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Amazon Creek Mitigation Bank, LLC

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Junction City, Oregon

Annual Report, 2009

Phase I and II

Submitted by

Amazon Creek Mitigation Bank, LLC

Prepared by

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Amazon Creek Mitigation Bank
Phase I Restored Wetland

Annual Report, 2009: Year-8 Monitoring

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Summary

Data from June 1 and June 2, 2009 indicates that the credited portion of the restored Phase I wetland at the Amazon Creek Mitigation Bank continues to attain performance criteria established in the Bank Mitigation Instrument.

Introduction

The Instrument specifies that the Phase I wetland that was restored in 2001 shall be monitored annually for at least 5 years to determine if specific wetland features are restored successfully, and consequently, if the MBRT may authorize release of mitigation credits. This report describes results of year-8 (2009 growing season) monitoring of the wetland. The Instrument also stipulates that particular comparisons will be made with a reference site, and the MBRT had previously agreed that Stewart Pond wetland complex in Eugene is an acceptable reference site.

Methods

The same survey methods used in the previous years were used again in the year 8 monitoring. Exactly as specified in the Instrument, a systematic quadrat (plot) method for sampling within the Bank was used. Within the Phase I Bank wetland, 25 quadrats that had been situated equidistantly (approximately 210 ft apart) along 5 transect lines were revisited, plus 20 that had been added in year 2. The transects were aligned perpendicular to the general topographic slope and direction of water movement. The location of the first sample quadrat on each transect has been staggered in order to minimize potential overlap among quadrats. The most northerly of the transects, (quadrats #38-#45) lies north of the boundary berm and passes through an area planted with trees. The remaining transects, except for their eastern ends (and a few mid-transect points on the southernmost transect) lie within the seasonally inundated area. For surveying herbaceous and open water habitats, each quadrat was 1m x 1m, with the centers located on a fixed t-bar fence post. Plants were identified to species where possible and percent cover of each species was estimated in each quadrat, as well as the percent bare ground. During the early growing season of 2009, herbicide applications were made to multiple locations containing Pennyroyal (Mentha pulegium). The percent cover of all vegetation killed by herbicide application was also made; and it is worth noting that Pennyroyal constituted the majority to practically the entirety of the noted dead vegetation.

For surveying woody plantings along the northern most transect, each quadrat had a diameter of 30 feet, centered on the transect. Herbaceous vegetation was also sampled in this transect, using the 1m x 1m quadrat. Each quadrat on each transect was surveyed for the characteristics described in sections 13.1.1, 13.1.2, 13.1.3 of the Instrument. In 2009, the Phase I wetland was surveyed on June 1 and June 2. All vegetation data is included in Appendix A. Vegetation that may have been sampled in previous years of monitoring, but which was not present during the 2009 monitoring, is included within the data presented in Appendix A, however, their sum species percentages are indicated as 0. The prevalence (moisture) index was calculated using the formula in the *Draft Guidance for Vegetation Planning and Monitoring in Western Oregon Wetlands and Riparian Areas* (June 2004 version). Scores were assigned to species as follows: 1 = OBL, 2 =FACW, 3 = FAC, 4 = FACU, and 5 = UPL or NOL.

By prior agreement with the MBRT, Amazon Creek data were compared to reference data collected by the City of Eugene from their Stewart Pond mitigation bank site. The most recent published data available from Stewart Pond (summer 2002) were used in the comparison. For woody plants, stem density in five Amazon Creek plots was compared with data from the same number of plots at the Stewart

Pond reference site. Plant species richness also was compared. To make that comparison with Amazon Creek data statistically comparable, 45 plots had been selected randomly (using the NCSS 2001 statistical software package) from a total of 259 that had been surveyed at Stewart Pond by the City of Eugene. Data were compared with data from the 45 Amazon Creek Bank plots.

Results

GENERAL CRITERIA: For a mitigation site to be counted as "wetland," it must have hydrological conditions, soils, and vegetation that typify wetlands. Hydrological conditions are clearly being met at most of the Amazon Creek site, with standing water or saturation occurring within 12 inches of the soil surface during the growing season over the entire area, and into late June in parts of the area. Soil indicators of wetland conditions require time to develop, and in much of the site already have developed. Given the fact that the site is located on soil classified as hydric and is now being flooded for long duration, it is inevitable that soil indicators and associated hydrophytic vegetation will eventually dominate all parts of the mitigation bank unit.

With regard to vegetation along the transect lines, and excluding quadrats 28, 44, and 45 which are outside of the part of the wetland counted for mitigation credit, the prevalence (moisture) index averaged 2.10 using the USFWS scale for plant indicator status. An index less than 3 indicates a prevalence of hydrophytic plant cover. The score was less than 3.00 (suggesting wetland conditions) in 76% of the quadrats within the area counted for mitigation credit. The quadrats where it exceeded 3.00 were mostly in higher areas along the periphery of the site. For comparison, the index values from all years are:

Year	Date	Prevalence (Moisture) Index
2002	8/30	2.54
2003	7/12	2.21
2004	6/25	1.91
2005	6/28	2.15
2006	6/29	1.93
2007	7/2	2.32
2008	7/11	2.15
2009	6/2	2.12

The Amazon Creek Mitigation Bank site continues to support a rich community of desirable herbaceous plants: 42 species were found during this, the eighth year of monitoring. A comparable number of plots from the Stewart Pond reference site contained 16, which likewise has existed as a restored formerly-riverine wetland but for a much longer period of time. Creation of wet prairie is not an objective of this project as defined by the Bank Instrument, which requires that part of the site be developed as a forested wetland.

Text on the next page in *italics,* is quoted directly from the Instrument. Other text responds to the Instrument's criteria.

The project will be successful and certified when:

13.1 Vegetation Performance Standards

13. 1.1 Herbaceous Vegetation

CRITERION: COVER and COMPOSITION. At the end of the first growing season, desirable herbaceous vegetation will dominate in 60% of the plots located in the non-inundated emergent habitats located at the bank site. At the end of the year two growing season, desirable herbaceous vegetation will dominate in a number of plots equal or greater than 65% of the proportional number of plots in which it dominates at the reference site in non-inundated emergent habitats, and 70% or greater in subsequent years.

STATUS: This standard was met, with desirable vegetation (i.e., no undesirable vegetation) dominating 100% of the plots. The only herbaceous species designated as undesirable in the Instrument and found previously within the Mitigation Bank by the approved sampling methodology was *Cirsium arvense*. However, this species was not encountered here in 2009, due to aggressive weed management efforts. *Senecio jacobaea* was encountered at Quadrat 8 this year; however it does not dominate the plot.

