FAC | non | | 3 | 0.00 | | | | | | | | | |
| Bareground Mean = | 18.11 | | | | | | 15 | 25 | | | 20 | 15 | 15 | 20 | 20 |
| Relative % Native canopy cover | | | Mean = | 80.68 | | | 85 | 75 | 90 | 100 | 80 | 85 | 85 | 75 | 80 |
| Relative % non-native invasive canopy cover : | | | Mean = | 0.00 | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Relative % non-native canopy cover, includes bareland: | | | Mean = | 19.32 | | | 15 | 25 | 10 | 0 | 20 | 15 | 15 | 25 | 20 |
| % of Total Vegetation that is Native = | | 99.05 | | Percent of Total Vegetation that is Non-native = | | | | | | 0.95 | | | | | |
| Prevelance Index | | | Mean = | 2.13 | | | 2.00 | 2.27 | 1.90 | 2.00 | 2.00 | 2.00 | 2.00 | 1.94 | 2.00 |
| Total # of native Species: 22 | | # of Wet Praire or Vernal Pool Species = 20 | | | | | | | | | | | | | |
| Total number of Species Sampled: 16 Total Number of Sample Plots: 37 | | | | | | | | | | | | | | | |
| Bareground due to: New forbs planting #33, #34, #36, # 37, #56, #58, #59, #61, #62, #63 | | | | | | | | | | | | | | | |
| Bareground (organic litter) | #4, #15, #16, #23, #26, #27, #29, #43, #45, #51 | | | | | | | | | | | | | | |

Attachment 2: Monitoring Data

| Plot #s | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | 26 | 27 | 28 | 29 | 33 | 34 | 35 | 36 | 37 | 41 | 42 | 43 | 45 | 47 | 50 | 51 | 52 | 53 | 56 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | 5 | | |
| | 5 | | | | 10 | 15 | | 5 | 15 | | | | | | | | | | | 15 | 15 | | 5 | 10 | 20 | | 10 |
| | 5 | | | 10 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 10 | 5 | | 5 | 5 | | | | | | | | | | | 5 | 5 | | 5 | 5 | 5 | | 5 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 10 | 10 | | 10 | 5 | | | | | | | | | | | | 5 | | 20 | 35 | 10 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | 10 |
| | | | | 10 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 5 | | | | | | | | | | | | | | | | 5 | | 5 | | | | 5 |
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| | | | | | 5 | | | 5 | | | | | | | | | | | | 5 | 5 | | | | | | |
| | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 5 | 5 | | 5 | 5 | | | | | | | | | | | 5 | 5 | | | 5 | 5 | | 5 |
| | | | | | 5 | | | 5 | 10 | | | | | | | | | | | | 5 | | | | 5 | | |
| | 40 | | | 5 | 10 | 5 | | | | | | | | | | | | | | | 5 | | | | 5 | | 5 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | 5 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 20 | 15 | 10 | 5 | 5 | | 5 | 5 | 35 | 25 | | 15 | | | 20 | 30 | | 35 | | | | 10 | 10 | | | 10 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | 5 | | | | | | | | | | | | | | | | | | |
| | | | | | | | | 5 | | | | | | | | | | | | | | | | | | | |
| 80 | 10 | 60 | 25 | 25 | 10 | | 80 | 5 | | 40 | 65 | 80 | 60 | 90 | 100 | 40 | 40 | 10 | 50 | | | 70 | | | | 60 | 30 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 25 | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | 20 | | 10 | 20 | 5 | 5 | | | | 5 | 10 | | 20 | 10 | 80 | 15 | | | 10 | 10 | 15 | 15 | 40 | |
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| | | | 30 | | | | | | | | | | | | | | | | | 35 | 30 | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 30 | 20 | 5 | 20 | 25 | 45 | | 45 | 40 | 25 | 10 | 20 | 20 | | | 20 | 20 | 10 | | 25 | 20 | 20 | 45 | 15 | 25 | | 15 |
| 80 | 70 | 80 | 95 | 70 | 70 | 55 | 100 | 55 | 60 | 75 | 90 | 80 | 80 | 100 | 100 | 80 | 80 | 90 | 100 | 75 | 75 | 80 | 50 | 85 | 75 | 100 | 80 |
| 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 | 0 |
| 20 | 30 | 20 | 5 | 30 | 30 | 45 | 0 | 45 | 40 | 25 | 10 | 20 | 20 | 0 | 0 | 20 | 20 | 10 | 0 | 25 | 25 | 20 | 50 | 15 | 25 | 0 | 20 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.00 | 2.21 | 2.00 | 2.63 | 2.63 | 2.13 | 2.27 | 2.00 | 2.09 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 3.20 | 2.81 | 2.00 | 2.00 | 2.29 | 2.27 | 2.0 | 2.1 |

