4

Environmental Analysis

4 ENVIRONMENTAL ANALYSIS

4.1 INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS

4.1.1 PURPOSE OF THE EIR

This section of the General Plan for Bidwell-Sacramento River State Park constitutes an environmental impact report (EIR), as required by Public Resources Code Sections 5002.2 and 21000 et seq., and is subject to approval by the California Parks and Recreation Commission (Commission). The Commission has sole authority for the Plan's approval and adoption. Following certification of the EIR and approval of the Plan, the Department will prepare facility development and resource management proposals (or comprehensive plans) that implement provisions of the General Plan as staff and funding allow. Future projects, based on the provisions in this General Plan, may be subject to permitting requirements and approval by other public agencies that have resource protection authority over the activities in the project area.

4.1.2 FOCUS OF THE EIR

The Notice of Preparation for this General Plan was circulated to the appropriate federal, state, and local planning agencies. Based on comments received during the NOP comment period and the planning process to date, this Draft EIR was prepared to analyze potential environmental impacts that may result from the implementation of the management goals and guidelines, as well as area-specific management and facility prescriptions, that constitute the proposed General Plan. Environmental resources or topics that would not likely be affected by the General Plan are briefly addressed in Section 4.5, Environmental Topics Eliminated from Further Analysis. Those topics or issues that warrant further environmental analysis are analyzed in detail in Section 4.6, Environmental Impacts.

4.1.3 SUBSEQUENT ENVIRONMENTAL REVIEW PROCESS

The tiering process of environmental review is incorporated into this EIR. Tiering in an EIR, particularly for a program-level project such as a general plan, allows agencies to consider broad environmental issues at the general planning stage. These environmental considerations will be analyzed in greater detail in subsequent environmental documents at the time specific development projects and management programs are proposed. It should be noted that subsequent environmental documents incorporate, by reference, the general analysis from the program-level EIR included here and will concentrate on the issues specific to the characteristics of subsequent projects (Public Resources Code §21093; California Environmental Quality Act (CEQA) Guidelines §15152). This EIR represents the first tier of environmental review.

Future second-tier environmental review will be based on more detailed information on proposed actions, including facility size, location, and capacity. Therefore, the environmental analysis will be more specific and focused, identifying any significant environmental impacts and mitigation measures that are applicable to future projects. In addition, future actions will also be

evaluated to determine if they are consistent with the approved General Plan.
Because future environmental review will be more specific and focused, and the characteristics of future projects will be better defined, it will be possible to develop appropriate project-level mitigation measures that address potentially significant adverse impacts to the environment. Developing appropriate mitigation measures generally requires resource specialists to evaluate the scope of work, identify specific causes of impacts, and to specify measures that avoid or maintain impacts at a less-than-significant level. This information will be available once specific projects or actions are defined.

4.1.4 CONTENTS OF THE EIR

The program EIR contained in this General Plan includes the following sections:

Introduction to the Environmental Analysis: This section includes a brief overview of the environmental review process, legal requirements, and approach to the environmental analysis.

EIR Summary: The EIR summary represents a summary of environmental impacts associated with the proposed General Plan and proposed mitigation measures to address the impacts identified, an overview of the environmental effects of alternatives considered to the preferred General Plan, and a description of any areas of controversy and/or issues that need to be resolved.

Project Description: This section provides an overview of the proposed General Plan, which is the focus of the program EIR.

Environmental Setting: This section notes the fact that the existing (baseline) conditions for environmental issues or resources that may be potentially affected by implementation of the General Plan are addressed in Chapter 2, Existing Conditions, which represents the environmental setting for this EIR.

Environmental Topics Eliminated from Further Consideration: This section describes those environmental topics that did not warrant detailed environmental analysis and the supporting rationale.

Environmental Impact Analysis: This section describes the level of environmental impact associated with implementation of the proposed General Plan, including goals and guidelines that address effects on the environment.

Other CEQA Considerations: This section contains information on other CEQA-mandated topics, including cumulative impacts, growth-inducing impacts, significant and unavoidable impacts, and significant irreversible environmental changes.

Alternatives to the Proposed Project: The alternatives analysis describes the various alternatives to the proposed General Plan (including the No Project Alternative) that are considered in this EIR and the associated environmental effects of these alternatives relative to the proposed project.

4.2 EIR SUMMARY

4.2.1 SUMMARY OF IMPACTS AND MITIGATION

For the most part, implementation of the General Plan is not expected to result in significant impacts on the environment. Implementation of the goals and guidelines contained in Chapter 3, in conjunction with compliance with federal, state, and local laws and regulations, avoids potential significant environmental effects or maintains them at a less-than-significant levels. Additional mitigation measures, therefore, are not necessary.

Conversion of designated Important Farmland to non-agricultural uses is the one exception. Several of the proposed property additions are designated as Important Farmland, and if they are added to the Park, they would be removed from agricultural production. This represents a significant environmental impact, and because no feasible mitigation measures are available, it is considered significant and unavoidable.

4.2.2 SUMMARY OF ALTERNATIVES CONSIDERED

Several alternatives were considered during the planning process and an additional alternative was developed as part of the development of this EIR. The three planning alternatives represent a range of management treatments (i.e., minimum, moderate, and maximum) for natural and recreational resources at the Park. Features of each of these alternatives were used to develop the preferred General Plan alternative, which is the focus of this EIR. An additional alternative, which represents maximum restoration of the Park, is also considered in this EIR. This alternative is solely aimed at promoting ecological diversity and health of the Park, providing only limited recreation opportunities. And, as required by CEQA, the No Project alternative has also been considered here. It was concluded that the Maximum Restoration Alternative is the environmentally superior alternative among the alternatives considered here; however, it fails to meet one of the Department's fundamental objectives-providing high-quality recreational opportunities to residents of the state. As a result, it was excluded from further consideration in the planning process.

4.2.3 AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

Generally, there have been very few areas of controversy associated with implementation of the General Plan expressed at various public meeting held during preparation of the plan. There

appears to be consensus between the Department and the public that the recreational value of the Park is not being realized and that future recreational development would improve the Park. However, there are different visions of the extent of recreation development, ranging from a focus on passive recreation and minimal facilities to developed recreation that is supported by a well-planned and integrated facility system. The General Plan is intended to balance these two directions and includes goals and guidelines that promote good stewardship of the land and resources, which addresses concerns regarding development-induced impacts on the environment. Other related issues pertain to the addition of Park properties and coordination with other public lands in the region, both of which are addressed in the General Plan.

4.3 PROJECT DESCRIPTION

The Plan section of this General Plan represents the project description for this EIR (see Chapter 3). The General Plan establishes the long-range purpose and vision for Bidwell- Sacramento River State Park, outlines a set of goals and guidelines that guides future management of environmental resources, recreational opportunities and operational considerations, and includes a discussion of area-specific planning concepts that focus on facility development at the various subunits of the Park. Please refer to Chapter 3, Park Plan, for specific details on the proposed General Plan (Project), which is the focus of this EIR.

4.4 ENVIRONMENTAL SETTING

Existing conditions that characterize the Park, including descriptions of important resource values and local and regional planning efforts, are described in Chapter 2, Existing Conditions and Issues. Information presented in Chapter 2 constitutes the CEQA environmental setting description for the following topics: aesthetics, agricultural resources, air quality, biological resources, cultural resources, geology, hazards and hazardous materials, hydrology and water quality, noise, public services, traffic and transportation and utilities. Please refer to Chapter 2 for detailed information on these topics.

4.5 ENVIRONMENTAL TOPICS ELIMINATED FROM FURTHER ANALYSIS

Based on a preliminary review of the proposed project, several environmental topics do not warrant comprehensive analysis in this EIR because there is no potential for significant environmental effects resulting from the implementation of the General Plan. These topics include Land Use and Planning; Mineral Resources; Population and Housing; and Recreation. A brief description of these topics and information supporting the decision to eliminate these topics from further analysis is provided below.

4.5.1 LAND USE AND PLANNING

The Park is located in a rural area of Butte and Glenn counties, outside of any established

communities; the City of Chico is located approximately 6 miles to the west of the Park. Because the Park is owned and managed by the state, it is not subject to local land use planning (e.g., county general plans or zoning). In addition, there are no federal or state land use plans applicable to the Park. Management plans are currently being developed on adjacent public lands managed by the U. S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG), but these do not directly affect Park properties. As a result, no further analysis of this topic is necessary.

4.5.2 MINERAL RESOURCES

The Park is not located within an area with known mineral resources, and as such, it is not designated as an important mineral resource area by the California Department of Conservation under the Mineral Resource Zone (MRZ) classification System. Further, the Park does not contain any energy production or mineral extraction land uses. In the project area, there have been efforts in the past to extract gravel from the river channel to minimize interference with water pumping activities downstream of the Park, but these efforts are attributed to facility maintenance rather than commodity production. As such, no significant effects to energy and mineral resources would occur and no further analysis is necessary.

4.5.3 POPULATION AND HOUSING

The Park primarily serves visitors from the City of Chico, located 6 miles west of the Park. However, it also represents a regional destination for particular user groups, most notably anglers that use the Park as an access point to the Sacramento River during peak fishing seasons. Based on the characteristics of the Park, it is surmised that the primary visitor base comes from the four nearest counties (i.e., Butte, Glenn, Colusa, and Tehama counties). The population of this four-county area is projected to grow by roughly 2 to 4% annually through 2020 (DOF 2001). There are no features of the proposed General Plan that would directly induce regional population growth. However, additional recreational facilities proposed under the General Plan could result in additional visitation to the area, thereby potentially resulting in a limited indirect increase in the employment base of the local area, primarily in Chico. Recent demographic data show that the unemployment rate (2000) in Glenn County was at 11.9% and 7.0% in Butte County, and the housing vacancy rate in Glenn County was 8.1% and 6.9% in Butte County (DOF 2002). Given these data, it is expected that any increase in the demand for labor would be met by the existing local population, and therefore, no increase in population or the need for additional housing is expected. As a result, no significant effects to population and housing would occur, and no further analysis is necessary.

4.5.4 RECREATION

The proposed General Plan focuses on the development of recreational facilities and implementation of management approaches that facilitate recreation use of the Park. The

environmental effects of proposed facility development and resource management are analyzed as part of this EIR. Because the proposed General Plan would provide additional recreational opportunities in the region, it would not increase the use of other existing recreation facilities that could potentially result in physical degradation of those facilities, nor would it necessitate the construction of new facilities outside the Park. Therefore, no significant adverse effects to recreation would occur and no further analysis is necessary.

4.6 ENVIRONMENTAL IMPACTS

4.6.1 AESTHETICS

This section analyzes the aesthetic impacts that would result from the implementation of the proposed General Plan. The analysis is based on the general location of proposed facility developments within the aesthetic setting of the Park, as well as the goals and guidelines of the Plan.

THRESHOLDS OF SIGNIFICANCE

The thresholds of significance for the analysis of aesthetic resources are based on criteria from Appendix G (Environmental Checklist) of the State CEQA Guidelines. According to these criteria, implementation of the General Plan would result in significant impact to aesthetics if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

IMPACT ANALYSIS

Impact AES

Degradation of Viewshed and Night-time Views: Proposed facility development within the Park, namely within the riparian-based viewshed, could affect the natural appearance of the project area, including views available throughout the Park and from the Sacramento River. These developments may also introduce new nighttime light sources, which could affect nighttime views around the Park. Implementation of Goal ER-4.1 and associated Guidelines ER-4.1-1 through ER-4.1-6 would avoid or minimize potential adverse impacts to scenic resources and the aesthetic quality of the Park.

As a result, this impact would be **less than significant.**

Implementation of the General Plan would result in the development of recreational and operational facilities and improvements that would be visible to Park visitors, including those people recreating along the Sacramento River and its tributaries. Such developments could potentially degrade the natural landscape of the river corridor and interfere with views of and from the Park. However, goals and guidelines have been included in the Plan to address potential adverse effects to visual resources. Goal ER-4.1, which calls for the preservation of the natural appearance of the Sacramento River corridor, is supported by a range of guidelines, including those that call for the retention of riparian woodland for aesthetic values (see Guideline ER-4.1-1), establishment of appropriate vegetative screening for new facilities (see Guideline ER-4.1-2), and consideration of the natural aesthetics of the river when siting and designing Park signage (see Guideline ER-4.1-3). In addition, new facilities, such as the proposed visitor center, may require nighttime lighting and may introduce a new source of light/glare to the area, which could adversely affect nighttime views within the Park. Guideline ER-4.1-4 states that light/glare sources should be shielded, wherever possible, thus minimizing this impact. It is also the intent of the Department to support regular debris cleanup along the river, which would help maintain the aesthetic value of the river itself (see Guideline ER-4.1-5). With the implementation of the range of goals and guidelines in the Plan, the riparian appearance within the Park would be protected and the aesthetic values of the Park would be maintained; therefore, this impact would be less than significant and no additional mitigation measures are necessary.

