

I Introduction

- Provides basic information about the Ecological Reserves
- Articulates the vision and goals of the Ecological Reserves
- Identifies issues and constraints that will shape appropriate activities at the Reserves
- Provides policies and implementation strategies for management
- Outlines procedures and policies for the use of the properties

The Ecological Reserves were established with the purpose of conserving habitat. Fundamental to habitat conservation are programs for habitat management, outreach and education, and research. The foundation of habitat management is rooted in sustaining processes to achieve conservation needs. This includes the incorporation of traditional environmental knowledge, science, and social needs into our management activities. Through outreach and education we can inform the broader population about our management strategies, and teach the stewards of tomorrow to interpret and act upon the needs of the ecosystem. Research activities serve to inform management within an adaptive management framework. Sustainable implementation of activities in all program areas is achieved via a network faculty, student researchers, interns, and community volunteers and donors.

This Management Plan is dynamic and will change as circumstances warrant. Additional information on the Big Chico Creek Ecological Reserve and Butte Creek Ecological Preserve can be found at the BCCER and BCEP Websites.

The Ecological Reserves are managed by the Research Foundation of the California State University, Chico, for purposes of natural resource protection, education, research, and community outreach. The BCCER and BCEP contain diverse wildlife sustained in unique and critically important habitats. The BCCER also contains a number and variety of cultural resources, including historical sites and features indicative of exploration, mining, logging, homesteading, and ranching, as well as prehistoric sites and features representing ancient and historic Native American habitation and other land uses. In order to manage and preserve the resources for future research and interpretation, provisions are included in this plan for protection of these resources.

The BCCER is located ten miles north of Chico; it is the largest tract of land managed by the CSUC Research Foundation and shares a boundary with Chico's most important recreational area, Bidwell Park. The Reserve ranges in elevation from 700 to 2,160 feet and includes approximately 4.0 miles of Big Chico Creek. The Reserve contains a wide diversity of habitats which support over 140 different wildlife species, including a number of listed species and species requiring large tracts of undisturbed habitat. Thirteen percent of the wildlife and 27 percent of the fish that are known or expected to occur on the Reserve are federal or state listed species. The key to maintaining species populations is preservation and enhancement of suitable habitat. To preserve and enhance habitat managers have to know specific requirements and, in many cases, that requires research. Finally, no species can be protected on a single piece of property, so educating others about critical habitat is essential. These three components define the three main purposes of the Reserve: Habitat Preservation, Research, and Education. It is critical that the Reserve be carefully managed to meet the stewardship goals of the

Reserve and the needs of the University, while maintaining the good will of the neighboring property owners and the wider community.

The Butte Creek Ecological Preserve is a 93-acre site along the middle section of Butte Creek. The site was formerly used for gold, sand and gravel mining, and is recovering from those activities. The property contains more than a mile of creek frontage, which is critical salmon habitat and spawning grounds, as well as habitat for many species of special status, including Chinook salmon and bald eagle. In December 1998 the University Research Foundation purchased this site with grants from the US Fish and Wildlife Service, National Fish and Wildlife Federation, CALFED, and the Wildlife Conservation Board. The goal of the preserve is to work in conjunction with other programs towards achieving a reasonable balance among the diverse demands on the resource base of the Butte Creek watershed. The research foundation will provide an adaptive management approach to managing the property. Program areas at the preserve include habitat management and conservation, outreach and education, and research. The reserve is open to the public year round

II Mission Statement

The mission of the CSU, Chico Research Foundation's Ecological Reserve System is to preserve critical habitat and to provide a natural area for environmental research and education.

III Vision

The Ecological Reserve System is committed to preserving the natural environment, the species that comprise the native biota, the natural processes that have always operated in the environment and the cultural resources that are part of its heritage. The Ecological Reserve System will be carefully managed to meet the stewardship goals of the Reserves with the understanding that they are part of larger ecosystems. The Reserves will strive to meet the needs of the University and maintain the goodwill of neighboring property owners and the wider community.

To preserve and enhance habitat, the requirements of the species that live in the Reserves and what effects disturbances have on the habitat and its inhabitants must be understood along with the dynamics of the ecological processes. The facilitation of research is critical to such an understanding.

The Reserves serve as a resource for California State University, Chico, providing professional opportunities for faculty and educational opportunities for students. Encouraging educational access to the Reserves by regional schools and the public through outreach to the population of the region will enable future generations to realize the importance of such natural resources as the Ecological Reserves.

The Reserves also serve as a resource for public access and community activities compatible with the goals of the Reserves; to the extent possible, public and community access should be integrated with the educational goals of the Reserve.

For this vision to come to fruition it will be necessary to seek funding from all constituents and friends of the Reserves.

IV Goals, Objectives, and Implementation Strategies for the Ecological Reserves

A. NATURAL AND CULTURAL RESOURCE PRESERVATION AND ENHANCEMENT

Goal: To preserve and restore natural and cultural resources of the Reserve System in order to maintain ecological processes and enhance biological diversity; maintain the physical integrity and sociological sensitivity of historical and archeological sites, and protect the Reserves from undue encroachment or damage by human activities.

Natural Resources

Objective 1: Maintain the Reserve as part of a larger ecosystem with holistic management for flora and fauna - on an ecosystem rather than species level.

Implementation Strategy:

Encourage other agencies and private land owners to maintain biological corridors to other protected areas.

Objective 2: Develop inventories and maps of natural resources.

Implementation Strategy:

Inventories and maps of natural resources should be ongoing.

Vegetation, geologic, soil maps, etc. are valuable tools for research and management and should be updated periodically.

Objective 3: Avoid activities that might damage natural resources.

Implementation Strategy:

When feasible, eliminate fencing within Reserve boundaries.

Eliminate traditional cattle grazing; consider short term grazing as a management tool. Restore wet meadows and floodplains degraded by gullying; construct waterbars or rolling dips along roads as needed.

Place cut brush in areas where gullying is likely.

Restrict recreational activities that create soil erosion or introduce non-native species.

Monitor trail erosion and restrict trail access if erosion becomes significant.

Objective 4: Management of Reserve should be in expectation of fire and other natural processes.

Implementation Strategy:

Create a fire management plan that integrates Reserve objectives with fire safety.

Work with Cal Fire to develop a policy on allowing wildfires to burn naturally on the Reserves.

Work with Cal Fire to conduct regular prescription burns that meet the objectives of the Master Management Plan.

Review and update the Fire Management Plan.

Objective 5: Re-establish or expand populations of native species; eliminate or reduce exotics and maintain the genetic integrity of species whenever possible.

Implementation Strategy:

Replace exotic species with native species when feasible.

Prioritize the removal of exotic species based on available labor, extent of infestation, and ability to control over long periods of time.

Limit management treatments to relatively small areas at one time.

Reintroduction of extirpated native species should be encouraged.

