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Wetland Mitigation and Monitoring Plan
Humboldt State University Corporation Yard
1601 Samoa Boulevard, Arcata
Humboldt County, California

April 2011

Prepared for:
Trustees of California State University
401 Golden Shore
Long Beach, CA 90802-4210
Gary Krietch
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Prepared by:
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UPDATED FINAL
WETLAND MITIGATION AND MONITORING PLAN
HUMBOLDT STATE UNIVERSITY, CORPORATION YARD FACILITY
AT 1601 SAMOA, BLVD
ASSESSOR PARCEL NUMBERS (APN) 021-191-006, 505-251-011, 505-251-013, and 506-05-105
ARCATA, CALIFORNIA

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April 2011

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1.0 INTRODUCTION

1.1 Responsible Parties

The applicant is the Trustees of the University of California on behalf of Humboldt State University (HSU), 1 Harpst St, Arcata CA, 95521. The contact person is Gary Krietsch, (707) 826-4111. Humboldt State University will implement the mitigation project.

This Wetland Mitigation and Monitoring Plan was prepared by Winzler & Kelly, 633 Third Street, Eureka CA, 95501. The lead author was Robert Holmlund, Environmental Land Use Planner and the lead reviewer was Misha Schwarz, Certified Professional Soil Scientist, (707) 443-8326.

1.2 Summary

The applicant purchased a 7.3 acre property to house the University's corporation yard, physical plant, shipping and receiving center, shops, warehousing center, and construction management offices. The property currently contains a 49,322 sf building (with a 43,006 sf footprint), fences, pavement, and limited landscaping. The property consists of three parcels (505-191-006, 505-251-011, and 505-251-013), is zoned Coastal Heavy Industrial (C-IH), and is within the city limits of Arcata and within the Coastal Zone.

The proposed project consists of interior remodeling of the existing building, painting the exterior of the building, removing the existing fence, installation of new fencing, landscaping, patching of small portions of the existing pavement, and eventual repaving. As a means to improve site access and increase traffic safety, portions of existing pavement will be reconstructed, while new pavement will be installed. Installation of the new pavement will include upgrading and connecting the eastern-most driveway (driveway #3) accessing the site to the front paved area and will include the closure of the central driveway (driveway #2). Drainage improvements are also proposed. A detailed description and figures of this plan is provided below.

A portion of the proposed new pavement and proposed drainage facility would require filling of wetlands. The filing of wetlands will be mitigated on-site at a 1 to1.57 ratio. See Table 1 for a summary of impacts and mitigation.

Table 1: Impact and Mitigation Summary

Classification	Category	SF	Acres	Mitigation Ratio	% of Impacts
Palustrine Emergent Wetlands	Impacted	21,713	0.50	NA	100%
	Mitigated	34,136	0.78	1.57	157%

2.0 PROPOSED PROJECT REQUIRING MITIGATION

2.1 Location

Figure 1 in Appendix A provides a map of the project vicinity. The project is located on a property consisting of three parcels within the city limits of Arcata and within the Coastal Zone. Arcata is located on the northern California coast in Humboldt County, approximately 275 miles north of San Francisco. The project site address is 1601 Samoa Boulevard, Arcata, CA; APN 021-191-006, 505-251-011, and 505-251-013. The northern edge of the property fronts on the eastbound lane of Samoa Boulevard (State Route 255) and the western edge of the property consists of Arcata's city boundary and agricultural land beyond. The City of Arcata's Marsh and Wildlife Sanctuary is south of the site. The northeast corner of the property is approximately 0.22 miles west of the junction of Samoa Boulevard and K Street. Figure 2 (Appendix A) provides a map of existing conditions at the project site.

2.2 Site Characteristics

2.2.1 Jurisdictional Areas

On March 16, 2009, a wetland delineation was conducted for the project parcels. Figure 3 (Appendix A) provides a map of jurisdictional wetlands at the project site (currently under review by the COE). The wetland delineation procedure was completed pursuant to the U.S. Army Corps of Engineers (COE) 1987 Wetland Delineation Manual; the Interim Regional Supplement to the COE Wetland Delineation Manual: Western Mountains, Valleys, and Coastal Regions (2006); and California Coastal Commission (CCC) guidance for wetland delineations (1994). The wetland delineation determined that wetland-type vegetation, hydric soils, and wetland hydrology are present in four areas throughout the property. The coastal zone map reviewed indicates that City of Arcata has primary jurisdiction over the parcel and is in the Appeal Zone for the CCC. Methods used for wetland delineations were pursuant to the COE, City of Arcata and CCC. Piezometers were installed on February 18, 2009, at fourteen locations at the site prior to the wetland delineation to determine if the depth to groundwater was within or not within 12 inches of the surface for a period of 14 cumulative days or greater (COE definition of wetlands hydrology). The collected groundwater data was utilized as a primary hydrology indicator for the wetland delineation on March 16, 2009 and for design of the porposed onsite wetland mitigaiton. In general, mapped jurisdictional wetlands are associated with the northern portion of the site around the existing building and pavement.

2.2.2 Aquatic Functions

Other than for limited groundwater recharge purposes, the aquatic function of the site is relatively low. The site consists of 144,899 sf (3.33 acres) of wetlands, 57,047sf (1.31 acres) of paved areas, a building with a 43,006 sf footprint, and 72,374sf (1.66 acres) of upland areas. Based on monitoring well data collected for the wetland delineation, the average depth to groundwater within the wetland areas is 0.56 feet during the winter months.

2.2.3 Hydrology and Topography

A topographic survey has been completed for the site. The site has very limited topography, with a 5 foot topographic variation within the site boundaries. Elevations range from 8 to 13 feet

above sea level. The site is poorly drained and contains very little flowing surface water. The elevation of groundwater was monitored at various locations throughout the site from February 24th to March 20th, 2010 following a cumulative total of greater than 19 inches of rainfall for the season and greater than a 0.5 inch storm event. The results generally indicate a high groundwater table fluctuating within 1-foot of the ground elevation in the wetland areas and 18 inches in the upland area proposed for wetland mitigation.

Observations of the site drainage patterns were made in February 2009 following a heavy rainfall event and are discussed below.

The north half of the parcel drains to ditches to the north of the site via overland sheet flow and existing culverts. The south half of the parcel drains to existing wetlands to the south of the site via overland sheet flow. The existing parking lot located on the NW portion of the property experiences isolated areas of standing stormwater during rainfall events as a result of the inadequately sloped asphalt concrete (AC). The existing drainage inlets located along the northern edge of the parking lot receive some sheet flow from the parking area and is conveyed through short storm drains which outlet into the ditch that parallels Samoa Boulevard. However, these inlets appeared to be partially plugged as a likely result of a low gradient in the drainage pipes, accumulation of debris at the outlet of the drainage pipes within the roadside ditch to the north, and lack of maintenance. The ditch along Samoa Boulevard conveys flow towards the west, paralleling Samoa Boulevard and terminates at Janes Creek. As part of the McDaniel's Slough Restoration Project (City of Arcata Marsh and Wildlife Sanctuary) and levee construction, the City of Arcata is proposing to install a new culvert at the ditch terminus that will be equipped with a tide gate. The proposed culvert will allow flow in the ditch to be conveyed under the new levee. During high tides, the tide gate is intended to prevent tidal encroachment into the ditch. It is currently unknown if the City has conducted any hydrologic and hydraulic analyses to assess potential impacts the tide gate would have on the flow conveyed through the ditch and the contributing storm drains such as those located on HSU's corporation yard property.

The large paved area on the southwest (SW) portion of the property currently drains away from the building towards the south. Sheet flow exits this paved area and disperses into the undisturbed grasslands (wetlands) south of the pavement edge and either infiltrates or overland flows towards the new City pond.

2.2.4 Geology and Soils

According to the University of California "Soils of Western Humboldt County," the soil type at the project site consists of Lolita Silt Loam, poorly drained and Bayside Silty Clay Loam, poorly drained. According to the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey, the soil type at the project site consists of Occidental Series, 0 to 2 percent slope. This alluvium-based soil type, consisting primarily of silty clay loam, is poorly drained, and typically found near salt marshes and/or coastal areas.

2.2.5 Vegetation, Habitat, Wildlife, and Threatened/Endangered Species

In March, April and May 2009, Winzler & Kelly performed biological surveys of the project area for special-status plant and animal species. Survey emphasis was given to the project site adjacent to the recent Arcata Marsh expansion immediately south of the project site, which encompasses the proposed mitigation area. The mitigation area was found to consist of grassland dominated by a mix of native and non-native species. The site was historically used for livestock grazing, which impacted the site and contribute to the invasion of non-native plant species. The dominant native habitat for the project area is the Arcata Bottoms grasslands.

A list of the special-status plant and animal species that could occur on or around the project site at various times of the year based on recorded appearances (FWS, 2009; CNPS, 2009; DGF, 2009) in either the Arcata North or Arcata South U.S.G.S 7.5 Minute Quadrangles (both quads analyzed as the project site occurs on the Arcata South section near the boundary with the north section) was reviewed. No special-status species are known to occur on the project site. The property is primarily composed of developed area, wetland area, and disturbed habitats. All suitable habitats at the project site for these special-status species were surveyed in March, April, and May of 2009, and no special-status or wildlife plant species were detected in the project area.

2.4 Existing Conditions

Figure 2 (Appendix A) provides an overview of current conditions at the proposed project site at 1601 Samoa Blvd. The site is approximately 7.3 acres on three parcels and includes a 49,322 sf structure (with a 43,006 sf footprint) and approximately 57,047 sf (1.28 acres) of pavement (driveways and parking). Existing access to the site consists of three driveways (Figure 2). Driveway #1 is located at the far northwest corner of the property, is currently in use, allows for ingress and egress, and connects to the east-bound and west-bound lanes of Samoa Blvd. Driveway #2 is located at the center of the northern edge of the property, is currently in use, allows for ingress and egress, and connects only to the east-bound lane of Samoa Blvd. Driveway #3 is located at the far northeast corner of the property, is not currently in use, connects to the east-bound lane of Samoa Blvd, but does not connect to paved parking areas on the site. Therefore, this third partially-developed driveway does not allow ingress or egress to the site and is not functional in its current condition. The functioning driveways (#1 and #2) carry all ingress and egress traffic for the site.

The approximately 57,047 sf (1.29 acres) of existing pavement contains approximately 58 designated vehicular parking spaces (with sufficient unmarked paved areas for additional parking). The front paved area (approximately 22,377 sf) is enclosed with a six inch AC curb and has three drainage inlets to a subsurface stormwater system. An additional drainage inlet is located in the front landscape area and a fifth drainage inlet is located in the unpaved grass area on the west side of the property. The five existing drainage inlets receive sheet flow from the front parking area; water is then conveyed through short storm drains into the ditch that parallels Samoa Boulevard on the north side of the project parcels.

This front paved area functions as access to the site and as the primary parking area. Approximately 130 lineal feet of sidewalk connect the front parking lot to the front door of the building. The back paved area (approximately 34,670 sf) is not enclosed with curbs and thus

drains off-site to a vegetated area to the south to existing wetlands. This back paved area is designed primarily for access to three large bay doors, vehicular storage, and other similar types of operations. Sheet flow exits this paved area and disperses into the undisturbed grasslands south of the pavement edge and either infiltrates or overland flows towards the new City pond. The existing areas on the east side of the subject parcels are currently vegetated and slope towards the southern property line. Overland flow that does not immediately infiltrate likely flows towards the south onto the adjoining City property.

The site contains very limited landscaping and does not contain an irrigation system. The building has multiple down spouts draining stormwater from the roof area. Downspouts in the front of the building connect to the subsurface stormwater system associated with the front paved area. Downspouts in the back and on the sides of the building drain directly onto the back paved area, which then allows sheetflow across the parking lot to the south. The site is generally flat, ranging in elevation from 7.6ft to 13.5ft.

An existing 3-foot high barbed-wire fence runs along the entire western boundary of the property. A second segment of fence also bisects the property from east to west, bordering the southern edge of the existing pavement. The total lineal feet of the existing fence on site is 1,476. The portion of the fence running west to east is 857 feet in length, all of which is within an existing wetland. This portion of the fence is fastened to 24 wooden posts (each 5" x 4") and 70 steel posts (each 1" x 1") (see Table 2).

