

Coyote Prairie North Mitigation Bank 2017 Report



June 2018

This report was prepared by the Parks and Open Space Division
of the City of Eugene's Public Works Department



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Chapter 1. **Introduction**

The Coyote Prairie North Mitigation Bank (CPNMB) operates under an agreement between the Oregon Department of State Lands (DSL), Oregon Department of Environmental Quality, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Oregon Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and the City of Eugene. The Mitigation Bank Instrument establishing this Bank was signed in 2011.

Wetland enhancement work, in the form of site preparation, began in 2008 in the East Phase of the bank and earthwork and seeding of this phase occurred in 2009. Fifth year monitoring of the East phase was completed in summer 2014, and in 2015 it was determined to have met its performance criteria.

The West Phase is the final phase of the CPNMB. Site preparation began in the West Phase in 2013. Earthwork and seeding of this phase were completed in fall 2015, with planting completed January 2016. Spring 2017 results represent the second growing season after first native seeding.

The 2015 earthwork also included conversion of an agricultural ditch to restore site hydrology at the CPNMB. The ditch, which flowed through the East Phase and Phase 2, was modified into a broad swale that now outlets into vegetated, restored, wet prairie. The west end of the ditch was filled to allow water to flow and infiltrate across the southeast part of the site through restored wet prairie, without being intercepted by the ditch and directed rapidly off-site. This annual report includes the seeding and vegetation establishment data for that project, as well as the financial status of the bank, credit summaries, and 2017 monitoring, seeding, and planting information for the West Phase.

Chapter 2. Credit Summary for the Coyote Prairie North Mitigation Bank

The first release of credits to the Coyote Prairie North Mitigation Bank (CPNMB) occurred in 2011. During the next 3 years, the CPNMB had a series of releases and sales that left 0.00 credits on the ledger at the end of 2014. Performance criteria were met in the East Phase in 2014 and the final 25% of the credits for the East Phase and 25% of the credits expected for the West Phase were released in fall 2015 following approval of the Long-Term Management Plan. For the West Phase a series of releases and sales followed site construction and monitoring results from the first growing season.

A summary of 2017 credit transactions for the CPNMB is reported in Table 2.1. Annual credit sales for the CPNMB since 2012 are summarized in Table 2.2. The anticipated credit release schedule for the remaining active phase of the bank (West Phase) is provided in Table 2.3.

Table 2.1 2017 Credit Transactions, Coyote Prairie North Wetland Mitigation Bank			
	Purchase Date	Credits in Transaction	Balance
Credit balance on January 1, 2017			15.668
Credits requested for certification during year (10% of Expected West Phase Credits)	April, 2017	3.92	19.588
Credits sold			
Bonneville Power Administration	January 2017	(0.240)	19.348
Legend Homes	March, 2017	(0.310)	19.038
Millersburg Land & Development	July, 2017	(4.600)	14.438
Hunter's Draw Subdivision	July, 2017	(0.150)	14.288
Jurassic Storage (Boles-Wallis Project)	July, 2017	(0.170)	14.118
Fern Ridge Self Storage	August, 2017	(0.330)	13.788
Alan Kay Properties	August, 2017	(0.998)	12.79
Greater Albany Public Schools	December, 2017	(12.790)	0.00
Subtotal of credits sold		(19.588)	
Credit balance as of December 31, 2017			0.00

Annual credit sales from 2012 - 2016

Since 2012, the Coyote Prairie North Mitigation Bank has sold a total of 40.192 mitigation credits. See Table 2.2 for an annual tally of credit sales.

Table 2.2. Summary of CPNMB Annual Credit Sales, 2012 – 2016	
Calendar Year	Total Credits Sold
2012	0.71
2013	8.23
2014	20.06
2015	6.16
2016	5.032
2017	19.588
Total	59.78

Table 2.3 Credit Release Summary Anticipated for West Phase of the Coyote Prairie North Mitigation Bank (39.25 credits anticipated)				
Year of Release	Percentage (Cumulative)	Performance Standard	Credits Anticipated for West Phase (Cumulative)	Credits Released
2011	15% (15%)	Approval of MBI	6.08 (6.08)	6.08
2015	25% (40%)	Approval of long-term management plan	9.81 (15.89)	9.81
2016	5% (45%)	Initial grading, seeding, and reporting of as-builts	1.79 (17.68) *	1.79
2017	10% (55%)	1 st growing season performance standards	3.92 (21.60)	3.92
	10 % (65%)	2 nd growing season performance standards	3.92 (25.52)	
	10% (75%)	3 rd growing season performance standards	3.92 (29.44)	
	10% (85%)	4 th growing season performance standards	3.92 (33.36)	
	15% (100%)	5 th growing season performance standard	5.89 (39.25) **	

*adjusted down 0.17 credits to balance prior release of 6.08 credits from 2011 (MBI approval), when anticipated total credits was higher, and to address rounding error. Anticipated credits are slightly lower than that identified in the CPNMB Instrument due to the 2015 construction of a berm and nesting areas for the federally threatened streaked horned lark.

**A final determination of the number of credits for the West Phase will be made after a final delineation has been approved.

Chapter 3. Site Description, Management and Monitoring

Site Area: 240 Acres

Coyote Prairie North Mitigation Bank Area: 165 acres

Ownership: City of Eugene

Table 3.1 Coyote Prairie Unit site timeline.

Section	Year of Construction	Enhancement Acres	Monitoring Period
East Phase	2009	84	Completed
West Phase	2015	81	2016 - 2020

Location

Coyote Prairie North is located in the Coyote Creek drainage approximately 1.5 miles west of Eugene. It lies on the south side of Cantrell Road and is part of the larger Coyote Prairie enhancement site that is bisected by the east branch of Coyote Creek. The south region of the 240-acre site is part of the now-completed West Eugene Wetland Mitigation Bank and the north region of the site comprises the Coyote Prairie North Mitigation Bank. The Coyote Prairie North Mitigation Bank is divided into an East Phase and a West Phase (Fig. 3.1). The East Phase is further subdivided into the Ha-Yaba Unit (Unit 1; south) and the Walahan Unit (Unit 2; north).

Site History

The site has likely been in agricultural use since the late 1800s or early 1900s, initially as pasture, and then cropped for grass seed production beginning in the early 1970s.

Bank Goals and Objectives

The Bank has two primary goals. The first is to enhance 165 acres of slope/flat wetlands, also referred to as palustrine emergent wetlands using the Cowardin classification. The second goal is to forward conservation goals articulated in the West Eugene Wetlands Plan.

Specific objectives of the Bank include:

- Provide 165 acres of compensatory wetland mitigation credits to approved applicants within its service area to offset impacts to wetland resources. All credits will be enhancement credits generated from slope/flat wetlands under the HGM classification, also referred to as palustrine emergent wetlands using the Cowardin classification. All buffer areas will be included in enhancement areas.
- Enhance site hydrology and historic surface water flow to support the establishment of wet prairie (primarily), and vernal pool, and emergent communities (secondarily) across the site meeting specific hydrologic criteria outlined in the performance standards.

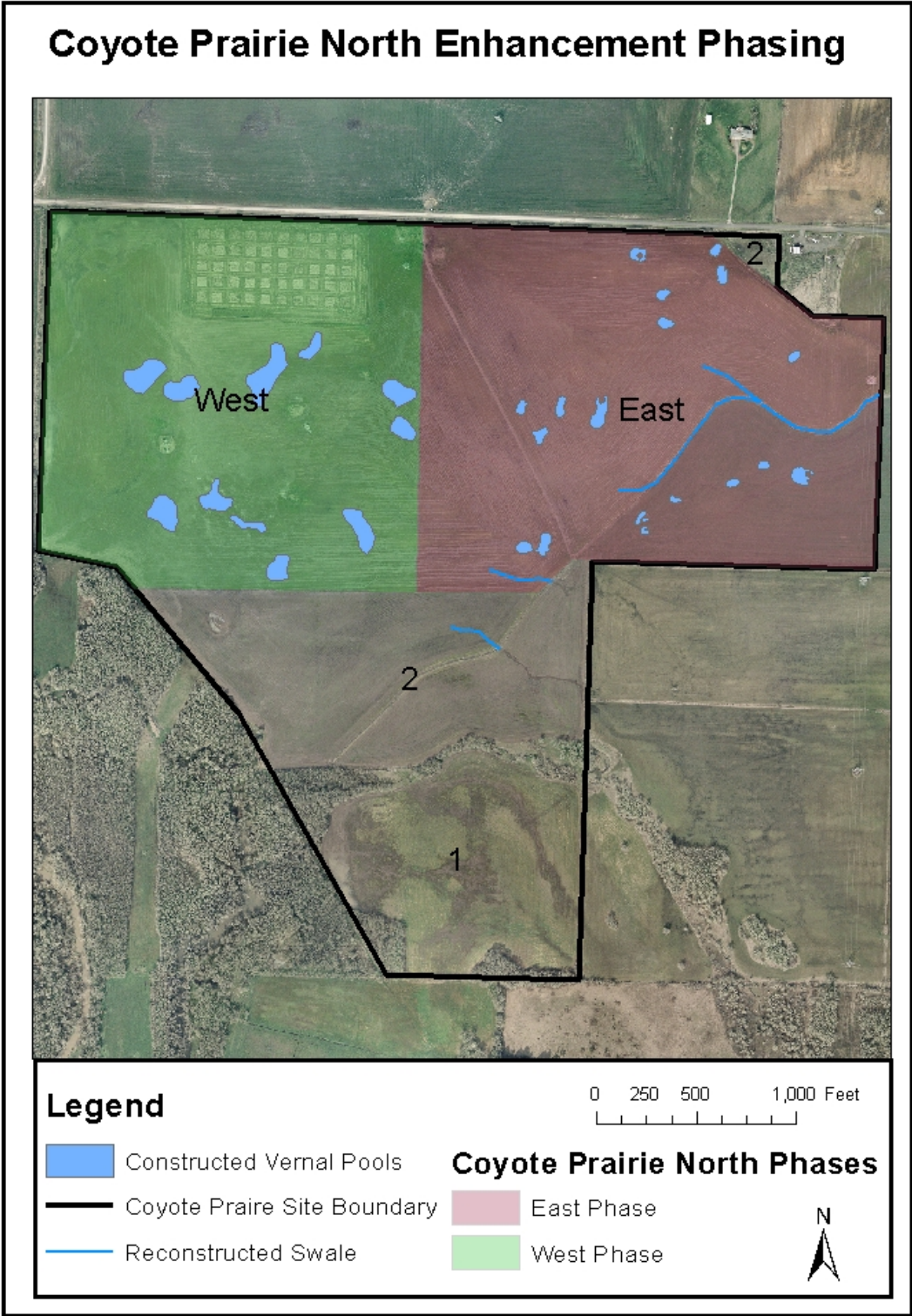


Figure 3.1 Coyote Prairie North Enhancement Phasing Map, identifying the two enhancement phases at Coyote Prairie, East (84 acres) and West (81 acres).

- Enhance vegetation to provide highly diverse wetland communities that are resistant to invasion and resilient to disturbance and that meet the specific criteria outlined in the performance standards. Emphasis includes wetland prairie plant communities with some vernal pool and emergent plant communities. Endangered, rare and uncommon species will be included.
- Establish a diverse prairie plant community to provide food, shelter, and breeding areas for native prairie invertebrates, reptiles, amphibians, mammals and birds, including those listed as Oregon Conservation Strategy species by the Oregon Department of Fish and Wildlife (ODFW).

