United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Mother Lode Field Office
5152 Hillsdale Circle
El Dorado Hills, CA 95762
www.blm.gov/ca/motherlode

Wetlands Operations, Maintenance, and Enhancement Program,
Cosumnes River Preserve – 2013 to 2023
(CA-180-10-51)
Finding of No Significant Impact

It is my determination that this decision will not result in significant impacts to the quality of the human environment. Anticipated impacts are within the range of impacts addressed by the Sierra Resource Management Plan (RMP). Thus, the proposed action does not constitute a major federal action having a significant effect on the human environment; therefore, an environmental impact statement (EIS) is not necessary and will not be prepared. This conclusion is based on my consideration of CEQ's following criteria for significance (40 CFR §1508.27), regarding the context and intensity of the impacts described in the EA and based on my understanding of the project:

1) Impacts can be both beneficial and adverse and a significant effect may exist regardless of the perceived balance of effects. Potential impacts include vegetation removal, soil disturbance and temporary noise and dust from commonly practiced and accepted wetland operations and maintenance activities. However, none of these impacts would be significant at the local scale or cumulatively. And these impacts would be counter balanced by improvements to the habitat used by waterfowl and other animals.

2) The degree of the impact on public health or safety. No aspects of the project have been identified as having the potential to significantly and adversely impact public health or safety. In fact, some aspects of the proposed project area benefit to public health and safety; for example, improvements to the Preserve's wetland's boardwalk and viewing platform areas.

3) Unique characteristics of the geographic area. The project area is within the Cosumnes River flood plain, which is unique because the Cosumnes is the only undammed river entering California's Central Valley. However, the project will not significantly affect the natural flooding that occurs in the area.

4) The degree to which the effects on the quality of the human environment are likely to be highly controversial effects. No anticipated effects have been identified that are scientifically controversial. As a factor for determining within the meaning of 40 C.F.R. § 1508.27(b)(4) whether or not to prepare a detailed environmental impact statement, "controversy" is not equated with "the existence of opposition to a use." *Northwest Environmental Defense Center v. Bonneville Power Administration*, 117 F.3d 1520, 1536 (9th Cir. 1997). "The term 'highly controversial' refers to instances in which 'a substantial dispute exists as to the size, nature, or effect of the major federal action rather than the mere existence of opposition to a use.'" *Hells Canyon Preservation Council v. Jacoby*, 9 F.Supp.2d 1216, 1242 (D. Or. 1998).

5) The degree to which the possible effects on the human environment are likely to be highly uncertain or involve unique or unknown risks. The analysis does not show that this action would involve any unique or unknown risks.

6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration. Wetland operations, maintenance, and enhancement activities are commonly practiced and accepted activities that are not precedent setting.

7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. No significant site specific or cumulative impacts have been identified. The proposed action is consistent with the BLM's Sierra Resources Management Plan and the Preserve's March 2008 Final Management Plan.

8) The degree to which the action may adversely affect National Historic Register listed or eligible to be listed sites or may cause loss or destruction of significant scientific, cultural or historical resources. The proposed action will not affect cultural resources listed on or eligible for the National Register of Historic Places and would not cause the loss or destruction of significant scientific, cultural or historical resources.

9) The degree to which the action may adversely affect ESA listed species or critical habitat. ESA listed species (or their habitat) are not likely to be adversely affected from the project, as concurred with by the U.S Fish and Wildlife Section 7 consultation dated September 24, 2012.

10) Whether the action threatens a violation of environmental protection law or requirements. There is no indication that this decision will result in actions that will threaten such a violation.

_____ _____

William S. Haigh Date
Field Manager

United States Department of the Interior

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EA Number: CA-180-10-51

Proposed Action: Wetlands Operations, Maintenance, and Enhancement Program, Cosumnes River Preserve – 2013 to 2023

Location: Approximately 2,809 acres in southern Sacramento County within portions of MDBM, T 5 N, R 5 E, Sections 15, 16, 17, 20, 21, 22, 25, 26, 27, and 28; (Map 1).

1.0 Purpose of and Need for Action

1.1 Need for Action

The U.S. Bureau of Land Management (BLM) is one of seven land-owning partners at the 46,000-acre Cosumnes River Preserve (Preserve). The BLM serves as the lead Federal agency at the Preserve, as defined by the Preserve Partners in the November 2008 Cooperative Management Agreement, as amended. The BLM provides a Preserve Manager's position whose role is to oversee the Preserve's agricultural operations and all of the Preserve Partner's activities as they relate to fish, wildlife, plants and other natural resources values at the Preserve. The BLM also provides a Wetlands Manager's position whose role is to implement the Preserve's comprehensive wetlands program.

Approximately 2,800 acres within the township/sections described above are owned and/or actively managed by the BLM and are subject to analysis in this environmental assessment (EA). This 2,809-acre area contains approximately 1,000 acres of intensively managed freshwater wetland habitat and 1,000 acres of organic rice. These wetland and rice acreages require continual day-to-day operations, maintenance, enhancement and restoration activities in order to produce optimal breeding, feeding, and sheltering habitat for tens-of-thousands of resident and wintering migratory waterfowl and other waterbirds. Without on-going, day-to-day operations, maintenance and enhancement activities in the individual wetland ponds and units, rank overgrowth of vegetation such as cattail (*Typha* spp.) and

bulrush (*Scirpus* spp.) would substantially degrade, and eventually ruin, the quality of the habitat. Additionally, deteriorating levees and roads, failing water delivery systems, and invasive species such as thistles (*Cardus* spp., *Centaurea* spp., *Cirsium* spp., and *Silybum* spp.), perennial pepperweed (*Lepidium latifolium*), and water primrose (*Ludwigia peploides*) would have a severe adverse effect on the native wildlife and plants that rely upon the mosaic of rice fields and freshwater wetland habitats and their associated uplands for their survival.

The proposed action analyzed in this EA covers all of the expected day-to-day operations and maintenance (O&M) activities needed to properly manage this 2,809-acre area of the Preserve over the next 10 years. Also analyzed under the proposed action are several anticipated enhancement and restoration projects that are needed in individual wetland ponds and units within this area over the next 10 years.

The 2,809-acre area has been organized into a 1,000-acre organic rice complex and seven individual wetland units (Willow Slough, Lost Slough, Lost Slough East, Twin Cities, Barn Ponds, Corral Ponds, and Cougar Wetlands) made up of 45 individual ponds.. This area includes approximately 24 miles of access roads and levees, water delivery systems, and a variety of other surrounding upland and riparian habitat and other man-made features (Map 2).

This EA is written at the programmatic level; it is intentionally broad in scope and attempts to analyze the environmental impacts of all anticipated activities needed to properly manage the 2,809-acre area of the Preserve over the next 10 years. The purpose of the EA is to assist the BLM and its Preserve Partners in meeting the requirements of the National Environmental Policy Act (NEPA) and other applicable Federal and State environmental laws, regulations and policies. The other Preserve Partners are either non-governmental organizations or state and local government agencies that do not have federal requirements per se, but may need to produce environmental studies that meet federal requirements in order to use federal funding, receive required federal permits, or use federal lands and other resources.

It is anticipated that day-to-day O&M—as well as the proposed wetland enhancement and restoration projects—will require additional compliance with other federal authorities including Section 7 of the Endangered Species Act (Section 7), Section 106 of the National Historic Preservation Act (Section 106), and Section 404 of the Clear Water Act (Section 404). The “nexus” expected to trigger NEPA

and other federal requirements includes the use of federal grants (administered by the US Fish and Wildlife Service and other federal agencies), the need for Section 404 permits (issued by the US Army Corps of Engineers), and the involvement of federal lands, workers, and equipment. Of note, approximately 1,789 acres potentially affected by the proposed actions analyzed in this EA are owned by the U.S. Bureau of Land Management's Mother Lode Field Office (BLM). Analysis of actions carried out by BLM employees, using BLM-owned equipment on non-federally owned properties, is addressed in the Cumulative Impacts section of this document.

With regard to the larger-scale wetland enhancement and restoration projects analyzed in this programmatic EA, the BLM and its Preserve Partners can readily develop NEPA documents with more detailed project-specific analysis that tier off of this EA. These tiered NEPA documents would be prepared as specific projects are funded and project designs and plans are finalized. It is also envisioned that project-specific Section 106, Section 7, and other requirements will be met, where applicable, in conjunction with these tiered NEPA documents. The analysis in this programmatic EA could also help Preserve partners to meet requirements under CEQA and other state laws where applicable.

The 10-year "sunset provision" for this EA is an estimated timeline that can be shortened or extended based on conditions at the time an action is implemented. It is assumed for now, however, that conditions (*e.g*., environmental, legal requirements, land ownership, *etc*.) at the Preserve generally will have changed enough in 10 years to warrant a fresh NEPA analysis or other courses of action.

1.2 Conformance with Applicable Land Use Plans and Other Guiding Documents

The proposed action is in conformance with several plans and guiding documents. The BLM's February 2008 Sierra Resource Management Plan (RMP) is the overarching Plan for management actions in the entire Mother Lode Field Office's jurisdiction. The RMP states that one goal for the Mother Lode Field Office-managed area is to "*Maintain, improve, or enhance native fish and wildlife populations and ecosystems upon which they depend.*" (USDI, Bureau of Land Management 2008) The Objectives stated under that goal include:

1) "*Restore disturbed or altered habitat for all life stages of native wildlife species, aquatic species, macroinvertebrates, special status species, and native fish species, including spawning fish passage habitat,*" and

2) "*Maintain or improve numbers of native fish, macroinvertebrates, and other aquatic species,*" and

3) "*Maintain or improve desired native plant communities while providing for wildlife/fisheries needs and soil stability.*"

Another goal stated in the RMP for vegetative communities is to:

1) "*Promote a healthy and diverse mix of plant communities and provide a wide spectrum of organisms and ecosystem processes for the needs of plants, animals and humans.*"

One of three actions for promoting vegetative communities is to:

1) *"Control and eradicate invasive species in important habitat for special status species. Invasive species management…would be designed to prevent or minimize damage to rare biological resources."*

The proposed goals, objectives and actions for the Preserve's managed wetlands program also are stated in the Preserve's March 2008 Final Management Plan (Kleinschmidt 2008). Sub-goal #4 in the Natural Resources Stewardship chapter states: *"**Maintain and restore a mosaic of freshwater wetland habitats (seasonal and permanent) that support native species.**"* Some of the objectives of sub-goal #4 include:

1) "*Maintain a minimum of 1,000 acres of seasonal managed ponds and evaluate the need for more managed wetlands ponds on a case-by-case basis*;"

2) "*Restore mosaic of tidal freshwater wetlands and associated habitats on tidal sloughs;*"

3) "*Restore and/or create freshwater wetlands to support waterfowl, cranes, and other wetland species;*"

4) "*Ensure that habitat requirements of special status species are incorporated into wetland restoration and management plans as appropriate;*"

5) "*Minimize the impact of non-native invasive species in wetlands through early detection and control efforts;*" and

6) "*Maintain and enhance water quality*."

2.0 Proposed Action and Alternatives

2.1 Proposed Action

The proposed action is to implement a strategic, managed freshwater wetland and rice operation, maintenance, enhancement, and restoration program on 2,809 acres at the Preserve over the next 10 years. The sunset date for this EA is ten years from the signing date of the decision record of this EA. After this time, this EA will need to be reviewed to determine whether it is still adequate.

This wetlands program would be implemented annually in accordance with a formal, written Wetlands Management Plan (Plan) that would be prepared annually by the Wetlands Manager, approved by the Preserve Manager, and distributed to all of the Preserve's Partners for review and comment. Four components would be covered in the Plan: 1) operations and maintenance of existing wetlands, 2) rehabilitation of wetlands units and ponds, 3) wetland habitat enhancement, and 4) wetland restoration and construction. Each of these components is more fully explained in detail below. The organic rice operation is overseen by the Preserve Manager with the assistance of the Wetlands Manager. No formal written plan exists or is necessary beyond the renewable lease agreements with the local farmers that lease the land and grow the organic rice for profit. At least once annually, usually in April or May before the start of the growing season, the Preserve Manager and staff meet formally with the lessees and others, such as the mosquito vector control district, to review the rice operations and plan the coming year's course of action for that growing season. The rice operation is more fully described below.

2.1.1 Operations and Maintenance of Existing Wetlands

Currently, there are approximately 1,000 acres of managed freshwater wetlands at the Preserve. These acres are configured into 7 wetland units with a total of 45 managed ponds surrounded and bisected by approximately 26 miles of roads and levees (Map 2). The activities described below would occur on all 1,000+/-acres of managed wetlands in all wetland units and on all ponds, roads and levees.

Management activities would include the annual O&M, and day-to-day management of seasonal (*i.e.,* fall/winter flooded and dry in the summer) and permanent wetlands and their associated access road and levee systems. Standard O& M activities generally include fall flooding, spring drawdowns (*i.e.,* draining), spring and/or summer irrigations, discing, and mowing as the primary tools for controlling successional stages of desirable wetland vegetation. Measures to control undesirable terrestrial and

aquatic weed species include manipulating water levels (*i.e.*, timing, duration, and depth), discing, mowing, excavation of excessive plant and sediment materials, grazing, and prescribed fire. Herbicide treatments would also be used but the effects of these actions would be analyzed under a separate NEPA document and in accordance with other applicable federal regulations, laws, and policies.

Each year approximately 20% (on average about 150-200 acres) of seasonal and permanent wetland habitat would be mowed, disced, burned and/or otherwise treated with herbicide or other commonly practiced methods. On a rotation of approximately 2-4 years, up to 5% of the permanent wetland ponds (on average about 10-45 acres) would be taken out of production (drained, mowed, disced, burned or otherwise treated and fallowed), and two seasonal wetland ponds would be converted into permanent ponds that support resident nesting waterfowl and their broods (aka "brood ponds"). Herbicide treatments in wetland units would be used when mechanical or cultural treatments (*i.e.*, mowing, discing, burning, grazing, and hand treatments) alone proved ineffective or were considered impractical due to the ecology and biology of the plant species (*e.g.*, perennial pepperweed cannot be controlled through mechanical means alone). The use of herbicides and other weed control methods at the Preserve would be addressed every three years in a separate EA and in a separate Endangered Species Act Section 7 Consultation with the U.S. Fish and Wildlife Service. The documents currently exist and are due for renewal in 2011.

Approximately 36,000+/- linear feet of swales within wetland ponds (approximately 17 acres), several (5-10) miles of adjacent slough habitat would be monitored for infestations of non-native upland and aquatic vegetation. As required, invasive plant species, such as water primrose and other highly invasive aquatic plants, would be removed using mechanical means and direct herbicide applications, as needed, and as described in the Preserve's "Integrated Weed Management at the Cosumnes River Preserve" EA and the associated Endangered Species Act Section 7 Consultation document.