# Attachment 2: Monitoring Data

## One Horse Slough Wetland Mitigation Bank

### Emergent Marsh (PEMC) Plot Data - August 31, 2012

| Species Observed | | | | | Ave. % | Sample Plot Number | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Moisture | Cover | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Botanical Name | Common Name | Status | Origin | Index | ea. Species | 2 | 3 | 8 | 9 | 10 | 11 | 17 | 18 | 20 | 21 | 22 | 25 | 30 | 31 | 32 | 38 | 39 | 40 | 44 | 48 | 49 | 54 | 55 | 57 | 73 | 74 | 75 | 76 |
| **Herbaceous Species - percent cover** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Alisma gramineum* | Narrow leaf water plantain | OBL | native | 1 | 1.07 | | | | | 20 | 10 | | | | | | | | | | | | | | | | | | | | | | |
| *Alisma triviale* | Northern Water plantain | OBL | native | 1 | 5.71 | 10 | | | | | 10 | | 40 | 40 | | | 30 | | | | | | | | | | | 10 | | | | | 20 |
| *Downingia elegans* | Common downingia | OBL | native | 1 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Eleocharis acicularis* | Needle spike-rush | OBL | native | 1 | 1.96 | | | | | | | | | | | 20 | | | | | | | | | | | | 25 | | 10 | | | |
| *Eleocharis ovata* | Ovoid spike rush | OBL | native | 1 | 4.82 | | | | | | | | | | | 20 | 25 | | 25 | | | | | 10 | | | | 35 | | 20 | | | |
| *Eleocharis palustris* | Creeping spike rush | OBL | native | 1 | 23.57 | 60 | | | | | | 85 | | | | 20 | | 20 | 5 | 70 | 20 | | | 90 | 90 | | | 10 | 20 | 30 | 90 | 40 | 10 |
| *Gratiola ebracteata* | Bractless hedgehyssop | OBL | native | 1 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Gnaphalium palustre* | Cudweed | FAC | native | 3 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Juncus bolanderi* | Bolanders rush | OBL | native | 1 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Juncus bufonius* | Toad rush | FACW | native | 2 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Ludwigia palustris* | Marsh seedbox | OBL | native | 1 | 0.89 | | | | | | | | | | | | | | | | | | | | 10 | | | | | | 5 | | 10 |
| *Lythrum portula* | Spatulaleaf loosestrife | OBL | non | 1 | 1.43 | | | | | | | | | | 5 | | | | 15 | | | | | | | | | 20 | | | | | |
| *Najas guadalupensis* | Common water-nymph | OBL | native | 1 | 3.57 | | 50 | | 50 | | | | | | | | | | | | | | | | | | | | | | | | |
| *Plagiobothrys figuratus* | Fragrant popcorn flower | FACW | native | 2 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Plagiobothrys scouleri* | Scouler's popcorn flower | FACW | native | 2 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Persicaria hydropiperoides* | Waterpepper | OBL | native | 1 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Potamogeton natans* | Floating-leaved pondweed | OBL | native | 1 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Sagittaria latifolia* | Wapato | OBL | native | 1 | 4.11 | | | | | | 50 | | 15 | 15 | | | | 30 | | | | | | | | | | | | | 5 | | |
