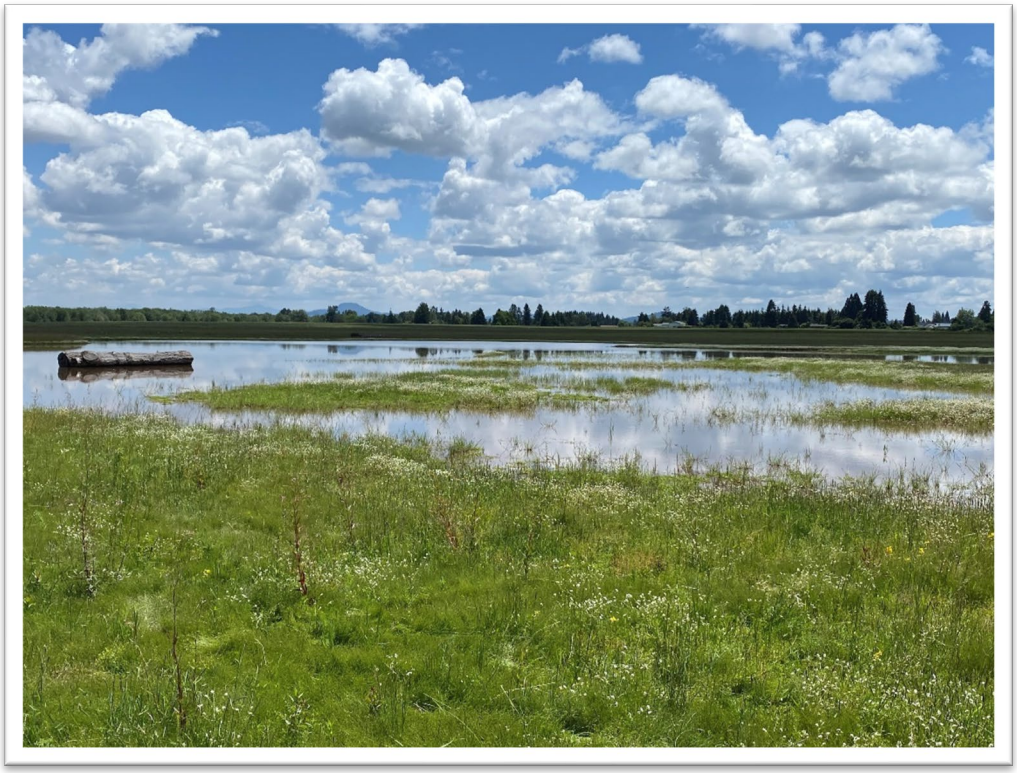
Amazon Prairie Mitigation Bank
Annual Report
for October 2021 – December 2022



May 2023

Report prepared by
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Parks and Open Space Division
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Chapter 1. **Introduction**

The Amazon Prairie Mitigation Bank (APMB) operates under an agreement (the Mitigation Bank Instrument) between the Oregon Department of State Lands (DSL), the U.S. Army Corps of Engineers (Corps), and the City of Eugene. The Mitigation Bank Instrument establishing this Bank was finalized and signed in October 2021.

Wetland enhancement work, in the form of site preparation, began in Fall 2020 in Phase 1, the western portion of the Amazon Prairie property, which had been farmed for grass seed for more than 40 years. Earthwork (in summer) to fill agricultural ditches and excavate shallow vernal pool, and first native seeding (in fall) occurred in Phase 1 in 2021, followed by planting of native species in winter 2021-2022. Management activities occurred throughout the year and qualitative vegetation monitoring occurred in summer 2022, the first growing season after seeding.

The City submitted an "As-Built" Report to the Corps and DSL on December 15, 2021, describing the earthwork and related initial activities (fencing, log placement). This current report provides information on the 2021 and 2022 seeding and planting, site management activities in the first growing season after seeding, 2022 initial vegetation establishment, as well as credit summaries and an assessment of performance to date.

Chapter 2. Credit Summary for the Amazon Prairie Mitigation Bank

The first release of credits to the Amazon Prairie Mitigation Bank (APMB) occurred in February 2022 with completion and signing of the Mitigation Bank Instrument, verification of the land survey, and site preparation that included earthwork and submission of the As-Built Report. No credits have been sold from the Amazon Prairie Mitigation Bank as of December 2022.

Table 2.1

Amazon Prairie Mitigation Bank Credit Ledger

Current Credits Available

Credits Certified	Jan-Jun 2022	Jul-Dec 2022	Jan-Jun 2023	***Total***
Phase 1	14.87	0		14.870
Phase 2	1.67	0		1.670
Subtotal				**16.540**
Annual Subtotal		16.54		

Credits Sold	Jan-Jun 2022	Jul-Dec 2022	Jan-Jun 2023	***Total***	Contract Date	Jurisdiction (fed, state, both)	State Parmit #	Fed Permit #	Credit Type HGM	Credit Type Cowardin	Acres Impacted
Subtotal	0	0		-							
Cumulative Total	***16.540***	***16.540***	***16.540***								

Chapter 3. Site Description, Management and Monitoring

Site Area (City of Eugene ownership): 329 Acres
Amazon Prairie Mitigation Bank Creditable Area: 317 Acres (Wetlands and Upland Buffers)

Location
The Amazon Prairie Mitigation Bank (APMB) is within a single 329-acre taxlot owned by the City of Eugene (City). It is located in Lane County, Oregon, in the Long Tom River watershed, along Amazon Creek (Lower Amazon Creek subwatershed), west of the Eugene airport and east of Fern Ridge Reservoir. The APMB is operated by the City.

Site History
Like much of the Willamette Valley, the site originally supported a complex of wetland and upland prairie, with riparian habitat along Amazon Creek and within its floodplain. These lands were inhabitat by indigenous people for more than 10,000 years, who shaped the Valley prairies with fire. More recently, the site has been in agricultural use, with some haying apparent throughout the uplands in 1936 aerial photographs, the earliest available. Over time, more of the site was tilled, with land managers creating agricultural drainages and removing riparian vegetation. From at least the early 1970s until the City purchased it in 2019, the site was farmed for production of grass seed. The City has continued to lease the east side of the site for grass seed production.

Bank Goals and Objectives
The primary goal of the APMB is to replace the functions and values of wetlands impacted by development within its service area and provide compensatory wetland mitigation credits. This will include establishing a diverse mosaic of Willamette Valley wetland and upland prairie; contributing to the conservation and recovery of listed and rare species; and providing important ecosystem services to the region, including flood storage capacity, water quality enhancement, soil stabilization, nitrate and phosphorus retenetion, grassland bird habitat, pollinator support, and others. The specific acre goals for the enhanced and restored areas are provided in the following table, adapted from Table 2a of the MBI.

Table 3.1

Action	Phase Acres		Total Affected Acres
	P1	P2	
Restoration of filled wetlands	0.25	0	**0.25**
Creation of wetlands WP/VP (PEM)	6.10	15.08	**21.18**
Creation of wetlands FORESTED (PFO)	0	0.50	**0.50**
Enhancement of wetlands with significant hydrologic impairment WP/VP (PEM)	103.21	21.31	**124.52**
Enhancement of wetlands with significant hydrologic impairment FORESTED (PFO)	0	3.16	**3.16**
Enhancement of Upland Riparian	0	3.96	**3.96**
Enhancement of Upland Prairie, Type A (within 200 ft of wetlands it buffers/protects)	35.67	77.43	**113.1**
Enhancement of Upland Prairie, Type B (beyond 200 ft of wetlands it buffers/protects)	0	50.67	**50.67**
TOTAL	145.23	172.11	**317.34**

Activity and Results Summary, Oct. 2021 – Dec. 2022

In October 2021, after completion of earthwork and control of emerging ryegrass following fall rains, the City seeded the site with 1,263 pounds of native seed, primarily of forbs, rushes, and sedges and repeated seeding again in fall 2022. Native species planting occurred in Dec. 2021 and Feb 2022. The City tracked establishment of both native and non-native plant species and conducted control actions on non-native plant species using manual string trimming, spot herbicide applications, and broadcast herbicide applications with a Utility Terrain Vehicle (UTV), when conditions allowed. During the first wet season after construction, the City also tracked functioning of pools, pool outlets, and swales and modified pool outlets during the dry season (summer 2022) as needed. In the first growing season, spring/summer 2022, plant establishment was slow for seeded wetland species, but

more rapid for seeded upland forbs in the northwest region of the site and for Roemer's fescue on the east side uplands. Vegetation management and tracking of hydrologic-related needs continues.

Phase 1 Management Action Detail

1. The City seeded native plant species in fall 2021 and fall 2022, focusing on forbs, sedges, and rushes in the wetlands and roemer's fescue in the uplands, with one 7-acre diverse forb area also seeded in the northwest uplands. The total amount of native seed that City staff distributed in 2021 was 1,263 lbs on 120 acres. Acres that were excluded from the fall 2021 seeding in Phase 1 were those around the north Bond Road entrance (due to potential need to treat non-natives again), a u-shaped ring around the NW corner (also due to potential need to treat invasives in that upland region), and the edge around the north, west, and south parts of the phase due to the density of non-native grasses along the boundary. These areas were all included in the 2022 seeding after further treatment of invasive species the prior year. The fall 2022 seeding encompassed the entire 145 acres of Phase 1 and included 1,099 pounds of native seed. Seed mixes are provided in Appendix B of this report and include those for wet prairie, upland prairie, and vernal pools. A summary is provided below.

Table 3.2 Distribution of Native Seeed at APMB fall 2021 and 2022.

	Quantity of native grass and upland sedge (*Carex tumilicola*) seeded (lbs)	Quantity of forbs, sedges, and rushes seeded (lbs)	Total Seeded (lbs)
2021 seeding	403	860	1,263
2022 seeding	336	763	1,099

2. City staff worked with contractors in winter 2021-2022 for the first plantings. The winter 2022-2023 plantings were complete in the 2023 calendar year and therefore are not part of this report. Most species are added to the restoration via seed. Planting is reserved for those species that become available (excess *Sidalcea virgata* from Heritage nursery beds), those salvaged from the site prior to treatment of the ryegrass crop (*Juncus nevadensis*) or those that are slow growing and more difficult to establish by seed (*Asclepias* sp., *Wyethia angustifolia*, bulb-forming species). The 2022 planted species are listed in Appendix B.

3. City staff worked with contractors and seasonal staff to control invasive non-native plant species at Amazon Prairie. Tractor-based broadcast herbicide (glyphosate) applications were needed in October 2021 to control non-native annual ryegrass, the most recent crop

grown on the site, that emerged just as earthwork was concluded. Other control activities included cutting non-native annual fescue grasses (*Vulpia myuros* and *Vulpia bromoides*) with electric and gas string trimmers, hand-weeding species such as wild carrot (*Daucus carota*), and curly dock (*Rumex crispus*), and using spot herbicide applications to control false dandelion (*Hypocheris radicata* and *Leontodon saxatilis*), pennyroyal (*Mentha pulegium*), and non-native invasive grasses (in addition to the annuals mentioned previously, these included velvet grass (*Holcus lanatus*), Kentucky bluegrass (*Poa pratensis*) and low glyceria (*Glyceria declinata*). Three relatively common non-native species that staff are observing, but not currently treating, are sharp leaved fluellin (*Kickxia elatine*) and the two annual Lythrums (*L. hyssopifolium* and *L. portula*), which are likely to diminish as native perennial cover increases. Non-native invasive upland plant species in the northwest corner of the site were also treated via UTV in summer 2022. After fall rains in 2022, annual ryegrass and annual fescues again emerged abundantly and were treated with a grass-specific herbicide application (Clethodim; tractor application) in early December 2022.