4.6.2 AGRICULTURAL RESOURCES

This section analyzes whether impacts to agricultural resources from implementation of the General Plan would result in potentially significant adverse impacts to the physical environment. The analysis is based on a review of proposed facility development, recreational uses, and resource management programs on land currently designated Important Farmland and/or active agricultural uses in the region. Existing conditions related to agricultural resources in the vicinity of the Park are described in Chapter 2, Existing Conditions and Issues, of the General Plan, which constitutes the environmental setting under CEQA. In addition, in keeping with the Secretary's policy memo, additional information has been added to discuss socioeconomic considerations.

THRESHOLDS OF SIGNIFICANCE

Information useful for developing thresholds of significance for determining whether an agricultural land conversion creates a significant environmental effect was reviewed, including the State CEQA Guidelines and other CEQA documents addressing the topic.

Appendix G of the State CEQA Guidelines is a "checklist" of sample questions to aid lead agencies in determining whether a project could cause potentially significant environmental

impacts. The "Agriculture Resources" section of the Appendix G checklist provides examples of land use changes as a way of aiding lead agencies in determining whether impacts to agricultural resources result in significant environmental effects. The checklist asks whether the project would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;

- Conflict with existing zoning for agricultural use, or a Williamson Act contract; or

- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Important Farmland, to non-agricultural use.

Although land use changes are not, in of themselves, significant effects on the environment, changes from less-intensive to more-intensive uses can be indicators that physical effects may be reasonably foreseeable, including indirect and secondary effects. As stated in the CEQA Guidelines definitions, "effects" includes:

- Indirect or secondary effects which are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems.

(CEQA Guidelines § 15358(a)(2). Emphasis added.) Therefore the threshold question is not whether there will be a land use change, but whether the land use change which will result in a potentially significant adverse impact on the physical environment. The "environment" is defined as land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. (CEQA Guidelines § 15360.) Although the "environment" includes "both natural and man-made conditions," the Guidelines acknowledge that current "natural conditions, including ecosystems" can in fact be man-made.[5]

For example, in the California Bay-Delta Authority's (CBDA) Draft EIR on the Sacramento River-Chico Landing Subreach Habitat Restoration project, the threshold of significance related to restoration of Farmland to natural habitat is as follows:

[5] For example, man-made agricultural drainage and irrigation canals can constitute critical riparian habitat for the giant garter snake (GGS)(Thamnophis gigas), a threatened species under both the Federal and State Endangered Species Acts. As stated in the Draft Natomas Basin Habitat Conservation Plan, Sacramento and Sutter Counties (July 25, 2002): "After emergence from winter retreats, which occurs by late March or early April, GGS utilize canals with water that persists through the summer months. Many of the canals contain adequate emergent aquatic vegetation and steep, vegetated banks that provide cover and an abundant food supply of small fish, tadpoles and frogs." (Natomas Basin HCP – Biological Data, at p. II-9.)

- Result in a permanent conversion of a substantial acreage of Prime, Unique, or Statewide Important Farmland. A permanent conversion is considered to be one that involves the irreversible change to land uses that would cause serious degradation or elimination of the physical conditions or natural processes that provide the land's resource qualities for agriculture and/or require expenditures of substantial development costs that would likely preclude future conversion back to agricultural uses if the opportunity for such conversion were to arise (CBDA 2005).

In a memorandum to its departments, dated May 4, 2005, The Resources Agency described its policy for all departments to "recognize the importance of both permanent preservation of productive agricultural land and restoration, protection, and management of the state's natural, historic, and cultural resources." In selecting and developing resource-related projects, departments "should consider ways to reduce effects on productive agricultural land." To minimize these effects departments should review the mitigation strategies presented in the CALFED Final Programmatic EIS/EIR (CALFED 2000) and incorporate them, where appropriate.

IMPACT ANALYSIS

Impact AG

Habitat Restoration and Low-Intensity Recreation Uses on Agricultural Lands: Implementation of the General Plan would result in new land uses in areas designated as Important Farmland and/or currently in agricultural production. The affected property that would be entirely restored to natural vegetation conditions is the Singh property, and properties that would support a combination of restored natural vegetation and low-intensity, outdoor recreation uses in a rural setting are the Sunset Ranch, Beard, and Brayton properties. The proposed recreation uses are considered compatible with agriculture in relevant state and federal farmland protection programs. Although commercial agriculture (i.e., orchard crops) would not continue under the General Plan, essentially the orchard trees are being replaced with native trees, such as willows and cottonwoods for non-commercial purposes. This could have a minor economic effect (see discussion in Socioeconomic Considerations on page 4-20) related to a small reduction of local crop production[6], but the change from commercial uses to non-commercial uses (i.e., the change from walnuts to willows) would not substantially diminish the land, soils or open space values of the physical resource, nor would they preclude future agricultural use of the land.

It was these former conditions, before the clearing of the riparian forests that allowed the formation of these highly productive soils. The Department considers "conversion," for the purposes of assuming potential impacts under the Appendix G checklist and Land Evaluation and

[6] An economic or social change by itself is not considered a significant effect on the environment (CEQA Guidelines §15382).

Site Assessment (LESA) Model to involve the commitment of productive farmed land to irreversible development or non-agricultural uses that damage or eliminate the soil and open space values of the land or create secondary growth-inducing impacts to adjacent farmed lands by precluding nearby agricultural uses, as described in the following sections. Therefore, the impact to agricultural resources from allowing native vegetation restoration and/or low-impact recreation would result in a **less-than-significant environmental impact**.

Proposed Land Use Changes on Affected Properties

There are four properties (or subunits) within the Park with lands that are either designated as Important Farmland and/or are currently in commercial agriculture production. The Singh Property (approximately 34 acres) is classified mainly as "Irrigated Farmland" under the Farmland Mapping and Monitoring Program (FMMP) administered by the California Department of Conservation (DOC). "Irrigated Farmland" is an interim map category that substitutes for the categories of Prime Farmland, Farmland of Statewide Importance, and Farmland of Local Importance in farmed areas lacking modern soil survey information (DOC 2004). The Singh property is planned for restoration to natural vegetation as an extension of the Big Chico Creek Riparian Area. The Sunset Ranch property (approximately 32 acres) contains roughly 14 acres east of the existing access road that is also classified as "Irrigated Farmland". Although a visitor center, administrative center, and day use area are proposed for the area west of the access road, which is not designated as irrigated farmland, the remaining portion of the property does not have any specific land uses proposed in the General Plan, and it has already been restored to native grassland and shrubs by TNC. The Beard Property (approximately 19 acres) is classified mainly as "Prime Farmland", and the Brayton property (approximately 41 acres) is classified as "Other" (although it is currently in active orchard production). Both of these properties are planned for joint low-intensity, rural outdoor recreation use and natural vegetation restoration. Proposed recreational uses on the Beard property include a family/group campground as an extension of the Irvine Finch River Access facility. At the Brayton property, proposed recreation opportunities include primitive camping, day-use facilities, and trails.

Definition of Conversion of Agricultural Land and Relationship to CEQA

It is important to understand the meaning or intent of the concept of "conversion of farmland to non-agricultural uses" in the regulatory, planning, and academic references about this important topic. The following information provides the substantial evidence that the planned uses of the affected properties do not constitute a conversion of farmland resulting in potentially significant adverse environmental impacts as defined in CEQA and the CEQA Guidelines. In the following paragraphs, the definition of the term "conversion" in the context of agricultural land is further addressed.

In the American Farmland Trust's mapping program, Farming on the Edge, the assessment of loss of farmland (i.e., conversion) evaluates the acres of farmland converted to developed uses

(American Farmland Trust 2004). The definition of "development" uses the term, "urban and built-up areas" from the National Resource Inventory, which is described as follows:

- urban and built-up areas: A land cover/use category from the National Resources Inventory that includes residential, industrial, commercial, and institutional land; construction sites; public administrative sites; railroad yards; cemeteries; airports; golf courses; sanitary landfills; sewage treatment plants; water control structures and spillways; other land used for such purposes; small parks (less than 10 acres) within urban built up areas; and highways, railroads and other transportation facilities if they are surrounded by urban areas.

The planned actions on the affected properties at Bidwell-Sacramento River State Park do not fit this definition of urban and built-up land, so in the sense of this mapping program, the planned uses do not qualify as "conversion" to development. The term "urban and built up land" is also used in the California Department of Conservation's Farmland Mapping and Monitoring Program (see below).

At the federal level, the Federal Farmland Policy Protection Act (FPPA) requires consideration of whether federal actions would lead to the conversion of agricultural lands to non- agricultural uses. While the statute does not include a definition of "non-agricultural uses," the procedures established by the Natural Resources Conservation Service (NRCS) for assessing farmland conversion impacts provide some insight. NRCS created Form AD 1006 to provide a "Farmland Conversion Impact Rating" to Federal actions. In assessing conversions, the form defines uses as "urban," which detract from agricultural land values in the rating system, and "non-urban uses," which create or protect agricultural land values in the rating system. The definition of "non-urban uses" includes: agricultural land; range land; forest land; non-paved parks and recreational areas; rural roads; lakes, ponds and other water bodies; open space; and wetlands, among other similar uses. Urban uses include houses, apartments, commercial and industrial buildings, paved recreation areas (e.g., tennis courts), and other urban development (NRCS 1983). The planned actions on the affected properties at Bidwell-Sacramento River State Park would clearly not result in "urban" uses, but would fall within the "non-urban" use category (i.e., non-paved parks and recreational areas, rural roads, other water bodies, open space, and wetlands) that creates or protects agricultural land values. Therefore, the ultimate physical conditions of the affected properties resulting from adoption of the General Plan would be protective of agricultural land values, as considered by the procedures implementing the Farmland Policy Protection Act.

In addition, it is important to note that federal environmental analysis for projects, including projects on farmland, is performed under the auspices of the National Environmental Policy Act (NEPA) (42 United States Code §§ 4321-4347) and not CEQA. NEPA and CEQA differ fundamentally in that NEPA concerns the "human environment" and requires that whenever an environmental impact statement is prepared interrelated economic or social effects shall be discussed (Council on Environmental Quality – Regulations for Implementing NEPA §1508.14).

But there is no concomitant duty to mitigate. In contrast, the CEQA Guidelines provide that "economic or social information may be included in an EIR or may be presented in whatever form the agency desires" but that "economic or social effects of a project shall not be treated as significant effects on the environment." (CEQA Guidelines § 15131. Emphasis added.) Where there are significant environmental effects occurring, as defined by CEQA, a project cannot be approved if there are feasible alternatives or feasible mitigation measures which would substantially lessen those effects. (Public Resources Code § 21002.)

The Department of Conservation's California Agricultural Land Evaluation and Site Assessment (LESA) Model was based on the Federal Natural Resource Conservation Service's Land Evaluation and Site Assessment system. As previously noted, the Federal LESA "was adopted as a procedural tool at the federal level for identifying and addressing the potential adverse effects of federal programs (e.g. , funding of highway construction) on farmland protection." (LESA instruction Manual (Department of Conservation, 1997) at p. 2.) On the Federal level "farmland protection" included physical and socioeconomic factors and did not require mitigation under NEPA. Yet both the Federal and State LESA call development projects "Land Committed to Nonagricultural Use" and contrast that with agricultural land, parks, and habitat– which they define as "Protected Resource Lands."

LESA defines "Land Committed to Nonagricultural Use," as "land that is permanently committed by local elected officials to nonagricultural development by virtue of decisions which cannot be reversed simply by a majority vote of a city council or county board of supervisors." (LESA Instruction Manual at p. 26.) The commitment to non-agricultural uses is further described as requiring a tentative subdivision map, tentative or final parcel map, or recorded development agreement. Each of these descriptors involves an urban development action that is not related in any way to the planned uses of the affected properties at Bidwell-Sacramento River State Park. In direct contrast, the LESA Model classifies the planned uses at Bidwell-Sacramento River State Park as "Protected Resources Lands" and states:

> Protected resource lands are those lands with long term use restrictions that are compatible with or supportive of agricultural uses of land. Included among them are the following:
>
> - Williamson Act contracted lands
> - Publicly owned lands maintained as park, forest, or watershed resources
> - Lands with agricultural, wildlife habitat, open space, or other natural resource easements that restrict the conversion of such land to urban or industrial uses.