Activity Summary 2017

The West Phase was in its second precipitation year and growing season in 2017. Staff tracked hydrology and the functioning of newly created vernal pools and the northwest water control structure in the West Phase throughout the wet season, as well as the functioning of the recontoured swale and filled ditch in the East Phase and Phase 2. Staff monitored vegetation establishment using point-intercept methods in both the West Phase and in the recontoured swale and filled ditch that crosses the East Phase and Phase 2. Monitoring indicates the functioning of the enhancement area is proceeding as planned, with growth of diverse native wet prairie vegetation, high water holding capacity in the West Phase (including in its vernal pools) and good structural integrity and function of the berms and water control structure in the northwest corner. Staff continued to adjust pool outlets and potential erosion points and will track and adjust as needed in the next few years until the site is fully vegetated.

Control of nonnative invasive nonnative plant species occurred primarily April through July, with a few patches of false dandelion (*Hypocheris radicata*) pulled as late as October. This site has a more tenacious population of rye grass than other phases on the Coyote Prairie parcel, so grass-specific treatments were needed again this year. In addition to controlling nonnative grasses, pennyroyal (*Mentha pulegium*) and false dandelion continued to be priorities. To promote native plant diversity, staff conducted an ecological controlled burn on 11 acres of the West Phase in October 2017 (along with 66 acres of the East Phase and Phase 2). In the West Phase, the burn was located in the former north research plots. A third year of seeding and planting of forbs, rushes, and sedges occurred in fall 2017 in select areas of the West Phase, including the area that had been recently burned.

West Phase Management Actions

1. Monitoring and adjustment of the functioning of vernal pools, the swale, berms, and controlled NW outlet occurred again in 2017. Pools that had water exiting at sites other

than the cobbled or anticipated outlet were stabilized in winter using coir logs and in summer by shifting cobble and adding and adjusting coir, followed by fall 2017 seeding. At the swale weirs, coir logs and more extensive coir net was installed in late summer 2017 to reduce erosion occurring as water concentrated in narrow channels and islands of vegetation formed in the swale bottom.

2. City staff directed the work of contract crews to control nonnative invasive species in the West Phase, and in the filled ditch and swale, using spot spraying and hand removal. Again this year, the most frequent non-native species needing treatment in the West Phase were the site's prior grass crop (annual ryegrass, *Lolium multiflorum*; treated with a broadcast application of a grass-specific herbicide in May and later in November), other nonnative grasses ((rattail fescue (*Vulpia myuros*), brome fescue (*Vulpia bromoides*), barnyard grass (*Echinochloa crus-galli*)), pennyroyal (*Mentha pulegium*), curly dock (*Rumex crispus*) and false dandelion (*Hypochaeris radicata*). On the filled ditch and in the recontoured swale, staff treated primarily the nonnative grasses in the genus *Vulpia*, North African grass (*Ventenata dubia*), and velvet grass (*Holcus lanatus*).
3. Nonnative Invasive species control was needed for the lark pads in 2017 and staff mowed the area surrounding the lark pads in the SE corner in late summer where tall, abundant, native beggartick (*Bidens frondosa*) and willow-herb (*Epilobium brachycarpum*), had established (volunteer establishment, not seeded). The West Phase restoration had numerous sparsely vegetated areas in spring 2017, in addition to the constructed lark pads, so the bare ground that larks prefer exceeded the area of the gravel. Sunrise surveys for larks occurred on April 23, June 3 and 20, and July 22, and scans were also made on visits doing other work, but no larks were observed in the West Phase. A small population of 3 to 5 pairs of streaked horned larks nest regularly about 0.75 miles to the north on private property and larks nested on lands to the west of Coyote Prairie that were being prepared for wet prairie restoration and were relatively bare.
4. Enhancement of wet prairie continued in the north region of the site, among the former EPA research plots. In early October 2017, the 11-acre former research plot area was burned as part of a 77-acre controlled ecological burn to enhance native vegetation throughout Coyote Prairie North and Phase 2. To enhance areas where tufted hairgrass (*Deschampsia cespitosa*) was very dense, areas were treated with a grass-specific herbicide and then overseeded with native forbs.
5. Staff conducted the third year of forb, sedge, and rush seeding in the following regions of the West Phase in fall 2017: vernal pool inlets (1 acre); southwest wet prairie mix 3 area (4.6 acres), former research plot area post-burn seeding (8 acres). See Appendix Table A-1 for a list of species seeded this year. In addition, forbs that were not well established after the first two years of seeding were added to specific areas by hand to promote site-wide

species diversity. The swale area of the East Phase of Coyote Prairie North also received follow-up seeding after installation of additional coir netting for erosion control (Table A-1).

6. In fall 2017, bulb flats and plants in band pots of 5 forb species grown at the City's Native Plant Nursery and at Heritage Seedlings were installed in the east region of the West Phase (quantities in parens): slim-leaf onion (*Allium amplexans*) (~600 bulbs (6 flats)), Oregon sunshine (*Eriophyllum lanatum*) (150), blue-eyed grass (*Sisyrinchium idahoense*) (100), hyacinth brodiaea (*Triteleia hyacinthina*) (~500 bulbs), narrow-leaf mules ear (*Wyethia angustifolia*).

Monitoring

Hydrology. Methods. In 2017, staff continued to conduct periodic assessments of West Phase vernal pools, the water control structure, East Phase swale, and water movement across the site. Pool depths were monitored with staff gauges once after significant rains on November 4, 2016, and every 3 to 7 weeks from February through mid-June.

Results. Precipitation was early and abundant in the 2016-2017 water year, with more than 10 inches of rain falling in the Eugene area in October 2016. By November 4, 2016, 10 of 11 pools were inundated to a half or more of their capacity. Pools remained full or nearly full throughout the winter. By the third week in March, inundation levels had declined slightly in 3 of 11 pools and in April and May drying rapidly increased. By May 4, 2017, pool water depths ranged from less than 2 inches (3 pools) to 12 to 14 inches (2 pools). Most pools dried in May and by mid-June only one pool (Pool 3) was still holding water – almost 10 inches across much of its inundation area – and still supported abundant chorus frog larvae.

Throughout winter and spring, water continued to flow as expected in a west-northwest direction out of the two newly contoured swale 'outlets' into well-established wet prairie vegetation, then flowed into constructed vernal pools in the East and West Phases, and eventually inundated an approximately 15-acre area in the northwest region of the site. Prior to the project, these swale flows, which enter the site via a culvert on the east property boundary from a neighboring ryegrass field, continued down a narrow, eroding agricultural channel (Coyote ditch) and off-site, carrying sediment with it. In fall 2017, staff measured sediments in West Phase vernal pools at the base of the staff gauges when the gauges were raised to the new soil surface. Although all sediment accumulations cannot be definitively attributed to inflow from across the site, staff recorded sediment depths that had been deposited since fall 2015, finding from 0.5 to 3.5 inches, with 2 of 11 pools having greater than 2.5 inches of sediment accumulation at the base of the staff gauge.

Vegetation. Methods: Vegetation monitoring consisted of the first year of quantitative point-intercept monitoring of the entire West Phase on June 15, 20, and 21, and point-intercept monitoring along the recontoured swale and filled ditch through the East Phase and Phase 2

on June 26. In addition, vegetation monitoring included site-wide walking surveys to record all species encountered in May/June and July/August, and assessments of establishment within different seed mix areas to inform future seeding. Appendix B more fully describes monitoring methods.

Results: *West Phase.* The West Phase was well-vegetated with native species in its second growing season, although the former annual ryegrass crop (*Lolium multiflorum*) was tenacious. Native vegetation cover was 113% (absolute cover; Table 3.2), with the densest vegetation in the north central area previously used for restoration research and the greatest bare ground occurring in vernal pools and in scattered patches where inundation was the most extended but water foxtail (*Alopecurus geniculatus*) was absent. During point-intercept monitoring, 38 native species and 10 nonnative species were recorded at sampling points. During meandering surveys, 67 native species and 40 nonnative species were found (species list Appendix C). It is typical that many fewer species will be sampled at the points than will be encountered during surveys throughout the site, since many species occur in small or localized patches. Of the seven most abundant native species (site-wide cover estimates over 5 percent), 3 were graminoids and 4 were forbs, 1 of these graminoids (water foxtail) was not seeded, but colonized abundantly from the soil seed bank (Table 3.2).

This report identifies invasive nonnative species using the definition in the Mitigation Bank Instrument, which was adapted from DSL's definition. It considers the following as invasive plant species: (1) those that occur on the Oregon Department of Agriculture's Noxious Weed List; (2) The following species: *Phalaris arundinacea*, *Mentha pulegium*, *Holcus lanatus*, and *Anthoxanthum odoratum*; (3) the last crop on the site (in this case *Lolium multiflorum* and *Schedonorus phoenix*) and (4) beginning in year two, a nonnative species that comprises more than 15% cover over at least 10% of the vegetation monitoring area and increases from one monitoring year to the next.

Although a grass-specific herbicide was applied to vegetation in late May to remove the last cropped species, the annual ryegrass *Lolium multiflorum* was not showing significant injury at the time of the point-intercept monitoring and the *Vulpia myuros* was past flowering. These two grasses and the two annual forbs, *Lythrum hyssopifolium* and *Lythrum portula* were the only nonnatives with site-wide cover of greater than 1 percent. Based on the successional changes in vegetation observed at earlier restoration phases, the cover of the two annual *Lythrums* are likely to diminish as native perennial vegetation establishes, therefore they are unlikely to be considered invasive as the vegetation develops. This is the first year of quantitative vegetation sampling in this West Phase. Beginning in 2018 (the second year of quantitative vegetation monitoring), cover of nonnative species will be compared annually to determine if criterion (4) above is met. A second grass-specific herbicide treatment was applied to the nonnative grasses in early November 2017.

Table 3.2. Coyote Prairie North Mitigation Bank, West Phase, Point-intercept Monitoring Results, 2017.

Percent cover results are shown (with 80% binomial confidence intervals (CI)) for several guild types as well as each species intercepted during monitoring.