Objective 6: Encourage conservation easements in the watersheds and seek to acquire property and promote stewardship contracts when the action meets the goals and objectives of the Master Management Plan for the Reserve System.

Implementation Strategy:

Seek to acquire the three BLM parcels along highway 32 that are adjacent to the BCCER.

Consider acquisitions, especially lands adjacent to the Reserves as they become available and funding allows.

Work with large neighboring land owners to promote conservation practices.

Objective 7: Assume a leadership role in the management of watersheds associated with the Reserves.

Implementation Strategy:

Implement practices that reduce erosion and allow surface water to infiltrate native soils. This includes restoring wet meadows and floodplains degraded by gullying.

Implement and maintain roads using best management practices such as out sloping and creating rolling dips. Maintain the natural runoff patterns whenever possible.

Cultural Resources

Objective 1: Establish cultural resource protection standards that meet or surpass state and national standards.

Implementation Strategy:

Develop a cultural resource management plan that includes long term evaluation and mitigation of sites.

Incorporate the plan for inventory, evaluation and mitigation of sites into academic/course schedules.

Objective 2: Develop inventories and maps of cultural resources.

Implementation Strategy:

Inventories and maps of natural and cultural resources should be ongoing.

Objective 3: Avoid activities that might damage cultural resources.

Implementation Strategy:

Restrict recreational, educational, and outreach activities on designated archaeological sites.

Monitor subsurface disturbance.

Develop a policy on informing the users of the Reserve about cultural resources and insure resource managers are aware of cultural sites.

Objective 4: Integrate cultural resources protection with university academic mission.

Implementation Strategy:

Create a high-quality learning environment in an “outdoor classroom” setting by investigating and recording cultural resources through CSU archaeology courses.

Provide data and information relevant to the prehistory and history of populations of the North State by investigating and protecting cultural resources on the Reserves.

Investigate the past, prehistory and history, to gain a better understanding of past resource use and the social and environmental consequences we have inherited.

Objective 5: Establish connections with appropriate groups or individuals interested in their heritage.

Implementation Strategy:

Connect with Mechoopda Maidu as well as other Native American tribes in the region, regional historical societies and vocational historians and archaeologists, and the Chico, Butte County and North State communities.

Objective 6: Encourage cultural resource research on topics that yield information facilitating management decisions.

Implementation Strategy:

Invite local Native American groups to participate in academic/research projects.

Encourage research projects on the Reserves.

Objective 7: Share results and data with appropriate community.

Implementation Strategy:

Introduce community to cultural resources through tours, media, and signs/brochures.

B. EDUCATION

Goal: To educate ourselves, our students, and the community to appreciate and understand ecological systems as part of becoming informed citizens and effective leaders in a democracy. The Reserves will be an educational resource serving as an outdoor laboratory, a natural museum, and an outdoor classroom.

Objective 1: To promote fieldtrips by educational groups and accommodate educational activities by developing educational materials which serve to enhance learning experiences at the Reserve.

Implementation Strategy:

Create an introductory university level module in order to provide background information about the Reserve that could be used by classes in any discipline.

Create a similar module for K-12 classes. The modules will be designed to present opportunities for research and education by highlighting resources on the Ecological Reserves.

Create an interpretive center in the BCCER Barn with displays explaining the purpose of the Reserve and its resources. Consider a “green” classroom/lab/bathroom facility showcasing alternative energy and resource use strategies, a small natural history museum, a Native American cultural site (demonstration of house and food storage facility).

Revise nature trail guide to increase use.

Develop trail maps specifically designed for field trips. Educational groups would be able to access information or download handouts from the BCCER website. This would include the level of difficulty, length, and estimated time to complete the route. Include topics of interest that students could investigate along the trail.

Create maps of important resources and uses and make maps easily available.

Maintain roads and trails to facilitate access. Development of roads and trails may be considered, but only after careful study.

Objective 2: To inform Faculty how they and their classes can benefit from the Reserves and to assist them in gaining access to parts of the Reserves appropriate for their needs.

Implementation Strategy:

Provide tours to show prospective instructors the potential of the Reserves for their classes. Encourage faculty to participate in tours.

Prioritize a list of areas and subjects that would be appropriate for long-term studies by classes with each class building on previous class data.

Objective 3: To encourage student projects within the Reserves.

Implementation Strategy:

Identify areas of the Reserves that can be utilized for student projects.

Encourage student projects that facilitate management decisions.

Assist students in gaining access to study areas.

Objective 4: Continue to use the Reserves as an outdoor classroom for K-12.

Implementation Strategy:

Accommodate as many classes as funding and other resources allow without serious degradation of natural or cultural resources.

Seek funding to hire a full-time Education and Research Coordinator. This position will coordinate the K-12 outdoor education program and associated assessments; community education programs; and coordinate student interns, class visits, and research activities associated with CSU Chico and other institutions.

Develop the curriculum for specific grade levels to incorporate the California Education and the Environmental Standards (EEI) and encourage teachers to use the standards.

Develop stand-alone curriculum boxes and trail maps for particular grades specifically designed to facilitate additional field trip opportunities (in addition to the existing Outdoor Classroom program 2011). Teachers could access our selection of topics from our website prior to their visit to the Reserves to aid presentation of relevant information. Additional resources (e.g., visual and "hands on, minds on" teaching aids) would also be available for check out upon arrival). This would include the level of difficulty, length, and estimated time to complete the hiking route and associated activity. It would also include additional topics of interest that students could investigate along the trail.

Coordinate with other local K-12 programs and other departments within CSU Chico to avoid duplication of services and to enhance program efficiency.

C. RESEARCH

Goal: To promote and accommodate research activities on the Ecological Reserves.

Objective 1: To promote class and individual research projects.

Implementation Strategy:

Continue fundraising activities to support student grant awards.

Advertise the BCCER and BCEP to other institutions.

Prioritize list of areas and subjects the TAC would like to see studied.

Develop an option for researchers to overnight at the BCCER by creating a guestroom at the caretaker's house or a stand-alone bunkhouse.

Objective 2: Maintain an active website and other forms of communication in order to facilitate information flow to interested parties.

Implementation Strategy:

Revise website to comply with CSU, Chico standards.

Develop a policy for posting research projects and address researcher privacy issues.

Review policy on "taking" native species for research purposes.

Objective 3: To assist researchers in gaining access to parts of the Reserves appropriate for their projects.

Implementation Strategy:

Maintain roads and trails to facilitate access by researchers. Development of additional roads and trails may be considered.

Provide tours to show prospective researchers the potential of the Reserves for their studies.

Develop a minimal impact camping policy for researchers who need to spend extended time in remote parts of the BCCER.

Objective 4: To accommodate research activities by making facilities, other lands, and infrastructure available.