(LESA Instruction Manual at p. 28.) Therefore, the LESA Model itself, included as a reference in Appendix G, distinguishes the planned uses at the Bidwell-Sacramento River State Park from the land use changes associated with "Lands Committed to Non-agricultural Use" (i.e., urban and

industrial development) and their potentially significant adverse impacts to the physical environment.

In addition, in a University of California issue briefing paper on agricultural land loss, the "paving over" of farmland is the primary concern raised regarding "farmland conversion." This involves a substantial loss of farmland by permanent conversion to developed uses through urbanization, almost a half million acres over 10 years ending in 1998 (Kuminoff, Sokolow, and Sumner 2001). The paper also notes an increase in retirement of agricultural lands for open space and habitat conservation purposes in recent years, which contribute to economic effects from reductions in the amount of cultivated acres. The General Plan's planned uses of the affected properties at Bidwell-Sacramento River State Park do not involve permanently paving over of agricultural lands, but would be considered to be in the category of land retired for habitat conservation purposes, along with low-intensity, rural outdoor recreation use. While an economic (and not environmental) effect of cessation of crop production would occur, a permanent conversion to developed uses that result in the loss of the agricultural resource would not take place.

Construction of low-intensity, outdoor recreation uses (e.g., rural roads, family campsites, trails) on parts of the properties now in agricultural use would not preclude their return to agricultural cultivation in the future, because the physical values of the land for agriculture would be maintained and the cost of removing recreational facilities would be modest. For instance, if in the future the state determined the properties to be surplus and sold them to other parties, it would be feasible to remove the facilities, so that new landowners could farm the land, if they chose to do so. Consequently, the use of parts of these properties for low- intensity, outdoor recreation would not constitute conversion in the sense of the environmental impact concerns of CEQA. Therefore, the Appendix G criterion of a "conversion to nonagricultural use," which would result in a potentially significant environmental impact, does not apply to the facts of the situation in this instance. Further discussion of this issue in the context of the proposed natural vegetation restoration and low-intensity rural recreation uses at the Park is provided below.

Habitat Restoration Uses

As described above, the Singh Property and portions of the Sunset Ranch property would be restored to native vegetation under the General Plan. Unlike urban development, natural vegetation restoration would represent a return to the land's original (natural) physical condition, as part of a riparian corridor, which offers long-term natural process and function benefits, including the natural formation of soils that provide these sites with their current resource values. (In fact, native vegetation restoration is a type of sustainable native plant cultivation.) Because the resource value of the soil is tied directly to the natural conditions and processes that existed prior to commercial agricultural cultivation, native vegetation restoration efforts would in effect be preserving (and possibly improving over time) the soil integrity (Cannon 2004). Further, because no new development is proposed on the Singh Property or on the "farmland" portions of the Sunset Ranch property, these lands would not be lost to potential

future resource uses, including agriculture, due to the construction of buildings and paved areas. Lastly, proposed habitat uses would not cause potentially growth–inducing impacts by indirectly affecting the ability of nearby agricultural uses to continue to operate as they would not significantly restrict agricultural uses or farming practices on adjacent lands. It also can be argued that agricultural lands provide open space values. In fact, the definition of "agricultural preserves" under the Williamson Act includes areas devoted to open uses (California Government Code Section 51201(d)). Under the proposed General Plan, the open space value of these lands would also be retained. The Department, as a steward of the land, would manage these properties in a manner that would preserve these open space values into the future, and because these properties would be held in public trust by the Department, the potential for loss of open space due to future urban development is negligible.

Further, the resource value of the land would be enhanced through natural processes that would occur in the absence of active agriculture. By ceasing agricultural practices, the nutrient value of the soils and groundwater levels are allowed to recharge. This recharge value could be augmented through native vegetation restoration practices that would improve and restore the natural hydrological processes of these lands, such as allowing for meandering.

Rural Outdoor Recreation Uses

Both the Beard and Brayton properties are planned for a combination of both low-intensity outdoor recreation use and native vegetation restoration. These properties are located in a rural area next to the Sacramento River, so they would in effect become low-intensity, outdoor recreational uses in a rural setting, in combination with native vegetation restoration on portions of the sites. While native vegetation restoration would not be the primary focus of these areas, the existing orchards would be removed and the property would be restored to natural vegetation in conjunction with the proposed recreational improvements. Thus, the environmental and (potential) agricultural benefits of restored natural soil-forming process over the long term would occur on the natural vegetation restoration portions of the Beard and Brayton properties, as described above, and for the Singh and irrigated farmland portion of the Sunset Ranch properties.

New goals/guidelines have been added to the proposed General Plan that recognize the resource value of these lands (please refer to Chapter 3, Park Plan). New Guideline AO-3.2-1 states that proposed land uses on areas mapped as important farmland would be planned such that these areas would minimize alteration of the natural landform and all new recreation facilities would be compatible with the open space values of the area, including the resource values that support agricultural productivity. The proposed rural recreational use of these properties, which include standard campground/day-use features and ancillary facilities (e.g., parking, restrooms, etc.), would conform to this guideline by incorporating provisions for little or no paving and few, if any, small structures (please refer to changes to Section 3.3.2 of the General Plan that incorporate these provisions). This type of development is not considered an irreversible commitment of the

resource. Further, new Bidwell-Sacramento River State Park Guideline AO-3.2-2 establishes the goal of implementing future natural vegetation restoration at such future time when existing and proposed recreation uses are no longer needed to help meet the recreation objectives of the Department or recreation needs of the region. In addition, the proposed recreational uses would not affect the viability of agriculture on nearby properties for the same reasons described above. Based on these new policies and the rural recreation nature of the planned uses, the resource value of the land or region would not be diminished, nor would future cultivation of the property be precluded when the need for recreation no longer exists. In summary, the proposed recreational improvements would be sufficiently limited in nature such that it would be feasible to return the lands to another resource-based use, such as agricultural production, at some future time.

Land Use Compatibility with Agriculture

There is a long history related to the compatibility of outdoor recreational uses and agriculture. A great deal of outdoor recreation takes place on farmland. On private lands, those enjoying these recreational opportunities may be the farmers themselves, friends, or visitors. In many areas, farmers supplement their income by charging to hunt or fish on their property, and in some cases, they take actions to increase the abundance of wildlife in order to attract business. Wildlife-associated recreation is an important source of income for many small agricultural communities. According to the American Farmland Trust, low-impact recreational uses such as hunting, fishing, hiking and camping may be acceptable under some easements at the discretion of the landowner.

The proposed outdoor recreational uses at Bidwell-Sacramento River State Park would be compatible with agriculture, based on existing state and federal laws and programs for farmland protection, as described below.

As described above, the Federal FPPA indicates that non-agricultural uses are urban uses, which detract from agricultural land values in the rating system, while “non-urban uses,” which create or protect agricultural land values, include non-paved parks and recreational areas. Based on the characteristics of the proposed low-intensity, outdoor recreation at the Park, they are non-urban uses and in the category of uses that the FPPA considers to be protective of and compatible with agricultural values.

At the State level, the California Land Conservation Act of 1965 (Williamson Act), which enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use, provides valuable insight into the land use compatibility issue and preservation of agricultural values. (None of the properties included in the proposed General Plan are under Williamson Act contract, but the provisions of

the act provide insight into the issue of compatibility of outdoor recreation issues with agriculture.) The Williamson Act contains numerous provisions that recognize the compatibility between agricultural and recreation/open space uses. The definitions included in the statute are the first indication of such compatibility. It defines an "agricultural preserve" as an area devoted to either: agricultural use, recreational use, open space use, or any combination thereof (California Government Code §51201(d)). Also, "recreational use" is defined as the use of the land in its agricultural or natural state by the public, with or without charge, for a range of listed uses, including, but not limited to walking, hiking, picnicking, camping, swimming, boating, fishing, and other outdoor sports (California Government Code §51201(n)). Finally, "compatible use" is defined as any use determined to be compatible with the agricultural, recreational, or open space use of the land within the preserve (California Government Code §51201(e)) The recreational uses proposed in the General Plan are considered compatible with agriculture and therefore should have no significant adverse effects on neighboring farmland production.

These definitions are reinforced in §52105 of the Williamson Act, which states that land devoted to recreational use…may be included within an agricultural preserve (California Government Code §51205). In outlining the purpose of the Williamson Act, the statute states that the discouragement of premature and unnecessary conversion of agricultural land to urban uses is a matter of public interest (California Government Code §51220(c)); there is no reference to other non-urban uses, such as low-intensity rural outdoor recreation, such as that proposed in the General Plan. The clearest evidence for compatibility between agriculture and the type of recreational uses proposed at the Park are found in the principles of compatibility presented in §51238.1 of the statute. It states that uses approved on contracted lands, such as those proposed in the General Plan, will not significantly compromise the long-term agricultural capability of the subject contracted parcel in agricultural preserves (California Government Code §51238.1(a)(1)). As explained above, the proposed land uses and associated goals/guidelines in the General Plan strive to maintain physical conditions of the land that create resource values, including future agricultural and open space capabilities.

CONSISTENCY WITH THE RESOURCES AGENCY POLICY MEMO

In a memorandum to its departments, dated May 4, 2005, The Resources Agency described its policy for all departments to "recognize the importance of both permanent preservation of productive agricultural land and restoration, protection, and management of the state's natural, historic, and cultural resources." In selecting and developing resource-related projects, departments "should consider ways to reduce effects on productive agricultural land." To minimize these effects departments should review the mitigation strategies presented in the CALFED Final Programmatic EIS/EIR (CALFED 2000) and incorporate those strategies or similar strategies, where appropriate.

The General Plan is consistent with The Resources Agency policy memorandum concerning productive agricultural land and restoration of natural resources and with the CALFED strategy examples for minimizing effects on agricultural lands with the addition of Goal AO 3.3. This new Goal states: "In recognition of the importance policy of both permanent preservation restoration, protection, and management of the state's natural, historic, and cultural resources and of productive agricultural land, the Department will incorporate the following measures as modeled on the CALFED agricultural land and water strategies."

The CALFED strategies that would be most compatible with the Goals, Guidelines and Vision found in the General Plan include the following:

(1.) Site and align Program features to avoid or minimize impacts on agriculture.

(2.) Restore existing degraded habitat as a priority before converting agricultural land.

(3.) Focus habitat restoration efforts on developing new habitat on public lands before converting agricultural land.

(10.) Examine structural and nonstructural alternatives to achieving project goals in order to avoid impacts on agricultural land.

(15.) Use a planned or phase habitat development approach in concert with adaptive management.

(16.) Minimize the amount of water supply required to sustain habitat restoration acreage.

Socioeconomic Considerations

While social and economic consequences are not in of themselves environmental impacts under CEQA, this section discusses socioeconomic considerations related to agricultural production resulting from implementation of the proposed General Plan, in keeping with The Resources Agency policy.

Agricultural production supports considerable economic activity in Butte and Glenn Counties. The value of agricultural production is approximately $290 million annually in Butte County and $280 million annually in Glenn County. In 2000, the amount of crop land harvested was 480,000 acres in Butte County and 460,000 acres in Glenn County (CBDA 2005).

Currently, the total amount of important agricultural land within Bidwell-Sacramento River State Park is approximately 36.5 acres (4.8 acres at Irvine Finch, 1.0 acre at Indian Fishery, and 30.7 at

the Singh property). An additional 32.8 acres (18.7 acres on the Beard property and 14.1 acres on Sunset Ranch) would be added if these properties are acquired by State Parks. Although roughly 41 acres on the Brayton property, already acquired by State Parks, is planted and irrigated in walnuts, it is not designated as Important Farmland under the FMMP. However, if the Brayton property was included as Important Farmland, the total area evaluated as agricultural land would be approximately 110 acres. If this total acreage was removed from production for native vegetation restoration or rural outdoor recreation uses, it would constitute a very small portion of total agricultural land in the two counties (about 1/100th of one percent). Reducing agricultural production value by this proportion would have a minor, if not unnoticeable, economic effect in the two counties. The cessation of agricultural production can also cause an indirect economic ripple effect on secondary service and supply businesses supporting agriculture. Because of the very small relative contribution of the state park land to agricultural production in the two counties, the combined direct and indirect economic effect of removing agricultural production from these lands would be minor.