	Area Sampled: 81 acres	Sample Size: 639 points		
		Wet Prairie with vernal pools		
Origin ¹	Species or Guild	% Cover	CI Low	CI High
	Native (absolute cover)	113.9		
	Invasive Nonnative (absolute cover)	6.6		
	Nonnative, excluding invasives (absolute cover)	18.7		
	Total Plant Cover (absolute cover)	139.0		
	Bare ground (no vascular plants, moss may occur)	8.5		
	Native² (a relative cover value)	84.8	82.8	86.6
	All Nonnative² (a relative cover value)	23.3	21.2	25.6
Native	<i>Alopecurus geniculatus</i>	33.3	30.9	35.8
Native	<i>Deschampsia cespitosa</i>	14.4	12.6	16.3
Native	<i>Bidens frondosa</i>	10.0	8.5	11.7
Native	<i>Grindelia integrifolia x nana hybrid</i>	8.9	7.5	10.5
Native	<i>Plagiobothrys scouleri</i>	7.2	5.9	8.7
Native	<i>Gnaphalium palustre</i>	5.5	4.4	6.8
Native	<i>Juncus occidentalis</i>	5.0	3.9	6.3
Native	<i>Plagiobothrys figuratus</i>	4.2	3.2	5.4
Native	<i>Downingia yina</i>	3.6	2.7	4.7
Native	<i>Epilobium densiflorum</i>	2.5	1.7	3.5
Native	<i>Juncus bufonius</i>	2.5	1.7	3.5
Native	<i>Carex unilateralis</i>	2.0	1.4	3.0
Native	<i>Epilobium brachycarpum</i>	1.9	1.2	2.8
Native	<i>Gratiola ebracteata</i>	1.6	1.0	2.4
Native	<i>Prunella vulgaris var. lanceolata</i>	1.6	1.0	2.4
Native	<i>Carex densa</i>	0.8	0.4	1.4
Native	<i>Navarretia intertexta</i>	0.8	0.4	1.4
Native	<i>Agrostis exarata</i>	0.6	0.3	1.2
Native	<i>Eleocharis obtusa</i>	0.6	0.3	1.2
Native	<i>Eryngium petiolatum</i>	0.6	0.3	1.2

Native	<i>Madia glomerata</i>	0.6	0.3	1.2
Native	<i>Microseris laciniata</i>	0.6	0.3	1.2
Native	<i>Microsteris gracilis</i>	0.6	0.3	1.2
Native	<i>Rumex salicifolius</i>	0.6	0.3	1.2
Native	<i>Veronica peregrina</i>	0.6	0.3	1.2
Native	<i>Beckmannia syzigachne</i>	0.5	0.2	1.0
Native	<i>Carex sp</i> (vegetative)	0.5	0.2	1.0
Native	<i>Eleocharis palustris</i>	0.3	0.1	0.8
Native	<i>Galium trifidum</i>	0.3	0.1	0.8
Native	<i>Madia sp.</i> (<i>M. elegans</i> or <i>M. sativa</i> , vegetative)	0.3	0.1	0.8
Native	<i>Carex ovalis</i>	0.2	0.0	0.6
Native	<i>Downingia elegans</i>	0.2	0.0	0.6
Native	<i>Eleocharis acicularis</i>	0.2	0.0	0.6
Native	<i>Epilobium ciliatum</i>	0.2	0.0	0.6
Native	<i>Lasthenia glaberrima</i>	0.2	0.0	0.6
Native	<i>Madia sativa</i>	0.2	0.0	0.6
Native	<i>Orthocarpus bracteosus</i>	0.2	0.0	0.6
Native	<i>Rorippa curvisiliqua</i>	0.2	0.0	0.6
Nonnative (2 categories)				
Invasive	<i>Lolium multiflorum</i>	6.4	5.2	7.8
Invasive	<i>Mentha pulegium</i>	0.2	0.0	0.6
Nonnative	<i>Lythrum portula</i>	8.3	6.9	9.9
Nonnative	<i>Lythrum hyssopifolium</i>	5.5	4.4	6.8
Nonnative	<i>Vulpia myuros</i>	3.3	2.4	4.4
Nonnative	<i>Hypochaeris radicata</i>	0.8	0.4	1.4
Nonnative	<i>Aira elegans</i>	0.2	0.0	0.6
Nonnative	<i>Glyceria declinata</i>	0.2	0.0	0.6
Nonnative	<i>Lactuca sp</i>	0.2	0.0	0.6
Nonnative	<i>Ventanata dubia</i>	0.2	0.0	0.6

1 In Origin column, invasive is as defined in the Mitigation Bank Instrument for this site.

2 Native and nonnative cover data are provided here transformed to allow calculation of binomial confidence intervals appropriate for point guild data. In the transformed data, each of the two guilds (native and nonnative) can only be recorded once at each point (e.g. each point is either native, nonnative, both, or neither). Total native and nonnative cover could therefore each equal 100%.

Recontoured swale and filled ditch:

The soils exposed and seeded with natives in the East Phase and Phase 2 along the recontoured swale and filled Coyote ditch are primarily vegetating with native graminoids on the swale sides and bottom and a mix of native and nonnative forbs along the top of the filled ditch. The linear extent of the devegetated disturbed zone is about 2 acres. Plant establishment on the swale has been rather slow, due to exposed clay slopes and the harsher

growing conditions than on the top of the filled ditch. Despite this, total plant cover during the monitoring period along the swale/ditch length was 142 percent (absolute cover: 108 percent native, 34 percent nonnative cover) and bare ground was only 17.6 percent (Table 3.3).

Of the 7 plant species that had greater than 5% cover in the swale/fill area, four were native: *Grindelia integrifolia* x *nana*, *Madia sativa*, *Agrostis exarata*, *Deschampsia cespitosa*; and three were nonnative: annual fescue (*Vulpia* sp. (species *V. myuros* and *V. bromoides* grouped), rough peavine (*Lathyrus hirsutus*), and annual hyssop loosestrife (*Lythrum hyssopifolium*). The hyssop loosestrife and rough peavine will likely diminish in abundance as the native perennial vegetation establishes. City staff are actively controlling the nonnative annual and perennial grasses (*Vulpia myuros*, *Vulpia bromoides*, *Ventenata dubia*, and *Holcus lanatus*).

The recontoured swale and filled ditch had a greater nonnative cover than the West Phase, likely because a greater diversity of native and nonnative plant species persisted along its length during the site's decades of grass seed production, both because a ditch is difficult to keep free of non-crop species and because seeds are transported to the site through water flow. Invasive nonnative species encountered during 2017 point-intercept monitoring were *Mentha pulegium* (2.3% cover) and *Holcus lanatus* (0.5% cover). Nonnative annual grasses in the genera *Vulpia* and *Ventenata* were present on the filled ditch and swale at nearly 11% combined and are being actively controlled. Beginning in 2018 (the second year of quantitative vegetation monitoring), cover of nonnative species will be compared annually to determine if other species should be considered invasive.

Table 3.3. Coyote Prairie North Swale/Fill Area Point-intercept Monitoring Results, 2017.
Percent cover results are shown (with 80% binomial confidence intervals (CI)) for several guild types as well as each species intercepted during monitoring.

	Area Sampled: 2 acres (entire)	Sample Size: 222 points		
		Wet Prairie (in recontoured swale and on filled ditch)		
Origin¹	Species or Guild	% Cover	CI Low	CI High
	Native (absolute cover)	108.1		
	Invasive Nonnative (absolute cover)	34.2		
	Nonnative, excluding invasives (absolute cover)	20.7		
	Total Plant Cover (absolute cover)	142.3		
	Bare ground (no vascular plants, moss may occur)	17.6		
	Native² (a relative cover value)	76.6	72.5	80.3
	All Nonnative² (a relative cover value)	29.7	25.7	34.0
Native	<i>Grindelia integrifolia</i>	34.7	30.5	39.1
Native	<i>Madia sativa</i>	16.2	13.1	19.8
Native	<i>Agrostis exarata</i>	11.3	8.6	14.5
Native	<i>Deschampsia cespitosa</i>	9.5	7.0	12.5
Native	<i>Prunella vulgaris var. lanceolata</i>	3.2	1.8	5.2
Native	<i>Juncus bufonius</i>	2.3	1.1	4.1
Native	<i>Madia glomerata</i>	2.3	1.1	4.1
Native	<i>Beckmannia syzigachne</i>	1.8	0.8	3.6
Native	<i>Eleocharis palustris</i>	1.8	0.8	3.6
Native	<i>Galium trifidum</i>	1.8	0.8	3.6
Native	<i>Bromus californicus</i>	1.8	0.8	3.6
Native	<i>Alisma triviale</i>	1.4	0.5	3.0
Native	<i>Carex densa</i>	1.4	0.5	3.0
Native	<i>Eleocharis obtusa</i>	1.4	0.5	3.0
Native	<i>Juncus bolanderi</i>	1.4	0.5	3.0
Native	<i>Juncus effusus</i>	1.4	0.5	3.0
Native	<i>Juncus occidentalis</i>	1.4	0.5	3.0
Native	<i>Sidalcea cusickii</i>	1.4	0.5	3.0
Native	<i>Carex sp. (not reproductive)</i>	0.9	0.2	2.4
Native	<i>Downingia yina</i>	0.9	0.2	2.4
Native	<i>Eleocharis acicularis</i>	0.9	0.2	2.4

Table 3.3. Coyote Prairie North Swale/Fill Area Point-intercept Monitoring Results, 2017.
Percent cover results are shown (with 80% binomial confidence intervals (CI)) for several guild types as well as each species intercepted during monitoring.

	Area Sampled: 2 acres (entire)	Sample Size: 222 points		
		Wet Prairie (in recontoured swale and on filled ditch)		
Origin¹	Species or Guild	% Cover	CI Low	CI High
Native	<i>Epilobium brachycarpum</i>	0.9	0.2	2.4
Native	<i>Epilobium densiflorum</i>	0.9	0.2	2.4
Native	<i>Navarretia intertexta</i>	0.9	0.2	2.4
Native	<i>Plagiobothrys scouleri</i>	0.9	0.2	2.4
Native	<i>Camassia leichtlinii</i>	0.5	0.0	1.7
Native	<i>Castilleja tenuis</i>	0.5	0.0	1.7
Native	<i>Carex unilateralis</i>	0.5	0.0	1.7
Native	<i>Deschampsia danthonioides</i>	0.5	0.0	1.7
Native	<i>Glyceria declinata</i>	0.5	0.0	1.7
Native	<i>Hordeum brachyantherum</i>	0.5	0.0	1.7
Native	<i>Juncus ensifolius</i>	0.5	0.0	1.7
Native	<i>Juncus patens</i>	0.5	0.0	1.7
Native	<i>Lotus unifoliatus</i>	0.5	0.0	1.7
Native	<i>Microseris laciniata</i>	0.5	0.0	1.7
Native	<i>Plagiobothrys figuratus</i>	0.5	0.0	1.7
Native	<i>Potentilla gracilis</i>	0.5	0.0	1.7
Native	<i>Triteleia hyacinthina</i>	0.5	0.0	1.7
Nonnative (2 categories)				
Invasive	<i>Mentha pulegium</i>	2.3	1.1	4.1
Invasive	<i>Holcus lanatus</i>	0.5	0.0	1.7
Nonnative	<i>Vulpia sp.</i>	9.5	7.0	12.5
Nonnative	<i>Lathyrus hirsutus</i>	6.8	4.7	9.5
Nonnative	<i>Lythrum hyssopifolium</i>	6.3	4.3	8.9
Nonnative	<i>Parentucellia viscosa</i>	1.8	0.8	3.6
Nonnative	<i>Vicia hirsuta</i>	1.4	0.5	3.0
Nonnative	<i>Ventenata dubia</i>	1.4	0.5	3.0
Nonnative	<i>Bromus hordeaceus</i>	0.9	0.2	2.4
Nonnative	<i>Crepis setosa</i>	0.9	0.2	2.4
Nonnative	<i>Centaureum erythrae</i>	0.5	0.0	1.7

Table 3.3. Coyote Prairie North Swale/Fill Area Point-intercept Monitoring Results, 2017.
Percent cover results are shown (with 80% binomial confidence intervals (CI)) for several guild types as well as each species intercepted during monitoring.