Implementation Strategy:

The Reserve has begun collecting research equipment through the student grant program that is available to researchers. Create an inventory of equipment so users know what is available to them.

Orient first time researchers at the Ecological Reserves to cover available resources (vehicles, field assistance, contact information, radio use, storage facilities and available equipment etc) and restrictions such as hunt areas and dates.

Explore the potential for developing a reserve-wide, wireless internet network. Consult UC Nature Reserve System and local resources to discuss feasibility.

Work with neighboring land owners to allow student research projects on their property as well as maintain good working relationships.

Create maps of important resources and uses.

Consider creating a laboratory building or space for laboratory research.

Objective 5: To facilitate the flow of information among researchers, between researchers and classes, and between the Reserve community and the general public.

Implementation Strategy:

Maintain a database of all research projects done on the Reserve and pertinent adjacent lands.

Maintain a research protocol on the web to clearly communicate steps necessary for conducting research on the Reserve. Update research protocol section of this plan.

Establish an annual symposium for faculty researchers and Reserve personnel to share information and ideas for maximizing the educational and research values of the Reserve.

Post information so researchers know when areas of the Reserves are not accessible.

D. OUTREACH

Goal: To connect the Ecological Reserves with the north state community.

Objective 1: To provide leadership and engage the community in land management practices, habitat enhancement, natural and cultural preservation, education, and research.

Implementation Strategy:

Conduct community programs such as Family Safari Days and the spring hiking series. Invite the public to participate in habitat enhancement, land management and cultural preservation activities.

Consider using Facebook, blogs, and other electronic media as a means of communication with friends of the Reserves.

Invite landowners to observe management practices on the Ecological Reserves.

Offer landowners, agencies, and local government assistance in implementing natural and cultural resource protection programs.

Work to develop mutual programs with the Gateway Museum and other non-profit groups.

Objective 2: Provide financial support for programs on the Ecological Reserves.

Implementation Strategy:

Candles in the Canyon is an annual BCCER fundraiser to support outdoor education and research programs.

Develop a fundraising mechanism for the Butte Creek Ecological Preserve.

Seek grants and donations to support Reserve programs.

Seek an endowment to ultimately support K-12 education, student interns and research.

Objective 3: Provide recreational opportunities to the public without compromising the other goals of the Reserves.

Implementation Strategy:

The hunt program is both educational and a source a revenue. Continue to seek ways to improve the hunting experience and generate revenue without adversely impacting native species and the natural resources of the Reserves.

Develop a hunt program management plan in consultation with DFG, California Deer Association and the National Wild Turkey Federation.

Continue to host an annual fly fishing trip for the Chico Area Flyfishers.

E. BUILDINGS, MAINTENANCE and INFRASTRUCTURE

Goal: The Reserves should serve as an example of best sustainable practices. This includes maintaining a small and compact foot print for the built environment and energy/water efficiency. New buildings and infrastructure should be kept to a minimum and future growth should only be considered when it directly supports the programs and goals of the Ecological Reserves.

Objective 1: Seek funds and volunteer labor to help provide facilities and infrastructure on the Reserves.

Implementation Strategy:

Integrate the new BCCER site plan into the Master Plan and create a site plan for Butte Creek.

Seek to achieve greater sustainability by using solar power, composting toilets, and other water and power saving technologies.

Upgrade BCCER maintenance building with solar power and acquire electric ATVs for use by researchers and Reserves personnel.

Seek funding for a classroom, conference area, and research lab on the BCCER.

Construct a dry crossing, such as a foot bridge, cable crossing, or other mechanism for accessing the west side of Big Chico Creek.

Explore methods of dry crossing for BCEP.

Research the need for a covered meeting area and toilets on the BCEP.

F. RULES and GUIDELINES

The mission of the CSU, Chico Research Foundation Ecological Reserve System is to continue the understanding and wise management of the Earth and its natural systems by preserving critical habitat, and to provide a natural area for environmental research and education. When accessing the Reserves please observe and adhere to the following rules and guidelines:

General Rules & Guidelines for BCCER Use

Use of the BCCER will be allowed if the proposed activity and level of use are deemed to be consistent with the mission, use guidelines, and management plan of the Reserve. Activities that may be harmful to the natural values, ecosystem, functions, and native bio-diversity of the reserve, or preclude its possible future use for University-level research or instruction, will not be allowed. Use will be limited so that natural and cultural values are not adversely affected.

- All visitors are requested to sign in each time they visit the reserves. Entry is walk-in only unless the user is a student or faculty conducting research, or the user is attending a scheduled reserve activity.
- Hunting and fishing are allowed ONLY during specified times according to State Fish and Game Regulations. Hunting is allowed by permit only from the BCCER
- No firearms (except for permitted hunting)
- No dogs or other pets allowed
- No fires or camping
- No swimming
- No automobiles, ATVs, dirt bikes, bicycles, or horses
- No collecting of plants, animals, rocks, fossils, fungi or artifacts,
- Alcohol use is not permitted on the BCCER except by approved alcohol permit, served at meals or official functions.
- The use of illicit drugs on the BCCER is prohibited.
- No access is permitted to non-hunters in the hunting areas on hunting days. [See the hunting schedule](#) and see [hunt area map](#).

Violations will be prosecuted under Title 14, Section 630 of the California Code of Regulations.

General Rules & Guidelines for BCEP Use

- Fishing is allowed ONLY during specified times according to State Fish and Game Regulations. Hunting is not allowed on the BCEP
- No firearms
- No fires or camping
- BCEP is day use only, including the parking area
- No automobiles, ATVs, dirt bikes, bicycles, or horses
- No collecting of plants, animals, rocks, fossils, fungi or artifacts,
- Alcohol use is not permitted on the BCEP except by approved alcohol permit, served at meals or official functions.
- The use of illicit drugs on the BCEP is prohibited.

Violations will be prosecuted under Title 14, Section 630 of the California Code of Regulations.

Use Decisions The reserve director has primary responsibility for approving proposed uses. In difficult cases, the reserve director will consult with the Ecological Reserves Technical Advisory Committee (TAC) before approving or rejecting an application. If a user fails to comply with any of the requirements, the reserve director, after proper consultation, may restrict or terminate on-going reserve use, and the user's subsequent use applications may be rejected. Appeal of use rejection or termination will be by way of

dispute resolution by an informed, ad hoc board consisting of faculty members with appropriate areas of expertise.

Natural Hazards. Anyone planning to use the reserve should be aware of the natural hazards that exist in this remote, rugged environment: Due to the limited number and exits of roads, becoming trapped by a rapidly advancing wildfire is a serious possibility. Other natural hazards include high, cold winter and spring flows of Big Chico Creek and Butte Creek, sheer cliffs and the falling rocks or landslides they generate. In hot weather, sun stroke, heat exhaustion and dehydration are significant hazards. Poison oak, wildlife (bear, mountain lion, rattlesnake), wasps, lyme disease (tick transmitted) and plague (flea transmitted) are among additional hazards.