Conclusion

Based on the information and evidence presented above, the Department concludes that the restoration of designated Farmland to natural vegetation or use of designated Farmland for the proposed rural outdoor recreation uses in the proposed General Plan would not result in potentially significant adverse impacts within the intended meaning of CEQA and the CEQA Guidelines. Permanent conversion of the properties to urban uses resulting in a loss of farmland as a resource, significant damage to soil values of the resource, detraction from the agricultural land values in the NRCS Farmland Conversion Impact Rating System, or indirect adverse primary or secondary (such as growth-inducing) effects on adjacent agricultural land would not occur. Also, the planned habitat restoration and low-intensity outdoor recreation uses on these properties do not result in a significant adverse change to the physical resources that provide soil and open space values to the land or an irreversible loss of such resources. Consequently, the General Plan impact on agricultural resources would not result in a significant adverse effect on the environment. Nevertheless, the General Plan includes a goal and attendant guidelines to promote consistency with the Resources Agency policy strategy to consider socioeconomic effects to agricultural land.

4.6.3 AIR QUALITY

This section analyzes impacts related to air quality that would result from the implementation of the Preliminary General Plan. The analysis is based on ambient air quality conditions in the project area and is focused primarily on potential impacts associated with the construction of new facilities at the Park, as well as ongoing operations.

THRESHOLDS OF SIGNIFICANCE

The thresholds of significance for the analysis of air quality are based on criteria from Appendix G

(Environmental Checklist) of the State CEQA Guidelines. According to these criteria, implementation of the General Plan would result in significant impact to air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standards or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

IMPACT ANALYSIS

Impact AQ

Degradation of Air Quality: Construction and operations-related activities at the Park may generate criteria air pollutants, odors, and air toxics that could exceed federal, state, and local standards. Implementation of Goal AO-3.3 and Guidelines AO-3.3-1 and AO-3.3-2, which call for compliance with Butte County AQMD and Glenn County APCD rules and regulations, would avoid or minimize adverse effects on air quality. As a result, this impact would be **less than significant.**

Development projects at the Park could result in air emissions during construction, through the use of construction equipment and fugitive dust, and during operations, such as campfire emissions at the proposed overnight campground. These projects may be required to obtain "authorization to construct" and "permit to operate" from the Butte County AQMD and/or Glenn County APCD. As a part of this permitting process, projects are required to comply with the Districts' rules and regulations on fugitive dust emissions, architectural coating emissions, air toxics, odors, and other air pollutants during construction and operational activities. Pursuant to Goal AO-3.3 and Guidelines AO-3.3-1 and AO-3.3-2, implementation of air pollution control measures required by all applicable rules and regulations would avoid or minimize the emission of criteria air pollutants from construction activities and stationary sources.

New recreational development proposed under the General Plan may generate additional vehicular traffic to and from the Park. The Transportation Project-Level Carbon Monoxide Protocol (Garza et al. 1997) states that signalized intersections at LOS E or F represent a potential for a CO violation. Due to the relatively low traffic volume on roadways in the area and the lack of intersections in the immediate vicinity of the Park, localized concentrations of vehicle-generated carbon monoxide would not be expected to exceed ambient air quality standards.

Typical recreational uses permitted in the State Parks system could potentially result in adverse effects on ambient air quality. Standard recreational uses are not known to generate odors that would be considered objectionable to most people, and the use of air toxics (e.g., regulated herbicides) would be in accordance with state and federal rules and regulations. However, the proposed General Plan includes provisions for the development of an overnight campground, with approximately 50 campsites and a group camp area, where the use of campfires would be expected to be standard. Based on the circumstances at the time such development is proposed, the applicable air district will be consulted and appropriate measures implemented to avoid or minimize this impact (see Guideline AO-3.3-2).

Based on the information presented above, any adverse effects on air quality would be less than significant. No mitigation measures are necessary.

4.6.4 BIOLOGICAL RESOURCES

This section analyzes impacts related to biological resources that could result from the implementation of the proposed General Plan. A variety of documents and additional information were used to assess impacts on vegetation and wildlife from implementation of the proposed General Plan. These include biological studies previously conducted in the vicinity of the project site (see list of documents in Chapter 2, Existing Conditions, field surveys conducted during preparation of the Preliminary General Plan, aerial photographs, consultation with Park staff, and results of natural resource database searches.

THRESHOLDS OF SIGNIFICANCE

The thresholds of significance for the analysis of biological resources are based on criteria from Appendix G (Environmental Checklist) of the State CEQA Guidelines. According to these criteria, implementation of the General Plan would result in significant impact to vegetation and wildlife if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan.

IMPACT ANALYSIS

Impact VEG

Effects on Vegetation: Implementation of the Preliminary General Plan would result in the avoidance or minimization of disturbances or losses of sensitive plant communities or special-status plants through compliance with goals and guidelines that ensure protection of vegetative resources in the Park. This impact would be **less than significant.**

As discussed in Chapter 2, Existing Conditions, the dynamic riparian ecosystem of the Park contains a number of common and sensitive vegetation communities that are valuable habitat for plants and wildlife. Sensitive plant communities in the Park include wetland, valley oak woodland, and other successional riparian woodland plant communities. Proposed improvements, such as the development of new buildings/structures (e.g., visitor center) and other recreation facilities, including the car-top boat launch area, overnight campground, day-use areas, and trails, may be developed in proximity to areas containing sensitive vegetative resources. However, these developments would avoid or minimize impacts to wetlands and other sensitive plant communities based on the protective measures included in the goals and guidelines contained in the Preliminary General Plan. These include Goal ER-1.1 and associated Guidelines ER-1.1-3 through ER-1.1-6, which focus on avoidance of sensitive resources and onsite restoration where avoidance is not feasible; and Goal ER-3.2 and Guideline ER-3.2-2, which address the establishment and maintenance of riparian vegetation along riverbanks. In addition, implementation of Goal ER-1.3 and Guidelines ER-1.3-1 and ER-1.3-2 would control and possibly reduce the presence of invasive weeds at the Park, thus limiting the effect from invasive weeds and animals on native habitats and species.

Seven special-status plant species have the potential to occur in plant communities present at the Park. Based on the CNDDB and the presence of suitable habitat, three of these species, fox sedge, rose-mallow and Columbian watermeal, can occur within the Park. However, the presence, locations and extent of populations of these plant species can vary because they grow in aquatic habitats, which are dynamic. Undocumented occurrences of these and other special-status plant species may be present in the Park; thus, focused surveys would be necessary to accurately determine the distribution and extent of special-status plant species in the Park. Direct impacts,

such as direct removal or damage of special-status plant occurrences, would not occur as a result of implementation of the General Plan because development or expansion of facilities and other ground disturbance activities, including invasive weed abatement activities, would be conducted in accordance with Goal ER-1.2 and Guidelines ER-1.2-1 through ER-1.2-6, which focus on the protection of special-status plant and wildlife species, and all previously mentioned goals and guidelines. In addition, consistent with Guidelines ER-1.1-1 and ER-1.1-6, restoration could potentially increase the quality and extent of suitable habitat for special-status plant species.

Currently, no Habitat Conservation Plans or Natural Communities Conservation Plans have been approved in the region. Therefore, implementation of the Preliminary General Plan would not conflict with such plans.

Based on the information presented above, direct and indirect impacts to sensitive vegetation communities and special-status plants would be minimized or avoided, and as a result, this impact would be less than significant.

IMPACT ANALYSIS

Impact WILD

Effects on Wildlife. Implementation of the proposed General Plan would result in the avoidance or minimization of disturbances or losses of special- status wildlife and wildlife corridors. The General Plan includes a range of goals and guidelines that ensure protection of natural resources, including wildlife, in the Park. These goals and guidelines maintain potential impacts at a less-than-significant level.

The Park supports a variety of terrestrial and aquatic wildlife species, primarily due to its position along the Sacramento River and Big Chico Creek. Many of the animals that occur in the Park are locally and regionally common, but as many as 24 terrestrial and 5 aquatic special-status species have been documented or have the potential to occur in the Park. Construction and maintenance of existing and proposed Park facilities could result in loss and/or disturbance of habitat and individuals of some of these special-status wildlife species. Potential direct impacts could result from development, re-location and/or expansion of facilities, such as trails, parking, campgrounds, picnic/day use areas, visitor center, administrative center, and boat launches. Potential secondary impacts on wildlife resulting from increased visitor use could include disturbance from visitor activities (e.g., hiking and boating), introduction/expansion of invasive species, and disturbance by domestic dogs.

However, impacts to special-status terrestrial and aquatic wildlife species would be avoided or minimized by implementation of the goals and guidelines contained in the proposed General Plan. These include Goal ER-1.2 and associated Guidelines ER-1.2-1 through ER-1.2-5, which would require monitoring of special-status species within the Park and development of specific measures to avoid and minimize adverse impacts that could result from facility construction, maintenance activities, and visitor use. In addition, implementation of Goal ER-1.4 and Guidelines ER-1.4-1 through ER-1.4-3, would avoid or minimize potential impacts of non-native

animals on wildlife in the Park, including impacts on special- status species, through monitoring efforts, development and implementation of a control plan, and public education to reduce release and feeding of non-native animals.

Wildlife movement is not expected to be substantially affected by construction and maintenance of proposed facilities. Relatively small patches of wildlife habitat would be disturbed and/or removed by facility development and such development would not substantially reduce opportunities for wildlife movement. In addition, habitat corridors would be protected and enhanced by implementation of Goal ER-1.5 and Guidelines ER-1.5-1, which promotes linkage with habitat areas that are currently isolated, and ER-1.5-2, which requires coordination with adjacent landowners to preserve habitat corridors in the vicinity. Potential impacts to the movement and/or migration of aquatic species would be minimized or avoided by implementation of Guideline ER-1.2-5, which restricts in-water construction during fish migration, spawning, and rearing periods.

4.6.5 CULTURAL RESOURCES

This section analyzes impacts related to cultural resources that would result from the implementation of the Preliminary General Plan. The analysis is based on a review of known (and potentially significant) cultural resources at the Park and proposed land use developments and resource management efforts prescribed in the proposed General Plan.

THRESHOLDS OF SIGNIFICANCE

The thresholds of significance for the analysis of cultural resources are based on criteria from Appendix G (Environmental Checklist) of the State CEQA Guidelines. According to these criteria, implementation of the General Plan would result in significant impact to aesthetics if it would:

- Cause a substantial adverse change in the significance of historical resources;
- Cause a substantial adverse change in the significance of an archaeological resource;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

IMPACT ANALYSIS

Impact CUL

Impacts to Cultural Resources: Implementation of the Preliminary General Plan would result in the avoidance or minimization of disturbances to the integrity of cultural resources located within the Park. The Preliminary General Plan includes goals and guidelines that ensure the protection and maintenance of prehistoric and historic sites, features, and landscapes documented within the Park. This impact is considered **less than significant.**

Although portions of Bidwell-Sacramento River State Park have been subjected to cultural resource surveys related to transportation, reclamation, and recreation projects, no prehistoric or historic sites, features or artifacts have been formally documented within the Park. However, several important sites are known to exist (e.g., Bidwell Ferry, Gianelli Bridge, Sea Scout station, Tyler Dance Hall, etc.), but the locations of these sites and features have not been documented using standard archaeological techniques. In addition, based on the presence of significant cultural resources within and in the immediate vicinity of the Park, and the sensitive nature of the landforms present in the area, it is likely that cultural resources remain to be discovered within Park boundaries, although the extent of such resources and their significance is probably limited based on existing information from surveys and archival research.

Although general statements can be made regarding the cultural resources sensitivity of particular landforms within the Park (e.g., stream terraces and riverbanks are typically more likely to exhibit evidence for prehistoric occupation and various activities), additional surveys are needed to locate cultural resources, document their distribution, and ensure that they are not adversely affected by Park development and maintenance proposals. The implementation of Goals ER-2 and ER-2.1 and associated Guidelines ER-2.1-1, ER-2.1-2, and ER-2.1-3 support future research regarding the presence of cultural resources at the Park, including the development of a Cultural Resource Management Plan, and would also require cultural resource surveys prior to any development project proposed at the Park. These goals and guidelines prescribed in the General Plan would add considerably to the levels of research and preservation of cultural resources currently occurring within the Park, and therefore, would reduce impacts to a less than significant level.