CRITERION: *SPECIES RICHNESS. At the end of the first and second growing seasons the number of species on the cumulative list of desirable herbaceous plant species (i.e.. the list accumulated from among all plots in herbaceous emergent habitats at the Bank site) will be at least 60% percent of the number of species of desirable herbaceous plants on a comparable list from the reference site. At the end of year five growing season, this standard will be 70% or greater.... Both planted and recruited species will be included in evaluating these standards.*

STATUS: The cumulative list for a comparable number (45) of randomly-selected plots from the Stewart Pond reference site contained a total of 16 desirable herbaceous species. For comparison, the 45 plots in the Mitigation Bank site in June 2009 contained 42 desirable herbaceous species. Thus 42/16= 263%.

CRITERION: *No more than 15% of individuals will be non-native, invasive, undesirable herbaceous species.*

STATUS: This criterion is clearly met because *Senecio jacobaea* constitutes only 0.8% of the total percentage of vegetation observed.

13.1.2 Scrub-shrub and Forest Vegetation

CRITERION: The cumulative list of species from plots in the scrub/shrub habitats will contain no fewer than three species of desirable planted or volunteer woody species.

STATUS: Excluding the undesirable *Rubus discolor*, during 2008 a total of 5 woody species was found in the Phase I wetland. This is an increase of one desirable species when compared with 2007. Observed species are *Fraxinus latifolia* (Oregon ash), *Salix lasiandra.* (Pacific willow), *Rosa nutkana* (Nootka rose), *Crataegus douglasii* (Douglas hawthorn), and new for 2008, *Populus trichocarpa* (Black cottonwood).

CRITERION: *Based on counts of woody stems summed from plots in scrub-shrub habitats there will be at least 100 stems per acre or at least 60% of the stem density at which they occur in comparable plots at the reference site (whichever is greater).*

STATUS: A total of 80 woody stems were noted in 7 scrub-shrub plots in the northeast corner, an increase from the 71 observed in 2008. Each 30-ft diameter quadrat encompasses 707 sq. ft., or 0.0162 acre, so 80 stems per 0.1134 acres (80 / 0.1134) is equivalent to 705 stems per acre, clearly exceeding the 100-stems-per-acre criterion. Woody stem density in 5 equivalent quadrats in the Stewart Pond reference site was determined to be 30 stems per 0.0810 acres, or 370 stems per acre. Taking 60% of this yields a criterion of 222 stems per acre. Thus, the Mitigation Bank site in 2009 clearly exceeded both criteria.

CRITERION: No more than 15% of individuals shall be undesirable non-native species. Both planted and recruited species will be included in evaluating these standards.

STATUS: Of the 80 woody stems found within the scrub-shrub portion of the Mitigation Bank wetland, none were from species deemed undesirable according to the Instrument.

13.1.3 Open Water

CRITERION: In open water areas there will be no more than a total of 15% cover of undesirable, non-native, invasive species.

STATUS: There are no parts of the Mitigation Bank wetland that contain surface water year-round. Nearly the entire site is inundated seasonally. Within that area, no species deemed undesirable was present (as noted in 13.1.1 above).

Appendix A

2009 Vegetation species percent cover in 45 quadrats in Amazon Creek Mitigation Bank wetland Phase I

2009 Phase I

		Quadrat	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
species status	species score	Species																										
--------		(bare/water)	12	10	0	5	1	0	3	15	5	3	0	3	0	3	0	0	5	0	20	6	20	10	8	55	1	0
--------		dead Mentha/mixed veg (herbicided)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	12	0	0	0	0	25	0	0
FACW	2	Agrostis exarata	0	30	0	0	0	0	0	0	0	3	0	35	0	0	0	0	0	0	0	0	0	0	0	0	0	40
NOL	5	Aira caryophyllea	0	0	0	0	0	12	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Alisma plantago-aquatica	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW	1	Alopecurus geniculatus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	54	0	0	0	0	0	0	0
FACW	2	Alopecurus pratensis	75	0	80	10	0	68	0	10	3	40	3	0	0	0	93	90	0	0	0	0	0	0	0	0	0	12
FACU	4	Anthemis cotula	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACU	4	Arenaria serpyllifolia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Beckmannia syzigachne	0	0	0	0	0	0	0	0	0	0	0	0	2	12	0	0	20	6	2	0	0	0	0	0	1	0
FACW+	2	Bidens frondosa	0	2	0	0	1	0	0	0	0	0	0	0	2	30	0	0	0	0	0	5	20	5	2	0	20	0
FACW+	2	Bidens cernua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW-	2	Boisduvalia densiflora	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC	3	Briza minor	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Bromus sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC	3	Cardamine oligosperma	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC	3	Centaurium erythraea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACU	4	Cerastium arvense	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC	3	Chenopodium album	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC-	3	Cirsium arvense	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC	3	Cirsium edule	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACU	4	Cirsium vulgare	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC	3	Craetagues douglassii	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	6	0	0	0	0	0	0	0	0	0
FACU	4	Crepis capillaris	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOL	5	Daucus carota	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW	2	Deschampsia caespitosa	6	2	0	3	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW-	2	Deschampsia danthonioides	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW	2	Echinochloa crus-galli	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Eleocharis ovata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Eleocharis palustris	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	1	0	73	0	35	40	5	0	0
FAC	3	Elymus trachycaulus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW-	2	Epilobium watsonii	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC-	3	Festuca arundinaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NI	4	Festuca bromoides	0	0	0	0	0	0	0	0	24	0	20	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0
FACU	4	Galium aparine	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW	2	Galium trifidum	1	0	3	0	0	0	3	0	0	8	0	1	0	0	0	0	0	2	0	0	0	0	0	0	6	0
FAC+	3	Gnaphalium palustre	0	0	0	0	20	1	0	0	0	0	0	0	2	2	0	0	0	0	0	0	1	1	1	0	0	0
FAC	3	Holcus lanatus	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW-	2	Hordeum brachyantherum	0	66	5	68	0	0	81	25	20	0	35	0	0	0	6	10	0	0	0	0	0	0	0	0	0	45
FACU	4	Hypochaeris radicata	0	0	0	0	0	0	0	0	25	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW	2	Juncus bufonius	0	0	0	0	3	0	0	0	0	0	0	3	35	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Juncus effusus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW	2	Juncus tenuis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACU	4	Lactuca serriola	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOL	5	Lapsana communis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOL	5	Lolium multiflorum	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOL	5	Lotus micranthus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOL	5	Lotus purshiana	0	0	0	0	2	0	0	0	0	0	0	0	62	8	0	0	0	0	0	0	0	0	0	0	20	0
OBL	1	Lythrum (Peplis) portula	0	0	0	0	20	6	0	0	0	0	0	3	60	60	0	0	20	20	3	10	56	48	20	0	45	0
OBL	1	Lythrum hyssopifolia	1	0	4	3	1	0	1	1	0	0	0	0	0	5	0	0	0	0	0	0	1	0	1	0	0	0
NOL	5	Madia sativa	3	0	0	0	46	3	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	3	0
FACU	4	Matricaria discoidea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC	3	Medicago lupulina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2009 Phase I

