Mitigation Monitoring Annual Report Year 8 (2019): Tualatin Valley Environmental Bank

1: *Tualatin Valley Environmental Bank* Identifiers:

DSL Permit # APP46796 Corps Permit # NWP-2009-552 Permittee: Dave Heikes Farms Inc.
County: Washington Report Date: Dec.16, 2019 Monitoring Year: 8
Date Removal-Fill Activity Completed: October 2011
Date mitigation was completed: Grading- October 2011, Planting- 2011-2015
Date(s) of data collection: July 10-19, 2019
Report prepared by: C. Jonas Moiel & Margret Harburg

2: Monitoring Report Purpose:

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

- ❑ Compensatory **freshwater, non-tidal** 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 had a monitoring requirement.
- ❑ **Voluntary** wetland enhancement, creation or restoration (General authorization or individual permit) not funded with money from DSL's wetland mitigation fund.
- ❑ Voluntary wetland enhancement, creation or restoration (General authorization or individual permit) funded with money from DSL's **wetland mitigation fund**.
- **X** **Mitigation Bank** Report
- ❑ Other _____

3: Results:

	Performance standards (verbatim from permit)	Fully Met? (Y/N)	Comments/Reason for shortfall (mark NA if doesn't apply this year)
VEGETATION PERFORMANCE STANDARDS			
Herbaceous (PEM) Wetlands			
FACW or FAC Dominated Herbaceous Wetlands			
1.1	The combined cover of native species for Year 1 shall be 40%; Year 2 shall be 50%; and Year 3 and thereafter shall be 60%.	Y	Average cover of native species in 20 sample plots in this habitat class for Year 8 was 86%. At an 80% confidence level, the upper confidence interval (CI) was 93% and the lower CI was 79%. This meets the final standard (Year 3 & thereafter).
1.2	The cover of non-native invasive species during the 1st and 2nd years shall not exceed 30%. For year 3 and thereafter, the non-native invasive cover, excluding reed canarygrass (*Phalaris arundinacea*), shall not exceed 10%. The cover of reed canary grass shall not exceed 10% for year 3 and thereafter.	Y	Average cover of invasive species in this habitat class for Year 8 rounded to 1%. At an 80% confidence level, the upper confidence interval (CI) was 2% and the lower CI was 0%. No reed canarygrass was present in any sample plot. This meets the final standard (Year 3 & thereafter).

1.3	Bare substrate represents no more than 20% cover by the 3rd year after planting.	Y	There was a total rounded average of 4% bare substrate, which consisted of bare mineral soil or moss in this habitat. This year there was no cover of dead, sprayed non-native plants in this habitat.The upper CI was 6% and the lower CI was 1%. This meets the final standard (Year 3 & thereafter).
1.4	The standard for diversity in herbaceous wetlands is at least 6 native species, each with 5% or more average cover and occurring in at least 10% of the plots by the 3rd year after planting.	N	This habitat is not meeting the standard for the first time since Year 3, with 4 native species meeting the diversity criteria: *Deschampsia cespitosa, Leersia oryzoides, Lotus unifoliatus, and Carex obnupta*.
1.5	The hydrophytic vegetation standard is that the Prevalence Index is $\leq$ 3.0 and/or the vegetation passes the "50/20 rule" for dominance of hydrophytic vegetation.	Y	The average rounded Prevalence Index (PI) for the habitat class this year was 2 (FACW). This meets the final standard (Year 3 & thereafter).
OBL Dominated Herbaceous Wetlands			
2.1	The standard for native cover for Year 1 shall be 10%; Year 2 shall be 20%; and Year 3 and thereafter shall be 40%.	Y	Average cover of native species in 5 herbaceous plots in this habitat class for Year 8 was 83%, which exceeds the final (Year 3 and thereafter) standard. At an 80% confidence level, the upper confidence interval (CI) was 94% and the lower CI was 83%.
2.2	The cover of non-native invasive species during the 1st and 2nd years shall not exceed 30%. For year 3 and thereafter, the non-native invasive cover, excluding reed canarygrass, shall not exceed 10%. The cover of reed canary grass shall not exceed 10% for year 3 and thereafter.	Y	The average invasive species cover in this habitat class was 0%; no invasive species were present in any plots. Thus, at an 80% confidence level, the upper confidence interval (CI) and the lower CI were both 0%. This meets the final standard (Year 3 & thereafter).
Forested (PFO) Wetlands, Shrub dominated (PSS) Wetlands and Buffers			

3.1	The combined cover of native species for Year 1 shall be 40%; Year 2 shall be 50%; and Year 3 and thereafter shall be 60%.	PFO: Y PSS: Y Buffer: Y	**PFO:** Average cover of native species in the 34 herbaceous plots for this habitat class for Year 8 was 75% (upper CI = 81%, lower CI = 68%). There was an average of 55% cover of native woody species in the 18 woody sample plots (upper CI = 65%, lower CI =46%). Combining the herb & woody averages gives a **total of 130%** native cover, which meets the final standard (Year 3 & thereafter). **PSS:** Average cover of native species in the 41 herbaceous plots for this habitat class for Year 8 was 32% (upper CI= 39%, lower CI = 26%). There was an average of 87% cover of native woody species in the 20 woody sample plots (upper CI = 92%, lower CI =81%). Combining the herb & woody averages gives a **total of 119%** native cover, which meets the final standard (Year 3 & thereafter). **Buffer:** Average cover of native species in the 28 herbaceous plots for this habitat class was 49% (upper CI = 57%, lower CI = 41%). There was an average of 35% cover of native woody species in the 14 woody sample plots (upper CI = 40, lower CI =30). Combining the herb & woody averages gives a **total of 84%** native cover, which meets the Year 3 standard (this is Year 5 for the buffers).
3.2	The combined cover of non-native invasive species will not exceed 30% by Year 3 and thereafter.	PFO:Y PSS:Y Buffer: Y	**PFO:** The average cover of invasives in the herb plots for this class rounded to 1% (upper CI =1%, lower CI= 0%); invasive cover in the woody plots was 0% (upper & lower CI= 0). This meets the final standard (Year 3 & thereafter). **PSS:** The average cover of invasives in the herb plots for this class was 6% (upper CI=9%, lower CI=4%); invasive cover in the woody plots rounded to 0% (upper & lower CI=0%). This meets the final standard (Year 3 & thereafter). **Buffer:** The average cover of invasives in the herb plots rounded to 8% (upper CI= 12%. lower CI=5%) and average invasive cover in the woody plots rounds to 0% (upper CI & lower CI= 0%).
3.3	Bare substrate represents no more than 40% cover by the 3rd year.	PFO:Y PSS:Y Buffer: Y	**PFO**: The average is 6% in the herbaceous plots (upper CI= 8%, lower CI =5%). **PSS:** the average is 22% in the herbaceous plots (upper CI=30%, lower CI =14%). **Buffer:** The bare substrate averages 6% (upper CI= 8%, lower CI= 4%). **Note:** As of 2015 and thereafter, any herbaceous plot having $\geq$ 60% shade from woody species is excluded from the bare substrate criteria.

3.4	By Year 3 and thereafter, there are at least 6 different native species. To qualify, a species must have at least 5% average cover in the habitat class, and occur in at least 10% of the plots sampled.	PFO:Y PSS: Y Buffer: Y	**PFO:** 8 native species (*Deschampsia cespitosa, Leersia oryzoides, Impatiens capensis, Polgonum hydropiperoides, Sparganium emersum* [herbs] and *Fraxinus latifolia, Salix hookeriana & Salix lucida var. lasiandra (lasiandra)* [woody species]) met the criteria. **PSS**: 8 species (*Impatiens capensis, Scirpus microcarpus* [herbs], and *Cornus sericea ssp. sericea, Fraxinus latifolia, Populus balsalmifera, Salix hookeriana, Salix sitchensis, Salix lucida* var. *lasiandra* and [woody species]) met the criteria. **Buffer:** 6 native species, including 4 herb species (Deschampsia cespitosa, *Elymus glaucus, Hordeum brachyantherum* and *Festuca rubra* and 2 woody species *(Mahonia aquifolium, Pseudotsuga menziesii*) met the criteria.
3.5	The density of woody vegetation is at least 1,000 native plants (shrubs) and/or stems (trees) per acre, including native volunteers. After the areal canopy cover (*including* shrub cover) is 50% or greater, there will be no minimum number of plants/stems. Woody vegetation standards should be met for two successive years without irrigation.	PFO: Y PSS: Y Buffer: Y	**PFO:** There was an average of 1,346 plants or stems/acre in 18 woody plots, which meets the standard. Average percent woody cover was 55% (upper CI=65% & lower CI= 45%). **PSS:** There was an average of 1,342 plants or stems/acre in 20 woody plots, which meets the standard. Average percent woody cover was 87% (upper CI= 92%, lower CI= 81%). **Buffers:** There was an average of 1,387 plants or stems/acre in 14 woody plots. Average percent woody cover was 35% (upper CI= 40%, lower CI = 30%).
3.6	The hydrophytic vegetation standard for PSS and PFO wetlands is that the Prevalence Index is $\leq$ 3.0 and/or the vegetation passes the "50/20 rule" for dominance of hydrophytic vegetation.	PFO: Y PSS: Y	**PFO:** The average rounded Prevalence Index (PI) from the herbaceous and woody plots were both 2 (FACW). **PSS:** The average rounded Prevalence Index (PI) from the herbaceous and woody plots were both 2 (FACW).
Notes: All the above cover percentages represent absolute areal cover. In all cases, the "Year" refers to the number of years after *that portion of the site* was first planted. All habitat classes *except* the buffers are Year 7; the buffers are Year 5. Bare substrate includes areas of bare soil and areas covered by moss, water, or dead herbaceous plants.			

4: Further Actions:

Remedial work recommended	Yes ☐	No ☒
Deed Restriction or other protection instrument attached	Yes ☐	No ☒
Final Monitoring Report?	Yes ☐	No ☒
Requesting release or partial release of financial security?	Yes ☐	No ☒

December 16, 2019

TUALATIN VALLEY ENVIRONMENTAL BANK

MONITORING REPORT YEAR 8 (2019)

Prepared by: C. Jonas Moiel, Senior Ecologist
Margret Harburg, Environmental Scientist
Green Banks LLC
14200 SE McLoughlin Blvd, Suite A
Milwaukie, Oregon 97267
(503) 477-5391

Prepared For: Dave Heikes Farms Inc.
9400 SW Heikes Drive
Hillsboro, Oregon 97123

greenbanks

TABLE OF CONTENTS

1.0 MITIGATION PLAN PURPOSE AND OVERVIEW:
1.1 LOCATION..... 1
1.2 MITIGATION GOALS AND OBJECTIVES..... 1
1.3 MAINTENANCE AND MANAGEMENT ACTIONS..... 1
1.4 MONITORING METHODS..... 2
1.5 MONITORING DATA LOCATIONS..... 2
1.6 HYDROLOGY METHODS AND CONTEXT..... 3

2.0 RESULTS:
2.1 VEGETATION STANDARDS..... 3
2.2 HYDROLOGY STANDARDS..... 6
2.3 DELINEATION OF WETLAND ACREAGE ACHEIVED..... 6
2.4 WILDLIFE OBSERVATIONS..... 7

3.0 CONCLUSIONS AND RECOMMENDATIONS:
3.1 PROJECT STATUS..... 7
3.2 CONCLUSIONS…….. 8
3.3 RECOMMENDATIONS…..... 8
3.4 FINANCIAL SECURITY STATUS..... 9

4.0 REFERENCES..... 9

MAPS AND FIGURES:
Figures 1a-1c: Monitoring Location Maps (Finalized 2017)
Figure 3: Credit Determination Map 2017

Note: There is no Figure 2 this year and the maps included are from the Year 6 (2017) monitoring report.

APPENDICES:
APPENDIX A: Vegetation Data
APPENDIX B: Photographic Documentation
APPENDIX C: Vegetation Monitoring Transect Location Table
APPENDIX D: Credit Ledger (2019)

1.0 MITIGATION PLAN PURPOSE AND OVERVIEW

1.1 LOCATION

The Tualatin Valley Environmental Bank (TVEB) is located on 105.95 acres at the confluence of the Tualatin River, Christensen Creek and several unnamed surface and sub-surface drainages. The TVEB is located near 9400 southwest Heikes Drive in Hillsboro, Oregon, 97123; Township 1 South, Range 2 West, Section 32, utilizing portions of tax lots 1200 and 691; and Township 1 South, Range 2 West, Section 29, tax lot 601.

1.2 MITIGATION GOALS AND OBJECTIVES

At the request of DSL, starting in 2015, we have removed some portions of text that are unchanged from year to year. To review the "Mitigation Goals and Objectives" please refer to the first three monitoring reports (Green Banks LLC 2012-2014) or the Mitigation Bank Instrument (Green Bank LLC 2010).

1.3 MAINTENANCE AND MANAGEMENT ACTIONS

Green Banks uses an integrated approach to vegetation management at the TVEB. For the first few years after Bank establishment (2012-2014), the maintenance efforts focused on non-native weed control. This included multiple herbicide applications per year, mowing, cutting, and prescribed burning. For the past five years (2015-2019) there has been a substantial reduction in maintenance efforts as the native plant communities have become established.

In 2019, there was a low need for maintenance compared to previous years due to reduced non-native species cover and increased native species cover. Most of the common target weeds have been reduced to very low percent cover and small populations. This reduction in weed cover has allowed us to adjust how we manage the site, with a transition away from repeated herbicide applications and an increase in mowing and hand-pulling efforts. This trend of decreased non-native cover has been noted for the past five years. Herbicide applications were made in a few select areas targeting perennial invasive grasses and broadleaf weeds in the spring and summer.

Most of the buffer areas, except those on steep slopes or with existing mature forest, were mowed twice per year for the first few years of establishment. In 2019 (and 2018), only patch mowing of certain areas of the buffers with higher levels of non-native plants was completed. The herbaceous layer in most of the buffer areas is now dominated by native grasses and herbs, and the planted trees and shrubs are established enough to no longer require frequent maintenance mowing.

Beaver activity has increased over the last couple years and minor maintenance of the primary log-jam, including hand removal of sticks and debris, has been necessary to maintain the desired surface water elevations. Dave Heikes, the Bank Sponsor, installed a beaver "leveler" at the primary log-jam in the late summer of 2018. This included hand-installing a 12-inch corrugated pipe through the log-jam, and caging the inlet of the pipe (to keep it from being plugged by beaver). It is anticipated that the leveler will reduce the amount of log-jam maintenance and help to maintain more consistent surface water levels.

1.4 MONITORING METHODS

At the request of DSL, we have removed some portions of text that are unchanged from year to year. To completely review the "Monitoring Methods", including the criteria for designating plant species as "non-native" and/or "invasive", please refer to any of the first three monitoring reports (Green Banks LLC 2012-2014) or the Mitigation Bank Instrument (Green Bank LLC 2010).

The 2019 vegetation monitoring was conducted on July 10th, 15th and 19th by Senior Scientist C. Jonas Moiel with assistance from Natural Resource Technicians Chari Adames-Smith, Ximena Cruz-Cuevas and Kate Cochran.

Dana Field (DSL) was provided with draft monitoring data and visited the site for an annual walk-through on July 25, 2019.