4.6.6 GEOLOGY, SOILS, AND SEISMICITY

This section analyzes impacts related to geology, soils, and seismicity that would result from the implementation of the General Plan. The analysis is based on a review of available geologic, seismic, and soils-related information for the project area in the context of development and resource management features included as part of the proposed General Plan.

THRESHOLDS OF SIGNIFICANCE

The thresholds of significance for the analysis of geology, soils, and seismicity are based on criteria from Appendix G (Environmental Checklist) of the State CEQA Guidelines. According to these criteria, implementation of the General Plan would result in significant impact to geological resources if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, and/or landslides;

- Result in substantial soil erosion or the loss of topsoil;

- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;

- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; or

- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

IMPACT ANALYSIS

Impact GEO

Risk of Geologic and Seismic Hazards: The recreational facilities and other structures developed in the Park could be potentially subject to geologic and seismic hazards and/or other adverse environmental effects based on geologic and soil-related conditions that exist at the Park. Compliance with the California Building Code (CBC) would maintain the risks of such hazards to an acceptable level; therefore, this impact would be **less than significant.**

The Park is located in a seismically active region, and potentially active faults in the area (e.g., Chico Monocline fault, Coastal Ranges thrust zone, and other faults in the Sierra foothills) may produce earthquakes with magnitudes of 6.5 or greater (Butte County 1996). However, there are no faults in the immediate project area, and the Park is not located in an Alquist-Priolo special study zone. As a result, although the potential for seismic activity in the region exists, the Park is not expected to be subject to fault rupture. Due to the relatively mild topography of the Park, only minor (if any) seismically-induced landslides along river banks could occur. In the event of a large earthquake, the Park could be subject to moderately- strong seismic ground shaking, which could result in potential structural damage to Park facilities. The risk of liquefaction, which is the transformation of soils from a solid state to a liquid state during ground shaking, is high at the Park due to the presence of saturated sandy soils (e.g., Columbia silt loam, Maywood fine sandy loam, Gianella fine sandy loam). Liquefaction can cause buildings to sink and could render them susceptible to major damage. By law, all structures developed within the Park would have to comply with the standards contained in California Code of Regulations, Title 24 (i.e., CBC). As such, future development and improvements would include structural reinforcements and other features, as required by the CBC, which avoid or minimize seismically induced structural damage.

In terms of soil-related impacts, the primary risks at the Park are soil erosion and subsidence. Erosion risk increases with increasing slope, precipitation, ground disturbance, and decreasing vegetative cover. Although the Park is relatively flat and is densely vegetated in most areas, ground-disturbing activities that would be occurring at the Park (e.g., trail use) coupled with loss of vegetation from facility and trail development and climatic factors (e.g., wind, precipitation,

etc.) could result in erosion and the loss of topsoil at the Park. However, there are goals and guidelines in this Plan that would control erosion factors. Goal ER-1.1 and Guidelines ER-1.1-1 and ER-1.1-2 would generate additional vegetative cover within the Park, which would generally aid in minimizing erosion. In addition, the construction of new facilities would require the use of best management practices, including measures specified in erosion-control plans, as prescribed in Goal ER-3.2 and Guideline ER-3.2-1. Further Guideline ER-3.2-2 would maintain vegetative buffers along the riverbank, which would avoid or minimize the potential for transport of sediment into water bodies during construction activities and visitor use at the Park. Guideline ER-3.2-3 requires trails be designed, maintained, and monitored to minimize adverse erosion effects. Given these goals and guidelines, the potential for soil erosion would be avoided or minimized.

Subsidence is a concern in the region due to natural gas and groundwater extraction. In the immediate vicinity of the Park, the primary cause of subsidence is groundwater extraction for agricultural purposes. Implementation of the General Plan would accommodate the conversion of agricultural uses to open space and recreational uses on several properties being considered for addition to the Park. While new wells may be needed to provide potable water at recreational facilities, the overall use of groundwater is expected to decrease because irrigation-dependent agricultural uses would be discontinued. As such, implementation of the General Plan would decrease the risk of subsidence. Moreover, facilities that would be developed at the Park would be required to comply with the CBC, which includes structural requirements for areas susceptible to subsidence.

It should also be noted that the characteristics of the soils within the Park are conducive to supporting specialized septic systems (i.e., septic tanks designed to prevent accidental release during flood events), such as those currently operating at the Irvine Finch and Indian Fishery subunits. As a result, future developments that may require the use of septic systems would not be limited by the soils in the project area.

Overall, because potential seismic-related impacts would be avoided or minimized through provisions in the CBC, erosion impacts would be addressed through goals and guidelines in the plan, and there are no soils-related limitations to the use of septic systems at the Park, implementation of the proposed General Plan would result in less-than-significant impacts to geology and soils. No mitigation measures are necessary.

4.6.7 HAZARDS AND HAZARDOUS MATERIALS

This section analyzes impacts related to hazards and hazardous materials that would result from the implementation of the General Plan. The analysis considers the types of proposed uses at the Park and the standard equipment and materials used in operating and managing the Park in relation to proposed hazard that could affect Park visitors and staff.

THRESHOLDS OF SIGNIFICANCE

The thresholds of significance for the analysis of hazards and hazardous materials are based on criteria from Appendix G (Environmental Checklist) of the State CEQA Guidelines. According to these criteria, implementation of the General Plan would result in significant impact associated with hazards and hazardous materials if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

IMPACT ANALYSIS

Impact HAZ

Risk of Wildland Fire, Exposure to Hazardous Materials, and Other Hazards: While the General Plan would accommodate new developments and improvements that may increase fire incidents and the use of hazardous materials, implementation of the management goals and guidelines, as well as the compliance with existing codes, rules and regulations, would maintain this impact at a **less-than-significant level.**

The analysis of hazards and hazardous materials under CEQA is multi-faceted. It is intended to address the use of hazardous materials, emergency response, and wildland fire. Each of these topics is addressed below.

There are no documented hazardous materials sites within the Park (EPA 2003). Implementation of the General Plan would not result in a substantial increase in the use of hazardous materials (e.g., propane, herbicides) at the Park. Transport and storage of hazardous materials within the Park would continue to be conducted in accordance with all regulatory requirements. Day-to-day operation of the Park does not involve the disposal of hazardous materials, and the Department would continue to contract with licensed providers of propane and herbicides when transporting these materials to the Park, as needed. The use, storage, and disposal of hazardous materials, as well as the development of new storage facilities, would comply with state and federal rules and regulations.

Implementation of the General Plan would not conflict with the emergency response plans of either Butte or Glenn counties. Implementation of Goal AO-2.3 and Guidelines AO-2.3.1 and AO-2.3-2 would promote coordination with emergency response agencies in planning for the safety of Park visitors, including the continuation of a coordinated emergency response to special events at the Park. No road closures are planned, and adequate emergency vehicle access would be maintained with implementation of Guideline AO-2.3-3 which would require all areas to accommodate adequate access for emergency vehicles.

The increase in interaction between Park visitors and wildland habitat, as well as introducing new recreational uses at the Park, would increase the risk of wildland fires at the Park. Implementation of the General Plan would result in additional native vegetation habitat through restoration opportunities (see Goal ER-1.1), which could increase the fuel load at the Park. Increases in fuel load combined with additional recreational facilities and trails that would increase human activity throughout the Park, including the use of campfires at the proposed overnight campground, would result in a higher risk for wildfires relative to baseline conditions. The threat of wildfire could threaten or otherwise adversely affect Park visitors, nearby establishments, private residences, and other nearby land uses such as agriculture. Implementation of Goal AO-2.3 and Guidelines AO-2.3.1 and AO-2.3.2 would facilitate monitoring and patrolling of the Park, which would provide the opportunity to respond to potential causes of wildfire (e.g., illegal fires). In addition, Guideline AO-3.3-2 would restrict the use of campfires, further minimizing potential wildfire ignition. And finally, Guideline VU-3.7-4 would ensure the provision of information to visitors on Park rules regarding fire safety. Given these goals and guidelines, the increase in the risk of wildland fire is not expected to be substantial. Further, all buildings would be designed in compliance with the CBC, which requires fire safety features.

The Park is not within 2 miles of an airport, and the General Plan would not accommodate the types of development that would be in conflict with the operation of the nearest airport in Chico.

Based on the information presented above, impacts related to wildland fires, risk of exposure to hazardous materials, and risks associated with airport operations are considered to be less than significant. No mitigation measures are necessary.

4.6.8 HYDROLOGY AND WATER QUALITY

This section analyzes hydrology and water quality impacts that would result from the implementation of the General Plan. This analysis considers the proposed development and resource management efforts prescribed in the General Plan in the context of the hydrological conditions that currently characterize the Park.

THRESHOLDS OF SIGNIFICANCE

The thresholds of significance for the analysis of hydrology and water quality are based on criteria from Appendix G (Environmental Checklist)of the State CEQA Guidelines. According to these criteria, implementation of the General Plan would result in significant impact to hydrological resources if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Inundation by seiche, tsunami, or mudflow.

IMPACT ANALYSIS

Impact HYDRO

Flood Damage, Riverbank Erosion, and Water Quality Degradation:
Implementation of the General Plan would allow for the development of facilities within the floodplain, the construction and operation of which could generate pollutants that may affect water quality. Compliance with goals and guidelines and existing rules and regulations would maintain these impacts at **less-than-significant levels.**

All of the Park's subunits, except Irvine Finch, are located within the 100-year floodplain. The General Plan would allow for the development of new facilities in the floodplain based on incorporating site and facility design features (e.g., elevated building pads), as prescribed in Goal AO-3.1 and Guideline AO-3.1-1. Some proposed facilities, such as campgrounds, function with minimal problems in the floodplain, while other permanent structures may need to be designed with flood-related protective features. In addition, per Guideline AO-3.1-2, existing facilities at the Park would be re-designed to withstand flood events, as needed. As a result, potential adverse environmental effects associated with flooding, including structural damage and release of pollutants, is expected to be minimal.

Implementation of the General Plan would not result in the alteration of the Sacramento River or its tributaries. However, the General Plan would allow for the development of new facilities and operations of existing facilities within the designated floodplain and Inner River Zone (see Guideline AO-3.1-1). It should be noted that siting of appropriate facilities within the Inner River Zone would take into account historic flooding patterns and river meander, including known hard-points along the river channel. As a result, the potential conflicts between structural developments and the natural hydrology of the river channel is expected to be minimal.

Based on the existing drainage pattern of the Park, which often results in onsite flooding, there are no features of the General Plan that would result in localized flooding at offsite locations. Furthermore, given the channel volume of the Sacramento River, implementation of the General Plan would not impede or redirect flood flows.

Due to close proximity of the Park to the Sacramento River and its tributaries, additional runoff generated by new impervious surfaces associated with facility development may drain into nearby waterways, thereby adversely affecting water quality. By virtue of the location of facilities within the floodplain, onsite pollutants may be washed into nearby waterways during flood events, resulting in degradation of water quality. However, there are goals and guidelines in the proposed General Plan that address potential impairments to water quality. Goal ER-1.1 and Guidelines ER-1.1-1 and ER-1.1-2 would result in additional vegetative cover within the Park, which serves as a filter to pollutants entering nearby water bodies. Goal ER-3.2 and Guidelines ER-3.2-1 and ER-3.2-2 would require vegetative buffers and other erosion-control features that would avoid or minimize the potential for runoff to carry eroded soils into water bodies during construction and operational activities. Erosion-control and other water quality control features may also be required by the Central Valley RWQCB through the NPDES permit program. Site-

specific best management practices (BMPs) to reduce the level of contaminants in discharges to surface waters (e.g., runoff, dewatering discharges) would be required for all construction and operational activities in the Park that could result in the generation of contaminants in discharges (e.g., all construction activities involving more than one acre of disturbed areas). Through the Section 401 certification program, water quality control features may be required to ensure that the placement of fill in the waters of the United States (e.g., wetlands, rivers and streams) is consistent with the State's water quality standards and criteria. These goals and guidelines, as well as RWQCB requirements, would avoid or minimize the contribution of sediments and other pollutants into waterways.

Based on the information presented above, the General Plan would result in less-than-significant impacts related to the hydrology and water quality at the Park. No mitigation measures are necessary.

4.6.9 NOISE

This section analyzes noise impacts that would result from the implementation of the General Plan. The analysis is based on typical noise levels generated by recreation uses that would be accommodated at the Park and the relationship with established noise standards.

