

APPENDIX X

ADAPTIVE MANAGEMENT PLAN

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Elk Valley Casino Project

Introduction

The Martin Ranch Adaptive Management Plan (AMP) is designed to provide baseline and post-project data for groundwater levels within the Crescent City Marsh and water quantity leaving the Martin Ranch property and entering the Crescent City Marsh. The plan will enable the Elk Valley Rancheria to actively monitor groundwater levels within the marsh and adjust conditions on the Martin Ranch site to maintain water conditions for outflows and groundwater levels within the Crescent City Marsh. The primary objective is to change operations and management of surface runoff, based on actual conditions, to achieve the environmental goals of the AMP. The baseline data gathered will be compared to post project data to ensure the mitigation measures implemented in the Final Environmental Impact Statement (FEIS) are adequate.

Mitigation

The FEIS, for which the AMP operations are prepared as an appendix, has evaluated the impacts of runoff resulting from the proposed development of a casino on the Martin Ranch property. Increased runoff, as a result of hardscape from the development, is identified as a potentially significant impact. The FEIS contains mitigation measures that when fully implemented will reduce those impacts to less-than-significant levels. The full implementation of this AMP will ensure the results of the mitigation measures are quantified and measurably maintained. The applicable mitigation measures identified in the FEIS follow.

SURFACE WATER HYDROLOGY

- Vegetated detention swales shall be constructed according to the Drainage and Grading Report recommendations and engineering specifications to mitigate for increased flows from Basins 1, 2, and 3. The suggested ratio is 500 feet of swale per acre of impervious surface. The vegetated detention swales are designed to capture the “first flush,” or first 0.2 inches of storm water runoff. Runoff would be captured for the most common storm event, or 1.5- to 2-year storm event. Runoff from larger storm events would be slowed by the swales. Detaining more water could deprive off-site wetlands of natural water supplies. Suggested areas to mitigate for increased flows are within parking areas, south of parking areas and roadways, and along the western edge of the fill slope adjacent to the parking area.

- Other mitigation may include but would not be limited to street cleaning/sweeping, signs discouraging dumping/littering, the use of native plants, and spill containment measures.
- The Tribe will monitor water levels within the marsh, at locations to be determined in consultation with the California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS). The Tribal Environmental Protection Agency (EPA) representative will monitor groundwater levels in a joint effort with the USFWS on a monthly basis and make the data available to CDFG and USFWS. If groundwater measurements indicate a problem caused by the Tribe's project, the AMP will be implemented as appropriate (i.e., more vegetated swales will be added).
- As required by the U.S. Environmental Protection Agency (USEPA) under the Clean Water Act (CWA), a Storm Water Pollution Prevention Plan (SWPP) shall be prepared that will address water quality impacts associated with construction and operation of the project by improving or preserving water quality. Water quality control measures identified in the Storm Water Pollution Prevention Plan shall include but not be limited to the following:

GENERAL CONSTRUCTION ACTIVITIES

- Existing vegetation shall be retained where possible. To the extent feasible, grading activities shall be limited to the immediate area required for construction.
- Temporary erosion control measures (such as silt fences, staked straw bales, and temporary revegetation) shall be employed for disturbed areas.
- No disturbed surfaces shall be left without erosion control measures in place during the winter and spring months. Disturbed areas will also have erosion control measures in place at the end of the day during summer and fall months when a chance of rain has been forecasted by the U.S. Weather Bureau.
- Sediment shall be retained on site by a system of sediment basins, traps, or other appropriate measures.
- A spill prevention and countermeasure plan shall be developed, if necessary, which will identify proper storage, collection, and disposal measures for potential pollutants (such as fuel, fertilizers, pesticides, etc.) used on site.
- Petroleum products shall be stored, handled, used, and disposed of, properly.
- Construction materials shall be stored, covered, and isolated, including topsoil and chemicals, to prevent runoff losses and contamination of groundwater.
- Maintenance areas for fueling and vehicle maintenance shall be established away from all drainage courses and wetlands and designed to control runoff.
- Sanitary facilities shall be provided for construction workers.
- Disposal facilities shall be provided for soil wastes, including excess asphalt produced during construction.
- Worker education shall be provided for all workers in the proper handling, use, cleanup, and disposal of all chemical materials used during construction activities.