	Area Sampled: 2 acres (entire)	Sample Size: 222 points		
		Wet Prairie (in recontoured swale and on filled ditch)		
Origin ¹	Species or Guild	% Cover	CI Low	CI High
Nonnative	<i>Echinochloa crus-gallii</i>	0.5	0.0	1.7
Nonnative	<i>Geranium dissectum</i>	0.5	0.0	1.7
Nonnative	<i>Leontodon taraxacoides</i>	0.5	0.0	1.7
Nonnative	<i>Lythrum portula</i>	0.5	0.0	1.7
Nonnative	<i>Trifolium dubium</i>	0.5	0.0	1.7

Management Actions for 2018

1. Control nonnative plant species in the West Phase, the swale (East Phase), and the filled ditch in Phase 2.
2. Assess and adjust, as needed, the functioning of vernal pools, the swale and the water control structure. Adjust the water crossings in the Phase 2 fill area, as needed.
3. Continue to identify and treat erosion on swale slopes, berm edges, and drainage features.
4. Monitor vegetation establishment in the West Phase and Swale/fill area.
5. Seed native grasses after nonnative grasses are controlled and seed additional forbs in select areas, where native establishment is limited or where native species diversity could be enhanced.

Coyote Prairie North 2017 West Phase Seeded Areas

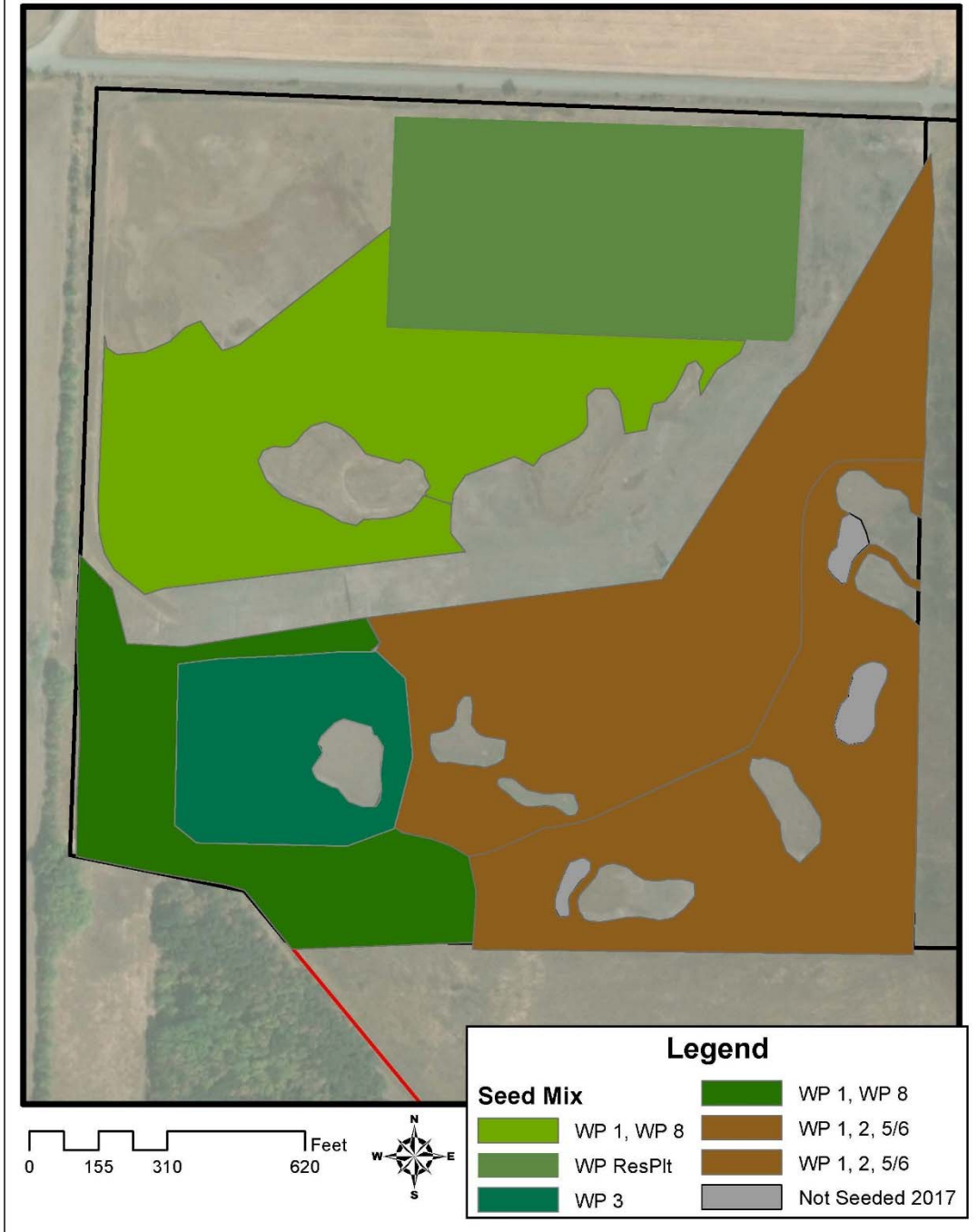


Figure 3.2. Coyote Prairie North Seeding Map. Seed mix composition is found in Table A-1.

Wildlife Utilization at Coyote Prairie through 2016

Invertebrates:

A variety of caddisfly larvae and other aquatic macroinvertebrates (e.g. ostracods, copepods, daphnia) are present in pooled and flowing water in all phases of Coyote Prairie and terrestrial invertebrates, such as dragonflies, bumblebees, praying mantids, and wasps are routinely encountered. Solitary native bees have been observed feeding on *Downingia* species in vernal pools. A group of North American Butterfly Association volunteers collected butterfly use data from other phases of Coyote Prairie during enhancement and documented over 700 individuals of 14 species using the East Phase enhancement from April through September 2012. The West Phase will likely be similar. See their report at <http://www.naba.org/chapters/nabaes/>.

Reptiles and amphibians:

Adult long-toed salamanders and larvae in pools have been observed in both the East and West Phases. Pacific chorus frogs continue to use the East Phase pools for breeding and were observed in 8 of 11 of the West Phase pools in 2017. Garter snakes and racers have been observed in both enhancements.

Birds:

Raptors (e.g. hawks, kites, owls) and songbirds continue to be sighted regularly foraging in all Coyote Prairie restoration phases and a bald eagle was inadvertently flushed from the ground in the West Phase in summer 2016. Northern harriers nested in the East Phase and hatched at least 4 young in 2017. Also of note, western meadowlarks are documented frequently in winter feeding flocks, males are observed singing from stakes and cottonwood logs, and young have been seen on fledgling flights. Ground-nesting birds, such as California quail, killdeer, and savannah sparrows have been documented nesting in the East phase and streaked horned larks have been seen in the West Phase, but not verified to have nested. In 2017, Grasshopper sparrows were observed singing on territories in the West Phase, for the first time. The large expanse of water in the northwest corner of the West Phase has attracted flocks of pintails, Canada geese, and other native waterbirds, including Greater Yellowlegs, Least Sandpiper and at least one Long-billed curlew.

Mammals:

Voles and their trails are commonly seen in the enhanced wet prairie vegetation. Elk use the entire site, as evidenced by tracks and scat and occasional observation of the herd. Coyotes use the site, based on scat, and a bear and bear sign were spotted in the nearby Phase 1 enhancement of Coyote Prairie several years ago.

Chapter 4. Progress Toward Meeting Performance Standards

Monitoring and assessment to verify progress toward meeting performance standards in the West Phase, as described in the Coyote Prairie North Mitigation Bank Instrument, are summarized in Tables 4.1 and 4.2, below. Table 4.1 shows progress toward meeting vegetation standards and Table 4.2 shows progress toward meeting hydrologic performance standards. Progress toward meeting vegetation standards in the recontoured swale and filled ditch are shown in Table 4.3.

Table 4.1. Progress of the Coyote Prairie North, West Phase Enhancement, Toward Meeting the Vegetation Performance Standards Identified in the MBI.

The most recent data for the West Phase are compared to their relevant performance standards. The number in the 'Monitoring Year' column indicates the summer growing season in which the data was collected to evaluate the site's success in meeting the associated standard. A corresponding year in the 'West Phase Data' column indicates the calendar year data was collected.

Monitoring Year	Phase/ Unit	Vegetation Performance Standards	Monitoring method	West Phase Data (Calendar Yr Collected)	Goal Met?
1	All	Seeding assessment will document initial vegetation establishment	Qualitative seeding assessment	Completed (2016 report)	Y
2	All	Native vascular plant cover > 40%	Point Intercept	Native cover = 113.9% (this report)	Y
2	All	Bare ground < 40%	Point Intercept	Bare ground = 8.5% (this report)	Y
2	All	Nonnative <i>invasive</i> vascular plant cover \leq 10%	Point Intercept	Nonnative invasive plant cover = 6.6% (this report)	Y

Table 4.1. Progress of the Coyote Prairie North, West Phase Enhancement, Toward Meeting the Vegetation Performance Standards Identified in the MBI.

The most recent data for the West Phase are compared to their relevant performance standards. The number in the 'Monitoring Year' column indicates the summer growing season in which the data was collected to evaluate the site's success in meeting the associated standard. A corresponding year in the 'West Phase Data' column indicates the calendar year data was collected.

Monitoring Year	Phase/ Unit	Vegetation Performance Standards	Monitoring method	West Phase Data (Calendar Yr Collected)	Goal Met?
3	All	Native vascular plant cover > 40%	Point Intercept	Anticipated 2018	TBD
3	All	Bare ground < 40%	Point Intercept	Anticipated 2018	TBD
3	All	Nonnative <i>invasive</i> vascular plant cover ≤ 10%	Point Intercept	Anticipated 2018	TBD
3	All	6 native species have ≥ 5% cover in 10% of area sampled	Point Intercept	Anticipated 2018	TBD
4	All	Native vascular plant cover > 60%	Point Intercept	Anticipated 2019	TBD
4	All	Bare ground < 40%	Point Intercept	Anticipated 2019	TBD
4	All	Nonnative <i>invasive</i> vascular plant cover ≤ 10%	Point Intercept	Anticipated 2019	TBD
4	All	6 native species have ≥ 5% cover in 10% of area sampled	Point Intercept	Anticipated 2019	TBD

Table 4.1. Progress of the Coyote Prairie North, West Phase Enhancement, Toward Meeting the Vegetation Performance Standards Identified in the MBI.

The most recent data for the West Phase are compared to their relevant performance standards. The number in the 'Monitoring Year' column indicates the summer growing season in which the data was collected to evaluate the site's success in meeting the associated standard. A corresponding year in the 'West Phase Data' column indicates the calendar year data was collected.

Monitoring Year	Phase/ Unit	Vegetation Performance Standards	Monitoring method	West Phase Data (Calendar Yr Collected)	Goal Met?
5	All	Native vascular plant cover > 75%	Point Intercept	Anticipated 2020	TBD
5	All	Bare ground < 20%	Point Intercept	Anticipated 2020	TBD
5	All	6 native species have \geq 5% cover in 10% of area sampled	Point Intercept	Anticipated 2020	TBD
5	All	Nonnative invasive vascular plant cover is \leq 10%	Point Intercept	Anticipated 2020	TBD
5	All	Nonnative plant cover is less than 15% of total plant cover	Point Intercept	Anticipated 2020	TBD
5	All	At least 50 native vascular plant species are present	Walking surveys	Anticipated 2020	TBD

Table 4.2. Progress of the Coyote Prairie North, West Phase Enhancement, Toward Meeting the Hydrologic Performance Standards Identified in the MBI.