Table 2: Existing Land Use Types and Quantities

	Land Use	Quantity	SF	Acres	Calculation Methodologies (and Notes)
A	*Existing Pavement*	*NA*	*57,047*	*1.31*	*NA*
B	*Existing Wetlands*	*NA*	*144,899*	*3.33*	*(As delineated by Winzler & Kelly May 2009)*
C	*Existing Structure Footprint*	*NA*	*43,006*	*0.99*	*(Square footage of building provided by HSU)*
D	*Existing Other (Unused/Undesignated)*	*NA*	*72,374*	*1.66*	*NA*
E	**TOTAL EXISTING SITE AREA**	**NA**	**317,326**	**7.28**	**E = A + B + C + D**

A pump station owned and operated by the City of Arcata borders the property on the northwest corner of the site. The pump station is accessed via the project's northwest driveway #1.

On March 16, 2009, a wetland delineation was conducted on the site (Figure 3 in Appendix A). According to this study, approximately 144,899 sf (3.33 acres) of wetlands exist within the project's property boundaries (see Figure 3 in Appendix A; see also Wetlands Delineation for Humboldt State University, Plant Operations Building: Winzler & Kelly, 2009. Wetlands Delineation, Assessor's Parcel Numbers APN 021-191-006, 505-251-011, 013). The wetland areas found at the site were identified as Palustrine Emergent Wetlands. Palustrine Emergent Wetlands include tidal and non-tidal wetlands dominated by persistent emergent vascular plants, emergent mosses or lichens, and all such wetlands that occur in tidal areas in which salinity due to ocean-derived salts is below 0.5 percent.

2.5 Description of Proposed Project

The proposed project consists of the redevelopment of the approximately 317,326 sf site (7.3 acres), which is to be used as Humboldt State University's corporation yard, physical plant, shipping and receiving center, shops, warehousing center, and construction management offices. The facility will house approximately 45 to 50 full time staff, and be the base of operations for another 10 or 15 staff. Figure 4 (Appendix A) shows proposed project components.

The project consists of remodeling the existing building, removing approximately 810 lineal feet of existing fence, installation of new fencing (approximately 1,440 lineal feet), patching of small portions of the existing pavement and eventual repaving, new paving, drainage improvements, landscaping, hazardous material abatement, and the addition of ADA compliant restrooms, a fire sprinkler system, doors and locker rooms, an elevator, new service doors, new roof, new paint, ceilings and flooring. Regarding on site pavement, approximately 19,322 sf (0.44 acres) of existing pavement will be reconstructed, while approximately 24,481 sf (0.56 acres) of new pavement will be installed. The new pavement adds to the 57,047 sf (1.31 acres) of existing and reconstructed pavement for a post-project total pavement area of 81,528 sf (1.86 acres). Installation of the new pavement will include upgrading and connecting the eastern-most driveway (driveway #3) accessing the site to the front paved area and will include the closure of the central driveway (driveway #2).

Site Ingress and Egress

As a part of the project, driveway #2 (located in the center of the northern property boundary) will be abandoned and driveway #3 (located at the northeast corner of the property) will be connected to the front and back parking lots. Connecting driveway #3 to the front and back parking lots will require 24,481 sf (0.56 acres) of new pavement, most of which overlaps existing wetlands.

Fences

In order to secure the facility, an eight-foot tall, green, vinyl-coated, wire-topped, chain-link fence with two vehicular gates will be installed. The total length of the fence will be approximately 1,440 lineal feet, with one fence post every ten feet. Approximately 810 lineal feet of the existing fence will be removed as a part of the project. This portion of the existing fence is secured to 24 wooden posts (each 5" x 4") and 70 steel posts (each 1" x 1").

No Cost Lease to City

An existing 30 foot wide easement for the City of Arcata runs along the entire west side of the western-most parcel. As a part of the project, approximately 1,000 sf (0.02 acres) of additional land will be leased to the City of Arcata. The easement and the leased area will provide parking and new public access to the Marsh and Wildlife Sanctuary (see Figure 4, Appendix A). The portion of the site that is leased will contain four standard parking spaces, one ADA parking space, signage, and a gravel parking lot. The gravel road and gravel parking lot will be locked on a seasonal basis to restrict access in order to protect seasonally-present sensitive species.

Zoning
The project focuses on redevelopment of one parcel of approximately 7.3 acres. The site is currently zoned Coastal Industrial Heavy (C-IH) and the General Plan Land Use Designation is Industrial General (IG).

Street Improvements
Existing access to the site consists of three driveways connecting to the east-bound lane of Samoa Blvd. The entrances are at the far northwest corner of the property, the center of the northern edge of the property, and at the northeast corner of the property. The project plans to utilize the northwest entrance (driveway #1), upgrade the northeast entrance (driveway #3), and abandon the central entrance (driveway #2). The project does not include street improvements; however, street improvements will be undertaken by the City as a part of the City's Gateway Proposal as a separate project.

Outdoor Lighting
Approximately nine outdoor light fixtures are attached to the exterior of the building and will be replaced. No new outdoor lighting is proposed.

Landscaping
Existing landscaping is very limited, consisting of four medium-sized trees and a few low shrubs along the front of the building. Future landscaping will consist of shrubs and flowering plants around the east, west, and north building perimeter, with some trees along the north property boundary and in the green space west of the building.

Grading and Drainage
The site is relatively flat, sloping very gently from the north to the south. The front paved area (approximately 22,377 sf) is enclosed with a six inch AC curb and has three drop inlets to a subsurface stormwater system. The back paved area (approximately 34,670 sf) is not enclosed with curbs and drains away from the building to an off-site vegetated area to the south. Sheet flow exits this paved area and disperses into the grasslands (wetlands) south of the pavement edge and either infiltrates or overland flows towards the new City pond. The areas on the east side of the subject parcels are currently vegetated and slope towards the southern property line. Overland flow that does not immediately infiltrate likely flows towards the south onto the adjoining City property.

The building has multiple down spouts draining stormwater from the roof area. Downspouts in the front of the building connect to the subsurface stormwater system associated with the front paved area. Downspouts in the back and on the sides of the building drain directly onto the back paved area.

Flooding
Based on the Federal Emergency Management Agency (FEMA) Floodway Map, community panel number 060061-0004 E (revised 11/5/97), the parcels are outside of the 100-year and 500-year floodplain and will therefore not be subject to inundation by 100-year or 500-year floods.

Permits / Approvals

The following agency permits and/or approvals may be necessary for the proposed project:

a) Encroachment Permit (CalTrans)
b) Coastal Development Permit (City of Arcata)
c) 404 Permit (US Army Corp of Engineers)
d) 401 Permit (Regional Water Quality Control Board)

Wetland Filling and Mitigation

Figures 3 and 4 of Appendix A and Tables 3 through 5 (below) provide additional detail regarding the wetland fill and mitigation areas and calculations discussed in this subsection.

As a part of the project, approximately 24,481 sf (0.56 acres) of new pavement will be installed, resulting in 21,563 sf of wetlands to be filled. In addition, a new fence along the property boundary will be installed in existing wetlands. The fence will be fastened to steel posts spaced 10 feet on center, each of which will disturb (concrete fill) approximately 1 sf of ground area and will therefore be considered as filling of wetlands. With one post per every 10 feet of fence and 1,440 total lineal feet of fencing, the site will contain approximately 149 fence posts (including four extra posts to secure two rolling gates). Each fence post will have a footprint of 1 foot by 1 foot, thereby filling 149 sf of wetlands (149 posts x 1sf/post). Between these two direct impacts to wetlands (new pavement and new fence posts), approximately 21,712 sf (0.50 acres) of wetlands will be directly impacted and will be mitigated for according to COE requirements.

Two projects will be enacted on-site to mitigate for the loss of wetlands. First, an existing fence bisecting existing wetlands will be removed, including 94 existing fence posts with a combined footprint of 3.82 sf. Second, approximately 34,132 sf of uplands will be converted to wetlands. As shown in Figure 4 (Appendix A), the created wetlands will be in the southwest portion of the property and will be set back from the gravel road and gravel parking lot by 25 feet and from the south and east property lines of parcel 505-251-011 (the south west parcel).

Factoring an on-site wetland mitigation ratio of 1-to-1.57, the total mitigation area for wetlands is 34,136 sf.

Table 3: Wetland Calculations

	Land Use	Quantity	SF	Acres	Calculation Methodologies (and Notes)
	Wetland Area to be Filled				
F	*Filled by New Pavement*	*NA*	*21,564*	*0.50*	*(area of new pavement that coincides with existing wetlands)*
G	*Filled by New Fence Posts (1' x 1' each)*	*149*	*149*	*0.00*	*1,442 lineal feet of new fence @ 1 post/10 feet =149 posts x 1sqft per post*
H	*TOTAL WETLAND FILL*	*NA*	*21,713*	*0.50*	*H = F + G*
	Mitigation				
I	*Removed Wooden Fence Posts (5" x 4" each)*	*24*	*3.33*	*0.00*	*24 posts x 0.14 sqft per post*
J	*Removed Steel Fence Posts (1" x 1" each)*	*70*	*0.49*	*0.00*	*70 posts x 0.01 sqft per post*
K	*On-site Uplands to be Converted to Wetlands*	*NA*	*34,132*	*0.78*	*NA*
L	*TOTAL AREA: WETLANDS CREATED*	*NA*	*34,136*	*0.78*	*L = I + J + K*
M	*Wetland Mitigation Ratio*	*1.57*	*NA*	*NA*	*M = L / H*

Table 4: Future Land Use Types and Quantities

	Land Use	Quantity	SF	Acres	Calculation Methodologies (and Notes)
	Areas Associated with new Gravel Parking Area				
N	*New gravel parking lot for City Wildlife Area*	*NA*	*2,402*	*0.06*	*NA*
O	*New gravel road to gravel parking lot*	*NA*	*5,708*	*0.13*	*NA*
P	TOTAL AREA: FUTURE GRAVEL LOT & ROAD	*NA*	*8,110*	*0.19*	*H = F + G*
	Pavement				
Q	*Retained Existing Pavement*	*NA*	*37,725*	*0.87*	*NA*
R	*Replaced Existing Pavement*	*NA*	*19,322*	*0.44*	*(pavement to be removed and replaced without a net gain or loss in area)*
S	*New Pavement*	*NA*	*24,481*	*0.56*	*(87.5% of which coincides with existing wetlands)*
T	TOTAL AREA: FUTURE PAVEMENT	*NA*	*81,528*	*1.87*	*T = Q - R - S*
	Wetlands				
U	*Retained Wetlands (following loss of wetlands)*	*NA*	*123,186*	*2.83*	*U = B - H*
L	*New Wetlands (created on-site for mitigation [see above])*	*NA*	34,136	0.78	*L = I + J + K*
V	TOTAL AREA: FUTURE WETLANDS	*NA*	*157,322*	*3.61*	*V = U + L*
	Other				
C	*Structure Footprint*	*NA*	*43,006*	*0.99*	*(Square footage of building provided by HSU)*
W	*Future Other (Unused/Undesignated)*	*NA*	*27,360*	*0.63*	*W = E - P - T - C*
X	TOTAL AREA: OTHER AREAS	NA	70,366	1.62	*X = C + W*
Y	**FUTURE TOTAL SITE AREA**	**NA**	**317,326**	**7.28**	**Y = P + T + V + X**

Table 5: Mitigated Wetlands Details

	Land Use	Quantity	Area	Acres	Calculation Methodologies (and Notes)
AA	*Approximate area of excavation (SF)*	*NA*	*35,173*	*0.81*	*NA*
AB	*Approximate depth of excavation (feet)*	*3*	*NA*	*NA*	*NA*
AC	*Approximate slope of excavation*	*3:1*	*NA*	*NA*	*NA*
AD	*Approximate Area of 3:1 Slope (SF)*	*NA*	*6,031*	*0.14*	*(3:1 slope x 3 feet of excavation around interior perimeter)*
AE	*Approximate area of bottom of wetland excavation (SF)*	*NA*	*29,142*	*0.67*	*(Area of excavation minus nine horizontal feet of slope around perimeter)*
AF	*Approximate area of wetlands*	*NA*	*34,136*	*0.78*	*(Depth to groundwater is 18 inches, thus wetlands begin at 6 inches BGS)*
AG	APPROXIMATE CUBIC YARDS OF EXCAVATION	NA	3,573	NA	AG = ((AE*3)+((AD*3)/2))/27

2.4 Proposed Mitigation Site

Mitigation will occur in an upland area on the southwest portion of the project site and is described in detail below.