<u>Maintenance of Roads, Levees, and Islands</u>

Access roads, levees and islands would be mowed, graded, contoured, repaired, graveled, treated, and otherwise maintained as needed to provide for vehicle, equipment, and personnel access, safety and infrastructure inspections, and nesting and foraging habitat. Generally, mowing occurs at least twice per year using standard farming equipment such as flail and rotary mowers pulled by appropriately sized tractors ranging in size from 20 to 100 or more horsepower. Vegetation removal on roads, levees, and islands could occur year-round depending on weather. Typically, it would begin in mid-March and would continue regularly, as needed, through October. The spring mowing (March-April) would be

done by mowing down the center of the road or levee top to provide vehicle access and facilitate the inspection and repair of road or levee damage caused by rodents or winter flooding. Late spring mowing (after brown up – typically May-June) again facilitates vehicular and equipment access, inspections, and damage repair, but would also reduce catastrophic wildfire hazard by removing excessive vegetation and fuel loads. Late summer and early fall mowing (prior to wetland flood up-typically August-September) would improve the waterfowl habitat by making roads, levees and islands accessible to resting and loafing waterfowl and waterbirds. In most locations, early fall mowing would be done in two or more passes in order to mow the slopes of the levees and islands to, or below, the mean water surface elevation. Additionally, mowing would increase foraging habitat along the roads, levees, and islands for geese, coot, and other herbivorous birds that eat the tender grasses and broadleaf weeds that germinate shortly after the winter rains begin. Road and levee repair work is further described below in this document.

Mowing, Discing, and Manipulating Habitat in Pond Interiors

With the exception of permanent "brood" ponds (which have water in them all year), approximately 20% of the interior of each pond would be either mowed, disced, or otherwise manipulated in late summer or early fall before flood up. Generally, that equates to approximately 100+/- acres being mowed and approximately 100+/- acres being disked or otherwise "disturbed" annually using regular farming equipment. Mowing alone would generally be used in swales to remove excessive buildups of vegetation such as cattails and bulrush. Mowing would also be used to open dense growths of vegetation and create habitat diversity that waterfowl prefer. Discing usually entails using a stubble or finish disc to turn the soil over to a depth of 4-10 inches in order to maintain the optimal conditions for succession of moist soil plants such as swamp pricklegrass (aka swamp timothy or swamp grass) (*Crysis schoenoides*), pricklegrass (*Crypsis vaginiflora*), bearded sprangletop (*Leptochloa fusca* (L.) Kunth ssp. *fascicularis* (Lam.) N. Snow), watergrass (aka barnyard grass) (*Echinochloa crusgalli*), and dotted smartweed (*Polygonum punctatum* Elliot). Discing would also be used to reduce dense stands of cattails, bulrush, and other species that become too dominating in ponds; this is especially effective when followed by two to three months of exposure to the sun to thoroughly dry and kill the plants. A combination of mowing, discing, and prescribed fire is highly effective at controlling excessive amounts of vegetation and reducing fuel loads within wetland units and ponds. The Preserve would use prescribed fire in cases where it can obtain the appropriate air quality permits and it could be safely employed.

Road and Levee Repairs

Beaver, muskrats, ground squirrels, and other burrowing animals continually damage roads and levees at the Preserve. Beaver frequently build lodges in the middle of ponds, however, in most cases the beaver and other rodents usually burrow into access roads and levees. The resulting holes and cavities vary in size and depth and they can frequently give way without warning beneath the weight of vehicles and equipment or even people, thereby resulting in serious safety issues for staff. Smaller holes and depressions would be filled with surrounding soil and/or gravel (*e.g.*, ¾-inch road base) that is purchased locally. Gravel and soil are brought in via the existing access roads using tractors, backhoes, ATVs/UTVs, pickup or flatbed trucks, and/or dump trucks. Usually, large loads are delivered via dump truck and stockpiled at convenient locations throughout each wetland unit (for example, the Barn storage area in the Barn Ponds Unit or near pumps W1 and W2 at the Lost Slough Unit). Pre-staging gravel and soil in strategic locations reduces the amount of wear and tear on the roads and levees during wet weather (when most repairs are needed), reduces travel and repair times, and reduces overall maintenance costs.

Annually, the Preserve encounters about six sites that are significantly damaged by beavers; usually these sites are immediately adjacent to permanent ponds which are where the beaver generally tend to occur. The larger damaged areas would be repaired by excavating and/or collapsing the cavities and tunnels using a backhoe or, in more difficult circumstances, an excavator with a longer reach. The work is typically performed from the existing access road or levee top unless the pond is dry and the work could be performed from the inside of the pond when needed. The damaged section of the road or levee top is restored to the existing grade by filling with on-site soil that is usually collected within a few feet of the damaged site or with a mix of soil and gravel. Each layer of fill, which can vary from four inches to one foot in thickness, would be compacted using a gas powered hand-held compactor or sheep's foot compactor as needed. The repaired are is left to naturally re-vegetate, which generally occurs rapidly due to the surrounding moisture from the wetland ponds or rice fields.

Flood Up

Wintering migratory waterfowl and waterbirds require a diet high in carbohydrates, especially following fall migration, and a diet high in protein, immediately preceding spring migration and the breeding season. Ponds that are scheduled to be managed as moist soil ponds would be irrigated at least once during the spring or summer months to promote growth of desirable seed-producing vegetation, which in turn would produce a carbohydrate-based food source for migrating waterfowl. Summer dry ponds provide little seed production; however, ponds managed as summer dry habitat would provide optimal substrates in the form of low growing vegetation and mud flats where invertebrate populations multiply rapidly to produce a diet for migratory and nesting waterfowl that is high in protein.

Approximately 85% of the managed waterfowl habitat would be "seasonal," meaning dry in the summer and flooded in the fall for winter migratory waterfowl and waterbirds. Ponds within each wetland unit could vary in size up to about 60 acres. The depth of each pond may vary up to 4 feet deep, depending on the pond's configuration and topography. From September thru December, ponds are flooded weekly on a rotational basis. The ponds typically take 3-5 days to fill depending on size and depth of pond, diameter of valve and pipe, horsepower rating of pump, distance from pump, and height in feet the pump is required to lift the water from the source.

Drawdown

Seasonal wetlands management involves a period of time where water is drained ("drawn down") from each pond. The drawdown for each pond would generally occur over a period of three days to three weeks and would coincide with targeted species habitat needs or with the optimal germination periods of preferred food plants. With the exception of the ponds that are scheduled to remain flooded as permanent ponds, the water would be drawn down in the spring. Generally speaking, beginning in March, ponds would be drawn down each week through the middle of May. Ponds scheduled for moist soil management to produce food crops would be drawn down generally in late-April or early to mid-May. Drawdowns would be done by removing boards from water control structures at the lower end of each pond. The boards in a water control structure are 2x6-inch boards that can be removed individually to control the depth of the water in each pond. One standard drawdown technique is to lower the pond level 18-24 inches in 2-3 days and then draw down the remaining water surface

elevation slowly, or allow the remaining water to evaporate. This technique would allow waterfowl and shorebirds to feed for two weeks or more on the concentrated food supply in the lowered pond and would create maximum "shoreline" and mudflats that are particularly attractive foraging areas for shorebirds. Another technique that would be employed is to remove all of the water off the pond as quickly as possible by removing all of the boards from the water control structure at once; this would be particularly true for moist soil units. Water that is released from managed wetland units is returned to the original tributary source through a system of drain ditches or swales.

Beaver Debris and Beaver Removal

Every year during the draw down and flood up beavers build dams of sticks and mud in water control structures and inlet valve areas beginning the very first night after the boards are removed or the pumps are turned on. Beavers clog pump screens; they build dams across supply or drainage ditches, impede water flow to and from wetland units or within ponds, and burrow into roads and levees. Each year this is a moderately serious problem in the permanent ponds. Beaver debris removal would be carried out using hand tools such as shovels and manure rakes. In extreme cases a backhoe is required to remove the bulk of the debris from the structure and the remaining debris would be removed by hand. All backhoe work to remove beaver debris would be done from the access road or the top of the levee. It can take up to 30 minutes or more to remove beaver debris from one structure. If manpower to facilitate the drawdown (remove beaver debris) is not available, or debris removal becomes too problematic and time consuming, beavers would need to be removed through lethal means. Annually, the Preserve would obtain a depredation permit from the California Department of Fish and Game. Typically, it is necessary to remove about six to eight problem animals using a government trapper or authorized Preserve staff. The method of take would be by firearm or live trap to eliminate the possibility of incidental take of non-target species.

Pumps and Pump Maintenance

Currently there are eight lift style pumps that service the wetlands and eight lift style pumps that service the rice farming operation, in addition to other pumps and wells (*e.g.*, Pump 9 at the Grey House) located around the Preserve (Map 2). Lift style pumps have six basic components: a stand, shaft housing, an electric motor, a shaft, an impeller, a bowl, and a screen to filter debris and prevent larger fish from being sucked up by the pump. The motor turns the vertical shaft that spins the impeller which is fitted inside of the bowl. The water is forced up through the shaft housing that

surrounds the vertical shaft to the outlet which is connected to 15-18 inch diameter underground PVC pipes. The water enters the ponds via the PVC pipes through a series of 12-20 inch diameter alfalfa-style valves at the upper end of each pond (Map 2).

Pumps range in size from 7.5 horsepower to 40 horsepower and deliver 1,500 to 3,000 gallons per minute of water from tidal sloughs connected to the Mokelumne and Cosumnes Rivers. No water is drafted directly from either river. Each pump requires regular and periodic maintenance. Most pumps incorporate an oil-drip system which delivers oil to the pump shaft bearings. Pumps that incorporate this drip system have a one half to one gallon oil reservoir mounted to the pump that require filling if it is less than half full. The oil drip must be inspected each time the pump is turned on to be sure it is dripping once every 4-9 seconds. Additionally, most electrical pump motors require the internal bearing to be greased twice a year. When pumps experience mechanical or electrical problems that the Wetlands Manager cannot diagnose and repair, a qualified pump repair company is called to diagnose the problem and repair the pump.

Under the proposed action routine pump operations and maintenance activities would continue to occur on a daily basis. Additionally, weedy vegetation would continued to be removed within a 25-50-foot radius around each pump and electrical stand using hand or power equipment including, but not limited to, weed whackers, hand saws, machetes, and chainsaws. Removal of vegetation would facilitate access and maintenance of the pump and reduce fire danger. Debris regularly would be removed from the pump intake screens using hand tools. Additionally, depending on the need, accumulated silt and debris would be removed from immediately around the pumps using a backhoe or long-reach excavator. The equipment would access the site via established access roads and levees and perform the work from the top or other designated high ground. Approximately every five years, or as needed, the main sloughs or main supply and drainage ditches would be excavated to remove silt and vegetation using a long-reach excavator, especially immediately adjacent to Pumps 3, 4, and 6, and pumps used in the rice operations like the Twin Pump #1 (Map 2). The excavator would stage and access the site using established roads and levee and at pre-designated staging and established access points (Map 3). Excavated material would be placed on the ground directly outside of the embankment. Piles of excavated material would be smoothed when dry by a bulldozer or backhoe which accesses the area via the established roads and levees (Map 3). In the unlikely event that equipment required refueling or needed to stage overnight, staging and refueling would take place at one of several pre-designated staging sites (Map 3).

Pump Replacement

Pumps are used for long hours and are continually exposed to the weather and to the corrosive effects of water, sand, and silt that is pumped through them. Fifteen to twenty years is a reasonable life expectancy, although many pumps are used far longer than that due to the high cost of replacement. Pumps 1, 2, 7, and 8 (Map 2) are 15 or more years old and do not produce adequate supplies of water in a timely manner to properly manage the wetland units they support. Under the proposed action pumps would be pulled every 2-5 years by a qualified and licensed pump repair company, beginning with the least efficient pump. This would be achieved by detaching the pump assembly from the stand and/or pipeline and using a truck mounted crane to lift the pump assembly straight up and away from the pump stand. The pump assembly would be inspected and diagnosed by repair personnel on site and replaced or repaired as necessary. If major repairs or pump assembly (bowl, shaft, and/or housing) replacement is required, the pump assembly would be taken off-site to the repair shop. If the electric motor alone needs repairs or replacement it would be removed separately from the pump assembly using the truck mounted crane and repaired or replaced as needed. All vehicles and heavy equipment that are required to perform the work would access the site via established roads and levees (Map 3). In the unlikely event that equipment required refueling or needed to stage overnight, staging and refueling would take place at one of several pre-designated staging sites (Map 3).

Water Control Structure Maintenance and Replacement

Water control structures require minimal maintenance once they are installed since they are primarily constructed of concrete and pipe and are completely buried with only a small portion of the structure exposed. To facilitate access and make the structures more visible, weedy vegetation would be routinely removed within about a 10-foot radius to a height of less than six inches around the water control structures using mowers or hand-held weed whackers. In addition, the water control structures may require removal of beaver debris as described in the *Beaver Debris and Beaver Removal* section above. In certain circumstances (*i.e.*, where rodents have burrowed into the embankment), small amounts of soil, gravel or rock would be replaced and/or refreshed around the bases and sides of some structures, as needed, to ensure the continued integrity and stability of the water control structure and surrounding embankments.

There currently are 30 metal water control structures at the Preserve that were installed 15 or more years ago when most of the wetlands were constructed. These structures have reached their intended lifespan and, except for a few that are not essential; these structures would be replaced at the rate of about 5-10 per year with modern cement structures equipped with PVC culverts that will last indefinitely. The process for their replacement would be to position the new structure, its boards, and its culvert near the failing metal structure scheduled for replacement. The metal structure and culvert would be removed with a backhoe and later sold for scrap metal or disposed of properly at an approved landfill. The new water control structure (including the culvert) would be installed using a backhoe or excavator to a depth of approximately 18 inches below the pond bottom grade to allow for possible future pond deepening and swale construction. The replacement structure and culvert would be positioned and soil would be backfilled and compacted around them. The sides of the levee where the new structure and culvert are installed would be restored to the original slope and grade which is generally 1:5 and compacted. Vegetation would be allowed to grow back naturally on the disturbed area. Some water control structures require additional rock reinforcement using larger rock immediately around the structure to reduce or eliminate erosion and allow easier access for board installation and removal.

Water Valves Maintenance and Replacement

These valves are designed for use in surface irrigation systems to provide effective shut-off and regulation of flow from underground pipelines to wetland ponds or rice checks. They generally require minimal maintenance once they are installed as they are primarily constructed of iron pipe with bronze screws that are corrosion resistant, and are completely buried with only a small portion of the riser exposed. To facilitate access and make the valves more visible, vegetation would be routinely removed within about a 5-to-15-foot radius around the valves using mowers or hand-held weed whackers. In addition, the valves may need rock or cobble splash blankets would be installed or refreshed surrounding the pipe riser with a minimum 3-foot diameter to prevent erosion.

There currently are 43 valves; ten of those have risers that are too short. When a pond with a short riser is filled to the highest possible level, the valve is submerged under water. This makes the valve both difficult to locate and to use for water management. Additionally, an open submerged valve causes back flow into the pipeline system, potentially draining the wetland like a siphon until the valve

is above the surface water level. Short risers would be replaced with longer risers utilizing valve extension kits as time and funding allow.