The most recent data for the West Phase are compared to their relevant performance standards. The number in the ‘Monitoring Year’ column indicates the potential years in which data can be collected to evaluate the site’s success in meeting the associated standard. Year “0” is the site preparation stage, before the initial seeding. A corresponding year in the ‘West Phase Data’ column indicates the calendar year data was actually collected.

Monitoring Year	Hydrologic Performance Standards	Monitoring and Reporting Method	West Phase Data (Calendar Yr Collected)	Goal Met?
0	PSH3: fill west length of Coyote Ditch	2015 as-built report	Ditch filled summer 2015	Y
0	PSH4: recontour east region of Coyote Ditch	2015 as-built report	Swale recontoured summer 2015	Y
0	PSH6: flows leaving the NW corner of the site are regulated by a berm and culvert	2015 as-built report and this 2016 annual report	Culvert and berm installed summer 2015 and functioning to date (see photos, this 2016 report)	Y
3, 4, or 5	PSH1: 84 acres exhibit wetland hydrology	Modified wetland delineation addendum	Anticipated 2018, 2019, or 2020	TBD
3, 4, or 5	PSH3: surface flows from Coyote South (Coyote Prairie Phase 2) not intercepted by Coyote Ditch	Photos, hydrologic mapping in year with “normal” rainfall	Anticipated 2018, 2019, 2020	TBD
3, 4, or 5	PSH4: water flows released from Coyote Ditch across East Phase	Photos, hydrologic mapping in year with “normal” rainfall	Anticipated 2018, 2019, 2020	TBD
3, 4, or 5	PSH4: >5% of the entire site’s acreage (East and West Phases) are in vernal pools that are inundated for at least 8 weeks from January through April.	November – May fill dates and depths	Anticipated 2018, 2019, 2020	TBD

Table 4.3. Progress of the Coyote Prairie North, Swale Hydrologic Enhancements, Toward Meeting the Vegetation Performance Standards Identified in the Removal-Fill Permit.

The most recent data for the Swale/Ditch Enhancements quantitative vegetation monitoring are compared to their relevant performance standards. The number in the 'Monitoring Year' column indicates the summer growing season in which the data was collected to evaluate the site's success in meeting the associated standard. A corresponding year in the 'Data' column indicates the calendar year data was collected.

Monitoring Year	Phase/ Unit	Vegetation Performance Standards	Monitoring method	Swale Data (Calendar Yr Collected)	Goal Met?
1	All	Seeding assessment will document initial vegetation establishment	Qualitative seeding assessment	Completed (2016 report)	Y
2	All	Native vascular plant cover > 40%	Point Intercept	Native cover = 108% (this report)	Y
2	All	Bare ground < 40%	Point Intercept	Bare ground = 18% (this report)	Y
2	All	Nonnative <i>invasive</i> vascular plant cover ≤ 10%	Point Intercept	Invasive cover = 2.8% (this report)	Y
3	All	Native vascular plant cover > 40%	Point Intercept	Anticipated 2018	TBD
3	All	Bare ground < 40%	Point Intercept	Anticipated 2018	TBD
3	All	Nonnative <i>invasive</i> vascular plant cover ≤ 10%	Point Intercept	Anticipated 2018	TBD

Table 4.3. Progress of the Coyote Prairie North, Swale Hydrologic Enhancements, Toward Meeting the Vegetation Performance Standards Identified in the Removal-Fill Permit.

The most recent data for the Swale/Ditch Enhancements quantitative vegetation monitoring are compared to their relevant performance standards. The number in the 'Monitoring Year' column indicates the summer growing season in which the data was collected to evaluate the site's success in meeting the associated standard. A corresponding year in the 'Data' column indicates the calendar year data was collected.

Monitoring Year	Phase/ Unit	Vegetation Performance Standards	Monitoring method	Swale Data (Calendar Yr Collected)	Goal Met?
4	All	Native vascular plant cover > 60%	Point Intercept	Anticipated 2019	TBD
4	All	Bare ground < 40%	Point Intercept	Anticipated 2019	TBD
4	All	Nonnative invasive vascular plant cover ≤ 10%	Point Intercept	Anticipated 2019	TBD
5	All	Native vascular plant cover > 75%	Point Intercept	Anticipated 2020	TBD
5	All	Bare ground < 20%	Point Intercept	Anticipated 2020	TBD
5	All	Nonnative invasive vascular plant cover is ≤ 10%	Point Intercept	Anticipated 2020	TBD
5	All	Nonnative plant cover is less than 15% of total plant cover	Point Intercept	Anticipated 2020	TBD

Appendix A. 2017 Seed Mixes

Table A-1. Coyote Prairie North Mitigation Bank, Native Seed Mixes Distributed Fall 2017.				
Seed mixes indicated below under acres as "NA" were distributed throughout the seeding region in appropriate habitat (e.g. vernal pool, wet prairie) and where they appeared most likely to establish (e.g. in less densely vegetated areas). This table includes the species seeded and total grams. Grams per acre are provided only when a consistent rate was applied across the entire region.				
Seed Mix Name	Acres	Scientific Name	Total Gms	Grams /Acre
CPNW WP 1, by hand	NA	<i>Lotus unifoliolatus</i> var. <i>unifoliolatus</i>	2103	
Purpose/Location: throughout		<i>Sidalcea cusickii</i>	1816	
CPNW WP 2, by hand	NA	<i>Achillea millefolium</i>	1164	
Purpose/Location: pool edges where erosion control work done		<i>Eriophyllum lanatum</i> var. <i>lanatum</i>	619	
		<i>Lomatium nudicaule</i>	1360	
		<i>Perideridia oregana</i>	1874	
		<i>Wyethia angustifolia</i>	1360	
CPNW WP 3 by hand	4.6	<i>Camassia leichtlinii</i> var. <i>suksdorfii</i>	4545	988
Purpose/Location: slightly higher elevation; SW region		<i>Lomatium nudicaule</i>	1955	425
		<i>Lupinus polyphyllus</i>	137	30
		<i>Sisyrinchium idahoense</i> var. <i>idahoense</i>	2361	513
		<i>Wyethia angustifolia</i>	1288	280
		Total	10286	2236
CPNW WP 5/6, by hand	NA	<i>Galium trifidum</i>	1,904	
Purpose/Location: SE region where 2017 mixes WP 5 and WP6 distributed.		<i>Madia elegans</i>	2,760	
		<i>Madia glomerata</i>	736	
		<i>Microseris laciniata</i>	828	
		<i>Potentilla gracilis</i> var. <i>gracilis</i>	1,748	
		<i>Rumex salicifolius</i> var. <i>salicifolius</i>	3,039	
CPNW WP 7 pool inlets	NA	<i>Ranunculus alismaefolius</i> var. <i>alismifolius</i>	240	
CPNW WP 8 by hand north & remainders	NA	<i>Grindelia integrifolia</i>	2724	
Purpose/Location: north emphasis		<i>Lotus unifoliolatus</i> var. <i>unifoliolatus</i>	908	
		<i>Carex tumulicola</i>	105	
		<i>Lasthenia glaberrima</i>	50	
		<i>Triteleia hyacinthina</i>	150	
		<i>Carex obnupta</i>	674	

Table A-1. Coyote Prairie North Mitigation Bank, Native Seed Mixes Distributed Fall 2017.

Seed mixes indicated below under acres as "NA" were distributed throughout the seeding region in appropriate habitat (e.g. vernal pool, wet prairie) and where they appeared most likely to establish (e.g. in less densely vegetated areas). This table includes the species seeded and total grams. Grams per acre are provided only when a consistent rate was applied across the entire region.

Seed Mix Name	Acres	Scientific Name	Total Gms	Grams /Acre
CPNW WP 9 past EPA Plots	8.00	<i>Camassia quamash var. maxima</i>	4400	550
Purpose/Location: post-fire seeding of EPA plot areas and post-treatment seeding where tufted hairgrass was particularly dense, to increase diversity		<i>Carex feta</i>	279	35
		<i>Carex unilateralis</i>	160	20
		<i>Epilobium densiflorum</i>	1680	210
		<i>Grindelia integrifolia</i>	2400	300
		<i>Juncus oxymers</i>	40	5
		<i>Juncus patens</i>	160	20
		<i>Lotus unifoliolatus var. unifoliolatus</i>	480	60
		<i>Microseris laciniata</i>	880	110
		<i>Perideridia oregana</i>	1298	162
		<i>Plagiobothrys figuratus</i>	880	110
		<i>Potentilla gracilis var. gracilis</i>	1200	150
		<i>Prunella vulgaris var. lanceolata</i>	320	40
		<i>Rorippa curvisiliqua</i>	709	89
		<i>Sidalcea cusickii</i>	480	60
		<i>Sisyrinchium idahoense var. idahoense</i>	2549	319
		Total:	17915	2239
CPNE Swale seeding		<i>Agrostis exarata</i>	2,700	
Purpose/Location: added to upper swale regions where erosion control was needed and in some drainages in the CPNE fall 2017 burn area.		<i>Beckmannia syzigachne</i>	3,014	
		<i>Carex densa</i>	312	
		<i>Carex leporina</i>	45	
		<i>Carex unilateralis</i>	397	
		<i>Deschampsia cespitosa</i>	2,700	
		<i>Hordeum brachyantherum</i>	4,000	
		<i>Juncus occidentalis</i>	50	
		<i>Juncus oxymers</i>	30	

Appendix B. Monitoring Methods

Overview

Monitoring methods for the Coyote Prairie North Mitigation Bank are based on methods developed for the West Eugene Wetland Mitigation Bank that were revised and expanded to provide a more complete assessment of performance for Coyote Prairie North enhancements.

The Coyote Prairie North Mitigation Bank is divided into the West Phase (current active phase) and the East Phase (complete). The monitoring is designed to document development of the enhancements for this Bank and determine if performance criteria area being met. Monitoring types are conducted for each Phase, depending on the Performance Criteria or Monitoring Benchmarks developed for the Phase.

Photopoints

Purpose: Photo document surface hydrology. Photos are taken pre- and post- treatment to show landscape level changes. Photos are also used to document specific actions and site conditions.

Method:

1. Permanent photo stations are established with metal stakes or GPSed in the field in sufficient number to provide photo coverage of the enhanced area.
2. Photographs are taken pre- and post-project and documented by photopoint number and compass bearing and/or landmarks.
3. For the NW Phase hydrologic enhancements, photos from regular point-and-shoot cameras were discontinued as UAV photography will be available to better document hydrologic changes and function.

Hydrology

Purpose: Assess whether wetland hydrology is established within the enhancement site. The extent of soil saturation during the growing season is an important factor in determining jurisdictional wetlands.

Method:

1. Site visits during the winter and spring include a brief description of the location, extent, and depth of standing water at each site.
2. Water depth is recorded at maximum height in pools and emergent areas (typically during January), and again as pools start to dry April – June. Depth is typically recorded from staff gauges installed in vernal pool and emergent areas in a given phase. Depths and duration of inundation in other pools is collected based on specific needs.