Medical Emergencies. Because of the remoteness of the Ecological Reserves, visitors should carry first aid kits and exercise caution in undertaking any potentially hazardous activities.

For response in medical emergencies, one or more persons in each visiting group should have training in basic first aid and CPR. If the problem is serious, emergency help 9-1-1 is to be contacted immediately. Warning: Cell phones will not work in most parts of the canyon.

Public Use of the Ecological Reserves

Since any human activity in a natural area will have subtle impacts that may not be noticed for many years, one might conclude that the best policy would be to forbid all recreational activities in the reserves. However, education is one of our main functions and people who tread lightly while enjoying the beauty and solitude of the Ecological Reserves are learning important lessons about nature. Therefore, it is the policy of the Ecological Reserves to allow recreational activities that are compatible with our primary goals of preservation, research, and education. All public access is walk-in only from the sign-in area unless granted access otherwise.

All visitors are asked to read and comply with all [rules and guidelines](#) when visiting the Ecological Reserves.

Public Use and Recreation

We request all visitors to sign in at the main gate check-in (one person per group can sign for the group.) Signing in and out takes only a few moments and gives us an idea how many people are in different parts of the reserve and what they are doing thereby helping us evaluate potential impacts.

Conference Center Rental

The Big Chico Creek Ecological Reserve Conference Center is both a conference/retreat/meeting facility and home for the caretakers. The first floor has a table that seats a maximum of 30 people, a kitchen, and bathroom. The second floor is private quarters for the caretakers.

Nature Hikes and Observation

Hiking, flower and wildlife observing are compatible with the educational goal of the reserve. Please use common sense to prevent habitat damage. See Use Guidelines. The reserve also offers a number of docent-led activities of this nature and a self-guided nature trail.

Hunting on the BCCER

Hunting by humans has been part of the reserve ecosystem for at least 3,000 years. Currently the reserve conducts limited, lottery-based, hunt programs for deer, turkey, and quail in specific zones only. Success rates, tissue samples and hunter observations provide useful research data. For additional hunting information and application forms, please visit our hunt page.

Avoid spreading noxious weeds

Invasion and dominance of ecosystems by non-native species is a major cause of loss of global biodiversity. The reserve already has major weed problems. Help prevent further problems by following common sense rules: Clean burs and mud from shoes and clothing before entering the reserve. Wash mud from wheels and wheel-wells before driving a vehicle into the reserve. Carry out seeds from any fruits you bring for lunch or snacks.

Collecting

Removal of any natural or historic object (other than legally obtained game) from its original location within the reserve should be done only as part of an approved research program. See Research Protocol.

Pets

While some pets may be as benign as their owners imagine, others terrorize wildlife, destroy habitat (digging, etc.) and transmit diseases that may prove fatal to un-inoculated wild counterparts. Bidwell Park has areas where you can hike with your pets. Please keep pets out of the BCCER.

Fishing

Big Chico Creek in the reserve (and most of Upper Bidwell Park) is open to fishing with single-hook artificial lures and zero limit from Nov. 1 through April 30. Only artificial lures with barbless hooks may be used. (Refer to DFG Fishing Regulations). Closure during spring, summer, and fall protects highly vulnerable populations of spring-run Chinook salmon, foothill yellow-legged frogs, and western pond turtles and reduces trampling when riparian vegetation is actively growing.

Swimming

Swimming at the BCCER is prohibited. Western pond turtles maintain a healthy population in the reserve but have been decimated throughout most of their range, including Bidwell Park. Turtles have to bask to get their body temperature high enough for normal metabolism and egg development. They are very shy and will leave their basking perch at the sight of people. Spring-run Chinook salmon are present during the summer in some pools in the reserve. They don't feed all summer and have limited energy reserves and fleeing from people uses up those energy reserves, reducing their survival chances. If you wish to swim in the creek, please do so in Bidwell Park and give the reserve turtles and salmon a break.

Research at the Ecological Reserves

The Ecological Reserves are an invaluable resource for environmental research and education. We encourage reserve use for field trips by classes and organizations and a wide variety of research activities.

At the Ecological reserves you will find many different habitats and species, as well as geological features and records of human activity. It contains historical sites and features indicative of exploration, mining, logging, homesteading, and ranching, as well as prehistoric sites and features showing ancient and historic Native American habitation and other land uses.

We invite field trips and research in order to use reserve resources to maximize environmental knowledge and appreciation. We believe, however, that a very important lesson to be learned in association with the reserve is how to conduct educational and research activities in ways that maximize learning while minimizing environmental damage. For the sake of future research and interpretation it is essential to preserve these habitats, maintain the physical integrity and sociological sensitivity of historical and archeological sites, and protect the reserve from undue encroachment or damage by human activities.

The Ecological Reserves are an educational resource serving as an outdoor laboratory, a natural museum, and an outdoor classroom. One goal of management is to promote and accommodate use of the Reserves for research and educational purposes. The procedures listed below will assist you in your request to use Big Chico Creek Ecological Reserve.

Research Use Protocol

1. Contact our reserves management staff to discuss your research proposal by calling (530) 898-5010.
2. Review our research and education protocol.
3. Apply for a use permit use by accessing our online [Reserves Access Management system \(RAMS\)](#). Please provide as much detailed information about your planned research project as possible. Submit one application for each research request.
4. Your request will be evaluated by our reserve management team and you will receive a response to your request in a timely manner.
5. Following application approval, arrange your orientation with our management staff if you are a first time user by calling (530) 898-5010.

Research Use. All researchers using the reserve must be qualified to conduct the research proposed. Research in any subject area may be allowed if the researcher can demonstrate that the resources and/or facilities available at the reserve are reasonably necessary for the proposed research project and that the research activities will not compromise the goals of the Ecological Reserves.

Leave No Trace. Researchers are required to remove all flagging, equipment, and mitigate any disturbances at the conclusion of the research project. Failure to remove flagging and equipment, or to return the site(s) to their unaltered condition, will result in a letter to the University to delay graduation until the matter is resolved.

Publications, Reports, Posters. All research, data, photographs, etc. collected at the Ecological Reserves must be provided to the Reserve Director at the conclusion of the project. This information may be posted on the Ecological Reserves website unless the researcher requests otherwise. All researchers are required to provide copies of mature data sets derived from work on the reserve, which will be archived at the reserve. Data

sets should include procedures followed and site descriptions sufficient to permit future replication by independent investigators.

Acknowledgements, Publications, and Reports. All researchers must identify the California State University, Chico Research Foundation, Big Chico Creek Ecological Reserve or Butte Creek Ecological Preserve in any publications or reports that result from use of the reserve. Two copies of each publication resulting from work done at the reserve shall be provided to the reserve as soon as they become available. One bound copy of each thesis shall be provided to the reserve. Researchers are encouraged to also provide a digital copy of publications to the reserve.