Rice Field Management

Currently, the Preserve has approximately 560+/- acres of rice fields owned by the BLM and The Nature Conservancy and 417+/- acres owned by Sacramento County. The Preserve leases these lands to local farmers that grow organic rice for a profit. The income generated from the leased rice land is the primary source of income for the Preserve. The Preserve operates the organic rice farming as part of its wildlife-friendly farming program and its wetlands program. In the summer, the rice fields are planted to organic rice. In the winter, the rice fields are flooded to support wintering migratory waterfowl and waterbirds. Essentially, the Preserve's 1,000+/- acre wetlands program doubles to 2,000+/- acres in the winter when most of the wintering waterfowl and waterbirds are present. On a rotational basis approximately one quarter of the rice acreage is fallowed annually. The fallowed rice fields are managed as shorebird habitat using summer irrigation and discing and then brought back into production the following year.

Management activities on the cultivated rice fields would include standard farming practices using standard farming equipment that is necessary to prepare the soil, plant the crop, and then harvest the crop. Typical management activities that relate specifically to maximizing wildlife habitat in the rice land include discing, rolling, leveling, pump maintenance and repair or replacement; summer flooding of fallow fields to provide shorebird habitat, winter flooding to provide additional habitat for migrating waterfowl and to facilitate rice stubble decomposition, maintaining water delivery systems including pipelines, water control structures, and delivery ditches as described above. Essentially, the routine, day-to-day operations, maintenance, and enhancement of the rice acreage is no different than the wetland ponds and units with the exception that a cash crop is produced rather than a wetland plant crop.

2.1.2 Rehabilitation of Wetland Units

The rehabilitation component of the proposed action would occur within the existing wetland units and ponds on the Preserve. Wetland units that become overgrown with emergent vegetation, have severely degraded roads or levees, or topography that has been altered significantly by flood events or damaged

by rodent activity would be rehabilitated. Any unit or pond that requires rehabilitation would be dewatered a minimum of 30-60 days prior to any heavy equipment activity. All heavy equipment would access the sites via designated access roads and levees. Equipment would use pre-determined staging and fueling areas for each project as needed (Map 3). Rehabilitation actions may include discing using heavy stubble discs and/or finish discs to knock down or incorporate vegetation, burning to remove excessive debris, and heavy equipment such as dozers, scrapers, backhoes, or other earth-moving equipment as required to repair roads and levees, replace and/or improve failing water delivery systems, construct or reconstruct swales or islands, and restore topographic integrity throughout the pond or unit.

2.1.3 Wetland Habitat Enhancement

The habitat enhancement component of the proposed action would occur within the Lost Slough Unit, the Lost Slough East Unit, and the Barn Ponds Unit.

Lost Slough Unit

Under the proposed action, approximately 57 acres within the Lost Slough Unit in ponds 3b, 3c, 4a, 4b, 7, 7a would be enhanced through a series of projects described below (Map 5). Individual enhancement projects would be combined where practical to minimize the number of disturbance events and the need to stockpile soil.

Pond 3B

The low check that separates Pond 3 from 3B would be removed, to combine ponds 3B and 3 into a single unit. The 2,000+/- cubic yards of soil from the levee removal would be utilized to enlarge or enhance the existing islands in Pond 3, or be stockpiled on site. The water control structure at the south end of the pond would be replaced with a cement structure, as described in the Water Control Structure Maintenance and Replacement Section above. A new 12-inch water valve would be placed in Pond 3 just inside its east levee to facilitate flood up. This would require the excavation of approximately 100 feet of trench and 100 feet of 16” PVC pipe that would tie into the existing pipeline currently located east of Pond 3B. Standard pipeline installation would be carried out as described above in the Rehabilitation of Wetland Units section.

Pond 3C

This 13-acre pond would be deepened primarily at its north and south ends. The movement of 4500+/- cubic yards of soil would create areas of varying depths within the pond, all of which would connect with the existing swale to facilitate drainage. The soil would be used to create two large islands within Pond 3C, strengthen the interior of the perimeter levees and enhance existing islands in pond 1.

Pond 4, 4A and 4B

The levees bordering north and south of Pond 4A would be removed, except for two portions that would be enlarged and remain as islands, in order to incorporate ponds 4, 4a and 4b into a single pond. About 80% of the north third of the pond would be deepened an average of 6 inches. That area would be connected to the outlet in the southwest corner with a swale, a branch of which would run from the outlet of Pond 5 on the east side. The 3,000+/- cubic yards of soil from the pond deepening and swale construction would be used to strengthen and widen the north levee of Pond 4, enlarge or enhance the existing islands in Pond 4, or be stockpiled on site. An approximate 1:6 slope ramp would be constructed near the east end of the improved levee to allow easy access of farm and heavy equipment that would be used for mowing and other habitat work near the boardwalk. The resulting pond would be called Pond 4.

Pond 7

This 28 acre pond would be enlarged by removing an average of five inches of soil (approximately 4,700+/- cubic yards) from 7 acres along its south and east sides using standard heavy machinery as described above. The material excavated would be used to strengthen the north levee, enhance the existing islands, create an additional large island inside the pond, or stockpiled near the southeast corner of the pond for future use at the Preserve.

Pond 7a

This 8-acre pond would be deepened approximately six inches primarily in the west and north portions of the pond. The movement of 3200+/- cubic yards of soil would be used to create areas of varying depths within the pond. Any additional soil not used for topographic features within the pond would be used to strengthen the north levee and/or to enlarge and enhance existing islands in adjacent ponds (Ponds 2 and 3).

Boardwalk Replacement and Rehabilitation

The boardwalk and viewing platform is currently constructed from treated lumber planks that are nailed into place. The existing wooden planking is severely weathered, resulting in substantial cracking and infrastructure weakening throughout the boardwalk. As the weather changes from cold and rainy to hot and dry, the nailed pressure treated lumber shrinks and swells and causes the nails to come out of the planks, thereby creating tripping hazards for visitors and staff. As needed, the nails are driven back into the wood, however, the long-term solution to the problem of 20-year-old lumber that is dry and cracking with protruding nails is to replace the planking on the boardwalk and the viewing platform with new wood or composite-type products such as "Trex" decking material that is screwed into the framing. As needed, sections of the boardwalk and viewing platform would be replaced with the new material using the existing support framing and structures.

Franklin Borrow Ditch Expansion Project

Over four acres of old ditches and culverts on the east side of the Lost Slough Unit and existing concrete trail system would be enhanced to turn it in to a larger, more productive wetland and riparian habitat area equipped with an extended public use trail that would terminate at a new parking lot on the east side of Pond 7. The public use trail would include up to a ¼-mile extension of the existing concrete trail, sitting and picnic areas, wildlife viewing and photography areas, and areas for information kiosks along the trail and immediately adjacent to Franklin Blvd. Elevations of the existing canals and ditches would dictate exactly how much soil would need to be moved or removed in order to make the area feasible for the additional wetland and riparian habitat and visitor use. Since the exact details of the Franklin Borrow Ditch Expansion Project are not known at this time, the effects of this proposed action would be addressed in a separate supplemental environmental assessment tiered off of this Programmatic Wetland EA.

<u>Lost Slough East Unit</u>

Within the Lost Slough East Unit, approximately 70 acres of wetland habitat would be enhanced in ponds 10a, 11, 12 and 14 by lowering pond bottom elevations in pond 10a, improving existing loafing islands in ponds 11 and 12, and moving or removing approximately 5,000+/- cubic yards of soil in the southeast corner of pond 14 to create a nesting or loafing island and to restore topographic relief within that portion of the pond (Map 6). Additional details for each action are provided below.

Pond 10A

This 9-acre pond would be deepened about one foot at its north and south ends (2 acres at each end) so it can better function as a brood pond and to slow the infestations of cattails. The water control structure at the south end would be replaced with a new cement water control structure and PVC culvert. A swale would be constructed from the water inlet valve in the northeast corner of the pond to the south water control structure and from that point to the outlet water control structure in the northwest corner of the pond (Map 6). The cement outlet structure in the northwest corner would be lowered 1 foot to facilitate complete draining of the pond as needed. The 5,500+/- cubic yards of soil removed from the pond would be used to construct one large island in Pond 10A and enlarge and enhance the two exiting islands in Pond 10. Any extra soil would be used to enhance islands in Ponds 11 and 12 (Map 6), or stockpiled in the old silage area near the Farm Center (Map 3). Access, staging and fueling areas would be pre-determined on existing permanent routes.

Pond 11 & 12

Currently, Ponds 11 and 12 have constructed islands in their interiors that are in need of remediation due to the constant effects of water, wind and waves as well as the wear and tear they receive from resident and migratory waterfowl. The islands would be enlarged, re-contoured and shaped using standard farm and heavy machinery. The soil required for the project would be generated from adjacent ponds where projects are concurrently taking place or from stockpiles of soil generated from previous nearby projects. No soil would be imported from off the Preserve.

Pond 14

This 37-acre pond would be enlarged by removing an average of 10 inches of dirt (4,020+/- cubic yards) from 3 acres near its southeast corner. The soil would be used to create two large islands in Pond 9. Any extra soil would be stockpiled in the old silage area near the Farm Center (Map 3). Access, staging and fueling areas would be pre-determined on existing permanent routes.

<u>Barn Ponds Wetland Unit</u>

Within the Barn Ponds Unit approximately 47 acres of habitat would be enhanced in ponds 15, 16, 23, and 24 through a series of projects as described below (Map 7).

Pond 15

The abandoned agricultural ditch that parallels the east and south levees of Ponds 15, and the three associated unused water control structures, would be removed. The south levee of Pond 15 (the north levee of the ditch) would be removed. The narrow levee that separates Pond 15 from the south ditch line would also be removed by pushing the soil to the south and collapsing the ditch into itself. An alternate use of the soil would be to improve the island structures located within Pond 15 or other adjacent ponds that need rehabilitation. In addition, the south 5 acres of this 22 acre pond would be lowered an average of 10 inches to slow the spread of cattails. A 1,100 linear foot swale would be constructed from the inlet valve westward across the pond to the outlet water control structure in the northwest corner. An additional swale branch approximately 700 linear feet in length would meander towards the south to facilitate drainage and provide addition habitat. The proposed action would increase the total pond acreage by approximately 1.5 acres. The 6,700+/- cubic yards of soil to be removed would be used to construct two large islands, one in Pond 15 and one in Pond 16, and to restore the west slope of the east levee of pond 15 to 1:5. Any extra soil would be stockpiled in the silage area near the Farm Center (Map 3). Access, staging and fueling areas would be pre-determined on existing permanent routes.

Pond 16

An independent water supply is important to good pond management, especially if moist soil management is going to be attempted. Pond 16 is a good candidate for moist soil management; however, the existing configuration of the water supply system needs modification. This project would install a 14" valve in the northeast corner of Pond 16. It would require approximately 1,000 feet of 18" PVC pipe to be installed and connected to the terminal end of the existing system near the valve in the northeast corner of Pond 15. The PVC pipeline installation would be carried out concurrently with the enhancement actions in Pond 15 to minimize the number of disturbance events. Access, staging and fueling areas would be pre-determined on existing permanent routes.

Ponds 23 and 24

These ponds, which together total 22 acres, would be combined by breaching the levee between them and forming an arch of islands with the remaining portions of levees. A 2,300 linear foot swale system with two branches and wide areas would be constructed through Pond 23 to the outlet water control

structure in Pond 24 to improve drainage and provide additional habitat diversity. Approximately 11,500+/- cubic yards of soil would be moved. The four existing islands in ponds 23 and 24 would be enlarged and enhanced with gradual 1:7 side slopes to provide improved access for management activities and the north and south levees would be strengthened using excavated soil from the project or from stockpiles on the Preserve. This project would also include the removal of the old pump on the north side of Pond 23 and the electrical stand in the "Reservoir" near the northeast corner of Pond 23. Any extra soil would be used for the Pond 19A levees or stockpiled at the Barn. Access, staging and fueling areas would be pre-determined on existing permanent routes.

This project may be timed to coincide with the undergrounding of the phone and power distribution lines that go between the residence at 7300 Desmond Road and the Barn. Given the size and scope of that project, the effects would be addressed in a separate supplemental environmental assessment tiered off of this Programmatic Wetland EA.

2.1.4 Future Wetland Restoration and Construction

Restoration and construction of additional wetlands units would occur if additional and suitable agricultural and/or rangeland, or historic wetland areas are or become available. In addition, degraded or highly altered wetland systems would be restored, when practical, to naturally functioning wetland systems. Soil excavated from pond and swale construction would be utilized for levee and island construction. No soil would be imported to or removed from the Preserve. The existing points of water diversion would be used for irrigation and flood up of wetland units. Drainage of the wetlands unit would occur via improved wildlife friendly swales that drain the water back to the original source. The upland areas that complement and enhance future wetlands projects would be prepared to suitable seed bed condition by discing and ring rolling. Seed beds would be treated with contact herbicide in the late fall after the first rains of the season and after the weed species have germinated. The upland areas would then be planted using native grass and forb mixtures with a range drill seeder or hydroseeding techniques followed by subsequent herbicide applications as prescribed.

Wetland enhancement projects proposed to restore natural hydrologic regimes by restoring historic topographic features and new wetland construction projects such as the Cougar Wetlands restoration project and Franklin borrow project would be addressed in separate supplemental environmental analysis (SEA) that tier to this Programmatic Wetland EA.

2.2 Conservation Measures for the Proposed Wetlands Operations, Maintenance and Enhancement Program

- Wetland enhancement or construction activities that require ground disturbance would only take place between May 1st and October 30th, during the active season for the giant garter snake (*Thamnophis gigas*).

- Construction activities that take place in potential giant garter snake habitat would be, at a minimum, visually surveyed by a qualified biologist within 24 hours prior to commencement of project activities.

- Prior to any wetland enhancement or construction-type activities, visual surveys for other special status species would be carried out by a qualified biologist.

- For wetland enhancement and construction-type projects, a U.S. Fish and Wildlife Service-approved person would be on-site to serve as a biological monitor during all earthmoving activities.

- Construction or enhancement activities in areas where threatened, endangered, or sensitive species are known to exist would be in compliance with all applicable biological opinions issued by the U.S. Fish and Wildlife Service and/or California Department of Fish and Game.

- Cultural resource studies (*i.e.*, inventories, evaluations, recommendations, *etc.*) would be conducted prior to the proposed actions in Section 2.1. These studies would be conducted in compliance with Section 106 and/or CEQA requirements where applicable. All prehistoric/Native American cultural resources would be assumed significant and would be avoided unless there is a specific plan to formally and fully evaluate the affected portion of the resource. Complex historic-era archeological deposits may also be assumed significant and avoided unless a specific evaluation plan is developed. The plan must identify funding sources for preparing the research design, analyzing artifacts analysis and preparing a final report, contracting out specialized artifact studies (*i.e.*, obsidian hydration/sourcing, radiocarbon

dating, *etc.*), and placing the artifact collection into long-term storage at a suitable curation facility.