3. A modified wetland delineation is conducted in year 3, 4, or 5, when precipitation is near normal (see DSL's Delineation "Lite" for Mitigation Monitoring in: Oregon Dept State Lands. 2009. Removal-Fill Guidelines, Compensatory Mitigation for Non-Tidal Wetlands and Tidal Waters and Compensatory Non-wetland Mitigation. Interim Review draft, October 14).

Vegetation Monitoring

The standard protocol for quantitative vegetation monitoring at the Coyote Prairie North Mitigation Bank sites was developed in 1994 for the West Eugene Wetland Mitigation Bank and further expanded and revised in 1997/1998, and 2010. It relies on the point-intercept method to assess plant cover by species, combined with full site surveys to identify species occurring in the mitigation site, but not encountered during point-intercept monitoring. The vegetation monitoring method for Coyote Prairie North builds on past monitoring experience and continues the use of point-intercept sampling and site-wide plant surveys to provide an objective method of measuring plant cover and assessing plant species richness.

Overall Goal

Monitor the establishment and development of hydrophytic and other vegetation within enhancement sites.

Species Lists

Purpose: Annually assess the status of each phase in meeting the City of Eugene's intent to enhance and restore wetland prairies with a high diversity of native wetland prairie plant species that encompass many spatial, temporal, and functional groups (e.g. species that are early-germinating, late-flowering, or nitrogen-fixing).

Method:

1. The species list should be collected annually; once early in the growing season (late May to mid-June), and once late in the growing season (August/Sept).
2. Compile the list by thoroughly walking through a site while filling out the species checklist.
3. Cross check and add to the list from other monitoring efforts including the Point-Intercept Sampling and Planting Establishment Assessments to ensure all species observed are represented.

Plant Establishment Assessments

Purpose: To provide an early qualitative assessment of plant establishment that will help guide future seeding and planting plans.

Method:

1. The assessment usually takes place in the first growing season, when the maximum number of species are identifiable and flowering (June to mid-July).

2. Each native species encountered during meandering surveys through the site is noted and its presence across the enhancement site (or target area if within a region covered by a specific seed mix) is assigned to one of 4 broad cover classes. Although the classes may be defined based on comparison with one another, they typically equate to the following cover classes in the first growing season: Dominant = 40+% of vegetation cover, Common = 10% – 39% of vegetation cover, Occasional = 2% -9% of vegetation cover, Trace = present, but less than 2% of vegetation cover.

Point-intercept Sampling

Purpose: To assess whether the enhancement or restoration site is meeting performance criteria addressing native and non-native plant cover, bare ground, and diversity, identified in the Coyote Prairie North Mitigation Bank Instrument.

Methods:

1. The entire restoration or enhancement site is sampled annually in years 2, 3, 4, and 5. This is a variation of methods used in the West Eugene Wetlands Mitigation Bank where representative, randomly chosen macroplots were sampled, rather than the entire enhancement area.
2. The sampling method is a systematic sampling with a random start, with each point being one sampling unit.
3. Sample points are dispersed systematically throughout the sampled area. Locations of sample points are determined by pacing and use of an on-site grid system that covers the entire site, rather than use of measuring tape.
4. The number of samples collected should be at least 200 in the first monitoring year of an enhancement phase, unless prior monitoring in an enhancement phase has identified that smaller sample sizes would still meet monitoring objectives identified in the Mitigation Bank Instrument and in the Oregon Department of State Lands Routine Performance Standards.
5. Based on the data collected in Coyote Prairie North, East Phase, we decided to collect a large number of sample points (639) for the first year of quantitative monitoring, so that the effects of future changes in sample size could be evaluated and to record the early site diversity (the number of species encountered diminishes with shrinking sample size). The 639 points equated to 8 per 1-acre monitoring grid square. Location of sample points were identified in the following way:
 - a. The sampling method uses the grid system that the City installed in the West Phase which divides the 84-acre site into equally sized 1-acre squares. The corner of each

grid square is marked with a wooden pole about 6 ft tall. Therefore, poles occur about every 64 meters throughout the site.

- b. For monitoring purposes, the x-axis of the site is east-west, parallel to Cantrell Road, and the y-axis is north-south (Fig. A-1). The start location for the first transect on the x-axis is identified to be a random number between 1 and 10 (assigned via random number table). For example, with a randomly chosen start point of 9 meters and the desire for at least 600 sampled points, the sampling locations would be as follows: 4 points were sampled in the north half of the each grid square at 9 m, 27 m, 45 m, and 63 m east of each grid line (Fig. A-1). This was repeated, using the same x-coordinates along a second transect in the south half of each grid.
- c. The start point for the two east-west transects, described above, were established for each grid using two random numbers (one in the north and one in the south half of the square) chosen along the north-south axis (y-axis). On the y-axis, two transects were run within each 1-acre grid square at points 17 m and 47 m south of the north grid lines. Thus, within each of the 84 one-acre squares, sampling occurred at the following x-y coordinates: 9-17, 27-17, 45-17, 63-17, 9-47, 27-47, 45-47, and 63-47, except within partial squares. (Fig. A-1).
- d. All distances were paced by the monitoring crew after equating their paces to actual distances measured with a measuring tape. The grid pole line at the boundary of each grid square was used to readjust position at each acre.
- e. The West site is slightly larger than 81 acres and partial grid squares exist at the site's boundaries, so with 8 sample points collected in each of the 1-acre grid squares, 639 total samples were collected.
- f. To reduce bias in arriving at the exact sample location, the monitoring crew is cautioned to avoid looking at the location where they place the tripod, once they have paced to within 1-meter of their sample location.

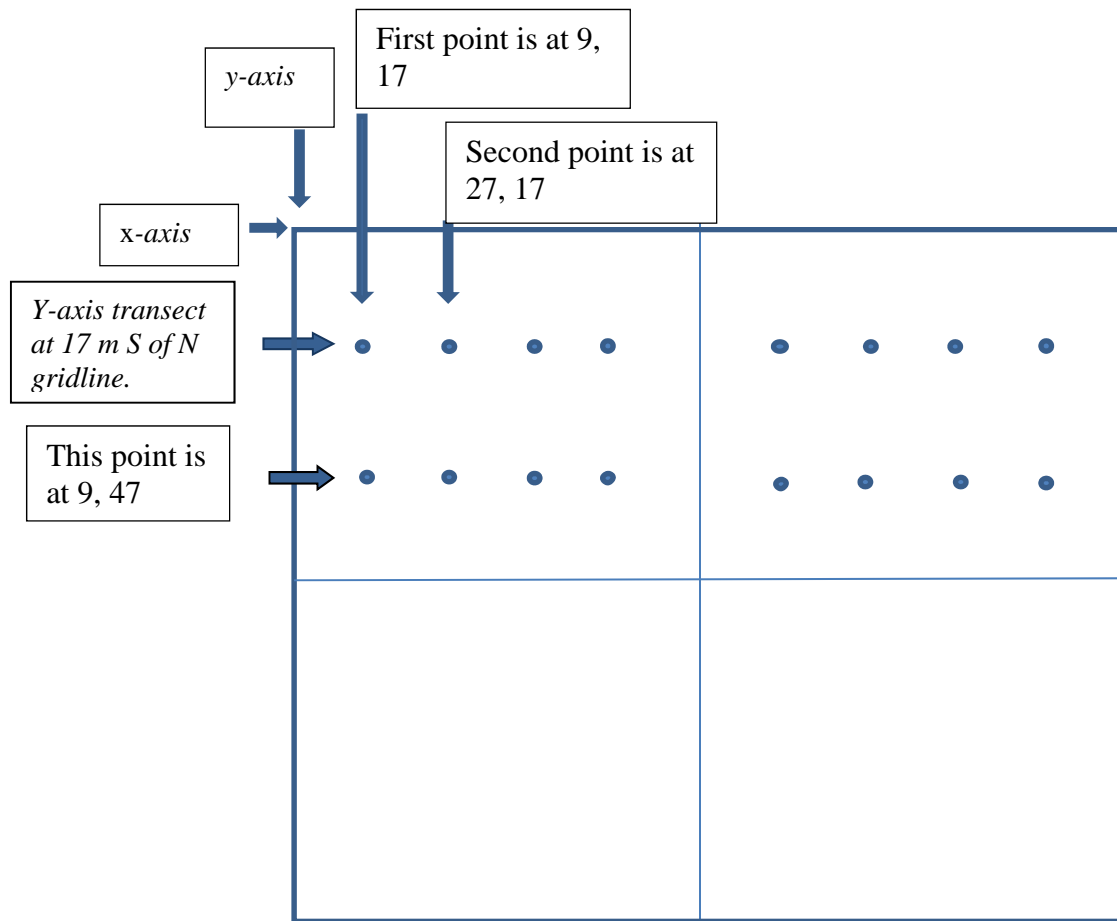


Figure B-1. **Coyote Prairie North grid-based monitoring strategy.** Four example one-acre grid squares are shown (points shown only in two). Dots represent sampled points, based on sample size needs and random start number. In each grid square 8 sample points were collected in 2017 (4 on each of two transects).

6. Each sample (or point) is obtained by lowering a vertical cylindrical metal rod with a sharp pin at the tip and noting each vascular plant species the tip intersects on its route to the ground at that location. The pole is dropped through a tube affixed to a specially modified camera tripod with a built in level, to ensure it stays vertical.
7. Ground cover is identified at each sample point as either bare, moss, or litter. Although this data is collected at each point, only samples that record no plant cover are included in the calculation of percent bare ground. The data collected on litter may be used in future years in determining how rapidly thatch build-up occurs in newly enhanced wetland prairies.

8. The percentage of ground covered by each species is calculated by dividing the total number of observations of each plant by the total number of sample points. Cover estimates are given with 80% binomial confidence intervals, unless otherwise indicated.
9. The data is summarized and reported using the following definitions:

<p>Native Cover: <i>the sum of all individual native vascular plant species cover values (individual cover values are the sum of all 'hits' for a species divided by the total pin drops); an absolute value that can exceed 100%</i></p>
<p>Nonnative Cover: <i>the sum of all individual nonnative vascular plant species cover values; an absolute value that can exceed 100%</i></p>
<p>Invasive Nonnative Cover: <i>computed the same as Nonnative Cover, but with only those species identified as invasive according to the definition accepted by the Oregon Department of State Lands and included in the Mitigation Bank Instrument.</i></p>
<p>Total Plant Cover: <i>the sum of all vascular plants species cover values; an absolute value that can exceed 100%;</i></p>
<p>Total Native and Nonnative Plant Cover (a relative cover value): <i>the number of pin drops out of the total pin drops that hit a vascular plant in one of those guilds (native, nonnative). For example, the hit is recorded as 'native' if at least one native species is hit with that pin drop and does not change if the pin drop hits more than 1 native species. Total native and nonnative cover could each equal 100%.</i></p>
<p>Bare ground: <i>the sum of all pin drops that do not hit a plant, divided by the total pin drops; combines scores for bare ground, litter, and moss, where no vascular plant cover occurs.</i></p>

Appendix C. Species List

This list include species recorded in all enhancement phases at Coyote Prairie, including Phase 1 and 2 completed under the *West Eugene Wetland Mitigation Bank*, the East Phase, and the West Phase, being completed under the *Coyote Prairie Wetland Mitigation Bank*.