1.5 MONITORING DATA LOCATIONS

Please refer to Figures 1a-1c which display the planted habitat types (sample units), monitoring transect locations, monitoring data plots, photo monitoring locations, and hydrology monitoring pits and wells. The habitat types consist of PEM wetlands, PSS wetlands, PFO wetlands, and buffers. In the PEM wetlands, we divided the class into two sub-classes: OBL dominated and FACW/FAC dominated. This is the case because each of these sub-classes have different performance standards.

In the 2019 monitoring we had total of five herbaceous plots in the OBL PEM community, 19 herbaceous plots in the FACW/FAC PEM community, 34 herbaceous plots and 18 woody plots in the PFO community, 41 herbaceous plots and 20 woody plots in the PSS community, and 28 herbaceous and 14 woody plots in the upland buffer areas.

Over the first six years of monitoring there have been some adjustments to the number and layouts of the plots; several were skewed, moved or removed to avoid a dirt road, property lines, deep inundation, or habitat transitions. These adjustments were documented in the first six monitoring reports and are also summarized in the notes following the vegetation monitoring data tables in Appendix A.

Monitoring Transect and Plot Details

For an in-depth description of the monitoring transects and plot details please refer to the Year 5 (2016) Monitoring Report or the MBI (Green Banks LLC 2010).

The locations of the start and end points of each monitoring transect (Appendix C), the northwestern corner of each herbaceous plot, and all four corners of the woody vegetation plots were GPS surveyed when the monitoring locations were established in 2012. Any subsequent modifications have been GPS surveyed.

1.6 HYDROLOGY METHODS AND CONTEXT

Post-construction hydrology monitoring occurred between 2012-2016. The delineation lite was conducted in 2014 with additional data collected in 2016 per the request of DSL. On March 24 2017, Dana Field (DSL) met with C. Jonas Moiel and Jeff Handley to review the post-construction wetland delineation boundary; this site visit was made in the early growing season, primarily to evaluate wetland hydrology. Following the site visit, it was determined that wetland hydrology was achieved.

2.0 RESULTS

2.1 VEGETATION STANDARDS RESULTS

The raw vegetation monitoring data for all the herbaceous and woody plots are presented in eight tables included in Appendix A. In the first three years of reporting, the verbatim text of each vegetation standard and the results were presented in this section, essentially repeating all the information that is presented in the Cover Sheet. Starting in 2015, in the interest of brevity, please refer to the Cover Sheet, which provides the *exact wording* of all the Performance Standards, the current confidence interval (CI) ranges, and minor comments, as well as the Vegetation Performance Standards Summary Tables for each habitat unit (Tables 3a through 3e) and brief discussions below. Please note that for all wetland habitat types listed below, 2019 is considered to be Year 8. However, the upland buffers are considered to be at Year 6 as this is the sixth year of monitoring since the initial planting was completed.

Table 3a: FACW/FAC PEM Habitat (~ 8.3 acres, 19 Herb Plots, Year 8)										
Criteria	**1.1:** Percent Native Cover		**1.2:** Percent Invasive Cover		**1.3:** Bare Substrate		**1.4:** Diversity		**1.5:** Hydrophytic Community	
Performance Standard	**1.1:** ≥ 60% by Year 3 and thereafter		**1.2:** ≤ 10% reed canarygrass and ≤ 10% other invasive species by Year 3 and thereafter		**1.3:** ≤ 20% by Year 3 and thereafter		**1.4:** Six native species with ≥ 5% cover, occurring in ≥ 10% of the plots.		**1.5:** Prevalence Index is ≤ 3.0	
	Average	Pass? Y/N	Average	Pass? Y/N	Average	Pass? Y/N	Number of species	Pass? Y/N	Average	Pass? Y/N
Results	**86%**	**Y**	**1%**	**Y**	**4%**	**Y**	**4**	**N**	**2**	**Y**

Herbaceous Palustrine Emergent (PEM) Wetlands- FACW/FAC Dominated Community
The FACW/FAC PEM community is meeting all the performance standards except for the diversity standard (Standard 1.4). It is densely populated with many native grasses, forbs, sedges and rushes with an average of 86% native cover, which is 26% above the standard of 60% by Year 3 (Standard 1.1). Invasive cover (Standard 1.2) rounds to 1%, *Convolvulus arvensis* was the only invasive species in the plots, same as in 2018. Cover by other non-natives is also minimal. There were three fewer non-native species recorded than last year. *Agrostis stolonifera* had an average cover of 7%, and all other non-natives had less than 2% average cover. Only four native species (*Deschampsia cespitosa, Leersia oryzoides, Lotus unifoliolatus, and Carex obnupta*) met the diversity standard (Standard 1.4) of ≥ 5% average cover and occurring in ≥ 10% of the plots this year. Although the average rounded prevalence index (PI) was 2 (FACW) for this habitat class, several plots (< half) had a rounded PI of 1 (OBL).

Table 3b: OBL PEM Habitat (~18.9 acres, 5 Herb Plots, Year 8)				
Criteria	**2.1:** Percent Native Cover		**2.2:** Percent Invasive Cover	
Performance Standard	**2.1:** ≥ 60% by Year 3 and thereafter		**2.2:** ≤ 10% reed canarygrass and ≤ 10% other invasive ecies by Year 3 and thereafter	
	Average	Pass? Y/N	Average	Pass? Y/N
Results	**83%**	**Y**	**0%**	**Y**

Herbaceous Palustrine Emergent (PEM) Wetlands- OBL Dominated Community

The OBL PEM community is meeting all the performance standards (Standards 2.1 and 2.2). The average percent native cover (Standard 2.1) is 83%. Common native species included *Sparganium emersum, Polygonum hydropiperoides, and Lemna minor.* Cover by invasive species (Standard 2.2) averaged 0%; no invasive or other non-natives were recorded.

Table 3c: PFO Habitat (~23.8 acres, 18 Woody Plots & 34 Herb Plots, Year 8)												
Criteria	**3.1**: Percent Combined Native Cover		**3.2:** Percent Invasive Cover		**3.3:** Bare Substrate		**3.4:** Diversity		**3.5:** Native Stem Count/ Cover		**3.6:** Hydrophytic Community	
Performance Standard	**3.1:** ≥ 60% by Year 3 and thereafter		**3.2:** ≤ 30% invasive species by Year 3 and thereafter		**3.3:** ≤ 40% by Year 3 and thereafter		**3.4:** Six native species with ≥ 5% cover, occurring in ≥ 10% of the plots.		**3.5:** Either ≥ 1,000 plants per acre or 50% aerial cover of woody species		**3.6:** Prevalence Index is ≤ 3.0	
	Average	Pass? Y/N	Average	Pass? Y/N	Average	Pass? Y/N	Number of species	Pass? Y/N	Average # Woody plants/acre	Pass? Y/N	Average	Pass? Y/N
Results	**130%** (75% herbs 55% woody)	**Y**	**1%** (1% herbs, 0% woody)	**Y**	**6%**	**Y**	**8**	**Y**	**1,346**	**Y**	**2** (in both herb & woody plots)	**Y**

Note: As of 2015, any herbaceous plot having ≥ 60% shade from woody species was excluded from the bare substrate criteria.

Palustrine Forested (PFO) Wetlands

The PFO community is meeting all of the performance standards. It is densely populated with native trees, shrubs and herbs. The combined percent cover of native species (Standard 3.1) is 130% (75% herbs and 55% woody species). Invasive cover (Standard 3.2) in the herb layer was 1% due to a small population of *Convolvulus arvensis* and the woody layer invasive cover was 0%. Cover by other non-natives was also minimal; of the 6 non-natives recorded in the herb layer, only two species had average cover as high as 3%. Average bare substrate (Standard 3.3) was 6%. This year, eight native species (five herbs and three woody species) met the diversity standard (Standard 3.4). These species were *Deschampsia cespitosa, Leersia oryzoides, Implatiens capensis, Polgonum hydropiperoides, Sparganium emersum, Fraxinus latifolia, Salix hookeriana* and *Salix lucida var. lasiandra*. The average density of native woody species (Standard 3.5) was 1,346 plants per acre. The average prevalence index (Standard 3.6) in both the herb and woody plots is 2 (FACW).

Table 3d: PSS Habitat (~11.6 Acres, 20 Woody Plots & 41 Herb Plots, Year 8)												
Criteria	**3.1**: Percent Combined Native Cover		**3.2:** Percent Invasive Cover		**3.3:** Bare Substrate		**3.4:** Diversity		**3.5:** Native Stem Count/ Cover		**3.6:** Hydrophytic Community	
Performance Standard	**3.1:** ≥ 60% by Year 3 and thereafter		**3.2:** ≤ 30% invasive species by Year 3 and thereafter		**3.3:** ≤ 40% by Year 3 and thereafter		**3.4:** Six native species with ≥ 5% cover, occurring in ≥ 10% of the plots		**3.5:** Either ≥ 1,000 plants per acre or 50% aerial cover of woody species		**3.6:** Prevalence Index is ≤ 3.0	
	Average	Pass? Y/N	Average	Pass? Y/N	Average	Pass? Y/N	Number of species	Pass? Y/N	Average # woody plants /acre	Pass? Y/N	Average	Pass? Y/N
Results	**119%** (32% herbs 87% woody)	**Y**	**6%** (6% herbs. 0% woody)	**Y**	**22%**	**Y**	**8**	**Y**	**1,342**	**Y**	**2** (in both herb & woody plots)	**Y**

Note: As of 2015, any herbaceous plot having ≥ 60% shade from woody species was excluded from the bare substrate criteria.

The PSS community is meeting all of the performance standards (Standards 3.1-3.6). It is densely populated with native trees, shrubs and herbs. The combined percent cover of native species (Standard 3.1) is 119% (32% herbs and 87% woody species), which is similar to the results from the previous three years. The woody cover has continued to increase while the herbaceous cover continues to decrease, presumably from increased shade. Invasive cover (Standard 3.2) in the herb layer was the same as last year at 6%, and the woody layer invasive cover was at 0%. Cover by other non-natives is also generally quite minimal. Bare substrate (Standard 3.3) was 22% this year, which is a 13% increase from last year. This year, eight (two herbaceous and six woody) native species (*Impatiens capensis, Scirpus mircrocarpus, Fraxinus latifolia, Cornus sericea ssp. sericea, Salix hookeriana, Salix sitchensis, Salix lucida* var. *lasiandra* and *Populus balsamifera*) met the diversity standard (Standard 3.4). The habitat meets Standard 3.5 with 1,342 plants per acre. The average prevalence index (Standard 3.6) in both the herb and woody plots is 2 (FACW).

Table 3e: Buffer Habitat (~27.5 acres planted, 36.7 acres total; 14 Woody Plots & 28 Herb Plots, Year 6)										
Criteria	**3.1:** Percent Combined Native Cover		**3.2:** Percent Invasive Cover		**3.3:** Bare Substrate		**3.4:** Diversity		**3.5:** Native Stem Count/ Cover	
Performance Standard	**3.1:** ≥ 60% by Year 3 and thereafter		**3.2:** ≤ 30% invasive species by Year 3 and thereafter		**3.3:** ≤ 40% by Year 3 and thereafter		**3.4:** Six native species with ≥ 5% cover, occurring in ≥ 10% of the plots		**3.5:** Either ≥ 1,000 plants per acre or 50% aerial cover of woody species	
	Average	Pass? Y/N	Average	Pass? Y/N	Average	Pass? Y/N	Number of species	Pass? Y/N	Average # woody plants /acre	Pass? Y/N
Results	**84%** (49% herbs & 35% woody)	**Y**	**8%** (8% herbs, 0% woody)	**Y**	**6%**	**Y**	**6**	**Y**	**1,387**	**Y**

Note: As of 2015, any herbaceous plot having ≥ 60% shade from woody species was excluded from the bare substrate criteria.

This is Year 6 for the upland buffers and the community is meeting all of its performance standards. The combined percent cover of native species (Standard 3.1) is 84% (49% herbs and 35% woody). Invasive cover (Standard 3.2) in the herb layer was 8% and the woody layer invasive cover was 0%. The invasive

cover has increased in the herb layer primarily due to an increase in *Holcus lanatus*. Cover by other non-natives is generally minimal; although *Bromus hordeaceus* had an average cover of 7% and *Vulpia brominoides* had an average cover of 9%. The bare substrate (Standard 3.3) was met at 6%. The buffer areas meet the diversity standard (Standard 3.4) with four herb species (*Elymus glaucus, Deschampsia cespitosa, Festuca rubra* ssp. *rubra* and *Hordeum brachyantherum*) and two woody species (*Mahonia aquifolium* and *Pseudotsuga menziesii*). The habitat meets Standard 3.5 with 1,387 plants per acre.

NOTES: All the above cover percentages in the preceding tables and discussions represent absolute areal cover. Bare substrate includes areas of bare soil and areas covered by moss, water, and/or dead herbaceous plants.

2.2 HYDROLOGY STANDARDS RESULTS

Standard: "The criteria for achieving wetland hydrology at the mitigation site will be met if hydrologic conditions meet or exceed the basic standard of the 1987 *US Army Corps of Engineers Wetland Delineation Manual*, and refined in the *Corp's May 2010 Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region*."

Result: A wetland delineation lite was completed for the project area in 2014, with supplemental paired-plot data collected in several areas in 2016 per the request of DSL; these data can be reviewed in the 2014 and 2016 monitoring reports. Slight adjustments were made to the post-construction delineation boundary after the 2016 data were collected and are displayed in the 2016 report. After making a spring site visit to evaluate hydrology on March 24, 2017 DSL concurred with the delineated post-construction wetland boundary except for a small area of approximately 1-acre where more information was requested. This information was provided in the 2017 monitoring report (Section 2.2) and the wetland delineation boundary was finalized.

Standard met? Yes. The post-construction wetland delineation boundary was concurred in spring of 2017, with the request for additional information for a small (approximate 1-acre) area. This additional information was provided in the 2017 monitoring report and the boundary was finalized.

2.3 DELINEATION OF WETLAND ACREAGE ACHEIVED

The post-construction wetland delineation lite was completed in 2014, with supplemental data collected in 2016, resulting in minor adjustments to the delineated boundary. The final (concurred) 2016 wetland delineation identified a total of 58.4527 acres of wetland within the project area; the 2014 delineation had a slightly larger wetland acreage of 58.533 acres prior to slight boundary adjustments in 2016.

The total wetland credits produced from this project are slightly higher than predicted in the MBI due to a slight increase in wetland creation acreage; see Figure 3. The following table summarizes the post-construction acreages by credit type.

Post-Construction Credit Summary Table:

Type	Ratio	Predicted Acreage (MBI)	Predicted Credit (MBI)	Achieved Acreage (post-construction)	Achieved Credit (post-construction)
Enhancement	3:1	33.2900	11.0966	33.2900	11.0966
Restoration	1:1	4.1100	4.1100	4.1100	4.1100
Creation	1.5:1	18.2800	12.1866	18.3156	12.2104
Buffers	10:1	36.7000	3.6700	37.1502	3.7150
No Credit	NA	13.5700	NA	13.0842	NA
TOTALS		105.9500	31.0632	105.9500	**31.1320**

2.4 WILDLIFE OBSERVATIONS

Since construction of the TVEB, the increased extent and duration of inundated areas have improved the habitat functions for amphibians, fish, insects, waterfowl and other avian species. Numerous species of ducks and Canada geese utilize the site. Great blue herons, egrets and belted kingfishers are often present, feeding in the water. A bald eagle's nest is present in the mature forest located in the southern portion of the site. A mating pair of eagles has been observed on-site since construction of the project in 2011. They have had two offspring per year in 2012, 2013, 2016 and 2018, and one offspring in 2014 and 2015. Besides the eagles, other raptors that utilize the site include osprey, northern harriers (marsh hawks), and other hawk species. Black tailed deer are often present in portions of the site and utilize the area for grazing and bedding. A coyote has been observed multiple times within the project area since 2011. Beaver activity has increased onsite since project construction.