- If archaeological materials are unearthed during construction, restoration or rehabilitation activities all ground disturbing activity at this location would cease until the nature and disposition of the materials are assessed by a qualified archaeologist, pursuant to Section 106, CEQA, and/or other applicable procedures.

- Managed wetland areas adjacent to sites that require vegetation treatments or earthmoving activities would be dewatered to an appropriate level at least two weeks prior to commencement of the activities.

- The Preserve would obtain appropriate compliance and permitting documents (*e.g.*, Army Corps of Engineers 404 permit and/or California Regional Water Quality Control Board 401 permit) prior to commencement of wetland enhancement or construction-type activities.

- All herbicide applications would be coupled with manual control methods for species that respond to such treatment regimes. Documentation must clearly demonstrate that manual treatments in combination with herbicide applications are achieving desired results (*i.e.*. production of moist soil plants).

- Prescribed fire would be used in compliance with all applicable federal, state, and local rules and policies.

- All proposed actions in Section 2.1 affecting BLM-administered land would conform to Sierra RMP guidelines for management of the Cosumnes River Preserve Area of Critical Environmental Concern (ACEC) and BLM policy with respect to ACEC management generally.

- Current and future best management practices (BMP) would be employed to reduce or eliminate discharges of methyl mercury and/or silt into the waters of the Sacramento-San Joaquin Delta.

- Where applicable, drainage and irrigation swales would be incorporated in all new wetland unit and pond design or enhancement projects to facilitate best management practices described in the 2008 Sac/Yolo Mosquito and Vector Control District BMP Manual. This would help reduce mosquito larvae production by creating reservoirs for mosquito larvae predators and to provide efficient irrigation and/or drainage of each pond.

- Application of all products that are considered to be toxic or have the potential to be harmful to natural resources would be applied outside recommended buffer zones and in a manner that minimizes or eliminates potential for contamination of habitat, per the BLMs existing guidance documents referred to previously in this document and the labeled instructions.

2.3 No Action

A comprehensive, strategic wetlands management program would not be used at the Preserve in order to create and maintain optimal habitat for resident and winter migratory waterfowl and waterbirds. Habitat management strategies would be limited to flood up and draw down techniques only. Repair and maintenance of the pond levees and water control structures would be limited to emergency repairs only, on a case-by-case basis. No enhancement of existing wetlands would be carried out.

2.4 Alternatives Considered but Eliminated from Detailed Analysis

A) Basic management with no enhancement projects on managed wetland areas at the Preserve.

Under this alternative management of wetlands units would consist of mowing and discing to supplement timed flood up and draw down of wetland units and individual ponds. Pond rotation would also occur on a limited basis. Mowing, discing, and hydrologic regimes would be the only means used to control wetland vegetation. Enhancement projects such as construction of swales, construction of islands or other restoration of topographic features within wetlands units would not take place or would require separate individual environmental analysis and process. This alternative would allow emergent vegetation and invasive plants to persist where they currently occur, allow new infestations of undesirable non-native species to become established, and allow managed ponds to become overgrown and unproductive. This alternative would not achieve the goals and objectives of the Preserve to provide high quality habitat and protect native biodiversity and it would not fulfill the mission of the BLM at the Preserve.

B) Use only herbicides to control vegetation in managed wetlands.

Under this alternative only herbicide applications would be used to control vegetation in managed wetland units. Disadvantages to the use of herbicides alone include continued high costs, a prohibitive permitting process, removal of desired vegetation, uncertainty of effectiveness, and the potential for indirect ecological effects such as eventual resistance of certain plant species to herbicides. This alternative was eliminated because the use of herbicides alone will not be effective in reaching Preserve goals, it would ultimately adversely impact land health, and it would be contrary to the guidance set forth by the BLM, other land management and regulatory agencies, and information published in peer-reviewed scientific journals.

3.0 Affected Environment

Soils

Preserve lands host a variety of soil types ranging from clay hardpan to sandy loam. The San Joaquin, Columbia-Cosumnes, Egbert-Valpac, Dierssen, and Sailboat-Scribner-Cosumnes soil series are in the project area. The primary soil types are the Columbia-Cosumnes and San Joaquin soils. The following information is from the *Soil Survey of Sacramento County, California* (USDA 1985).

The Sailboat-Scribner-Cosumnes soil series is found on natural levees, the edges of backswamps, channels and sloughs in the Delta area, and low flood plains adjacent to the Sacramento River. Sailboat soils are found on natural levees on low flood plains, are very deep and somewhat poorly drained; typically have a silt loam surface layer and underlying material comprised of stratified clay loam and loam. Scribner soils are on the edges of backswamps, are very deep and poorly drained, typically have a surface layer of clay loam and underlying material comprised of stratified clay loam and sandy clay loam. Cosumnes soils are found on low flood plains, are very deep and somewhat poorly drained soils; typically have a surface layer of silt loam and underlying material comprised of stratified silty clay loam and clay.

The Egbert-Valpac soil series is found on high flood plains, backswamps, and on the natural levees of high flood plains, primarily adjacent to the Sacramento River in the central part of the county and the

northern part of the Delta area. Egbert soils are found on high flood plains and backswamps, are very deep, poorly drained, and typically have a surface layer of clay underlain by stratified clay loam and sandy clay loam. Valpac soils are found on natural levees of high flood plains, are very deep, somewhat poorly drained soils, and typically have a surface layer of loam underlain by stratified sandy loam to clay loam.

The Columbia-Cosumnes soil series is on narrow, low flood plains along the Cosumnes River and other streams. Columbia soils on narrow, low flood plains, are very deep, and typically have a surface layer of silt loam that are underlain by stratified sandy loam, silt loam, and loam. Some Columbia soils are underlain by clay. Cosumnes soils are on narrow low flood plains commonly downstream of the Columbia soils with a composition as above.

The Dierssen soil series is on the rims of basins on the west side of the county. Dierssen soils are moderately deep or deep and typically have a sandy clay loam surface layer. The subsoil is calcareous clay underlain by a hardpan at a depth of 20-45 inches with a perched water table at a depth of 6-36 inches in the winter and early spring.

The San Joaquin soil series is found on low terraces in the western and central parts of Sacramento County. San Joaquin soils are moderately deep, moderately well drained soils and typically have surface layers of silt loam. The subsoil is a claypan underlain by a cemented hardpan at a depth of 20-40 inches.

Vegetation

The Cosumnes River Preserve protects a rich diversity of plant species: 442 species have been identified, of which 279 (63%) are California natives. Habitat types found at the Cosumnes River Preserve are described below. These descriptions follow the California Department of Fish and Game's Wildlife Habitat Relationship (CWHR) vegetation types.

Many of the areas bordering the river and sloughs on the Preserve are valley foothill riparian areas. Most trees are winter deciduous with the dominant species consisting of valley oak (*Quercus lobata*) and cottonwood (*Populus deltoids*). Subcanopy trees are Oregon ash (*Fraxinus latifolia*), box elder (*Acer negundo*), and white alder (*Alnus rhombifolia*). California wild grape (*Vitis californica*)

frequently festoons both trees and shrubs, and provides 30 to 50% of the ground cover. Typical understory shrub layer plants include wild rose (*Rosa acicularis*), California blackberry (*Rubus urinus*), blue elderberry (*Sambucus cerulea*), poison oak (*Toxicodendron diversilobum*), button bush (*Cephalanthus occidentalis*), and willows (*Salix spp.*). Herbaceous vegetation constitutes about one percent of the cover. Herbs include sedges (*Carex spp*.), rushes (*Eleocharis spp*.), grasses, miner's lettuce (*Claytonia perfoliata*), Douglas sagewort (*Artemisia douglasiana*), poison hemlock (*Conium maculatum*), and stinging nettle (*Urtica dioica*).

The California Natural Diversity Data Base (CNDDB) identifies two special status plant communities along the Cosumnes River riparian zone. Great Valley Oak Riparian Forest and Great Valley Mixed Riparian Forest. There are four known special-status plant species in the Preserve that are associated with vernal pools, marshes, or slough habitats including Dwarf dowingia (*Downingia pusilla*), Rose-mallow (*Hibiscus lasiocarpus*), Legenere (*Legenere limosa*), and Sandford's arrowhead (*Sagittaria sanfordii*).

Vast annual grassland habitat is found on the Preserve. These habitats are open grasslands composed primarily of annual plant species including wild oats, soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), wild barley, and annual ryegrass. The native California poppy (*Eschscholzia californica*) is also found in this habitat. Vernal pools, which support downingia, meadowfoam (*Limnanthes spp*.), and other native plant species, are found in small depressions within the annual grassland underlain by a hardpan or claypan layer.

Freshwater emergent wetlands are perennial wetlands that depend on year-round water availability. The marshes are typically characterized by species such as common cattail (*Typha latifolia*), bulrush (*Scirpus spp*.), arrowhead (*Sagittaria spp*.), and the highly invasive, non-native water primrose.

Managed seasonal and perenial wetlands are an important component at the Preserve and consist of intensively managed wetlands primarily for the production of moist soil and summer dry wetland vegetation such as watergrass (*Echinochloa spp*.), smartweed (*Polygonum spp*.), swamp timothy (*Heleochloa schenoides*), sprangle top (*Leptochloa* spp.) and a variety of sedge species (*Cyperus spp*.). When flooded during the fall and winter months the wetlands and accompanying vegetation provide foraging and loafing habitat to migratory waterfowl and wetland dependent species. Secondarily

managed permanent and seasonal wetlands provide local waterfowl or ground nesting species with adequate nesting and brood rearing habitat.

Wildlife

The Preserve hosts a rich and wide variety of wildlife species that inhabit wetland, upland, vernal pool, grassland, and riparian areas of the Preserve. There are 295 species known to occur at the Preserve, including 247 species of birds, 30 species of mammals, and 18 species of amphibians and reptiles.

Many of the species that commonly occur at the Preserve are not specifically managed for as part of the Preserve's overall management strategy. However, these species benefit from habitat that is created, restored or preserved as part of the Preserve's projects and continued management. These species include black tailed deer (*Odocoileus hemionus)*, river otter (*Lutra canadensis*), California vole (*Microtus californicus*), beaver (*Castor canadensis*), American bittern (*Botaurus lentiginosus*), redwing blackbird (*Agelaius phoeniceus*), western fence lizard (*Sceloporus occidentalis*), common kingsnake (*Lampropeltis getulus*), and desert cottontail (*Sylvilagus auduboni*).

The lower Cosumnes River watershed hosts a variety of special-status wildlife species including those wildlife species that have been designated as endangered, threatened, or species of special concern, or is proposed for listing (*i.e.,* candidate species) under the Federal Endangered Species Act (FESA) or California Endangered Species Act (CESA). Special-status species known to occur on the Cosumnes River Preserve include vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), California tiger salamander (*Ambystoma californiense*), western pond turtle (*Clemmys marmorata*), giant garter snake (*Thamnophis gigas*), greater sandhill crane (*Grus canadenis tabida)*, and Swainson's hawk (*Buteo swainsoni*).

Hydrology/water resources

The Cosumnes River watershed covers approximately 940 square miles (approximately 600,000 acres), from its headwaters in the Sierra Nevada to its confluence with the Mokelumne River in the Sacramento-San Joaquin Delta. The river remains as the only river flowing to the Central Valley in California with out major dams.

The river segment from Highway 16 down to the tidal floodplains consists of a continuum of highly incised meandering channel lined with agricultural levees and limited riparian vegetation in the upper reaches. The river is less incised in the lower reaches where discontinuous low levees and riparian forests flank the channel. The tidal floodplain area includes the portion of the Cosumnes River from the confluence with the Mokelumne River, upstream to the limits of tidal influence near Twin Cities Road bridge. Much of the tidally influenced floodplain is farm fields protected by low levees that do not prevent seasonal flooding. In addition to the main stem Cosumnes River, several tributaries drain into the lower watershed: Deer Creek, Badger Creek, and Laguna Creek.

Winter storms account for about 80% of the annual precipitation in the Cosumnes River watershed (Robertson-Bryan, Inc. 2006). The Cosumnes River watershed typically does not receive significant amounts of snowfall because of its low peak elevation and, therefore, most floods are caused by intense rainfall events (Sacramento County Water Agency 2005).

Groundwater is typically found in distinct shallow and deep aquifer zones ranging in depth between 200 and 2,000 feet below the ground surface level. Measured groundwater levels in the basin have shown a regional decrease in groundwater elevations characterized by "cones of depression," formed north and south of the Cosumnes River, with groundwater levels as low as 80 feet below mean sea level. Historically, the input of groundwater to the river channel kept the channel and associated wetland areas wet throughout the summer for the entire length of the river. Over the past 60 years, however, groundwater pumping has reduced groundwater levels in the valley segment, leading to a decline of groundwater input to the river.

Hydrologic regimes in the managed wetlands units are artificially manipulated. Currently the BLM and the Nature Conservancy hold riparian and supplemental water rights that divert water via lift pumps and irrigation pipelines to flood and maintain water levels in the wetlands units. Timing and duration of inundation of the wetlands are determined by the Wetland Manager to achieve desired habitat condition *i.e*, early fall shallow water foraging habitat. Post waterfowl migration the seasonal ponds are drawn down and the water is returned to the original source via drainage ditch or swale.

Fisheries

Thirty-eight fish species are found within or migrate through the Cosumnes River Preserve including a diverse variety of native and non-native species. Several species have been designated as special status species by the National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service, and/or California Department of Fish and Game due to concern over their declining numbers. These species include fall-run chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*Oncorhynchus mykiss*), delta smelt (*Hypomesus transpacificus*), Sacramento splittail (*Pogonichthys macrolepidotus*), and Sacramento perch (*Archoplites interruptus*). Two special-status species, hardhead (*Mylopharodon conocephalus*), and speckled dace (*Rhinichthys osculus*), have likely been extirpated from the Cosumnes River. The remaining 26 (65%) fish species have been introduced to California water bodies, either intentionally or unintentionally.

Recreation

In general, passive recreational activities, such as bird watching, photography, nature study, hiking and paddling, are encouraged on the Preserve. Designated areas have been set aside for limited hunting. Fishing is only allowed from a boat in waterways that are part of the public trust.

The Visitor Center is the focal point for public access and environmental education at the Preserve. The Wetlands Walk Trail is a one-mile, universally accessible trail that offers visitors an up-close experience into lush marshes, wetland plants, water birds, insects, and amphibians. The River Walk Trail is a 3-mile round-trip trail that winds through a variety of habitats, including buttonbush thickets, valley oak riparian forest, tule marsh, and valley oak savannah along the Cosumnes River. The Cosumnes River Preserve also offers non-motorized boat access via the Visitor Center put in ramp and floating dock as well as a self-guided driving tour throughout the public road system.