Equipment. Students and faculty may request to borrow research equipment from the Ecological Reserves. Any equipment purchased from funds generated by the Ecological Reserves becomes property of the Ecological Reserves.

Hazardous Materials. Hazardous materials may not be used on the Ecological Reserves unless permission is granted from the Director. All hazardous materials used in research projects shall be disposed properly (legally) by the researcher.

Research Application. All researchers should discuss their proposed research project with the reserve Director before formally applying for permission to conduct their studies. All researchers must apply for research permit(s) using the online [Reserves Access Management System](#) (RAMS) and agree to comply with all reserve rules and regulations. Describe the purpose of the research and procedures to be followed in conducting research, specify the proposed project duration, dates of reserve use, contract and grant information, prospective research site(s), and animal and plant populations that may be affected by the proposed research. Any potential disturbances to the reserve's ecosystem or cultural resources must be clearly described along with plans for avoidance or mitigation.

Evaluation. The Reserve Director will use the following to evaluate each application for research use:

- (a) *Impacts on Natural Systems.* Potential positive and negative impacts on natural systems (e.g., significant new research, extensive collections, significant habitat alterations, introductions of species or genes);
- (b) *Impacts on Present or Long-term Use.* Potential positive and negative impacts on present or future long-term use of reserve for research or instructional purposes;
- (c) *Laws and Policies.* Compliance with applicable state and federal laws, and with established research guidelines of the reserve;
- (d) *Feasibility.* Feasibility and scientific merit of proposed project;
- (e) *Researcher's Credentials.* All researchers using the reserve must be qualified to conduct the research proposed;
- (f) *Funding.* Certification of grant approval by the applicant's funding source;
- (g) *Alternative Sites.* Availability and proximity of alternative sites;
- (h) *Safety.* Ability of researcher to conduct research in a safe manner.

Decision. The Reserve Director will inform the applicant that his/her request has been approved, denied, or approved with conditions. If an application is approved, the researcher must comply with all applicable University and reserve regulations, and provide all required state and federal permits. The reserve manager and potential users

will discuss appropriate restrictions on research projects involving experimental manipulations.

Educational Use

The Ecological Reserves are an educational resource serving as an outdoor laboratory, a natural museum, and an outdoor classroom. One goal of management is to promote and accommodate use of the Ecological Reserves for research and educational purposes. The procedures listed below will assist you in your request to use the Ecological Reserves.

At the Ecological Reserves you will find many different habitats and species, as well as geological features and records of human activity. It contains historical sites and features indicative of exploration, mining, logging, homesteading, and ranching, as well as prehistoric sites and features showing ancient and historic Native American habitation and other land uses.

We invite field trips and research in order to use reserve resources to maximize environmental knowledge and appreciation. We believe, however, that a very important lesson to be learned in association with the reserve is how to conduct educational and research activities in ways that maximize learning while minimizing environmental damage. For the sake of future research and interpretation it is essential to preserve these habitats, maintain the physical integrity and sociological sensitivity of historical and archeological sites, and protect the reserve from undue encroachment or damage by human activities.

Instructional Use. Classes in any subject may be allowed on-site if the instructor can adequately demonstrate that unique resources at the reserve are reasonably necessary for the class. All instructors must agree to comply with all [rules and guidelines](#) for use. Any potential disturbances to the reserve's ecosystem or cultural resources must be clearly described. If applicable, the instructor must provide an approved animal care and use protocol and all required state and federal permits.

Classroom Use Protocol

1. Contact our reserves management staff to discuss your proposed classroom project or activity by calling (530) 898-5010.
2. Review our research and education use [rules, guidelines and protocol](#).
3. Apply for a use permit use by accessing our online [Reserves Access Management system \(RAMS\)](#). Please provide as much detailed information about your planned classroom project activities as possible. Submit one application for each class request.
4. Your request will be evaluated by our reserve management team and you will receive a response to your request in a timely manner.
5. Following application approval, arrange your orientation with the management staff if you are a first time user by calling (530) 898-5010.

Ecological Reserves Technical Advisory Committee (TAC) 2011

Andy Wood nvbs@aol.com

Bill Murphy WMurphy@csuchico.edu

Colleen Hatfield chatfield@csuchico.edu

Dave Brown dlbrown@csuchico.edu

Dean Fairbanks DFFairbanks@csuchico.edu
Don G Miller DGMiller@csuchico.edu
Don Hankins dhankins@csuchico.edu
Douglas Alexander DAlexander@csuchico.edu
Dulcy Schroeder dulcy@forestranch.com
Christopher Ivey ctivey@csuchico.edu
Nette Martinez amartinez@csuchico.edu
Paul Maslin pmaslin@csuchico.edu
Julie Monet jmonet@csuchico.edu
Jeff Mott JMott@csuchico.edu
James Pushnik JPushnik@csuchico.edu
Rachel Teasdale rteasdale@csuchico.edu
Susan Strachan sstrachan@csuchico.edu
Tag Engstrom tengstrom@csuchico.edu
Todd Greene tjgreene@csuchico.edu

VEGETATION AND FUEL MANAGEMENT PLAN

Vegetation Plan

Vegetation in the Big Chico Creek Ecological Reserve is extremely varied, changing subtly as aspects of the microhabitat (slope, exposure, elevation, soil moisture, soil depth) change. Plant assemblages often grade slowly into one another. In a particular transect, blue oaks in a savanna may gradually get denser until at some arbitrary point the habitat would be classified as a woodland area, then a few interior live oaks will be mixed in, then more live oaks and a few canyon oaks.

Gradually the canyon oaks will come to dominate, and other species (ponderosa pine, big-leaf maple, black oak, incense cedar) will be mixed in and the vegetation will be dense enough to be classified as forest. Because of these ubiquitous spatial gradients, a fine-scale vegetation map is impractical for making reserve-wide decisions. To provide a more practical tool, vegetation types have been grouped into broad-spectrum categories each representing a segment of the total vegetation gradient. These categories are: grassland, wet meadow, riparian, valley oak woodland, blue oak savanna/woodland, mixed woodland/forest, chaparral, and chaparral/savanna.

Grasslands (10 acres; 0.4% of the reserve) are open meadows, generally devoid of woody vegetation and dominated by grasses and forbs, except that an occasional valley oak, blue oak, or foothill pine may be present. Non-native plants such as wild oats, rip-gut brome, yellow-star thistle, rose clover, and subterranean clover are usually abundant. A few native grasses and a diversity of mostly spring-blooming native forbs are usually present.

Wet Meadows (2 acres; 0.1% of the reserve) are uncommon and small, usually less than an acre in size. Soils are water-saturated close to the water source and grade to barely damp at the margins. Vegetation consists of native sedges, rushes, grasses, and forbs with the non-native Dallas grass sometimes dominating near the margins. Clumps of native deer grass and rush are also common near the margins.