| *Sparganium emersum* | Simple-stem bur-reed | OBL | native | 1 | 16.61 | | | 25 | | 70 | 30 | | 20 | 20 | | | | 30 | | | | 50 | 70 | | | 50 | 40 | | | | | | 60 |
| *Typha latifolia* | Common cattail | OBL | native | 1 | 14.82 | 30 | | 65 | | | | 15 | 25 | 25 | 95 | | | | | | 50 | | 30 | | | 50 | | 20 | | 10 | | | |
| **Grass Species** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Agrostis exarata* | Spike bentgrass | FACW | native | 2 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Alopecurus geniculatus* | Water foxtail | OBL | native | 1 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Beckmania syzigachne* | American Sloughgrass | OBL | native | 1 | 5.00 | | | | | | | | | | | 25 | | | 60 | 30 | | | | | | | | 15 | | 10 | | | |
| *Deschampsia cespitosa* | Tufted hairgrass | FACW | native | 1 | 0.18 | | | | | | | | | | | 5 | | | | | | | | | | | | | | | | | |
| *Glyceria borealis* | Floating mannagrass | OBL | native | 1 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Hordeum brachyantherm* | Meadow barley | FACW- | native | 2 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Leersia oryzoides* | Rice cut-grass | OBL | native | 1 | 8.21 | | | | | | | | | | | 10 | 10 | 20 | | | 30 | | | | | | | | 80 | 20 | | 60 | |
| *Panicum capillare* | Common witchgrass | FACU | native | 4 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bareground (due to recent inundation) Mean = | | 3.39 | | | | | | | | | | | | | | | 35 | | | | | | | | | | 60 | | | | | | |
| Open Water Mean = | | 7.68 | | | | | 50 | 10 | 50 | 10 | | | | | | | | 45 | | | | 50 | | | | | | | | | | | |
| Relative Percent Native Cover | | | Mean = | 95.18 | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 95 | 100 | 65 | 100 | 85 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 40 | 80 | 100 | 100 | 100 | 100 | 100 |
| Relative Percent Non-Native Cover (includes bareland) | | | Mean = | 4.82 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 35 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 60 | 20 | 0 | 0 | 0 | 0 | 0 |
| Relative % non-native invasive canopy cover : | | | Mean = | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Percent of Total Vegetation Cover That is Native = | | | Mean = | 98.57 | Percent of Total Vegetation Cover That is Non-Native = | | | | | | | | 1.43 | | | | | | | | | | | | | | | | | | | | |
| Prevelance Index | | | Mean = | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Total Sample points = 28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# Attachment 2: Monitoring Data