Visual Resources

The Cosumnes River Preserve wetland program is a major visual resource for the south Sacramento County area from a variety of perspectives. From Interstate 5 the Twin Cities Unit provides a high profile visual resource to travelers that highlight the wetlands program. In addition the Lost Slough, Lost Slough East, and Barn Ponds units provide excellent wetland viewing opportunities from

Desmond Road and Franklin Boulevard in addition to the universally accessible "Wetlands Walk" hiking trail and boardwalk. From a distance the distinct wetland and forested landscape appears as a natural area in marked contrast to the surrounding agricultural and urban landscapes. Visitors experience a sense of visual enclosure from trails that traverse natural areas and especially from within the forests along the River Walk trail.

Cultural

There are nearly 180 known archaeological sites within the Cosumnes River floodplain that are recorded in the California Historical Resources Information System. Of these, almost 160 are prehistoric/ethnographic sites of Native American origin; 18 date to the historic period (including both archaeological remains and standing structures); and 3 are dual-component prehistoric/historic-period sites. In July 2009 the City Council of the City of Galt designated the McFarland Ranch as a "Heritage Area" and currently the Galt Area Historical Society has applied for this site to become a registered national landmark.

Currently two Native American tribes come to the Preserve to collect native plant materials from the managed wetlands for ceremonial headdress, basketry and traditional building materials for structures.

Fire/fuels

There is a wide variety of fuel types and structure at the Preserve which include grass, shrub and tree species. The Preserve has routinely used prescribed fire for weed control and to reduce vegetation density. In addition, wildfires occur annually on Preserve lands caused by a variety of sources ranging from vehicle-caused fires to bird strikes at power lines. Fuels include down, standing dry, and live native and non-native grasses, forbs, shrubs and trees. A variety of vegetation within the wetlands units including common cattail, common bulrush, cocklebur, sprangletop, and watergrass serve as standing dry fuels during the summer and fall fire season. In addition to dry vegetation within the wetland units terrestrial weed species such as wild mustard, yellow star thistle, bristly ox-tongue, and a variety of non-native grasses are present on the elevated roads surrounding the wetlands ponds and also serve as standing dry fuels during the summer and fall fire season.

Social/agricultural

The current landscape of Central Valley, including the lower Cosumnes watershed, consists largely of agriculture, especially intensively managed irrigated crops. However, the Central Valley is one of California's more rapidly growing regions, gaining nearly two million more residents in the 1980's and 90's. In the last several years the Sacramento region has experienced explosive growth, with urban expansion driving further south and east. The City of Elk Grove is planning to expand beyond the existing Urban Service Boundary to as far south as Eschinger Road. The City of Galt is located to the east of the Preserve. The city has been working on a General Plan update with ideas of expanding northward; however, they have made few inroads with the agricultural community on this issue. Thornton is an unincorporated town located south of the Preserve in San Joaquin County. Like other towns in the area, there is mounting pressure for new growth and development and land speculation in the area has increased.

The Preserve has an active education program and is currently a field trip destination for over 10,000 K-12 students annually. In addition 3,000 K-12 students are involved in service learning projects, and more than 10 higher education field trips are attended by local and visiting colleges annually (J. Durand, pers. com. 2007). In addition the Consumes River Preserve is used by graduate and undergraduate college students for research projects. The Preserve also has an active Volunteer program with several sub groups and a total of over 80 active volunteers (, A. Veselka, pers. com. 2012.)

Farming occurs on over 13,000 acres on the Cosumnes River Preserve, and approximately 2,000 acres of additional farmland have been protected through conservation easements. Of the total 13,000 acres in agricultural production, approximately 10,000 acres are managed to be compatible with wildlife. Grazing currently occurs on nearly 3,000 acres of annual grasslands in the Preserve. In addition, well over 15,000 acres of vernal pool grassland are grazed on lands held under conservation easements.

Prime/Unique Farmland

Currently approximately 2,200 acres of prime farmland exists on the Preserve, primarily in the organic rice operation and on the McCormack-Williamson Tract (aka the Bean Ranch), in the form of irrigated

cropland. The *Soil Survey of Sacramento County, California* (USDA 1985) identifies Bruella sandy loam, Clear Lake Clay, Columbia sandy loam, Columbia silt loam, Cosumnes silt loam, Dierssen clay loam and Egbert clay as prime farmland where irrigated.

Area of Critical Environmental Concern

One management action of the RMP record of decision intends to designate the Cosumnes River Preserve as an Area of Critical Environmental Concern. The ROD states: "Relevant and important values include the existence or potential for restoration of: (1) valley oak (*Quercus lobata*) riparian forest; (2) seasonal wetlands; (3) vernal pools; (4) oak (*Quercus* spp.) savannah; and (5) agricultural lands such as irrigated pasture and crops that provide habitat for sandhill cranes (*Grus canadensis*) and a buffer for the Preserve." Special attention is required to protect relevant and important natural or cultural resource values.

Air Quality

Air quality on the Preserve is generally good; however because of its proximity to agricultural operations, which entail burning and plowing, as well as major urban areas (Lodi, Stockton and Elk Grove), higher concentrations of air pollutants may occur in summer and fall, as well as on stagnant, foggy winter days.

4.0 Environmental Effects

The following critical elements have been considered for this environmental assessment, and unless specifically mention later in this chapter, have been determined to be unaffected by the proposal: hazardous waste, wild and scenic rivers, wilderness, and environmental justice.

4.1 Impacts of the Proposed Action and Alternatives

Soils

As a result of the minimization and avoidance measures outlined in the proposed action, no long term negative impacts caused by management, construction, or rehabilitation actions are anticipated to the

soils found on the Preserve. Over the long term, treatments that remove invasive vegetation, reduce fuels, and restore native plants should enhance soil quality on Preserve lands.

Impacts to soil compaction are not expected because areas requiring treatment by ground vehicle are primarily access roads and levees. In areas that require treatment within wetland ponds or units would be carried out using low impact vehicles including wheel or track equipment.

As vegetation is removed, there is less plant material to intercept rainfall and less to contribute organic material to the soil. Loss of plant material and organic matter can increase the risk of soil susceptibility to erosion. However, the risk for increased erosion would be temporary, lasting only until desirable vegetation was established. If herbicide treatments lead to revegetation with native plants, soil stability may be improved relative to sites dominated by invasive plants. (USDI, Bureau of Land Management 2007)

Vegetation

Temporary reductions of vegetation due to construction, rehabilitation, restoration and/or maintenance activities within wetlands units are expected. However as a result of the minimization and avoidance measures outlined in the proposed action, no negative impacts are expected to occur to the four known special status plant species or the 10 other special status plant species that potentially occur on the Preserve.

Wetlands are a known to methylize elemental mercury which can enter the food chain where methylmercury (MeHg) can accumulate in fish. Findings in a recent study generally support the widely held contention that vegetated sites are more active zones of MeHg production than open water non-vegetated areas (Marvin-DiPasquale *et al.* 2007). Current levels of MeHg production are likely to decrease because the proposed actions would reduce the amount of vegetative mater in overgrown seasonal wetlands.

No negative impacts to the two special status plant communities identified by the CNDDB which include the Great Valley Oak Riparian Forest and Great Valley Mixed Riparian Forrest are expected because the special status plant communities do not exist within the constructed wetlands and because

minimization and avoidance measures would be employed where the special status plant communities occur.

Wildlife

Impacts to wildlife species may include a temporary reduction in the amount of escape cover from predators. Populations of cocklebur, bulrush, and cattails that provide dense or spiny refuge for animals like desert cottontail, California quail (*Callipepa californica*), California voles, and other prey species would temporarily be reduced until desirable wetland vegetation could be established.

As a result of the minimization and avoidance measures outlined in the proposed action, no permanent negative impacts to wildlife are expected because negative impacts to habitat components - soil, water and native vegetation - are expected to be temporary and future conditions would be improved.

Most wildlife will benefit from the proposed actions carried out on the Preserve wetlands because these actions would improve habitat conditions over the long term. Herbivorous wildlife will benefit from the reduction of terrestrial weeds that are less palatable or unpalatable and compete with the native or desirable plant species. The reduction of water primrose is likely to improve habitat conditions for wetland dependent species including sandhill cranes, migrating waterfowl and giant garter snakes which rely primarily on an aquatic prey base of small fish, tadpoles, frogs and minnows. When stream or lake habitats are completely covered by water primrose and open water is no longer available due to absorption and evapotranspiration, that habitat becomes unsuitable for giant garter snakes and migratory waterfowl. Foraging habitat for raptors, including Swainson's hawks, may also be improved in seasonal wetland ponds by providing better access to prey species on the ground. Restoration, rehabilitation, improvements, and construction of wetland habitat would have a beneficial effect on overall biodiversity by increasing the quantity, quality, and diversity of habitat for wildlife. Impacts to these species will be further analyzed during the Fish and Wildlife Service Section 7 consultation process.

Hydrology/water resources

As a result of the proposed action no negative impacts to hydrology are expected because all best management practices to minimize siltation and storm water runoff would be incorporated into specific

actions. The proposed action would have a positive overall effect on the hydrology by removing or substantially reducing invasive aquatic weed species that alter flows and absorb and transpire water resources. Wetlands are also known to be important zones of net particle deposition. Thus one possibility is that the creation of extensive new wetland habitat effectively traps much of the total mercury associated with particles originating from upstream (Marvin-Dipasquale *et al.* 2007).

Fisheries

As a result of the minimization and avoidance measures outlined in the proposed action, no negative impacts to fisheries are likely to occur. Any in stream activities would employ all measures outlined by the Regional Water Quality Control Board 401 permit to eliminate or minimize impacts to fish habitat. Positive impacts to native fish species are likely to occur because project design in critical or important fish habitat would be guided by best current scientific information to provide high quality smolt rearing habitat.

Recreation

Short term impacts on recreation would include trail closures during maintenance, rehabilitation, enhancement, restoration and construction activities. Long term benefits to recreation include improved wildlife viewing opportunities, improved visual access to wetland habitats, and improve general visitor experience by providing high quality wetland landscapes. Additionally, visitor experiences would be enhanced by the availability of native plant species along roads and trails.

Visual Resources

Short term impacts to visual resources are likely to occur during the restoration, construction, and rehabilitation phases. The short term impacts will provide opportunities for public education about resource management, restoration, and long term benefits of improved visual resources. Visual resources on the Preserve would improve because increased bird use would increase viewing opportunities in high profile public areas. In addition restoration of wetland habitats would restore the visual landscape to a more natural setting.

Cultural Resources

Lands within the Preserve contain prehistoric archaeological sites and other types of cultural resources. Preservation of significant cultural resources is a high priority for BLM and the Preserve partners. Compliance with Section 106 of the National Historic Preservation Act and its implementing regulations at 36 CFR 800 (or agency-specific alternative procedures) would be completed before implementation of any of the actions proposed in Section 2.1 of this EA affecting federal land, involving federal funding, or having another federal nexus. The cultural resource provisions of CEQA may also apply. Any discoveries made during implementation would be handled pursuant to the Section 106 regulations (or agency-specific alternative procedures) and/or CEQA provisions where applicable. In all cases a reasonable and good faith effort would be made to identify and assess effects to significant cultural resources potentially affected by the proposed actions. This includes identification and assessment of places to which Native Americans attach traditional cultural and religious significance. Identification and assessment of effects would be handled only by specialists that meet the Secretary of the Interior's professional standards. The Section 106 process would be completed on a project-by-project basis. Routine ongoing maintenance activities would be handled upfront. Negative effects to significant cultural resources would be avoided, minimized, or mitigated, pursuant to the Section 106 regulations. Due to the Conservation Measures in Section 2.2, however, it is anticipated that none of the proposed actions in Section 2.1 of this EA would cause negative effects to significant cultural resources (a situation known as "adverse effect" under the Section 106 regulations). Potential negative effects would be avoided wherever possible. Proposed projects or maintenance activities would be redesigned or canceled to avoid potential adverse effects. Certain types of cultural resources (*i.e.,* those with prehistoric or complex historic-era archaeological deposits) would be assumed to be legally significant (eligible for the National Register of Historic Places) and avoided unless a plan is developed to evaluate them. This plan must identify on-hand funding sources for research design preparation, artifact analysis, long-term curation of collections, and other necessary components of an evaluation.

Fire/Fuels

Long term negative impacts to fire or fuels are not expected. Because the sources of ignition continue to be present the frequency of unintentional fire would remain approximately the same. However positive impacts are likely to occur because routine maintenance of levee road vegetation in the form

of mowing would decrease the amount of flashy fuels and act as fuel breaks. In addition the reduction of fuel loads within rehabilitated ponds through management actions such as prescribed burns, mowing, and discing could also have a beneficial effect on fire and fuels.

Social/agricultural

The continued maintenance, enhancement and restoration of wetlands habitats may further improve relationships with the neighboring cities of Galt and Elk Grove by improving long term visual resources, recreational opportunities and the educational experience, as well as by reducing the risk of weed spread to adjacent privately owned land and fostering good relations between the Preserve and its neighbors.

Surrounding farmlands (including leased lands) would be positively affected by continued maintenance, enhancement and restoration of wetland habitat. This is because certain species, such as Canada geese (*Branta canadensis*), are known to cause crop damage would be encouraged, and more likely to stay within the managed wetland units, which would in turn reduce impacts to neighboring farmland with winter sown crops (e.g. winter wheat and oats). In addition, waterfowl that forage and loaf in both the rice fields flooded for stubble decomposition and winter fallowed fields provide valuable fertilizer with increased use. Consequently, qualities of agricultural products produced in the Preserve's farming operation would be likely to increase.

Prime/Unique Farmland

Due to the conservation measures outlined in the proposed action, no adverse impacts to prime or unique farmland are expected, because maintenance, management and enhancement activities would take place in existing constructed wetlands. At sites that are restored, or where new wetlands are constructed all minimization and avoidance measures would be followed and measures outlined by the U.S. Army Corps of Engineers and Regional Water Quality control board would be employed. No adverse impacts to prime or unique farmlands or to soil microorganisms on prime farmland are expected.

Area of Critical Environmental Concern

Due to the minimization and avoidance measures outlined in the proposed action, no adverse impacts to the ACEC values identified by the BLM are anticipated. Continued maintenance, enhancement, and restoration of wetlands habitats would benefit the ACEC values because the proposed actions would protect, restore or enhance the natural resources identified as having ACEC value.

Air Quality

Short term impacts to air quality associated with specific actions such as dust created by heavy equipment during mowing, discing, construction, or enhancement activities and smoke created prescribed burns to reduce vegetation are anticipated. However impacts to air quality would be minimized by employing all best management practices for dust reduction and smoke management. Water trucks would be used to wet soils during ground disturbing activities when appropriate and prescribed burns would take place only when weather conditions were conducive to clearing and dissipating smoke rapidly. In addition all appropriate management actions described in the RMP ROD would be employed.