On February 26th 2016, an amphibian survey was conducted by herpetologist Katie Holzier, PhD. assisted by Green Banks staff. The vegetation along the edges of the inundated portion of the site was searched for egg masses of various frogs, salamanders, and newts. Egg masses of the following five native species were observed: Pacific chorus frog (*Hyla regilla* aka *Pseudacris regilla*), red-legged frog (*Rana aurora*), northwestern salamander (*Ambystoma gracile*), long-toed salamander (*Ambystoma macrodactylum*) and roughskin newt (*Taricha granulosa*). We are pleased that the TVEB is providing habitat for this diverse assemblage of amphibians, especially the red-legged frog, which is somewhat rare in Oregon. No egg masses of non-native American bullfrog (*Rana catesbeiana* aka *Lithobates catesbeianus*) were not found because they lay their eggs later in the season, but they are known to be present.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 PROJECT STATUS

The mitigation wetlands are in compliance with nearly all of the performance standards for Year 8. The only standard that was not met (for the first time since project construction) was the diversity Standard 1.4 within the PEM FACW habitat; this habitat had 4 species that met standard, the standard requires 6 species.

The project is nearing the long-term management phase and the Bank Sponsor has been making efforts to finalize an agreement with a long-term land steward to take over management of the site in the future. Long-term management plan and conservation easement documents have been drafted and a potential Steward has been identified. It is anticipated that a long-term management agreement will be finalized in 2020.

3.2 CONCLUSIONS

In Year 8 (2019) the wetland areas are continuing to be diverse native-dominated plant communities. The TVEB wetland areas had very low weed cover for Year 8 with an average range of 0-8% non-native invasive cover within the various wetland and upland community types. The non-native invasive cover across habitat types was similar to what was observed in 2018 (and 2017). Very little reed canarygrass was present in any of the habitats; it averaged 0% cover in all habitat types except in the PSS where it averaged 5% cover.

The wetland and upland areas have diverse plant communities with a large number of native species in all plant community types. The PEM FACW habitat type did not meet the diversity standard (1.4) this year as the result of shifting species distributions and a small data set collected within the habitat type. In previous years, the community has met the standard, but each year different annual species meet the criteria along with some perennials. The habitat type still remains to be diverse, however, these species cover fluctuations have caused it not to meet the standard in 2019. During the annual site inspection with Dana Field, she commented that the area appeared to have diversity of greater than 6 species; many native species were observed. Since we have observed shifts in species cover within the habitat over the last several years, we do not recommend any remedial action. It is likely that the area will meet Standard 1.4 again in future years as the native species cover and diversity has been increasing for several perennial species.

The planting of native trees and shrubs in the form of bare root, plug and live cutting have been successful. Some mortality has been observed, but a majority of the woody plantings in all habitats have high vigor. As a result, there has been a continued increase in woody cover in these habitats.

The hydrological enhancements made through construction of the project in 2011 are performing as designed. Please review the MBI or As-Built report for more information about the hydrological enhancements. The primary log-jam was observed approximately once per month in 2019. Water flow through the log-jam was nearly perennial with very limited flows in the late summer.

The TVEB credit ledger for 2019 is included in Appendix D. The most recent credit release was on May 23rd 2019, for 0.819 credits; bringing the total number of credits released to 23.349 credits or 75% of the total anticipated for the Bank. A total of 1.014 credits were withdrawn from the bank in 2019. There is a total of 0.1659 credit currently released and available for withdrawal.

3.3 RECOMMENDATIONS

The TVEB is meeting nearly all of the performance standards for Year 8 and is on track to meeting the performance standards for future years. It is recommended that the current plan and strategy for vegetative community establishment continue. There has been a decrease in weed cover within the wetlands since 2012, and it is likely that this trend will continue. Non-native plant control efforts should occur when necessary.

In 2020, the project area should be observed approximately monthly from March through October to direct maintenance efforts and ensure that the project goals are being met.

3.4 FINANCIAL SECURITY STATUS

A performance bond (Assignment of Deposit) in the amount of $89,782 was established for the release of enhancement area credits on October 24th 2011. In the fall of 2011, $44,891 (50%) was returned to the bank sponsor after completion of hydrological enhancements and initial planting of the enhancement area. It was reduced by $26,935 (30%) in May of 2017 for meeting Year 5 Performance Standards; $17,956 is currently in the account.

An irrevocable letter of credit was established for the release of restoration, creation and buffer credits in 2011 in the amount of $196,075. In March of 2013, a partial reduction of this account was granted resulting in an account balance of to $114,125. In May of 2017, the total amount in this account was reduced to $39,215, or 20% of the initial account total, for meeting Year 5 Performance Standards.

The release of financial securities will generally follow the financial assurance release schedule as described in Exhibit J of the MBI.

4.0 REFERENCES

Green Banks LLC. *Tualatin Valley Environmental Bank Monitoring Report, Years 1- 7.* Submitted to the Inter-Agency Review Team, December 2011-2018.

Green Banks LLC. 2010. *Tualatin Valley Environmental Bank Mitigation Bank Instrument*. Submitted to the Inter-Agency Review Team, December 31st 2010.

Oregon Department of Agriculture (ODA) 2012. ODA Plant Division, Noxious Weed Control. Oregon Noxious Weed List. URL http://www.oregon.gov/ODA/PLANT/WEEDS/statelist2.shtml.

U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2012-2016. The PLANTS Database. National Plant Data Center, Baton Rouge, LA 70874-4490 USA. URL: http://plants.usda.gov

U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2002. WETS Table for Hillsboro, Oregon WETS Station OR3908. Start yr. - 1971 End yr. – 2000 Accessed on-line in October, 2013 at URL: ftp://ftp.wcc.nrcs.usda.gov/support/climate/wetlands/or/

U.S. Army Corps of Engineers. 2014. *State of OREGON 2014 Wetland Plant List;* compiled from: Lichvar, R.W., M. Butterw ick, N.C. Melvin, and W.N. Kirchner. 2014. The National Wetland Plant List: 2014 Update of Wetland Ratings. Phytoneuron 2014-41: 1-42. Accessed on-line in 2014 at URL http://www.oregon.gov/dsl/WETLAND/docs/OR_2014v1.pdf

MAPS AND FIGURES:

Figure 1a-1c: Monitoring Location Maps (Finalized 2017)
Figure 3: Credit Determination Map 2017

Note: The included maps are from the Year 6 (2017) monitoring report. The post-construction wetland delineation boundary was finalized in 2017 and the maps will no longer change.

Figure 1a: Tualatin Valley Environmental Bank Monitoring Inset 1

2017

N

INSET 1

INSET MAP INDEX

INSET 1

INSET 2

INSET 3

Project Area

T1

T1-S1

T1-S2

T2

T2-S1

T2-S2

T2-S3

T2-S4

T2-S5

T3

T3-BF1

T3-F1

T3-S2

T3-S1

T4

T4-F1

T4-BF1

1

INSET 2

T5

T5-F1

H1

2

3

T6

T6-S1

T6-S2

T6-S3

T6-S4

T6-S5

T6-S6

T6-S7

T6-S8

T6-BF1

H3

H4

H5

H5a

4

S1

S2

K7

K8

K9

K10

The road crossing of North-South Ditch was an upland island during the baseline study and in the MBI; but the crossing has been removed in 2014 and is now wetland.

T7

T7-BF1

T7-BF2

T7-F1

T7-F2

T7-BF3

H5b

H5c

H6

H7

H8

H9

H9a

Project Area

Post-Construction Wetland Boundary (2016)

Vegetation Monitoring Transect

Tree/Shrub Plot

Herbaceous Plot

Hydrological Monitoring Pit

Photo Point

As-Built PEM OBL

As-Built PFO

As-Built PSS

1 Foot Contour (2011)

Monitoring Inset Map

0 125 250 500 Feet

Map should be printed size 11"x17"

greenbanks

Figure 1b: Tualatin Valley Environmental Bank Monitoring Inset 2

2017

0 125 250 500 Feet

N

INSET 1

INSET 2

INSET 3

T5

T6

T7

T8

T9

T10

T5-F1

T6-S1 T6-S2 T6-S3 T6-S4 T6-S5 T6-S6 T6-S7 T6-S8 T6-S9 T6-S10 T6-S11

T6-BF1 T6-BF2

T7-BF1 T7-BF2 T7-F1 T7-F2 T7-BF3

T8-BF1 T8-F1 T8-F2 T8-F3 T8-BF2

T9-BF1 T9-F1 T9-F2 T9-F3 T9-F4 T9-BF2

T10-BF1 T10-F1 T10-F2 T10-F3 T10-BF2 T10-BF3

H1 H2 H3 H4 H5 H5a H5b H5c H6 H7 H8 H9 H9a H10 H11 H12 H12a H12b H12c H12d H13 H14 H15 H16 H17 H17a H17b H18 H19 H20 H21 H22 H23 H24 H24a H24b H24c H24d H25 H26 H27 H28 H29 H30 H30a H30b H30c H31 H32 H32a H32b H32c

H17 Well

H32 Well

1 2 3 4 5 6 7 8 11

Project Area
Post-Construction Wetland Boundary (2016)
Vegetation Monitoring Transect
Tree/Shrub Plot
Herbaceous Plot
Hydrological Monitoring Pit
Photo Point
1 Foot Contour (2011)
As-Built PEM OBL
As-Built PEM FAC/FACW
As-Built PFO
As-Built PSS
Monitoring Inset Map

INSET MAP INDEX

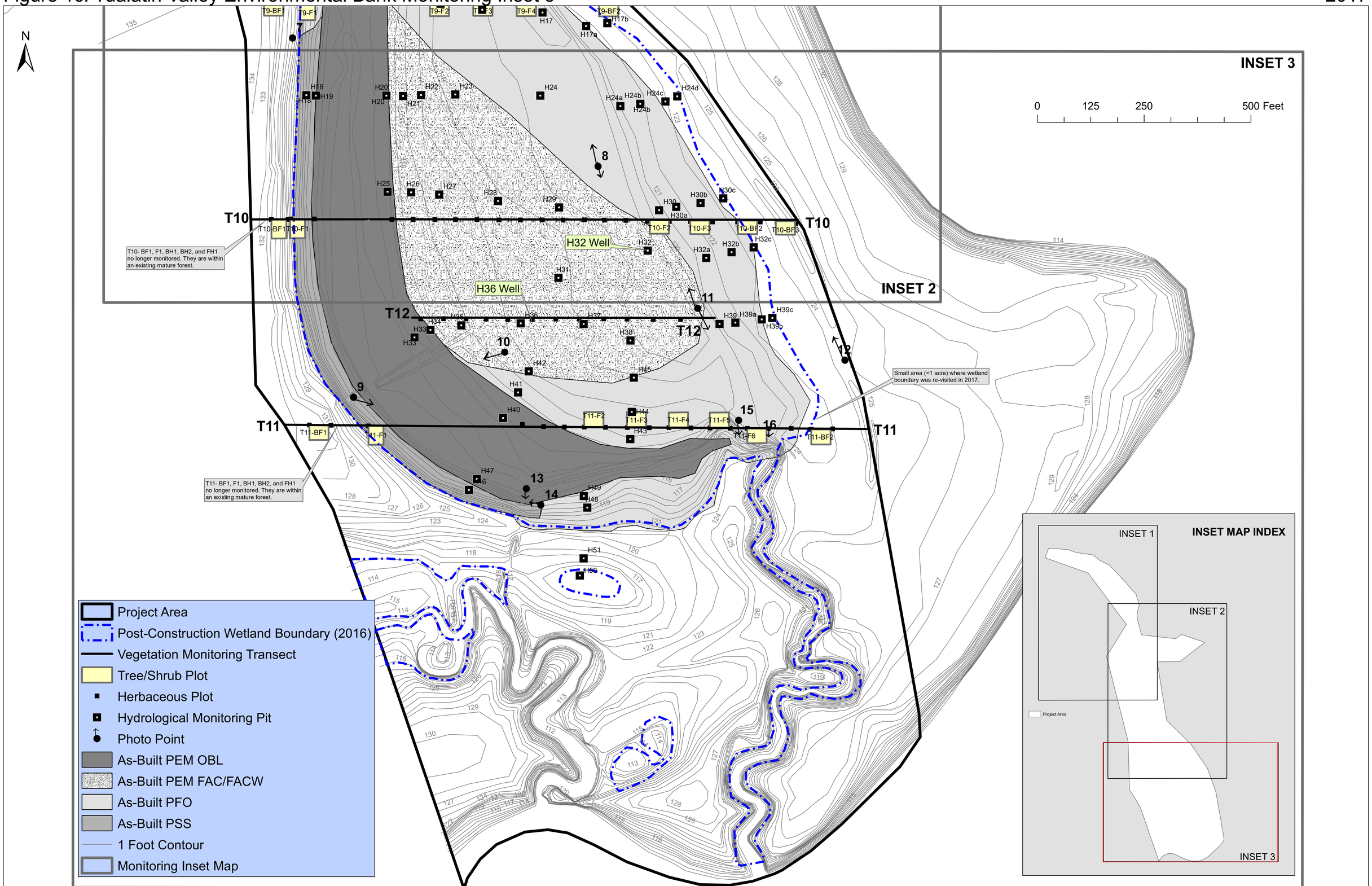
T10- BF1, F1, BH1, BH2, and FH1 no longer monitored. They are within an existing mature forest.