3.0 MITIGATION DESIGN

3.1 Location and Description

Mitigation will occur in an approximately 35,200 sf upland area in the southwest portion of the project (see Figures 5 through 8 in Appendix A). For a description of the overall project area, see Section 2 above. The upland area that is to serve as the mitigation area is bounded on the west by an existing dirt road and on the east by an existing fence. The area currently consists of upland grasses.

3.2 Site Selection Process and Ownership Status

The parcels on which the project is to occur contains an area of uplands that is a suitable location to use as a mitigation site. The mitigation will occur on the same property as the project and is a logical choice of location for mitigating wetlands filled as a part of the project.

3.3 Basis for Design

The upland area designated to serve as wetland mitigation was selected because it is directly adjacent to existing Palustrine Emergent Wetlands and is onsite, in the Coastal Zone, and within the City of Arcata city limits. In addition, the proposed mitigation area is within approximately 300 feet of and is very similar topographically to the Palustrine Emergent Wetlands that are to be filled as a part of the project. The basis of design is to connect the newly created wetlands with the adjacent existing onsite wetlands. The wetland mitigation area will function similarly as the wetlands to be filled.

Two groundwater monitoring wells were installed at the wetland mitigation site and monitored for a six-week period from January 17th to February 21st, 2010. The results of the groundwater monitoring indicate that groundwater is at an average of 18 inches below the ground surface, as is displayed below in Table 6. The locations of the wells are displayed in Figure 3, Appendix A. The Figure shows a third well (#12) in the mitigation area. This well was installed and monitored in 2009 and also showed an average depth to groundwater at 18 inches, but was damaged and not monitored in 2010.

Table 6: Average Depth to Groundwater (inches) at Mitigation Site

	1/17/2010	1/24/2010	1/31/2010	2/7/2010	2/14/2010	2/21/2010	Average
Groundwater Depth (inches) at Well # 15	20	13	17	19	22	34	**21**
Groundwater Depth (inches) at Well # 16	17	9	11	17	16	25	**16**
Average	**18**	**11**	**14**	**18**	**19**	**29**	**18**

The following description of the excavation profile of the wetland mitigation area is displayed graphically in Figure 8, Appendix A. Approximate 35,200 sf of uplands will be excavated to a depth of three feet with 3:1 side slopes. The approximate ground elevation at the mitigation site is approximately 10 feet (NAVD 88). The future top-of-bank of the wetland area will be at an elevation of 10 feet, with the bottom of the wetland excavation at seven feet elevation (or three feet below the existing ground surface). The edge of wetlands will begin at 9.5 feet elevation (or six inches below the existing ground surface). Based on the monitoring well data presented above, this plan assumes an average depth to ground water in the mitigation area at 18 inches. Based on this assumption, excavating at the site to a depth of six inches would bring the groundwater to within 12 inches of the surface. Therefore, all excavation below six inches would be wetlands. All excavation from the ground surface to the depth of six inches would remain uplands.

The results from groundwater monitoring at the mitigation area indicate that mitigation will be successful if the mitigation wetlands are excavated approximately three feet below existing grade to an elevation of seven feet. Long-term mitigation wetland survival and stability will depend on vigorous vegetation establishment. Palustrine habitats created the first year will be available immediately. The maturity of the palustrine habitat will occur in approximately two to five years. Seasonal surface water that will be created within the wetland mitigation area will host a diversity of invertebrates that will in return provide a food source for other larger species in the vicinity. The wetlands will provide habitat for migrating birds in the spring, including most likely open water. The shrub species proposed on the border of the wetlands will provide cover for passerine bird species.

3.4 Characteristics of Reference Sites

The reference site for the mitigation area will be the wetlands that are to be filled as a part of the project, although the reference site is mainly a monoculture of non-native reed fescue, whereas the mitigation site is anticipated to contain a wider diversity of plant species.

3.5 Current Characteristics of Proposed Mitigation Area

The mitigation area is located on the same parcels described above under the description of the project requiring mitigation (Section 2). Groundwater monitoring data conducted in this area in the late winter of 2010 indicated that the area is uplands. For more detail regarding the current characteristics of the mitigation area, see Section 2 above.

3.5.1 Jurisdictional Areas

During the 2009 wetland delineation for the project, the area designated to serve as mitigation was mapped as uplands (COE jurisdictional obtained).

3.5.2 Aquatic Functions

Other than for limited groundwater recharge purposes, the aquatic function of the mitigation area is currently relatively low. The mitigation area does not contain any surface water. The area is currently mixed-grass pasture uplands surrounded by fencing and existing wetlands.

3.5.3 Hydrology and Topography

A topographic survey has been completed for the site. The mitigation area of the site has very limited topography, with a one foot topographic variation within the mitigation area. Elevations range from 9 to 10 feet above sea level. Depth to ground water is at 18 inches below the ground surface. The mitigation area contains no flowing surface water.

3.5.4 Geology and Soils

According to the University of California "Soils of Western Humboldt County," the soil type at the project site consists of Lolita Silt Loam, poorly drained and Bayside Silty Clay Loam, poorly drained. According to the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey, the soil type at the project site consists of Occidental Series, 0 to 2 percent slope. This alluvium-based soil type, consisting primarily of silty clay loam, is poorly drained, and typically found near salt marshes and/or coastal areas.

3.5.5 Vegetation, Habitat, Wildlife, and Threatened/Endangered Species

In March, April and May 2009, Winzler & Kelly performed a biological assessment and a survey of the project area for plant and animal species of special status. No special-status or wildlife plant species were detected in the mitigation area. Likely wildlife use consists of limited visitation by small mammals and commonly occurring land birds found in coastal Humboldt County. No raptor nests or threatened or endangered bird or mammal species were observed within the mitigation area. No rare, threatened or endangered plants were identified within the mitigation area during numerous visits, including installation of monitoring wells, a wetlands delineation, and a wildlife assessment.

3.5.6 Historical, Present, and Future Uses of Mitigation Site

Prior to being purchased by Humboldt State University (HSU), the property and associated building were owned by the company known as Industrial Electric. The site has since been purchased by the applicant and is slated to serve as the University's Corporation Yard.

3.5.7 Historical, Present, and Future Uses of Adjacent Areas

To the north of the property is State Route 255, known locally as Samoa Boulevard. Samoa Boulevard serves as a major local collector and is a heavily traveled road providing access to the City of Arcata, the City of Eureka, and the towns of Samoa and Manila. The route will continue to serve this function in the future. The parcel to the east of the project is an industrial property, with several buildings, paved areas, and vegetated areas that likely consist of both wetlands and uplands similar to the uplands/wetlands on the project site. The parcels to the south and west of the project are undeveloped and will likely remain as such in the future as they are portions of the City of Arcata's Marsh and Wildlife Sanctuary. These parcels contain vegetated areas that appear similar to the uplands/wetlands on the project site.

3.6 Characteristics of Created/Restored Habitat

The following describes the characteristics of the habitats to be created as a part of the planned wetland mitigation.

3.6.1 Compensation Ratio

The mitigation ration will be 1 to 1.57.

3.6.2 Long Term Goals

The primary goal of the mitigation is to develop 34,132 sf of a self-sustaining Palustrine Emergent Wetland to compensate for the filling of Palustrine Emergent Wetlands associated with the project. Other goals of the wetland mitigation are to:

1. Enhance native biodiversity, resulting in a net gain of good quality native palustrine wetland habitat surrounded by riparian habitat;
2. Maintain, restore, or mimic ecological processes, to the extent practical;
3. Provide groundwater recharge;
4. Permit slow surface flow;
5. Filter surface runoff;
6. Improve the aquatic functions of the existing wetland areas by expanding the area of the existing wetlands and focusing on improving plant diversity and cover;
7. Provide seasonal open water habitat

3.6.3 Target Aquatic Functions

The target aquatic functions of the proposed wetland mitigation area are a self-sustaining Palustrine Emergent Wetland with enhanced ecologic function over existing conditions, including wetland and seasonal open water.

3.6.4 Target Hydrology and Topography

The proposed mitigation area will be graded below average seasonal high groundwater. This will provide seasonal ponding to support hydrophytic vegetation types typically present in seasonal wetlands typical of the area.

3.6.5 Target Vegetation, Habitat, Wildlife, and Threatened/Endangered Species

Target plant community types to be created are Palustrine Emergent Wetlands (freshwater marsh seasonal wetland) and Arcata Bottoms and Humboldt Bay Area. Specific species have been selected and are included below in the planting plan. Mitigation only consists of the creation of wetlands and does not include restoration or enhancement.

5.0 IMPLEMENTATION PLAN

5.1 Site Preparation

5.1.1 Overview
Approximately 34,132 sf of Palustrine Emergent Wetlands will be created through minor excavation adjacent to existing Palustrine Emergent Wetlands. A grading plan and cross sections are shown on Figures 5 and 6, Appendix A, existing conditions and conceptual grading plan.

5.1.2 Grading Implementation
Soils at the proposed mitigation site are described above in Section 3 above. The mitigation area will be graded to an approximate depth of 3 feet below ground surface. The subsoil will be exposed, which is described on data sheets for test pits TP-12, 15, and 16. Based on the mitigation site groundwater monitoring data, the average grading depth of three feet below existing ground surface will be adequate to create seasonal wetland characteristics. The deep parts of the mitigation area will support seasonal ponding water for a significant part of the growing season as well as wetland vegetation. Cross Sections and a grading plan in included as Figures 5 and 6, Appendix A.

5.1.3 Avoidance Measures
The mitigation area is constrained to the west by the existing dirt road and to the east by an existing fence. Equipment will enter on the existing dirt road. Grading limits will be clearly defined and identified to prevent damage to existing wetlands. Exclusion fencing will protect good quality habitat including existing wetlands. Access routes for equipment will be limited to upland areas, particularly the existing dirt road directly east of the wetland mitigation area. The area of excavation is expected to be approximately 35,173 sf (0.81 acres). As the existing dirt road and the area slated to be a gravel parking lot will be used for construction staging, the area of temporary disturbance is not expected to exceed the excavation area. Temporary disturbance areas will be mitigated through restoration activities including revegetation with native species.

5.1.4 Soil Disposal
Approximately 3,573 cubic yards (cy) of soil will be excavated during wetland mitigation implementation. The excess soil will be removed from the wetland mitigation area and transported off site to an uplands area.

5.1.5 Soil Treatment
No soil treatment is proposed.

5.1.6 Invasive Plant Control

Invasive species are defined as those listed by the California Invasive Species Council (Cal-IPC) with a rating of high or moderate, or any Tier 1 or Tier 2 invasive species listed in the Water Board's Fact Sheet for Wetland projects (RWQCB, 2009). No invasive species have been identified at the site. It is not expected that invasive species control will be necessary prior to project implementation. If species are found during the five-year monitoring period, species specific strategies will be implemented.

5.1.7 Construction Monitor

A professional biologist familiar with the mitigation/monitoring plan and with the project site will observe periodic phases of mitigation construction. This person will have authority to direct equipment operators and will submit a summary report to the permitting agencies documenting construction observation and any problems that arise during construction.