		Site	Coyote Prairie				
		Phase	1	2	2	N East	N West
		Section			Rem-nant		
Scientific Name	Common Name	Origin					
<i>Achillea millefolium</i>	Yarrow	N	X	X	X	X	
<i>Acmispon americanus</i> (syn. <i>Lotus unifoliolatus</i>)	Spanish clover	N	X	X	X	X	X
<i>Agrostis exarata</i>	spike bentgrass	N	X	X	X	X	X
<i>Agrostis stolonifera/capillaris</i>	fiorin (bentgrass)	I					
<i>Aira elegans</i> (syn <i>A. caryophyllea</i>)	silver hairgrass	I		X			X
<i>Alisma lanceolatum</i>	narrowleaf waterplantain	I					X
<i>Alisma trivale</i>	northern waterplantain	N	X	X		X	X
<i>Allium amplexans</i>	Slim leaf onion	N	X	X	X	X	
<i>Alopecurus geniculatus</i>	water foxtail	N	X	X		X	X
<i>Alopecurus pratensis</i>	meadow foxtail	I	X		X	X	X
<i>Amelanchier alnifolia</i> var. <i>semiintegrifolia</i>	western serviceberry	N			X		
<i>Anagallis arvensis</i>	scarlet pimpernel	I	X	X		X	
<i>Anaphalis margaritacea</i>	pearly everlasting	N					
<i>Anthemis cotula</i>	mayweed chamomile	I					
<i>Anthoxanthum odoratum</i>	sweet vernalgrass	I			X		
<i>Anthriscus caucalis</i>	bur chervil	I			X		
<i>Asclepias speciosa</i>	showy milkweed	N					
<i>Beckmannia syzigachne</i>	American sloughgrass	N	X	X	X	X	X
<i>Bellis perenne</i>	Lawn daisy	I					X
<i>Bidens frondosa</i>	leafy beggars-tick	N				X	X
<i>Bidens sp.</i>							
<i>Briza minor</i>	little quaking-grass	I			X	X	X
<i>Brodiaea coronaria</i>	harvest brodiaea	N					

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		Site	Coyote Prairie				
		Phase	1	2	2	N East	N West
		Section			Rem-nant		
<i>Brodiaea elegans</i>	harvest brodiaea	N		X	X	X	
<i>Bromus carinatus</i>	California brome	N				X	
<i>Bromus hordeaceus</i>	soft brome	I		X	X	X	
<i>Bromus sp.</i>	Brome sp (no flr)	-					X
<i>Calandrinia ciliata</i>	red maids	N					
<i>Camassia leichtlinii</i> ssp. <i>suksdorfii</i>	tall camas	N		X	X	X	
<i>Camassia quamash</i> ssp. <i>maxima</i>	common camas	N		X	X	X	
<i>Cardamine hirsuta</i>	hairy bittercress	I		X			X
<i>Cardamine penduliflora</i>	Willamette V. bittercress	N					
<i>Carex densa</i>	dense sedge	N	X	X	X	X	X
<i>Carex feta</i>	green-sheath sedge	N	X			X	X
<i>Carex leporina</i>	oval broom sedge	N	X		X	X	X
<i>Carex obnupta</i>	slough sedge	N	X				X
<i>Carex stipata</i> var. <i>stipata</i>	awl-fruit sedge	N				X	
<i>Carex tumulicola</i>	foothill sedge	N			X		
<i>Carex unilateralis</i>	one-sided sedge	N	X	X	X	X	X
<i>Carex vesicaria</i>	inflated sedge	N					
<i>Castilleja tenuis</i>	hairy owl-clover	N	X	X	X	X	
<i>Centaureum erythraeae</i>	common centaury	I	X	X	X	X	X
<i>Centunculus minimus</i>	chaffweed	N	X				
<i>Cerastium glomeratum</i>	sticky chickweed	I	X	X	X	X	X
<i>Chamerion angustifolium</i> var. <i>canescens</i>	perennial fireweed	N		X		X	X
<i>Cicendia quadrangularis</i>	Timwort	N					
<i>Cirsium arvense</i>	Canada thistle	I			X		
<i>Cirsium vulgare</i>	bull thistle	I		X	X		
<i>Clarkia amoena</i> ssp. <i>lindleyi</i>	farewell-to-spring	N	X	X		X	
<i>Clarkia purpurea</i> ssp. ssp. <i>quadrivulnera</i>	winecup clarkia	N		X	X	X	
<i>Collomia grandiflora</i>	grand collomia	N		X		X	
<i>Convolvulus arvensis</i>	bindweed	I					
<i>Conyza canadensis</i>	Canadian horseweed	I					

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		Site	Coyote Prairie				
		Phase	1	2	2	N East	N West
		Section			Rem-nant		
<i>Crassula aquatica</i>	water pygmy weed	N	X				
<i>Crataegus monogyna</i>	English hawthorn	I					
<i>Crataegus suksdorfii</i>	black hawthorn	N			X	X	
<i>Crataegus suksdorfii X monogyna</i>	hybrid hawthorn	I					X
<i>Crepis capillaries</i>	smooth hawksbeard	I		X			
<i>Crepis setosa</i>	bristly hawksbeard	I					
<i>Cynosurus echinatus</i>	hedgehog dogtail	I	X				
<i>Cyperus eragrostis</i>	tall flatsedge	I			X		
<i>Danthonia californica</i>	California oatgrass	N		X		X	
<i>Daucus carota</i>	Queen Anne's lace	I		X	X	X	X
<i>Deschampsia cespitosa</i>	tufted hairgrass	N	X	X	X	X	X
<i>Deschampsia danthonioides</i>	annual hairgrass	N					
<i>Dianthus armeria</i>	Deptford pink	I		X	X		
<i>Dichanthelium acuminatum var. fasciculatum</i>	western witchgrass	N		X	X		
<i>Dichelostemma congestum</i>	ookow	N		X			
<i>Dipsacus fullonum</i>	teasel	I		X	X	X	X
<i>Downingia elegans</i>	showy downingia	N		X		X	X
<i>Downingia yina</i>	Willamette downingia	N	X	X	X	X	X
<i>Echinochloa crus-galli</i>	large barnyard-grass	I		X		X	X
<i>Eleocharis acicularis</i>	needle spike-rush	N	X			X	X
<i>Eleocharis obtusa</i>	common spike-rush	N	X	X		X	X
<i>Eleocharis palustris</i>	common spikerush	N	X	X		X	X
<i>Elymus glaucus ssp.ssp. glaucus</i>	western ryegrass	N					
<i>Epilobium brachycarpum</i>	autumn willowherb	N	X	X	X	X	X
<i>Epilobium campestre</i>	smooth willowherb	N					
<i>Epilobium ciliatum</i>	hairy willowherb	N	X	X	X	X	X
<i>Epilobium densiflorum</i>	dense spike-primrose	N		X	X	X	X

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		Site	Coyote Prairie				
		Phase	1	2	2	N East	N West
		Section			Rem-nant		
<i>Equisetum sp.</i>	horsetail	N					
<i>Eriophyllum lanatum</i> var. <i>lanatum</i>	wooly sunflower	N	X	X	X	X	
<i>Eryngium petiolatum</i>	coyote thistle	N		X		X	X
<i>Euchiton sphaericus</i>	Star cudweed	I					X
<i>Festuca roemerii</i>	Roemer's fescue	N					
<i>Fragaria virginiana</i> ssp.ssp. <i>platypetala</i>	mountain strawberry	N	X	X			
<i>Fraxinus latifolia</i>	Oregon ash	N		X	X		X
<i>Galium aparine</i>	catchweed	N		X			
<i>Galium divaricatum</i>	wall bedstraw	I	X	X		X	
<i>Galium sp.</i>	bedstraw sp.	N/I			X		
<i>Galium trifidum</i>	small bedstraw	N	X	X		X	X
<i>Galium triflorum</i>	fragrant bedstraw	N					
<i>Gentiana sceptrum</i>	king's gentian	N					
<i>Geranium dissectum</i>	cut-leaved geranium	I	X	X	X		X
<i>Geranium lucidum</i>	shining geranium	I		X			X
<i>Geum macrophyllum</i>	large-leaf avens	N				X	
<i>Gilia capitata</i> ssp. <i>capitata</i>	bluehead gilia	N		X			
<i>Glyceria occidentalis</i>	western mannagrass	N					
<i>Glyceria declinata</i>	Waxy mannagrass	I					X
<i>Gnaphalium palustre</i>	lowland cudweed	N	X	X		X	X
<i>Gnaphalium purpureum</i>	purple cudweed	N	X			X	
<i>Gnaphalium stramineum</i>	cotton batting plant	N	X				
<i>Gnaphalium uliginosum</i>	marsh cudweed	I	X				
<i>Gratiola ebracteata</i>	bractless hedge-hyssop	N	X	X		X	X
<i>Grindelia integrifolia</i> x <i>Grindelia nana</i> var.var. <i>nana</i>	Willamette V. gumweed	N	X	X	X	X	X
<i>Heracleum maximum</i>	cow parsnip	N		X			
<i>Holcus lanatus</i>	velvet grass	I			X	X	X
<i>Hordeum brachyantherum</i>	meadow barley	N		X		X	
<i>Hordeum marinum</i>	Mediterranean barley	I					
<i>Hypericum perforatum</i>	St. John's-wort	I		X	X	X	X

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		Site	Coyote Prairie				
		Phase	1	2	2	N East	N West
		Section			Rem-nant		
<i>Hypochaeris radicata</i>	false dandelion	I	X	X	X	X	X
<i>Isoetes sp.</i>	quillwort	N	X				
<i>Juncus acuminatus</i>	tapered rush	N	X				
<i>Juncus articulatus</i>	jointed rush	N			X		
<i>Juncus bolanderi</i>	Bolander's rush	N	X	X		X	
<i>Juncus bufonius</i>	toad rush	N	X	X	X	X	X
<i>Juncus effusus var. var. effuses</i>	common rush	I				X	
<i>Juncus effusus var. var. pacificus</i>	soft rush	N	X			X	X
<i>Juncus ensifolius</i>	Swordleaf rush	N	X			X	X
<i>Juncus marginatus</i>	grass-leaf rush	I	X				X
<i>Juncus nevadensis</i>	Nevada rush	N			X	X	X
<i>Juncus occidentalis</i>	slender rush	N	X	X	X	X	X
<i>Juncus oxymeris</i>	pointed rush	N	X			X	X
<i>Juncus patens</i>	Spreading rush	N	X		X	X	
<i>Kickxia elatine</i>	cancerwort	I					
<i>Lactuca saligna</i>	willow lettuce	I		X			
<i>Lactuca serriola</i>	prickly lettuce	I		X	X	X	X
<i>Lasthenia glaberrima</i>	smooth lasthenia	N	X	X		X	X
<i>Lathyrus aphaca</i>	yellow vetch	I		X			
<i>Lathyrus hirsutus</i>	rough pea	I					
<i>Lathyrus sphaericus</i>	grass pea	I					
<i>Leontodon taraxacoides</i>	hairy hawkbit	I	X	X	X	X	X
<i>Leucanthemum vulgare</i>	oxeye daisy	I	X		X		
<i>Linum bienne</i>	pale flax	I	X		X		
<i>Lolium multiflorum</i>	Italian ryegrass	I		X	X	X	X
<i>Lomatium bradshawii</i>	Bradshaw's desert parsley	N			X		
<i>Lomatium nudicaule</i>	barestem desert-parsley	N		X	X	X	X
<i>Lotus corniculatus</i>	bird'sfoot trefoil	I	X				
<i>Lotus formosissimus</i>	seaside lotus	N	X	X		X	
<i>Lotus micranthus</i>	small-flowered deervetch	N					
<i>Ludwigia palustris</i>	marsh speedbox					X	
<i>Lupinus affinis</i>	fleshy lupine	N					
<i>Lupinus polycarpus</i>	smallflower lupine	N		X			X