Map should be printed size 11"x17"

greenbanks

Figure 1c: Tualatin Valley Environmental Bank Monitoring Inset 3

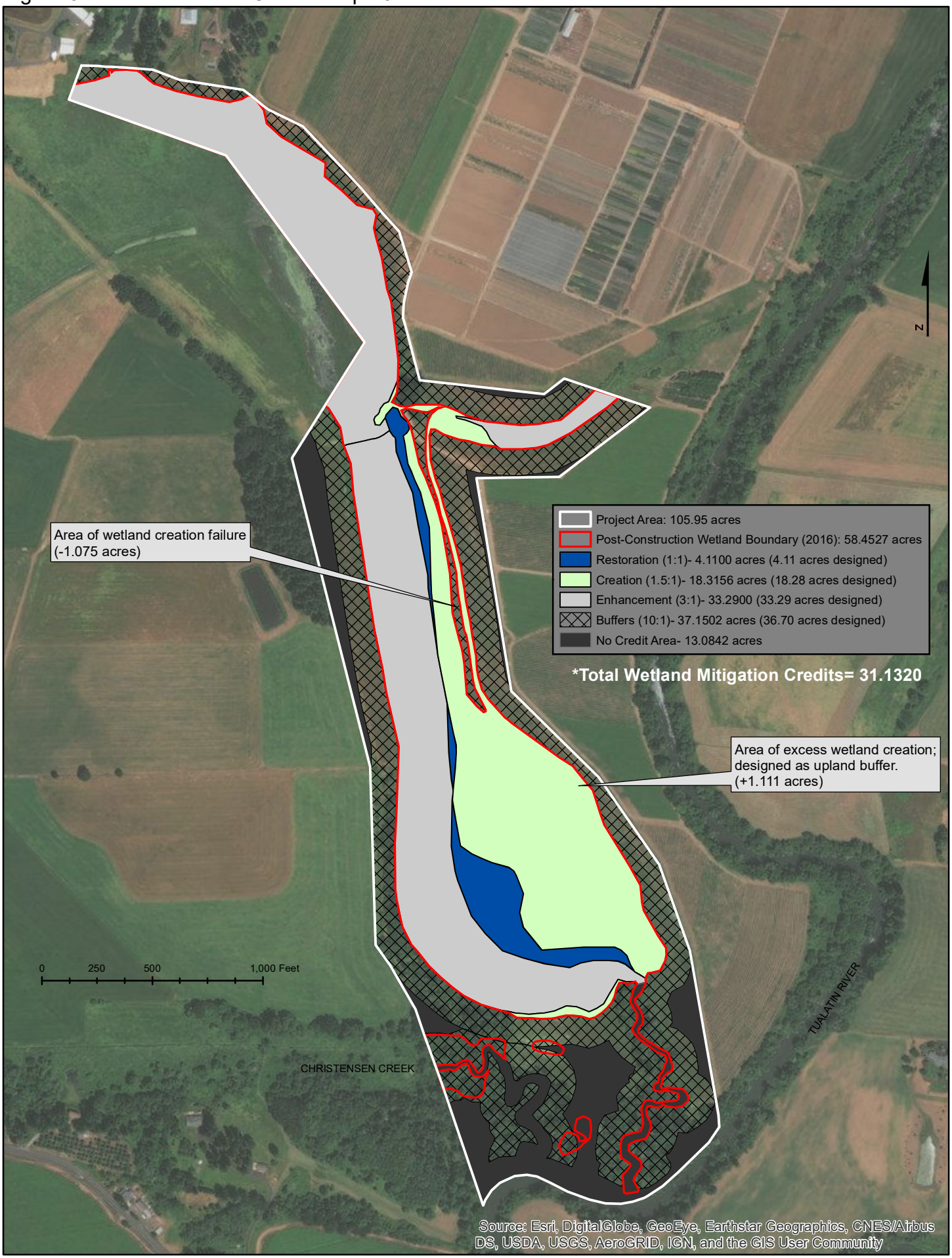
2017



Map should be printed size 11"x17"

greenbanks

Figure 3: Determination of Credits Map 2017



Aerial photo compliments of Bing.

greenbanks

APPENDICES:

APPENDIX A: Vegetation Data
APPENDIX B: Photographic Documentation
APPENDIX C: Vegetation Monitoring Transect Location Table
APPENDIX D: Credit Ledger (2018)

APPENDIX A: VEGETATION DATA

Vegetation Data Tables should be printed at the size of 11"x17".

Vegetation monitoring notes are included after the tables in this appendix.

TUALATIN VALLEY ENVIRONMENTAL BANK

2019 Vegetation Monitoring	**Sample Date(s):**	7/10/2019-7/22/19										*Percent (%) Cover*											
FACW / FAC PEM Community			T10-PEM2	T10-PEM3	T10-PEM4	T10-PEM5	T10-PEM6	T10-PEM7	T10-PEM8	T10-PEM9	T10-PEM10	T12-PEM2	T12-PEM3	T12-PEM4	T12-PEM5	T12-PEM6	T12-PEM7	T12-PEM8	T12-PEM9	T12-PEM10	T12-PEM11		
Species	Origin (N, NN, I)	Wetland Status (1 - 5)																				**Average**	
Native Herbaceous Species																							
Agrostis exarata	N	2	0	0	0	0	5	10	0	0	0	0	0	0	0	0	0	8	0	0	0	**1**	
Alisma triviale (plantago)	N	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**0**	
Alopecurus geniculatus	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Azolla microphylla (mexicana)	N	1	2	3	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	**0**	
Beckmannia syzigachne	N	1	0	0	5	0	5	0	0	0	0	0	0	0	0	0	2	0	0	0	0	**1**	
Bidens cernua	N	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Bidens frondosa	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Carex densa	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	**0**	
Carex ovalis (leporina)	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Carex scoparia	N	2	0	0	1	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	**1**	
Carex species	N		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Carex obnupta	N	1	50	0	0	0	0	0	0	30	0	75	0	80	50	0	35	0	0	0	0	**17**	
Carex pachystachya	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Carex unilateralis	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Cyperus erythrorhizos	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Deschampsia cespitosa	N	2	0	0	4	0	5	0	40	5	85	0	0	0	0	0	0	25	20	40	65	**15**	
Deschampsia elongata	N	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Downingia elegans	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Eleocharis acicularis	N	1	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	
Eleocharis obtusa (ovata)	N	1	0	8	25	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	
Eleocharis palustris	N	1	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	
Epilobium ciliatum	N	2	0	0	0	0	0	5	5	2	0	0	0	0	0	1	15	10	20	1	1	**3**	
Epilobium densiflorum	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	8	1	0	**1**	
Fragaria sp.	N		0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**0**	
Galium trifidum	N	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	1	**0**	
Grindelia integrifolia	N	2	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Hordeum brachyantherum	N	2	0	0	0	0	10	0	20	10	3	0	0	0	0	0	6	6	0	0	0	**3**	
Juncus effusus	N	2	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	**0**	
Juncus oxymeris	N	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Leersia oryzoides	N	1	0	5	17	12	2	3	0	0	0	0	45	13	5	4	7	0	0	0	0	**6**	
Lemna minor	N	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**0**	
Lotus unifoliolatus	N	4	0	0	0	2	15	75	15	15	12	0	0	0	0	15	15	50	50	80	40	**20**	
Ludwigia palustris	N	1	0	0	5	7	0	0	0	0	0	0	0	0	0	50	2	0	0	0	0	**3**	
Lycopus americanus	N	1	0	0	1	20	1	0	0	0	0	0	0	0	0	12	0	0	0	0	0	**2**	
Madia glomerata	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	8	0	0	0	**1**	
Plagiobothrys scouleri	N	2	0	0	0	0	8	5	0	0	0	0	0	0	0	0	1	0	1	0	0	**1**	
Polygonum (Persicaria) hydropiperoides	N	1	5	6	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	**1**	
Polygonum (Persicaria) lapathifolium	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	**0**	
Potomogeton natens and/or P. nodosus	N	1	3	0	0	0	2	0	0	0	0	0	0	0	0	2	2	0	0	0	0	**0**	
Prunella vulgaris	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	**0**	
Rorippa curvisiliqua	N	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	**0**	
Sagittaria latifolia	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Salix sp. seedling (Assumed N, FAC or wetter)	N		0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	**0**	
Sparganium emersum	N	1	10	65	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	**4**	
Invasive Herbaceous Species																							
Convolvulus arvensis	I	5	0	0	0	0	1	5	0	0	0	0	0	0	0	7	0	0	5	0	0	**1**	
Non-Native Herbaceous Species																							
Agrostis stolonifera	NN	3	0	0	15	50	0	0	0	0	0	0	50	7	0	2	0	0	0	0	0	**7**	
Agrostis capillaris	NN	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Agrostis species (assumed NN, FAC or wetter)	*NN*	3	0	2	0	0	0	0	0	0	0	0	0	0	39	0	0	0	0	0	0	**2**	
Anthemis cotula	NN	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Lactuca serriola	NN	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	**0**	
Leontodon taraxacoides ssp.taraxacoides	NN	5	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	1	**0**	
Lolium perenne	NN	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Lythrum portula	NN	1	0	0	2	0	0	0	0	0	0	0	0	0	0	10	3	0	0	0	0	**1**	
Rumex crispus	NN	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**0**	
Unknown seedling	NN		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Vicia tetrasperma	NN	5	0	0	0	0	0	0	20	8	0	0	0	0	0	0	0	0	0	0	0	**1**	
Bare Substrate																							
Bare ground, unvegetated water, and/or moss			4	0	0	4	0	0	0	0	0	12	0	0	0	0	3	0	0	0	0	**1**	
Dead sprayed weeds			0	0	21	0	0	0	0	28	0	0	0	0	0	0	0	0	0	0	0	**3**	
Shade, Woody Stem Cover & Water Depth																							
Approx. water depth (feet)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	

Summary Information			T10-PEM2	T10-PEM3	T10-PEM4	T10-PEM5	T10-PEM6	T10-PEM7	T10-PEM8	T10-PEM9	T10-PEM10	T12-PEM2	T12-PEM3	T12-PEM4	T12-PEM5	T12-PEM6	T12-PEM7	T12-PEM8	T12-PEM9	T12-PEM10	T12-PEM11	**Habitat Average**	**Standard Error**
Cover of Native Herbaceous Species			96	97	62	46	58	102	80	62	100	88	50	93	61	100	99	111	101	124	107	**86**	5.2
Lower CI (80%)																						79	
Upper CI (80%)																						93	
Cover of Invasive Herbaceous Species			0	0	0	0	1	5	0	0	0	0	0	0	0	7	0	0	5	0	0	**1**	0.5
Lower CI (80%)																						0	
Upper CI (80%)																						2	
Bare Substrate			4	0	21	4	0	0	0	28	0	12	0	0	0	0	3	0	0	0	0	**4**	1.8
Lower CI (80%)																						1	
Upper CI (80%)																						6	
Native Diversity																						**4 species met the criteria: DECE, LEOR, LOUN, CAOB**	
Prevalence Index			1	1	1	2	2	3	3	2	2	1	2	1	1	2	2	3	3	3	3	**2**	N/A
Weighted Prevalence Index			94	94	113	202	141	374	290	174	224	86	205	114	55	216	170	306	327	412	299		
Sum of plant cover			96	100	79	96	63	107	100	72	100	88	100	100	100	121	102	111	107	124	108		

TUALATIN VALLEY ENVIRONMENTAL BANK

2019 Vegetation Monitoring	Sample Date(s):	7/10/2019-7/22/19	*Percent (%) Cover*						
OBL Herbaceous Community			T4-PEMOBL5	T4-PEMOBL6	T8-PEMOBL2	T9-PEMOBL3	T11-PEMOBL4		
Species	**Origin (N, NN, I)**	**Wetland Status (1 - 5)**						**Row Average**	
Native Herbaceous Species									
Alisma triviale	N	1	0	0	0	0	0	**0**	
Bidens cernua	N	1	0	0	0	0	0	**0**	
Ceratophyllum demersum	N	1	0	0	0	0	0	**0**	
Cyperus erythrorhizos	N	1	0	0	0	0	0	**0**	
Eleocharis acicularis	N	1	0	0	0	0	0	**0**	
Eleocharis obtusa (ovata)	N	1	0	0	0	0	0	**0**	
Eleocharis palustris	N	1	0	0	0	0	0	**0**	
Elodea canadensis	N	1	0	0	0	0	0	**0**	
Elodea nuttallii	N	1	0	0	0	0	0	**0**	
Elodea species	N	1	0	0	0	0	0	**0**	
Juncus oxymeris	N	2	0	0	0	1	0	**0**	
Leersia oryzoides	N	1	0	0	0	0	0	**0**	
Lemna minor	N	1	50	2	0	0	1	**11**	
Ludwigia palustris	N	1	0	0	0	2	0	**0**	
Polygonum amphibium var. *emersum* (*Persicaria amphibia*)	N	1	0	0	0	0	0	**0**	
Polygonum (Persicaria) hydropiperoides	N	1	30	75	15	10	10	**28**	
Polygonum (Persicaria) lapathifolium	N	2	0	0	0	0	0	**0**	
Polygonum species (not *P. persicaria*, assumed native)	N	2	0	0	0	0	0	**0**	
Potamogeton species	N	1	0	0	0	0	0	**0**	
Potamogeton natens and/or P. nodosus	N	1	0	0	50	15	5	**14**	
Schoenoplectus tabernaemontmontani	N	1	0	0	0	0	0	**0**	
Sparganium emersum	N	1	8	20	25	55	35	**29**	
Stuckenia pectinata	N	1	0	0	0	0	0	**0**	
Typha latifolia	N	1	0	5	0	0	0	**1**	
Invasive Herbaceous Species									
Phalaris arundinacea	I	2	0	0	0	0	0	**0**	
Non-Native Herbaceous Species									
Lythrum portula	NN	1	0	0	0	0	0	**0**	
Agrostis species (assmed NN, FAC or wetter)	NN	3	0	0	0	2	0	**0**	
Potomogeton crispus	NN	1	0	0	0	0	0	**0**	
Bare Substrate									
Bare ground			12	0	10	0	5	**5**	
Unvegetated water (aprox.)			0	0	0	0	0	**0**	
Shade, Woody Stem Cover & Water Depth									
Shade from woody plants			0	0	0	25	0	**5**	
Stem cover on ground			0	0	0	3 (SALA)	0	**0**	
Approx. water depth (feet)			1	0.5	2	0	1	**0.9**	
Summary Information								**Habitat Average**	**Standard Error**
Cover of Native Herbaceous Species			88	102	90	83	51	**83**	9
Lower CI (80%)								72	
Upper CI (80%)								94	
Cover of Invasive Herbaceous Species			0	0	0	0	0	**0**	0
Lower CI (80%)								0	
Upper CI (80%)								0	
Bare Substrate			12	0	0	0	0	**2**	3
Lower CI (80%)								-1	
Upper CI (80%)								6	
Native Diversity								**NA- there is no diversity standard for this community**	
Prevalence Index			1	1	1	1	1	**1**	
Weighted Prevalence Index			88	102	90	90	51		
Sum of plant cover			88	102	90	85	51	**91**	