5.2 Planting/Seeding Plan

5.2.1 Plant Species List

The wetland mitigation areas will be planted according to the planting plan shown in Table 7. The planting areas within the planting area have are numbered in Table 7 to correspond with the following areas:

1. Wetland – the area that counts as wetland mitigation acreage consists of the flat bottom portion of the wetland as well as the lower 2/3 of the 3:1 side slope area. slough sedge (*Carex obnupta*), soft stem rush (*Juncus effuses*), and bulrush (*Scirpus acutus*) will be planted mid slope to the bottom of the slope and across the entire flat-bottom portion of the mitigation area. Native willow(s) (Salix sp.) will be intermixed in the mid slope to the bottom of the slope of the mitigation area.
2. Upper 2/3 of Slope – the upper 2/3 of the side slopes is considered transitional upland and will be planted with native shrubs that can withstand some wet conditions.
3. Below top-of-bank – the area just below the top of bank is considered upland and will be planted with shrubs described in Item 2 above as well as intermixed with larger shrub and tree species. The tree species such as red alder (*Alnus rubra*) and big leaf maple (*Acer macrophyllum*) have been selected to provide a windbreak for the wetland mitigation area

Table 7: Planting Plan

		Planting Area	1	2	3		
Scientific Name	**Common Name**		**Wetland**	**Side Slopes**	**Top of Bank**	**Total**[1]	**Spacing**[2]
33,106 sf wetland / 2,067 sf upland (top/sides of slope) / 700 linear feet circumference							

Table 7: Planting Plan

		Planting Area	1	2	3		
Scientific Name	**Common Name**		**Wetland**	**Side Slopes**	**Top of Bank**	**Total**[1]	**Spacing**[2]
Carex obnupta	slough sedge		200			200	8-10
Juncus effusus	soft stem rush		200			200	8-10
Scirpus acutus	bullrush		200			200	8-10
Salix sp.	willow			35	35	70	20
Rubus parviflorus	thimbleberry			8		8	10-15
Rubus spectabilis	salmon berry			8		8	10-15
Myrica californica	wax myrtle			8		8	10-15
Acer macrophyllum	big leaf maple			8		8	100
Alnus rubra	red alder			20		20	35

1 Total includes an additional 20% of individual plants to account for potential plant die off during the 5-year minimum monitoring period. To fit additional 20% increase in coverage, the recommended plant spacing may be decreased and/or plantings arranged in a zigzag across parcel.

2 The spacing between plants in the mitigation area is between individual plants. The plant species are to be mixed in some areas. For example, the spacing between the maple and red alder along the upper wetland edge should result in a maple every 100 feet, yet the red alder may be interspersed at a distance of 35 feet from any other plant.

Bare soil areas outside of the wetland creation area shall be covered with maximum of 4 inches of sterile rice straw, which will protect area from erosion and reduce revegetation from non-native weedy species.

All species will be planted in the late fall or early winter, when the plants are dormant, and after the rains have begun. Table 7 presents specific species to be planted in the wetland mitigation area. Also provided is recommended plant spacing and approximate number of each species.

5.2.2 Sources and Storage

Plants will be purchased from nurseries and will be grown from local stock. The nursery should be selected well in advance so that adequate quantities and sizes of species will be available at time of planting.

All plants should be obtained from a nursery in a minimum of ½ gallon pots to ensure healthy establishment, with the exception of the willows. Willow cuttings for the mitigation area can be gathered onsite or within 10 square miles and planted with adherence to the following directions.

Willow Planting Instructions:
Willow (Salix sp.) cuttings can be taken from large vigorous-growing shrubs and trees from December 15 through February 1 (when plants are dormant) prior to bud swelling. The willow-cutting source shall be within a 15-mile radius of the project area. Length of cuttings shall be 3 feet with a minimum ¾ inch diameter at the base and maximum of 3 inches. It is recommended

that the bottom of the willow cuttings be cut at a 45-degree angle in order to keep track of the correct orientation of the cutting and to facilitate planting. Cuttings shall be placed in a bucket filled with water prior to planting to avoid desiccation. Willow cuttings shall be placed with the basal 2/3 of the slip in the ground, with approximately 10-12 inches above the soil surface. If holes are dug or augured for the willows the soil shall be tampered around each willow slip so no air void occurs.

5.2.3 Estimated Number of Installed Plants

The Planting Plan (Table 7) provides estimated quantity of each species based on acreage of area to be replaced and enhanced.

5.2.4 Rooted Material Planting Methods and Protections

Holes will be dug to twice the size of the root ball. The holes will be refilled with native soil and gently tamped to reduce air pockets. An initial watering will be conducted to further eliminate air spaces and ensure adequate contact of the root surface with the soil medium.

5.3 Water Supply and Irrigation

Soil should be moistened before plant installation begins, either from rainfall or human procedures. Plantings should receive a deep watering at time of installation. Plantings should be irrigated within 24 hours after initial planting if natural rainfall is not imminent. Areas seeded with seed mixes should receive a gentle watering at time of installation. If precipitation is insufficient following the planting, supplemental watering once every approximately 10 to 15 days may be necessary in order to promote deep root growth and target species establishment. Irrigation should be continued at least until the onset of the cool weather/wet season and/or a prolonged period of early rain in the fall. Irrigation is not planned after irrigation associated with the initial planting.

5.4 Implementation Schedule

The anticipated schedule for mitigation is as follows:

Table 8: Development Schedule

Task		Approximate Date
1	Draft Mitigation and Monitoring Plan Completed	January 1
2	Final Draft Mitigation and Monitoring Plan Completed	January 15
3	Submit Permits	May 1
4	95% drawings and specifications, and hydrology technical memorandum	June 15
5	Obtain Permits	September
6	Final Drawing and Specifications	August
7	Grade/excavate on-site mitigation area	September
8	Place wetland plants in off-site mitigation area	October

9	Complete and submit as-built drawings	December
10	Monitor wetland success	November Year 1 to November Year 5

7.0 SUCCESS CRITERIA

Performance standards are intended to be measurable by systematic monitoring methods, presented below.

At the end of five years, the mitigation area will consist of self-sustaining Palustrine Emergent Wetlands with enhanced ecological function over current conditions. Annual monitoring will occur for five years after the wetland mitigation area is planted. Table 9 provides the yearly criteria to be met, based on a reasonably paced progress towards final success criteria.

Table 9. Seasonal Wetland* Habitat Success Criteria.

Year 1: 40% or greater absolute cover of wetland plant species. No large unvegetated bare spots or erosional areas.
Year 2: 50% or greater absolute cover of wetland plant species. No large unvegetated bare spots or erosional areas.
Year 3: 70% or greater absolute cover of wetland plant species. No large unvegetated bare spots or erosional areas.
Year 4: 75% or greater absolute cover of wetland plant species. No large unvegetated bare spots or erosional areas.
Year 5: 80% or greater absolute cover of wetland plant species. No large unvegetated bare spots or erosional areas.

*Note: Uneven vegetative cover success criteria between monitoring years is recommended to allow for slow growth rates of newly-planted material, and accelerated growth rates and natural spread of plants outward from planted material in subsequent years after establishment.

8.0 MONITORING

8.1 Hydrology and Soils Monitoring Methods

Evaluation of the seasonal wetlands will consist of recording the limit of inundation and recording water levels within 10 days of a January storm event during a normal (or wetter) precipitation year. Precipitation and weather conditions will be documented. In the event of prolonged drought, extension of the monitoring period or other appropriate adaptive management may be proposed.

8.2 Vegetation Monitoring Methods

8.2.1 Photomonitoring

Permanent photodocumentation points will be established within the mitigation area. A minimum of one photopoint per habitat type will be established. GPS coordinates will be obtained for each photopoint, and the points included on a GIS map of the site. Photos shall be taken from the same location in the same direction. Photos of sampling locations shall be taken to document the percent vegetative cover and will be included with the annual report, as deemed necessary.

Photographs will be taken throughout the monitoring period, during each monitoring event. One photograph will be taken from each monitoring point. Photos will be taken with a digital camera with a moderate wide angle lens (approximately 35mm focal length if a full-frame sensor, approximately 24mm focal length if a DX sensor, at the widest setting if a consumer-level digital camera with a built in zoom). The make and model of camera and type and focal length of lens will be noted in monitoring documentation. Photographs will be taken from eye level, ideally from a tripod with the height noted and consistent from year to year.

8.2.2 Vegetation Monitoring Transects and Quadrats

Each season during June, July, or August, five dominant plants in each sample plot shall be identified to species, and percent cover of hydrophytic vegetation shall be noted. Monitoring events will be recorded on current COE wetland botanical data sheets. Annual sampling locations will be selected using a random number generator.The coverage of ten random plots (per mitigation area) shall be averaged and compared to the Annual Performance Criteria. One meter square quadrants will be used. Plot locations shall be recorded using GPS and mapped in GIS, compass bearings noted, and photographs taken of each transect. Vegetation monitoring will be conducted at each plot.

Data to be collected for each plot will include:

- Absolute cover of vegetation present will be recorded. Estimates will be included of bare earth within each quadrant.
- Absolute cover of native and non-native species within each plot will be recorded.
- Absolute and relative percent cover of target invasive plants will be recorded.

- Total number of plants (species richness), and total number of native vs. non-native plants will be recorded.
- A photograph will be taken at each plot and provided to Humboldt State University electronically and as part of annual monitoring reports.

In addition to data collected at each plot, quantitative and qualitative data will be documented each year of monitoring. These general site assessments are intended to help determine if data from sampling transects is an accurate representation of site conditions, to help assess the overall functioning of the site as a whole, and also to help identify localized or low-level trends such as new invasive species formations, localized changes in species abundance, and other changes that might be overlooked if only transect data are analyzed.

During the same timeframe as the monitoring, the vegetation monitor will walk the entire site and record vegetation data by habitat type and by strata. The monitor will record the same types of data as at the plots, including recording species present, and estimating absolute cover.

Results should be similar if plots adequately represent habitat variability. If results vary widely, and vary year after year, additional sampling locations may be added or substituted for the original sampling transects, as long as the overall number of transects remains the same.

The following observations will be documented during the site assessment:

- Mortality (presence/absence) of planted vegetation monitor will document compliance with landscape performance, and progress relative to success criteria.
- Species richness. This general site data will be used for calibrating similar data taken at transects, and is not intended for comparison with success criteria. Data will also help to evaluate whether invasive or non-native species are outcompeting native plants, and whether more active management might be required.
- Average height of dominant or target plant materials. This information will be used to assess overall health and not for comparison to success criteria.
- Other site characteristics, including patterns of plant die-offs, erosion, hydrological issues, trespass, herbivory or grazing pressure, or other land use issues. This information is intended for use in recommending management actions as necessary.

Table 10. Qualitative Score for Assessing the Health and Vigor of Planted Stock

Score	Description of Score
Excellent	No evidence of stress; minor pest or pathogen damage may be present. No chlorotic leaves, no or very minor herbivory (browse). Evidence of new growth, flowering, seed set on majority (greater than 75 %) of plants observed.
Good	Some evidence of stress. Pest or pathogen damage present, few chlorotic leaves (> 5%), minor evidence of herbivory (browse). Evidence of new growth, flowering, seed set on most (greater than 50%) of plants observed.
Fair	Moderate level of stress; high levels of pest or pathogen damage, some chlorotic leaves (> 10%), some herbivory damage (few snapped leaves, stems, wear mamrks etc.). Evidence of new growth, flowering, seed set on some (less than 50%) of plants observed.

Poor	High level of stress; high levels of pest or pathogen damage, many chlorotic leaves (> 30%), severe herbivory damage (massive forage damage, main stems/leaves stripped etc.). No evidence of new growth, flowering, or seed set, or only a few plants (less than 25%) with these characteristics.

Reference sites will be visually assessed for general conditions prior to each monitoring event to help account for any unexpected changes in vegetation due to stochastic events such as fire, flood, or drought.

8.3 Monitoring Schedule

Generally, the mitigation communities will be monitored annually at least once during period of June through August. Some flexibility to account for annual variation in weather conditions is acceptable.

Monitoring of vegetation will be completed during the performance period as described below. After the performance period (typically five years), the site will be inspected for general parameters including observations of invasive non-native plants or trees, and signs of erosion or vandalism.

9.0 MAINTENANCE DURING MONITORING PERIOD

9.1 Processes

The community types present at the mitigation area could provide habitat for sensitive as well as more common species. Created and enhanced habitats have been designed to be as self-sustaining as possible. However, natural ecosystems are dynamic and subject to change over time. This is especially true in modern fragmented urban preserves, where the vast landscapes and ecological processes which once maintained a habitat mosaic may have been partially or completely disrupted. Natural processes include flood and drought, fog, fire, wind, disturbance by burrowing animals, and grazing.

As a result of human-induced change, management is usually required to maintain preserves and prevent gradual degradation, at least during five-year monitoring period or until natural balance is reached within the new habitat. The following discussion identifies approaches to longer term maintenance after the end of the construction and planting period.