Riparian zones (20 acres: 0.8% of the reserve) are found in the floodplain of Big Chico Creek as well as some permanent tributaries. They contain a wide diversity of both woody and herbaceous plants including alders, willows, sycamores, spicebush, button-willow, California grape, deer grass, sedges and forbs such as umbrella plant and creek orchid. The invasive Scotch broom, edible fig, and Himalayan blackberry were common in some parts but have been substantially reduced by management activities.

In the Blue oak savanna/woodland (262 acres; 10% of the reserve) the blue oak trees grade from scattered to dense enough to form a closed canopy. Many areas include a few to many foothill pines. Valley oaks may be present along swales. The groundcover is mostly herbaceous, containing the same species as the grasslands, but usually including more native perennial grasses, particularly purple needle grass, blue wild rye, and California brome. Shrubs are present, particularly manzanita, red berry, and skunkbrush and range in abundance from occasional to a continuous layer.

Valley oak woodland (6 acres; 0.2% of the reserve) is rare in the reserve and generally found next to open meadows in the bottom of the canyon. The under-story is similar to that of blue oak woodland, but is usually brushier, containing poison oak, coffeeberry and skunkbrush.

The mixed woodland/forest category (299 acres; 11.5% of the reserve) is the most diverse assemblage. In the densest parts it includes canopy species of interior live oak, canyon oak black oak, and big-leaf maple and scattered emergents of gray pine, ponderosa pine, incense cedar, and Douglas fir. An under story layer may be formed of juvenile trees and shrubs, especially toyon, coffee berry, and poison oak. It grades to a closed-canopy woodland of interior live oaks mixed with blue oaks. Ground cover is also varied but usually includes a number of forbs and the native grasses, California and Torrey's melic, woodland brome, and blue wild rye. The main problem with subdividing this diverse assemblage is that the entire gradient can often be encountered within a few tens of meters.

Extensive stands of chaparral (603 acres; 23% of the reserve) are found in a few places, particularly toward the northern part of the reserve. These are almost impenetrable thickets of many species of shrubs including scrub oaks, buck brush, deer brush, mountain mahogany, poison oak, California bay, manzanita, honeysuckle, pitcher sage, and others. Emergent foothill pines are common in less dense areas. Ground cover is relatively limited when the shrubs are mature, but many forbs and grasses show up after a fire.

Chaparral/savanna: (1401 acres; 54% of the reserve) Large areas in the western part of the reserve are vegetated by varying width bands of chaparral interspersed with bands of savanna or grassland. (This banding is imposed by the underlying layers of substrate in the Tuscan Formation.) The chaparral bands contain the usual chaparral assemblage of shrubs and the savanna bands are similar to blue oak savanna except that gray pine is as common as blue oak and small patches of chaparral brush are scattered throughout.

Goals of Vegetation Management

1. Reduce wildfire threat. (Wildfires starting on the reserve or propagating across the reserve could damage vegetation, animal habitat, and research projects as well as threatening neighboring properties.)
2. Optimize browse and cover for wildlife.
3. Maximize diversity of native species.
4. Maintain natural plant communities.
5. Reduce populations of exotic species and prevent their spread.
6. Research the impacts of management strategies (e.g. fire or grazing) on target and non-target species.

Techniques:**Fuelbreaks**

Create shaded fuel breaks along reserve roads by removing shrubs, surface and ladder fuels, selectively leaving trees that will eventually be large enough to suppress shrub growth. Obviously fuel breaks will require maintenance, but the amount should decrease as the trees grow.

Fuel breaks don't stop a fire but they create an area of reduced fire intensity, providing a starting line for firefighters or reducing the heat that sweeps into an adjacent habitat. Drainage divides are natural places for a fuel break since fire burns rapidly uphill but slowly downhill and vegetation is generally sparse on ridge tops. (Most ridge tops in the reserve from the Musty Buck Ridge west have roads with existing firebreaks. All need maintenance and widening in spots.) See [Coexisting with Fire in the BCCER](#).

Controlled Burns

In collaboration with CDF, use controlled burns to rejuvenate chaparral and savanna areas, keeping burn areas small (<40 acres) and adjacent areas in different parts of the rotation cycle. Before initiating a controlled burn, any dense brush around large trees should be manually removed to prevent tree damage. (Large trees are critical habitat components, providing nest and perch sites as well as seeds for reproduction and animal food.)

Controlled burns could also be used in woodland or even forest areas under conditions where the fire would burn slowly. Some fraction of seedlings as well as large trees should be protected by pre-fire removal of adjacent fuel.

Manual removal of under-story fuel

In forest areas, periodically remove under-story fuel particularly adjacent to large trees to prevent stand replacement in inevitable wildfires.

Invasive Weeds

Control invasive woody shrubs such as broom and Himalayan blackberry by pulling up roots or use of herbicide. Experiment with burning, mowing, hand pulling, and herbicide treatment to determine the most effective, species-specific techniques for reducing or eliminating invasive herbaceous weeds such as yellow-star thistle and medusa-head grass. In general seek to replace the invasive weeds with similar native species.

Native Grasses

Select in favor of perennial native grasses by gathering local seeds and dispersing them in favorable spots such as burned or disturbed areas to expand stands or start new stands. Use fall burns (after emergence of annual weeds) to reduce exotic annual

grasses or forbs and favor perennials.

Protect selected oak seedlings

Monitor seedling survival of blue and valley oaks. In savanna areas where recruitment is inadequate, place "tree guards" or wire mesh rings around selected seedlings to prevent deer browse and enhance survival to the sapling stage. Remove surrounding dense herbaceous vegetation to reduce rodent damage.

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Cultural Resources Management Plan

Big Chico Creek Ecological Reserve

1. Cultural resources include historical and prehistoric archaeological sites, features, and objects, buildings and other constructed features, and might include "Traditional Cultural Properties" (TCPs), consisting of locations of historical significance to Native American tribes, or areas used for traditional collecting, hunting, or ceremonial activities. Based on cultural resource inventories conducted on adjoining lands with similar landscape and habitat, a number of cultural resources indicative of historical and prehistoric occupation are likely to occur on BCCER lands.
2. The CSU, Chico Research Foundation BCCER recognizes that the acquisition of permits and compliance are the responsibility of the applicant, and also recognizes that any combination of federal and state agencies might issue permits or oversee particular actions on the BCCER. For any action resulting in the issuance of a permit the CSU, Chico Research Foundation will determine which agencies are involved, federal, state, and/or local, and will consult with the agency regarding recommendations and specific expectations for cultural resource management. These specifications may include, but will not be limited to: Consultant Qualifications, Prefield Research, Native American Consultation, Intensity of Field Work, Level of Documentation, Report Format Guidelines, and Report Distribution.
3. With respect to the management of cultural resources, BCCER land use is currently covered under provisions of the California Environmental Quality Act (see CEQA Guidelines, Appendix K: Archaeological Impacts), authority cited: Sections 21083 and 21087, Public Resources Code; Reference: Section 7050.5, Health and Safety Code; Sections 5097.98, 21001(b) and (c), and 21083.2, Public Resources Code; Society for California Archaeology v. County of Butte (1977) 65 Cal. App. 3d 832.
4. The CSU, Chico Research Foundation BCCER recognizes the principle, outlined in CEQA Guidelines Appendix K, Section VI, that a Lead agency overseeing an action requiring federal oversight may use documentation prepared under the federal guidelines—most likely the National Historical Preservation Act of 1966 (as amended 1992) (NHPA) "Section 106 process"—in place of documentation called for under CEQA.