- The Tribe shall educate contractors involved in the project on the potential environmental damages resulting from soil erosion prior to development by conducting a pre-construction conference. Copies of the project's erosion control plan shall be distributed at this time. All construction bid packages; contracts, plans and specifications shall contain language that requires adherence to the plan.
- Construction activities shall be scheduled to minimize land disturbance during peak runoff periods. Soil conservation practices shall be completed during the fall or late winter to reduce erosion during spring runoff.
- Creating construction zones and grading only one part of a construction zone at a time shall minimize exposed areas. If possible, grading on a particular zone shall be delayed until protective cover is restored on the previously graded zone.
- Utility installations shall be coordinated to limit the number of excavations.
- Preserving as much natural cover, topography, and drainage as possible shall protect disturbed soils from rainfall during construction. Trees and shrubs shall not be removed unnecessarily.
- Disturbed areas shall be stabilized as promptly as possible, especially on long or steep slopes. Recommended plant materials and mulches shall be used to establish protective ground cover. Vegetation such as fast-growing annual and perennial grasses shall be used to shield and bind the soil. Mulches and artificial binders shall be used until vegetation is established. Where truck traffic is frequent, gravel approaches shall be used to reduce soil compaction and limit the tracking of sediment onto Humboldt Road.
- Surface water runoff shall be controlled by directing flowing water away from critical areas and by reducing runoff velocity. Diversion structures such as terraces, dikes, and ditches shall collect and direct runoff water around vulnerable areas to prepared drainage outlets. Surface roughening, berms, check dams, hay bales, or similar devices shall be used to reduce runoff velocity and erosion.
- Sediment shall be contained when conditions are too extreme for treatment by surface protection. Temporary sediment traps, filter fabric fences, inlet protectors, vegetative filters and buffers, or settling basins shall be used to detain runoff water long enough for sediment particles to settle out.
- Topsoil removed during construction shall be carefully stored and treated as an important resource. Berms shall be placed around topsoil stockpiles to prevent runoff during storm events.
- Construction and related staging activities shall be conducted in a manner so as to avoid significant cultural resources.
- All necessary permits and approvals shall be obtained.