4.2 Impacts of the No Action Alternative

Soils

Under the no action alternative negative impacts to the Preserve's soils are likely. Noxious weeds and other invasive vegetation can impact soil function and reduce soil biodiversity. Sites infested with weeds often have more extreme soil temperatures that can alter soil moisture regimes (USDI, Bureau of Land Management 2007).

Under the no action alternative invasive vegetation within the wetlands units would continue to spread and displace native plant species. Without treatment, it is likely that invasive plants would continue to spread rapidly, resulting in dramatic and potentially irreversible effects on soil quality through changes in organic matter content, diversity and abundance of soil organisms, and nutrient and water availability (USDI, Bureau of Land Management 2007).

Vegetation

Under the no action alternative negative impacts to the vegetative communities within and surrounding Preserve wetlands are likely because only flood up and draw down techniques to control the spread of invasive plant species could be employed. In the absence of other control methods invasive and noxious vegetation would continue to spread. Overall botanical diversity could be negatively impacted by the spread of invasive and noxious weed species because invasive and non-native plants generally out-compete native species for resources.

Under the no action alternative current levels of MeHg production would continue at current levels or increase because of the amount of vegetative mater in overgrown seasonal wetlands which could not be incorporated into the soil or otherwise reduced.

Wildlife

Wildlife habitat would be adversely impacted due to the continued spread of native and non-native invasive species that completely fill in or choke open water habitats and displace native or desirable plants that provide high quality foraging, nesting, and roosting habitat. If invasive emergent vegetation and noxious species such as water primrose are left unchecked, vegetation would cover most of the surface of permanent water thereby degrading habitat quality or eliminating it completely. In addition, non-vegetated shallowly flooded mud flats are required for shorebird foraging habitat. Because discing would not take place under the no action alternative the amount of suitable shorebird habitat would be substantially reduced or absent in the Preserve wetland program.

Hydrology/water resources

Under the no action alternative aquatic weeds would continue to spread depleting surface water resources as they absorb and transpire water through respiration. In addition aquatic weeds would continue to reduce or impede water flow throughout the Preserve, could exacerbate flood events by increasing vegetation that back up flood waters onto adjacent properties, and increase the duration of inundation.

Fisheries

Under the no action alternative it is unlikely that fisheries would be impacted in the existing managed wetlands. However, floodplain wetlands and tributaries that have large monocultures of water primrose and other aquatic weeds may negatively impact fisheries as aquatic weeds spread or choke out water bodies that serve as open-water habitat. Invasive weed species would continue to spread in floodplain habitats and over the long term would degrade rearing habitats that are used by native fish. Methylmercury would continue to accumulate in fish tissues at higher rates because discharges of flood water from densely vegetated wetlands that contain increased levels of MeHg are likely.

Recreation and Visual Resources

The Preserve trail system and boat launch sites may be negatively impacted because of the aquatic vegetation that hangs over and encroaches onto trails making access more difficult. Tall emergent vegetation would also create visual barriers to high quality wildlife viewing opportunities along the trails and driving tour. Monocultures of invasive aquatic vegetation and/or mixed weed patches would persist and spread which would degrade the scenic value of the Preserve. Visual resources in the wetlands would be degraded because wetlands habitats that are overgrown would impede viewing opportunities and are likely to cause a decline in migratory species use.

Cultural Resources

Under the no action alternative, significant cultural resources would not be affected.

Fire/fuels

Under the no action alternative, increases in fuel quantity and height are likely to increase the intensity of wildfires and capacity for fire to carry into and through wetland habitats.

Social/agricultural

If no action is taken to control or maintain emergent or aquatic vegetation and invasive weed species in the wetlands, relationships with adjacent land owners, neighboring cities, and education programs are

likely to be negatively affected. The Preserve's image and reputation as a pioneer in ecologically sound restoration design would be damaged. Agricultural production and product quality, particularly at the Preserve's organic rice operation, would decline as competing aquatic vegetation became more dominant in cropland adjacent to wetland habitats.

Prime/Unique Farmland

Prime or unique farmlands could be negatively impacted because invasive weed species would continue to spread or colonize on properties that are identified as having prime farmland. As noted above soil quality can be dramatically impacted by invasive plants due to more extreme soil temperatures and changes in diversity and abundance of soil organisms.

Area of Critical Environmental Concern

Under the no action alternative ACEC values would be negatively impacted. Invasive vegetation would continue to encroach and cover critical wetland habitats. Sandhill cranes and other species that prefer shallow open water foraging and roosting habitat would be displaced. In the absence of maintenance, enhancement, and restoration actions, natural resource values would degrade.

Air Quality

Under the no action alternative, air quality would not be affected.

4.3 Cumulative Impacts

A) Proposed Action

Cumulative impacts from the proposed action, combined with other operations, maintenance, enhancement, and restoration activities within the lower Cosumnes River watershed, are expected to be wholly beneficial. Over time, wetland habitat conditions within the Preserve would improve, thereby leading to overall improvements for wetland-dependent plant, fish, and wildlife species within the lower watershed. There is very little remaining natural wetlands, riparian forest, and other pre-Anglo American natural landscape in the bottomlands of the Central Valley. Over 90 percent of it has been lost to modern agriculture, urbanization, and other causes (Dahl 1990). The proposed actions would

help to expand one of the Central Valley's last remaining natural landscapes. With an increase in wetland acreage there is a potential for the increased discharge of methylmercury into the lower watershed, however due to design features and the future implementation of new BMPs that are currently being developed by the Preserve and its research collaborators, discharges of methylmercury are expected to decrease overall from current levels.

As a result of the proposed actions some individual plants and animals may be adversely impacted temporarily. No long-term adverse cumulative impacts are expected to plant, fish and wildlife populations. Stream flow regimes and water quality may be temporarily affected by modifications to watershed processes that occur as a result of restoration, enhancement, or the construction of wetland habitats. However, it is commonly known that wetland habitats act as filters that improve water quality and, as such, over time the proposed actions would improve the existing condition and health of the lower watershed by improving water quality. Water quality and quantity, which are key components of wetland and riparian habitat, can also have substantial influence over the health of fish and other aquatic organisms (USDI, Bureau of Land Management 2007). Because the condition of aquatic environments on the Preserve would be improved over the long term by removal of invasive aquatic weeds and other proposed actions, adverse cumulative impacts to fisheries are not expected. Because there are no long-term site specific adverse impacts expected for agriculture, cultural resources, recreation, visual resources, or fire and fuels, no cumulative impacts are expected for these resources at a larger scale.

In addition to actions that occur on BLM owned property, operations, maintenance, restoration, and enhancement of wetland habitats are also expected to occur on non-federal lands at the Preserve. Actions that occur in wetlands units or individual ponds that are bifurcated by property boundaries are analyzed in section 4.1 above.

Additional actions that occur within the wetland program such as routine operations and maintenance and rehabilitation actions as described above in sections 2.1.1 and 2.1.2 that take place on non-federal lands are also not expected to have adverse cumulative impacts. These impacts are also expected to be beneficial in nature and, in fact, due to the existing management agreements amongst the Preserve partners, these actions will take place concurrently and in conjunction with actions taken on adjacent BLM properties.

In addition the following enhancement actions are also expected to occur on non-federal properties within the Preserve wetlands program.

Pond 18

The size of this pond would be increased by 1 acre, from 25 to 26 acres, by pushing the south levee further south with a bulldozer to fill in the unused borrow ditch between pond 18 and the Barn pad. Currently, the unused borrow ditch is a significant source of weeds, particularly perennial pepperweed, that spreads to other areas within the Barn Ponds Unit. In addition to slightly enlarging the pond, this project would improve access to the road that goes west from the Barn road at that point. The project would include replacement of the metal water control structure in the southwest corner of Pond 18 with a new cement water control structure and PVC culvert. About 1,500+/- cubic yards of soil would be moved to fill the unused borrow ditch. Any extra soil would be stockpiled near the Barn. Access, staging and fueling areas would be pre-determined on existing permanent routes.

Pond 19A

The south levee and parts of the west and east levees, of this 1 acre pond are subject to severe damage from ground squirrels because the levees are steep and narrow. This project would re-contour and re-slope the existing levees to a 1:5 slope on the outside. Approximately 300+/- cubic yards of soil would be obtained from existing stockpiles or on-going projects on the Preserve in order to re-slope the levees (*e.g.*, see Ponds 23 and 24 projects below). The water control structure in Pond 19A would be replaced with a cement structure. Access, staging and fueling areas would be pre-determined on existing permanent routes.

Pond 25

The outlet of this pond is the only source of water for the Savannah Pond, except for tidal water. A swale through 25 is needed to allow water to be put in the Savannah Pond without flooding 25. This swale would be 425 yards long, 14 feet wide at the bottom with 1:5 slopes on the sides. The 8,000 cubic yards of dirt excavated from these swales would be stockpiled near the Barn. This project will be done at the same time as the combining of Ponds 23 and 24 and will use the same heavy equipment which will be off-loaded on the east side of the Barn, just north of the project at the staging area shown in Map 3.

Pond 26

Half of this pond has dense cattails and half has dense water primrose. The primrose and some of the cattails would be treated with herbicides after the pond is drained. The south and west sides of the pond would then be disked and deepened with the excess soil being used to strengthen the north levee and create a long island in the middle of the pond. No soil will be removed from the site.

Pond 27

This is a long and shallow pond that frequently attracts large numbers of cranes and ducks. To more fully support the wintering waterfowl and waterbirds, approximately 400 yards of levee on the west, south, and east sides would be raised approximately 1 foot and a new cement water control structure with PVC culvert would be installed in place of the old, metal water control structure. Since there may be a sand lens in the pond, the interior of it would not be disturbed. Therefore, the 2,000+/- cubic yards of soil needed for this project would be obtained from existing stockpiles located on the Preserve or from other on-going projects with extra soil.

Willow Slough Unit

The Willow Slough wetland unit is highly visible to the public and has a public access trail completely around the perimeter. The Willow Slough project would rehabilitate pond 28, 29 and 30 (Map 4). Access for heavy equipment would be via established roads and levees and staging/fueling areas would be determined along the route in areas deemed safe for such activities (Map 3).

Pond 28

Pond 28, which is currently a permanent pond, would be drawn down at least 30-60 days prior to any disturbance activities to allow aquatic wildlife to move temporarily to adjacent habitat and to allow soil conditions to dry. The dense overgrowth of cattails and bulrush in the north half of Pond 28 would be disked at least twice using a heavy stubble disc at right angles on each pass to incorporate the vegetative mass and to expose the tuberous roots to sunlight. The topsoil containing the incorporated vegetation would be stripped and stockpiled on site in the far north portion of the pond. The topographic relief within the center one-third of the pond would be restored by excavating approximately 2,000 to 3,000 cubic yards of soil that would be used to bolster and restore the west and south levees that have been degraded by beaver activity and flood events. The work would be done primarily by standard heavy construction equipment such as bulldozers and/or belly scrapers, rollers,

compactors, backhoes, and other machinery. Water trucks would be used to provide the proper soil moisture for maximum compaction on levees and to reduce dust per the standardized Best Management Practices and requirements applicable during all major construction projects. The stockpiled topsoil would be spread evenly over the restored portion of the pond which would remain dry throughout the growing season and the pond would be re-flooded at the appropriate time.

Ponds 29 and 30

Currently the levee that separates ponds 29 and 30 is highly degraded by rodent damage and Pond 30 does not have independent water control. In order to fill Pond 30, water must be moved through Pond 29, which creates extremely weedy areas with standing stagnant water where mosquitoes breed. Pond 29 would be rehabilitated by discing the west half of the pond using a heavy stubble disc in order to incorporate the vegetation into the topsoil. The topsoil and incorporated vegetation would be stockpiled in the far eastern portion of the pond. The existing swale that links Ponds 29 and 30 meanders along the west levee of the pond to the water control structure, located in the northwest corner of the pond. It is inadequate and does not function properly so it would be widened to 15 feet across the bottom and have gently sloping 1:7 sides. Soil excavated to create the improved swale would be used to bolster and improve the degraded levee between the ponds. The stockpiled topsoil would be spread evenly over the disturbed area outside of the newly improved swale or used to create islands, improve existing roads or levees or moved off site to a pre-determined location for stockpiling. The work would be done using standard heavy construction equipment as described above for pond 28.

In addition, the existing water delivery pipeline would be extended east and north to the southwest corner of Pond 30 to allow independent water control of Pond 30. The underground pipeline installation would require approximately 1,200 feet of trenching which would be carried out by backhoe or trenching machine. The trench would be approximately four to five feet deep depending on the topography and two to three feet wide. The 15-inch diameter PVC pipe would be assembled in place and a two phase backfill process would fill the trench. The first phase of backfill covers the pipeline with approximately 18 inches of soil which is then watered in by opening the valve and pumping water into the half filled trench. The second phase of backfill covers the trench to above grade to allow for settling.

The north 1/3 of Pond 30 would be deepened an average of 1 foot to allow it to function some years as a brood pond. Heavy equipment would be used as described for Pond 28 and the dirt used to construct an island and strengthen the levees.

Cumulative impacts from actions carried out on non-federal lands in conjunction with and adjacent to the action on BLM properties associated with operations, maintenance, enhancement, and restoration, of wetland habitats within the Cosumnes River watershed are also expected to be wholly beneficial. As a result of the proposed actions on non-federal lands some individual plants and animals may be adversely impacted temporarily. However, no long-term adverse cumulative impacts would be expected to plant, fish and wildlife populations. The proposed actions and the anticipated cumulative effects are expected to be wholly beneficial in the long-term to all of the preserve's targeted species.

B) No Action Alternative

Under the no action alternative, invasive native and non-native aquatic species would continue to spread virtually unchecked within the Preserve. As invasive aquatic and terrestrial weeds spread, impeding flows of tributary streams and clogging wetlands, cumulative impacts to fisheries and natural hydrologic regimes are likely. Overall biodiversity in the lower watershed may be negatively impacted by the reduced quality and/or quantity of nesting, rearing and migration habitat. Cumulative impacts to recreation and visual resources may occur as a result of degraded scenic value and reduced opportunities for recreational activities. Cumulative impacts to social and agricultural resources are expected as described above. Invasive plant infestations are likely to continue to spread and displace desirable species throughout the Preserve. One of the last vestiges of the Central Valley's natural landscape including critical habitat for migratory birds would be threatened.

5.0 Agencies and Persons Consulted

5.1 BLM Interdisciplinary Team

- Mark Ackerman (Wildlife Biologist and Certified Pesticide Applicator, Mother Lode Field Office, BLM).
- Holden Brink (Wetlands Manager (retired), Cosumnes River Preserve, Mother Lode Field Office, BLM)
- Harry McQuillen (Preserve Manager, Cosumnes River Preserve, Mother Lode Field Office, BLM)
- James Barnes (NEPA Coordinator, Archeologist, Mother Lode Field Office, BLM)

5.2 Other Personnel, Agencies and Organizations

- Kathy Brown (Division Chief for Conservation Partnerships Program, Sacramento Ecological Services Office, U.S. Fish and Wildlife Service)
- Jeff Rhoades (Recreation Specialist, Sacramento County Department of Regional Parks)
- John Durand (Service Learning Coordinator, Galt Joint Union Elementary School District)

5.3 Availability of Document and Comment Procedures

The EA, posted on Mother Lode Field Office's website (www.blm.gov/ca/motherlode.gov) under Information, NEPA (and available upon request), will be available for a 30-day public review period. Comments should be sent to the BLM at 5152 Hillsdale Circle, Eldorado Hills, CA 95762 or emailed to jjbarnes@blm.gov.