## One Horse Slough Wetland Mitigation Bank

### Planted Shrub/Forest (PFO) Sample Plot Monitoring Results - June 15, 2012

| Species Observed | | | | | Ave.% | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Moisture | Cover | 5 | 6 | 7 | 46 | 66 | 67 | 68 | 69 | 70 | 71 | 72 |
| **Botanical Name** | **Common Name** | **Status** | **Origin** | **Index** | **ea. Species** | | | | | | | | | | | |
| **Overstory Species. - stem count within 30' diameter** | | | | | | | | | | | | | | | | |
| *Crataegus douglasii* | Douglas hawthorne | FAC | native | 3 | | 1 | | 7 | 2 | 4 | | 1 | | | | 1 |
| *Fraxinus latifolia* | Oregon ash | FACW | native | 2 | | 18 | 5 | 3 | 1 | 4 | 6 | 5 | 4 | 7 | 8 | |
| *Malus fusca* | Flowering crabapple | FACW | native | 2 | | | | | | | | | | | | |
| *Pinus ponderosa* | Ponderosa pine | FACU | native | 4 | | | | 1 | | | | | | | | |
| *Populus balemifera* | Black cotton wood | FAC | native | 3 | | 1 | 1 | | | 2 | 2 | 1 | | | | |
| Total # of Plots: 11 | | | | | | | | | | | | | | | | |
| Total Stems per plot | | | | | | 20 | 6 | 11 | 3 | 10 | 8 | 7 | 4 | 7 | 8 | 1 |
| Average Stems per Plot = | 7.7 | Avg Stems per Plot (fac or wetter) = | | | 7.2 | | | | | | | | | | | |
| Mean Trees/Acre = | 476 | | | | | | | | | | | | | | | |
| Mean Trees/Acre(fac or wetter) = | 443 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| **Shrub Species. - stem count within 30' diameter** | | | | | | | | | | | | | | | | |
| *Amelanchier alnifolia* | Service berry | FACU | native | 4 | | | | | 1 | | | | | | | |
| *Cornus sericea* | Red osier dogwood | FACW | native | 2 | | | | | | | | | 1 | | | |
| *Oemlaria cerasiformis* | Indian plum | FACU | native | 4 | | | | | | | | | | | | |
| *Physocarpus capitatus* | Pacific ninebark | FACW | native | 2 | | | | | | | | | | | | 1 |
| *Ribies sanquineum* | Red flowering current | FACU | native | 4 | | | | | 3 | | | | | | | 1 |
| *Rosa nutkana* | Nootka rose | FAC | native | 3 | | | | | 5 | 2 | | 1 | | | 1 | 6 |
| Rosa pisocarpa | Clustered rose | FAC | native | 3 | | | 2 | | 6 | 2 | 3 | 1 | | 1 | | 2 |
| *Salix lasiandra* | Pacific willow | FACW | native | 2 | | 1 | 3 | | | | | | 2 | | | |
| *Spiraea douglasii* | Douglas spirea | FAC | native | 3 | | | | | 2 | | | 1 | | | | 4 |
| *Symphoricarpos albus* | Snowberry | FACU | native | 4 | | 2 | 1 | 1 | 2 | | 1 | 2 | | | | 3 |
| Total # of Plots: (11) | | | | | | | | | | | | | | | | |
| Total Stems per plot | | | | | | 3 | 6 | 1 | 19 | 4 | 4 | 5 | 3 | 1 | 1 | 17 |
| Average Stems per Plot = | 5.8 | Avg Stems per Plot (fac or wetter) = | | | 4.3 | | | | | | | | | | | |
| Mean Shrubs/Acre = | 359 | | | | | | | | | | | | | | | |
| Mean Shrubs/Acre(fac or wetter) = | 263 | | | | | | | | | | | | | | | |
| **Herbaceous Species - percent cover** | | | | | | | | | | | | | | | | |
| *Achillea millefolium* | Yarrow | FACU | native | 4 | 0.91 | | | | | | | | | | | 10 |
| *Carex densa* | Dense sedge | OBL | native | 1 | 2.73 | 30 | | | | | | | | | | |
| *Carex unilateralis* | One-sided sedge | FACW | native | 2 | 2.27 | | | | 25 | | | | | | | |
| *Epilobium ciliatum* | Fringed willoweed | FACW | native | 2 | 9.09 | | | | 60 | | 10 | 10 | | | | 20 |
| *Eriophyllum lanatum* | Oregon sunshine | NOL | native | 5 | 5.91 | | | | | | 15 | | | | | 50 |
| *Gilia capitata* | Bluefield gilia | NOL | native | 5 | 0.00 | | | | | | | | | | | |
| *Gnaphalium palustre* | Cudweed | FAC | native | 3 | 0.45 | | | 5 | | | | | | | | |