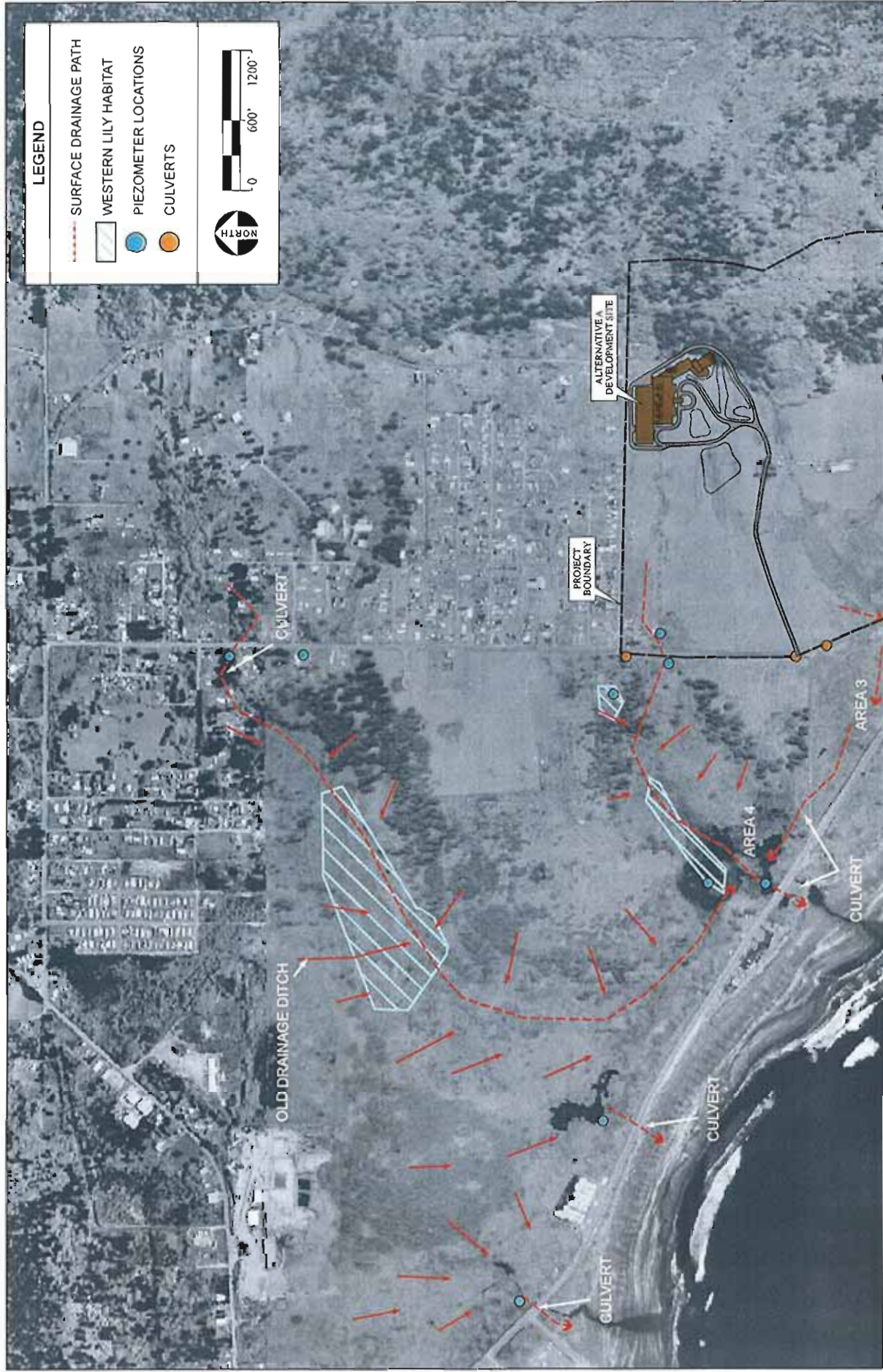
GENERAL OPERATION MEASURES

- Storm drains will be equipped with silt and oil traps to remove oils, debris, and other pollutants. Storm drain inlets will also be labeled “No Dumping—Drains to Streams and Rivers.”
- The parking lot shall be designed so that storm water runoff is directed to vegetative filter strips to help control sediment, where possible.
- Permanent energy dissipaters shall be included for drainage outlets.
- Fertilizer use shall be limited to the minimum amount necessary and shall be adjusted for the nutrient levels in the water used for irrigation. Fertilizer shall not be applied immediately prior to anticipated rain.
- Landscape irrigation shall be adjusted based on weather conditions and shall be reduced or eliminated during the wet portion of the year in order to prevent excessive runoff.
- The Tribe shall create, utilize, and update as necessary a maintenance plan for all best management practices (BMPs).

Methodology

Upon the implementation of the aforementioned mitigation measures, the Elk Valley Rancheria will augment the USFWS Crescent City Marsh monitoring goals by providing three piezometers to monitor groundwater levels within the Crescent City Marsh. An additional piezometer will be installed on the Martin Ranch, adjacent to the marsh, to actively monitor groundwater levels on site. Potential piezometer locations are shown in **Figure 1**. Exact locations and sampling protocols will be determined in cooperation with USFWS representatives. Data will be reviewed in a timely manner (not to exceed thirty days) and exchanged with the USFWS on a regular and ongoing basis. Exchange of information shall include data obtained by the USFWS relative to groundwater levels in the Crescent City Marsh. Such exchange shall be on a mutually agreed upon schedule by the Tribe and USFWS.

