BUTTE CREEK ECOLOGICAL PRESERVE
Honey Run Unit
Management Plan

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1. Executive Summary (pending)

2. Introduction

The 93 acre parcel on Butte Creek formerly known to locals as the "McAmis Property", and named herein "Butte Creek Ecological Preserve, Honey Run Unit" was purchased by the California State University, Chico Research Foundation in December of 1998 through funding provided by the U.S. Fish and Wildlife Service (USFWS), National Fish and Wildlife Foundation (NFWF), CALFED, and the Wildlife Conservation Board (WCB). The property includes 4000' of creek frontage, with critical riparian corridor adjacent to spawning and holding pools supporting several priority species and habitats, primarily the spring-run chinook salmon and steelhead trout. The salmon is currently listed as threatened under the California Endangered Species Act. Determination has yet to be made under the Federal Endangered Species Acts. The Steelhead is proposed to be listed.

The key to restoring and sustaining healthy populations of these fish is to protect and restore the habitat on which they depend. The California Department of Fish and Game (CDFG) has determined that this piece of property has extreme value in terms of providing wildlife habitat and the protection of shaded riverine aquatic habitat.

This parcel, in conjunction with the adjacent CDFG Ecological Preserve, will be managed to bear limited recreational use while improving the quality of both areas for anadromous fish and recreational users.

The Honey Run Unit is located six miles north of the Skyway on Honey Run Road. Besides the creek frontage, there remain on this parcel many piles of tailings - evidence of the dredger mining conducted on the site in the mid- to late-1800's. Habitat contained within the parcel include spawning and holding grounds for the spring-run chinook salmon and steelhead trout, riparian woodland for the Swainson's Hawk and Burrowing Owls, wet meadow, and annual grasslands. Important geographic features include splendid habitat for the gray pine, an overabundance of star thistle, and seasonal dredger ponds, in addition to the shaded riverine and spawning and holding grounds for anadromous fish.

The Honey Run Unit management goal is three fold:

- *Restore, protect, and enhance the habitat for spring-run chinook salmon and steelhead trout*
- *Develop and demonstrate methods of channel and floodplain management resulting in improvements for riparian plant species that would help to cool the stream, filter urban runoff, capture large woody debris, and increase water storage and groundwater recharge capabilities of lower Butte Creek*
- *Foster, through Preserve access and use, a living laboratory and field classroom for local students of all ages, and public appreciation of the Unit's resources*

2.1 Purpose of the Site-Specific Honey Run Unit Management Plan

This management plan makes recommendations for priority actions and programs to be implemented at the Honey Run Unit. It also provides an overview of the tri-fold

management scenario. Costs are estimated using the Center for Natural Lands Management's Property Analysis Record, which is a program that provides a detailed listing of required management tasks, associated line-item budget and requirements for a long-term endowment sufficient to cover annual operating costs.

3. Background

3.1 History of the Preserve

The Honey Run Unit of the Butte Creek Ecological Preserve, currently owned by the Research Foundation of California State University, Chico was leased and later sold to Baldwin Construction for gravel mining (**need date)**. Two other units, Canyon and Virgin Valley are owned by the California Department of Fish and Game (DFG). Gravel extraction continued on all of the Preserve into the 1970's but was all but discontinued by 1975. An old paved haul road once passed up the middle of the Preserve crossing Butte Creek on two bridges. This road provided year round access to equipment and trucks for the gravel operation. The Honey Run Unit had two large gravel ponds along Butte Creek toward the upstream end of the property. A high volume deep well was constructed in between these ponds and a planned cluster development was proposed in this area in 1980. The project called for 75 condominiums surrounding the ponds and serviced by the single well and a large common sewage disposal area near Honey Run Road. This project was approved by the Butte County Planning Commission and later by the Board of Supervisors. Local concerns about the development led to a successful ballot initiative that overturned the County decision and the stopped the project.

The land was later sold to John McAmis who contracted for preparation of an environmental impact report, a wetlands delineation, and lot plans for several variations of a subdivision of single family homes. The Planning Commission voted down a fourteen-lot subdivision. A subsequent four-parcel subdivision was approved and site preparation began. The construction activities raised local concern for the ultimate fate of the property and efforts to work with the landowner to purchase the property as a Preserve were initiated. The Butte Creek Watershed Conservancy (BCWC) led this effort with support from the CSU Chico, DFG, and U.S. Fish and Wildlife Service (USFWS). Proposals were prepared and submitted to Cal Trans, National Fish and Wildlife Foundation (NFWF), USFWS, CALFED, and the Wildlife Conservation Board of DFG. All of the grants were approved with the exception of the Cal Trans proposal. The contributions toward the purchase were $125,000 from USFWS, $150,000 from CALFED, and $100,000 each from NFWF and WCB. Approximately 13% of the grants ($32,441 from NFWF and $36,128 from CALFED) were set aside to develop a management plan and do some initial management. Discussions with the funding partners led to the CSU, Chico Research Foundation acquisition of the title as well as management responsibilities.

4. Related Conservation Programs in a Regional Context

4.1 Mitigation Programs/Habitat Conservation Plans

4.1.1 Butte County Wetlands Mitigation Bank

The Butte County Fish & Game Commission has undertaken an investigation into the feasibility and preliminary steps necessary to establish a mitigation project using income collected by the California Dept. of Fish & Game from Section 1600 Streambed Alteration Agreements issued in Butte County since 1991. The Center for Natural Lands Management (CNLM) is under contract to complete the feasibility analysis and initiate a protection/restoration program in Butte County. This task was completed in late 1997.

4.1.2 Butte Creek/Big Chico Creek Improvements

Over the past four to five years, both the U.S. federal government and California state government have initiated major programs to address severely declining and/or listed native anadromous fish species in the golden state. These species include fall, winter and spring-run chinook salmon (*Oncorhynchus tshawytscha*), steelhead trout (*Oncorhynchus mykiss*), white sturgeon (*Acipenser transmontanus*) and green sturgeon.[1]

The most prominent programs are the Central Valley Project Improvement Act, passed by Congress in 1992, and the Bay/Delta Accord, signed between state and federal regulatory agencies in 1994.

Funds from these programs, as well as other sources, are currently being used to address blockages and diversions along Butte Creek that have historically caused problems for the fall-, late-fall-, and spring-run chinook salmon as well as steelhead trout. These funds were also used to relocate a major diversion along Big Chico Creek that in years past caused reverse flows in the creek, resulting in a complete loss of downstream juvenile salmon migrants (USFWS, 1995).

The Butte Creek Watershed Conservancy was established to provide a local voice in this process relative to Butte Creek and to develop a watershed management plan that will seek to define a comprehensive program for the protection, restoration, and management of Butte Creek resources. The Big Chico Creek Task Force (since 1996 the Big Chico Creek Watershed Alliance), initially established by the City in 1992, has been the force behind securing funds to address the diversion problem on Big Chico Creek. The Task Force's goal is to restore the creek's riparian habitat and fisheries while developing a recreation

[1]These programs also address striped bass (*Morone saxatilis*) and American shad (*Alosa sapidissima*), both introduced game species.

program compatible with conservation of these resources. The Task Force is also addressing management of the Lindo Channel (a revegetation plan has been developed), and will soon be expanding their focus to Mud Creek, Rock Creek, and Sycamore Creek -- all tributaries to Big Chico Creek.

4.2 Conservation Programs and Regional Preserves

4.2.1 Sacramento River National Wildlife Refuge

The Sacramento National Wildlife Refuge, established by Congress in 1987, acquired its first property in 1989. The Refuge planning area encompasses 18,000 acres of land along the Sacramento River from Red Bluff to Colusa to be protected by purchase of fee title or conservation easements from willing sellers. The focus of the refuge is the protection, enhancement and restoration of riparian habitat.