2019 Vegetation Monitoring — Sample Date(s): 7/10/2019-7/22/19

PFO Herbaceous Community

Percent (%) Cover

Species	Origin (N, NN, I)	Wetland Status (1 - 5)	T3-FH1	T4-FH1	T4-FH2	T5-FH1	T5-FH2	T7-FH1	T7-FH2	T7-FH3	T7-FH4	T8-FH1	T8-FH2	T8-FH3	T8-FH4	T9-FH1	T9-FH2	T9-FH3	T9-FH4	T9-FH5	T9-FH6	T9-FH7	T9-FH8	T10-FH2	T10-FH3	T10-FH4	T10-FH5	T11-FH2	T11-FH3	T11-FH4	T11-FH5	T11-FH6	T11-FH7	T11-FH10	T11-FH11	T11-FH12	Row Average	
Native Herbaceous Species																																					
Achillea millefolium	N	4	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	0	0	0	0	0	0	**0**	
Agrostis exarata	N	2	0	0	0	0	0	30	0	0	2	0	0	25	0	0	0	12	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	
Beckmannia syzigachne	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Carex densa	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Carex feta	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Carex obnupta	N	1	0	0	0	0	0	0	0	20	5	0	0	0	0	0	0	0	30	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	**2**	
Carex scoparia and/or C. ovalis	N	2	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	0	0	0	0	0	0	**0**	
Carex species, assumed native, FAC or wetter	*N*	*3*	0	0	0	0	8	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Deschampsia cespitosa	N	2	0	0	0	0	0	0	0	0	3	0	0	0	50	0	0	45	10	45	65	65	95	25	85	2	0	0	0	0	0	0	0	0	4	30	**15**	
Eleocharis obtusa (ovata)	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Eleocharis palustris	N	1	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	**0**	
Elymus glaucus	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Epilobium densiflorum	N	2	0	0	0	0	0	0	0	5	10	5	0	0	0	7	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	**1**	
Epilobium ciliatum	N	2	0	0	3	0	3	0	0	3	0	0	0	35	5	0	0	0	15	8	5	2	0	0	1	0	0	0	0	0	0	0	0	0	4	0	**2**	
Fraxinus Latifolia seedling	N	2	0	0	0	0	1	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	4	0	**0**	
Galium trifidum	N	2	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Geum macrophyllum	N	3	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	0	0	0	5	0	0	**0**	
Gnaphalium palustre	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Hordeum brachyantherum	N	2	0	0	0	0	0	5	0	1	10	0	0	0	6	0	0	25	5	0	0	0	0	0	2	35	90	0	0	0	0	0	0	0	30	70	**8**	
Impatiens capensis	N	2	60	0	0	0	30	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	0	**3**	
Juncus bufonius	N	2	0	0	0	0	0	0	7	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**	
Juncus oxymeris	N	2	0	0	0	0	0	0	50	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	**1**	
Juncus patens	N	2	0	0	0	0	0	0	0	0	15	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**	
Leersia oryzoides	N	1	0	0	0	20	0	0	15	0	0	45	65	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**6**	
Lemna minor	N	1	0	10	0	2	0	0	1	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**	
Lotus unifoliolatus	N	4	0	0	0	0	0	0	0	2	0	3	0	7	7	0	0	15	30	50	25	4	2	15	4	0	0	0	0	0	0	0	0	0	7	0	**5**	
Ludwigia palustris	N	1	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	0	0	0	0	0	0	**0**	
Lycopus americanus	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Madia glomerata	N	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	**0**	
Plagiobothrys scouleri	N	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	20	0	7	0	5	0	0	0	0	0	0	0	0	0	0	**1**	
Polygonum (Persicaria) hydropiperoides	N	1	0	70	1	60	0	0	15	0	0	5	20	0	0	0	2	0	0	0	0	0	0	0	0	0	0	40	25	30	45	40	40	0	0	0	**12**	
Polygonum (Persicaria) lapathifolium	N	2	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	0	0	0	0	0	0	**0**	
Potamogeton natens and/or P. nodosus	N	1	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	3	0	12	0	10	3	0	0	0	**1**	
Prunella vulgaris	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	**0**	
Rorippa curvisiliqua	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	**1**	
Rubus ursinus	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Schoenoplectus tabernaemontani	N	1	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	17	0	0	0	0	0	0	**1**	
Sparganium emersum	N	1	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	50	65	30	45	50	42	0	0	0	**8**	
Veronica peregrina	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Invasive Herbaceous Species																																					
Cirsium arvense	I	3	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Convolvulus arvensis	I	5	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	3	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	**0**	
Phalaris arundinacea	I	2	0	0	0	5	0	0	0	0	0	5	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**	
Non-Native Herbaceous Species																																					
Agrostis species (assumed NN, FAC or wetter)	*NN*	*3*	0	0	0	0	0	0	0	5	0	10	10	0	0	0	30	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	**2**	
Centaurium erythraea (umbellatum)	NN	3	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	0	0	0	0	0	0	**0**	
Crepis setosa	NN	5	0	0	0	0	0	0	0	0	5	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**	
Daucus carota	NN	4	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	0	0	0	0	0	0	**0**	
Geranium dissectum	NN	4	0	0	0	0	0	2	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	2	0	**0**	
Kickxia elatine	NN	3	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**0**	
Lactuca serriola	NN	4	0	0	0	0	0	25	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	10	2	0	0	0	0	0	0	0	0	0	**1**	
Leontodon taraxacoides ssp.taraxacoides	NN	5	0	0	0	0	0	7	0	0	45	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0	**3**	
Lolium perenne	NN	3	0	0	0	0	0	15	0	0	0	3	0	0	0	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**	
Lythrum portula	NN	1	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	0	0	0	0	0	0	**0**	
Misopates orontium	NN	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Parentucellia viscosa	NN	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Plantago lanceolata	NN	4	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	0	0	0	0	0	0	**0**	
Plantago major	NN	3	0	0	0	0	0	0	0	0	0	6	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**	
Plantago lanceolata	NN	4	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	0	0	0	0	0	0	**0**	
Poa annua	NN	3	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	0	0	0	0	0	0	**0**	
Poa species (asssumed NN, FAC)	*NN*	*3*	3	0	5	0	1	2	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Poa trivialis	NN	3	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	0	0	0	0	0	0	**0**	
Polygonum aviculare	NN	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	**0**	
Raphanus sativus	NN	5	0	0	0	0	0	4	0	0	0	0	0	0	10	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	
Rumex crispus	NN	3	0	0	0	0	0	5	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	**0**	
Solanum dulcamara	NN	3	0	0	0	3	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	0	0	**0**	
Sonchus asper	NN	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	**0**	
unknown herb seedling	NN		0	0	0	0	3	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	0	**0**	
Vicia tetrasperma	NN	5	0	0	0	0	0	0	0	70	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	**2**	
Vulpia brominoides	NN	4	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	0	0	0	0	5	0	**0**	
Bare Substrate																																					
Bare ground and/or moss			0	20	74	10	52	5	8	0	2	15	5	0	18	0	0	0	0	0	5	3	3	29	3	0	5	2	10	11	10	0	15	93	0	0	**12**	bare substrate is NA plots that have ≥ 60% woody shade
Dead sprayed weeds			0	0	0	0	0	0	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	
Unvegetated water			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	0	0	0	0	0	0	**0**	
Shade, Woody Stem Cover & Water Depth																																					
Shade from woody plants			85	100	100	100	98	0	0	0	0	0	0	5	0	5	40	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	100	70	0	**21**	
Stem (basal) cover on ground (w/ species 4-letter code)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	3 (COSE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Approx. water depth (feet)			0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0	1	0.5	0	0	0	**0.1**	
Summary Information			**T3-FH1**	**T4-FH1**	**T4-FH2**	**T5-FH1**	**T5-FH2**	**T7-FH1**	**T7-FH2**	**T7-FH3**	**T7-FH4**	**T8-FH1**	**T8-FH2**	**T8-FH3**	**T8-FH4**	**T9-FH1**	**T9-FH2**	**T9-FH3**	**T9-FH4**	**T9-FH5**	**T9-FH6**	**T9-FH7**	**T9-FH8**	**T10-FH2**	**T10-FH3**	**T10-FH4**	**T10-FH5**	**T11-FH2**	**T11-FH3**	**T11-FH4**	**T11-FH5**	**T11-FH6**	**T11-FH7**	**T11-FH10**	**T11-FH11**	**T11-FH12**	**Habitat Average**	**Standard Error**
Cover of Native Herbaceous Species			100	83	11	82	45	35	92	31	45	58	85	72	68	15	73	102	100	103	98	92	97	71	92	84	90	98	90	89	90	100	85	7	50	100	**75**	4.8
Lower CI (80%)																																					68	
Upper CI (80%)																																					81	
Cover of Invasive Herbaceous Species			0	0	0	5	1	0	0	0	3	5	0	4	0	0	0	0	0	3	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	**1**	0
Lower CI (80%)																																					0	
Upper CI (80%)																																					1	
Bare Substrate			0	20	NA	10	NA	5	8	0	2	15	5	21	18	0	0	0	0	0	5	3	3	29	3	0	5	2	10	11	10	0	15	NA	0	0	**6**	1
Lower CI (80%)																																					5	
Upper CI (80%)																																					8	
Native Diversity																																					**8 plants meet diversity criteria- DECE, LEOR, IMCA, POHY, SPEM (herbs) + FRLA, SAHO & SALA (woody)**	
Prevalence Index-herb strata			2	1	3	1	2	3	2	10	4	2	1	2	3	3	2	2	2	3	2	2	2	2	2	2	2	1	1	1	1	1	1	1	4	2	**2**	N/A
Weighted Prevalence Index			249	80	73	101	102	299	149	1111	350	154	115	181	217	303	162	229	238	321	244	206	198	150	217	187	198	98	90	89	90	100	85	8	364	200		
Sum of herbaceous plant cover			103	83	26	90	50	95	92	106	98	85	95	79	82	100	103	102	102	106	98	97	97	71	97	100	95	98	90	89	90	100	85	7	100	100		

TUALATIN VALLEY ENVIRONMENTAL BANK																						
2019 Vegetation Monitoring	**Sample Date(s): 7/10/2019-7/22/19**																					
PFO Tree and Shrub Data	**Percent Cover %**																					
Species	Origin (N, NN, I)	Wetland Status (1 - 5)	**T3-F1**	**T4-F1**	**T5-F1**	**T7-F1**	**T7-F2**	**T8-F1**	**T8-F2**	**T8-F3**	**T9-F1**	**T9-F2**	**T9-F3**	**T9-F4**	**T10-F2**	**T10-F3**	**T11-F2**	**T11-F3**	**T11-F4**	**T11-F6**	**Row Average**	
Native Tree and Shrub Species:																						
Alnus rubra	N	3	0	0	0	7	7	12	0	0	1	0	0	5	0	0	0	0	0	0	**2**	
Amelanchier alnifolia	N	4	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	**1**	
Cornus sericea ssp. *sericea (alba)*	N	2	5	0	0	8	15	1	4	0	0	5	2	3	2	0	0	0	0	4	**3**	
Corylus cornuta	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	**0**	
Crataegus douglasii	N	3	0	4	4	1	4	1	4	9	0	1	1	5	1	2	0	0	0	2	**2**	
Frangula purshiana	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Fraxinus latifolia	N	2	10	15	14	35	15	12	15	3	1	30	35	15	10	5	1	1	0	25	**13**	
Lonicera involucrata	N	3	0	0	0	2	2	1	0	0	0	0	4	2	5	0	0	0	0	2	**1**	
Mahonia aquifolium	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**0**	
Malus fusca	N	2	0	0	0	0	1	1	1	0	0	0	0	1	0	2	0	0	0	0	**0**	
Physocarpus capitatus	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	**0**	
Populus balsamifera	N	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Rosa nutkana	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	10	**1**	
Rosa pisocarpa	N	3	0	0	0	0	1	0	0	1	40	1	0	1	1	0	0	0	0	0	**3**	
Rubus spectabilis	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Salix hookeriana	N	2	15	55	60	0	15	4	6	0	0	5	1	5	0	0	0	10	5	0	**10**	
Salix lucida var. *lasiandra (lasiandra)*	N	2	55	30	30	5	7	2	17	0	0	10	0	10	0	0	25	25	25	0	**13**	
Salix scouleriana	N	3	0	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	
Salix sitchensis	N	2	8	0	0	1	2	2	2	0	0	0	0	0	0	0	0	5	1	0	**1**	
Spiraea douglasii	N	2	10	0	0	1	10	0	20	2	2	5	1	0	3	0	5	5	5	2	**4**	
Symphoricarpos albus	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	**0**	
Thuja plicata	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Non-Native Shrub and Tree Species																						
Crataegus monogyna	NN	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Invasive Shrub and Tree Species																						
Rubus armeniacus	I	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Rubus species (cultivar)	I		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Native Shrub and Tree Count	**Woody Stem Count (Trees and Shrubs)**																					
Alnus rubra	N	3	0	0	0	1	2	3	0	0	1	0	0	1	0	0	0	0	0	0	**0**	
Amelanchier alnifolia	N	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**0**	
Cornus sericea ssp. *sericea (alba)*	N	2	3	2	0	14	7	2	1	0	0	0	4	4	3	0	0	0	0	5	**3**	
Corylus cornuta	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	**0**	
Crataegus douglasii	N	3	0	0	1	4	2	3	5	9	0	0	2	3	1	3	0	0	0	2	**2**	
Frangula purshiana	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Fraxinus latifolia	N	2	1	6	3	22	14	10	19	1	1	15	31	18	15	8	1	2	0	5	**10**	
Lonicera involucrata	N	3	0	0	0	3	1	1	0	0	0	0	5	6	8	1	0	0	0	4	**2**	
Mahonia aquifolium	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**0**	
Malus fusca	N	2	0	0	0	0	1	1	2	0	0	0	0	1	0	3	0	0	0	0	**0**	
Physocarpus capitatus	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	**0**	
Populus balsamifera	N	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Rosa nutkana	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	**0**	
Rosa pisocarpa	N	3	0	0	0	0	3	0	0	1	22	1	0	1	1	1	0	0	0	0	**2**	
Rubus spectabilis	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Salix hookeriana	N	2	5	20	23	0	3	4	1	0	0	5	1	2	0	0	0	1	1	0	**4**	
Salix lucida var. *lasiandra*	N	2	25	6	13	13	1	4	19	0	0	7	0	7	0	0	52	35	13	0	**11**	
Salix scouleriana	N	3	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Salix sitchensis	N	2	3	5	0	2	1	4	1	0	0	0	0	0	0	0	0	4	2	0	**1**	
Spiraea douglasii	N	2	6	0	0	3	8	0	19	3	2	2	1	0	6	0	4	4	5	1	**4**	
Symphoricarpos albus	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	**1**	
Summary Information																					**Habitat Average**	**Standard Error**
Cover of Invasive Shrubs and Trees			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
Lower CI (80%)																					0	
Upper CI (80%)																					0	
Native Diversity--See PFO Herb table for summary info																						
Density of Woody Vegetation		Average per acre	1387	1258	1420	2001	1420	1033	2162	452	871	968	1420	1387	1097	549	1839	2969	678	1323	**1346**	
Plot Area (shrub/tree plot)	1350																					
Per acre multiplier: Input 4,047 if plot area entered in B62 is in sq.meters or 43,560 for sq.feet	43560																					
Percent Cover of Native Shrubs and Trees			103	110	113	60	80	36	69	15	59	57	44	47	22	11	31	46	36	57	**55**	7
Lower CI (80%)																					46	
Upper CI (80%)																					65	
Sum of native plants /plot			43	39	44	62	44	32	67	14	27	30	44	43	34	17	57	46	21	41	**39**	
Does Plot Pass Native Cover Standard based on ≥ 50% Native Cover Y or N?			Y	Y	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N		
Does Plot Pass Native Cover Standard based on ≥ 1000 plants or stems per acre Y or N?			Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y	Y	N	Y	Y	N	Y		
Prevalence Index--woody strata			2	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	3	**2**	
Weighted Prevalence Index			206	230	235	130	174	86	142	40	189	116	93	107	51	27	62	92	72	146		
Sum of plant cover			103	110	113	60	80	36	69	15	59	57	44	47	22	11	31	46	36	57		