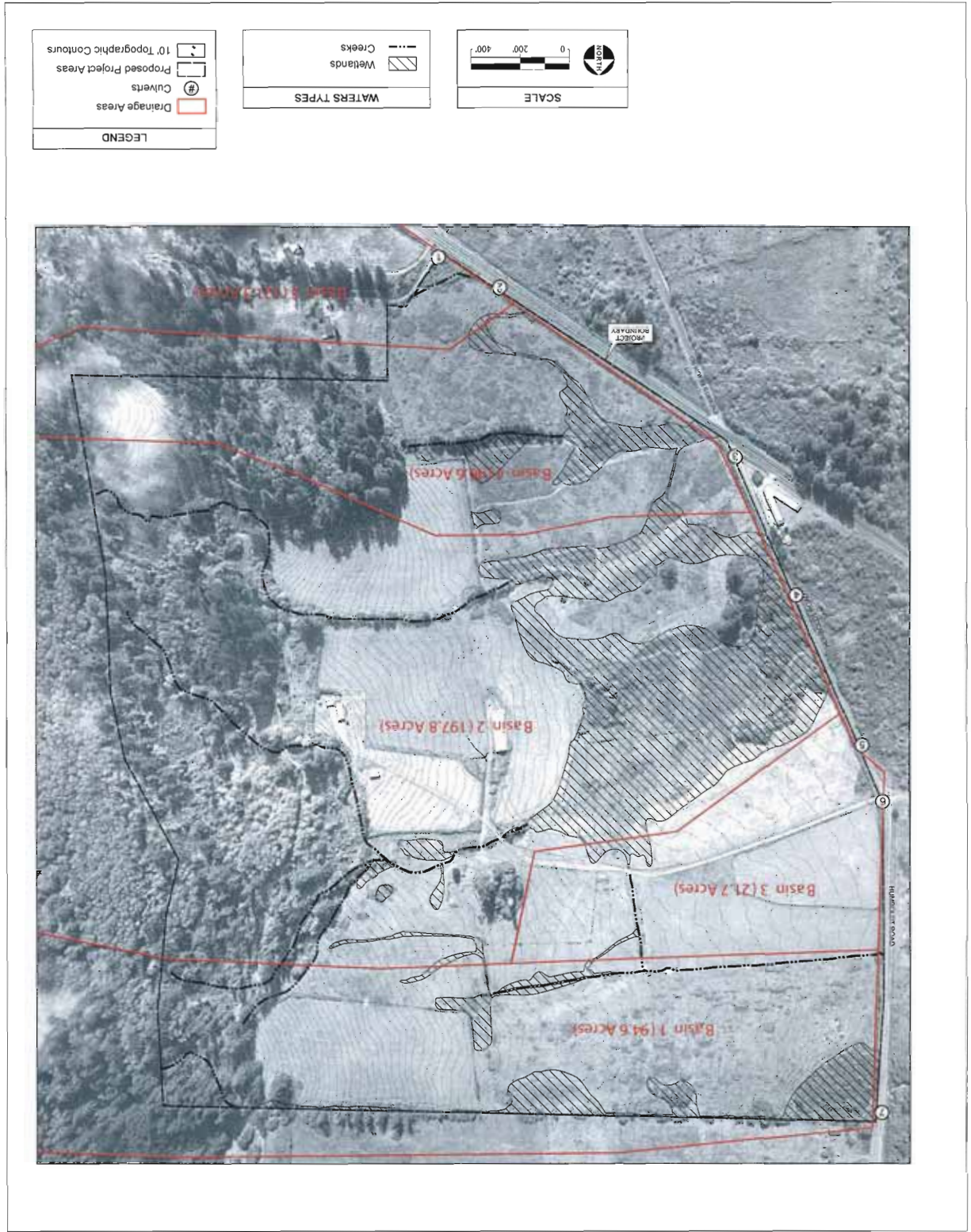
Flow meters will be used to measure water leaving Martin Ranch. Certified personnel, approved by the Tribe, will perform the collection, recording, and preservation of data. Monitoring will be event dependent and performed at key culvert locations (**Figure 2**). This data will be compared to the results anticipated from the pre-project modeling to ensure no flow issues are present that are not accounted for by the mitigation measures.



SOURCE: Imper, 1992; USFWS, 2005; AES, 2006

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Figure 1
Surface Drainage to the Crescent City Marsh



Maintenance Considerations

Maintenance of grassed swales mostly involves maintenance of the grass or wetland plant cover. Typical maintenance activities are included in **Table 1**, and have been adopted from the U.S. Environmental Protection Agency (USEPA) standards.

Table 1
Typical maintenance activities for grassed swales

Activity	Schedule	
<ul style="list-style-type: none"> ▪ Inspect pea gravel diaphragm for clogging and correct the problem. ▪ Inspect grass along side slopes for erosion and formation of rills or gullies and correct. ▪ Remove trash and debris accumulated in the inflow forebay. 	Annual(semi-annual the first year)	
<ul style="list-style-type: none"> ▪ Inspect and correct erosion problems in the sand/soil bed of dry swales. ▪ Based on inspection, plant an alternative grass species if the original grass cover has not been successfully established. ▪ Replant wetland species (for wet swale) if not sufficiently established. 		
<ul style="list-style-type: none"> ▪ Rototill or cultivate the surface of the sand/soil bed of dry swales if the swale does not draw down within 48 hours. 		As needed (infrequent)
<ul style="list-style-type: none"> ▪ Remove sediment build-up within the bottom of the swale once it has accumulated to 25 percent of the original design volume. 		
<ul style="list-style-type: none"> ▪ Mow grass to maintain a height of 3–4 inches 	As needed (frequent seasonally)	

Source: USEPA, 2006.

Levels to Trigger Action

Outflow patterns will be tested against the model found in the Supplemental Grading and Drainage Report (Appendix B to the Martin Ranch FEIS), to replicate patterns of pre-project conditions. If the outflow pattern significantly deviates (>10%) from the predicted outflow as observed from pre-project levels for constituents that can be attributed to the project, then action shall be taken to determine the source and remediate the problem. Concurrently, groundwater data that varies significantly from baseline data in the Crescent City Marsh will trigger action to correct the variation. Possible actions include: increasing the number of vegetative swales, installing collectors in the swales, or other actions designed to specifically address the impact documented as resulting from the project.