species status	species score	Species	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	SUM
--------		(bare/water)	15	21	0	5	25	6	0	10	20	20	10	0	6	6	25	0	3	3	6	366
--------		dead Mentha/mixed veg (herbicided)	0	0	0	0	47	0	51	5	5	0	0	0	0	0	0	0	0	0	0	160
FACW	2	Agrostis exarata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	108
NOL	5	Aira caryophyllea	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	1	0	26
OBL	1	Alisma plantago-aquatica	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
FACW	1	Alopecurus geniculatus	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	58
FACW	2	Alopecurus pratensis	6	30	0	56	0	0	0	0	0	0	0	0	0	5	25	0	0	0	0	606
FACU	4	Anthemis cotula	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACU	4	Arenaria serpyllifolia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Beckmannia syzigachne	0	0	0	0	2	1	0	6	2	6	0	0	0	0	0	0	0	0	0	60
FACW+	2	Bidens frondosa	0	0	0	0	0	6	25	1	2	0	0	0	0	0	1	0	0	0	0	122
FACW+	2	Bidens cernua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW-	2	Boisduvalia densiflora	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC	3	Briza minor	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	2	0	0	13
		Bromus sp.	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	3	0	0	5
FAC	3	Cardamine oligosperma	10	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	18
FAC	3	Centaurium erythraea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACU	4	Cerastium arvense	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	7
FAC	3	Chenopodium album	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC-	3	Cirsium arvense	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC	3	Cirsium edule	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACU	4	Cirsium vulgare	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
FAC	3	Craetagues douglassii	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
FACU	4	Crepis capillaris	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	6	8	46
NOL	5	Daucus carota	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW	2	Deschampsia caespitosa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
FACW-	2	Deschampsia danthonioides	0	0	0	0	0	0	0	0	0	0	0	35	0	1	39	0	0	0	0	77
FACW	2	Echinochloa crus-galli	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Eleocharis ovata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Eleocharis palustris	0	0	0	0	1	0	8	0	0	0	63	0	0	0	0	0	0	0	0	232
FAC	3	Elymus trachycaulus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW-	2	Epilobium watsonii	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3
FAC-	3	Festuca arundinaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NI	4	Festuca bromoides	45	12	59	0	0	0	0	0	0	0	0	0	0	38	0	0	65	83	15	401
FACU	4	Galium aparine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
FACW	2	Galium trifidum	4	4	3	1	0	0	0	0	0	0	0	0	5	0	0	0	6	4	40	91
FAC+	3	Gnaphalium palustre	0	0	0	0	0	20	2	0	0	1	0	0	0	0	0	0	0	0	0	51
FAC	3	Holcus lanatus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
FACW-	2	Hordeum brachyantherum	12	0	12	35	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	423
FACU	4	Hypochaeris radicata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
FACW	2	Juncus bufonius	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41
OBL	1	Juncus effusus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW	2	Juncus tenuis	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
FACU	4	Lactuca serriola	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
NOL	5	Lapsana communis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOL	5	Lolium multiflorum	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	9
NOL	5	Lotus micranthus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOL	5	Lotus purshiana	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92
OBL	1	Lythrum (Peplis) portula	0	6	0	0	10	65	12	71	65	69	3	0	0	0	0	0	0	0	0	672
OBL	1	Lythrum hyssopifolia	2	0	0	0	0	0	0	1	2	2	2	0	0	3	2	1	6	3	20	62
NOL	5	Madia sativa	0	3	0	0	0	0	0	0	0	0	4	80	82	35	3	60	0	0	0	326
FACU	4	Matricaria discoidea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC	3	Medicago lupulina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2009 Phase I

		Quadrat																									
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
species status	species score	Species																										
OBL	1	Mentha pulegium	0	0	0	0	7	0	0	0	0	0	0	30	0	10	0	0	46	46	0	6	0	1	25	15	3	3
FACW	2	Myosotis discolor	1	0	3	12	0	1	12	6	0	2	20	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
FAC-	3	Parentucellia viscosa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW	2	Paspalum distichum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW	2	Plagiobothrys figuratus	0	0	0	0	3	0	0	0	0	0	0	20	0	6	0	0	3	3	6	0	0	0	3	0	1	0
FACW	2	Plagiobothrys scouleri	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOL	5	Poa nemoralis	0	0	0	0	0	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW	2	Polygonum persicaria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Rorippa curvisiliqua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC-	3	Rosa nutkana	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACU	4	Rubus discolor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACU+	4	Rumex acetosella	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC+	3	Rumex crispus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
OBL	1	Schoenoplectus microcarpus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Schoenoplectus tabernaemontanii	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACU	4	Senecio jacobaea	0	0	0	0	0	0	0	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC	3	Sidalcea nelsoniana	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC-	3	Sonchus asper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Sparganium sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Typha latifolia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Veronica peregrina	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0
NOL	5	Vicia tetrasperma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total % veg cover	88	100	100	96	104	100	97	83	95	99	100	95	177	133	100	100	95	134	77	94	78	90	92	45	99	101
		Vegetation + Bare Ground	100	110	100	101	105	100	100	98	100	102	100	98	177	136	100	100	100	134	97	100	98	100	100	100	100	101

		Woody Planting Count		38	39	40	41	42	43	44	45		
FAC	3	Crataegus douglasii		0	0	0	0	1	2	0	1		
FACW	2	Fraxinus latifolia		11	11	16	7	9	5	3	2		
FAC	3	Populus trichocarpa		0	0	0	0	0	0	0	0		
FAC-	3	Rosa nutkana		0	0	0	0	0	0	0	6		
FACW+	2	Salix lasiandra		1	0	0	5	0	0	0	0	80	Sum

		Prevalence (Moisture) Index		2.09	2.00	2.03	1.97	3.31	2.34	1.99	2.92	3.51	3.29	2.64	1.75	2.67	1.54	2.00	2.00	1.16	1.84	0.92	1.05	1.28	1.08	1.08	0.44	2.20	1.97