4. City staff assessed erosion and pool/berm stability in winter 2021-2022 and fall 2022. Erosion issues noted in winter 2021-2022 were corrected in September 2022 when soils were least susceptible to compaction and involved modifying berm outlets in Pools 7 and 10 where outlets weren't functioning as designed.

5. City staff installed staff gauges in all excavated pools to be able to track water depth in the 2023-2024 water year.

6. City staff installed additional t-posts to keep unauthorized vehicles from accessing the site where there is not fenceline woody vegetation. City staff also repaired and replaced gate panels when these were broken from vandalism or unauthorized vehicle use.

7. Two pools at the north end of the site, Pools 16 and 19, held water longer than anticipated into the dry season and were still holding water in September 2022. Non-native fish had colonized these pools, likely from upward movement from Amazon Creek during high water and potentially downstream travel from ponds south of Amazon Prairie on private land. As Pools 16 and 19 began to dry and water oxygen levels diminshed, fish were beached, which attracted circling turkey vultures overhead. Eugene airport personnel and their contractors determined that the vultures could be a potential hazard to aircraft, so the City authorized hand removal of fish from these two pools and then made modification to the outlet of Pool 19 to reduce its depth. The City also pumped the remaining water from Pool 16 in October and add two fish screens to the Pool 19 outlet region near the Bond Rd ditch, to keep carp and other large fish from moving up from Amazon Creek and into the pools. Maintenance of the fish screens and assessment of functioning is ongoing.

Monitoring

Hydrology.

Staff monitored hydrology, especially pool filling and outflow function, via walking surveys and periodic drone surveys. Three UAV (drone) photo arrays are included in this report (Figures 3.1, 3.2, 3.3) as examples of pool water level changes from early November through mid-December 2021, when precipitation was above normal. Pool 5 (A5) and Pool 19 (A19) are in the wetland enhancement area and Pool 9 (A9) is a created pool in the east uplands. The Pool 19 array shows the swale exit for water at the north end of the site and the light tan coir net installed to reduce sediment movemement. Once water enters the Bond Road ditch, it flows for approximately 0.3 mile before entering Amazon Creek on the west side of the APMB property. In winter 2021-2022, City staff identified several adjustments to pool outflows that were needed and could be conducted in summer/fall 2022 prior to the next precipitation season.

All wetland pools filled fully, as expected. Upland creation pools filled during the most abundant rains of the season, but then drained more rapidly than wetland pools, although there was variability in which pools in the uplands had saturated soils, refilled, and persisted following storm events. The extent to which these pools are achieving wetland characteristics will be assessed more fully in the 2023-2024 water year.

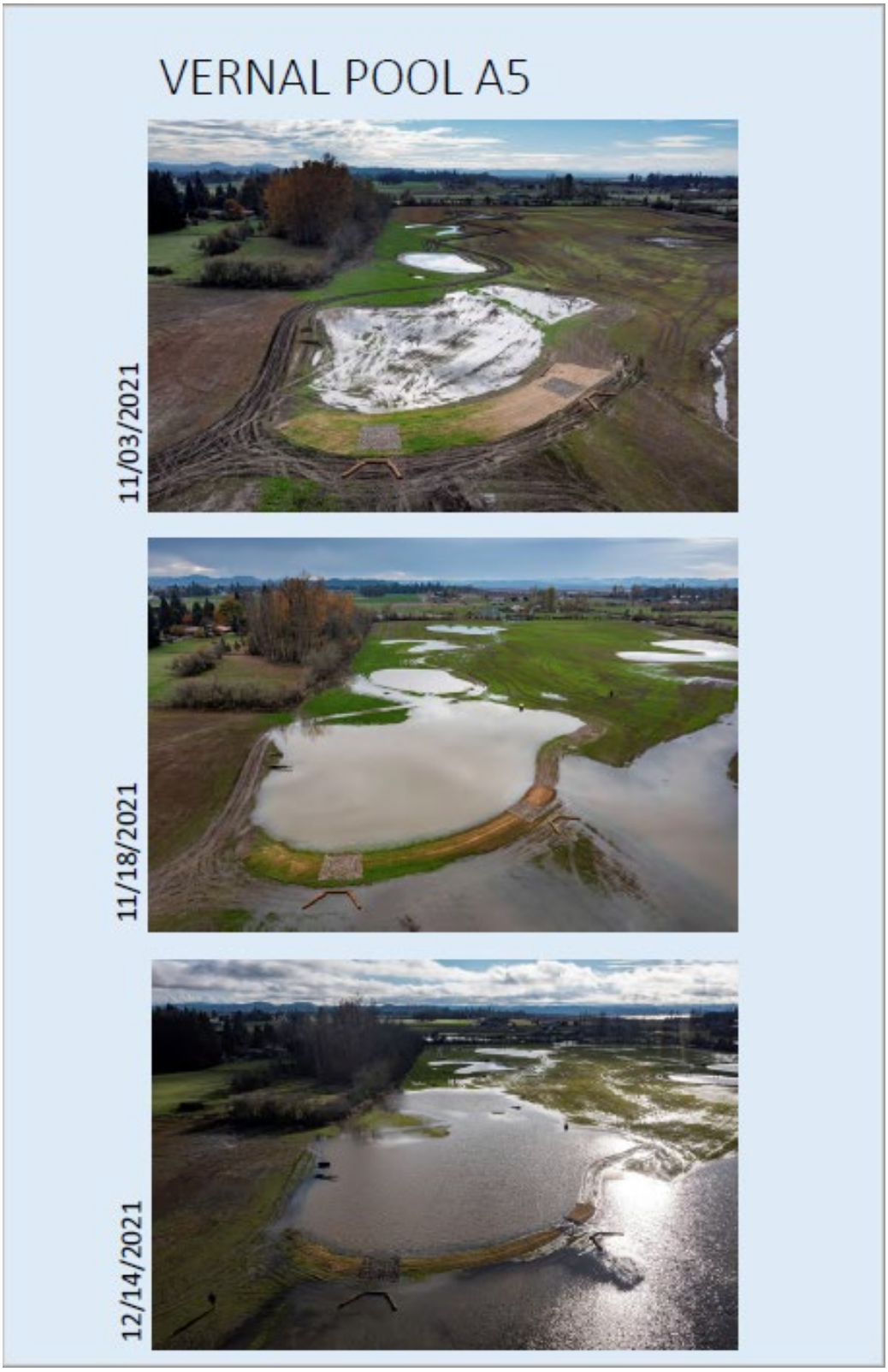

Figure 3.1. Drone photos of Pool 5 and pools at the south end of the site, over a 6-week period from early November to mid-December 2021.

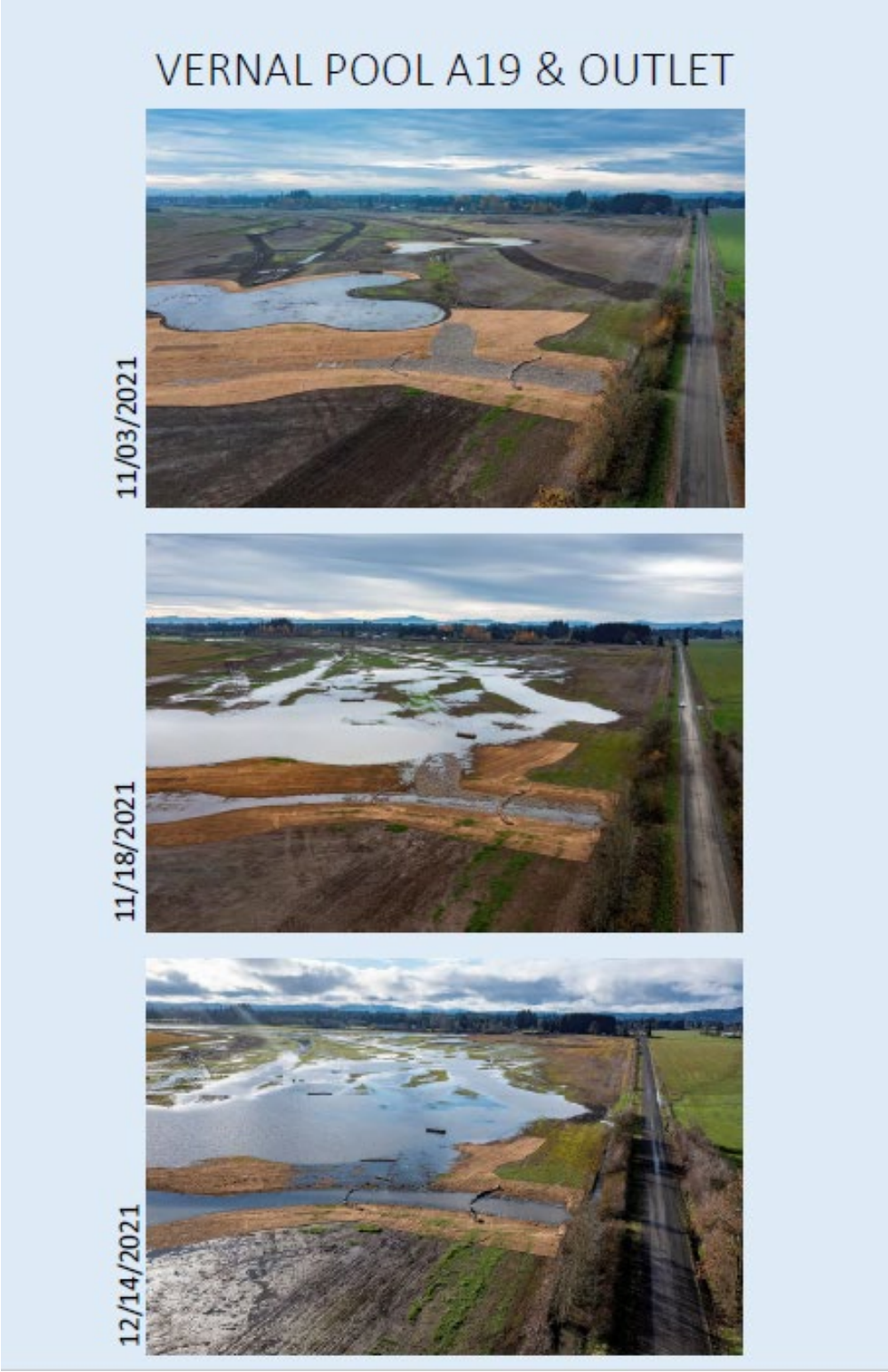

Figure 3.2. Drone photos of Pools 19 and 16 and the coir-covered north outlet over a 6-week period from early November to mid-December 2021.