Currently, the USFWS owns approximately 7,200 acres along the river, including some Preserves, such as Stoney Creek, Copta Slough and Llano Seco, that are undergoing restoration overseen by The Nature Conservancy. Working closely with the USFWS, the Conservancy has instituted a program of subcontracting restoration work to local farmers, using income from unproductive orchards to gradually convert them back to riparian habitat.

The Sacramento River National Wildlife Refuge provides habitat for many rare and/or listed species, including yellow-billed cuckoos (*Coccyzus americanus*), bald eagles (*Haliaeetus leucocephalus*), peregrine falcons (*Falco peregrinus*), giant garter snakes (*Thamnophis couchi gigas*), Aleutian Canada geese (*Branta canadensis ssp. leucopareia*), Valley elderberry longhorn beetles *(Desmocerus californicus dimorphus*), winter and spring-run chinook salmon, and sandhill cranes (*Grus canadensis*).

Public access to the refuge is currently limited to Seven-Mile Lane at the Llano Seco wetlands. Other areas will be closed until the USFWS has completed its acquisition and management plan--within about 10 years. Volunteer riparian restoration opportunities provide a means for public access to sites closed to visitation.

The Refuge is cooperating with a plan to protect and restore riparian and fish habitat required by Senate Bill 1086 passed in 1986. The plan is working to "preserve remaining riparian habitat and reestablish a continuous riparian ecosystem along the Sacramento River between Chico and Redding, and reestablish riparian vegetation along the river from Verona to Chico" (SB1086, 1996).

4.2.2 Sacramento River Wildlife Area

The Sacramento River Wildlife Area is a state Preserve owned and managed by the California Department of Fish & Game (CDFG). The Wildlife Area was

established to preserve riparian wetlands and associated sensitive species along the Sacramento River. It consists of 15 management units totaling approximately 3,500 acres along both sides of the river from Colusa to the Butte/Tehama County. A 1000-acre section of the wildlife area is located due west of the City of Chico. There is public access at the wildlife area, although most areas are accessible only by boat.

The wildlife area protects bank swallows (*Riparia riparia*), yellow-billed cuckoos, and Swainson's hawk nesting and foraging habitat. Swainson's hawks have not been confirmed in the wildlife area, but there are confirmed nest sites nearby. All of the wildlife area lies within the 100-year floodplain of the Sacramento River, and CDFG is currently in the planning stage for conducting restoration on approximately 250 acres in the section west of Chico. Existing orchards on some parcels will continue to operate, providing income for restoration of other parcels.

4.2.3 Butte Creek Canyon Ecological Reserve

CDFG ecological reserves are established to provide protection for rare, threatened, or endangered native plants, wildlife, aquatic organisms and specialized terrestrial aquatic habitat types. The Butte Creek Canyon Ecological Reserve consists of two units totaling 285 acres that are protected and managed by the CDFG along Butte Creek. Both units are located about two miles southeast of the City of Chico. The 30-acre Virgin Valley unit lies on an alluvial apron approximately ½ mile downstream from the mouth of the Butte Creek canyon, and the Canyon unit lies at the mouth of the canyon extending for 2.5 miles upstream. The purpose of the Reserve is to protect the anadromous fishery and riparian habitat from land use change. The primary management issue within the Reserve is the need for removal of exotic species along the creek, such as tree-of-heaven (*Ailanthus altissima*), French broom (*Cytisus monspessulanus*), Spanish broom (*Spartium junceum*), and Himalaya berry (*Rubus discolor*). Due to past disturbances and close proximity to residential areas, an unusually high percentage (44.6%) of the flora is non-native.

The Canyon Unit shares a common boundary with the Honey Run Unit.
(note Howard Slough and Llano Seco)

5. Preserve Site Characteristics

A map of the Honey Run Ecological Preserve showing surrounding properties is included as **Figure XX** of this plan.

5.1 Surrounding Area Characteristics

The Honey Run Ecological Preserve encompasses roughly 93 acres in a rectangular tract within the topographic confines of Butte Creek Canyon, located along the North side of Butte Creek and South of Honey Run Road. A stretch of the Preserve's property lies along the immediate south side of Butte Creek as well. To the Northeast, the upstream

portion of the Preserve is bounded by private property. To the Southeast, the downstream boundary meets the northern edge of the Canyon Unit of the CDFG Ecological Preserve which stretches intermittently southward to Highway 99. The Southern edge of the Preserve lies adjacent to large parcels of undeveloped land which are adjacent to private holdings atop and along the southern canyon walls. There has been no attempt to develop these floodplain parcels during the past twelve years and they will not be affected by the Preserve.

The Preserve is bounded on the north by Honey Run Road for one-third of its length, and by private parcels for about two-thirds. Access from Honey Run Road is found on the central northern side of the property. This means that the Preserve is bordered by private property, with fourteen existing structures along the Northern periphery south of Honey Run Road. There will be a need to clearly identify and record the exact Preserve-private land property lines in this area since some easements may have been granted prior to the change in land ownership. To the north of Honey Run Road there is an unbroken line of private parcels with a total of eighteen existing structures. A home of an adjacent landowner lies directly across Honey Run Road from the main entrance to the property.

The general surrounding regional land use pattern of scattered residences generally mirrors the settlement within the Lower Butte Creek Canyon. The Butte County General Plan designates the area Agricultural-Residential allowing single-family dwelling units at rural densities, and secondary uses such as mining, outdoor recreation facilities, animal husbandry, facilities, and forestry. The region is zoned FR-5 (Foothill-Recreation - 5 acre minimum lot size). There is no specific general land use plan currently in force for Butte Creek Canyon.

The land parcel sizes near the Preserve tend to be smaller than the general plan indicates. Of the lots in the Preserve's vicinity inventoried in 1993, 44 were found to be one acre or less while half of the lots were 0.5 acres or less (with a range of 0.25 acre to 10.0 acres or more). The total residences within Butte Creek Canyon was estimated at 238 in 1990, and 15 new building permits were finalized between 1991 and 1993 (Greystone, EIR, 1993). The residential growth rate during the 1990's is thus estimated at around 2.9-3.2%, about the same as for Butte County in general during this period.

A consideration of parcel size means that the 93-acre Preserve will be one of the largest land holdings in Butte Creek Canyon. It will represent land that, on the one hand, will be excluded from development yet, on the other hand, will have restricted access due to its designation as an ecological Preserve. This dichotomy could lead to misunderstanding between CSU, Chico staff and local residents unless a close, mutual working relationship between the two entities is maintained from the outset. Critical issues for university staff will be to maintain security at the site, dissuade unwanted recreation access and use, and to develop the Preserve to further its educational promise. Critical issues for local residents could include accelerated road use, restoration activities, and diminished access to the Preserve. These concerns may increase as adjacent properties become part of an extensive ecological reserve between Highway 99 and the Honey Run site. An

understanding of the feelings and expectations of all affected groups will be necessary if the ecological goals of the Preserve are to be met.

A meeting with neighboring land owners was held on the evening of April 21, 1999. The focus of their concerns was the possibility of increased human activity on the Preserve as well as accessing the creek through the Preserve. At the suggestion of the adjacent landowners, Project staff will develop a brochure educating visitors as to the purpose of this Preserve, and outlining visitor restrictions. A draft of this brochure will be distributed to the neighbors for review and approval before it is finalized for distribution at the site.

5.2 Physical Characteristics: Topography, Geology and Soils; and Hydrology

The basic map showing the course of Butte Creek and the local topography is included in this plan as **Figure XX**.