2009 Phase I

species status	species score	Species	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	SUM
OBL	1	Mentha pulegium	0	0	0	0	15	0	2	0	2	2	10	0	0	0	0	0	0	0	0	223
FACW	2	Myosotis discolor	10	8	0	2	0	0	0	5	0	0	0	2	6	0	0	0	0	0	6	98
FAC-	3	Parentucellia viscosa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW	2	Paspalum distichum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACW	2	Plagiobothrys figuratus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45
FACW	2	Plagiobothrys scouleri	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3
NOL	5	Poa nemoralis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36
FACW	2	Polygonum persicaria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Rorippa curvisiliqua	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC-	3	Rosa nutkana	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10
FACU	4	Rubus discolor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACU+	4	Rumex acetosella	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAC+	3	Rumex crispus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
OBL	1	Schoenoplectus microcarpus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Schoenoplectus tabernaemontanii	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FACU	4	Senecio jacobaea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
FAC	3	Sidalcea nelsoniana	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
FAC-	3	Sonchus asper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	2
OBL	1	Sparganium sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBL	1	Typha latifolia	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
OBL	1	Veronica peregrina	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	13
NOL	5	Vicia tetrasperma	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	33	1	0	0	35
		Total % veg cover	91	77	100	95	75	93	100	90	80	81	90	123	94	92	74	100	97	97	99	4320
		Vegetation + Bare Ground	106	98	100	100	100	99	100	100	100	101	100	123	100	98	99	100	100	100	105	

		Woody Planting Count
FAC	3	Crataegus douglasii
FACW	2	Fraxinus latifolia
FAC	3	Populus trichocarpa
FAC-	3	Rosa nutkana
FACW+	2	Salix lasiandra

																						MEAN (45 quads)	MEAN (credited quads)
		Prevalence (Moisture) Index	3.12	2.73	4.17	2.00	0.37	1.52	0.78	1.02	0.94	1.02	1.20	3.98	4.63	4.11	2.23	3.23	3.51	3.84	2.36	2.17	2.12

Amazon Creek Mitigation Bank
Phase II Restored Wetland

Annual Report, 2009: Year-5 Monitoring

by
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Summary

Data from July 2, 2009 indicate the credited portion of the restored Phase II wetland at the Amazon Creek Mitigation Bank continues to attain all performance criteria established in the Mitigation Bank Instrument.

Introduction

The Instrument specifies that the Amazon Creek Mitigation Bank wetland that was restored in 2001 shall be monitored annually for at least 5 years to determine if specific wetland features are restored successfully, and consequently, if the MBRT may authorize release of mitigation credits. This report describes results of monitoring of the "Phase II" wetland. Vegetation was monitored previously at this site beginning in 2004. The Instrument also stipulates that particular comparisons will be made with a reference site, and the MBRT had previously agreed that Stewart Pond wetland complex in Eugene is an acceptable reference site.

Methods

Survey methods similar to those used at the Phase I site and previous years on the Phase II site were used. Exactly as specified in the Instrument, a systematic quadrat (plot) method is being used for sampling. A total of 30 quadrats were located systematically and surveyed. Quadrats were situated equidistantly (approximately 71 m apart) along 7 transect lines, which also were 71 m apart. Because of the irregularly tapering shape of the wetland, five transects contained 5 points, one contained 4 points, and one (near the north end) contained a single point. The location of the first quadrat on each transect was staggered from the previous transect. Quadrats were surveyed sequentially beginning at the southwest corner and proceeding eastward, then continuing northward to the next transect and heading westward, etc.. For surveying herbaceous habitats, each quadrat has dimensions of 1 x 1 m, with centers located on a fixed post. In 2004 a steel post was installed at the center of each quadrat to allow resurvey at exact locations in future years. Plants were identified to species where possible and percent cover of each species was estimated in each quadrat, as well as percent bare ground. No woody habitats were included in this Phase II survey. Each quadrat on each transect was surveyed for the characteristics described in sections 13.1.1, 13.1.2, 13.1.3 of the Instrument. The Phase II site was monitored on July 16, 2008. All vegetation data is included in Appendix A. Vegetation that may have been sampled in previous years of monitoring, but which was not present during the 2008 monitoring, is included within the data presented in Appendix A, however, their sum species percentages are indicated as 0.The prevalence (moisture) index was calculated using the formula in the *Draft Guidance for Vegetation Planning and Monitoring in Western Oregon Wetlands and Riparian Areas* (June 2004 version). Scores were assigned to species as follows: 1 = OBL, 2 =FACW, 3 = FAC, 4 = FACU, and 5 = UPL or NOL.

Results

GENERAL CRITERIA: For a mitigation site to be counted as "wetland," it must have hydrological conditions, soils, and vegetation that typify wetlands. Soil and hydrological conditions are documented in papers filed separately from this report, and vegetation conditions are documented herein.

From the data from all 30 quadrats (see accompanying data in Appedix A), the average moisture index was found to be 2.11, indicating a prevalence of wetland plant species cover. The score was less than 3.00 (suggesting wetland conditions) in 83% of the quadrats. Quadrats where it exceeded 3.00 were all in higher areas along the periphery of the site and their high score mainly reflected increased dominance by *Madia sativa*, a species whose wetland status is actually unknown, but which had to be categorized as "Upland" by default according to Corps of Engineers delineation procedures. The Phase II site also was found to support a noteworthy richness of plants: 34 species were found during this survey, and that includes only the species that fell within the sample quadrats. A comparable number of plots from the Stewart Pond reference site, which likewise has existed as a restored formerly-riverine wetland but for a much longer period of time, contained 14 species.

Text below in *italics* is quoted directly from the Instrument. Other text responds to the Instrument's criteria.

The project will be successful and certified when:

13.1 Vegetation Performance Standards

13. 1.1 Herbaceous Vegetation

CRITERION: *COVER and COMPOSITION. At the end of the first growing season, desirable herbaceous vegetation will dominate in 60% of the plots located in the non-inundated emergent habitats located at the bank site. At the end of year two growing season, desirable herbaceous vegetation will dominate in a number of plots equal or greater than 65% of the proportional number of plots in which it dominates at the reference site in non-inundated emergent habitats, and 70% or greater in subsequent years.*

STATUS: No herbaceous species designated as undesirable in the Instrument were found within the Phase II area by the approved sampling methodology. Thus, the standard is clearly met.

CRITERION: *SPECIES RICHNESS. At the end of the first and second growing season the number of species on the cumulative list of desirable herbaceous plant species (i.e.. the list accumulated from among all plots in herbaceous emergent habitats at the Bank site) will be at least 60% percent of the number of species of desirable herbaceous plants on a comparable list from the reference site. At the end of year 5 growing season, this standard will be 70% or greater... Both planted and recruited species will be included in evaluating these standards.*

STATUS: The cumulative list for a comparable number of randomly-selected quadrats from the Stewart Pond reference site contained a total of 14 desirable herbaceous species. For comparison, the 30 plots in the Phase II Mitigation Bank site in July 2008 contained 31 herbaceous species excluding those designated as undesirable. Thus 34/14= 242% and the criterion is clearly exceeded.