9.2 Inspection Activities and Frequencies

The following inspections will be generally performed on an annual basis at the time of mitigation monitoring. Field notes will document weather conditions are normal or abnormal and the annual monitoring report will recommend remedial actions to address any significant issues. The annual monitoring should note whether within each habitat type, the following conditions are observed:

1. Is erosion control in place and functioning properly?

2. Are planting areas exhibiting excessive water or drought stress (too much or too little water as evidenced by leaf wilt, leaf drop, plant die off, etc?
3. Is there any presence of new or reestablished populations of invasive plants? Pioneer populations of invasives (previously unidentified at the site, such as fennel, pampas grass, etc.) should be treated immediately upon detection. Existing invasive plant populations (i.e. Himalayan Blackberry), or others, are to be managed under an adaptive management plan if reestablishment or continued predominance is detected.
4. Is there a distinctive pattern of plant die off (i.e., all species of a single plant or a cluster of plants within a small area)?

9.3 Remedial Actions (Adaptive Management)

Monitoring and maintenance will respond with adaptive management procedures, recommended on a case-by-case basis, to address any issues identified at the site. Remedial actions could include one or more of the following activities (not exclusive):

1. Weeding around planting sites to reduce competition from non-native grasses and forbs;
2. Supplemental watering;
3. Additional erosion control;
4. Additional invasive plant control;
5. Supplemental replacement plantings (may be in-kind, or if a particular species is not doing well at the site, a suitable replacement species can be supplemented for original plant species);
6. Hydrologic modification or minor regarding and supplemental planting

9.3.1 Initiating Procedures

Standards for when to implement remediation will apply if the percent cover in any monitoring year (averaged over sample plots) is 15% below the target level described under “Annual Success Criteria”, or if final criteria are not met. If annual performance criterion are not met, a report shall be prepared analyzing the cause of failure and, if necessary, proposing remedial action for agency approval.

9.3.2 Replanting

Replanting would be recommended if it is deemed that no other procedure could be employed to restore the target habitat to meet monitoring criteria.

9.3.3 Regrading

Regrading could be recommended if it is deemed that no other procedure could be employed to restore the target habitat to meet monitoring criteria.

9.3.4 Hydrologic Modification

For both the mitigation area, no hydrologic modification is expected to be necessary beyond excavation of the ground surface to a level that supports seasonal standing water.

9.4 Invasive Species Control

9.4.1 Predators
Deer are the main concern for browsing on the plantings.

9.4.2 Vegetation
Section 6 describes weedy/non-native and invasive species that are known to occur at the site, as well as management strategies to be employed to eliminate these species, if present. No known invasive species occur at the mitigation area.

For the mitigation area, green machines and mowers can be used to weed around the plantings and wetland mitigation site, as needed. The weed management should be done at least once a year in late summer until shrub and tree plantings are established. Stakes and mulch collars will help to keep the weeds and mowers away from the plants. Machinery should not be used at the site during wet conditions. Machine mowing should not occur in flat bottom portions of mitigation areas unless specifically prescribed as an adaptive management strategy. The reasoning for this limitation is that machine mowers could damage perennial wetland plantings (e.g. *Juncus, Carex,* etc) as well as pioneer wetland species that may be establishing at the site.

Invasive species control could require repeated effort for several years and possibly throughout the monitoring period. Specific needs will be identified based on each year of monitoring, and documented in annual reports. Appropriate control methods will be utilized depending on the species, the abundance and distribution of the species, and the location within the site and relative to wetlands or other sensitive resources. Adaptive management is emphasized wherein various strategies will be employed depending on site-specific conditions and invasive species issues at the time of management/maintenance activity. Publications on invasive species control may be referenced when identifying appropriate methods for use within a habitat enhancement site.

9.5 Maintenance Schedule
Maintenance will be conducted annually, during the dry season unless another time of year is more appropriate to avoid disturbance to sensitive species, habitats, or resources. Weed management (such as with a mower) may be necessary once a year in late summer until shrub and tree species at the top of bank of the mitigation areas are established. If timing of maintenance needs to be modified, the rationale for the decision will be documented in annual reports.

10.0 MONITORING REPORTS

10.1 As-Builts

At completion of site grading and planting, as-built drawings will be prepared and provided to appropriate agencies. Drawings will show, at a minimum, post-grading surface contours, typical cross-sections, and limits of each habitat or planting zone.

10.2 Annual Reports

Annual reports of monitoring results will be submitted to the U.S. Army Corps of Engineers (Northern Field Office, 601 Startare Drive, Eureka, CA, 95501, Attention Dave Ammerman) and the Environmental Services Department of the City of Arcata (735 F Street, Arcata, CA 95521, Attention Mark Andre). The reports will assess attainment of yearly target criteria and progress toward final success criteria. If final success criteria are met early, then a request for early completion of permit requirements will be made. Photographs of restoration areas shall be included in annual reports, as necessary, to document site conditions.

10.3 Due Dates

As-builts will be provided within 120 days after the completion of construction and planting activities. The first annual report shall be delivered by December 1 of the year following the first growing season after planting, with a report provided by December 1 of each subsequent year until the end of the 5-year monitoring period.

11.0 CONTINGENCY MEASURES

11.1 Initiating Procedures

If an annual performance criterion (averaged over sample plots) is not met for any year, or if final criteria are not met, a report shall be prepared analyzing the cause of failure and, if necessary, proposing remedial action for approval. Potential remedial actions include but are not limited to replanting, modifying management strategies or methods, providing additional offsite mitigation or extending the monitoring period.

11.2 Contingency Funding Mechanism

Humboldt State University is responsible for funding any adaptive management or additional measures which are determined necessary and with which the appropriate agencies concur.

12.0 COMPLETION OF MITIGATION RESPONSIBILITIES

12.1 Notification

When performance criteria have been met, the applicant will notify the North Coast District of the U.S. Army Corps of Engineers, the City of Arcata, and the County of Humboldt. Documentation will be provided within the accompanying annual report.

12.2 Agency Confirmation

Upon notification of completion, the agencies identified above may concur based on written documentation or, at their discretion, may request a site visit to observe the completed project.

13.0 LONG TERM MANAGEMENT

13.1 Property Ownership

The mitigation area will remain in the ownership of Humboldt State University.

13.2 Management Plan

Once released from permit requirements, the mitigation area will be maintained by the applicant as a part of their annual management plan. A description of anticipated future management needs, formulated after consideration of mitigation monitoring results and any necessary adaptive management during the monitoring period, will be included in the final annual report.

13.3 Site Protection

Access to the project site (which includes the mitigation area) will be restricted by a fence during designated times of the day and designated times of the year (see Figure 6, Appendix A). Given its proximity to the Arcata Marsh and Wildlife sanctuary and the new access parking lot associated with the project, it is expected that hikers and bird-watchers will occasionally walk near the site. To avoid impacts to the mitigated wetlands, signage will be installed around the perimeter of the created wetlands to discourage pedestrians from disturbing the area and to educate the public about the sensitive nature of the habitat.

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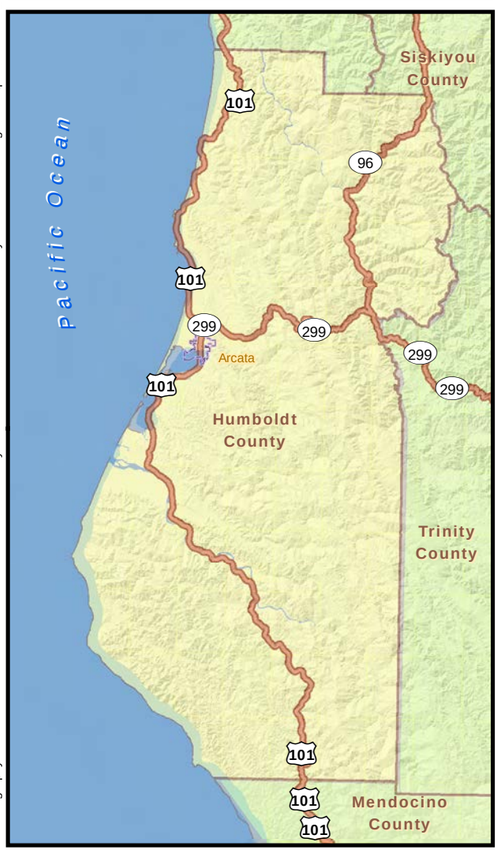
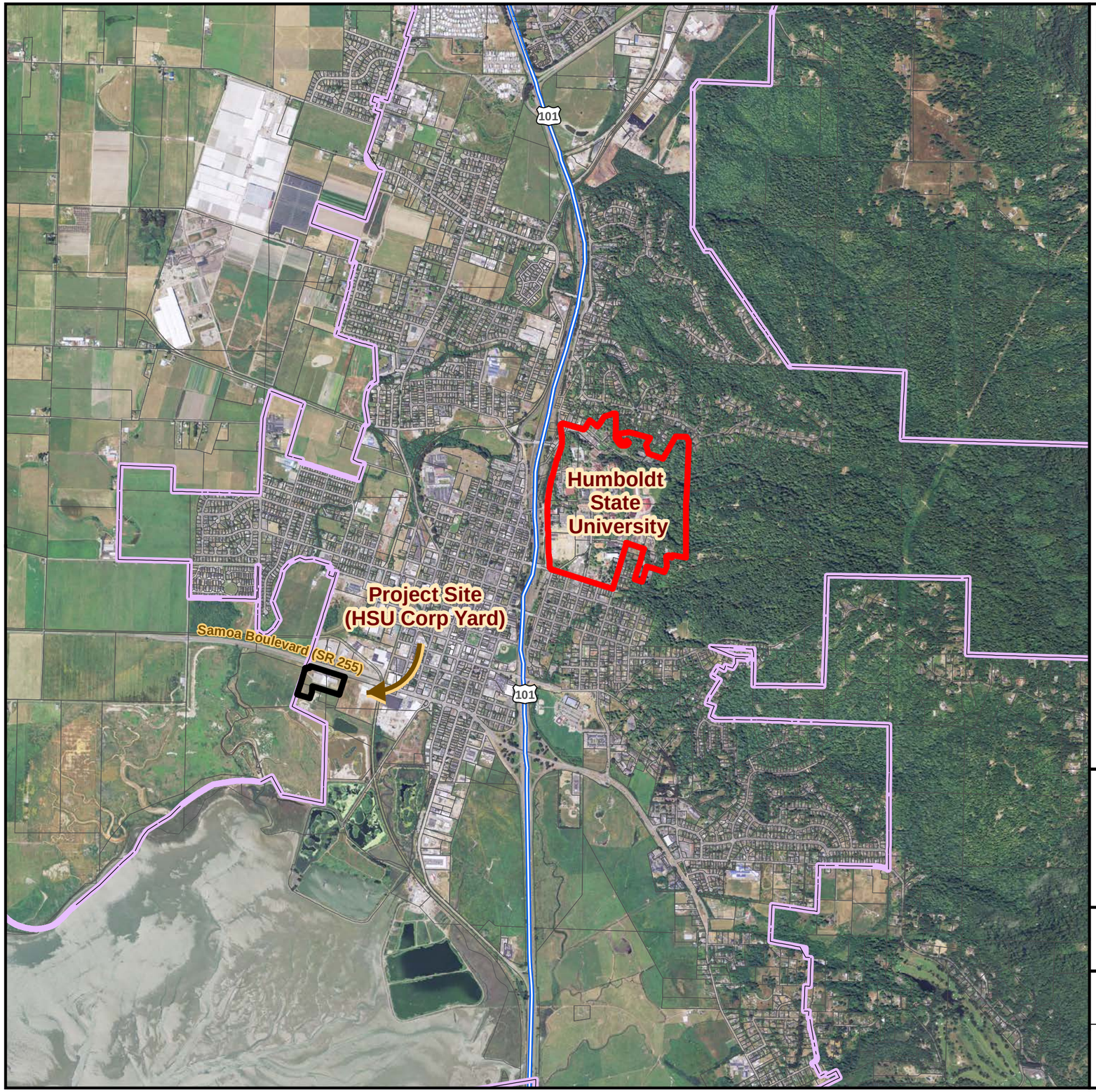
Appendix A
Figures





HSU Corp Yard

Humboldt State University

Arcata City Boundary

Route 101

Parcels

Humboldt County

0 750 1,500 3,000 ft

1 inch = 2,000 feet printed at 11x17

N

Sources:
USDA: Aerial NAIP 2009 1 meter resolution; City of Arcata GIS: Parcels.