5.2.1 Topography

The Honey Run Ecological Preserve is located along the lower stretch of the "Lower Butte Creek Canyon Watershed" portion of Butte Creek. The Preserve extends roughly 3800 feet in a Northeast-Southwest direction across surface topography which has been severely affected by large-scale mining activities. Consequently, the local topography is characterized by extraction pits and tailing mounds with a very low local relief (approximately 10 to 30 feet from pit to mound). Elevations across the site plotted from the USGS 7.5 minute Hamlin Canyon Quadrangle (1969) range from approximately 300 to around 325 feet above mean sea level. The local topography of the Preserve is bordered by canyon escarpments to the north and south which rise to elevations of 700-900 feet above sea level, and present a dramatic visual frame to the Preserve's location. The important environmental consequences of the disturbed local topography of the Preserve relate to water flow and retention, soil destruction, and, ecological processes such as vegetational succession, and the availability of habitats for animal species.

5.2.2 Geomorphology

Butte Creek Canyon lies along the western edge of the broader Sierra Nevada geomorphic province which is formed from intrusive igneous rocks overlain by metamorphics. The canyon itself is incised into rocks which were formed in association with volcanic activity of the Cascade Range geomorphic province to the North. These igneous volcanic rocks were produced by a chain of volcanic cones, lava flows, pyroclastic flows, and associated mud flows of volcanic debris. The resultant geologic column for the middle to lower Butte Creek Canyon shows four main elements: (1) a basement metamorphic rock complex formed in association with the uplift of the Sierra Nevada in the early to mid-Cretaceous (90 to 130 million years ago); (2) A layer of near-shore sedimentary deposits, the Chico Formation, comprised of sandstone, pebbles and cobbles, and marine fossils,

formed in the Late Cretaceous (70-80 million years ago) and resting unconformably on the metamorphic rocks; (3) An overlying thick series of impervious volcanic mud flows intermixed with volcanic and other sediments, the Tuscan Formation, of mid-Pliocene age (approximately three million years ago), which caps the Chico Formation, and; (4) a surficial broken layer of Quaternary (within the past 1.75 million years) alluvial sediments, slopewash, and terrace materials. These latter deposits have been severely disrupted at the Honey Run Ecological Preserve by mining activities.

The Preserve sits within a broad canyon cut into the thick layers of the Tuscan Formation, since the last exposed strata of the Chico Formation occur about 3-4 miles upstream. The canyon itself provides important environmental consequences to the Preserve, including: slope and exposure impacts on ecosystems, air movement related to storm and precipitation patterning, and restrictions on stream flow. The geologic rock sequencing is evident in the sedimentary materials veneering the surface of the Preserve. Not only do these sediments give visual evidence of geologic processes along the Sierra Nevada-Cascade Range provincial borders, but they illustrate the rock series involved-granitics, metamorphics, and volcanics; as well as volcanic, continental and marine sediments. The sediments of the Chico Formation, due to their resemblance to the gold-bearing auriferous gravels which also rested on the metamorphic basement rocks of the Sierra Nevada, led to the initial gold mining operations which resulted, in part, to the extreme disturbances found today at the Preserve.

5.2.3 Soils

The climate, rock parent materials, and riverine locations of the Honey Run Ecological Preserve should have resulted in a range of distinctive soil types ranging from non-zonal alluvial deposits to deeply layered riparian forest soils. Due to over a century of gold dredging and gravel extraction activities only a few minor areas of undisturbed soil remain. These soils, characterized as ranging from gravelly sandy loam to silty clay loam range from 5 to 7 feet in depth and are covered by an overburden of tailings which are 5 to 6 feet in depth. The lack of well-developed soils across the Preserve's topography is the most important single factor to be considered when evaluating vegetation restoration projects as well as assessing a post-mining re-establishment of the original ecosystem types. Since the bulk of the parent material for soil formation over the Preserve is from rocks of the Tuscan Formation, there should be no major edaphic, or geochemical limiting factors.

5.2.4 Watershed and Water Supply

The Preserve occupies a segment of the Lower Butte Creek Canyon watershed roughly four miles Northeast of the transition from the canyon to the valley section of the stream's course. Butte Creek transects the entire extent of the Preserve and no portion of the Preserve is farther than 750 feet from its nearest bank. While diversion dams and channels exist both upstream and downstream from the Preserve (including two hydroelectrical generating stations) there are no such works present on the site. The stream currently occupies a channel which has shown considerable local variability in recent years, and especially during the heavy runoff episodes of the 1997-1998 period.

The high canyon walls have acted to restrict the course of Butte Creek in this section and the stream today meanders through the Preserve atop thick deposits of sediments derived from the Tuscan Formation and Quaternary alluvium. These deposits of gravels, sands, and clay sediments are estimated to lie in horizontal beds of from 10 to 400 feet below the stream bed.

The surface stream flow is monitored by the nearest USGS gauging station about one mile North of the Preserve since 1930. A sixty year record of stream flow shows a mean flow of 406 cubic feet/second, and a mean annual discharge of about 294,000 acre-feet. Extreme discharge records for this period show a minimum of 10 cfs and a maximum of 22,000 cfs. Stream runoff at peak periods will inundate low lying areas and serve to fill several elongated ponds on the Preserve. These ponds are perennially full of water which is also provided by subsurface flow. A consideration of these ponds and their water supply systems will be important in wetlands restoration projects at the Preserve.

The bulk of the Preserve lies within the 100-year floodplain of Butte Creek. This designation indicates that there is a one percent chance that a flood of this magnitude will occur in any given year. There is considerable evidence that heavy precipitation and accompanying runoff will heavily skew such statistical evaluations during such El Nino related storm events as occurred in 1981-1982 and 1997-1998. During such "100-year" events peak runoff from Butte Creek would be expected to inundate most of the Preserve extending to approximately 500-600 feet south of Honey Run Road.

The groundwater resources of the Preserve are contained in a shallow water-containing zone in the recent alluvial sediments, in intermediate Pleistocene alluvium, and in deeper layers (450 to 1200 feet) of the Tuscan Formation. The Tuscan recharge area provides groundwater of excellent quality to the down-slope high capacity wells of Chico and Durham. The shallower alluvial deposits are the source of high quality well water for the human occupants of Butte Creek Canyon. A Table of water quality monitoring data for this reach of Butte Creek is included as **Table XX in Appendix XX.**

The surface hydrology of Butte Creek has an important environmental impact on the Honey Run Ecological Preserve. The active erosional-depositional open system of the stream, especially during peak flow periods, will profoundly affect the wetland communities along its course. This may necessitate bank stabilization projects in order to maintain a channel course for Butte Creek that does not damage biotic restoration projects or compromise visitor safety.

5.2.6 Climatic Conditions

The basic climate of the Northern Central Valley of California and its eastern foothills is Subtropical Summer Dry (Mediterranean). This climate is characterized by a cool rainy winter (October to March) and a hot, dry summer (April to September). Rainfall for the Lower Butte Creek Canyon is approximately 25-30 inches per year, with 90-95% of this total occurring during the winter season. The winter period is characterized by the passage of wave cyclonic storms passing eastward from the North Pacific Ocean and bringing moist, unstable air masses into interior Northern California. The actual number of these individual storm systems is quite variable (averaging 12-15) and this is the primary determinant of precipitation variability from one year to another. The lowest winter mean monthly temperature in Chico is 36.4^{o}F for January, but daily temperatures can occur much lower, with attendant short periods of frost. Light snowfalls can occur between December and February, but snow does not persist at the Preserve. The summer months in the Sacramento Valley show an elongate thermal low pressure trough due to terrestrial heating. The retreat Northward of the winter storm track is accompanied by the domination of Northern California by massive subsidence from the eastern margins of the North Pacific high pressure system. These subsiding air masses are warm and quite dry, and govern the day-to-day weather of the summer months. The summer drought is only rarely alleviated by sporadic convectional thundershowers which are created by unstable air rising along the western flanks of the Cascades-Sierra Nevada systems. This rainfall is unreliable and spotty, and rarely contributes more than 5% of the annual total. The mean monthly temperatures for July-September in Chico are above 97°F, with periods above 100°F and even 106°F being common. In broadest macro-climatic terms, the climate of the Preserve in winter is closer to that of the Pacific Northwest, while the summer climate is closest to a subtropical desert such as Baja California.