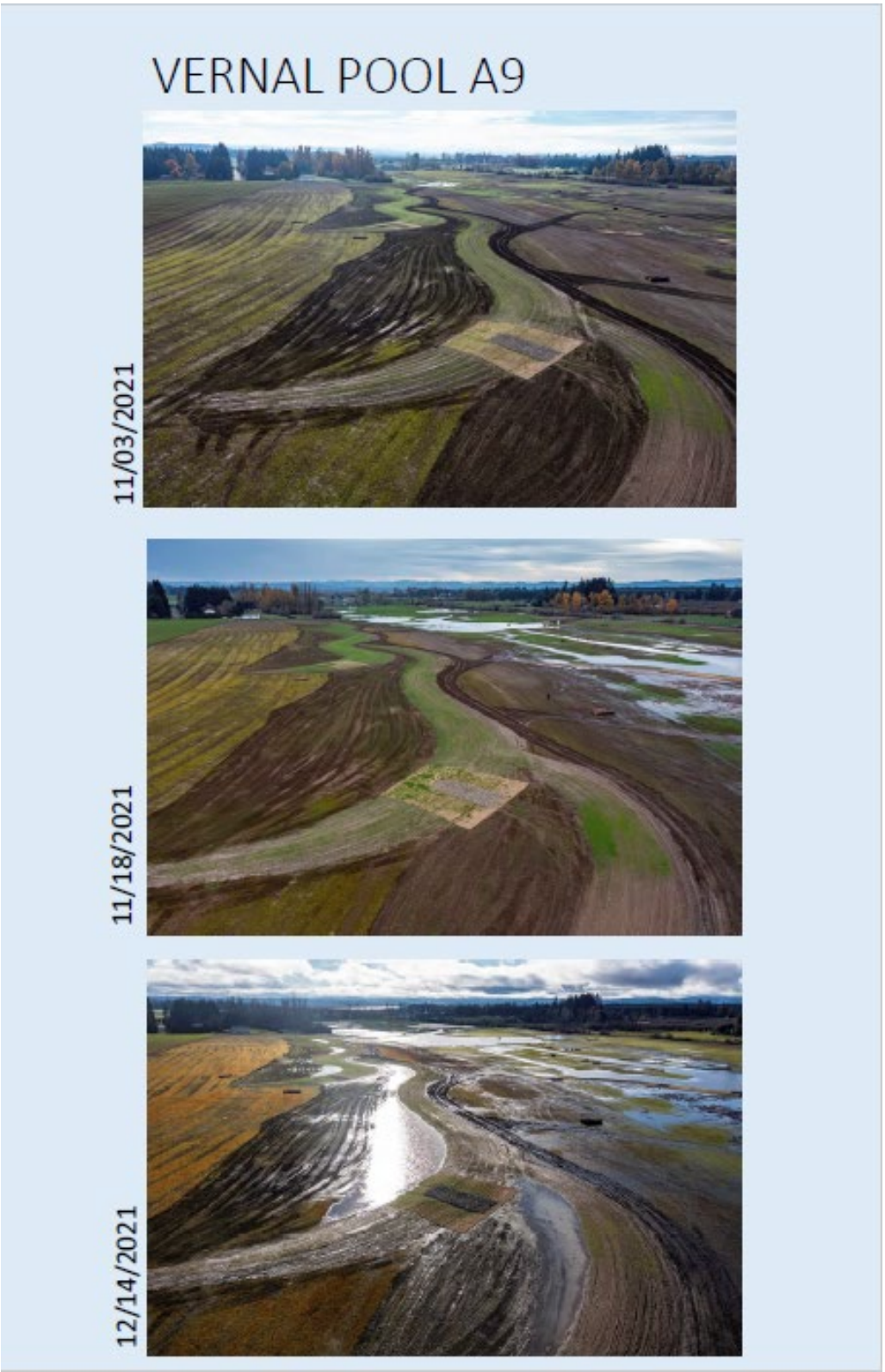

Figure 3.3. Drone photos of Pool 9, created in uplands, over a 6-week period from early November to mid-December 2021.

Vegetation. Methods: Vegetation monitoring in the first growing year following native seeding consists of observations during walking surveys of emergence throughout spring and summer, focusing on the abundance and location of non-native species that will need removal or treatment. In addition, staff conducted an assessment of species distributed in native seed mixes in summer 2022 for most of the vernal pool, and larger wet prairie and upland prairie seed mixes. This involved a walking survey through the area in which a given seed mix was distributed, recording each species found, whether it was in the seed mix for that location or not, and assessing its relative cover in relation to all vegetation cover. A sample of the seed assessments are included in Appendix A, with the Project Name column identifying whether the seed mix was distributed in vernal pool or wet prairie habitat. These assessments were also used to plan the fall 2022 seeding.

Results: The majority of native plant establishment at the site in wetlands in spring and summer 2022 consisted of annual species from the soil seedbank, rather than species distributed from restoration seed mixes. However, in both the east uplands and the northwest uplands native plant establishment of seeded species was high. This included the seeded perennial grass roemer's fescue, in the east uplands, and diverse upland annual and perennial forbs in the northwest uplands. It is not unusual that wet prairie native species can be slower to establish, especially in the first years following cessation of farming, although the lack of native species diversity in some areas was puzzling when compared to other restoration sites in their first year (e.g. Coyote Prairie NW). Native plant species that established abundantly from the soil seedbank (not part of restoration seed mixes) included toad rush (*Juncus bufonius*), marsh cudweed (*Gnaphalium palustre*), and water foxtail (*Alopecurus geniculatus*), with toad rush covering almost the entire extent of wetlands other than inundated regions of vernal pools or swales. Two non-native annual Lythrums, *Lythrum portula* and *L. hyssopifolia*, also emerged abundantly from the soil seedbank, as expected based on plant cover during site preparation.

One notable plant species observed in 2022 was *Navarretia intertexta* (needleleaf navarretia), which occurred in one relatively large population (>500 plants) in the northwest uplands and in a couple locations on the east side. These popualtions emerged from the soil seedbank and apparently persisted through farming, since City staff noted their presence during site preparation and adjusted seeding and treatments to preserve them. This species has not occurred as a 'volunteer' in other restorations in the West Eugene Wetlands, to our knowledge.

Future Management Actions

City staff anticipate the following management actions for 2023 for Phase 1:

1. Control invasive non-native plant species and assess native vegetation establishment.
2. Continue to identify and treat erosion and assess pool functioning. Adjust coir placement or add native seed or plants to pool outlets, pool margins, or swale edges to reduce sediment movement.
3. Continue to maintain all facilities, including fences, gates, and fish screens.
4. Plant additional native shrubs along the property boundary fenceline where blackberry was removed, to provide wildlife habitat and buffer the wetland community from adjacent roads.
5. Seed native perennial wetland species to create greater densities of perennial vegetation in the north Pools 16 and 19, if both pools continue to hold water through August, to reduce potential for fish (carp) use and significant summer fish mortality that could attract turkey vultures.
6. Seed native grasses after non-native grasses are controlled and seed additional forbs in select areas, where native establishment is limited or where native species diversity could be enhanced.

Chapter 4. **Progress Toward Meeting Performance Standards**

Monitoring and assessment to verify progress toward meeting performance standards in Phase 1, as described in the Amazon Prairie Mitigation Bank Instrument, are summarized in the three tables below. Table 4.1 addresses vegetation performance standards for wetland prairie, Table 4.2 for upland prairie, and Table 4.3 addresses performance standards for site hydrology.

Table 4.1. Progress of the Amazon Prairie Mitigation Bank, Phase 1 Enhancement, Toward Meeting the Wetland Vegetation Performance Standards Identified in the MBI.

The most recent data for Phase 1 are compared to their relevant performance standards. The number in the 'Monitoring Year' column indicates the summer growing season after first seeding in which the data was collected.

Monitoring Year	Vegetation Performance Standards	Monitoring method	Result (Calendar Year Collected)	Goal Met?
1	Seeding assessment and seeding and planting will document initial vegetation establishment	Qualitative seeding assessment	Completed (2022, this report)	Y
2	Native vascular plant cover > 40%	Point Intercept		
2	Bare ground (bare, litter, stone) < 40%	Point Intercept		
2	Nonnative *invasive* vascular plant cover ≤ 10%	Point Intercept		
3	Native vascular plant cover > 40%	Point Intercept		
3	Bare ground (bare, litter, stone) < 40%	Point Intercept		
3	Nonnative *invasive* vascular plant cover ≤ 10%	Point Intercept		

Table 4.1. Progress of the Amazon Prairie Mitigation Bank, Phase 1 Enhancement, Toward Meeting the Wetland Vegetation Performance Standards Identified in the MBI.

The most recent data for Phase 1 are compared to their relevant performance standards. The number in the 'Monitoring Year' column indicates the summer growing season after first seeding in which the data was collected.

Monitoring Year	Vegetation Performance Standards	Monitoring method	Result (Calendar Year Collected)	Goal Met?
3	8 native species have > 2% cover site-wide and in each 1/3 of the site, from N to S.	Point Intercept		
4	Native vascular plant cover > 60%	Point Intercept		
4	Bare ground (bare, litter, stone) < 20%	Point Intercept		
4	Nonnative invasive vascular plant cover ≤ 10%	Point Intercept		
4	8 native species have > 2% cover site-wide and in each 1/3 of the site, from N to S.	Point Intercept		
5	Native vascular plant cover > 60%	Point Intercept		
5	Bare ground (bare, litter, stone) < 20%	Point Intercept		
5	8 native species have > 2% cover site-wide and in each 1/3 of the site, from N to S.	Point Intercept		
5	Nonnative invasive vascular plant cover is ≤ 10%	Point Intercept		
5	Nonnative plant cover is less than 15% of total plant cover	Point Intercept		

Table 4.2. Progress of the Amazon Prairie Mitigation Bank, Phase 1 Enhancement, Toward Meeting the Upland Prairie Vegetation Performance Standards Identified in the MBI.

The most recent data for Phase 1 are compared to their relevant performance standards. The number in the 'Monitoring Year' column indicates the summer growing season after first seeding in which the data was collected.

Monitoring Year	Vegetation Performance Standards	Monitoring method	Result (Calendar Year Collected)	Goal Met?
1	Seeding assessment and seeding and planting will document initial vegetation establishment	Qualitative seeding assessment	Completed (2022, this report)	Y
2	Native vascular plant cover > 40%	Point Intercept		
3	Native vascular plant cover > 60%	Point Intercept		
3	Nonnative *invasive* vascular plant cover ≤ 15% and no single invasive plant species cover exceeds 10%	Point Intercept		
4	Native vascular plant cover > 60%	Point Intercept		
4	Nonnative *invasive* vascular plant cover ≤ 15% and no single invasive plant species cover exceeds 10%	Point Intercept		
5	Native vascular plant cover > 60%	Point Intercept		
5	Nonnative invasive vascular plant cover < 15% and no single invasive plant species cover exceeds 10%	Point Intercept		

Table 4.3. Progress of the Amazon Prairie Mitigation Bank, Phase 1 Enhancement, Toward Meeting the Hydrologic Performance Standards Identified in the MBI.