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Figure 1
Project Vicinity

Humboldt State University
Corporation Yard
Wetland Mitigation Plan

Cartography: RCH

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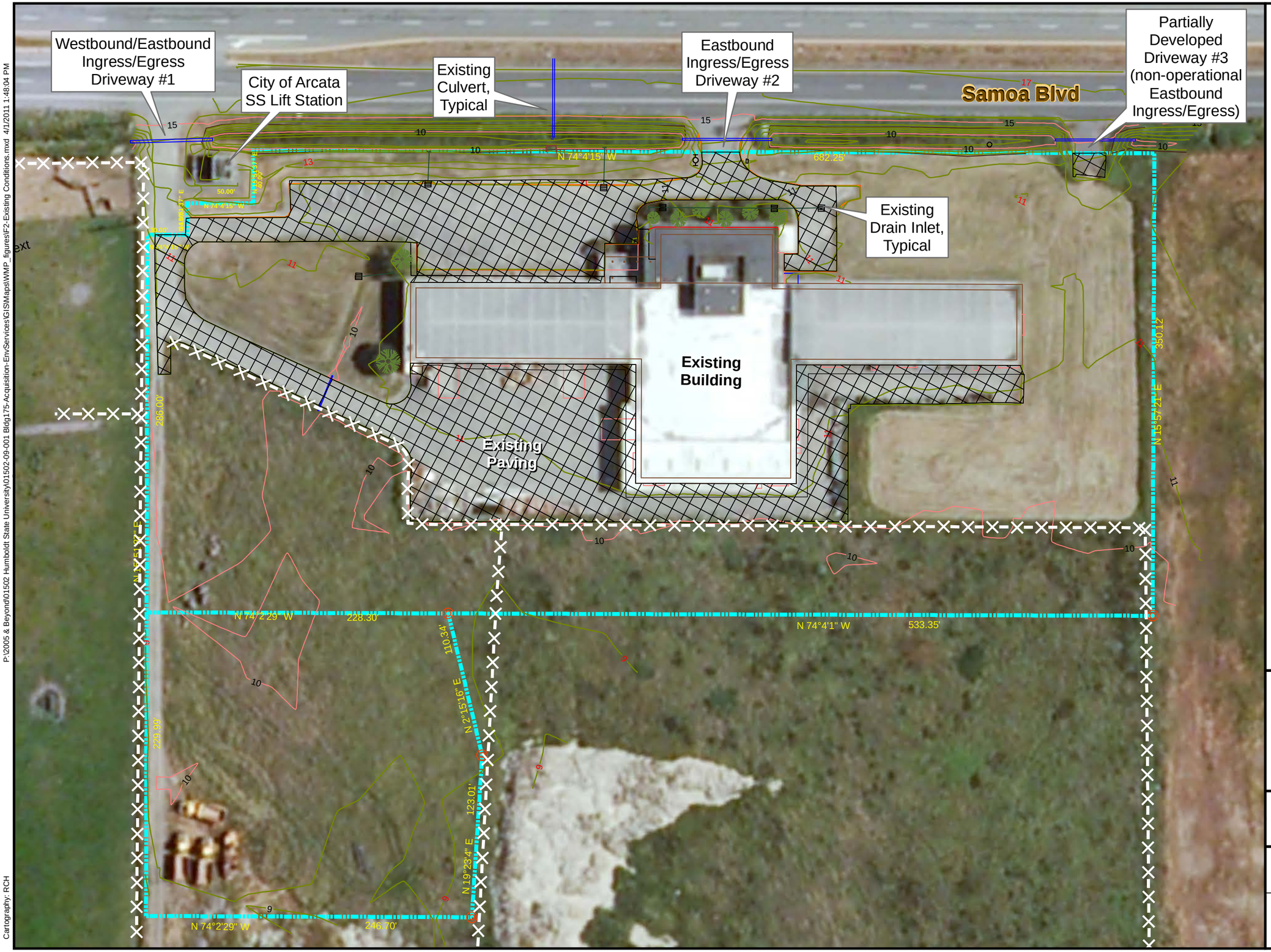

Existing Pavement

Existing Fence

Index Contours 5 Ft

Intermediate Contours 1 Ft

Existing Culvert

Existing Drain Inlet

Existing Tree

Survey Monument

Boundary Survey
(Location Approximate, see "Topographic Survey, Humboldt State University Corp Yard, Samoa Blvd, City of Arcata, Feb. 25, 2009 Gutierrez Land Surveying)

For existing wetland data, see Figure 3

0 35 70 140 ft

1 inch = 70 feet printed at 11x17

N

Sources:
USDA: Aerial NAIP 2009 1 meter resolution; City of Arcata GIS: Parcels; boundaries and topo :Gutierrez Land Surveying

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Figure 2
Existing Site Conditions

Humboldt State University
Corporation Yard
Wetland Mitigation Plan

Cartography: RCH

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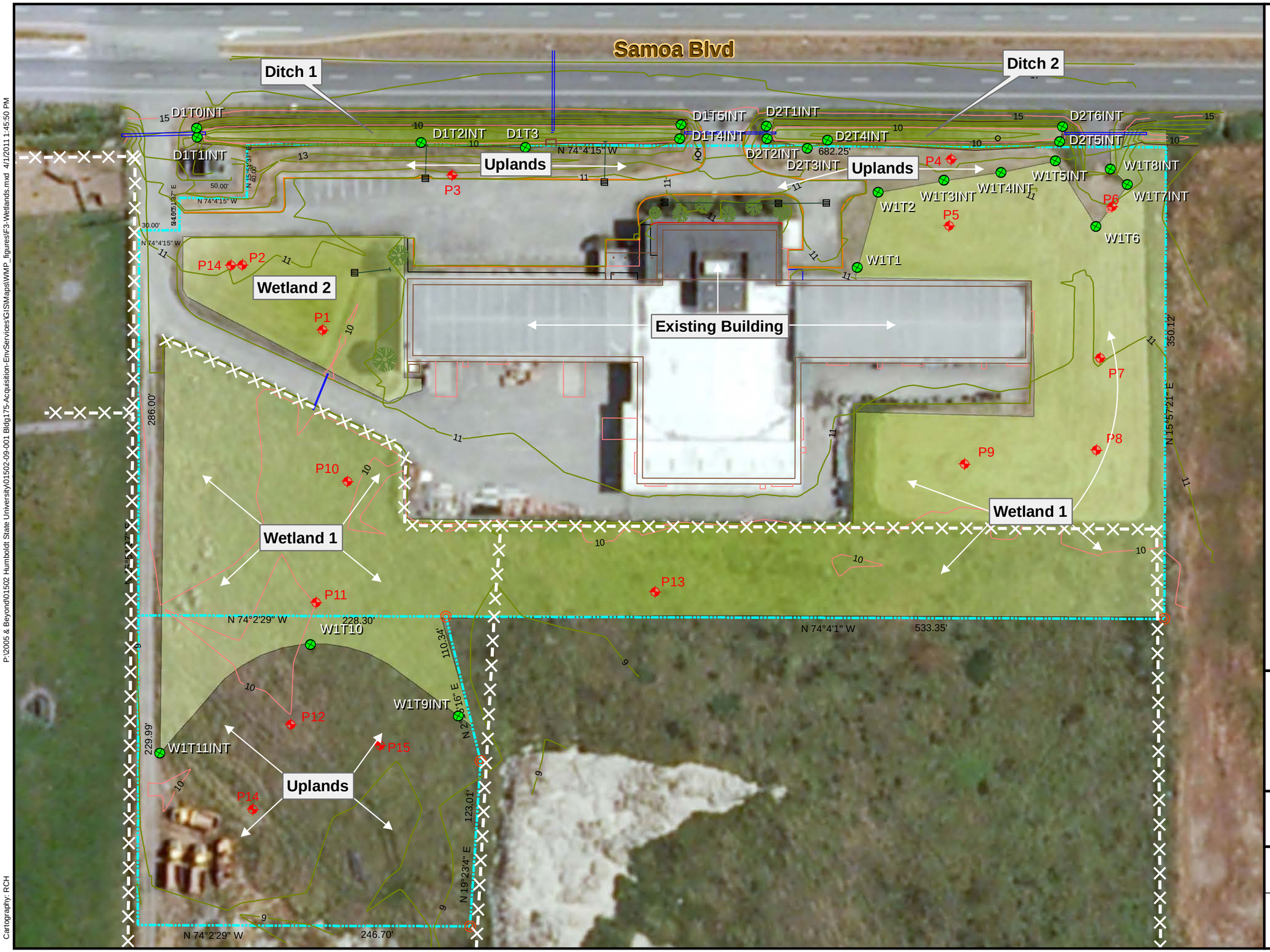

Wetland Survey Features

- Wetland Plot/ Boundary Point
- Wetland
- Existing Fence
- Index Contours 5 Ft
- Intermediate Contours 1 Ft
- Monitoring Well
- Survey Monument
- Boundary Survey
  (Location Approximate, see "Topographic Survey, Humboldt State University Corp Yard, Samoa Blvd, City of Arcata, Feb. 25, 2009 Gutierrez Land Surveying)

0 35 70 140 ft

1 inch = 69 feet printed at 11x17

N

Sources: USDA: Aerial NAIP 2009 1 meter resolution; Humboldt County GIS: Parcels, Blueline Streams.

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Figure 3
Wetland Delineation

Humboldt State University
Corporation Yard
Wetland Mitigation Plan

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Cartography: RCH

Samoa Blvd

Driveway #1

Existing Access to be Abandoned Driveway #2

New Paving

Developed Access Driveway #3

New Gate #1

New Gate #2

Existing Building

Existing Paving

New Paving

Existing 30' Easement

Gravel Access Road (20')

Proposed Coastal Access Parking

10'

R=4'

CONCRETE WHEELSTOP, TYPICAL 5 PLACES

ADA PARKING SIGN

VAN ACCESSIBLE PARKING

45'

8'

43'

New Fence

Fence to be Removed

Fence to Remain

New Paving

Existing Pavement

Created Wetlands

Boundary Survey
(Location Approximate, see "Topographic Survey, Humboldt State University Corp Yard, Samoa Blvd, City of Arcata, Feb. 25, 2009 Gutierrez Land Surveying)

0 35 70 140 ft

1 inch = 70 feet printed at 11x17

N

Sources: USDA: Aerial NAIP 2009 1 meter resolution; Humboldt County GIS: Parcels, Blueline Streams.