Wind trajectories in the Northern Sacramento River Valley tend to be from Northwest to Southeast; however, at a secondary level, winds associated with winter wave cyclones can be both northerly and southerly. Summer winds relate closely to local thermal conditions and the strength of the subsident flow. Tertiary level valley and mountain breezes will occur on a daily basis in association with differential diurnal heating and cooling of valley and upland surfaces.

The major environmental impacts of climate at the Preserve relate to precipitation patterns which affect the discharge of Butte Creek; wind trajectories, especially during dry late summer months, which could affect wildfires; and, temperature

extremes which could serve as habitat limiting factors. The frost free period in this area is approximately seven months; however, it does not seem to represent a major environmental limiting factor for natural communities, since a winter-deciduous habit is common for most large hardwood species.

5.2.7 Other Characteristics

a. Access

Access is gained to the Honey Run Ecological Preserve by means of a short side road from Honey Run Road which extends along the entire northern edge of the site. There are a number of on-site gravel roads and trails whose existence is based upon earlier mining activities and visitations by individuals in pursuit of recreation. There is presently no bridge across Butte Creek within the Preserve, a situation which will hamper stream bank stabilization projects, and make field work difficult to the south of the stream—especially if these adjacent level terraces become utilized within the Preserve. Some roadway reorganization will be necessary in order to provide site access, and trails will need to be mapped and marked in order to aid in the development of environmental education activities at the Preserve.

b. Natural Hazard Systems

The two major "natural hazard systems" operative within the Preserve are riverine flooding and wildland fire. Both flooding and wildfires create circumstances which could endanger restoration projects, improvements on the site, and visitor safety. While the danger from additional hazards outside the Preserve might also be apparent, such as canyon-side landsliding which could hamper road access; an assessment of the flood and fire hazards should be undertaken prior to specific micro-scale, on-site projects. These natural hazard systems tend to link the management practices at the Preserve with shared concerns of adjacent Butte Creek Canyon residents within a larger regional scope.

5.3 Biological Characteristics

A map showing the approximate major vegetation communities of the Honey Run Ecological Preserve will be prepared by interns.

5.3.1 Natural Communities

The Preserve consists basically of heavily disturbed riparian habitats, with local intrusions of species from adjacent stands of chaparral, foothill woodland, and valley grassland. The California Department of Fish and Game's Natural Diversity Data Base (NDDB) has described and listed natural communities of special concern. None of them, in an undisturbed state, exist on the Preserve; however, most of the area does fit (or could fit) into one or another wetland category. The primary NDDB natural communities that once occurred at the Preserve, and are present today in a highly degraded state, are organized in a transect from the stream to the Preserve's periphery:

a. Great Valley Willow Scrub: an open, broadleaved, winter-deciduous shrubby streamside thicket dominated by any of several willow (*Salix*) species. Dense strands usually have little understory or herbaceous components. More open areas have grassy understories, usually dominated by introduced weedy species. This association has been greatly expanded on the Preserve by mining activities and the channel swings of Butte Creek. Exotic species colonizing these areas include: French broom, Scotch broom, and star thistle.

b. Great Valley Mixed Riparian Forest: a tall, dense, winter-deciduous, broad-leaved riparian forest. The tree canopy is closed and composed of several species including *Acer negundo, Juglans hindsii, Platanus racemosa, Populus fremontii, Alnus rhombifolia*, and willows. Understory consists of vines such as *Vitis californica* and exotics such as blackberry and vinca. At some sites on the Preserve this riparian forest grades into a related element—the Great Valley Cottonwood Riparian Forest which is heavily disturbed. The Mixed Riparian Forest usually intergrades away from the stream with oak dominated riparian forests; however, this transition is heavily obscured by the mining pit and mound topography.

c. Valley Oak Riparian Forest: a medium to tall broad-leafed, winter-deciduous, closed-canopy riparian forest dominated by valley oak (*Quercus lobata*), and intermixed with ash, walnut, and sycamore species. This riparian forest usually occurs on the highest parts of the floodplains and intergrades closer to the river with the Mixed Riparian Forest. The oak riparian forest has also been severely disturbed and in places is dominated by white alders and willows on tailings mounds.

d. Species from three other NDDB recognized natural communities intrude into the riparian forests. North Slope Mixed Chaparral shrubs are found mainly on the southwestern portions of the Preserve and these stands are characterized by locally thick stands of poison oak, buckbrush, manzanita, California buckeye, and other species, both native and introduced. The Blue Oak Woodland is an open-canopy forest dominated primarily by blue oak (*Quercus douglasii*) and gray pine (*Pinus sabiniana*) with interspersed grasses, shrubs, and other herbaceous species. This community intrudes on both sides of Butte Creek, and gray pines extend in some instances nearly to the stream's banks. Both blue oaks and gray pines are found mixed with riparian forest elements on heavily disturbed sites. Valley Grassland elements have re-established themselves on level terraces, mainly North of Butte Creek, which have been left undisturbed by mining activities for long periods. Valley grassland species are found also as pioneer species on rubble mounds. The grassland community is characterized by annual grasses and forbs that develop in the spring to late summer period. These include bromes, fescues, wild oats, clovers, lupines, popcorn flowers, and lotuses. A number of introduced species such as star thistle, mulleins, thistles, and cocklebur have formed extensive mats in areas of valley grassland habitat.

5.3.2 Flora and Fauna

There have been at least two surveys of the flora of the Honey Run Ecological Preserve. The 1979-1980 study was conducted in association with an Environmental Impact Report on the site by Eco-Analysts of Chico, and the 1993 study was also made in conjunction with an EIR by Greystone of Sacramento. The 1979 study listed 30 species of trees, shrubs, and vines; and 95 species/genera of herbaceous plants. The 1993 study listed 30 general species of plants as a "representative species list." The 1979 floral listing is included as **Figure XX in Appendix XX**. In 1987, V.H. Oswald of CSU, Chico conducted an extensive survey of vascular plants as part of the management plan for the 285 acres of similar habitat (both in topography and mining history) downstream from the Honey Run Ecological Preserve near Highway 99. His survey recorded vascular plants from 76 plant families, 235 genera, and 390 species/varieties. Although the area surveyed is 2-3 miles downstream from the Preserve, his compilation serves as a datum for further floral research in Lower Butte Creek Canyon.

Bidwell's knotweed (*Polygonum bidwelliae*) and robust sidalcea (*Sidalcea robusta*) are two species of flowering plants which have been reported from the general vicinity of the Preserve and are on the rare and endangered lists of the California Native Plant Society. A systematic search for these species was conducted on the Preserve in August 1979, but failed to discover their existence there. Consequently, this EIR stated that "it would appear that rare and endangered plant species are not present on the site". This could be due, in part, to the extensive disturbances of the Preserve's habitats.