2019 Vegetation Monitoring	Sample Date(s):	7/10/2019-7/22/19	Percent (%) Cover																																								
PSS Herbaceous Community Species	Origin (N, NN, I)	Wetland Status (1 - 5)	T1-SH1	T1-SH2	T1-SH3	T1-SH4	T1-SH5	T2-SH1	T2-SH2	T2-SH3	T2-SH4	T2-SH5	T2-SH6	T2-SH7	T2-SH8	T2-SH9	T2-SH10	T2-SH11	T2-SH12	T3-SH1	T3-SH2	T3-SH3	T3-SH4	T6-SH1	T6-SH2	T6-SH3	T6-SH4	T6-SH5	T6-SH6	T6-SH7	T6-SH8	T6-SH9	T6-SH10	T6-SH11	T6-SH12	T6-SH13	T6-SH14	T6-SH15	T6-SH16	T6-SH17	T6-SH18	T6-SH19	T6-SH20	Average	
Native Herbaceous Species																																													
Azolla microphylla (mexicana)	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Cornus sericea ssp. *sericea (alba)*	N	2	0	0	3	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	0	0	0	0	0	0	0	0	0	0	**0**	
Cyperus erythrorhizos	N	1	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	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Deschampsia cespitosa	N	2	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	0	10	0	0	0	0	0	0	0	0	0	0	**1**	
Epilobium ciliatum	N	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	**0**	
Equisetum arvense	N	3	80	0	0	7	0	0	0	0	0	0	0	3	2	20	5	0	0	0	0	0	5	0	0	0	5	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	**3**	
Fraxinus latifolia seedling	N	2	1	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	0	0	0	4	0	1	3	1	0	0	0	0	**0**	
Galium aparine	N	4	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	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Gnaphalium palustre	N	2	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	0	0	0	0	0	0	0	0	0	0	0	0	25	**1**	
Hordeum brachyantherum	N	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	5	0	0	0	0	0	0	0	0	0	15	5	0	**1**	
Impatiens capensis	N	2	4	30	0	15	40	20	10	75	80	0	20	0	75	40	80	0	5	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**12**	
Juncus effusus	N	2	0	0	0	0	15	0	0	0	0	0	0	8	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	0	**1**	
Leersia oryzoides	N	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	5	0	0	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	
Lemna minor	N	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	5	30	0	0	0	2	30	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	
Ludwigia palustris	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Lycopus americanus	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Panicum capillare	N	3	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	0	0	0	0	0	0	0	0	0	0	0	0	12	**0**	
Plagiobothrys scouleri	N	2	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	0	0	0	0	0	0	0	0	0	0	0	0	5	**0**	
Polygonum (Persicaria) hydropiperoides	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	8	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	
Polygonum lapathifolium	N	2	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	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Prunella vulgaris	N	4	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	0	0	2	0	0	0	0	1	0	0	0	0	0	**0**	
Psilocarphus elatior	N	2	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	0	0	0	0	0	0	0	0	6	0	0	0	25	**1**	
Rorippa curvisiliqua	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Scirpus microcarpus	N	1	0	0	0	0	0	0	0	0	0	0	60	0	15	40	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**	
Toxicodendron diversilobum seedling	N	3	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	0	0	0	0	1	1	0	0	0	0	0	0	0	**0**	
Typha latifolia	N	1	0	0	0	0	10	5	10	0	0	0	0	0	5	0	0	0	15	80	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**	
Veronica americana	N	1	0	0	0	0	0	0	0	0	0	0	5	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	0	0	**0**	
Invasive Herbaceous Species																																										0			
Convolvulus arvensis	I	5	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	12	0	0	0	0	0	0	0	4	0	0	0	0	0	**0**	
Holcus lanatus	NN	3	3	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	1	4	0	0	0	0	0	0	0	0	0	0	**0**	
Hypericum perforatum	I	4	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	1	0	0	10	1	0	0	5	0	0	0	0	0	0	0	**0**	
Phalaris arundinacea	I	2	0	0	0	0	0	50	70	25	10	0	0	0	0	0	3	0	0	5	2	20	0	5	0	2	0	0	0	0	0	0	0	0	0	0	0	5	8	0	0	20	0	**5**	
Non-Native Herbaceous Species																																													
Agrostis capillaris	NN	3	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	85	95	3	60	20	0	0	0	0	7	65	3	75	75	5	**12**	
Agrostis stolonifera	NN	3	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	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Agrostis species (assmed NN, FAC or wetter)	NN	*3*	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	60	25	0	0	0	0	0	2	5	0	0	0	0	0	0	0	0	**2**	
Centaurium erythraea (umbellatum)	NN	3	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	0	1	2	0	0	0	0	0	0	0	0	0	0	**0**	
Crepis setosa	NN	5	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	0	0	0	0	0	0	0	0	0	0	1	0	0	**0**	
Daucus carota	NN	4	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	2	0	1	3	3	0	0	0	0	0	0	0	0	0	0	**0**	
Kickxia elatine	NN	3	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	1	0	0	0	0	0	0	0	1	0	0	0	0	**0**	
Leontodon taraxacoides ssp.taraxacoides	NN	4	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	0	15	0	0	0	0	0	0	0	0	0	0	0	**0**	
Lotus corniculatus	NN	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	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**	
Lythrum portula	NN	1	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	0	0	0	0	0	0	0	1	2	0	0	0	25	**1**	
Plantago lanceolata	NN	4	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	1	0	0	0	0	0	0	0	0	0	0	1	0	0	**0**	
Poa species (assumed NN, FAC)	NN	*3*	0	60	0	0	30	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	
Polygonum aviculare	NN	3	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	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Raphanus sativus	NN	5	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	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Ranunculus repens	NN	3	0	3	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	0	0	0	0	0	0	0	0	0	0	0	**0**	
Rumex crispus	NN	3	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	0	0	0	4	1	3	0	0	0	0	0	0	0	**0**	
Solanum dulcamara	NN	3	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	
Vicia species, assumed NN, FACU or drier	NN	4	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	0	1	0	1	0	0	0	0	0	0	0	0	0	**0**	
Vicia tetrasperma	NN	4	0	0	0	0	0	0	0	0	0	0	3	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	0	0	**0**	
Vulpia brominoides	NN	3	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	0	10	50	0	0	0	0	0	0	0	0	0	0	**1**	
Bare Substrate (bare substrate is NA in plots with > 60% shade)																																													bare substrate is NA in plots with ≥ 60% shade.
Bare ground and/or moss			12	7	96	78	0	15	10	0	10	97	5	89	2	5	12	24	69	10	29	80	5	82	88	67	10	43	5	0	69	0	2	85	85	89	89	73	17	92	6	0	3	**38**	
Dead/sprayed weeds			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	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Shade & Woody Stem Cover on Ground																																													
Shade from woody plants			95	75	100	100	50	70	45	75	25	75	0	100	80	80	100	100	100	70	40	100	90	100	90	100	85	60	80	0	0	10	30	95	95	100	95	80	50	100	45	5	0	**68**	
Stem cover (basal) on ground (w/ species 4 letter code)			0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	75	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10 (POBA)	0	0	5 (POBA)	0	0	0		
Summary Information			T1-SH1	T1-SH2	T1-SH3	T1-SH4	T1-SH5	T2-SH1	T2-SH2	T2-SH3	T2-SH4	T2-SH5	T2-SH6	T2-SH7	T2-SH8	T2-SH9	T2-SH10	T2-SH11	T2-SH12	T3-SH1	T3-SH2	T3-SH3	T3-SH4	T6-SH1	T6-SH2	T6-SH3	T6-SH4	T6-SH5	T6-SH6	T6-SH7	T6-SH8	T6-SH9	T6-SH10	T6-SH11	T6-SH12	T6-SH13	T6-SH14	T6-SH15	T6-SH16	T6-SH17	T6-SH18	T6-SH19	T6-SH20	**Habitat Average**	**Standard Error**
Cover of Native Herbaceous Species			85	30	4	22	65	25	20	75	80	3	87	11	98	100	85	1	20	85	69	0	95	3	2	31	30	32	7	0	26	0	12	8	9	3	1	10	7	0	17	5	67	**32**	5.4
Lower CI (80%)																																												26	
Upper CI (80%)																																												39	
Cover of Invasive Herbaceous Species			3	0	0	0	0	50	70	25	10	0	0	0	0	0	3	0	0	5	2	20	0	5	0	2	0	0	1	12	0	11	5	0	0	5	0	9	8	0	0	20	0	**6**	2
Lower CI (80%)																																												4	
Upper CI (80%)																																												9	
Bare Substrate			NA	NA	NA	NA	0	15	10	0	10	97	5	89	2	5	12	24	69	10	NA	NA	5	NA	NA	67	NA	43	5	0	69	0	2	NA	NA	NA	NA	NA	NA	NA	6	0	3	**22**	6
Lower CI (80%)																																												14	
Upper CI (80%)																																												30	
Native Diversity																																												**8 plants meet diversity criteria- IMCA,SCMI (herbs), POBA, COSE, FRLA, SAHO, SALA, SASI (woody).**	
Prevalence Index-herb strata			3	3	1	2	2	2	2	2	2	1	1	2	2	2	2	2	2	1	1	2	1	3	3	1	2	2	3	3	2	3	3	3	2	3	0	2	3	3	3	3	2	**2**	N/A
Weighted Prevalence Index			257	249	2	51	234	145	170	200	180	3	136	25	177	180	181	2	58	95	53	40	115	46	32	35	218	107	281	349	70	332	302	46	26	33	0	62	228	9	266	275	186		
Sum of herbaceous plant cover			88	93	4	22	103	75	90	100	90	3	95	11	98	100	88	1	31	90	71	20	95	18	12	33	90	57	95	108	31	101	98	15	15	11	1	27	83	3	94	100	97	**60**	

TUALATIN VALLEY ENVIRONMENTAL BANK

2019 Vegetation Monitoring	Sample Date(s):	7/10/2019-7/22/19	Percent Cover %																				
PSS Shrub and Tree Data																							
Native Shrub and Tree Species:	Origin (N, NN, I)	Wetland Status (1 - 5)	T1-S1	T1-S2	T2-S1	T2-S2	T2-S3	T2-S4	T2-S5	T3-S1	T3-S2	T6-S1	T6-S2	T6-S3	T6-S4	T6-S5	T6-S6	T6-S7	T6-S8	T6-S9	T6-S10	T6-S11	Row Average
Acer macrophyllum	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Alnus rubra	N	3	0	40	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	1	1	0	**2**
Amelanchier alnifolia	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Cornus sericea ssp. *sericea (alba)*	N	2	5	5	5	0	5	5	10	0	0	12	8	25	15	1	1	3	0	1	1	0	**5**
Corylus cornuta	N	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Crataegus douglasii	N	3	0	0	0	0	10	5	0	0	0	0	0	0	10	1	1	0	3	1	1	0	**2**
Frangula (Rhamnus) purshiana	N	3	0	0	5	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**0**
Fraxinus latifolia	N	2	0	10	0	0	7	25	0	0	0	15	0	5	15	10	5	13	0	5	1	0	**6**
Lonicera involucrata	N	3	0	0	0	5	0	2	0	0	0	4	4	6	2	5	1	0	0	0	0	0	**1**
Malus fusca	N	2	0	0	0	0	5	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**0**
Physocarpus capitatus	N	2	0	0	0	0	4	0	2	0	0	0	0	2	0	0	0	1	0	0	0	0	**0**
Populus balsamifera	N	3	0	0	5	0	0	0	0	0	0	0	0	0	0	35	25	80	87	24	0	0	**13**
Pseudostuga menziesii	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Quercus garryana	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	**0**
Rosa nutkana	N	3	0	0	0	0	0	0	0	0	0	0	0	0	5	0	1	0	0	0	0	0	**0**
Rosa pisocarpa	N	3	0	0	0	0	4	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	**0**
Rubus leucodermis	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	**0**
Rubus spectabilis	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Salix hookeriana	N	2	80	30	40	40	20	30	60	40	50	20	33	30	30	0	2	1	6	42	40	23	**31**
Salix lucida var. *lasiandra (lasiandra)*	N	2	5	30	15	30	15	0	10	20	20	0	40	10	0	0	0	0	2	12	15	25	**12**
Salix scouleriana	N	3	0	0	0	0	0	0	0	0	0	0	5	8	0	0	0	0	0	0	0	0	**1**
Salix sitchensis	N	2	0	5	5	12	5	7	2	15	15	60	10	0	0	0	0	0	5	9	15	12	**9**
Spiraea douglasii	N	2	5	3	5	5	0	10	10	3	10	0	0	3	0	1	5	0	1	0	0	0	**3**
Thuja plicata	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Non-Native Shrub and Tree Species																							
Crataegus monogyna	NN	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Malus pumila	NN	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Prunus species	NN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Invasive Shrub and Tree Species																							
Rubus armeniacus	I	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Bare Substrate- See the PSS herbaceous plot data on a separate table for bare substrate data.																							
Native Shrub and Tree Count	**Woody Stem Count (Trees and Shrubs)**																						
Acer macrophyllum	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Alnus rubra	N	3	0	3	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	1	0	**0**
Amelanchier alnifolia	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Cornus sericea ssp. *sericea (alba)*	N	2	1	4	2	0	8	4	2	0	0	6	5	17	4	1	1	5	0	0	1	0	**3**
Corylus cornuta	N	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Crataegus douglasii	N	3	0	0	4	0	12	6	0	0	0	0	0	0	5	2	2	0	1	0	1	0	**2**
Frangula (Rhamnus) purshiana	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**0**
Fraxinus latifolia	N	2	0	5	0	0	3	3	0	0	0	4	0	2	9	14	7	6	0	1	2	0	**3**
Lonicera involucrata	N	3	0	0	0	5	0	0	0	0	0	2	1	4	1	8	1	0	0	0	0	0	**1**
Malus fusca	N	2	0	0	0	0	4	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	**0**
Physocarpus capitatus	N	2	0	0	0	0	6	1	1	0	0	0	0	1	0	0	0	1	0	0	0	0	**1**
Populus balsamifera	N	3	0	0	2	0	0	0	0	0	0	0	0	0	0	16	14	22	48	23	0	0	**6**
Pseudostuga menziesii	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Quercus garryana	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	**0**
Rosa nutkana	N	3	0	0	0	0	0	0	0	0	0	0	0	0	5	0	1	0	0	0	0	0	**0**
Rosa pisocarpa	N	3	0	0	0	0	6	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	**1**
Rubus leucodermis	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	**0**
Rubus spectabilis	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Salix hookeriana	N	2	26	8	30	11	7	6	12	11	15	10	18	6	3	0	2	1	6	10	29	22	**12**
Salix lucida var. *lasiandra (lasiandra)*	N	2	0	10	8	7	4	0	2	8	8	0	28	3	0	0	0	0	2	5	5	7	**5**
Salix scouleriana	N	3	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	6	0	0	**1**
Salix sitchensis	N	2	1	2	6	8	1	2	1	7	4	16	4	0	0	0	0	0	1	1	3	11	**3**
Spiraea douglasii	N	2	10	2	9	4	0	9	14	5	12	0	0	4	0	1	6	0	1	0	0	0	**4**
Thuja plicata	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Summary Information																							**Habitat Average**	**Standard Error**
Cover of Invasive Shrubs and Trees			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0
Lower CI (80%)																							0	
Upper CI (80%)																							0	
See PSS Herb table for summary info on diversity																								N/A
Density of Woody Vegetation		Average per acre	1226	1097	1968	1129	1678	1065	1033	1000	1258	1226	1904	1258	1033	1517	1226	1194	1904	1484	1355	1291	**1342**	
Plot Area (shrub/tree plot)	1350																							
Per acre multiplier: Input 4,047 if plot area entered in B63 is in sq.meters or 43,560 for sq.feet	43560																							
Percent Cover of Native Shrubs and Trees			95	123	80	92	76	86	94	78	95	111	100	91	80	56	44	99	104	95	74	60	**87**	4
Lower CI (80%)																							81	
Upper CI (80%)																							92	
Sum of native plants/plot			38	34	61	35	52	33	32	31	39	38	59	39	32	47	38	37	59	46	42	40	**42**	
Does Plot Pass Native Cover Standard based on ≥ 50% Native Cover Y or N?			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Does Plot Pass Native Cover Standard based on ≥ 1000 plants or stems per acre Y or N?			Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Prevalence Index-woody strata			2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	2	2	2	2	**2**	
Weighted Prevalence Index			190	286	170	189	168	179	188	156	190	226	209	198	180	150	113	278	298	216	150	120		
Sum of plant cover			95	123	80	92	76	86	94	78	95	111	100	91	80	56	44	99	104	95	74	60	**87**	