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Figure 4
Site Improvements

Humboldt State University
Corporation Yard
Wetland Mitigation Plan

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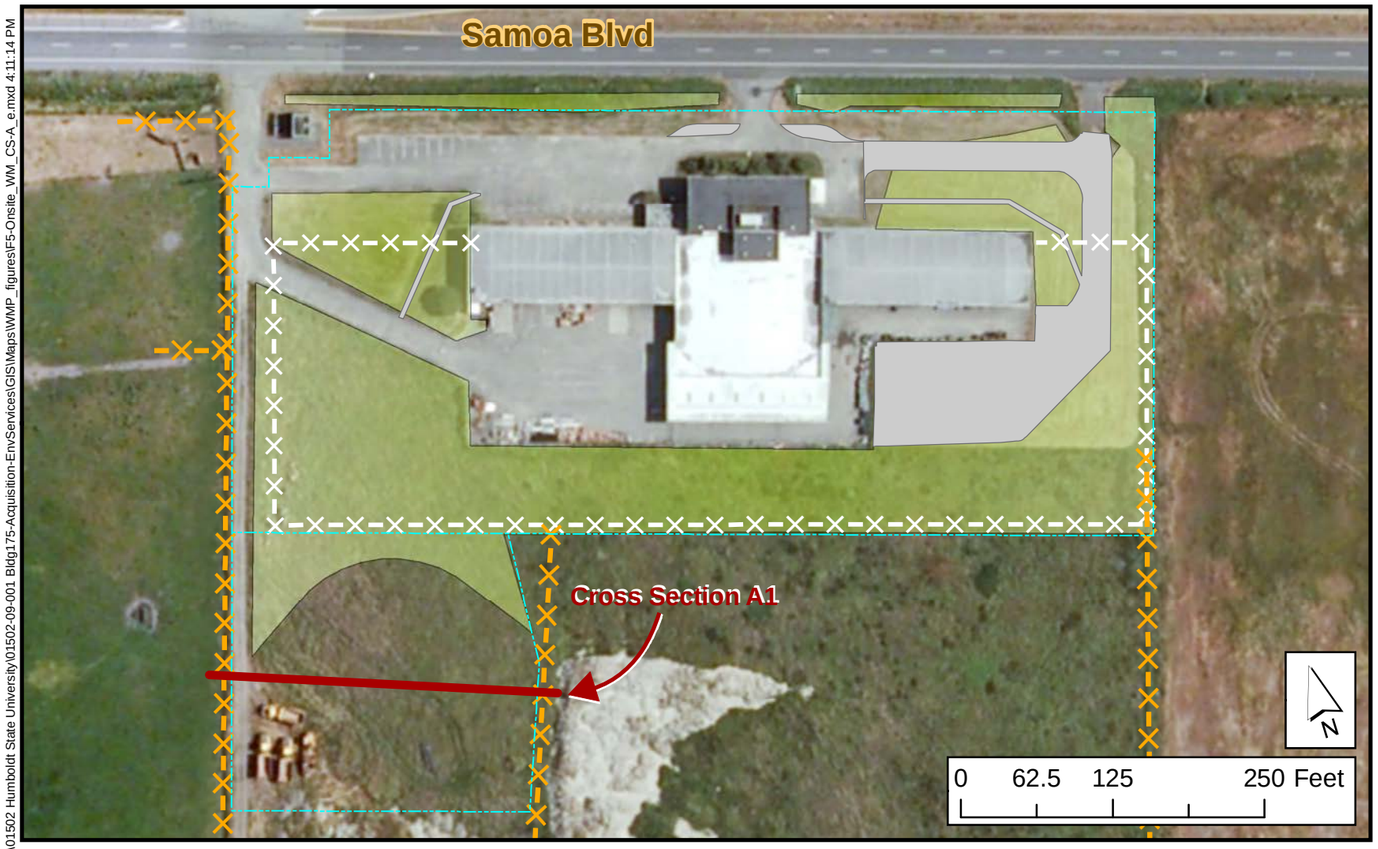

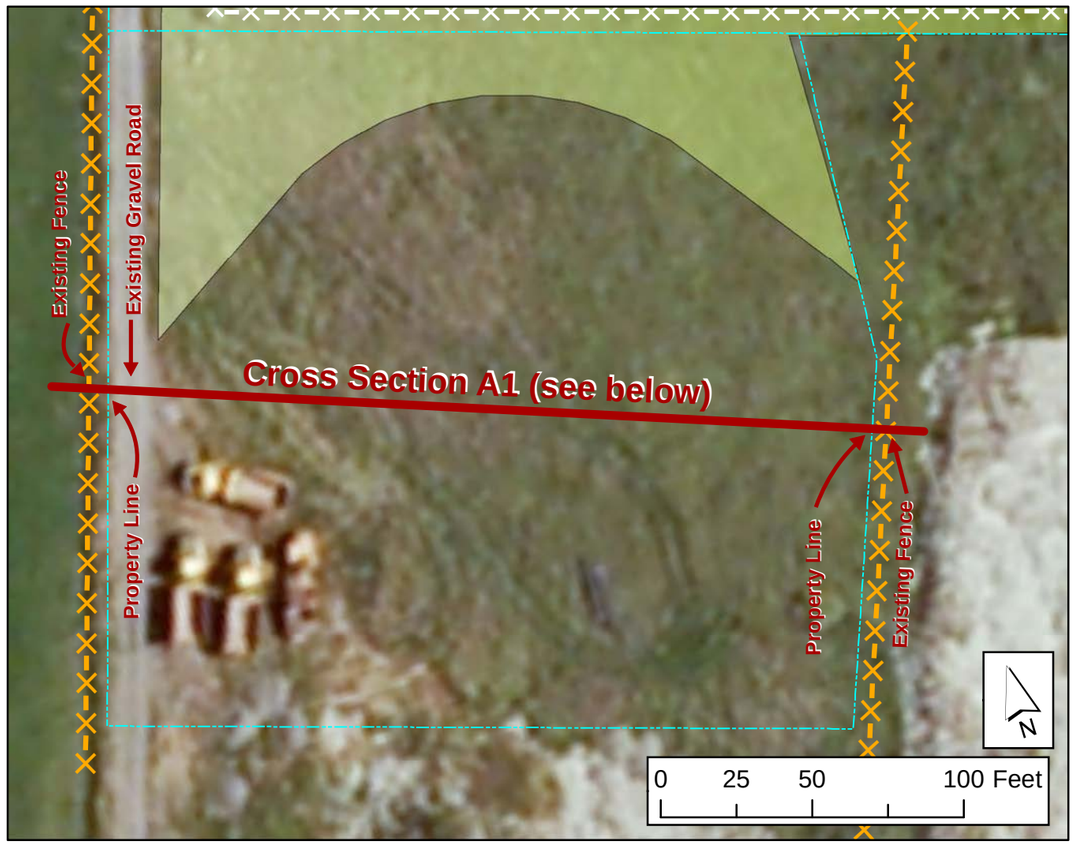

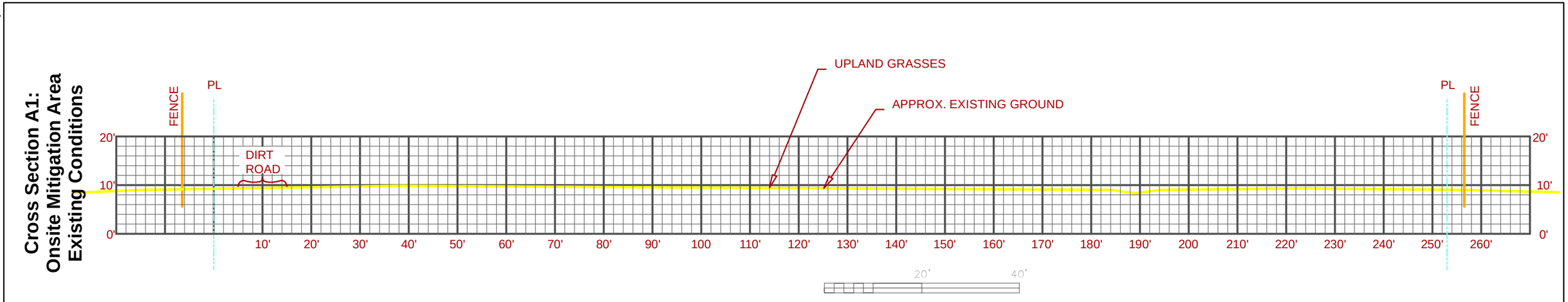

Onsite Cross Section A

Boundary Survey

Fence to Remain

New Fence

Wetlands (e)

0 62.5 125 250 ft

1 inch = 125 feet printed at 11x17

N

Sources: NOOA: Aerial 2010 1.5 ft resolution; Humboldt County GIS: Parcels, Blueline Streams.

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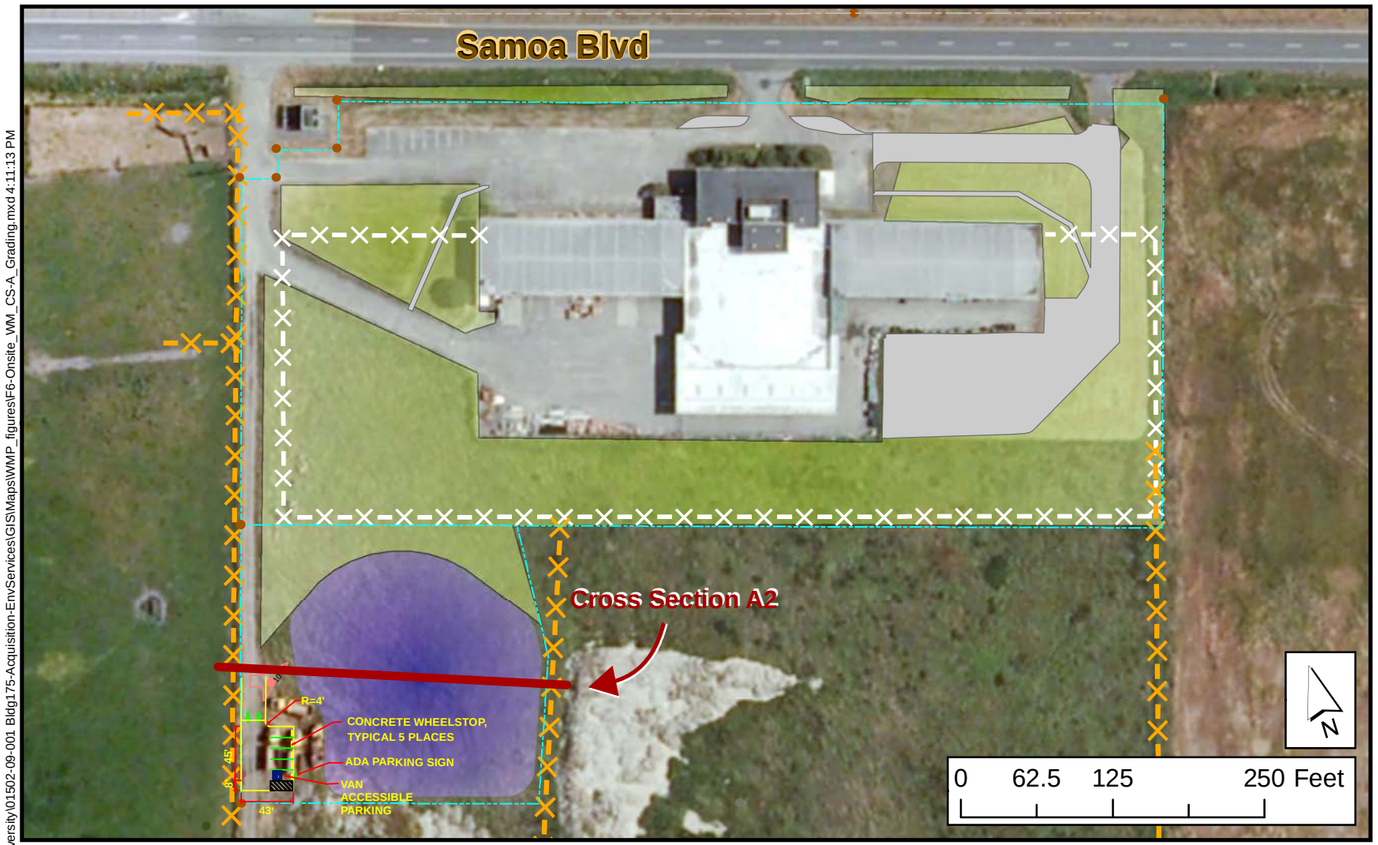
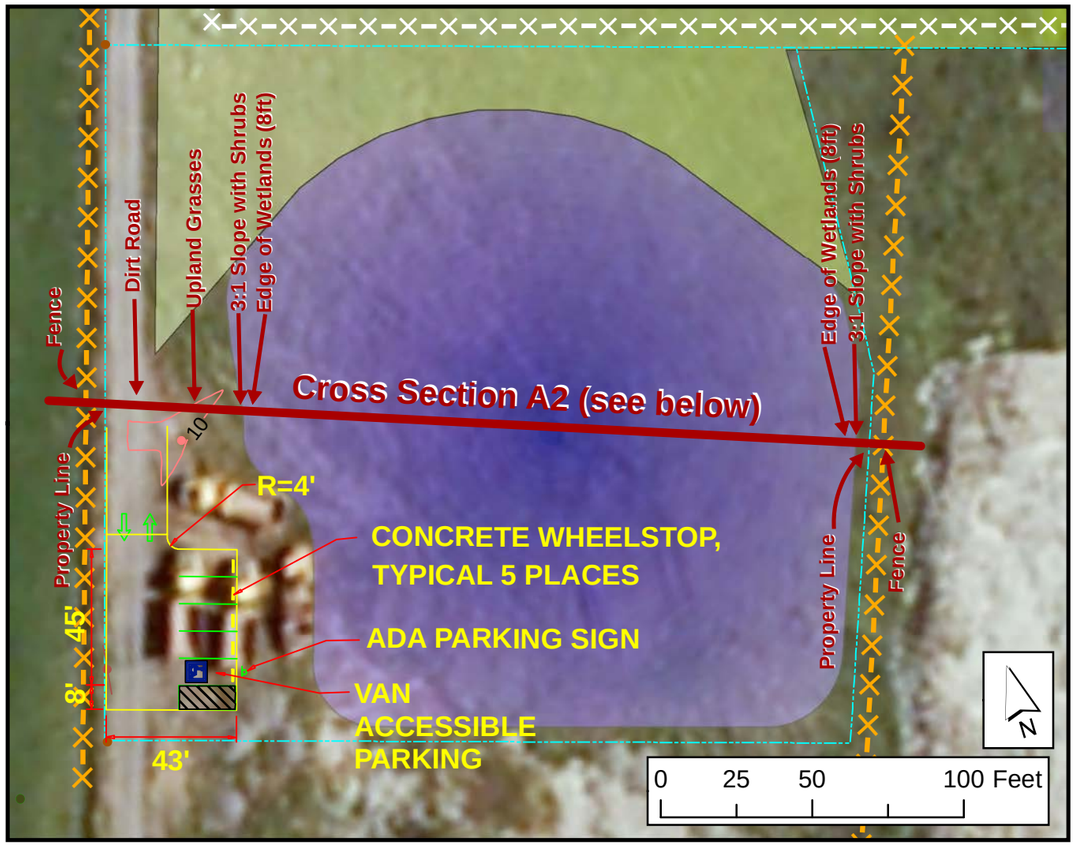
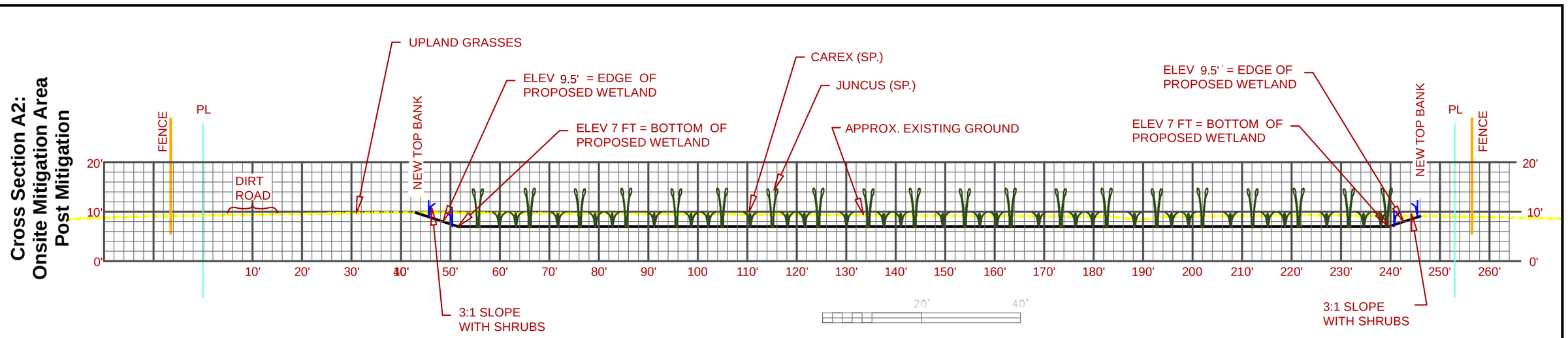
Cartography	Date	Project #
RCH	4/1/2011	0150209001