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		Site	Coyote Prairie				
		Phase	1	2	2	N East	N West
		Section			Rem-nant		
<i>Lupinus oregonus</i>	Kincaid's lupine	N					
<i>Lupinus polyphyllus</i> var. var. <i>polyphyllus</i>	bigleaf lupine	N		X		X	X
<i>Lupinus rivularis</i>	stream lupine	N	X	X		X	
<i>Luzula comosa</i> var. <i>comosa</i>	field woodrush	N	X	X	X		
<i>Lythrum hyssopifolium</i>	hyssop loosestrife	I	X	X	X	X	X
<i>Lythrum portula</i>	water-purslane	I	X	X		X	X
<i>Madia elegans</i>	showy tarweed	N	X	X	X	X	X
<i>Madia glomerata</i>	cluster tarweed	N	X	X	X	X	X
<i>Madia sativa</i>	coast tarweed	N	X	X	X	X	X
<i>Malus fusca</i>	western crab-apple	N					
<i>Matricaria discoidea</i>	pineapple weed	N					
<i>Melilotus alba</i>	white sweetclover	I					
<i>Mentha pulegium</i>	pennyroyal	I	X	X	X	X	X
<i>Micranthes integrifolia</i>	swamp saxifrage	N					
<i>Micranthes oregana</i>	bog saxifrage	N	X	X		X	
<i>Microseris laciniata</i> ssp. <i>laciniata</i>	cut-leaved microseris	N		X	X	X	X
<i>Microsteris gracilis</i>	pink microsteris	N	X	X		X	X
<i>Mimulus guttatus</i> var. <i>depauperatus</i>	depauperate monkeyflower	N		X	X	X	X
<i>Moenchia erecta</i> ssp. <i>erecta</i>	moenchia	I			X		
<i>Montia linearis</i>	narrow-leaved montia	N	X	X			X
<i>Myosotis discolor</i>	yellow & blue forget me not	I	X	X	X		
<i>Myosotis laxa</i>	small-flowered forget me not	N	X	X		X	
<i>Navarretia intertexta</i> ssp. <i>intertexta</i>	needle-leaved navarretia	N	X	X	X	X	X
<i>Navarretia squarrosa</i>	skunkweed	N		X	X		X
<i>Navarretia willamettensis</i>	Willamette navarretia	N				X	
<i>Nemophila menziesii</i>	baby blue eyes	N		X			
<i>Orobanche californica</i> ssp. <i>californica</i>	California broomrape	N					X
<i>Orthocarpus bracteosus</i>	rosy owl-clover	N		X		X	X

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		Site	Coyote Prairie				
		Phase	1	2	2	N East	N West
		Section			Rem-nant		
<i>Panicum capillare</i> ssp. <i>capillare</i>	common witchgrass	N	X			X	
<i>Parentucellia viscosa</i>	yellow parentucellia	I	X	X	X	X	X
<i>Perideridia montana</i>	Gairdner's yampah	N		X			
<i>Perideridia oregana</i>	Oregon yampah	N			X	X	
<i>Persicaria hydropiperoides</i>	marshpepper smartweed	N	X				
<i>Persicaria maculosa</i>	heartweed	I	X	X			
<i>Persicaria lapathifolia</i>	Curltop ladythumb	N					X
<i>Phalaris aquatica</i>	Harding grass	I					
<i>Phalaris arundinacea</i>	reed canarygrass	I					X
<i>Phleum pratense</i>	Timothy	I					
<i>Plagiobothrys figuratus</i> var. <i>figuratus</i>	fragrant popcorn-flower	N	X	X	X	X	X
<i>Plagiobothrys scouleri</i>	Scouler's popcorn-flower	N	X	X		X	X
<i>Plantago lanceolata</i>	English plantain	I			X		
<i>Plectritis congesta</i>	rosy plectritis	N	X	X	X	X	
<i>Poa annua</i>	annual bluegrass	I		X			X
<i>Poa compressa</i>	Canada bluegrass	I					
<i>Poa pratensis</i>	Kentucky blugrass	I				X	X
<i>Poa sp.</i>	bluegrass sp	I		X			
<i>Polygonum aviculare</i> ssp. <i>aviculare</i>	doorweed	I					
<i>Polygonum douglasii</i>	douglas knotweed	N					
<i>Populus trichocarpa</i>	black cottonwood	N	X			X	X
<i>Portulaca oleracea</i>	little hogweed	I				X	
<i>Potentilla gracilis</i> var. <i>gracilis</i>	slender cinquefoil	N	X	X	X	X	X
<i>Prunella vulgaris</i> var. <i>lanceolata</i>	self-heal	N	X	X	X	X	X
<i>Prunus sp.</i>	plum	I					X
<i>Psilocarphus spp.</i>	wooly heads	N					
<i>Pyrrocoma racemosa</i> var. <i>racemosa</i>	racemed goldenweed	N				X	
<i>Pyrus communis</i>	pear	I			X		
<i>Pyrus malus</i>	apple	I					

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		Site	Coyote Prairie				
		Phase	1	2	2	N East	N West
		Section			Rem-nant		
<i>Ranunculus alismifolius</i>	water-plantain buttercup	N				X	X
<i>Ranunculus aquatilis</i>	white water buttercup	N					
<i>Ranunculus flammula</i>	creeping buttercup	N					
<i>Ranunculus occidentalis</i>	western buttercup	N	X	X	X	X	
<i>Ranunculus orthorhynchus</i>	straight beaked buttercup	N		X	X	X	X
<i>Ranunculus sceleratus</i>	celery-leaf buttercup	N					
<i>Rhamnus purshiana</i>	casacara	N					
<i>Rorippa curvisiliqua</i>	western yellowcress	N	X	X		X	X
<i>Rorippa palustris</i>							
<i>Rosa multiflora</i>	many flowered rose	I					
<i>Rosa nutkana</i>	Nootka rose	N			X	X	
<i>Rosa pisocarpa</i>	peafruit rose	I					
<i>Rosa sp.</i>	rose sp.	N/I	X				
<i>Rubus bifrons</i>	Himalayan blackberry	I	X	X	X	X	X
<i>Rubus laciniatus</i>	evergreen blackberry	I					
<i>Rumex acetocella</i>	sheep sorrel	I	X				X
<i>Rumex conglomeratus</i>	clustered dock	I	X				
<i>Rumex crispus</i>	curly dock	I	X	X	X	X	X
<i>Rumex salicifolius</i> var. <i>salicifolius</i>	willow dock	N	X	X		X	X
<i>Saxifraga oregana</i> (see <i>Micranthes oregana</i>)							
<i>Salix sp.</i>	willow	N	X			X	
<i>Schedonorus arundinaceus</i>	tall fescue	I		X	X		
<i>Schoenoplectus tabernaemontani</i>	softstem bulrush	N					
<i>Senecio jacobea</i>	tansy ragwort	I		X	X	X	X
<i>Senecio sylvaticus</i>	wood groundsel	I		X			
<i>Senecio vulgaris</i>	old-man-in-the-spring	I		X			X
<i>Sericocarpus rigidus</i>	rigid white topped aster	N					

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		Site	Coyote Prairie				
		Phase	1	2	2	N East	N West
		Section			Rem-nant		
<i>Sherardia arvensis</i>	blue field-madder	I					
<i>Sidalcea cusickii</i>	Cusick's checker-mallow	N		X		X	X
<i>Sidalcea malviflora</i> ssp. <i>virgata</i>	dwarf checker-mallow	N	X				
<i>Sisyrinchium bellum</i>	Western blue-eyed grass	N					
<i>Sisyrinchium hitchcockii</i>	Hitchcock's blue-eyed grass	N				X	X
<i>Sisyrinchium idahoense</i>	Idaho blue-eyed grass	N	X	X	X	X	
<i>Solanum dulcamara</i>	bitter nightshade	I		X			
<i>Solanum nigrum</i>	black nightshade	I					
<i>Solidago elongata</i> (syn. <i>Solidago canadensis</i> var. <i>salebrosa</i>)	West coast goldenrod	N	X				X
<i>Sonchus asper</i>	prickly sow-thistle	I		X	X	X	
<i>Sparganium emersum</i>	simplestem bur-reed	N					
<i>Spergula arvensis</i>	stickwort	I					
<i>Spergula rubra</i>	red sandspurry	I		X			
<i>Spiraea douglasii</i>	Douglas spirea	N	X			X	
<i>Spiranthes romanzoffiana</i>	hooded ladies tresses	N					
<i>Stellaria media</i>	chickweed	I					
<i>Symphoricarpos albus</i> var. <i>laevigatus</i>	snowberry	N					
<i>Symphyotrichum hallii</i>	Hall's aster	N		X	X	X	X
<i>Tanacetum vulgare</i>	common tansy	I					
<i>Taraxicum officinale</i>	dandelion	I		X			
<i>Toxicodendron diversiloba</i>	poison oak	N					
<i>Toxicoscordion venenosum</i>	meadow death camas	N		X	X	X	
<i>Trifolium arvense</i>	rabbitfoot clover	I					
<i>Trifolium dubium</i>	least hop clover	I			X		
<i>Trifolium pratense</i>	red clover	I					
<i>Trifolium repens</i>	white clover	I					
<i>Trifolium subterraneum</i>	subterranean clover	I					
<i>Trifolium vesiculosum</i>	arrowleaf clover	I					

Coyote Prairie North Mitigation Bank Report

		Site	Coyote Prairie				
		Phase	1	2	2	N East	N West
		Section			Rem-nant		
<i>Triphysaria versicolor</i> ssp. <i>versicolor</i>	johnnytuck	N					
<i>Triteleia hyacinthina</i>	hyacinth brodiaea	N		X	X	X	
<i>Typha latifolia</i>	cat-tail	N		X		X	X
<i>Verbascum blattaria</i>	moth mullein	I					
<i>Verbascum thapsus</i>	common mullein	I					
<i>Veronica americana</i>	American speedwell	N					
<i>Veronica peregrine</i> var. <i>xalapensis</i>	purslane speedwell	N	X	X	X	X	X
<i>Veronica scutellata</i>	marsh speedwell	N	X			X	X
<i>Vicia cracca</i>	bird vetch	I			X		
<i>Vicia hirsuta</i>	hairy vetch	I					
<i>Vicia sativa</i>	common vetch	I			X		X
<i>Vicia tetrasperma</i>	slender vetch	I	X	X	X	X	X
<i>Vulpia bromoides</i>	barren fescue	I	X	X	X	X	
<i>Vulpia myuros</i>	rat-tail fescue	I	X	X		X	X
<i>Wyethia angustifolia</i>	narrow-leaf mule's ears	N	X	X	X	X	X
<i>Xanthium stumarium</i>	Rough cocklebur	N					X
<i>Zeltnera muehlenbergii</i>	monterey centaury	N					