A. Public Access to BCCER Cultural Resource Information

The CSU, Chico Research Foundation recognizes that information on archaeological site location and content, including all maps and physical descriptions, are considered privileged information, and state and federal law and policy strictly prohibits public distribution.

B. Avoidance Policy

The CSU, Chico Research Foundation BCCER adheres to the principle, outlined in CEQA Guidelines Appendix K, Section II, that all BCCER activities will avoid damaging effects on archaeological resource whenever feasible, and *in-situ* preservation and avoidance is preferred. Planning options to be considered for all roads, trails, buildings and other improvements include: 1. planning construction to avoid known cultural resources, 2. planning open space to incorporate known cultural resources, or 3. "capping" with fill to cover known cultural resources, where deemed appropriate.

C. Evaluation and Mitigation

The CSU, Chico Research Foundation BCCER adheres to the principle, outlined in CEQA Guidelines Appendix K, Section III, that, if avoidance is not feasible, then significance of the site shall be evaluated. A professional archaeologist will be retained in order to evaluate the nature, extent, and significance of the cultural resource, and to determine its significance according to the following criteria: (A) Is associated with a significant event or person?; (B) Can provide information of public and scientific interest?; (C) Is the oldest, best example, largest, or last surviving example of its kind?; (D) Is at least 100 years old and possesses substantial stratigraphic integrity?; or (E) Does the resource involve important research issues answerable only with archaeological methods?

In keeping with CEQA procedures, if an archaeological resource is determined non-significant, it shall be noted in the Initial Study or EIR but need not be considered further. However, if it is determined significant and avoidance is not feasible, then BCCER or a designated Lead Agency should produce a mitigation plan (sampling plan). The scope and content of the mitigation plan will be prepared following guidelines provided in CEQA Appendix K.

D. Unanticipated Discovery

The CSU, Chico Research Foundation BCCER adheres to the principle, outlined in CEQA Guidelines Appendix K, Section IX, Part A, calling for provisions for unanticipated cultural resources discovered during construction. In the event of discovery of unanticipated cultural resources, all ground disturbing activity should cease immediately in the vicinity of the find. At the earliest possible time, a professional cultural resource specialist should be retained to evaluate the find, determine the nature, extent, and variability of the resource, and determine its significance following the criteria named above.

E. Discovery of Human Remains

Human remains might be found in any historical property at any time, promulgating a number of procedures mandated under state and federal law. Applicable California Public Law will be followed, including the stipulations of Public Resources Code Section 5097.98 and CEQA Guidelines, Appendix K, Section VIII, Discovery of Human Remains. These provisions stipulate that, in the event of discovery or recognition of any human

remains in any location other than a dedicated cemetery, the following actions must be taken: 1. (BCCER manager) contacts the County Coroner (CC), 2. (CC) contacts the Native American Heritage Commission (NAHC), 3. (NAHC) identifies and contacts the Most Likely Descendent (MLD), and 4. (BCCER) initiates consultation with the MLD. Further, if the remains are discovered in the course of ground disturbing activity, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the steps proscribed above are taken.

Recreation: Hunting

Goals:

1. Manage a hunt program to comply with the DFG MOU.
2. Collaborate with the California Deer Association and National Wild Turkey Federation on program guidelines and implementation.
3. Provide a quality hunting experience by managing for healthy wildlife populations and limiting hunting pressure through random lottery drawings and auction sales.

Summary:

The BCCER staff plan and implement a hunt program to comply with the MOU with DFG. The MOU needs to be amended to reflect new procedures that have been adopted over time and listed below. All the procedures that vary from the existing MOU have been discussed with DFG administration and the California Deer Association (CDA). CDA is a partner in planning and implementing the hunt program and providing support in improving habitat for all wildlife species.

The game species included in the hunt program originally consisted of deer, turkey and quail. Quail were largely eliminated from the hunt program when access was lost to the Musty Buck Ridge through Noel Owens' property (now Loafer Creek). Occasionally a quail hunter will request access and we give them a permit to hunt only on the Musty Buck Ridge between December 1 and the end of quail season. The dates are limited as to not conflict with deer and fall turkey seasons. Access to the Musty Buck Ridge is through one of the existing parking areas, fording the creek, and hiking to the Ridge. The current hunt program includes archery deer season A1, early deer rifle season C4, late deer rifle season G1, and fall and spring turkey seasons. We encourage guided youth and handicap hunts.

The biggest challenge in managing the hunt program is keeping public hikers, faculty, students, and researchers separate from the hunting community. The public often fails to recognize that the southern half of the reserve is closed on hunt days (posted at gates). Faculty and student are better at following the rules but will fail at times to recognize area closures. When hunters and other users interact, it is usually the hunter that feels deprived of the unique opportunity of being able to hunt on the BCCER without human interference. Even with the challenges, the hunt program on the BCCER is very unique and appreciated by the hunting community. The BCCER hunt program has served as a model to other agencies, non profits, and private land owners as a successful way to demonstrate multiple use activities. The BCCER hunt program grants access to the public, raises revenue for programs, helps procure grants from foundations, while educating people and enhancing wildlife populations.