Faunal species censused during the 1979-1980 study included six species of fish, four species of amphibians, five species of reptiles, 89 species of birds, and 14 species of mammals. The 1993 study listed four species of fish, three species of amphibians, six species of reptiles, 45 species of birds, and 14 species of mammals. It is clear that continued actual sightings of terrestrial vertebrate animals will be necessary in order to complete and/or clarify these listings. The faunal listings from the 1979 survey are included as **Figure XX in Appendix XX**. No rare, endangered or threatened species are known to exist at the Preserve; however, the entire length of Butte Creek Canyon lies within the Buck Mountain Deer Herd range. The Preserve itself is located within a designated "Deer Development Zone" which was established jointly by CDFG and Butte County to define areas which represent low value deer habitat as a consequence of current land use development. Mule deer (*Odocoileus hemionus*) individuals have been observed at sites on the Preserve.

5.3.3 Historical and Ongoing Research

The two primary research efforts at the present-day Preserve are the EIR's mentioned above. The Butte Creek Watershed Project is currently engaged in producing an Existing Conditions Report for Butte Creek. This draft is currently in the public review stage and is being revised per comments from stakeholders and agency representatives. Additional surveys have been conducted at other sites within Butte Creek Canyon and are on file at CSU, Chico and the Butte County Planning Department office in Oroville. The Butte Creek Watershed Project of CSU, Chico is presently engaged in multiple research efforts at the Preserve involving faculty and students primarily from the Departments of Geography and Planning, Geosciences, and Biological Sciences. These efforts involve all aspects of environmental investigation and include: planning for riparian forest restorations, proposals for creek channel/bank stabilizations, trails and facilities for environmental education programs, further natural community assessments, studies of water quality and environmental monitoring.

5.4 Ecological Processes

The major ecological processes operative at the Honey Run Ecological Preserve are controlled by the site's elevation, topography, active hydrology, and climate. Much of the potential natural vegetation and wildlife of the Preserve's riparian habitats is dependent on the seasonal flooding of Butte Creek and the interplay between occasional inundations and the local upslope topography. These natural ecological processes have been severely altered by over a century of extensive and sporadic mining of the site, with consequent disruptions of topography, soils, drainage, and micro-habitats. As well, the site is partially vegetated by a large number of introduced species which are highly invasive and can occur in nearly pure stands. One estimate of non-native plant species in Butte County indicates that approximately 22% fit into this category. The survey by Oswald (1988) a few miles downstream from the Preserve indicates that the non-native species represent 170 out of 390 total species, which at 45% is twice the percentage for the county. This can be attributed to the highly disturbed character of the Preserve as well as its proximity to urban centers such as Chico and Paradise.

The most serious consequence of the extensive mining operations at the Preserve is that soils have been almost entirely stripped away or are buried under deep piles of gravel tailings. In ecological terms, the resultant re-vegetation is an example of primary (ecological) succession in a post mining context. Such a primary succession differs from a case of secondary succession (such as post-burning, grazing, logging, or clearing) in the important aspects of having soils largely in place. With a post-mining succession soils must be formed, and mesic sites for re-vegetation (relatively level, well-drained upland areas with deep soils) are non-existent. The succession is closer to that of a major topographic natural disturbance such as a landslide or a volcanic eruption. The continued channel swings and

erosional activities of Butte Creek also serve to maintain some of the disturbed areas on the Preserve.

In such disturbed areas non-native, weedy, invasive species such as blackberry, French broom, star thistle, tree-of-heaven, and cocklebur can maintain themselves for many years since their succession to other native species is retarded by the lack of soils. Given such considerations, management policy in such disturbed areas should include a program of non-native plant removal. This program should be carefully evaluated in terms of wildlife populations since some introduced species can provide cover and food for animals. A phased removal and re-vegetation restoration program with a balanced impact on natural community habitats may be most sound ecologically.

The distribution of chaparral and valley grassland species within the Preserve means that the ecological role of wildfire must be considered. Some woody species are fire-increasers while others are fire-decreasers. While the Preserve as a whole is not in an especially high wildland fire hazard zone, fire suppression on the one hand, and local controlled burns to suppress weedy growth on the other hand, could impact local stands. Fire hazard evaluations should be especially conducted near riparian restoration sites and sensitive areas important to environmental education programs on the Preserve, as well as near adjacent homes. It would be counter-productive to have such improved areas damaged by wildfire.

In broadest ecological terms, the Preserve would serve as an example of a post-mining succession along and within the stream course of a perennial stream. It serves as a natural laboratory for long-term habitat recovery and, as such, is open for a full range of original ecological and restoration studies and projects. Within Butte Creek itself, an important ecological goal is to maintain the aquatic habitat for the spring run and fall run chinook salmon and steelhead trout. Butte Creek is presently the largest of the four remaining tributaries of the Sacramento River that support wild and persistent populations of spring run chinook salmon, a species which is scheduled for listing under the Endangered Species Act.

5.5 Physical Improvements, Previous Enhancements

The property has been primarily utilized for mining activities over the last one hundred years. The improvements for these activities, primarily the paved haul road, have all but disappeared in the channel changes of the creek and the revegetation of the disturbed areas of the site. Some additional improvements are discussed here.

5.5.1 Existing Improvements

The property has been improved to accommodate four leach fields. These areas were excavated and filled with silt and sand material sifted from other areas on the property. These leach fields are approximately 100' square and 4' deep. They are generally located along the northern property boundary near Honey Run Road and the along the property boundary with

the houses on the upstream end of the property. One leach field is located on the extreme downstream border.

Other improvements and or enhancements have been minimal. There is a domestic well that has been drilled but currently has not been developed for use. It is located **(need GPS coordinates)**. Several lengths of berms were constructed to reduce the visibility of the Preserve from Honey Run Road and from the neighboring homes.

5.5.2 Previous Enhancement

There have been very few recognizable enhancements in the past. The course change of the creek in 1986 bisected the area of the original planned development. Some enhancements had been made in this area, including a high volume deep well. The well casing for the well is now visible in the middle of the creek and little else from that era is visible. Some of the old haul road is still visible in places but fragmented by the creek movement and eroding directly into the creek.

5.5.3 Management History

Other than the previously mentioned activities, there has been no management of the Preserve for conservation purposes or otherwise.

5.6 Current Issues

The purchase of the property by CSU, Chico has initiated a process of developing a locally compatible use for the property that is consistent with the mission of the University. Because of years of uncertainty by the neighbors regarding the site's future, there is sensitivity to what uses will be acceptable to the community and to the University. The development of this management plan will be coordinated with a citizen advisory committee to develop a use plan compatible with neighbor's concerns.

Control of exotic plant species is a major issue on the Preserve. Several acres are completely overtaken by star thistle (*Centaurea solstitialis)* which is pervasive along Honey Run Road and in areas that have been recently disturbed. Himalayan Blackberries are also pervasive in many of the dredger tailing piles and depressions.

5.7 Constraints to Management

5.7.1 Legal Constraints

The stream through the property is habitat for the threatened runs of spring run chinook salmon and steelhead trout. The riparian corridor (bed, bank, or perimeter) is protected by DFG Code Sections 1600 and 1603. The National Marine Fisheries Service is currently seeking

comments on essential habitat for threatened and endangered anadromous fish species and could strengthen protections for the riparian corridor. Beyond the protections for anadromous fish, the Preserve is limited to development activities that maintain the ecological integrity of the area. Restriction of uses is currently being defined specifically as part of this management plan.