The most recent data for Phase 1 are compared to their relevant performance standards. The number in the 'Monitoring Year' column indicates the number of years from construction earthwork and seeding, with the beginning of Year 1 identified as earthwork completion and first native seeding (Oct 2021 for Phase 1) and the end of Year 1 as 12 months later (Oct 22).

Monitoring Year	Hydrologic Performance Standards	Monitoring and Reporting Method	Result (Calendar Yr Collected)	Goal Met?
1	HPS 1; HPS 2; HPS 3; construction earthwork to fill ditches, excavate pools, remove fill piles.	2021 As-Built Report	Constructed as proposed, with one fewer pool excavated than anticipated (2021 As-Built Report)	Y
2, 3, or 4	HPS 1; at least 20% of vernal pools hold water for 6 weeks between January and May	Dec – May pool fill dates and depths		
3, 4, 5	HPS 4; 109.56 acres exhibit wetland hydrology	Delineation amendment		

Appendix A. Seed Assessments

Amazon Prairie Mitigation Bank, Plant Establishment Assessment (aka seed assessment to identify beginning of plant establishment) **Summer 2022**. Plants establishing within a seed mix distribution area are visually assessed during a walking survey and assigned to one of five qualitative cover classes, which correspond to the following cover classes: Dominant = 40+% of vegetation cover, Common = 10-39% of vegetation cover, Occasional = 2-9% of vegetation cover, Trace = present, but <2% of vegetation cover. The data below is a sample of the seed mixes assessed. Seeded species are listed first, followed by species that were present and growing, but had not been in the fall 2021 seed mix for the given area. Under "Origin", "Introduced" equates to non-native.

Project Name	Origin - Native or Introduced	Scientific Name	Grams	Grams/ Acre	Qualitative Cover Class
APMB VP14 0.8 2021 (vernal pool)					
Seeded	N	Alisma triviale	67	84	T
Seeded	N	Carex leporina	32	40	-
Seeded	N	Downingia elegans	240	300	T
Seeded	N	Eleocharis obtusa	24	30	C
Seeded	N	Eryngium petiolatum	340	425	-
Seeded	N	Gratiola ebracteata	76	95	C
Seeded	N	Lasthenia glaberrima	160	200	-
Seeded	N	Montia linearis	40	50	-
Seeded	N	Navarretia intertexta ssp. intertexta	64	80	T
Seeded	N	Phlox gracilis	160	200	-
Seeded	N	Plagiobothrys figuratus/Plagiobothrys scouleri	219	274	O
Seeded	N	Rorippa curvisiliqua	64	80	-
Seeded	N	Veronica peregrina	72	90	-
Non-seeded	I	Lythrum portula			C

APMB VP19 1.7 2021 (vernal pool)		No vegetation was present in this pool when it was assessed on Sept 23, 2022 and nearly dry.			
Seeded	N	Alisma triviale	180	106	-
Seeded	N	Carex exsiccata	178	105	-
Seeded	N	Carex feta	68	40	-
Seeded	N	Carex obnupta	34	20	-
Seeded	N	Downingia elegans	216	127	-
Seeded	N	Eleocharis obtusa	49	29	-
Seeded	N	Eleocharis palustris	24	14	-
Seeded	N	Eryngium petiolatum	489	288	-
Seeded	N	Gratiola ebracteata	170	100	-
Seeded	N	Juncus oxymeris	34	20	-
Seeded	N	Lasthenia glaberrima	238	140	-
Seeded	N	Navarretia intertexta ssp. intertexta	428	252	-
Seeded	N	Plagiobothrys figuratus	425	250	-
Seeded	N	Ranunculus orthorhynchus	34	20	-
Seeded	N	Veronica scutellata	79	46	-
APMB VP4 1.3 2021 (vernal pool)					
Seeded	N	Alisma triviale	52	40	O
Seeded	N	Downingia yina	104	80	O
Seeded	N	Eleocharis acicularis	6	5	-
Seeded	N	Gratiola ebracteata	117	90	T
Seeded	N	Juncus nevadensis	Planted		T
Seeded	N	Lasthenia glaberrima	162	125	-
Seeded	N	Navarretia intertexta ssp. intertexta	143	110	-
Seeded	N	Plagiobothrys figuratus	130	100	T
Seeded	N	Veronica peregrina	52	40	-
Seeded	N	Veronica scutellata	20	15	-
Non-seeded	N	Agrostis exarata (on edge)			O
Non-seeded	I	Alopecurus pratensis (on edge)			T
Non-seeded	N	Eleocharis obtusa			C
Non-seeded	I	Lythrum hyssopifolium			T
Non-seeded	I	Lythrum portula			C

APMB VP7 2.2 2021 (vernal pool)					
Seeded	N	Carex feta	44	20	T
Seeded	N	Downingia yina	440	200	-
Seeded	N	Eleocharis obtusa	66	30	C
Seeded	N	Eryngium petiolatum	88	40	-
Seeded	N	Gratiola ebracteata	88	40	-
Seeded	N	Juncus occidentalis	9	4	-
Seeded	N	Lasthenia glaberrima	110	50	-
Seeded	N	Montia linearis	66	30	-
Seeded	N	Navarretia intertexta ssp. intertexta	308	140	-
Seeded	N	Phlox gracilis	154	70	-
Seeded	N	Plagiobothrys figuratus/Plagiobothrys scouleri	440	200	T
Seeded	N	Ranunculus alismaefolius var. alismifolius	50	23	-
Seeded	N	Ranunculus orthorhynchus	242	110	-
Seeded	N	Veronica peregrina	69	31	-
Non-seeded	I	Alisma lanceolatum			T
Non-seeded	I	Alopecurus pratensis			T
Non-seeded	N	Beckmannia syzigachne			T
Non-seeded	I	Echinochloa crus-galli			O
Non-seeded	N	Gnaphalium palustre			O
Non-seeded	I	Lythrum hyssopifolium			T
Non-seeded	I	Lythrum portula			D
Non-seeded	N	Myosotis laxa			T
Non-seeded	N	Rorippa curvisiliqua			T
APMB WP1 18 2021 (wet prairie 18 acres)					
Seeded	N	Carex unilateralis	222	12	-
Seeded	N	Epilobium densiflorum	1,489	83	T
Seeded	N	Grindelia integrifolia	6,660	370	T
Seeded	N	Luzula comosa	360	20	-

Seeded	N	Microseris laciniata	3,243	180	T
Seeded	N	Plagiobothrys figuratus/Plagiobothrys scouleri	1,590	88	O
Seeded	N	Potentilla gracilis var. gracilis	1,250	69	-
Seeded	N	Prunella vulgaris var. lanceolata	1,440	80	T
Seeded	N	Rumex salicifolius var. salicifolius	2,340	130	T
Non-seeded	N	Alopecurus geniculatus			D
Non-seeded	I	Briza minor			T
Non-seeded	N	Downingia yina			T
Non-seeded	N	Epilobium ciliatum			O
Non-seeded	N	Erythranthe guttata			T
Non-seeded	N	Gnaphalium palustre			T
Non-seeded	I	Hypochaeris radicata			T
Non-seeded	N	Juncus bufonius			D
Non-seeded	N	Koeleria macrantha			T
Non-seeded	I	Lolium multiflorum			C
Non-seeded	I	Lythrum hyssopifolium			C
Non-seeded	I	Lythrum portula			D
Non-seeded	I	Mentha pulegium			T
Non-seeded	I	Parentucellia viscosa			T
Non-seeded	N	Rorippa curvisiliqua			O
Non-seeded	N	Veronica peregrina var. xalapensis			O
APMB WP3 3.8 2021 (wet prairie 4 acres)					
Seeded	N	Acmispon americanus	154	41	T
Seeded	N	Allium amplectens	418	110	-
Seeded	N	Camassia quamash var. maxima	1,140	300	-
Seeded	N	Carex unilateralis	76	20	-
Seeded	N	Drymocallis glandulosa	74	19	-
Seeded	N	Grindelia integrifolia	418	110	T
Seeded	N	Juncus oxymeris	123	32	-
Seeded	N	Lomatium nudicaule	532	140	-
Seeded	N	Lupinus polyphyllus	141	37	-
Seeded	N	Lupinus rivularis	301	79	-

Seeded	N	Luzula comosa	114	30	-
Seeded	N	Micranthes oregana	65	17	-
Seeded	N	Perideridia oregana	624	164	-
Seeded	N	Phlox gracilis	114	30	-
Seeded	N	Plagiobothrys figuratus/Plagiobothrys scouleri	1,140	300	O
Seeded	N	Potentilla gracilis var. gracilis	342	90	-
Seeded	N	Prunella vulgaris var. lanceolata	190	50	-
Seeded	N	Pyrrocoma racemosa var. racemosa	401	106	-
Seeded	N	Ranunculus occidentalis var. occidentalis	526	138	-
Seeded	N	Rorippa curvisiliqua	266	70	T
Seeded	N	Rumex salicifolius var. salicifolius	532	140	-
Non-seeded	N	Alopecurus geniculatus			D
Non-seeded	Unknown	Bidens sp.			T
Non-seeded	N	Epilobium ciliatum			T
Non-seeded	N	Epilobium densiflorum			T
Non-seeded	N	Erythranthe guttata			T
Non-seeded	N	Juncus bufonius			D
Non-seeded	I	Lolium multiflorum			C
Non-seeded	I	Lythrum hyssopifolium			C
Non-seeded	I	Lythrum portula			Unrecorded
Non-seeded	I	Poa pratensis			C
Non-seeded	N	Ranunculus sceleratus			T
Non-seeded	N	Veronica peregrina var. xalapensis			T
APMB WP4 6.8 2021 (wet prairie 7 acres)					
Seeded	N	Achillea millefolium	316	46	T
Seeded	N	Allium amplectens	622	91	-
Seeded	N	Camassia quamash var. maxima	3,400	500	-
Seeded	N	Carex feta	327	48	-
Seeded	N	Epilobium densiflorum	748	110	T
Seeded	N	Grindelia integrifolia	884	130	T

Seeded	N	Lomatium nudicaule	1,700	250	-
Seeded	N	Luzula comosa	848	125	-
Seeded	N	Madia glomerata	136	20	-
Seeded	N	Micranthes oregana	107	16	-
Seeded	N	Montia linearis	126	19	-
Seeded	N	Perideridia oregana	1,224	180	-
Seeded	N	Phlox gracilis	136	20	T
Seeded	N	Plagiobothrys figuratus/Plagiobothrys scouleri	1,632	240	C
Seeded	N	Potentilla gracilis var. gracilis	612	90	T
Seeded	N	Prunella vulgaris var. lanceolata	748	110	T
Seeded	N	Pyrrocoma racemosa var. racemosa	2,040	300	-
Seeded	N	Ranunculus occidentalis var. occidentalis	2,380	350	T
Seeded	N	Rumex salicifolius var. salicifolius	1,496	220	T
Seeded	N	Sidalcea cusickii	1,632	240	T
Seeded	N	Wyethia angustifolia	748	110	-
Non-seeded	N	Alopecurus geniculatus			D
Non-seeded	N	Agrostis exarata			T
Non-seeded	N	Eleocharis obtusa			T
Non-seeded	N	Epilobium ciliatum			O
Non-seeded	N	Gnaphalium palustre			O
Non-seeded	I	Holcus lanatus			O
Non-seeded	I	Hypochaeris radicata			T
Non-seeded	N	Juncus bufonius			D
Non-seeded	I	Kickxia elatine			T
Non-seeded	I	Lolium multiflorum			C
Non-seeded	I	Lythrum hyssopifolium			C
Non-seeded	I	Lythrum portula			C
Non-seeded	I	Mentha pulegium			T
Non-seeded	N	Navarretia intertexta ssp. intertexta			T
Non-seeded	N	Panicum capillare			T
Non-seeded	N	Persicaria lapathifolia			T
Non-seeded	I	Poa pratensis			C
Non-seeded	N	Ranunculus orthorhynchus			T
Non-seeded	I	Rumex crispus			O