2019 Vegetation Monitoring	Sample Date(s):	7/10/2019-7/22/19																													
			Percent (%) Cover																												
Buffer Herbaceous Community	Origin (N, NN, I)	Wetland Status (1 - 5)	T3-BH1	T3-BH2	T4-BH1	T4-BH2	T6-BH1	T6-BH2	T6-BH3	T6-BH4	T7-BH1	T7-BH2	T7-BH3	T7-BH4	T7-BH5	T7-BH6	T8-BH1	T8-BH2	T8-BH3	T8-BH4	T9-BH1	T9-BH2	T9-BH3	T9-BH4	T10-BH3	T10-BH4	T10-BH5	T10-BH6	T11-BH3	T11-BH4		
Species																													**Average**	
Native Herbaceous Species																															
Achillea millefolium	N	4	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0		**0**	
Agrostis exarata	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	10	0	0	0		**1**	
Anaphalis margaritacea	N	4	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**	
Deschampsia cespitosa	N	2	0	0	0	0	4	5	0	0	0	0	0	0	70	12	0	0	60	0	0	0	0	20	45	0	0	0	75	0	**10**	
Deschampsia elongata	N	2	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	**0**	
Elymus glaucus	N	4	0	25	20	15	0	0	0	5	15	20	5	10	0	1	7	30	0	0	10	10	0	0	0	0	0	0	0	0	**6**	
Epilobium ciliatum	N	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Epilobium brachycarpum	N		5	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**	
Epilobium densiflorum	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	**0**	
Equisetum arvense	N	3	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	**0**	
Festuca idahoensis ssp. Roemeri	N	4	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	
Festuca rubra ssp. *rubra*	N	3	20	0	0	0	0	0	40	5	75	55	88	60	0	0	60	50	0	0	30	40	0	0	0	0	0	0	0	77	**21**	
Gnaphalium palustre	N	2	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	**0**	
Hordeum brachyantherum	N	2	0	0	10	0	0	0	0	0	0	0	0	0	0	15	0	0	10	0	0	0	65	5	25	0	0	0	0	0	**5**	
Lotus unifoliolatus	N	4	0	0	0	0	0	90	2	1	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**3**	
Prunella vulgaris	N	4	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	**0**	
Psilocarphus elatior	N	2	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	**0**	
Rorippa curvisiliqua	N	1	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	**0**	
Rubus ursinus	N	4	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	**0**	
Veronica peregrina	N	1	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	**0**	
Invasive Herbaceous Species																															
Cirsium arvense	I	3	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Convolvulus arvensis	I	5	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	3	0	0	3	2	0	0	0	0	0	0	**0**	
Phalaris arundinacea	I	2	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	**0**	
Rubus sp. (cultivar) seedlings	I	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	0	**0**	
Holcus lanatus	I	3	43	20	20	20	0	0	15	67	7	0	0	8	0	15	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**8**	
Non-Native Herbaceous Species																															
Agrostis capillaris	NN	3	0	0	35	0	0	20	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	**3**	
Agrostis species	NN		0	0	0	0	8	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	5	1	0	0	0	0	0	0	**1**	
Alopecurus pratensis	NN	3	0	0	0	0	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	**1**	
Anthemis cotula	NN	4	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	**0**	
Avena species	NN		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	**0**	
Bromus hordeaceus	NN	4	15	20	5	20	15	1	0	0	0	0	0	0	0	0	0	0	0	4	50	10	0	0	0	0	0	50	10	0	**7**	
Capsella bursa-pastoris	NN	4	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	**0**	
Centaurium erythraea (umbellatum)	NN	3	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	**0**	
Cerastium glomeratum (viscosum)	NN	4	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	**0**	
Crepis setosa	NN	5	0	0	0	12	0	0	5	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	2	**1**	
Daucus carota	NN	4	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	**0**	
Geranium dissectum	NN	4	12	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	10	0	0	0	0	**1**	
Hypochaeris radicata	NN	5	0	0	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	**0**	
Kickxia elatine	NN	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**0**	
Lactuca serriola	NN	4	0	0	0	0	0	0	0	0	2	0	0	0	3	0	5	4	0	0	0	7	4	2	0	5	0	0	6	12	**2**	
Leontodon taraxacoides ssp.taraxacoides	NN	5	0	0	0	0	36	25	15	15	0	0	0	5	20	6	0	0	10	7	0	0	0	6	0	0	0	0	4	2	**5**	
Lolium perenne	NN	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**0**	
Malva neglecta	NN	5	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	**0**	
Medicago lupulina	NN	4	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	**0**	
Raphanus sativus	NN	5	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	15	7	0	0	35	70	10	0	0	**5**	
Rumex crispus	NN	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	7	0	0	0	0	10	0	0	**1**	
Vicia hirsuta	NN	5	0	15	7	5	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	
Vicia sativa	NN	5	0	5	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**	
Vicia tetrasperma	NN	5	5	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**	
Vicia species, assumed NN, FACU or drier	NN	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	
Vulpia brominoides	NN	4	0	0	0	10	0	5	20	3	0	0	0	5	0	20	0	0	10	65	0	0	5	50	15	15	0	30	0	0	**9**	
Bare Substrate																															
Bare ground and/or moss			0	15	3	0	28	0	0	0	0	0	0	1	1	0	13	16	4	1	5	10	2	6	5	19	20	0	5	7	**6**	
Dead sprayed weeds			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	**0**	
Shade & Woody Stem Cover on Ground																															
Shade from woody plants			0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	5	0	0	15	0	10	0	0	0	0	0	0	0	**2**	
Stem (basal) cover on ground (w/ species 4 letter code)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2 (SYAL)	0	0	0	0	0	0	0	**0**	

Summary Information			T3-BH1	T3-BH2	T4-BH1	T4-BH2	T6-BH1	T6-BH2	T6-BH3	T6-BH4	T7-BH1	T7-BH2	T7-BH3	T7-BH4	T7-BH5	T7-BH6	T8-BH1	T8-BH2	T8-BH3	T8-BH4	T9-BH1	T9-BH2	T9-BH3	T9-BH4	T10-BH3	T10-BH4	T10-BH5	T10-BH6	T11-BH3	T11-BH4	**Habitat Average**	**Standard Error**
Cover of Native Herbaceous Species			25	25	30	15	4	95	42	13	91	100	93	72	70	50	67	80	70	0	41	50	65	32	70	10	10	0	75	77	**49**	6.0
Lower CI (80%)																															41	
Upper CI (80%)																															57	
Cover of Invasive Herbaceous Species			43	20	20	20	0	0	15	67	7	0	7	8	0	15	0	0	0	3	0	1	3	2	0	0	0	0	0	0	**8**	2.9
Lower CI (80%)																															5	
Upper CI (80%)																															12	
Bare Substrate			0	15	3	0	28	0	0	0	0	0	0	1	1	0	13	16	4	1	5	10	2	6	5	19	20	0	5	7	**6**	1.4
Lower CI (80%)																															4	
Upper CI (80%)																															8	
Native Diversity																															Currently 4 native herb spp. (ELGL, HOBR, FERU, DECE) meet the diversity criteria.	
Prevalence Index			3	4	3	4	4	4	4	3	3	3	3	3	3	3	3	3	3	4	4	4	3	3	2	4	5	4	2	3	**3**	
Weighted Prevalence Index			322	340	320	337	273	595	368	345	316	345	315	336	279	261	288	286	258	381	337	334	261	315	245	342	390	400	234	299		
Sum of herbaceous plant cover			100	85	97	85	72	151	100	100	100	100	100	99	99	101	87	84	96	99	92	90	102	94	100	81	80	100	95	93		

TUALATIN VALLEY ENVIRONMENTAL BANK

2019 Vegetation Monitoring	**Sample Date(s):**	7/10/2019-7/22/2019	**Percent Cover %**															
Buffer Tree and Shrub Data	Origin (N, NN, I)	Wetland Status (1 - 5)	**T3-BF1**	**T4-BF1**	**T6-BF1**	**T6-BF2**	**T7-BF1**	**T7-BF2**	**T7-BF3**	**T8-BF1**	**T8-BF2**	**T9-BF1**	**T9-BF2**	**T10-BF2**	**T10-BF3**	**T11-BF2**	Row Average	
Native Tree and Shrub Species:																		
Abies grandis	N	4	0	0	0	0	2	8	0	8	0	0	0	0	0	0	**1**	
Acer circinatum	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Acer macrophyllum	N	4	5	12	0	1	0	0	0	0	0	0	1	1	1	2	**2**	
Alnus rubra	N	3	0	0	1	2	0	0	0	0	0	0	0	0	0	0	**0**	
Amelanchier alnifolia	N	4	2	2	0	0	0	0	0	0	1	1	1	0	0	0	**1**	
Ceanothus species	N	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Cornus sericea ssp. *sericea (alba)*	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Cornus nuttallii	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Corylus cornuta	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Crataegus douglasii	N	3	8	0	2	1	1	1	2	1	3	1	1	5	1	4	**2**	
Frangula (Rhamnus) purshiana	N	3	3	2	0	0	0	1	0	0	0	0	0	0	0	0	**0**	
Fraxinus latifolia	N	2	10	1	1	2	0	0	5	0	10	1	5	7	5	4	**4**	
Holodiscus discolor	N	4	0	2	0	0	0	0	0	0	0	2	0	0	0	0	**0**	
Lonicera involucrata	N	3	0	0	0	0	0	1	1	0	0	1	1	2	0	1	**1**	
Mahonia aquifolium	N	4	1	2	2	3	2	3	5	2	20	3	5	5	5	10	**5**	
Mahonia nervosa	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Malus fusca	N	2	0	0	1	0	0	0	0	0	0	1	0	1	1	0	**0**	
Oermleria cerasiformis	N	4	0	0	0	0	1	1	0	0	0	1	0	0	0	0	**0**	
Philadelphus lewisii	N	5	0	0	0	1	0	0	0	0	0	0	1	0	1	0	**0**	
Physocarpus capitatus	N	2	0	0	0	0	1	1	1	0	0	0	0	1	0	1	**0**	
Pinus pondserosa	N	4	6	0	0	0	0	0	0	0	0	0	1	0	1	0	**1**	
Populus balsamifera	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Prunus emarginata	N	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**0**	
Prunus virginiana	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Pseudotsuga menziesii	N	4	12	10	1	0	40	15	0	30	1	20	0	0	0	0	**9**	
Quercus garryana	N	4	1	1	2	1	0	1	1	0	0	1	0	1	2	0	**1**	
Ribes sanguinium	N	4	3	1	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Rosa gymnocarpa	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Rosa nutkana	N	3	0	0	0	1	1	1	2	2	2	3	3	5	4	3	**2**	
Rosa pisocarpa	N	3	0	0	1	0	0	0	0	0	7	0	0	0	0	0	**1**	
Rubus leucodermis	N	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**0**	
Rubus parviflorus	N	4	0	0	1	0	5	0	1	0	0	0	1	0	0	0	**1**	
Sambucus racemosa	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Sambucus nigra ssp. *cerulea*	N	4	8	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	
Salix hookeriana	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Salix lucida var. *lasiandra (lasiandra)*	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Salix scouleriana	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Salix sitchensis	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Spiraea douglasii	N	2	0	0	0	0	0	0	15	0	5	0	0	0	0	0	**1**	
Symphoricarpos albus	N	4	1	1	1	1	3	5	2	1	1	4	1	5	1	1	**2**	
Thuja plicata	N	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**0**	
Tsuga heterophylla	N	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**0**	
Non-Native Shrub and Tree Species																		
Crataegus monogyna	NN	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
None this year			0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Prunus species	NN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Rosa rubignosa	NN	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Invasive Shrub and Tree Species																		
Rubus armeniacus	I	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Rubus cultivar	I		0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Native Shrub and Tree Count	**Woody Stem Count (Trees and Shrubs)**																	
Abies grandis	N	4	0	0	0	0	2	7	0	3	0	0	0	0	0	0	**1**	
Acer circinatum	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Acer macrophyllum	N	4	6	10	0	3	0	0	0	0	0	0	2	1	1	2	**2**	
Alnus rubra	N	3	0	0	2	2	0	0	0	0	0	0	0	0	0	0	**0**	
Amelanchier alnifolia	N	4	1	3	0	0	0	0	0	0	2	1	1	0	0	0	**1**	
Ceanothus species	N	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Cornus sericea ssp. *sericea (alba)*	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Cornus nuttallii	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Corylus cornuta	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Crataegus douglasii	N	3	4	0	5	1	1	1	3	2	3	3	2	7	1	9	**3**	
Frangula (Rhamnus) purshiana	N	3	2	2	0	0	0	1	0	0	0	0	0	0	0	0	**0**	
Fraxinus latifolia	N	2	10	2	2	3	0	0	8	0	12	1	8	11	6	8	**5**	
Holodiscus discolor	N	4	0	1	0	0	0	0	0	0	0	3	0	0	0	0	**0**	
Lonicera involucrata	N	3	0	0	0	0	0	1	1	0	0	2	3	4	0	2	**1**	
Mahonia aquifolium	N	4	3	5	5	8	10	7	15	6	23	10	12	11	9	23	**11**	
Mahonia nervosa	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Malus fusca	N	2	0	0	2	0	0	0	0	0	0	1	0	2	1	0	**0**	
Oermleria cerasiformis	N	4	0	0	0	0	1	1	0	0	0	1	0	0	0	0	**0**	
Philadelphus lewisii	N	5	0	0	0	2	0	0	0	0	0	0	1	0	1	0	**0**	
Physocarpus capitatus	N	2	0	0	0	0	1	2	1	0	0	0	0	1	0	2	**1**	
Pinus ponderosa	N	4	1	0	0	0	0	0	0	0	0	0	1	0	1	0	**0**	
Populus balsamifera	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Prunus emarginata	N	4	0	0	0	0	0	2	0	0	0	0	0	0	0	0	**0**	
Prunus virginiana	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Pseudostuga menziesii	N	4	12	6	1	0	11	6	0	7	1	6	0	0	0	0	**4**	
Quercus garryana	N	4	2	3	4	1	0	3	3	0	0	1	0	2	4	0	**2**	
Ribes sanguinium	N	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Rosa gymnocarpa	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Rosa pisocarpa	N	3	0	0	1	0	0	0	0	0	9	0	0	0	0	0	**1**	
Rosa nutkana	N	3	0	0	0	1	2	1	5	5	4	6	4	11	4	6	**4**	
Rubus leucodermis	N	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**0**	
Rubus parviflorus	N	4	0	0	1	0	1	0	1	0	0	0	1	0	0	0	**0**	
Sambucus nigra ssp. *cerulea*	N	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Sambucus racemosa	N	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Salix hookeriana	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Salix lucida var. *lasiandra (lasiandra)*	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Salix scouleriana	N	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Salix sitchensis	N	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	
Spiraea douglasii	N	2	0	0	0	0	0	0	22	0	7	0	0	0	0	0	**2**	
Symphoricarpos albus	N	4	0	3	3	4	13	12	5	3	3	13	4	9	1	1	**5**	
Thuja plicata	N	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**0**	
Tsuga heterophylla	N	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**0**	
Summary Information																	**Habitat Average**	**Standard Error**
Cover of Invasive Shrubs and Trees			0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0
Lower CI (80%)																	0	
Upper CI (80%)																	0	
Native Diversity--See buffer Herb table for summary info																		
Density of Woody Vegetation		Average per acre	1420	1162	871	807	1387	1452	2065	839	2065	1549	1258	1904	936	1710	**1387**	
Plot Area (shrub/tree plot)	1350																	
Per acre multiplier: Input 4,047 if plot area entered in B101 is in sq.meters or 43,560 for sq.feet	43560																	
Percent Cover of Native Shrubs and Trees			60	34	14	13	57	40	35	44	50	39	21	33	22	26	**35**	4
Lower CI (80%)																	30	
Upper CI (80%)																	40	
Sum of native plants /plot			44	36	27	25	43	45	64	26	64	48	39	59	29	53	**43**	
Does Plot Pass Native Cover Standard based on ≥ 50% Native Cover Y or N?			Y	N	N	N	Y	N	N	N	Y	N	N	N	N	N		
Does Plot Pass Native Cover Standard based on ≥ 1000 plants or stems per acre Y or N?			Y	Y	N	N	Y	Y	Y	N	Y	Y	Y	Y	N	Y		
Sum of plant cover			60	34	14	13	57	40	35	44	50	39	21	33	22	26	**35**	

VEGETATION MONITORING NOTES:

General

-Occasionally a native woody species was rooted in herbaceous plots in various habitat classes. The percent cover at ground level of "stems" as well as "rooted in" aerial cover was recorded in the tables followed by the 4-letter species code, but the woody cover recorded in herb plots was not added to the total native percent cover so as not to double up cover already captured in the woody plot data for the PFO, PSS & Buffer habitat classes.