THRESHOLDS OF SIGNIFICANCE

The thresholds of significance for the analysis of noise are based on criteria from Appendix G (Environmental Checklist) of the State CEQA Guidelines. According to these criteria, implementation of the General Plan would result in significant impact associated with noise if it would:

- Expose persons to or generation of noise levels in excess of established standards;
- Expose persons to or generation of excessive groundborne vibration or groundborne noise levels;
- Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

IMPACT ANALYSIS

Impact NOISE

Increase in Ambient Noise Level: Based on the proposed facility developments in the General Plan, there would likely be an increase in visitation to the Park that could result in increases in ambient noise primarily from vehicle access to and from the Park. However, visitor use at the Park is not expected to be such that ambient noise levels would result in adverse impacts to sensitive receptors. Further, compliance with goals and guidelines in the General Plan would ensure that future construction of facilities and other improvement efforts at the Park would not generate noise levels that exceed the State noise guidelines. Therefore, this impact would be **less than significant.**

The three primary sources of noise expected within the Park are construction activities, operations of facilities, and vehicular traffic. Based on the California Office of Planning and Research's General Plan Guidelines (State Guidelines), 60 dBA is the maximum acceptable noise level for the most noise-sensitive land uses (e.g., single-family residences). Recreation and agricultural uses have a maximally acceptable noise level of 75 dBA, and the standard for commercial businesses is 70 dBA. While areas conducive to wildlife and nature observation are not included in the State Guidelines, they would also be considered noise- sensitive uses.

Based on information provided by U.S. Environmental Protection Agency (EPA), outdoor receptors within approximately 1,600 feet of construction sites could experience maximum instantaneous noise levels of greater than 60 dBA when onsite construction-related noise levels exceed approximately 90 dBA at the boundary of the construction site. There are sensitive uses that exist near the Park, including private residences adjacent to the proposed Sunset Ranch Addition and Scotty's Bar and Grill located along Pine Creek.

In addition, potential stationary sources of noise within the Park include the operation of facilities (e.g., visitor center), which would generate occasional parking lot-related noise, and general recreation use, which would generate noise from the use of recreation equipment (e.g., motor boats) and casual conversation.

Finally, if future development and improvements would generate additional visitation to the Park, then traffic volumes and the associated noise volumes along roadways would increase.

Overall, there exists the potential for adverse noise effects to nearby sensitive receptors resulting from construction of activities, including the development of a visitor center at the Park; stationary source noise associated with typical recreation uses at the Park; and traffic- related noise associated with increased visitation to the Park. Based on the characteristics of the Park and expected use levels, noise associated with typical recreation uses and traffic is not expected to exceed State Guidelines. However, construction-related noise could adversely affect nearby

residences on a short-term and periodic basis. Goal AO-3.3 and Guideline AO-3.3-3 would require proposed development projects conformance with applicable state noise standards. This may be achieved through implementation of noise- reducing measures (e.g., noise walls, site design changes, and limits on hours of operations) that would maintain appropriate construction noise levels near sensitive uses. Therefore, this impact would be less than significant, and no mitigation measures are necessary.

4.6.10 TRANSPORTATION AND CIRCULATION

This section analyzes transportation and circulation impacts that would result from the implementation of the General Plan. This analysis considers potential increases in visitation that would result from the proposed General Plan and the related effects on traffic and circulation in the project area. It should be noted that recreation use projections have not been developed for the Plan, and therefore, the analysis represents a qualitative evaluation of this issue.

THRESHOLDS OF SIGNIFICANCE

The thresholds of significance for the analysis of transportation and circulation are based on criteria from Appendix G (Environmental Checklist) of the State CEQA Guidelines. According to these criteria, implementation of the General Plan would result in significant impact to transportation and circulation if it would:

- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections);
- Exceed, either individually or cumulatively, a level of service standard established by the congestion management agency for designated roads or highways;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access;
- Result in inadequate parking capacity; or
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

IMPACT ANALYSIS

Impact TRANS

Increase in Trips and the Effect on Local Traffic, Circulation, and Roadway Safety: Implementation of the General Plan may increase traffic volumes on local roadways serving the Park during noncommuter peak periods, but would not likely result in the degradation of traffic flows or the need for roadway expansion. Increased visitation to the Park may also affect internal circulation and parking, as well as roadway safety. Goals and guidelines in the General Plan avoid or minimize potential adverse effects related to the internal and local transportation system. As such, traffic-related impacts would be **less than significant.**

The General Plan would allow for new recreational developments that may attract additional visitation, which would increase vehicular trips along local roadways serving the Park. Most of the additional vehicular trips would occur during weekends, particularly during holiday weekends, and very few of the trips are expected during the peak commute hours when LOS levels along SR 32 are of concern. Further, goals and guidelines in the General Plan would also facilitate the provision of public transportation to the Park (see Goal VU-3.2 and Guidelines VU-3.2-1 and VU-3.2-2), which would likely have a beneficial effect on traffic volumes in the area. There may be short-term traffic congestion during peak-period recreation events (e.g., Fourth of July, Labor Day), when thousands of visitors overwhelm the capacity of the local roadways. However, coordination and collaboration with Caltrans and other agencies, per Goal AO-2.3, which requires the provision of a safe environment for the visitors, and Guideline AO-2.3-2, would facilitate the safest and most expedient access to and from the Park possible. Overall, traffic conditions along local roadways are not expected to noticeably change as a result of the proposed General Plan.

In terms of roadway safety, intersection improvements or new intersections may be needed along SR 32, River Road, and other roadways where access roadways to new facility development connect with existing roadways. This is particularly applicable to proposed development areas that may need design features to provide safer access off the existing roadway system, which may be the case at the Sunset Ranch property. Goal VU-3.1 and Guidelines VU-3.1-1 through VU-3.1-5 would provide for adequate roadway signage, preparation of traffic analyses for major development proposals, and coordination with Caltrans and local jurisdictions to implement roadway improvements, where necessary, to ensure safe access to and from the Park. Moreover, separation of vehicle traffic from pedestrians, bicyclists, and equestrians, and installation of roadway safety signage in the Park is prescribed under Guidelines VU-3.8-1 and VU-3.8-2, respectively. During peak-period recreation events, Goal AO-2.3 and Guidelines AO-2.3-2 would promote safe access to and from the Park along local roadways. In addition, implementation of Guideline AO-2.3-3 would ensure that the existing and new use areas be designed to maintain adequate access for emergency vehicles. Roadway visibility may be affected by nighttime

campfire smoke from proposed overnight campgrounds; however, because these emissions would originate from proposed small- to moderate-scale facilities that are not located directly on the roadway system, they are not anticipated to result in safety hazards. With goals and guidelines prescribed in this plan, implementation of the General Plan would not be expected to adversely affect traffic safety in the project area.

With additional facilities, additional parking capacity would be needed at the Park. Implementation of Goal VU-3.3 and Guidelines VU-3.3-1 and VU-3.3-2 would provide for expanded parking capacity for vehicles and buses and private vehicles to meet visitor needs.

Overall, given the goals and policies related to traffic and circulation included in the Plan, as well as the compliance with applicable codes and regulations, impacts related to traffic and transportation would be less than significant.

4.6.11 PUBLIC SERVICES AND UTILITIES

This section analyzes impacts on utility and public service systems that would result from the implementation of the General Plan. The analysis based on the potential demands for public services and utilities as part of proposed facility developments included in the General Plan.

THRESHOLDS OF SIGNIFICANCE

The thresholds of significance for the analysis of public services and utilities are based on criteria from Appendix G (Environmental Checklist) of the State CEQA Guidelines. According to these criteria, implementation of the General Plan would result in significant impact to public services and utilities if it would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection, police protection, schools, parks, and other public facilities;

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;

- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

- Require or result in the construction of new storm water drainage facilities or expansion of

existing facilities, the construction of which could cause significant environmental effects;

- Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed;
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- Comply with federal, state, and local statutes and regulations related to solid waste.

IMPACT ANALYSIS

Impact UTIL

Increased Demand for Utility and Public Services: The General Plan would allow for the development of new facilities and improvements that would generate an increase in the demand for utility and public services. Because existing service providers and resource capacities are expected to be sufficient, the impact would be **less than significant.**

The General Plan would allow for the development of new facilities and site improvements that would increase visitor use at the Park, and therefore, generate additional demand for water, wastewater, electricity, propane, solid waste, telephone, law enforcement, fire protection, emergency, and road maintenance services. Because the level of additional visitation is not expected to be substantial, the Department would continue to utilize existing sources of utility and other public services, which have sufficient capacity to accommodate increases in demands that would result from implementation of this plan.

For services provided by outside sources including, solid waste collection and disposal, road maintenance, fire protection, law enforcement, and emergency medical services, existing service providers would be utilized. For most service providers, there are no known capacity issues that would affect the provision of these services for the Park. Fire protection services provided by the Hamilton City Fire Protection District are based on limited financial and volunteer resources, but would be supplemented by CDF and internal Department staff, which have experience in handling the types of wildfires that could potentially occur at the Park. Further, cooperation and coordination with service providers, as described in Goal AO-2.3 and Guideline AO-2.3-1, would help ensure that adequate public services be provided.

The Department would continue to provide potable water from its existing wells or from new

wells as needed. Based on the types of facilities proposed and the ceasing of irrigation on potential property additions currently in agriculture, it is expected that the existing groundwater supply would be sufficient to serve the Park. New water and wastewater facilities (e.g., pipelines) may be needed for new developments and would be built in conjunction with specific facility developments, per Guidelines AO-3.4-1 and AO-3.4-2.

The construction and installation of new equipment and facilities that may be needed to serve the future development within the Park could result in adverse environmental effects. Because preference would be given to the use of existing infrastructure over the development of new infrastructure, in accordance with Goal AO-3.2 and Guidelines AO-3.2-1 and AO-3.2-2, which give preference to connection with existing infrastructure over the development of new infrastructure, the amount of new development, including ground-disturbing activities, required to provide utility and public services may be avoided or minimized.

While the exact nature of the infrastructure and service needs would not be determined until the development proposal is available, it is expected that any adverse effects would be mitigated to the extent feasible in accordance with Guideline AO-3.2-3. Construction and operations of any new equipment and facilities are expected to be in compliance with state and federal rules and regulations. In addition, new infrastructure and services are expected to be environmentally compatible with the Park's resources, and any degradation of environmental values is not expected to be substantial based on implementation of Guideline AO-3.2-3.

Based on the information provided above, overall impacts associated with the provision of utility and other public services is expected to be less than significant, and no mitigation measures are necessary.

4.7 OTHER CEQA CONSIDERATIONS

4.7.1 UNAVOIDABLE SIGNIFICANT EFFECTS ON THE ENVIRONMENT

This first-tier environmental review indicates that the potential significant environmental effects from implementation of the General Plan can be maintained at a less-than-significant level with appropriate facility siting, implementation of goals and guidelines included in this Plan, and the development of specific mitigation measures during the project-level environmental review process. The one exception, as discussed below, is the unavoidable significant conversion of farmland to non-farmland uses.

At the programmatic level, it is generally difficult to identify unavoidable significant effects on the environment because the specific location and scope of proposed uses or management efforts are not known. However, there are features of the proposed General Plan that would likely result

in unavoidable significant effects on the environment, as described below.

Implementation of the General Plan would likely result in a significant and unavoidable effect related to the conversion of Important Farmland to non-agricultural uses. By expanding the Park through property acquisition and either restoring or developing new properties that are or may be considered Important Farmland (i.e., Beard Addition, Singh Orchard), these properties would be converted from agricultural to non-agricultural uses. Because the Department would not continue agricultural operations on these properties and there are no measures that can be taken to mitigate this effect, it is considered an unavoidable and significant effect on the environment under CEQA (Appendix G Checklist, CEQA Guidelines). It should be noted that the Department would restore native riparian habitat on this land and that restoration would result in long-term natural process and function benefits.

4.7.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

No significant irreversible changes to the physical environment are anticipated from the adoption and implementation of this General Plan. Facility development, including structures, roads and trails, may be considered a long-term commitment of resources; however, the impacts can be reversed through removal of the facilities and discontinued access and use. Ongoing adverse effects on the environment, if any, can be monitored by Park staff through their consideration of carrying capacity issues. The Department does remove, replace, or realign facilities, such as trails and campsites, where impacts have become unacceptable either from excessive use or from a change in environmental conditions.