Non-seeded	N	Veronica peregrina var. xalapensis			T
APMB WP5 15 2021 (wet prairie 15 acres)					
Seeded	N	Camassia quamash var. maxima	4,500	300	-
Seeded	N	Carex densa	143	10	-
Seeded	N	Carex unilateralis	77	5	-
Seeded	N	Epilobium densiflorum	450	30	O
Seeded	N	Grindelia integrifolia	600	40	O
Seeded	N	Hosackia gracilis	102	7	-
Seeded	N	Juncus occidentalis	30	2	-
Seeded	N	Juncus patens	75	5	-
Seeded	N	Luzula comosa	599	40	-
Seeded	N	Montia linearis	51	3	T
Seeded	N	Phlox gracilis	550	37	T
Seeded	N	Plagiobothrys figuratus/Plagiobothrys scouleri	3,450	230	C
Seeded	N	Potentilla gracilis var. gracilis	1,350	90	-
Seeded	N	Prunella vulgaris var. lanceolata	900	60	-
Seeded	N	Ranunculus occidentalis var. occidentalis	300	20	-
Seeded	N	Ranunculus orthorhynchus	300	20	-
Seeded	N	Sidalcea cusickii	450	30	-
Seeded	N	Sisyrinchium idahoense var. idahoense	2,028	135	-
Seeded	N	Veronica peregrina	300	20	-
Non-seeded	N	Acmispon americanus			T
Non-seeded	N	Alopecurus geniculatus			D
Non-seeded	N	Agrostis exarata			T
Non-seeded	N	Beckmannia syzigachne			T
Non-seeded	N	Downingia elegans			T
Non-seeded	I	Echinochloa crus-galli			O
Non-seeded	N	Eleocharis acicularis			T
Non-seeded	N	Eleocharis obtusa			O
Non-seeded	N	Epilobium ciliatum			O

Non-seeded	N	Erythranthe guttata			T
Non-seeded	N	Gnaphalium palustre			T
Non-seeded	N	Juncus bufonius			D
Non-seeded	I	Lythrum hyssopifolium			O
Non-seeded	I	Lythrum portula			O
Non-seeded	N	Microseris laciniata			T
Non-seeded	N	Navarretia intertexta ssp. intertexta			T
Non-seeded	N	Panicum capillare			O
Non-seeded	I	Poa pratensis			C
Non-seeded	N	Rorippa curvisiliqua			T
Non-seeded	N	Rumex salicifolius			T
Non-seeded	N	Schoenoplectus tabernaemontani			T
APMB WP6 19 2021 (wet prairie 19 acres)					
Seeded	N	Achillea millefolium	285	15	-
Seeded	N	Eriophyllum lanatum var. lanatum	340	18	-
Seeded	N	Juncus occidentalis	57	3	-
Seeded	N	Luzula comosa	380	20	-
Seeded	N	Micranthes oregana	224	12	-
Seeded	N	Microseris laciniata	3,420	180	-
Seeded	N	Plagiobothrys figuratus/Plagiobothrys scouleri	3,800	200	-
Seeded	N	Potentilla gracilis var. gracilis	5,700	300	-
Seeded	N	Prunella vulgaris var. lanceolata	3,800	200	-
Seeded	N	Rumex salicifolius var. salicifolius	1,710	90	T
Seeded	N	Sidalcea malviflora virgata	3,800	200	-
Seeded	N	Wyethia angustifolia	2,081	110	-
Non-seeded	N	Alopecurus geniculatus			D
Non-seeded	I	Briza minor			T
Non-seeded	N	Eleocharis obtusa			T
Non-seeded	N	Gnaphalium palustre			O
Non-seeded	N	Epilobium ciliatum			O
Non-seeded	N	Juncus bufonius			D

Non-seeded	I	Kickxia elatine			T
Non-seeded	I	Lolium multiflorum			T
Non-seeded	I	Lythrum hyssopifolium			C
Non-seeded	I	Lythrum portula			D
Non-seeded	I	Mentha pulegium			T
Non-seeded	I	Poa pratensis			O
Non-seeded	N	Rorippa curvisiliqua			O
Non-seeded	N	Veronica peregrina var. xalapensis			O

Appendix B. Seeding and Planting

2021 Seed Mixes

Amazon Prairie MB (2021)			
Seed Mix Name	**Plant Species Scientific Name**	**Grams**	**Grams/Acre**
APMB 5 CircPlots WP 0.15 2021	Camassia quamash var. maxima	1020	6800
	Castilleja tenuis	33	220
(plot-specific seeding for species	Gentiana sceptrum	158	1053
with limited seed)	Lomatium bradshawii	245	1633
	Lupinus polyphyllus	334	2227
	Orthocarpus bracteosus	100	667
	Pyrrocoma racemosa var. racemosa	3709	24727
	Sidalcea cusickii	1868	12453
	Triteleia hyacinthina	146	973
	TOTAL	7613	50753
APMB BermOutflowOverseed 3.5 2021	Epilobium densiflorum	350	100
	Grindelia integrifolia	1750	500
	Juncus occidentalis	350	100
	Potentilla gracilis var. gracilis	9520	2720
	TOTAL	11970	3420
APMB BermsCircPlot NW UP 2021	Agoseris grandiflora	1225	1225
	Clarkia purpurea	1512	1512
	Collomia grandiflora	1942	1942
(plot-specific seeding for species	Dichelostemma congestum	552	552
with limited seed)	Gilia capitata ssp. capitata	12359	12359

	Linanthus bicolor	753	753
	Lomatium triternatum	74	74
	Lupinus polyphyllus	1032	1032
	TOTAL	19449	19449
APMB Bond Ditch Coir Grass 0.01 2021	Bromus carinatus	797	79700
	Elymus glaucus	204	20400
	Grindelia integrifolia	250	25000
	Juncus occidentalis	489	48900
	Madia gracilis (old leftoveer seed)	300	30000
	Madia sativa (old leftover seed)	1362	136200
	TOTAL	3402	340200
APMB BondOutlet 0.8 2021	Acmispon americanus	120	150
	Beckmannia syzigachne	3632	4540
	Carex tumulicola	850	1063
	Carex unilateralis	180	225
	Deschampsia elongata	362	453
	Epilobium densiflorum	192	240
	Erythranthe guttata	6	8
	Grindelia integrifolia	160	200
	Hordeum brachyantherum	270	338
	Juncus occidentalis	400	500
	TOTAL	6172	7715
APMB CATU Overseed UP 4 2021 (upland)	Carex tumulicola	27198	5440
APMB Drill Addn Berm9 Berm12 Grass 2.0 2021 (upland)	Festuca roemeri	9080	4540
APMB hand seed meander WP 1 2021	Asclepias speciosa	586	NA
	Camassia quamash var. maxima	20400	
	Madia glomerata	1397	
	Microseris laciniata	3600	
	Myosotis laxa	1401	
	Pyrrocoma racemosa var. racemosa	2412	
	Symphyotrichum hallii	8211	

	TOTAL	38007	
APMB HaulRt Overseed WP 5 2021	Acmispon americanus	2500	500
	Epilobium densiflorum	1000	200
	Grindelia integrifolia	2000	400
	Juncus occidentalis	1000	200
	Potentilla gracilis var. gracilis	3000	600
	TOTAL	9500	1900
APMB NW BermBase UP 1 2021	Achillea millefolium	1960	1960
(upland)	Lomatium nudicaule	1400	1400
	Lupinus polycarpus	1428	1428
	Madia elegans	1038	1038
	Microseris laciniata	800	800
	Plectritis congesta	600	600
	Potentilla gracilis var. gracilis	200	200
	Prunella vulgaris var. lanceolata	976	976
	Ranunculus occidentalis var. occidentalis	600	600
	TOTAL	9002	9002
APMB NW SensitiveHomeSite FERO 1.5 2021 (upland)	Festuca roemeri	13620	9080
APMB Penninsula Addition WP 1.4 2021	Carex unilateralis	70	50
	Juncus occidentalis	28	20
	Lomatium nudicaule	1120	800
	Luzula comosa	70	50
	Plagiobothrys figuratus	560	400
	Potentilla gracilis var. gracilis	560	400
	Prunella vulgaris var. lanceolata	700	500
	Ranunculus occidentalis var. occidentalis	280	200
	Rorippa curvisiliqua	656	469
	Wyethia angustifolia	700	500
	TOTAL	4744	3389
APMB UP GRASS AdditionForBrdcst 2021 (upland)	Festuca roemeri	63560	4540

APMB UP7 4.2 2021	Achillea millefolium	105	30
(upland)	Asclepias speciosa	140	40
	Camassia leichtlinii var. suksdorfii	1624	464
	Carex tumulicola	210	60
	Clarkia purpurea	326	93
	Collomia grandiflora	385	110
	Eriophyllum lanatum var. lanatum	764	218
	Lomatium nudicaule	1493	427
	Lupinus rivularis	105	30
	Madia elegans	105	30
	Microseris laciniata	875	250
	Perideridia gairdneri	71	20
	Plectritis congesta	280	80
	Potentilla gracilis var. gracilis	455	130
	Prunella vulgaris var. lanceolata	770	220
	Pyrrocoma racemosa var. racemosa	630	180
	Sidalcea malviflora virgata	2835	810
	Sisyrinchium idahoense var. idahoense	1470	420
	Wyethia angustifolia	1781	509
	TOTAL	14424	4121
APMB UPGrassFinalBerm9Berm12 Addn 1.66 2021 (upland)	Festuca roemeri	15073	9080
APMB UPLAND Grass 15 2021	Festuca roemeri	68099	4540
APMB VP 18 0.5 2021	Drymocallis glandulosa	200	400
(vp=vernal pool)	Epilobium densiflorum	40	80
	Eryngium petiolatum	87	174
	Galium trifidum	115	230
	Lasthenia glaberrima	140	280
	Montia linearis	20	40
	Myosotis laxa	200	400
	Plagiobothrys figuratus	80	160
	Ranunculus occidentalis var. occidentalis	200	400
	Ranunculus orthorhynchus	100	200
	Rumex salicifolius var. salicifolius	100	200
	Sidalcea cusickii	100	200