CRITERION: *No more than 15% of individuals will be non-native, invasive, undesirable herbaceous species.*

STATUS: This criterion is clearly met: none of the species in the Phase II Mitigation Bank wetland was a species designated as undesirable.

13.1.3 Open Water

CRITERION: In open water areas there will be no more than a total of 15% cover of undesirable, non-native, invasive species.

STATUS: There are no parts of the Phase II Mitigation Bank wetland that contain surface water year-round. Nearly all of the site is inundated seasonally. Within that area, no species deemed undesirable was present (as noted in 13.1.1 above).

Appendix A

2009 Vegetation species percent cover in 30 quadrats in Amazon Creek Mitigation Bank wetland Phase II

2009 Phase II	Wet Score		46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	SUM
(bare/herbicided dead veg)		--	0	0	3	8	12	18	50	4	5	0	10	20	50	80	0	0	62	67	85	0	0	97	99	85	3	42	56	99	55	3	1013
Alopecurus pratensis	2	FACW	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
Alopecurus geniculatus	2	FACW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	12
Anthemis cotula	4	FACU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beckmannia syzigachne	1	OBL	0	1	0	3	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	28
Bidens frondosa	2	FACW+	0	1	1	1	0	8	0	4	1	0	0	1	10	0	0	1	3	1	0	0	0	1	1	1	4	35	1	1	45	1	142
Bromus sp.			0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Carex densa	1	OBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62	2	0	0	0	0	0	0	0	0	0	64
Cerastium arvense	4	FACU	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Cirsium vulgare	4	FACU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crepis capillaris	4	FACU	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Cuscuta sp.	5	NOL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	3
Deschampsia danthonioides	2	FACW-	9	0	55	1	10	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	69
Echinochloa crus-galli	2	FACW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eleocharis ovata	1	OBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eleocharis palustris	1	OBL	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	7
Epilobium watsonii	2	FACW-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Festuca bromoides	4	NI	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Fraxinus latifolia	2	FACW	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Galium aparine	4	FACU	0	0	0	0	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Galium triflidum	7	FACW	30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	74	0	0	0	0	0	0	0	0	0	105
Gnaphalium palustre	3	FAC+	0	3	1	1	0	2	1	15	12	0	0	0	3	1	30	1	5	0	0	0	0	0	0	1	2	1	0	0	0	0	79
Juncus bufonius	2	FACW	0	0	0	2	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
Lactuca serriola	4	FACU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Lotus micranthus	5	NOL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lotus purshiana	5	NOL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
Lythrum hyssopifolia	3	OBL	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Lythrum portula	1	OBL	0	0	25	29	1	50	5	80	40	0	0	3	8	4	60	0	0	15	0	0	0	0	0	0	50	0	5	0	0	60	435
Madia sativa	5	NOL	70	6	2	3	50	3	0	75	35	90	85	0	1	1	65	12	0	1	0	34	20	0	0	0	6	0	2	0	0	6	517
Matricaria discoidea	4	FACU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	13	0	0	0	14
Mentha pulegium	1	OBL	0	90	35	50	0	16	40	0	5	0	0	75	20	12	0	90	10	12	15	0	0	1	0	5	8	0	0	0	0	18	502
Myosotis discolor	2	FACW	15	0	0	0	1	0	0	0	0	8	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	8	0	0	0	0	26
Paspalum distichum	2	FACW	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Plagiobothrys figuratus	2	FACW	0	0	0	1	0	2	15	4	2	0	0	1	3	0	0	3	20	4	0	0	0	0	0	0	0	0	0	0	0	1	56
Plagiobothrys scouleri	3	FACW	0	1	0	2	0	0	0	0	0	0	0	0	5	2	3	16	0	0	0	0	0	1	0	3	3	0	0	0	0	18	63
Poa nemoralis	5	NOL	1	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Polygonum pensylvanicum	2	FACW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Populus trichocarpa	3	FAC	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Rorippa curvisiliqua	1	OBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rumex acetosella	4	FACU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rumex conglomeratus	2	FACW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rumex crispus	3	FAC+	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	4	0	0	0	0	0	13
Rumex salicifolius	2	FACW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	5	7
Sonchus asper	3	FAC-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Veronica peregrina	1	OBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vicia tetrasperma	5	NOL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
% Vegetated Cover			121	102	120	93	88	83	62	147	98	100	90	80	52	20	160	129	38	33	15	98	100	3	1	15	99	58	44	1	45	111	
Total Veg + Bare			121	102	123	101	100	101	112	151	103	100	100	100	102	100	160	129	100	100	100	98	100	100	100	100	102	100	100	100	100	114	
Prevalence (Moisture) Index:			3.83	1.31	1.54	1.23	3.58	1.35	1.29	2.08	2.77	4.72	4.96	1.03	1.54	1.40	3.03	1.64	1.87	1.27	1.00	2.43	2.62	1.67	2.00	1.40	1.45	2.10	2.75	2.00	2.00	1.46	2.11

Wildlife Survey

Winter Survey February, 2009

Species:

Red-tailed Hawk	3
Widgeon	100+
Pintail	100+
Greenwing Teal	100+
Northern Shoveler	10
Mallard	30+
Gadwall	0
Bufflehead	2
Great Blue Heron	0
Ring-necked Pheasant	11
Canada Goose	Thousands
Crow	6
Field Mouse	0
Bald Eagle	1

Survey Station Results. Numbers represent sightings within 50 meters of the survey station; bracketed numbers represent sightings more than 50 meters from the survey station.

Species	**Station 1**	**Station 2**	**Station 3**	**Station 4**
Red-tailed Hawk	[2]		[1]	
Widgeon	[100+]			
Pintail	[100]			
Greenwing Teal	[100]			
Northern Shoveler				[10]
Mallard	[30+]			
Gadwall				
Bufflehead				[2]
Great Blue Heron				
Ring-necked Pheasant	5	1	4	1
Canada Goose				[Thousands]
Crow	[4]	[2]		
Bald Eagle			[1]	
Field Mouse				

Wildlife Survey

Spring Survey May, 2009

Species:

Killdeer	19
Red-tailed Hawk	2
Widgeon	20
Pintail	0
Greenwing Teal	50+
Northern Shoveler	0
Mallard	2
Gadwall	0
Barn Swallow	25+
Starling	0
Great Blue Heron	0
American Robin	4
Red-winged Blackbird	7
Ring-necked Pheasant	0
Western Canada Goose	8
Canada Goose	[hundreds]
Mourning Dove	7
Crow	8
Field Mouse	2

Survey Station Results. Numbers represent sightings within 50 meters of the survey station; bracketed numbers represent sightings more than 50 meters from the survey station.