The construction and operation of facilities may require the use of non-renewable resources. This impact is projected to be minor based on considerations of sustainable practices in site design, construction, maintenance, and operations that are generally practiced by the Department. Sustainable principals used in design, construction and management, such as the use of non-toxic materials and renewable resources, resource conservation, recycling, and energy efficiency, emphasize environmental sensitivity.

4.7.3 GROWTH-INDUCING IMPACTS

State CEQA Guidelines §15126.2(d) require that an EIR evaluate the growth-inducing impacts of a proposed project. Specifically, an EIR must discuss the ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Growth can be induced in a number of ways, including the elimination of obstacles to growth, or by encouraging and/or facilitating other activities that would induce new growth. Growth inducement itself is not an environmental effect, but may lead to environmental effects. Such environmental effects may include increased

demand on other community and public services and infrastructure, increased traffic and noise, degradation of air or water quality, degradation or loss of plant or wildlife habitats, or conversion of agricultural and open space land to urban uses.

If implemented completely, the General Plan may indirectly foster economic growth in the region. This economic growth would be associated with the development of new recreational and interpretive facilities, which could increase visitation to the Park. The anticipated increase in Park visitation is based on an increase in the overall capacity of the Park (i.e., Park expansion), interpretive potential at the proposed visitor center, the development of family and group day-use and overnight camping facilities, and improvements to the trail system, including additional new trails and linkages between the Park and regional trails. Additional directional and informational signage outside the Park should raise the Park's profile as a destination for recreation and historical interpretation. If visitation to the Park increases, tourism-related spending would increase in adjacent communities and surrounding region, which would in turn support tourism- and recreation- related businesses and employment. The extent of such economic effects is unknown at this time, but could indirectly result in growth of local economic activity.

In addition, there will be the need to expand permanent and seasonal Park staff to address increases in Park visitation and to operate facilities, such as the proposed visitor center. Increases in employment opportunities in both the public and private sector could result in increases in local population growth, but this effect is expected to be minimal because the number of new jobs is not expected to be substantial and any new employees would likely be from the local area.

4.7.4 CUMULATIVE IMPACTS

This EIR provides an analysis of cumulative impacts of the proposed General Plan, as required in State CEQA Guidelines §15130. Cumulative impacts are defined in State CEQA Guidelines §15355 as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." A cumulative impact occurs from "the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time (State CEQA Guidelines §15355[b]). By requiring an evaluation of cumulative impacts, CEQA attempts to ensure that large-scale environmental impacts will not be ignored.

To evaluate cumulative environmental impacts, other projects that could cumulatively contribute to the impacts described in this EIR need to be identified. In addition to substantial growth in the Chico region, several development and planning projects are being undertaken in close proximity

to the Park by other public agencies, including the U.S. Army Corps of Engineers (USACE), USFWS, and CDFG. These projects are:

- Sacramento River Wildlife Area Management (CDFG).
- Comprehensive Conservation Plan – Sacramento River National Wildlife Refuge (USFWS).
- Hamilton City Flood Damage and Ecosystem Restoration Project (USACE)

Please refer to Chapter 2, Existing Conditions and Issues, for an overview and key features of these projects.

As described above, the facility development and resource management efforts proposed in the General Plan would not, except for conversion of farmland, result in significant adverse environmental impacts based on implementation of the goals and guidelines included in the Plan. Although not individually significant, those environmental topics that are not expected to be subject to significant adverse effects from the proposed development in the General Plan may result in cumulative impacts to the extent that they are occurring in the region, such as water quality degradation and the loss of biological, cultural, and visual resources. However, features of the General Plan, including possible acquisitions and resource protection efforts, would act to protect existing Park resources, preserve viewsheds, and enhance plant and wildlife habitat by providing habitat linkages and buffers. As a result, cumulative impacts associated with these environmental topics are expected to be less than significant.

The General Plan would result in a significant and unavoidable impact related to the conversion of Important Farmland in the project area. This loss would cumulatively contribute to the loss of farmland and agricultural productivity that is affecting the region and the state, including losses associated with implementation of restoration and conservation uses on adjacent public lands. Therefore, this would be a significant and unavoidable cumulative impact, although restoration would return farmland to its original riparian habitat state, and provide environmental benefits to improved natural process and functions.

4.8 ALTERNATIVES TO THE PROPOSED PROJECT

The guiding principles for the analysis of alternatives in this EIR are provided by the State CEQA Guidelines §15126.6, which indicate that the alternatives analysis must: (1) describe a range of reasonable alternatives to the project that could feasibly attain most of the basic objectives of the project; (2) consider alternatives that could reduce or eliminate any significant environmental impacts of the proposed project, including alternatives that may be more costly or could otherwise impede the project's objectives; and (3) evaluate the comparative merits of the

alternatives. The State CEQA Guidelines §15126.6(d) permit the evaluation of alternatives to be conducted in less detail than is done for the proposed project. A description of the project alternatives, including the No Project Alternative, is provided in this EIR to allow for a meaningful evaluation, analysis, and comparison of these alternatives with the proposed General Plan.

4.8.1 DESCRIPTION AND ENVIRONMENTAL EFFECTS OF THE ALTERNATIVES

ALTERNATIVES 1A, 1B, AND 1C: PROJECT PLANNING ALTERNATIVES.

Description

A range of planning alternatives was developed and presented to the public during the General Plan process. These alternatives represented a menu of options in addressing the various issues identified at the Park, and were organized by the degree of management (or treatment) for a particular issue. As such, these alternatives do not just represent separate alternatives unto themselves, but also describe packages of management intensity, ranging from minimum to moderate to maximum treatment of natural and recreational resources. In addition, some of the integral key features are included in more than one planning alternative.

The minimum treatment of natural and recreational resources (Alternative 1A) includes the following key features:

- Monitoring approach to management of special-status plant/wildlife species and non-native/feral animals;
- Control of California Department of Food and Agriculture (CDFA) Class “A” and “B” noxious weeds;
- Use of native plants in facility landscaping;
- Focus on the protection of known cultural resources;
- Expand Irvine Finch boat launch area and develop small-scale car-top boat launch area at the Peterson property;
- Minor expansion of picnic amenities at existing day-use areas;
- Limited number of primitive, environmental campsites at the Big Chico Creek Riparian Area, east of River Road;
- New internal loop trail at Big Chico Creek Riparian Area and canoe trail;
- Small visitor center at Beard Addition using signs/panels;
- Relocation of existing administrative center to Sunset Ranch Addition; and
- Implement policies that foster community involvement and coordination with local and regional planning efforts.

The moderate treatment of natural and recreational resources (Alternative 1B) includes the following key features:

- Active approach to management of special-status plant/wildlife species, including restoration of threatened and endangered species habitat and control of animals affecting sensitive species;
- Prevent spread of all existing and establishment of new invasive weeds;
- Restore natural habitat of future property additions;
- Focus on the protection of known and potential cultural resources at the Park;
- Expand Irvine Finch and Pine Creek boat launch areas and develop moderate-scale car-top boat launch area on the east side of the Big Chico Creek Riparian Area;
- Small expansion of existing day-use areas and develop new day-use area at Indian Fishery;
- Limited number of primitive, environmental campsites in the eastern portion of the Big Chico Creek Riparian Area and in Indian Fishery (near Old Chico Landing) and small family campground at Indian Fishery;
- New internal loop trail at Big Chico Creek Riparian Area, expand existing loop trail at Indian Fishery, and canoe trail;
- Moderate-scale, mobile visitor center with working farm at Sunset Ranch Addition;
- Relocation of existing administrative center to Sunset Ranch Addition; and
- Implement policies that foster community involvement and coordination with local and regional planning efforts.

The maximum treatment of natural and recreational resources (Alternative 1C) includes the following features:

- Active approach to management of special-status plant/wildlife species, including restoration of all sensitive species habitat, control of animals affecting sensitive species, and monitoring of biodiversity;
- Reduce extent of and control all invasive weeds;
- Restore natural habitat of all degraded sites within the Park;
- Focus on the protection of known/potential cultural resources at the Park and develop Cultural Resource Management Plan;

- Expand Irvine Finch and Pine Creek boat launch areas and develop larger-scale boat launch area on the eastern portion of the Big Chico Creek Riparian Area providing car-top and motorized boat access;
- Small expansion of existing day-use areas and development of two new day-use areas;
- Limited number of primitive, environmental campsites on the eastern portion of the Big Chico Creek Riparian Area and Indian Fishery (near Old Chico Landing). Large family campground at Beard Addition;
- New internal loop trail at Big Chico Creek Riparian Area, expand existing loop trail at Indian Fishery, coordinate to develop multi-agency loop trail near Sunset Ranch, and canoe trail;
- Coordinate to develop permanent, large-scale visitor center with working farm at the Sunset Ranch Addition serving multiple public agencies;
- Relocation of existing administrative center to Sunset Ranch Addition; and
- Implement policies that foster community involvement and coordination with local and regional planning efforts.

EVALUATION

The minimum treatment of natural and recreation resources (Alternative 1A) does not provide for substantial recreation development, but is limited in the extent of management of important natural, cultural and visual resources. On the other end of the spectrum, the maximum treatment of natural and recreation alternatives (Alternative 1C) calls for the greatest amount of facility development, but also includes the strongest or most stringent management of natural resources at the Park. The moderate treatment of natural and recreation alternatives (Alternative 1B) lies in between these two bookend planning concepts. It is difficult to ascertain what the resulting net environmental effect would be from these three alternatives on the environmental resources at the Park. Based on the balance of physical development and environmental stewardship that characterizes each of these alternatives, it would be expected that these three alternatives would result in comparable environmental impacts relative to one another. Further, because the proposed General Plan is characterized by a combination of the three planning alternatives described above, and also balances the development of facilities with sound stewardship of natural resources, it is also expected to result in comparable environmental impacts relative to these planning concepts.

ALTERNATIVE 2: MAXIMUM RESTORATION ALTERNATIVE

Description

This alternative represents the scenario where the existing subunits of the Park and all future property additions are restored to natural habitat conditions to the extent feasible. As such, existing facilities at the Park would be removed where appropriate and no new recreation or operations-related facilities would be developed. The Park would ultimately represent

discontiguous pockets of protected open space, where visitors could engage in passive recreation opportunities in the absence of developed facilities.

Evaluation

The Maximum Restoration alternative would result in less environmental impacts relative to the proposed General Plan. Because no recreation or other facility development is proposed, adverse environmental effects associated with ground-disturbing construction activities, such as loss or degradation of sensitive riparian and/or wildlife habitat, would be avoided. Also, there would be relatively less visitation to the Park under this alternative because recreation opportunities at the Park would be limited to passive opportunities only. With less visitation, there would also be less demand on consumptive resources (e.g., potable water) and public services (e.g., law enforcement), and resulting traffic, air quality, and noise effects would be less pronounced relative to the proposed project. However, this alternative would still entail addition of the three proposed properties included as part of the proposed project (i.e., Beard property, Sunset Ranch, and Singh Orchard), which would be restored to their natural habitat conditions. As a result, this alternative would result in the conversion of Important Farmland to non-agricultural uses similar to the proposed project.

Although the Maximum Restoration alternative would result in less impact to the environment, relative to the proposed project, it would not achieve one of the Department's primary missions –providing high-quality recreation opportunities to residents of the State. However, this alternative would still meet the criteria of a State Park, which are intended to balance natural, cultural, and scenic resource considerations and facilitate the provision of the recreational opportunities they provide to the public (albeit extremely limited under this alternative).

ALTERNATIVE 3: NO PROJECT ALTERNATIVE

Description

The California Environmental Quality Act requires an evaluation of the "no project" alternative and its impact (CEQA Guidelines §15126.6[e][1]). The no project alternative represents perpetuation of existing management actions, and its analysis is based on the physical conditions that are likely to occur in the future if the project (the proposed General Plan) is not approved and implemented. The purpose of describing and analyzing a no project alternative is to allow decision-makers to compare the impacts of approving the proposed project with the expected impacts of not approving the project. If a general plan is not implemented for Bidwell-Sacramento River State Park, the existing management scenario would continue for Park development, operation, and management, which includes, but is not limited to, the following features:

- maintenance of existing recreation and operation facilities and Park grounds,
- restoration of existing properties that were acquired for habitat values,

- property acquisition that facilitate management of the Park, and

- implementation of the Interpretive Prospectus (1997) developed for the Park.