5.4 Interdisciplinary Team/Reviewers:

NEPA coordinator/Archaeologist	Date
/s/ Mariah Garr	*12-13-12*
Wetlands manager	Date
/s/ Brian R. Mulhollen	*12-13-12*
Fuels specialist	Date
/s/ Sara Sweet	*12-18-12*
Botanist	Date
/s/ Mark Ackerman	*12-13-12*
Wildlife/fisheries biologist	Date
/s/ Jeff Horn	*12-18-12*
Outdoor recreation planner/VRM specialist	Date

6.0 References

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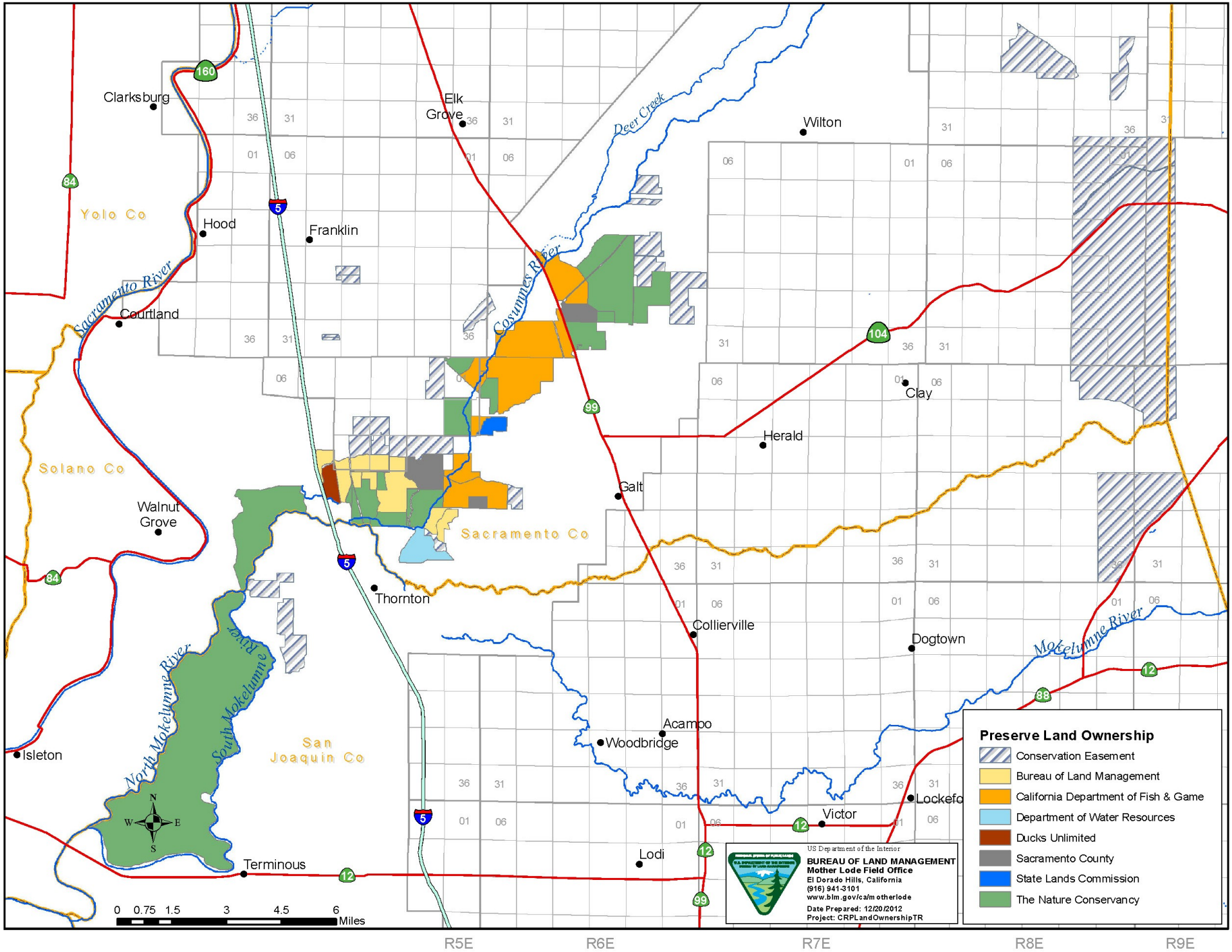
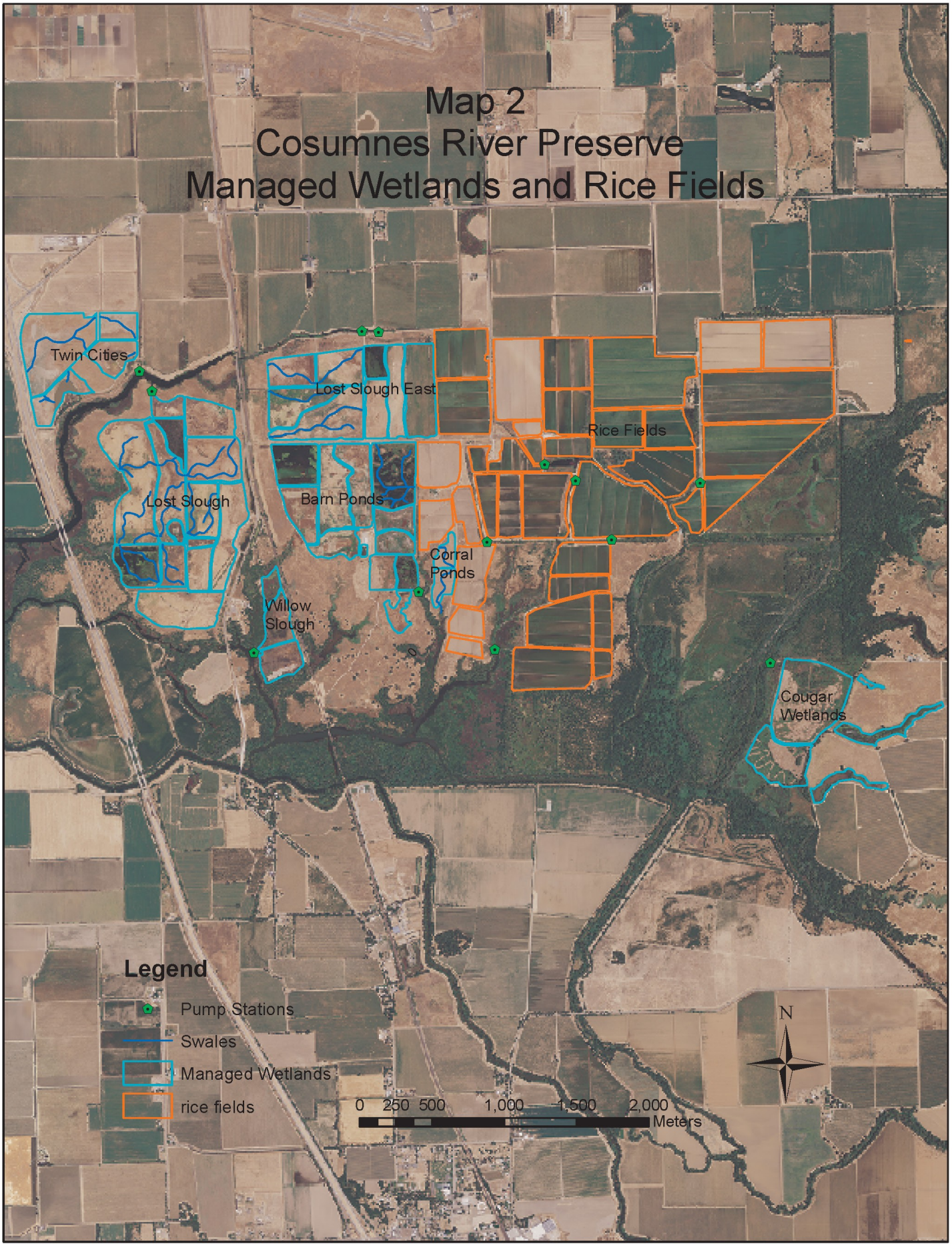
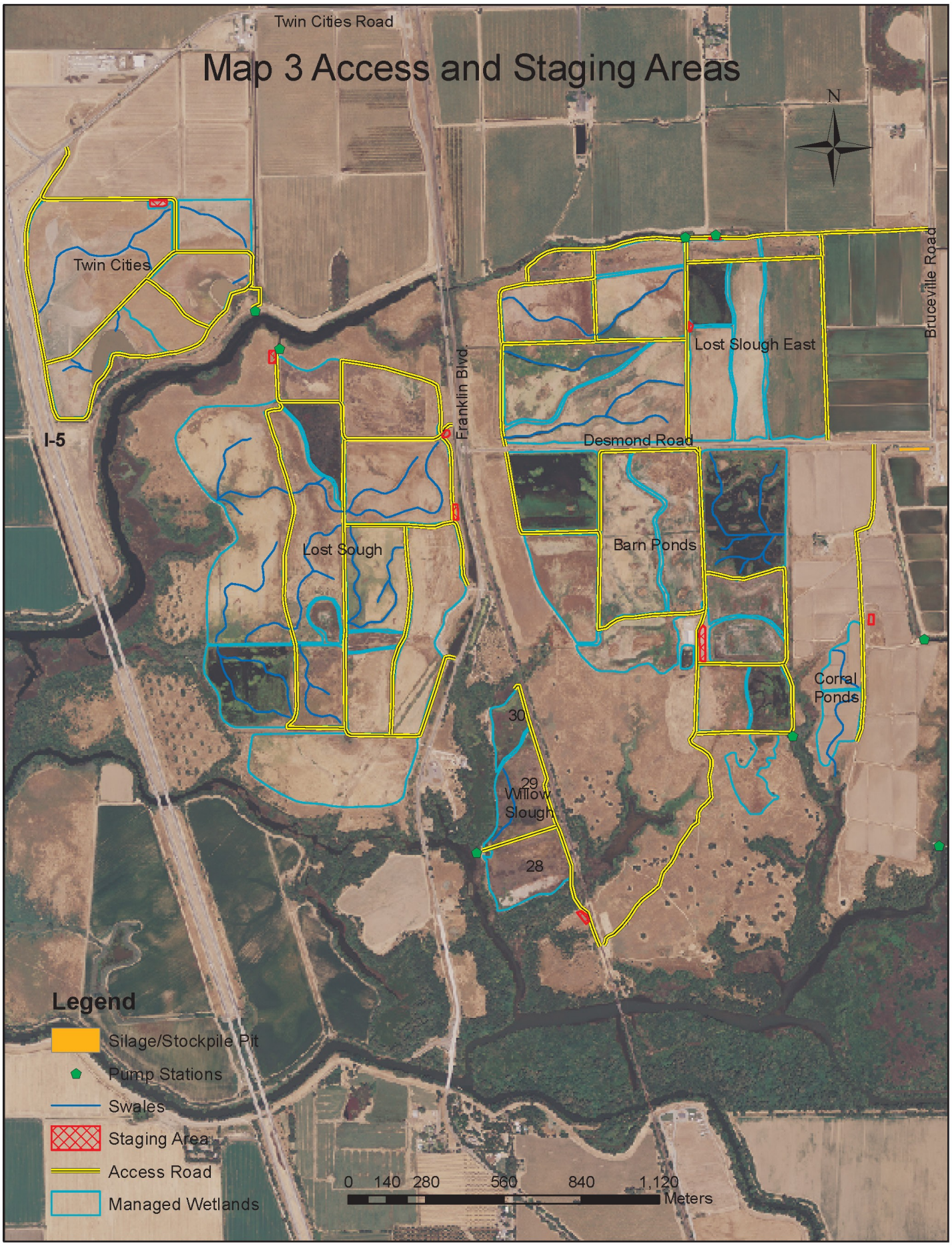
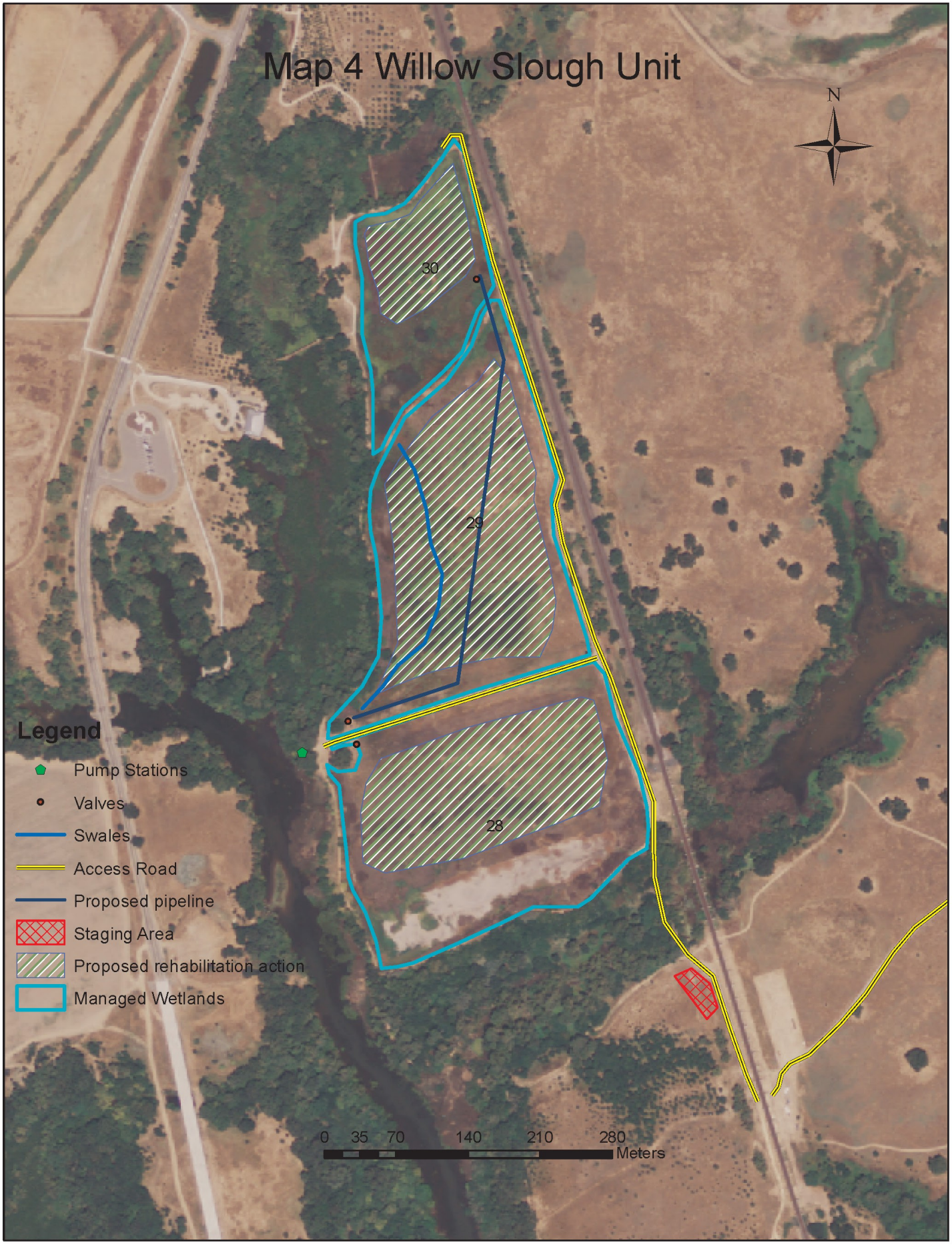
Cosumnes River Preserve Land Ownership