Hunt Program Management:

1. Identify Dates for the Hunt Season

- a. Identify specific hunt dates for deer, turkey and quail
 - i. Spring and fall turkey seasons and the A1 and C4 deer seasons are divided into hunt periods. A hunt period is a Friday, Saturday or Sunday, Monday, leaving one day each weekend as a non-hunt day. Hunters apply for a hunt per period by paying a \$5.00 fee for each period.
 - ii. The G1 Deer season is open on the reserve for all 9 consecutive days of that season. Applicants apply for the entire 9 day season by paying a \$5.00 fee.
 - iii. Quail hunting permits are issued on a first come, first served basis. Quail hunting is only allowed on the Musty Buck Ridge from December 1 through the end of quail season. One hunting party is allowed to hunt per day. There is currently no drive-in access so hunters must hike to the ridge to hunt.
 - b. Identify application deadlines for the hunt season
 - i. Application deadlines for the spring season should be determined by January 1st, and by June 1st for the fall season.
 - ii. The application deadline should be at least 6 weeks prior to the first hunt day of the season.
 - iii. Lottery drawings should occur within five days of the application deadline (allow several days leeway for late applications).
 - iv. Post draw results online and notify drawn hunters once drawing is completed.
 - v. Hunter Liability Release and Hunter Regulations forms should be received with \$35.00 access fee at least two weeks prior to first hunt day.
 - vi. Hunt passes; maps, gate combinations, etc. should be mailed to hunters no later than two weeks prior to hunt date.
2. Applications
- a. Update the previous year's application to reflect current dates and any procedural changes to the application process.
 - b. Post applications on the California Deer Association website and update the link on the BCCER website.
 - c. Collect applications as they are submitted and deposit fees to Hunt Program Account (88065).
3. Random Lottery Drawing
- a. Enter all applicant information into the Hunt Application Fees sheet excel file.
 - b. Use the data sort tool and create a list of the hunters applying for each period. Each applicant will then have a number on the left column to compare with the results of the random number generator.
 - c. Use the Department of Fish and Game Lottery random number generator program to enter the number of hunters applying for each period.
 - d. Print out the list of random numbers generated for each period. Each printout will contain two columns of numbers. The left column is the draw order (1, 2, 3, 4...) and the right is the random number assigned to the applicant.
 - e. Compare the results of the random number generator with the list of applicants for that period. Find the hunter that was drawn first by finding the applicant number (right column) on the applicant list and record his name and

those of his hunting guest(s). Repeat this for each Period until all periods are full.

- i. Spring turkey season will have only two applicants drawn per period; one for hunt Area A and one for hunt Area B.
 - ii. A1 (archery deer) and C4 (early rifle deer) seasons will have a total of 4 hunting parties drawn per period. A hunting party shall not exceed three hunters.
 - iii. G1 season will have a total of 8 applicants drawn for the season. An applicant for the G1 season may only apply with one guest. Note, (7) G1 trespass permits will be sold at auction for a total of 15 G1 hunters per season.
4. Lottery Drawing Results and Drawn Hunter Notification
 - f. Send draw results to the California Deer Association (CDA) for posting on their website and update link on BCCER website.
 - g. Send email to drawn hunters. The primary applicant on the drawn application is the primary contact for the hunting party and is responsible for all communication with the party. Email will include the following.
 - i. Date of specific hunt
 - ii. Instructions for completing paperwork and paying fees
 1. Forms include the Liability Release Form, Minor Liability Release Form, and Hunter Regulations Form. The forms may be mailed or scanned and emailed, but must be signed by each member of the hunting party, including non-hunters.
 2. Fees may be paid by check, payable to Research Foundation or online through CDA website.
 - iii. A link to CDA online payment page
 - iv. Attach liability release forms and hunter regulations form to email
 - v. In the event the hunter does not use email a US Post mail packet will be mailed including the information above.
5. Mail Hunt Packets
 - h. When all forms and fees are received for an applicants' entire party they will be mailed a packet containing the following
 - i. Cover letter
 - ii. Current hunt map with directions to the BCCER
 - iii. Harvest survey card with the current hunt lock combination on the bottom
6. Promotion
 - i. Send email announcement to email list recipients once applications are posted online. Include a link to the application page.
 - j. Post flyers at local sporting goods stores and in kiosks.
 - k. Send flyer to the hunting and fishing columnist at Chico Enterprise Record.
7. Additional Tasks
 - l. Notify all combination holders (faculty, staff, etc) of hunt dates and use guidelines during hunt season. Include a map of the hunt zones.
 - m. Check and upgrade signage along hunt zone and parking areas.

- n. Close/lock gate at Simmons/ Henning parcel boundary.
- o. Clear 14 mile house and 10 mile house roads prior to each hunt period.
- p. Clean and restock outhouses frequently during hunt seasons.
- q. Change combinations
- r. Follow-up with hunters that don't return survey cards
- s. Eliminate from the hunt program hunters that violate rules

Example Management Decision Matrix				
Management Action/Need	Spatial Extent 0 = non-existent or unknown 1 = localized 2 = several isolated locations 3 = Extensive	Urgency 0 = lack of action does not result in adverse impacts preserve 1 = Moderate adverse impacts if neglected 2 = Severe adverse impacts if neglected	Ability to Manage 0 = Low 1= Moderate 2= High	Total Highest score is the highest priority task.
General Items				
Revise and update existing management plans (include short- and long-term management actions)	3	2	2	7
Implement actions outlined in management plans	3	2	2	7
Design monitoring protocol with flexibility for adaptive management	3	1	2	6
Implement monitoring and adaptive management	3	1	2	6
Specific Management Actions				
Develop soil restoration test plots and assess methods suitable to restore degraded soils at preserve	1	1	2	4
Conduct feasibility study for development of additional permanent or seasonal wetlands	1	0	2	3
If applicable, create or enhance wetlands and monitor their status	1	0	2	3
Install peizometers to monitor ground water availability	2	1	2	5
Eradicate/manage invasive vegetation	3	2	2	7
Eradicate/manage invasive wildlife	0	1	2	3
Restore and adaptively manage riparian vegetation	2	0 System is dynamic and functional	2	4
Restore and adaptively manage upland vegetation	2	1 Provides minimal buffering/filtration	2	5

Install, monitor and maintain bird and bat boxes	1	0	2	3
Facilitate the enhancement of the overflow channel by using methods to encourage native plant establishment	1	2	1	4
Assess sediment input rates	1	0	2	3
Fuels reduction / removal of woody debris	2	2	2	6
Identify actions from species recovery or management plans to implement at the preserve	3	0	2	5
Establish a credit method for mitigation banking	2	1	2	5
Become a certified mitigation bank	2	0	2	4

Management Implementation Plan				
Task	Priority (from decision matrix)	Time to Completion	Cost	Status
Revise and update existing management plans (include short- and long-term management actions)				
Implement actions outlined in management plans				
Design monitoring protocol with flexibility for adaptive management				
Implement monitoring and adaptive management				
Specific management actions				
Develop soil restoration test plots and assess methods suitable to restore degraded soils at preserve				
Conduct feasibility study for development of additional permanent or seasonal wetlands				
If applicable, create or				

enhance wetlands and monitor their status				
Install peizometers to monitor ground water availability				
Eradicate/manage invasive vegetation				
Eradicate/manage invasive wildlife				
Restore and adaptively manage riparian vegetation				
Restore and adaptively manage upland vegetation				
Install, monitor and maintain bird and bat boxes				
Facilitate the enhancement of the overflow channel by using methods to encourage native plant establishment				
Assess sediment input rates				
Fuels reduction / removal of woody debris				