	Sisyrinchium idahoense var. idahoense	240	480
	TOTAL	1622	3244
APMB VP1 0.6 2021	Alisma triviale	48	80
	Downingia elegans	104	173
	Eleocharis obtusa	24	40
	Gratiola ebracteata	67	112
	Veronica scutellata	21	35
	TOTAL	264	440
APMB VP10 2.9 2021	Carex feta	87	30
	Downingia yina	398	137
	Epilobium densiflorum	116	40
	Erythranthe guttata	50	17
	Gratiola ebracteata	233	80
	Grindelia integrifolia	116	40
	Juncus bolanderi	6	2
	Juncus patens	12	4
	Lasthenia glaberrima	195	67
	Navarretia intertexta ssp. intertexta	116	40
	Phlox gracilis	87	30
	Plagiobothrys figuratus	406	140
	Ranunculus orthorhynchus	87	30
	Veronica scutellata	66	23
	TOTAL	1975	681
APMB VP11 0.9 2021	Alisma triviale	72	80
	Downingia elegans	162	180
	Gratiola ebracteata	63	70
	Lasthenia glaberrima	107	119
	Navarretia intertexta ssp. intertexta	72	80
	Plagiobothrys figuratus	45	50
	TOTAL	521	579
APMB VP13 2.7 2021	Carex exsiccata	54	20
	Carex feta	54	20
	Downingia yina	342	127
	Eryngium petiolatum	108	40

	Gratiola ebracteata	133	49
	Juncus oxymeris	11	4
	Lasthenia glaberrima	351	130
	Montia linearis	84	31
	Navarretia intertexta ssp. intertexta	351	130
	Plagiobothrys figuratus	324	120
	Ranunculus orthorhynchus	107	40
	Veronica scutellata	54	20
	TOTAL	1973	731
APMB VP14 0.8 2021	Alisma triviale	67	84
	Carex leporina	32	40
	Downingia elegans	240	300
	Eleocharis obtusa	24	30
	Eryngium petiolatum	340	425
	Gratiola ebracteata	76	95
	Lasthenia glaberrima	160	200
	Montia linearis	40	50
	Navarretia intertexta ssp. intertexta	64	80
	Phlox gracilis	160	200
	Plagiobothrys figuratus	219	274
	Rorippa curvisiliqua	64	80
	Veronica peregrina	72	90
	TOTAL	1558	1948
APMB VP15 0.6 2021	Alisma triviale	48	80
	Camassia quamash var. maxima	480	800
	Epilobium densiflorum	78	130
	Eryngium petiolatum	66	110
	Lasthenia glaberrima	84	140
	Myosotis laxa	769	1282
	Plagiobothrys figuratus	180	300
	Pyrrocoma racemosa var. racemosa	264	440
	Ranunculus occidentalis var. occidentalis	245	408
	Rorippa curvisiliqua	24	40
	Rumex salicifolius var. salicifolius	120	200
	Sidalcea cusickii	240	400
	Sisyrinchium idahoense var. idahoense	200	333

	Veronica peregrina	18	30
	TOTAL	2816	4693
APMB VP16 1.5 2021	Alisma triviale	135	90
	Beckmannia syzigachne	300	200
	Carex feta	45	30
	Downingia yina	558	372
	Eleocharis obtusa	68	45
	Eryngium petiolatum	165	110
	Gratiola ebracteata	105	70
	Navarretia intertexta ssp. intertexta	300	200
	Plagiobothrys figuratus	225	150
	TOTAL	1901	1267
APMB VP19 1.7 2021	Alisma triviale	180	106
	Carex exsiccata	178	105
	Carex feta	68	40
	Carex obnupta	34	20
	Downingia elegans	216	127
	Eleocharis obtusa	49	29
	Eleocharis palustris	24	14
	Eryngium petiolatum	489	288
	Gratiola ebracteata	170	100
	Juncus oxymeris	34	20
	Lasthenia glaberrima	238	140
	Navarretia intertexta ssp. intertexta	428	252
	Plagiobothrys figuratus	425	250
	Ranunculus orthorhynchus	34	20
	Veronica scutellata	79	46
	TOTAL	2646	1556
APMB VP2 0.3 2021	Alisma triviale	68	227
	Downingia yina	63	210
	Eleocharis obtusa	15	50
	Eryngium petiolatum	18	60
	Gratiola ebracteata	42	140
	Navarretia intertexta ssp. intertexta	36	120
	Plagiobothrys figuratus	39	130
	TOTAL	281	937

APMB VP3 0.3 2021	Alisma triviale	48	160
	Downingia yina	69	230
	Eryngium petiolatum	24	80
	Juncus acuminatus	5	17
	navarretia willamettensis	16	53
	Plagiobothrys figuratus	27	90
	TOTAL	189	630
APMB VP4 1.3 2021	Alisma triviale	52	40
	Downingia yina	104	80
	Eleocharis acicularis	6	5
	Gratiola ebracteata	117	90
	Lasthenia glaberrima	162	125
	Navarretia intertexta ssp. intertexta	143	110
	Plagiobothrys figuratus	130	100
	Veronica peregrina	52	40
	Veronica scutellata	20	15
	TOTAL	786	605
APMB VP5 1.2 2021	Gratiola ebracteata	123	103
	Lasthenia glaberrima	228	190
	Montia linearis	53	44
	Plagiobothrys figuratus	108	90
	Ranunculus alismaefolius var. alismifolius	96	80
	Veronica peregrina	72	60
	Veronica scutellata	36	30
	TOTAL	716	597
APMB VP6 0.5 2021	Beckmannia syzigachne	105	210
	Carex feta	25	50
	Carex unilateralis	25	50
	Downingia yina	40	80
	Eleocharis palustris	7	14
	Epilobium densiflorum	20	40
	Eryngium petiolatum	75	150
	Juncus oxymeris	2	4
	Plagiobothrys figuratus	30	60
	TOTAL	329	658

APMB VP7 2.2 2021	Carex feta	44	20
	Downingia yina	440	200
	Eleocharis obtusa	66	30
	Eryngium petiolatum	88	40
	Gratiola ebracteata	88	40
	Juncus occidentalis	9	4
	Lasthenia glaberrima	110	50
	Montia linearis	66	30
	Navarretia intertexta ssp. intertexta	308	140
	Phlox gracilis	154	70
	Plagiobothrys figuratus	440	200
	Ranunculus alismaefolius var. alismifolius	50	23
	Ranunculus orthorhynchus	242	110
	Veronica peregrina	69	31
	TOTAL	2174	988
APMB VP8 VP9 VP12 WPVP 5 2021	Camassia leichtlinii var. suksdorfii	1000	200
	Carex densa	100	20
	Epilobium densiflorum	350	70
	Eryngium petiolatum	700	140
	Galium trifidum	318	64
	Grindelia integrifolia	950	190
	Hosackia gracilis	205	41
	Juncus occidentalis	25	5
	Luzula comosa	300	60
	Micranthes oregana	133	27
	Montia linearis	200	40
	Phlox gracilis	85	17
	Plagiobothrys figuratus	1400	280
	Potentilla gracilis var. gracilis	1200	240
	Rorippa curvisiliqua	350	70
	Rumex salicifolius var. salicifolius	1500	300
	Sidalcea cusickii	1050	210
	Sisyrinchium idahoense var. idahoense	1300	260
	Veronica peregrina	300	60
	TOTAL	11466	2293

APMB Wetland BermsB 1.4 2021	Allium amplectens	807	576
	Camassia leichtlinii var. suksdorfii	1176	840
	Carex leporina	42	30
	Epilobium densiflorum	56	40
	Lomatium nudicaule	700	500
	Luzula comosa	56	40
	Micranthes oregana	9	6
	Phlox gracilis	182	130
	Pyrrocoma racemosa var. racemosa	700	500
	Ranunculus occidentalis var. occidentalis	368	263
	Rorippa curvisiliqua	126	90
	Rumex salicifolius var. salicifolius	196	140
	Sidalcea malviflora virgata	899	642
	Sisyrinchium idahoense var. idahoense	392	280
	Symphyotrichum hallii	420	300
	Wyethia angustifolia	707	505
	TOTAL	6836	4883
APMB WetlandBermsA 1.5 2021	Achillea millefolium	45	30
	Allium amplectens	807	538
	Camassia leichtlinii var. suksdorfii	3457	2305
	Carex densa	45	30
	Grindelia integrifolia	60	40
	Lomatium nudicaule	420	280
	Luzula comosa	75	50
	Micranthes oregana	23	15
	Plagiobothrys figuratus	300	200
	Plectritis congesta	300	200
	Prunella vulgaris var. lanceolata	114	76
	Ranunculus occidentalis var. occidentalis	450	300
	Symphyotrichum hallii	270	180
	Wyethia angustifolia	225	150
	TOTAL	6591	4394
APMB WP 1 North Overseed 9.5 2021	Grindelia integrifolia	21565	2270
	Potentilla gracilis var. gracilis	21565	2270
	TOTAL	43130	4540

APMB WP1 18 2021	Carex unilateralis	222	12
	Epilobium densiflorum	1489	83
	Grindelia integrifolia	6660	370
	Luzula comosa	360	20
	Microseris laciniata	3243	180
	Plagiobothrys figuratus	1590	88
	Potentilla gracilis var. gracilis	1250	69
	Prunella vulgaris var. lanceolata	1440	80
	Rumex salicifolius var. salicifolius	2340	130
	TOTAL	18594	1033
APMB WP2 3.1 2021	Achillea millefolium	227	73
	Allium amplectens	186	60
	Camassia quamash var. maxima	2296	741
	Carex leporina	64	21
	Drymocallis glandulosa	93	30
	Epilobium densiflorum	248	80
	Grindelia integrifolia	248	80
	Lomatium nudicaule	454	146
	Luzula comosa	155	50
	Micranthes oregana	20	6
	Phlox gracilis	93	30
	Potentilla glandulosa	20	6
	Prunella vulgaris var. lanceolata	245	79
	Rorippa curvisiliqua	620	200
	Symphyotrichum hallii	248	80
	Veronica peregrina	134	43
	Wyethia angustifolia	806	260
	TOTAL	6157	1986
APMB WP3 3.8 2021	Acmispon americanus	154	41
	Allium amplectens	418	110
	Camassia quamash var. maxima	1140	300
	Carex unilateralis	76	20
	Drymocallis glandulosa	74	19
	Grindelia integrifolia	418	110
	Juncus oxymeris	123	32
	Lomatium nudicaule	532	140