Species	**Station 1**	**Station 2**	**Station 3**	**Station 4**
Killdeer	[10]	[9]		
Red-tailed Hawk	[2]			
Widgeon	20			
Pintail				
Greenwing Teal	[50+]			
Northern Shoveler				
Mallard	2			
Gadwall				
Barn Swallow		100		
Starling				
Great Blue Heron				

Species	Station 1	Station 2	Station 3	Station 4
American Robin		4		
Red-winged Blackbird		5	2	
Ring-necked Pheasant				
Western Canada Goose	[4]			
Canada Goose	[8]			[hundreds]
Mourning Dove			7	
Crow	[8]			
Field Mouse				

Other observations

Animal tracks included: nutria, goose, heron or egret? Many other unidentifiable.

Well Data Phase I & II

This Table shows depth to water (in inches) below land surface in observation wells.

Well #	1	2	3	4	5
Date					
1-7	10	0	0	2	2
2-1	12	1	0	3	2
3-3	27	7	4	6	4
4-1	32	12	11	8	7
5-2	39	18	12	12	10
6-11	53	57	54	56	>48
7-12	>54	>69	62	>57	>48
8-1	>54	>80	>62	>57	>48
9-15	>54	>80	>62	>57	>48
10-2	>54	>80	>62	>57	>48
11-5	54	78	>59	55	48
12-19	16	2	1	3	2

Credit Sale Log, 2009

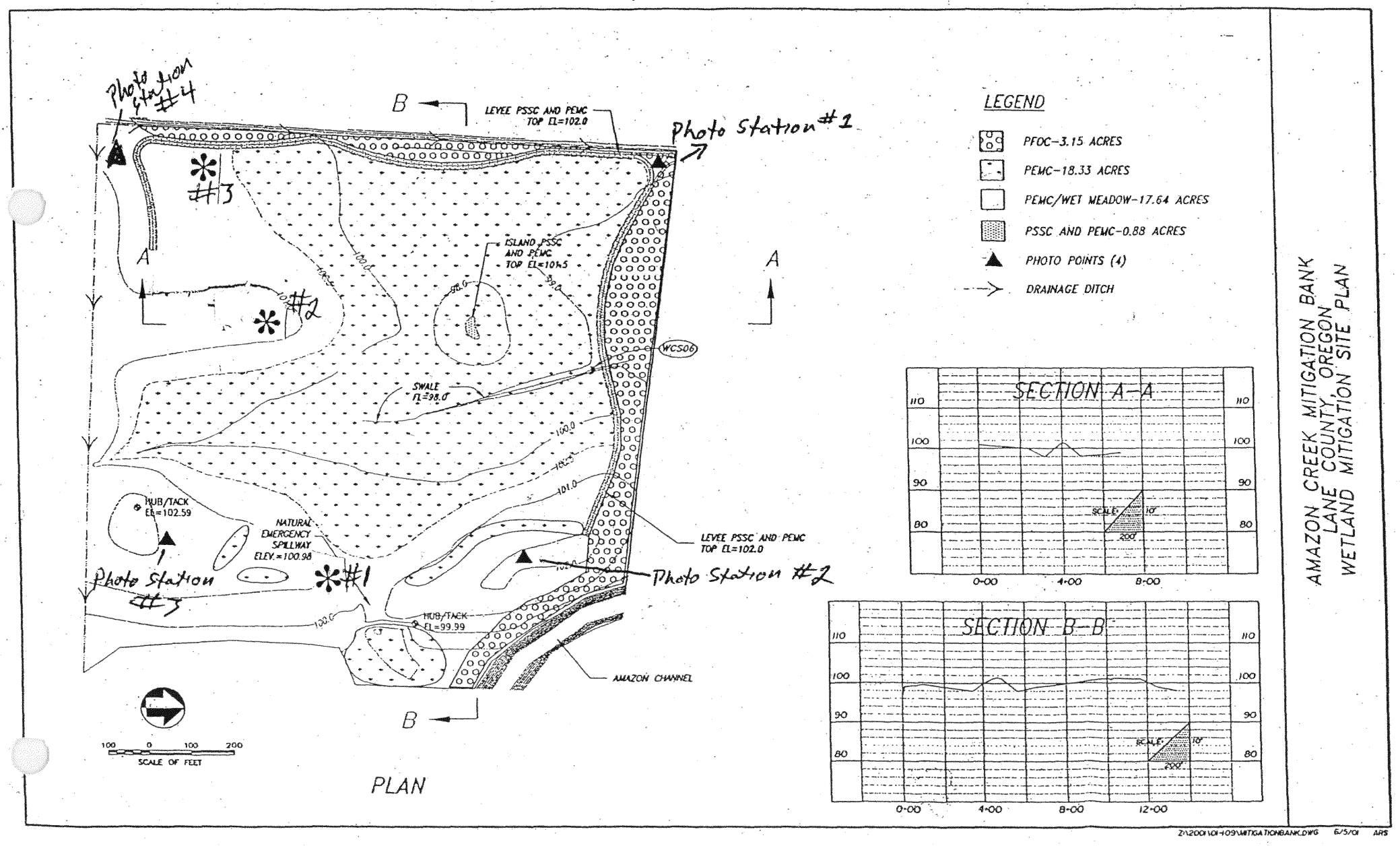
7.847 Credits Remaining from '08

1.	3/6/2009	2.39	Paddock Masonry	DSL#30239-FP Corps#2001-00003
2.	3/6/2009	.1	K&R LLC	DSL#38505 Corps#2007-418
3.	6/15/2009	.74	Piculell	DSL#40013 Corps#
4.	9/21/2009	.41	Seneca	DSL#42548 Corps#2009-270
5.	9/25/2009	.3	Mertro Wastewater	DSL#42120 Corps#0000-9901/1