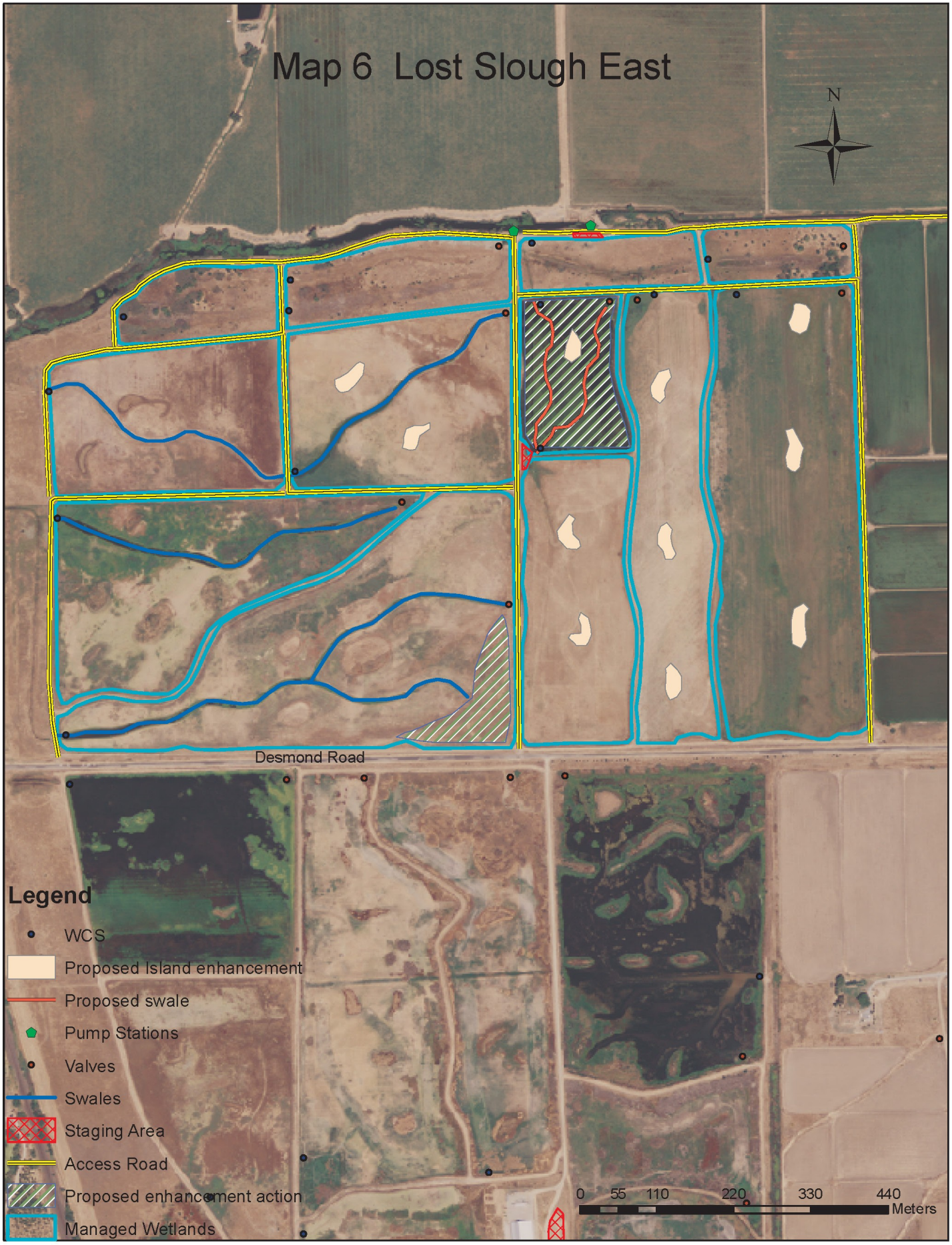


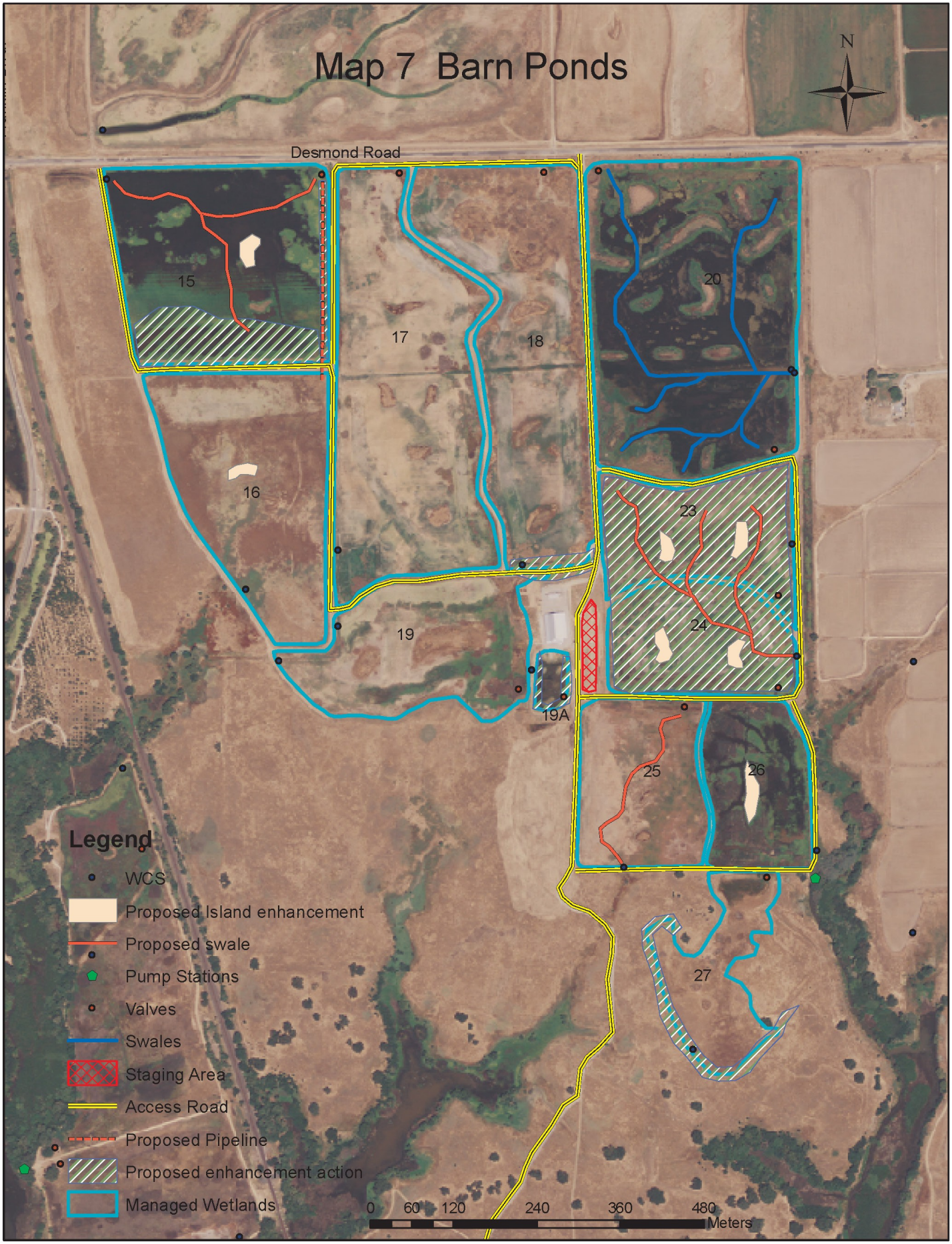

Map 2
Cosumnes River Preserve
Managed Wetlands and Rice Fields
Twin Cities
Lost Slough East
Rice Fields
Lost Slough
Barn Ponds
Corral Ponds
Willow Slough
Cougar Wetlands
Legend
Pump Stations
Swales
Managed Wetlands
rice fields
0 250 500 1,000 1,500 2,000
Meters
N

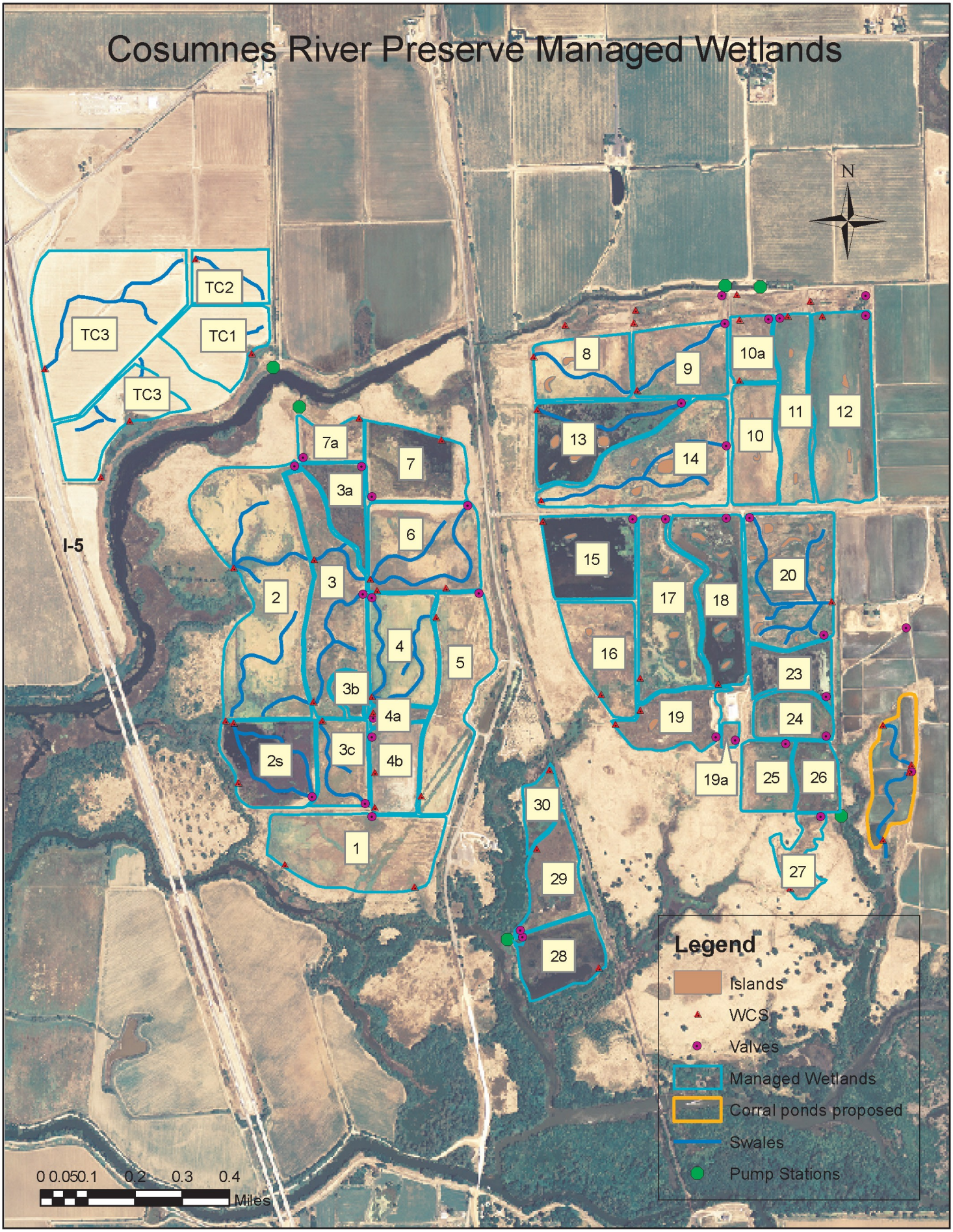

Map 3 Access and Staging Areas
Twin Cities Road
N
Twin Cities
I-5
Franklin Blvd.
Lost Slough East
Bruceville Road
Desmond Road
Lost Sough
Barn Ponds
Corral Ponds
30
29
Willow Slough
28
Legend
Silage/Stockpile Pit
Pump Stations
Swales
Staging Area
Access Road
Managed Wetlands
0 140 280 560 840 1,120
Meters


Map 4 Willow Slough Unit
N
30
29
28
Legend
Pump Stations
Valves
Swales
Access Road
Proposed pipeline
Staging Area
Proposed rehabilitation action
Managed Wetlands
0 35 70 140 210 280
Meters

Map 5 Lost Slough
N
Franklin Blvd.
7A
7
3A
6
2
3
4
5
3B
4A
3C
4B
2S
1
Legend
WCS
Proposed ls. enhancement
Pump Stations
Valves
Swales
Staging Area
Access Road
Boardwalk
Franklin Borrow
Proposed enhancement action
Managed Wetlands
0 75 150 300 450 600
Meters


Map 6 Lost Slough East
N
Desmond Road
Legend
WCS
Proposed Island enhancement
Proposed swale
Pump Stations
Valves
Swales
Staging Area
Access Road
Proposed enhancement action
Managed Wetlands
0 55 110 220 330 440
Meters


Map 7 Barn Ponds
N
Desmond Road
15
16
17
18
19
19A
20
23
24
25
26
27
Legend
WCS
Proposed Island enhancement
Proposed swale
Pump Stations
Valves
Swales
Staging Area
Access Road
Proposed Pipeline
Proposed enhancement action
Managed Wetlands
0 60 120 240 360 480
Meters


Cosumnes River Preserve Managed Wetlands
N
TC2
TC3
TC1
TC3
I-5
7a
7
3a
6
2
3
4
5
3b
4a
2s
3c
4b
1
8
9
10a
11
12
13
14
10
15
17
18
20
16
23
19
24
19a
25
26
27
30
29
28
Legend
Islands
WCS
Valves
Managed Wetlands
Corral ponds proposed
Swales
Pump Stations
0 0.050.1 0.2 0.3 0.4
Miles