5.7.2 Financial Constraints

There is no current source of funding that will provide for the long-term management costs of Honey Run Unit Preserve in perpetuity. Establishment of an endowment for ongoing management would provide for long-term management. The Property Analysis Record calculates requirements for average annual ongoing expenses, and this level of funding would be the minimum required revenue from an endowment to adequately maintain the Preserve. The average annual expense allows for savings to cover large costs that occur cyclically, such as fence replacement. However, establishment of a endowment may not be sufficient to cover initial and capital costs, such as construction of educational, interpretive, storage, and sanitation facilities and many activities in the first annual work plan. The management team of the University, with community input and regulatory agency concurrence, will ultimately need to decide the intensity (and relative cost) of the public outreach program to be implemented at the Honey Run Unit Preserve.

5.7.3 Environmental Constraints

The size and diversity of the Preserve constitutes a constraint in that certain management tools may be highly expensive to implement, such as building a bridge to the other side of the creek. Access is currently limited to the north side of the creek except by wading or fording the creek. This would preclude most mechanized management without significant environmental consultations relative to disturbance of the creek bed and banks. Since much of the Preserve is in the floodplain, there are constraints on many restoration activities that may impact the channel, banks, or flood control situation of the Preserve. As part of ongoing studies of the aquatic habitats, fluvial geomorphology and hydrology of the Preserve, management strategies will be developed to address these constraints.

5.7.4 Social Constraints

The Preserve's proximity to surrounding homes could potentially limit the use of certain management techniques, depending upon community response. For example, it would be entirely possible to conduct a prescribed burn on parts of the Preserve even with houses nearby. Liability concerns and resistance from the neighboring community

could invalidate this as a management technique in the long-term. However, the City of Chico has conducted burn programs in Bidwell Park near residences without opposition or complaint. In addition, community reaction could be negative in response to the use of herbicides, if this were deemed necessary. Use of the Preserve for educational activities could also be a concern of neighboring landowners. Unregulated access could create an intolerable situation and force a change in management that would restrict educational activities.

6. Future Potential Growth of Preserve/Conservation Management Areas

It is the intent of the CSU, Chico Research Foundation to connect the Honey Run property with the existing California Department of Fish and Game Ecological Preserves (downstream of the Honey Run Unit) to be co-managed by both entities. All of these properties on Butte Creek will become "units" of the Butte Creek Ecological Preserve. Currently, these are the Honey Run, Canyon, and Virgin Valley Units. The "Keeney" property (on Butte Creek south of Durham) is owned and administered by the Center for Natural Lands Management. As other properties become available for acquisition and/or management, they will be added to the existing units. Properties acquired and/or managed need not be connected with the existing Preserve units.

7. Management Goals and Objectives

The Honey Run Unit management goal is to protect and where appropriate restore the aquatic and riparian habitat that supports spring run chinook salmon, fall run chinook salmon, and steelhead trout. A secondary goal of the Preserve is to improve floodplain and channel functions such as stabilizing the sediment and bedload input from the remains of the gravel mining operation. A final goal of the Preserve is to provide opportunities for watershed education through scheduled field trips and research endeavors.

7.1 Ecological Objectives

7.1.1 Ecosystem Objectives

1. Sustain and restore critical habitat for the endangered spring run chinook salmon. This objective can be measured by conducting annual monitoring of shaded riverine aquatic habitat, pebble counts, photomonitoring, etc.
2. Determine the feasibility of native habitat restoration on highly disturbed portions of the property.
3. Determine whether additional rare elements occur at the Preserve that merit special management attention.

7.1.2 Biological Element Objectives

1. Protection of critical habitat for the endangered spring run chinook salmon and steelhead trout populations at this site is of the highest priority. This can be done most effectively through proper management of the ecosystem of which it is a part.

7.2 Programmatic Objectives

1. Increase awareness and build a supportive constituency for the Honey Run Unit within the community.
2. Develop a public access/educational program for the Honey Run Unit that will discourage vandalism, aid in ensuring that uses of the site are appropriate, and integrate Preserve management with the local community's needs.
3. Promote the use of the Honey Run Unit as a “laboratory” for testing and assessing management techniques and practices that will benefit anadromous fish habitat and help control invasive exotic species.

7.3 Facilities and Maintenance Objectives

1. Improve existing Preserve facilities. The fence regulating vehicular access to the site has been relocated to allow vehicles to queue off the road safely. The existing roadway to an internal parking lot will be improved.
2. Construct and maintain composting toilet. Purchase and maintain trash cans.
3. Construct and maintain an open-air classroom.
4. Construct and maintain shed for equipment and tools.
5. Construct and maintain regulatory and welcoming signs.
6. Construct and maintain proposed interpretive infrastructure and signs.

The average annual cost of maintaining the facilities is estimated in the Property Analysis Records (PAR), provided as an appendix to this plan.

8. Management Strategies

8.1 Recommendations on Species Requirements and Management

1. Reintroduce disturbance processes to which the Honey Run Unit cottonwood riparian and upland communities are adapted. Due to changes in Central Valley fauna, as well as the small size and proximity of the Preserve to development, such processes will of necessity be controlled imitations of natural processes. They may consist of prescribed burns, overseeding, mowing, hand control, spot herbicides or a combination thereof.

2. Institute management actions to control invasive species, particularly star thistle, that are invading disturbed areas of the Preserve. Such measures could include the processes listed under Recommendation 1.

3. Monitoring the existing and restored vegetation complexes to determine success levels for restoration.

4. Implement buffer management that will closely coordinate county road maintenance and hydrological protection measures at neighboring homes and development sites.

5. Develop a limited public use program that will aid in achievement of Preserve management objectives by providing educational materials at a kiosk or directly distributed to groups explaining the values and stewardship of the Preserve.

6. Monitor the progress of developments bordering the Preserve as they are planned and implemented.

7. Update existing information immediately and periodically revise a biological inventory for the Preserve. This could be done relying primarily on volunteer aid, with staff time required for organization and volunteer activity supervision.

8. Encourage student and faculty research and K-12 education programs at the Preserve that will address ecological management issues.

8.2 Adaptive Management

Adaptive Management is an approach that allows resource managers to learn from past experience through formal experiment or by altering actions based on their measured effectiveness. Monitoring programs are the foundation of the adaptive management approach. For example, alders begin to grow into a creek bank washed away by a high water event. While the growth of alders can often act to stabilize the creek bank, it collapses again. Resource Managers would then attempt bank stabilization with willow plantings and initial irrigation.

8.3 Restoration, Enhancement and Reintroduction

There is need for reintroduction of new species or restoration efforts at this time. Valley oaks, Ponderosa Pine, cottonwood and others species should be utilized to extend the upland forest areas. This will help with exotic species control. Restoration in the floodplain will be addressed after fluvial geomorphological and hydrological studies are complete. The USFWS and CDFG would both have to approve the details of such a program prior to its implementation.

8.4 Invasive/Exotic Pest and Plant Species Control

There are a limited number of serious non-native/invasive plants on the Preserve. Of particular concern are star thistle, Scotch Broom, Himalayan Blackberry and various exotic weeds and grasses. Pending approval of the proposal submitted to CALFED for the 1999 round of funding, a Weed Management Plan will be developed in conjunction with this management plan.

8.5 Guidelines for Sensitive Species/Sensitive Habitats

8.5.1 Riparian Habitats

The restoration of riparian wildlife and fisheries habitats can be approached in two ways: passive restoration, in which natural processes are left alone to do their work; and active restoration, which includes the planting and first year irrigation of riparian species. Once the fluvial geomorphology study on this portion of Butte Creek is completed, Project staff will be able to make informed decisions about where to help natural processes restore the riparian habitat on this reach of the creek.

8.5.2 Oak Woodlands

No oak woodlands currently exist on the Preserve. There are plans to plant valley oaks with seedlings provided by the California Department of Forestry (CDF) in Magalia. A Restoration Ecologist plans to conduct a groundwater study, which will be instrumental in deciding where on the Preserve the oak plantings will take place.