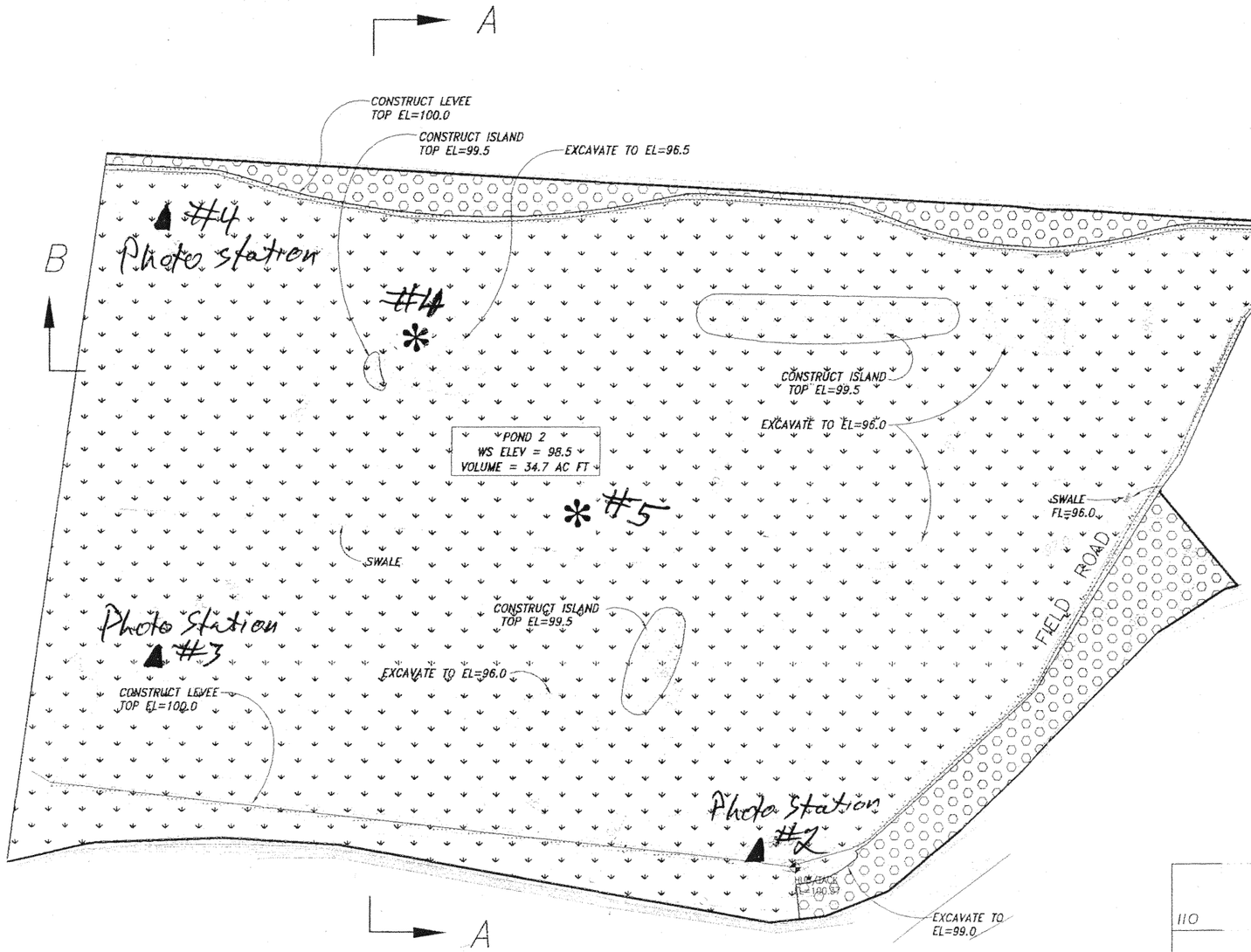
Total Credits Sold in 2009: 3.94

Credits Remaining: 3.907

Phase I Monitoring Well Locations: *



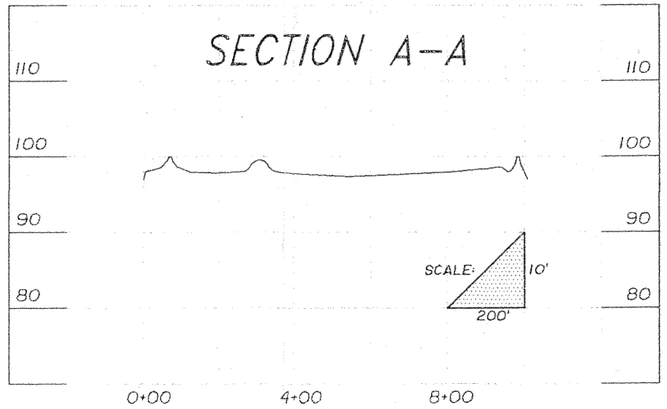
Phase II Monitoring Well Locations: *

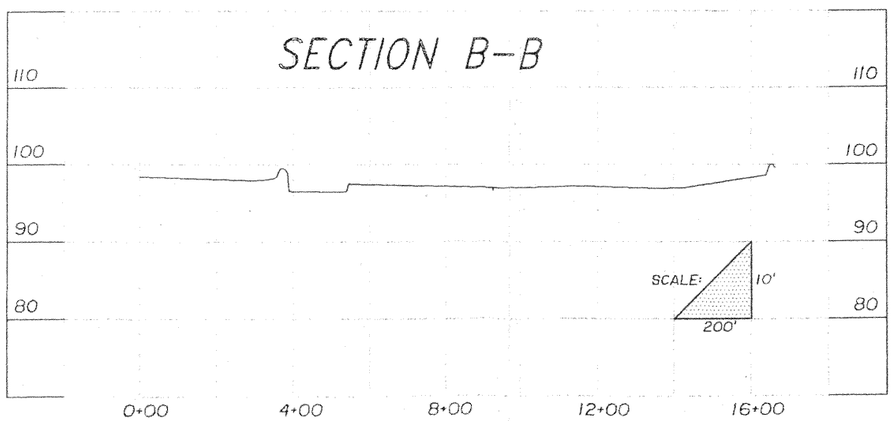


PLAN

LEGEND

- PFOC-1.5 ACRES
- PEMC-36.6 ACRES
- PHOTO POINTS (4)
- DRAINAGE DITCH