	Lupinus polyphyllus	141	37
	Lupinus rivularis	301	79
	Luzula comosa	114	30
	Micranthes oregana	65	17
	Perideridia oregana	624	164
	Phlox gracilis	114	30
	Plagiobothrys figuratus	1140	300
	Potentilla gracilis var. gracilis	342	90
	Prunella vulgaris var. lanceolata	190	50
	Pyrrocoma racemosa var. racemosa	401	106
	Ranunculus occidentalis var. occidentalis	526	138
	Rorippa curvisiliqua	266	70
	Rumex salicifolius var. salicifolius	532	140
	TOTAL	7691	2024
APMB WP4 6.8 2021	Achillea millefolium	316	46
	Allium amplectens	622	91
	Camassia quamash var. maxima	3400	500
	Carex feta	327	48
	Epilobium densiflorum	748	110
	Grindelia integrifolia	884	130
	Lomatium nudicaule	1700	250
	Luzula comosa	848	125
	Madia glomerata	136	20
	Micranthes oregana	107	16
	Montia linearis	126	19
	Perideridia oregana	1224	180
	Phlox gracilis	136	20
	Plagiobothrys figuratus	1632	240
	Potentilla gracilis var. gracilis	612	90
	Prunella vulgaris var. lanceolata	748	110
	Pyrrocoma racemosa var. racemosa	2040	300
	Ranunculus occidentalis var. occidentalis	2380	350
	Rumex salicifolius var. salicifolius	1496	220
	Sidalcea cusickii	1632	240
	Wyethia angustifolia	748	110
	TOTAL	21862	3215

APMB WP5 15 2021	Camassia quamash var. maxima	4500	300
	Carex densa	143	10
	Carex unilateralis	77	5
	Epilobium densiflorum	450	30
	Grindelia integrifolia	600	40
	Hosackia gracilis	102	7
	Juncus occidentalis	30	2
	Juncus patens	75	5
	Luzula comosa	599	40
	Montia linearis	51	3
	Phlox gracilis	550	37
	Plagiobothrys figuratus	3450	230
	Potentilla gracilis var. gracilis	1350	90
	Prunella vulgaris var. lanceolata	900	60
	Ranunculus occidentalis var. occidentalis	300	20
	Ranunculus orthorhynchus	300	20
	Sidalcea cusickii	450	30
	Sisyrinchium idahoense var. idahoense	2028	135
	Veronica peregrina	300	20
	TOTAL	16255	1084
APMB WP6 19 2021	Achillea millefolium	285	15
	Eriophyllum lanatum var. lanatum	340	18
	Juncus occidentalis	57	3
	Luzula comosa	380	20
	Micranthes oregana	224	12
	Microseris laciniata	3420	180
	Plagiobothrys figuratus	3800	200
	Potentilla gracilis var. gracilis	5700	300
	Prunella vulgaris var. lanceolata	3800	200
	Rumex salicifolius var. salicifolius	1710	90
	Sidalcea malviflora virgata	3800	200
	Wyethia angustifolia	2081	110
Total pounds of seed =	TOTAL	25597	1347

2022 Seeding

Amazon Prairie MB (2022)			
Seed Mix Name	**Plant Species Scientific Name**	**Grams**	**Grams/Acre**
APMB BondOutlet 0.8 2022	Juncus nevadensis var. nevadensis	1	1
	Juncus nevadensis var. nevadensis	3	4
	Juncus nevadensis var. nevadensis	3	4
	TOTAL	7	9
APMB DECE Encircle VP 16 19 2022	Deschampsia cespitosa	1800	1800
	TOTAL	1800	1800
APMB E Berms 8 9 12 FERO 2.8 2022	Festuca roemeri	11340	4050
	Festuca roemeri	13401	4786
	TOTAL	24741	8836
APMB E Uplands FERO 15.5 2022	Festuca roemeri	13347	861
(upland)	Festuca roemeri	21838	1409
	TOTAL	35185	2270
APMB NW UP Forbs 4.7 2022	Acmispon americanus	235	50
(upland)	Camassia leichtlinii var. suksdorfii	474	101
	Clarkia purpurea	535	114
	Clarkia purpurea	940	200
	Collomia grandiflora	940	200
	Gilia capitata ssp. capitata	71	15
	Gilia capitata ssp. capitata	930	198
	Gilia capitata ssp. capitata	809	172
	Leptosiphon bicolor	450	96
	Leptosiphon bicolor	270	57
	Lupinus polycarpus	66	14
	Lupinus polycarpus	1446	308
	Lupinus polycarpus	211	45
	Madia elegans	517	110
	Madia glomerata w/ MAEL	2083	443
	Nemophila menziesii var. atomaria	383	81
	Plectritis congesta	1400	298
	Sidalcea malviflora virgata	732	156
	Triteleia hyacinthina	80	17
	Wyethia angustifolia	2115	450
	TOTAL	14687	3125

APMB NW UP Grass FERO 10 2022	Festuca roemeri	90800	9080
(upland)	TOTAL	90800	9080
APMB Peninsulas WP 1.5 2022	Acmispon americanus	90	60
	Carex densa	100	67
	Carex feta	90	60
	Carex obnupta	90	60
	Epilobium densiflorum	270	180
	Grindelia integrifolia	270	180
	Plagiobothrys figuratus	210	140
	Potentilla gracilis var. gracilis	300	200
	Rorippa curvisiliqua	300	200
	Rumex salicifolius var. salicifolius	240	160
	TOTAL	1960	1307
APMB Seed by hand SmAmts2022	Carex tumulicola	210	NA
	Eriophyllum lanatum var. lanatum	440	
	Juncus occidentalis	480	
	Madia glomerata	2526	
	Madia gracilis	3497	
	Madia gracilis	13218	
	Navarretia intertexta ssp. intertexta	226	
	Prunella vulgaris var. lanceolata	114	
	TOTAL	20711	
APMB South BoundryU WP 5.6 2022	Grindelia integrifolia	4200	750
	Juncus occidentalis	2520	450
	Juncus occidentalis	1120	200
	Potentilla gracilis var. gracilis	5096	910
	TOTAL	12936	2310
APMB SYHA 2022	Symphyotrichum hallii	7108	355
	TOTAL	7108	355
APMB UP Forbs by hand 2022	Clarkia purpurea	1040	NA
	Clarkia purpurea	931	
	Collomia grandiflora	1083	
	Dichelostemma congestum	552	
	Eriophyllum lanatum	113	
	Iris tenax	15	
	Iris tenax	150	
	Iris tenax	87	
	Leptosiphon bicolor	300	

	Lupinus polycarpus	1012	
	Lupinus polycarpus	1766	
	Lupinus polyphyllus	412	
	Luzula subsessilis	58	
	Madia gracilis	519	
	Micranthes oregana	9	
	Micranthes oregana	22	
	Nemophila menziesii	128	
	Pyrrocoma racemosa var. racemosa	800	
	TOTAL	8997	
APMB VP 4 region by hand 2022	Acmispon americanus	311	NA
(vp=vernal pool)	Castilleja tenuis	18	
	Cicendia quadrangularis	29	
	Gentiana sceptrum	63	
	Gentiana sceptrum	107	
	Gentiana sceptrum	2	
	Juncus occidentalis	100	
	Lupinus polyphyllus	234	
	Madia glomerata	380	
	Myosotis laxa	115	
	Orthocarpus bracteosus	56	
	Pyrrocoma racemosa	1493	
	Ranunculus orthorhynchus	2614	
	Rorippa curvisiliqua	1260	
	Sidalcea cusickii	1170	
	Symphyotrichum hallii	1600	
	Symphyotrichum hallii	1486	
	Veronica peregrina	5	
	TOTAL	11043	
APMB VP1 0.6 2022	Alisma triviale	72	120
	Downingia elegans	288	480
	Eleocharis acicularis	10	17
	Erythranthe guttata	36	60
	Gratiola ebracteata	66	110
	Lasthenia glaberrima	129	215
	Myosotis laxa	95	158
	Navarretia willamettensis	11	18
	Plagiobothrys figuratus	162	270
	Veronica scutellata	15	25
	TOTAL	884	1473

APMB VP1 satellite 0.1 2022	Downingia yina	20	200
	Gratiola ebracteata	30	300
	Navarretia intertexta ssp. intertexta	20	200
	Plagiobothrys figuratus	30	300
	TOTAL	100	1000
APMB VP10 2.9 2022	Alisma triviale	116	40
	Carex densa	87	30
	Downingia yina	253	87
	Downingia yina	375	129
	Gratiola ebracteata	87	30
	Plagiobothrys figuratus	261	90
	Plagiobothrys figuratus	580	200
	Rorippa curvisiliqua	87	30
	TOTAL	1846	637
APMB VP11 0.9 2022	Alisma triviale	99	110
	Downingia yina	270	300
	Eleocharis obtusa	35	39
	Eryngium petiolatum	144	160
	Gratiola ebracteata	54	60
	Lasthenia glaberrima	126	140
	Navarretia intertexta ssp. intertexta	72	80
	Plagiobothrys figuratus	108	120
	TOTAL	908	1009
APMB VP13 2.7 2022	Alisma triviale	270	100
	Carex densa	180	67
	Carex feta	108	40
	Carex unilateralis	81	30
	Downingia elegans	837	310
	Gratiola ebracteata	135	50
	Lasthenia glaberrima	196	73
	Plagiobothrys figuratus	297	110
	Veronica scutellata	78	29
	TOTAL	2182	808
APMB VP14 0.8 2022	Alisma triviale	104	130
	Downingia elegans	480	600
	Eleocharis obtusa	48	60
	Eryngium petiolatum	340	425
	Gratiola ebracteata	112	140
	Lasthenia glaberrima	72	90

	Navarretia intertexta ssp. intertexta	240	300
	Plagiobothrys figuratus	48	60
	Plagiobothrys figuratus	72	90
	Veronica scutellata	40	50
	TOTAL	1556	1945
APMB VP16 1.5 2022	Carex leporina	129	86
	Carex obnupta	90	60
	Carex obnupta	210	140
	Carex unilateralis	23	15
	Deschampsia cespitosa	225	150
	Eleocharis palustris	16	11
	Eryngium petiolatum	617	411
	TOTAL	1310	873
APMB VP19 1.7 2022	Carex densa	68	40
	Carex leporina	68	40
	Carex obnupta	68	40
	Carex obnupta	426	251
	Carex unilateralis	77	45
	Deschampsia cespitosa	272	160
	Eleocharis palustris	59	35
	Eryngium petiolatum	510	300
	TOTAL	1548	911
APMB VP2 0.3 2021	Alisma triviale	42	140
	Carex densa	45	150
	Carex leporina	60	200
	Carex obnupta	48	160
	Downingia yina	120	400
	Eleocharis obtusa	30	100
	Eryngium petiolatum	54	180
	Juncus oxymeris	6	20
		405	1350
APMB VP3 0.3 2021	Carex leporina	37	123
	Carex obnupta	90	300
	Carex unilateralis	72	240
	Downingia yina	46	153
	Eleocharis obtusa	27	90
	Eryngium petiolatum	129	430
	TOTAL	401	1337