8.5.3 Wetlands

A wetlands delineation study was conducted in 1979 as a part of the EIR referenced above. Wetlands on the Preserve will remain undisturbed by this Project.

8.5.4 Western Pond Turtle

The Western Pond Turtle is a species of special concern. While the Preserve has superb habitat for this turtle, none have been sighted there. There is the potential for reintroduction of the Western Pond Turtle at this site.

8.5.5 Bald Eagle/Raptors

Bald eagles have been sighted on the property and a pair of bald eagles was recently (April 1999) viewed courting through the canyon. The planting of new cottonwoods will ensure raptor roosting areas. The wildlife monitoring portion of this Project will include observation and quantification of raptor species on the Preserve.

8.5.6 Chinook Salmon/Steelhead

Protecting and enhancing the survival of the spring and fall run chinook salmon and steelhead trout is a major focus of this project. A series of activities, including riparian restoration and bank stabilization, will be undertaken to ensure that the reach of the stream flowing through the Preserve will provide proper migrating, spawning, and holding habitat for these sensitive species.

The reader is referred to the Butte Creek Watershed Existing Conditions Report for a complete history, lifecycle analysis, and management guidelines for the spring and fall run chinook salmon and steelhead trout.

8.5.7 River Otter

River otter have not been observed directly on the Preserve, but the habitat indicates that their presence is likely to occur.

8.6 Public Use

Public use is most assuredly an issue on the Preserve for Project staff and adjacent landowners. The Preserve is intended to be a wildlife viewing area, not a public park. Accordingly, signs have been posted warning against vehicle trespass, camping, and hunting. A brochure will be developed to educate Preserve visitors as to the purpose and ecological value of the Preserve, as well as to outline restrictions to its use. The Preserve will be utilized by local school groups (K-12 classes, community college classes, and university classes, as well as individual researchers by permission). A log of all activity and visits by school groups will be maintained, as well as a visitor sign in sheet. A relationship with adjacent landowners is being and will be developed to ensure that the concerns of the neighbors of the Preserve are addressed.

8.7 Coordination and Partnerships

Management practices for the spring and fall run chinook salmon and steelhead trout are being coordinated with the CDFG, in conjunction with the management of the Canyon Unit of the Preserve. A partnership with the Butte Creek Education Program (BCEP) will provide volunteers for surveys of biological and wildlife communities. Through the BCEP, a partnership with Chico Unified School District will allow Project staff to provide assistance to local schoolteachers in utilizing the planned education center for class activities related to riparian restoration and ecology. Coordination with the Parks and Preserves Foundation regarding public access and use of the Preserve for wildlife viewing is underway. A partnership with the Board and members of the Butte Creek Watershed Conservancy (BCWC) will yield a pool of volunteers to assist with the eradication of invasive species and the planting of native species. This partnership with BCWC will also provide assistance in starting endowment funding for long-term management. Butte County currently has a program that utilizes low-risk prisoners from the County Jail to cut up the large woody debris deposited on the Preserve during high water events. Of course, Butte County would also be the lead agency for any land use planning decisions, as well as the recipient of property taxes. Finally, the Department of Water Resources has plans to conduct a water quality monitoring program on Butte Creek, and may use the Preserve as one of its test sites.

8.8 Permit and Legal Requirements

Before any restoration activities can commence, any proposed earth work that affects the stream bed or bank will require a Reclamation Board permit, and work in jurisdictional wetlands may require US Army Corps of Engineers and the US Fish and Wildlife Service oversight. Section 1600 of the DFG code requires mitigation agreements for any modifications to the bed and/or bank of the stream. It is anticipated that any restoration activities that do affect the stream bank and riparian zone will be mitigated with new wetlands and riparian zone creation exceeding a ratio of 2:1. A use permit from Butte

County may be required for construction of the educational center. The annual work plan will address these requirements.

8.9 Facilities and Public Services Maintenance Program (pending PAR)

8.10 Cultural Resources Management

A request has been made to the Northeast Archeology Information Center on the CSU, Chico campus to conduct a literature search of the archeology and history of the Preserve, based on a USGS quad map delineating property boundaries. If cultural resources are identified, a plan for their preservation will be undertaken.

10. Real Estate Issues

9.1 Property Taxes

The maximum amount of property tax cannot exceed 1% of the property's appraised (assessed) value, plus any bonds or similar assessments which have been voter approved. The property was appraised on November 18, 1997 at $475,000. This priced was based on the value of the property for single home development. Property taxes for the fiscal year 1997-1998 totaled $4,932. The property will be reassessed as a conservation site. This should substantially reduce the annual property tax burden. The average annual property tax, based upon the latest appraisal, is included in the PAR.

9.2 Title Considerations

The property boundaries have been identified and marked. A legal description of the property is on file titled: McAmis. California State University, No.: 2-65690BG, Fidelity National Title Company, 535 Wall Street, Chico, California.

Per the California Penal Code (Section 602), three signs per mile will be posted around the perimeter of the designated off-limits area to prevent trespassing and hunting.

To ensure protection of the ecological values of the property in perpetuity, the conservation use of it will be recorded as a deed restriction. The restriction will remain with the property unless and until a catastrophic or other event (irremediable through restoration) destroys the conservation value of the property. In that case, and with agreement from the relevant local and resource agencies, the land could be sold and replaced by land with appropriate conservation values elsewhere.

Standard title insurance for the property has been purchased from Fidelity National Title Company of Chico, California. The following exceptions have been noted for the property:

Any adverse claim based upon the assertion that:

a) Some portion of said land had been created by artificial means, or has accreted to such portion so created.

b) Some portion of said land has been brought within the boundaries thereof by an avulsive movement of Butte Creek, or has been formed by the accretion to any such portion.

Rights and easements for navigation and fishery which may exist over that portion of said land lying beneath the waters of Butte Creek.

Easement granted to Ben E. Crouch: "Ditches and also the right to erect a dam or dams." (Recorded April 30, 1914, in Book 140 of Deeds, Page 249, Butte County Records.)

Easement granted to Frank Colm: "The Drexler Ditch." (Recorded August 6, 1926, in Book 222 of Deeds, Page 264, Butte County Records.)

Easement granted to Pacific Gas and Electric Company: "Public Utility Purposes." (Recorded January 8, 1849, in Book 457, page 496, Official Records of Butte County.)

Easement granted to William Bidsworth: "Pipes or flumes." (Recorded February 9, 1950, in Book 531, page 203, Official Records of Butte County.)

Easement granted to State of California: "For ingress and egress." (Recorded August 28, 1986, as instrument no. 86-28747, Official Records of Butte County.)

Easements and building setback line, dedications or offer for dedications, if any, and statements, if any, as shown on that certain map filed in the Office of the Recorder of the County of Butte, State of California, on February 3, 1997, in book 141 of maps, at pages 53, 54, 55, 56 & 57, referred to herein.

9.3 Land Acquisition

The Butte Creek Ecological Preserve consists of three "units" located between Highway 99 up to the Honey Run Unit. An estimated 15,000 feet of streambank are protected among these units. There are several potential acquisition sites that would support the ecological and programmatic objectives of not only the Honey Unit, but also the greater Butte Creek Ecological Preserve. Potential acquisition sites will be evaluated on a case by case basis.

10. Funding Mechanisms

Funding to meet ongoing management costs is a required component of any land management plan. Without an adequate and secure source of funding, resources necessary to carry out needed management actions for the Honey Run Unit may not be available. It is highly recommended that a secure source of management funding be established for the Honey Run Unit as soon as possible.