AMAZON CREEK MITIGATION BANK PHASE 2
LANE COUNTY, OREGON
WETLAND MITIGATION SITE PLAN

Bank Site Winter 2009

Phase I

Phase 1

2

4

1

3

Phase 1

Bank Site Winter 2009

Phase II

Phase II

2

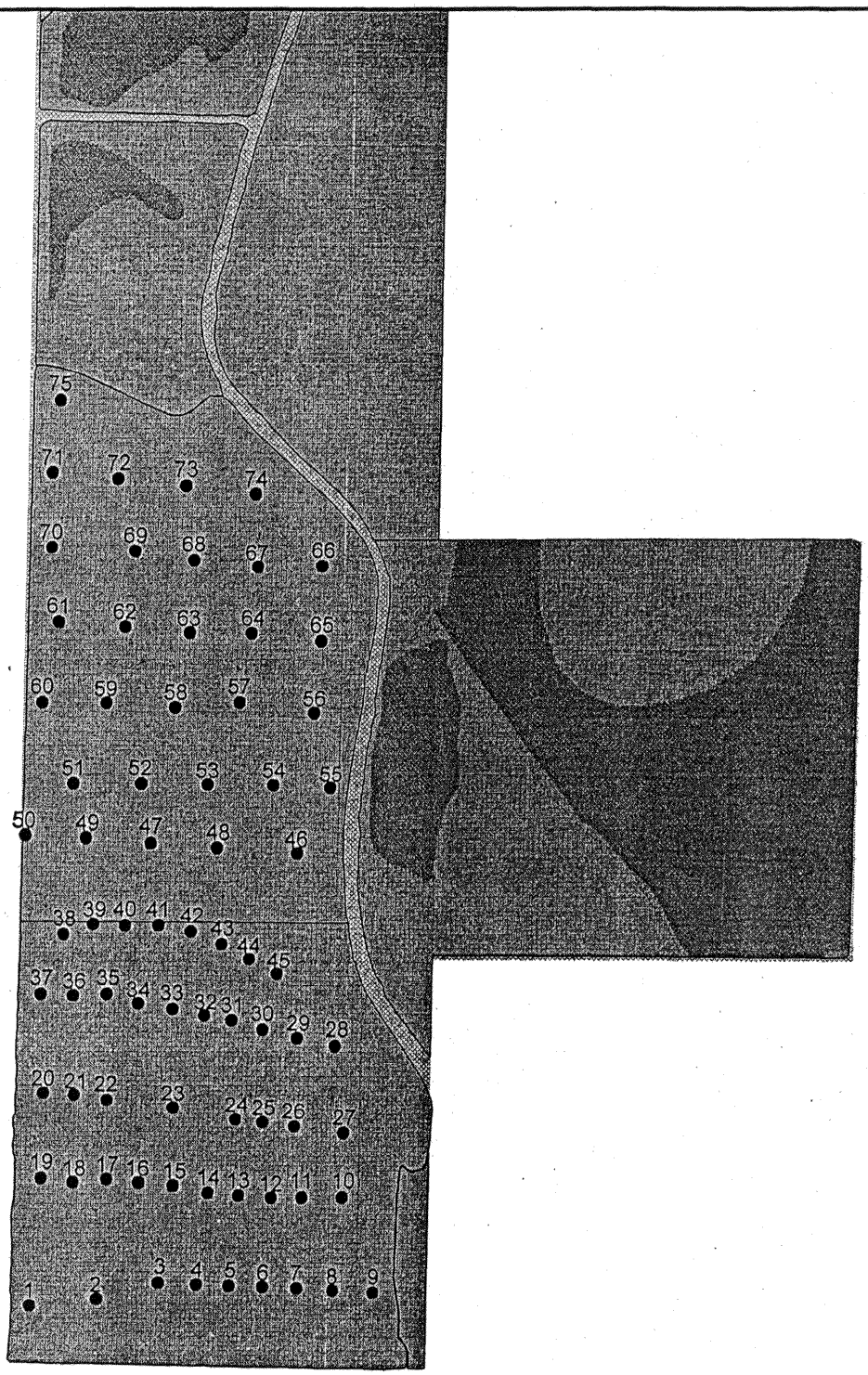
4

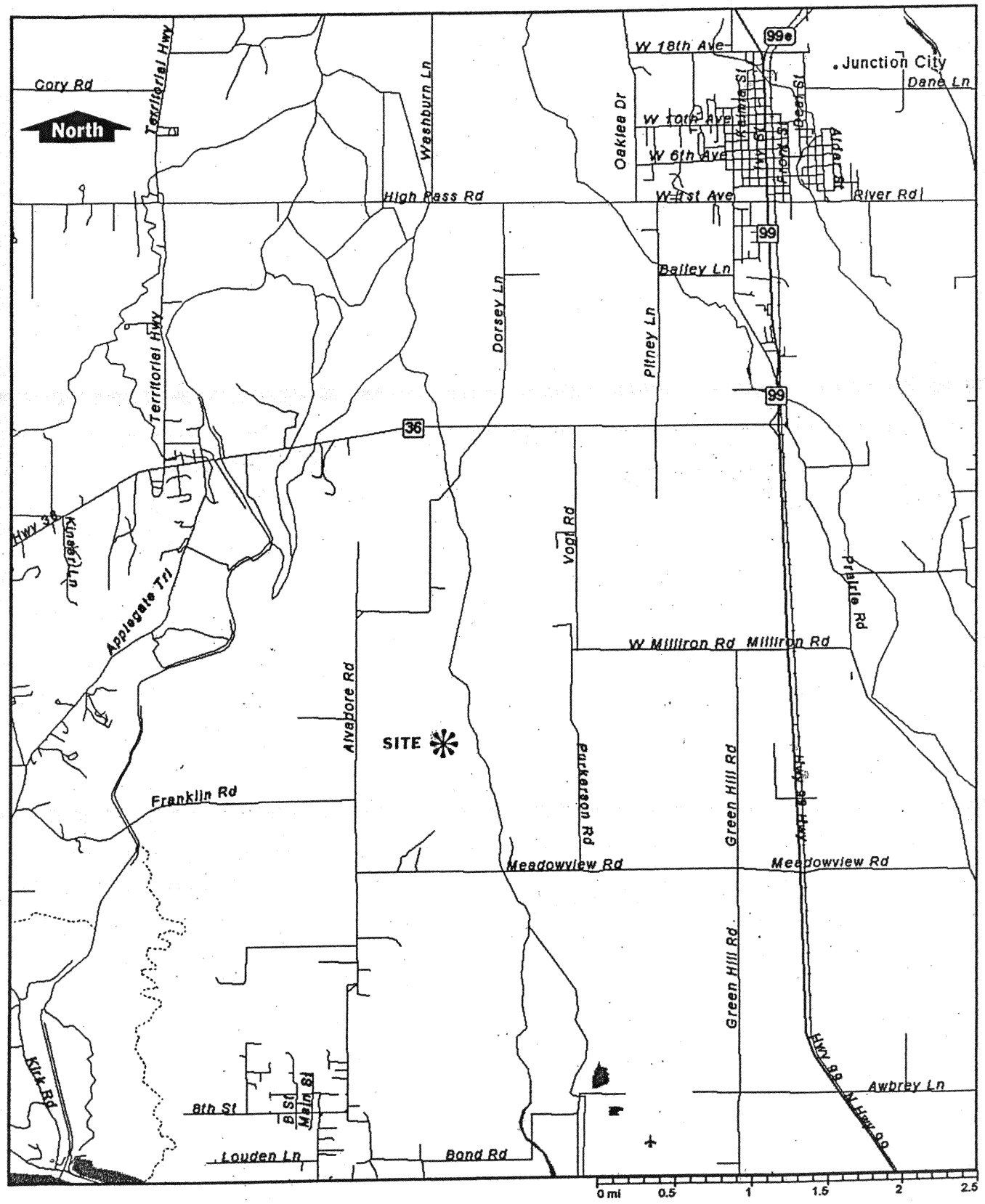
1

Phase II

3

Jampolsky - July 2006





Amazon Creek Wetland Mitigation Bank

SITE LOCATION MAP

Figure 1