- In the herbaceous plot data for the PFO, PSS & Buffer habitat classes, as of 2015, we started recording "shade from woody plants" i.e., aerial cover. Again this was not added to the native cover totals. *Starting in 2015, any herb plot with 60% or more aerial cover (shade) from woody plants is excluded from the bare substrate criteria.*

-Several herbaceous plots in the wetlands are listed as having *Carex scoparia* and/or *C. ovalis.* These two species are very similar looking native FACW sedges; we did not key every sample but it is likely both species are present.

-The identification of *Microsteris gracillis,* present in low percentages in a few herb plots in the FACW/FAC communities, is somewhat tentative.

PEM-OBL Herbaceous Community

-There are some disagreements re: the nativity of *Sparganium emersum.* As per the Mitigation Bank Instrument, this species will be considered a native for this project.

-Both *Potomogeton nodosus* and *P. natens* are present in this community and have similar floating leaves (the submerged leaves differ). Populations within plots identified as one or the other may include both. Both species are native OBL aquatic plants.

-Identification of *Stuckenia pectinata* (formerly *Potomogeton pectinatus*) and *Potomogeton foliosus* is somewhat tentative; no flowers were present in samples, but they matched the vegetative characteristics of these species. These species were not seen in 2016 or 2017 (possibly due to removing the deepest inundated plots) but may be seen again in future years.

PFO, PSS and Upland Buffers-Tree & Shrub Plots

-T7-F1: 50% of plot inundated

T8-F1: 60% of plot inundated

-T8-F3: About 50% of this plot is actually in the PEM habitat/

-T11-F2: most of the plot does not support woody species due to water.

-T11-F3: currently only 70% of plot supports woody species due to water.

-T11-F4: currently only 15% of plot supports woody species due to water.**-**

-Willows identified as *Salix hookeriana* (aka *S. piperi*) may occasionally include *S. scouleriana* plants; the two may look very similar when young.

Removals of Plots in 2017:

- This year we removed nine more of the permanently inundated OBL plots (T4-PEMOBL1, T4-PEMOBL2, T4-PEMOBL3, T4-PEMOBL4, T5-PEMOBL2, T7-PEMOBL1, T7-PEMOBL3, T9-PEMOBL1, and T10-PEMOBL3).

Removals of Plots in 2016:

- Two PFO herb plots were removed: T11-FH8 and T11-FH9 were inundated approximately 2 and 3 feet respectively and thus were not representative of the PFO habitat.
- Nine PEMOBL plots were removed: (T5-PEMOBL1, T8-PEMOBL1, T8-PEMOBL2, T9-PEMOBL2, T10-PEMOBL1, T10-PEMOBL2, T11-PEMOBL1, T11-PEMOBL2, and T11-PEMOBL3). They were too deeply inundated ($\geq$ 1.5 foot to about 3 or more feet) to accurately estimate cover from a distance.

Removals and Addition of Plots in 2015:

- The five PSS herbaceous plots on Transect 6 (T6-SH2, T6-SH6, T6-SH11, T6-SH12, and T6-SH14) that had been removed in 2014 due to being in total shade provided by a few scattered mature trees were added back. However these herb plots (and any others with $\geq$ 60% aerial cover from woody plants) are now excluded from the bare substrate criteria.
- Several plots were added on the eastern side of transect 10 in 2015 to ensure full coverage of the transect. These plots were T10-F3, T10-FH5, T10-BF3, T10-BH5, and T10-BH6.
- One of the inundated OBL plots, T7-PEMOBL2 was too deep to estimate cover from a distance so it was removed.

Removals and Addition of Plots in 2014:

- PFO herb plot T5-FH2 was added; it had originally thought to have been in the buffer but it is in wetland.
- Five PSS herbaceous plots on Transect 6 (T6-SH2, T6-SH6, T6-SH11, T6-SH12, and T6-SH14) were removed due to being in total shade provided by a few scattered mature trees.
- Two PFO woody plots (T10-F1 and T11-F1) and the two associated herbaceous plots (T10-FH1 and T11-FH1) were removed because they were located in the pre-existing mature wetland forest, where no woody and herbaceous planting had occurred.
- One PFO woody plot (T11-F5) was removed from the PFO community because it was approximately 70% inundated.
- In the buffer we initially sampled but then removed two woody plots (T10-BF1 and T11-BF1) and associated herb plots (T10-BH1 and T11-BH1) because they were in the existing mature forested unplanted buffer.

Alterations of Plot Location or Orientation in 2014:

- PFO woody plot T4-F1 and associated herb plot T4-FH1 were moved approximately 20 feet to the east to the plant community break because the woody plot had previously been partially within the PEM OBL habitat.
- PSS woody plot T6-S4 was moved and skewed (as in 2013) and the associated herb plot T6-SH6 was moved to the west to avoid placement in the road, however the resulting placement varied from slightly from the 2013 location.

- Buffer woody plot T7-BF2 and associated herb plot T7-BH3 were placed only about 30 feet east of the previous herb plot (rather than the usual 50 feet) so that the woody plot would fit within the mitigation buffer; the rectangular woody plot was also skewed so that the short edge was parallel to the transect for the same reason. Buffer woody plot T9-BF2 was similarly skewed.

Removal or Re-Labeling of Plots in 2013:

- Herb plot T10-PEM1 (initially placed in the FAC/FACW community) was re-labeled as T10-OBL3 since it was actually in the OBL community.
- Herb plot T12-PEM1 (also initially placed in the FAC/FACW community) was inundated on August 1, 2013 and was discarded.

Alterations of Plot Location or Orientation in 2012 or 2013:

- PSS herb plot T2-SH1 started 15 ft from property line because of bisecting property line (the 1st shrub plot was not associated with this herb plot for the same reason (it was with T2-SH2 instead))
- PFO woody plot T5-F1 was moved approximately 10 feet to the east of its original location because a portion of it was in the OBL-dominated herbaceous habitat.
- PSS plots T6-S2 and T6-SH3 were skewed slightly because portions of them were in open water.
- PSS woody plot T6-S4 was moved approximately 25 feet west so it would be completely out of an unimproved access road, and the associated herb plot T6-SH6 was moved so it would be in the corner of the shrub plot.
- PSS woody plot T6-S11 was skewed north so that it would be entirely within one wetland habitat type.
- PFO woody plots T8-F1, T9-F1 and T10-F1 were skewed so that the short edge was parallel to the transect in order to fit within the community.

Plant Nomenclature:

-Plant nomenclature is generally up-to-date. The USDA PLANTS database (http://plants.usda.gov/java/) was our source for nomenclature. In cases where the latest nomenclature is different than that listed in the Corps WIS list, the name used name in the Corps' list, or closest synomy is in parentheses. Except for a few species as noted in the Mitigation Bank Instrument, this is also our source for nativity designations.
-The Wetland Indicator Statuses (WIS) are from the 2016 list for the Western Mountains, Valleys and Coast Region as presented in the Corps' *State of OREGON 2016 Wetland Plant List*

Principal Plant Identification Resources Used For This Project

Technical Flora and Keys:

-Hitchcock, C. Leo and Cronquist. 1974. Flora of the Pacific Northwest. University of Washington Press.
-Hitchcock, C. Leo et. al. 1955, 1959, 1961, 1964 and 1969. Vascular Plants of the Pacific Northwest (5 Volumes). University of Washington Press.

-Kozloff, Eugene N. 2005. Plants of Western Oregon, Washington and British Columbia. Timber Press.
-Meyers, Stephen C. *et. al.* 2015. Flora of Oregon- Volume 1: Pteridophytes, Gymnosperms, and Monocots. Botanical Research Institute of Texas Press.
-Various authors. 2014. The on-line Oregon Flora Project keys and plant descriptions. URL http://www.oregonflora.org/

Field Guides:

-Cooke, Sarah Spear (Editor). 1997. A Field Guide to the Common Wetland Plants of Western Washington and Northwestern Oregon. Seattle Audubon Society
-Guard, B. Jennifer. 1995. Wetland Plants of Oregon and Washington. Lone Pine Publishing.
-Whitson, Tom D. (editor) et. al. 1996. Weeds of the West. 5th Edition. University of Wyoming Press.

-Other Resources:

-John Christy, Wetland ecologist for the Institute for Natural Resources was consulted in previous years concerning the identification of several native species.
-Richard Brainerd and others from the Carex Working Group in Corvallis, Oregon were consulted in previous years concerning the identification of several native *Bromus* species.
-Stephen C. Meyers, Taxonomic Director, Oregon Flora Project, Oregon State University was contacted in 2016 to confirm our identification of atypical samples of the native *Polygonum hydropiperoides* (aka *Persicaria hydropiperoides*) that had spotted leaves, a feature that is not described for this species in any regional flora. He confirmed our ID of *P. hydropiperoides* and speculated that there may have been hybridization with *Polygonum persicaria* (aka *Persicaria maculosa)* in past generations that had subsequently back-crossed with pure strains of *P. hydropiperoides.* Because this was an unusual plant he requested that we send a pressed specimen that will now be included in their herbarium.
-USDA PLANTS database URL http://plants.usda.gov/java/. This site provides drawings, photos and distribution maps plus useful links to other web sites including the CalPhotos website URL http://calphotos.berkeley.edu etc.

APPENDIX B: PHOTOGRAPHIC DOCUMENTATION

Photographic Documentation: Photos taken on 12/10/2019

Photo Point 1 NW: Photo displays native dominated plant communities within the wetland area and native grass dominated upland buffer.

Photo Point 1 SW: Photo displays native dominated plant communities within the wetland area and native grass dominated upland buffer

Photo Point 2 NW: Photo displays native dominated plant communities within the wetland area and vigorously-growing woody plantings.

Photo Point 3 SW: Photo displays the un-improved access road near the "north-south" ditch.

Photo Point 3 SE: Photo displays the un-improved access road which crosses the constructed swale.

Photo Point 4 N: Photo displays the head of the constructed swale, at the un-improved access road crossing.

Photo Point 4 S: Photo displays head of constructed swale, at the un-improved access road crossing.

Photo Point 5 E: Photo displays northern woody-debris jam / ditch plug.

Photo Point 6 NW: Photo displays constructed swale and wetland creation area within the PFO vegetation community and upland buffer.

Photo Point 6 SE: Photo displays constructed swale and wetland creation area.

Photo Point 7 SE: Photo displays wetland enhancement, restoration and creation areas.

Photo Point 8 NW: Photo displays wetland creation area within the PEM FAC/FACW and PFO vegetation communities.

Photo Point 8 SE: Photo displays wetland creation and restoration areas within the PEM FAC/FACW and PFO vegetation communities.

Photo Point 9 SE: Photo displays southern woody-debris jam / ditch plug.

Photo Point 10 SW: Photo displays woody-debris jam / ditch plug, and an obligate dominated PEM community.

Photo Point 11 NW: Photo displays the mouth of the constructed swale and the wetland creation area.

Photo Point 11 SE: Photo displays the mouth of the constructed swale looking toward the log jams.

Photo Point 12 NW: Photo displays upland buffer area.

Photo Point 13 SW: Photo displays the re-contoured location of the 18" culvert, ditch outfall, and adjacent hill-slope trench.

Photo Point 14 NW: Photo displays the re-contoured location of the 18" culvert and ditch outfall.

Photo Point 15 SW: Photo displays the secondary log jam.

Photo Point 16 SE: Photo displays primary log jam.

APPENDIX C: VEGETATION MONITORING TRANSECT LOCATION TABLE

TUALATIN VALLEY ENVIRONMENTAL BANK
Vegetation Monitoring Transect Locations:

Transect	Start Latitude	Start Longitude	End Latitude	End Longitude
T1	45.448	-122.968	45.448	-122.967
T2	45.448	-122.968	45.448	-122.966
T3	45.447	-122.965	45.447	-122.964
T4	45.446	-122.965	45.446	-122.963
T5	45.445	-122.963	45.445	-122.962
T6	45.443	-122.963	45.443	-122.959
T7	45.442	-122.963	45.442	-122.961
T8	45.441	-122.963	45.441	-122.961
T9	45.439	-122.962	45.439	-122.960
T10	45.438	-122.962	45.438	-122.958
T11	45.437	-122.962	45.437	-122.958
T12	45.437	-122.961	45.437	-122.959

Please refer to Section E: Monitoring Data Locations for an in depth description of plot locations. Transects ran west to east. In general, the first plot on a transect was 5 feet east of the transect start point; herbaceous plots were spaced every 50 feet and tree/shrub plots were spaced every 100 feet. Some areas were not sampled due to deep inundation, upland, or impermiable surface. The locations of the start and end points of each monitoring transect, the northwestern corner of each herbaceous plot, and all four corners of the woody vegetation plots were GPS'ed; these data are available upon request.

APPENDIX D: CREDIT LEDGER (2018)

TUALATIN VALLEY ENVIRONMENTAL BANK CREDIT LEDGER: 12/13/18 - 12/16/19

Date	Transaction Type	Jurisdiction	Permitee	Permit Number (DSL/Corps)	Wetland Impact Type	Number of Credits (ac.)	Balance of Credits after Transaction (ac.)
1/14/2019	withdrawl	State/Federal	Brookman Development LLC	61502-FP, NWP-2018-00472	PEM; Slopes/Flats/Riverine	0.36	0.0009
5/23/2019	release	State/Federal				0.819	0.8199
6/28/2019	withdrawl	State/Federal	Washington County	62020-GP, NWP-2019-00243	PEM; Slopes/Flats	0.034	0.7859
7/16/2019	withdrawl	State/Federal	JT Smith Companies	61737-RF, NWP-2019-00035	PEM; Flats	0.34	0.4459
10/31/2019	withdrawl	State/Federal	Tualatin Hills Parks and Recreation District	61830-RF, NWP-2018-00365	PEM; Slope/Flats	0.28	0.1659
Credits Released 2019 (ac.): 0.819			**Credits Withdrawn 2019 (ac.): 1.014**				
Total Credits Released (ac.): 23.349			**Total Credits Withdrawn (ac.): 23.1831**			**Balance (ac.):**	**0.1659**