There are numerous options for obtaining a source of ongoing management funding for the Honey Run Unit.

- A capital endowment could be established through the University Research Foundation, the interest from which would provide funds adequate to cover average annual ongoing costs. (The PAR also calculates the endowment amount that would need to be set aside to cover average annual management expenses, assuming a 5% capitalization rate; **see Appendix II)**. The advantage of an endowment is that when established at a sufficient level and properly managed, funds will be generated in perpetuity and they will keep pace with inflation. This occurs when a portion of the interest generated from the endowment is reinvested every year to offset the effects of inflation. A disadvantage is that an endowment requires a large up-front capital investment, which can be difficult to generate.

- Wildlife Conservation Board. The Wildlife Conservation Board, a working group of the Resources Agency of the State of California, has expressed interest in funding riparian restoration projects and management activities in the Butte Creek Ecological Preserve.

  The Wildlife Conservation Law of 1947 (FGC Sections 1300 et seq.), authorizes the Wildlife Conservation Board (WCB) to make grants to public agencies and nonprofit groups for fish and wildlife habitat restoration. The WCB, comprised of the directors of the DFG and the Department of Finance, and the President of the Fish and Game Commission, has authority for expenditure of funds from a variety of sources for purposes beneficial to fish and wildlife as well as recreational activities associated with them. Funding sources that fall entirely or partially under the purview of the WCB include the Wildlife Restoration Fund and specified portions of both the California Wildlife, Coastal, and Park Land Conservation Fund of 1988 (Proposition 70), and the Habitat Conservation Fund (Proposition 117).

- Mitigation Bank Opportunities**…(Need info.)**

  In summary, the ultimate result of insufficient annual ongoing management funds will be neglect--neglect that results in degradation of facilities and infrastructure, but most importantly a decline in the overall health of native habitats and their benefits to wildlife.

10.1 Total Cost

The purchase price of the property was $475,000. Annual costs will be estimated by the Property Analysis Record (PAR) (pending).

10.2 Cash Flow Structures

This is to be determined by the PAR referenced above.

10.3 Financing Structure

This is to be determined by the PAR referenced above.

10.4 Special Districts

10.4.1 Habitat Management Districts (pending)

10.4.2 Lighting and Landscape Districts (pending)

10.5 Foundation Endowment (pending)

11. Reporting Requirements

Required reports to be prepared for the Honey Run Unit include quarterly and annual reports to the funding agencies listed in (2) above and yearly annual plans and budgets.

11.1 Quarterly and Annual Reports

The progress of the work performed on the Honey Run Unit is reported quarterly and annually to the USFWS, NFWF, CALFED, and WCB. These progress reports will discuss coordination with the Education Program (and classroom field trips), research and monitoring results, relationships and agreements with neighboring landowners, security and trespass problems and corrections, improvements and maintenance, patrolling, and revegetation work accomplished. Any adaptive modifications to this management plan are noted in the progress reports as well. Reports will also include discussions of other activities such as budget expenditures and staffing issues.

11.2 Invoicing Procedures

Contract requirements stipulate that all invoicing for labor and materials costs incurred in the production of the management strategy and all restoration work be submitted to the funding agencies on a quarterly basis.

12. Workload and Budgets (pending)

I. Ecological Objective: Restoration and Enhancement of Habitat for spring-run chinook Salmon.

II. Ecological Objective: Channel and Floodplain Management.

III. Programmatic Objective:Use as a living laboratory for local community and educational groups.

13. List of Preparers

Donald Holtgrieve, Ph.D., AICP, Project Director
Laura Lukes, Project Manager
Richard Haiman, Ph.D., Biogeographer
Kent Lundberg, Research Associate
Allen Harthorn, Research Associate

14. Glossary

adaptive management -- an enlightened system of management in which monitoring is conducted regularly as a feedback loop to allow assessment, modification or research of management actions as needed.

annotated management plan -- the outline of a land management document, containing explanatory information on the plan requirements as well as generic language that can be used in developing a site-specific management plan.

balanced portfolio -- an investment portfolio that contains selected stocks and bonds weighted generally to achieve the higher returns of stocks and the stable returns of bonds.

basis -- the value of the property for calculating tax losses or tax gains.

biodiversity -- the diversity of life on earth, encompassing variation at the genetic, species, ecosystem and landscape levels.

capitalization rate -- the rate to calculate the size of an investment necessary to produce a given stream of income. Conversely, the proportion of the endowment that may be used for management expenses after adjustments for inflation and fund management.

compensatory mitigation -- the policy of requiring restoration, creation, enhancement or, in exceptional circumstances, preservation of wetlands and/or other natural area resources for the purpose of compensating for unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

conservation easement -- partial ownership of some rights associated with a property, while title is retained by another party. Such easements are usually held to prohibit certain activities such as development, tree cutting, or farming practices, in perpetuity.

covenants, conditions and restrictions -- deed restrictions often applying to a group of properties such those in a subdivision.

deed restriction -- a recorded reduction in the fee title owner's rights to a property.

easement -- an interest in a property held by someone other than the fee title owner.

ecology -- the study of the interrelationships among and between living organisms and their physical surroundings.

ecosystem -- a geographically defined unit consisting of all the plants, animals and microbial species together with the non-living environment, and the interdependent relationships among them all.

ecosystem process -- any natural process, often a disturbance such as fire or flooding, (1) that has influenced the way in which an ecosystem, community or species has evolved and to which it is adapted and/or (2) upon which an ecosystem, community or species is dependent for its continued existence.

exception to title -- See deed restrictions.

fee title -- ownership of title to land.

habitat -- the ecological and/or physical place that contains a particular combination of environmental conditions sufficient for a population's or species' survival.

initial and capital costs -- costs incurred as a one-time or short-term expense at the outset of establishing a project.

inventory -- a complete list of species occurrences and/or community types for a given geographic or managed area.

mitigation bank -- a relatively large-scale conservation, restoration, and/or creation project in which fractions of the property, known as "credits", can be purchased as mitigation for impacts in similar habitats elsewhere. Mitigation banks generally have the benefits of increased management efficiency and benefits to wildlife due to their larger size in comparison to individual mitigation projects.

monitoring -- the practice of taking defined, consistent, and periodic measurements of specified characteristics of a natural system to determine its status and health and to record changes over time. Monitoring is most often undertaken to assess ecosystem response to various management actions.

natural community -- all of the species that share a given habitat.

ongoing costs -- costs incurred regularly and in perpetuity for the maintenance and management of a project.

Property Analysis Record -- (PAR), a program developed specifically to provide a detailed listing of required management actions for a natural reserve area, the associated costs, and long-term funding requirements for maintenance.

preserve management goal -- the primary purpose for which a natural area has been protected, which will define management goals and objectives.

quiet title action -- an action taken by a judge to rest title of a property in known persons. Quiet title is often requested if one or more owners of a property cannot be found after a sufficient search.

riparian -- pertaining to the banks and other adjacent terrestrial environs of freshwater bodies where soil moisture is sufficiently in excess of that otherwise available from precipitation to support the growth of mesic vegetation.

site specific management plan -- a land management document that describes specific conditions, management objectives, and support needs of a defined geographic area.

special district -- a legally established and geographically defined area in which payments by district landowners are collected to support specific services within the district.

watershed -- the area drained by a river, river system or other watercourse, usually geographically defined by ridgelines.

wetland -- a zone that is periodically, seasonally or continuously submerged or which has high soil moisture, and which may have both aquatic and riparian components. Jurisdictional wetlands are defined by criteria relative to soil type (anaerobic conditions), hydrology (period of inundation) and vegetation (wetland obligate plants).