| *Juncus bufonius* | Toad rush | FACW | native | 2 | 0.00 | | | | | | | | | | | |
| *Juncus tenuis* | Slender rush | FACW | native | 2 | 4.55 | 30 | | | | | | | | 10 | 10 | |
| *Lupinus rivularis* | Stream-side lupine | FAC | native | 3 | 0.45 | | | | 5 | | | | | | | |
| *Lythrum portula* | Spatulaleaf loosestrife | OBL | non | 1 | 0.45 | 5 | | | | | | | | | | |
| *Navarretia intertexta* | Naverretia | FACW | native | 2 | 0.00 | | | | | | | | | | | |
| *Sidalcea cusickii* | Cusick's checkermallow | FACW | native | 2 | 2.27 | | | 20 | | 5 | | | | | | |
| *Sisyrinchium angustifolium* | Blue-eyed grass | FACW | native | 2 | 0.00 | | | | | | | | | | | |
| **Grass Species** | | | | | | | | | | | | | | | | |
| *Agrostis exarata* | Spike bentgrass | FACW | native | 2 | 33.18 | | 80 | 30 | 10 | | 30 | 35 | 70 | 50 | 60 | |
| *Alopecurus geniculatus* | Water foxtail | OBL | native | 1 | 0.00 | | | | | | | | | | | |
| *Beckmania syzigachne* | American Sloughgrass | OBL | native | 1 | 0.91 | | 5 | | | | | | 5 | | | |
| *Deschampsia cespitosa* | Tufted hairgrass | FACW | native | 2 | 19.55 | 10 | | 20 | | 20 | 35 | 55 | 15 | 40 | 20 | |
| *Deschampsia elongata* | Slender hairgrass | FACW | native | 2 | 2.27 | | | 5 | | 20 | | | | | | |
| *Elymus glaucus* | Blue wildrye | FACU | native | 4 | 0.00 | | | | | | | | | | | |
| *Hordeum brachyantherm* | Meadow barley | FACW | native | 2 | 8.64 | 10 | 15 | | | 30 | 10 | | | | 10 | 20 |
| *Panicum capillare* | Common witchgrass | FACU | native | 4 | 0.00 | | | | | | | | | | | |
| *Poa annua* | Annual bluegrass | FAC | non | 3 | 0.00 | | | | | | | | | | | |
| *Poa trivialis* | Rough-stalk bluegrass | FAC | non | 3 | 0.00 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Bareground Mean = | 6.36 | | | | | 15 | | 20 | | 25 | | | 10 | | | |
| Relative % native cover (herbaceous only) | | | **Mean =** | **93.18** | | 80 | 100 | 80 | 100 | 75 | 100 | 100 | 90 | 100 | 100 | 100 |
| Relative % non-native invasive (herbaceous layer only): | | | **Mean =** | **0** | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Relative % non-native (includes bareground,herbaceous layer only): | | | **Mean =** | **6.82** | | 20 | 0 | 20 | 0 | 25 | 0 | 0 | 10 | 0 | 0 | 0 |
| Percent of Total Vegetation Cover That is Native = | | | **Mean =** | **99.55** | Percent of Total Vegetation Cover That is Non-Native = | | | | | | | | **0.45** | | | |
| Prevelance Index (herbacous only) | | | **Mean =** | **2.16** | | 1.59 | 1.95 | 2.06 | 2.05 | 2.00 | 2.45 | 2.00 | 1.94 | 2.00 | 2.00 | 3.70 |
| Total Sample points = 11 | | | | | | | | | | | | | | | | |
| Bareground due to age, or recent inundation= 5, 7, 69, Organic litter=66 | | | | | | | | | | | | | | | | |

Attachment 3: Monitoring Photos

# One-Horse Slough Mitigation Bank 2012 Photo Monitoring

Photo Point 1 North

Photo Point 1 South

Photo Point 1 West

Photo Point 2 North

Photo Point 2 East

Photo Point 2 South

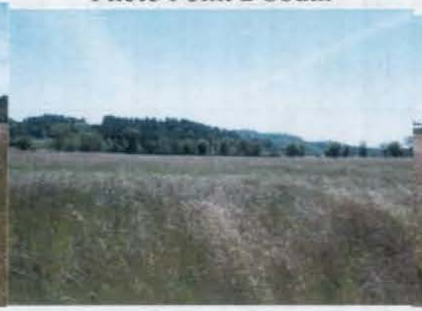

Photo Point 2 West

Photo Point 3 Southwest

Photo Point 3 South

Photo Point 3 West

Attachment 3: Monitoring Photos

Photo Point 4 North

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 West

Attachment 3: Monitoring Photos

Photo Point 7 North

Photo Point 7 East

Photo Point 7 Southwest

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 NE

Photo Point 9 SE

Photo Point 9 South

Attachment 3: Monitoring Photos

Photo Point10 North

Photo Point 10 East

Photo Point 10 South

Photo Point 10 SE