Figure 5
On-site Wetland Mitigation Area: Cross Section A: Existing Conditions

Humboldt State University
Corporation Yard
Wetland Mitigation Plan







Onsite Cross Section A

Boundary Survey

Fence to Remain

New Fence

Retained Wetlands

Wetland Mitigation Area

0 62.5 125 250 ft

1 inch = 125 feet printed at 11x17

N

Sources: NOOA: Aerial 2010 1.5 ft resolution; Humboldt County GIS: Parcels, Blueline Streams.

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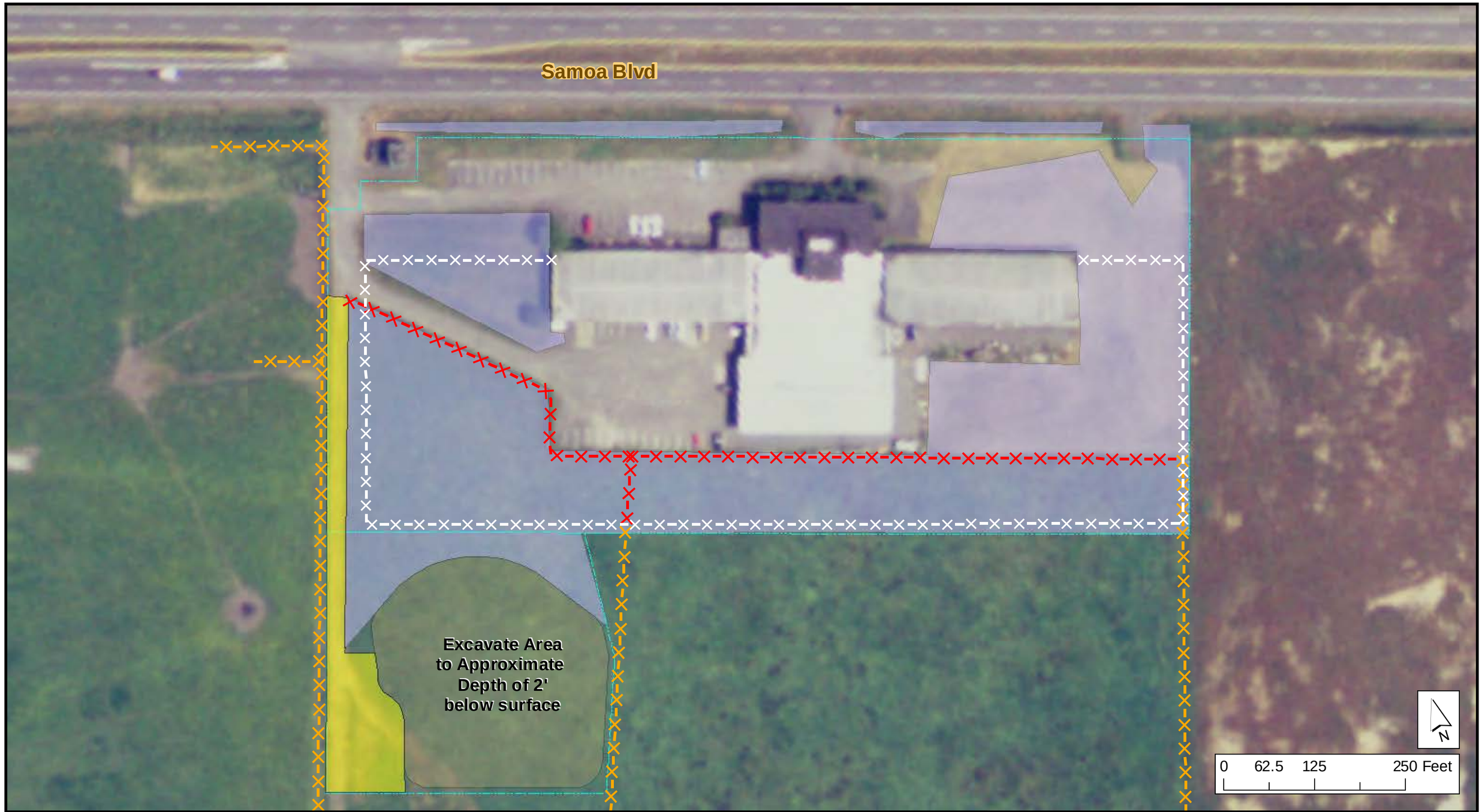
Cartography	Date	Project #
RCH	4/1/2011	0150209001

Figure 6:
On-site Wetland Mitigation Area: Cross Section A: Conceptual Grading Plan

Humboldt State University
Corporation Yard
Wetland Mitigation Plan



Boundary Survey
New Fence
Fence to be Removed
Fence to Remain
Existing Wetlands
Construction Staging Area

Figure 7:
Onsite Wetland Area Construction Staging

Cartographer	Date	Project #
RCH	12/21/09	0150209001

Project:
HSU Corporation Yard
Wetland Mitigation Plan

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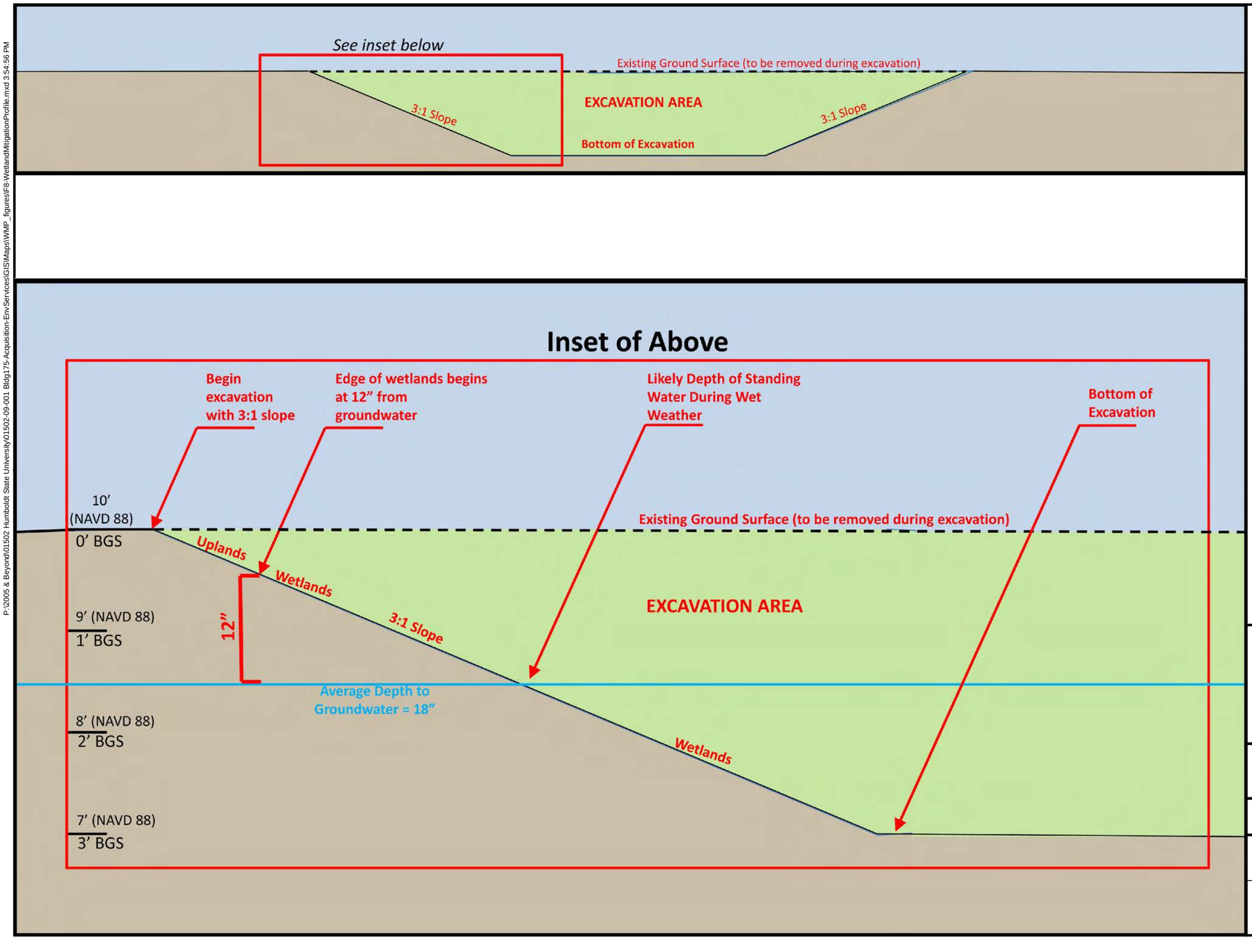

Area of Excavation

Soil

Groundwater

Excavated Ground Surface

BGS Below Ground Surface

NAVD88 North American Vertical Datum of 1988

Not to Scale

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Cartography	Date	Project #
RCH	4/5/2011	0150209001

Figure 8:
Elevation Profile of
Wetland Mitigation Excavation

Humboldt State University
Corporation Yard
Wetland Mitigation Plan