APMB VP4 1.3 2022	Alisma triviale	104	80
	Downingia yina	260	200
	Downingia yina	260	200
	Eleocharis acicularis	87	67
	Erythranthe guttata	59	45
	Gratiola ebracteata	78	60
	Lasthenia glaberrima	52	40
	Lasthenia glaberrima	78	60
	Lasthenia glaberrima	29	22
	Myosotis laxa	28	22
	Navarretia intertexta ssp. intertexta	104	80
	Navarretia intertexta ssp. intertexta	182	140
	Plagiobothrys figuratus	390	300
	Veronica scutellata	52	40
	TOTAL	1763	1356
APMB VP5 1.2 2022	Carex densa	45	38
	Carex obnupta	360	300
	Downingia yina	264	220
	Eryngium petiolatum	480	400
	Plagiobothrys figuratus	360	300
	Plagiobothrys figuratus	240	200
	TOTAL	1749	1458
APMB VP6 0.5 2022	Beckmannia syzigachne	680	1360
	Carex densa	90	180
	Carex leporina	40	80
	Carex unilateralis	53	106
	Eryngium petiolatum	70	140
	Plagiobothrys figuratus	100	200
	TOTAL	1033	2066
APMB VP7 2.2 2022	Alisma triviale	163	74
	Carex densa	66	30
	Carex obnupta	132	60
	Carex unilateralis	150	68
	Downingia yina	492	224
	Lasthenia glaberrima	352	160
	Plagiobothrys figuratus	176	80
	Plagiobothrys figuratus	198	90
	TOTAL	1729	786
APMB VPs 15 18 1.0 2022	Alisma triviale	210	210

	Camassia leichtlinii var. suksdorfii	599	599
	Drymocallis glandulosa	180	180
	Eleocharis obtusa	60	60
	Epilobium densiflorum	100	100
	Eryngium petiolatum	400	400
	Plagiobothrys figuratus	120	120
	Potentilla gracilis var. gracilis	180	180
	Sidalcea malviflora virgata	600	600
	Sisyrinchium idahoense var. idahoense	450	450
	TOTAL	2899	2899
APMB VPs 8 9 12 WP 5 2022	Acmispon americanus	600	120
	Carex tumulicola	3000	600
	Epilobium densiflorum	300	60
	Grindelia integrifolia	2250	450
	Juncus occidentalis	250	50
	Juncus occidentalis	1000	200
	Potentilla gracilis var. gracilis	1400	280
	Rorippa curvisiliqua	567	113
	Sidalcea malviflora virgata	3000	600
	TOTAL	12367	2473
APMB WP 3 Berm Addition 2022	Camassia leichtlinii var. suksdorfii	4689	2345
	Carex tumulicola	600	300
	Grindelia integrifolia	600	300
	Lomatium nudicaule	1040	520
	Luzula subsessilis	325	163
	Perideridia oregana	560	280
	Potentilla gracilis var. gracilis	880	440
	Prunella vulgaris var. lanceolata	402	201
	Rorippa curvisiliqua	180	90
	Sidalcea malviflora virgata	1481	741
	TOTAL	10757	5379
APMB WP 4 Wet Berm Addition 2022	Camassia leichtlinii var. suksdorfii	2270	2270
	Carex tumulicola	300	300
	Grindelia integrifolia	90	90
	Lomatium nudicaule	520	520
	Luzula subsessilis	160	160
	Perideridia oregana	280	280
	Potentilla gracilis var. gracilis	440	440
	Prunella vulgaris var. lanceolata	210	210
	Rorippa curvisiliqua	90	90

	Sidalcea malviflora virgata	700	700
	TOTAL	5060	5060
APMB WP 6A 5.8 2022	Allium amplectens	464	80
	Camassia quamash var. maxima	4640	800
	Carex tumulicola	1740	300
	Eriophyllum lanatum var. lanatum	1160	200
	Galium trifidum	186	32
	Grindelia integrifolia	464	80
	Lomatium nudicaule	3480	600
	Lupinus polyphyllus	114	20
	Luzula subsessilis	1121	193
	Microseris laciniata	1160	200
	Plectritis congesta	638	110
	Potentilla gracilis var. gracilis	2613	451
	Ranunculus occidentalis var. occidentalis	1710	295
	Rumex salicifolius var. salicifolius	1276	220
	Sidalcea malviflora virgata	2204	380
	TOTAL	22970	3960
APMB WP 6B 3.8 2022	Camassia quamash var. maxima	8626	2270
	Carex tumulicola	3420	900
	Eriophyllum lanatum var. lanatum	760	200
	Galium trifidum	30	8
	Galium trifidum	30	8
	Lomatium nudicaule	5790	1524
	Luzula subsessilis	152	40
	Microseris laciniata	1178	310
	Potentilla gracilis var. gracilis	1064	280
	Pyrrocoma racemosa var. racemosa	3420	900
	Rumex salicifolius var. salicifolius	152	40
	Sidalcea malviflora virgata	1672	440
	Wyethia angustifolia	1140	300
	TOTAL	27434	7219
APMB WP 6wet 12.5 2022	Acmispon americanus	1000	80
	Carex feta	125	10
	Carex leporina	53	4
	Carex leporina	64	5
	Carex unilateralis	125	10
	Grindelia integrifolia	3500	280
	Perideridia oregana	3750	300
	Phlox gracilis	1543	123

	Plagiobothrys figuratus	1375	110
	Potentilla gracilis var. gracilis	5000	400
	Sisyrinchium idahoense var. idahoense	3750	300
	Veronica peregrina	250	20
	TOTAL	20535	1643
APMB WP 8 Dryr 6.5 2022	Acmispon americanus	195	30
	Allium amplectens	19	3
	Allium amplectens	1300	200
	Camassia quamash var. maxima	4527	696
	Camassia quamash var. maxima	1323	204
	Carex tumulicola	255	39
	Eriophyllum lanatum var. lanatum	2844	438
	Lomatium nudicaule	1820	280
	Microseris laciniata	910	140
	Microseris laciniata	1637	252
	Perideridia oregana	390	60
	Plectritis congesta	1950	300
	Potentilla gracilis var. gracilis	679	104
	Potentilla gracilis var. gracilis	1271	196
	TOTAL	19120	2942
APMB WP 8 Wet 5.5 2022	Carex tumulicola	4045	735
	Epilobium densiflorum	1100	200
	Grindelia integrifolia	1100	200
	Juncus occidentalis	1650	300
	Juncus occidentalis	1100	200
	Perideridia oregana	741	135
	Potentilla gracilis var. gracilis	1100	200
	TOTAL	10836	1970
APMB WP 9 Hi to Low 7 2022	Acmispon americanus	560	80
	Carex tumulicola	4802	686
	Carex tumulicola	3150	450
	Grindelia integrifolia	4200	600
	Juncus occidentalis	1400	200
	Juncus occidentalis	1400	200
	Madia glomerata	350	50
	Microseris laciniata	817	117
	Potentilla gracilis var. gracilis	430	61
	Potentilla gracilis var. gracilis	3770	539
	TOTAL	20879	2983

APMB WP1 South 9 2022	Carex densa	72	8
	Epilobium densiflorum	450	50
	Grindelia integrifolia	990	110
	Grindelia integrifolia	990	110
	Lomatium nudicaule	8172	908
	Microseris laciniata	2700	300
	Plagiobothrys figuratus	925	103
	Potentilla gracilis var. gracilis	8190	910
	Prunella vulgaris var. lanceolata	1468	163
	Rumex salicifolius var. salicifolius	4726	525
	TOTAL	28683	3187
APMB WP1 South Supp 2 2022	Camassia quamash var. maxima	1800	900
	Carex densa	60	30
	Carex feta	80	40
	Epilobium densiflorum	80	40
	Grindelia integrifolia	320	160
	Juncus patens	80	40
	Madia glomerata	80	40
	Montia linearis	125	63
	Perideridia oregana	120	60
	Potentilla gracilis var. gracilis	180	90
	Rumex salicifolius var. salicifolius	220	110
	Sidalcea malviflora virgata	280	140
	TOTAL	3425	1713
APMB WP3 toWBound 4.6 2022	Camassia quamash var. maxima	1131	246
	Camassia quamash var. maxima	3680	800
	Epilobium densiflorum	276	60
	Grindelia integrifolia	368	80
	Lomatium nudicaule	1886	410
	Microseris laciniata	520	113
	Potentilla gracilis var. gracilis	1748	380
	Prunella vulgaris var. lanceolata	506	110
	Rumex salicifolius var. salicifolius	1288	280
	Wyethia angustifolia	966	210
	TOTAL	12369	2689
APMB WP4 Dryr 8 2022	Allium amplectens	1770	221
	Camassia quamash var. maxima	4000	500
	Carex densa	120	15
	Carex densa	39	5
	Epilobium densiflorum	400	50

	Grindelia integrifolia	800	100
	Lomatium nudicaule	4800	600
	Microseris laciniata	906	113
	Perideridia oregana	1760	220
	Potentilla gracilis var. gracilis	2480	310
	Prunella vulgaris var. lanceolata	880	110
	Rumex salicifolius var. salicifolius	671	84
	Wyethia angustifolia	2051	256
	TOTAL	20677	2585
APMB WP4W 3 2022	Acmispon americanus	180	60
	Carex densa	96	32
	Carex obnupta	150	50
	Downingia elegans	321	107
	Downingia yina	90	30
	Eryngium petiolatum	180	60
	Grindelia integrifolia	660	220
	Juncus occidentalis	90	30
	Juncus occidentalis	120	40
	Juncus patens	59	20
	Juncus patens	60	20
	Plagiobothrys figuratus	330	110
	Plagiobothrys figuratus	120	40
	Ranunculus orthorhynchus	120	40
	Veronica peregrina	120	40
	TOTAL	2696	899
APMB WP5 15 2022	Carex densa	142	9
	Carex leporina	118	8
	Carex unilateralis	60	4
	Carex unilateralis	85	6
	Downingia elegans	954	64
	Downingia yina	1050	70
	Epilobium densiflorum	60	4
	Epilobium densiflorum	300	20
	Erythranthe guttata	5	0
	Grindelia integrifolia	1500	100
	Juncus occidentalis	1500	100
	Juncus occidentalis	600	40
	Juncus patens	195	13
	Plagiobothrys figuratus	1800	120
	Plagiobothrys figuratus	1350	90
	Veronica peregrina	300	20

	TOTAL	10019	668
APMB WP7 NE Bond 5.0 2022	Achillea millefolium	1265	253
	Acmispon americanus	900	180
	Camassia quamash var. maxima	8499	1681
	Carex leporina	95	19
	Carex tumulicola	111	22
	Carex tumulicola	66	13
	Carex tumulicola	32	6
	Epilobium densiflorum	550	110
	Galium trifidum	28	6
	Plectritis congesta	1000	200
	Potentilla gracilis var. gracilis	1000	200
	Prunella vulgaris var. lanceolata	800	160
	Pyrrocoma racemosa var. racemosa	1067	213
	Pyrrocoma racemosa var. racemosa	2000	400
	Rumex salicifolius var. salicifolius	700	140
	Sidalcea malviflora virgata	2250	450
	TOTAL	20363	4054

Planting Winter 2021-2022

APMB	
Species	**Quantity (plants)**
Allium amplectens	10 flats (~1,000 bulbs)
Asclepias fascicularis	138
Asclepias speciosa	40
Camassia leichtlinii	20 flats (~2,000 bulbs)
Carex exsiccata	14
Iris tenax	350
Juncus nevadensis	78 flats (~1,560 plants)
Sidalcea virgata	880
Sidalcea virgata	600 large bare-root plants
Triteleia hyacinthina	8 flats (~800 bulbs)

Wyethia angustifolia	459
Toxicoscordion venenosum	10 flats (~1,000 bulbs)