Evaluation

The existing conditions at the Park, including the lack of needed facilities, would continue if the General Plan were not adopted. Visitation to the Park is increasing every year and based on demographic trends, use of the Park would increase, but not at the level expected under the proposed General Plan due to the lack of facilities. There would be public pressure to expand facilities at the Park; however, without a general plan in place, the Department would not have the authority to develop or enhance facilities to respond to this demand and funding for recreation and interpretation improvements to enhance the visitor experience may be difficult to obtain. Recreational and interpretive improvements that could enhance the visitor experience at the Park's current level of use or anticipated future needs would not be developed. As a result, similar to the Maximum Restoration alternative (Alternative 2), this alternative would potentially avoid construction-related impacts associated with facility development that would occur under the proposed General Plan.

However, without the facility improvement to accommodate the existing visitor demand, as well as the projected increase in visitor use (although less than the proposed General Plan), sensitive natural and cultural resources may be expected to degrade over time because of overuse and lack of formalized management approaches. In other words, under the No Project Alternative, the Park's natural and cultural resources would not receive an increased level of protection, as prescribed under the General Plan. Comprehensive Park-wide resource management plans and policies for natural and cultural resources would not be implemented, including the development of a formal Cultural Resource Management Plan (CRMP).

Traffic and circulation improvements may not be accomplished under the No Project Alternative. Parking and circulation problems would continue as visitor use increases, creating issues with visitor capacity at the Park. Improvements to informational and directional signage would not occur.

Finally, this alternative would continue current patterns of property acquisition, including those properties that contain Important Farmland. Because the Department would not continue agricultural use of these properties under most circumstances, the No Project Alternative would result in significant and unavoidable impacts to agricultural resources, similar to the proposed General Plan.

4.8.2 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

State CEQA Guidelines §15126(d)(2) states that "if the environmentally superior alternative is the no project alternative, the EIR shall also identify an environmentally superior alternative from

among the other alternatives." In light of this guidance, the EIR discusses whether the no project alternative or one of the other plan alternatives would be environmentally superior. Alternatives considered here include the proposed General Plan, the three planning alternatives (Alternatives 1A, 1B, and 1C), the Maximum Restoration Alternative, and the No Project Alternative.

It is concluded that the Maximum Restoration Alternative is the environmentally superior alternative from the alternatives considered here. Although property acquisition would still likely proceed under this alternative, thus potentially resulting in the conversion of Important Farmland to non-agricultural uses (a significant and unavoidable impact under all of the alternatives), it would minimize ground-disturbing activities and construction- and service-related impacts associated with facility development, which would be the lowest out of all of the alternatives. However, this alternative fails to meet one of the fundamental objectives of the Department, which is to provide high-quality recreation to residents of the State. Passive recreation opportunities would be provided, in conjunction with habitat restoration activities, but due to the sensitivities associated with restoration efforts, these opportunities would be extremely limited. As a result, it was excluded from further consideration in the planning process.

Although not selected as the "environmentally superior alternative," the proposed General Plan was selected as the preferred project alternative because it balances the interests of natural, cultural, and recreational resources at the Park. It is based on fundamental principles of land and resource stewardship, which are found throughout the goals and guidelines of the Plan. Moreover, it provides the framework to establish improved and expanded recreation opportunities to Park visitors all within a context of resource protection and stewardship, which is an integral consideration for State Parks planning.

5

References

5 REFERENCES

5.1 PRINTED REFERENCES

Anonymous. 2000. Big Chico Creek Watershed Project.

Atchley, S. 2000. Cultural Resource Study for the Bidwell Sacramento River SP Restoration Project, Butte County, California. On file, Northern Buttes District Office, Oroville, California.

Barbour, M., B. Pavlik, F. Drysdale, S. Lindstrom. 1993. California's Changing Landscapes. Diversity and Conservation of California Vegetation. Sacramento: California Native Plant Society.

Bayham, Frank E. and Keith L. Johnson. 1990. Archeological Investigations at CA-GLE-105: A Multicomponent Site along the Sacramento River, Glenn County, California. Prepared for U.S. Department of the Army Corps of Engineers, Sacramento District. By Archaeological Research Program, California State University, Chico.

Butte County Council of Governments (BCAG). 2001. Regional Transportation Plan. Adopted September 27, 2001.

Bidwell Environmental Institute, CSU Chico. 2001 (December). Critical Habitat Assessment of the Big Chico Creek/Mud Creek/Sacramento River Confluence Area.

Bombay, H.L., T.M. Ritter, and B.E. Valentine. 2000. A Willow Flycatcher Survey Protocol for California. USDA Forest Service, Pacific Southwest Region, Vallejo, CA.

Bryan, K. 1923. Geology and Ground-Water Resources of Sacramento Valley, California. U.S. Geological Survey Water-Supply Paper 495. Butte County. 1996. Butte County Comprehensive Plan.

Butte County. 2003. Butte County General Plan. <http://www.buttecounty.net/dds/planning/land.htm> Accessed March 5, 2003.

Butte County Air Quality Management District (BCAQMD). <http://www.bcaqmd.org/air.cfm#Clean%20Air%20Plan> Accessed October 14, 2003.

California Department of Conservation (DOC). 2000. Farmland Mapping and Monitoring Program.

California Department of Finance (DOF). 2001. Interim County Population Projections. California

Department of Finance. 2002 (February). California County Profiles.

<http://www.dof.ca.gov/HTML/FS_DATA/profiles/pf_home.htm>

California Department of Fish and Game (CDFG). 1983. California Wildlife Habitat Relationships System: California's Wildlife, Mammals, Ringtail.

CDFG. 2000. The Status of Rare, and Endangered Animals and Plants in California. , Greater Sandhill Crane. Department of Fish and Game website. <http://www.dfg.ca.gov/hcpb/cgi-bin/read_one.asp?specy=birds&idNum=48

California Environmental Resources Evaluation System (CERES). 1995. Wetlands Management in the Past. Accessed on-line at http://ceres.ca.gov/ceres/calweb/ wetlands/wetland_past.html

California Exotic Pest Plant Council (CalEPPC). 1999. The CalEPPC List: Exotic Pest Plants of Greatest Ecological Concern in California, October 1999. List accessed on-line at http:// groups.ucanr.org/ceppc/Pest_Plant_List

California Natural Diversity Database (CNDDB). 2002. Rarefind: A database application for the use of the California Department of Fish and Game's Natural Diversity Database. California Natural Heritage Division, California Department of Fish and Game, Sacramento, CA.

California Native Plant Society (CNPS). 2002. Electronic Inventory of Rare and Endangered Vascular Plants of California. Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor. Sacramento, CA.

California Department of Transportation (Caltrans), District 3. 1997 (March). State Route 32 Transportation Concept Report.

Caltrans. 2003. California Scenic Highway System. <http:\www.dot.ca.gov\hq\LandArch\ scenic\cahisys.htm> Accessed December 1, 2003.

Caltrans. 2003. 2002 All Traffic Volumes on CSHS. Traffic and Vehicle Data Systems Unit. < http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2002all.html> Accessed October 16, 2003.

Chartkoff, Joseph and Kerry Chartkoff. 1983. Excavations at the Patrick Site (4-Butte-1), in the Archaeology Two Northern California Sites, Monograph 22, Institute of Archaeology. University of California, Los Angeles.

Chico Chamber of Commerce. 2003. <http://www.chicochamber.com> Accessed March 4, 2003

City of Chico. 2003. Key to the City. <http://www.usacitiesonline.com/cacountychico.htm> Accessed March 4, 2003.

Deal, Krista C. 1987. The Archaeology of the Cana Highway Site,, CA-BUT-288, Butte County, California. Masters Thesis on file at California State University, Chico.

Department of Parks and Recreation (DPR). 2003a. CalFlora database.

DPR. 2003b. Interpretation and Education Division. All Visitors Welcome: Accessibility in State Park Interpretive Programs and Facilities. Third Edition.

DPR. 2003c. Purpose and Visions. <http://www.parks.ca.gov/default.asp?page_id=21877> Accessed April 15, 2003.

DPR. 2002. California State Parks Planning Handbook.

DPR. 2001 (November). Accessibility Section, Acquisition and Development Division. Access to Parks Guidelines.

DPR. n.d. Resources Inventory, Bidwell River Park, Chico Landing, California, North Valley Area. Manuscript on file at California State Parks and Recreation Office, Oroville, CA.

Dittes and Guardino Consulting. 2003. Floristic Inventory for Bidwell-Sacramento River State Park.

Dixon, R. 1905. The Northern Maidu. Bulletin of the American Museum of Natural History 17(3):119-346.

Dreyer, William Ray. 1984. Prehistoric Settlement Strategies in a Portion of the Northern Sacramento Valley, California. Master Thesis on file at California State University, Chico.

EDAW. 2001 (November). The Natural Conservancy Sacramento River Project: Jewett Creek Integrated Farm Plan. Sacramento, CA.

EDAW. 2003 (January). The Nature Conservancy's Sacramento River Public Recreation Access Study: Red Bluff to Colusa. Sacramento, CA.

EDAW. 2003. Sacramento River Public Recreation Access Study. Sacramento, CA.

Geographic Information Center (GIC). 1998a. Species List for Washout and Peterson Addition. Revised October 8, 1998. California State University, Chico, CA.

GIC 1998b. Partial List of Plant Species at Big Chico Creek Riparian Area, Bidwell- Sacramento River State Park. Version October 8, 1998. Prepared by Samantha S. Mackey. California State University, Chico, CA.

GIC 2003. GIS database of vegetation and natural communities occurring in Bidwell- Sacramento River State Park. California State University, Chico, CA.

Gilcrist, J., S.L. Small, and G.R. Geupel. 2002. Riparian birds in the Sacramento Valley: a Draft Summary of the 2002 Field Season. A report of the Point Reyes Bird Observatory. Stinson Beach, CA.

Glenn County Public Works Department. 1997 (June). Glenn County Bicycle Plan. Heatherington. 1980. Archaeological Reconnaissance of the Bidwell River Park.

Henrici, Dawn. 1978. Chico River Road Project No. 50143-77-1. Prepared by Department of Anthropology, California State University, Chico, for Department of Public Works, Oroville, CA.

Hickman, J.C. (ed). 1993. The Jepson Manual: Higher Plants of California. University of California Press, Berkeley and Los Angeles, CA.

Hill, Dorothy. 1978. The Indians of Chico Rancheria. California Department of Parks and Recreation. Sacramento, CA.

Hinds, N.E.A. 1952. Evolution of the California Landscape. California Division of Mines Bulletin 158.

Hood, Joe D. and Pamela McGuire. 1981. Bidwell River Park Project (Chico Landing), A Partial Inventory of Cultural Features Cultural Heritage Planning Section, California State Department of Parks and Recreation.

Humple, D. and R. Churchwell. 2002. Tricolored Blackbird Survey Report 2001. A report of the Point Reyes Bird Observatory. Stinson Beach, CA.

Integrated Hardwood Range Management Program (IHRMP). 2000 (May). Hardwood Rangeland Policies for California Counties. University of California. <http://danr.ucop.edu/ihrmp/county.html>

Johnson. 1975. Archaeological Reconnaissance of 26 Erosion Sites along the Sacramento River, Chico Landing to Red Bluff, Butte, Glenn, and Tehama Counties, California.

Jones & Stokes. 1996. Cultural Resources Inventory Report for the M&T Ranch/Parrott Pumping Plant and Fish Screen Project, Butte County, California.

Kirk, Paul. 2003. Hybridization of Juglans hindsii in Riparian Forests of Northern California based on ITS Sequences. MS thesis presentation December 9, 2003. California State University, Chico.

Kowta, Mark. 1988. The Archaeology and Prehistory of Plumas and Butte Counties, California: An Introduction and Interpretive Model. Northeast Information Center, California State University, Chico.

Kroeber, A.L. 1925. Handbook of the Indians of California. Bureau of American Ethnology Bulletin 78. Washington DC.

Kroeber, A.L. 1932. The Patwin and Their Neighbors. University of California Publications in Archaeology and Ethnology 29(4):253-423. Berkeley.

Larsen, Eric, Emily Anderson, Ellen Avery, and Krishna Dole. 2002. The controls on and evolution of channel morphology of the Sacramento River: A case study of River Miles 201-185. Report to the Nature Conservancy. Geology Department, University of California, Davis.

Laymon, S.A., P.L. Williams, and M.D. Halterman. 1997. Breeding Status of the Yellow- Billed Cuckoo in the South Fork Kern River Valley, Kern County, California: Summary Report 1985-1996. A report of the Kern River Research Center. Weldon, CA.

Manning, James P. 1983. Letter report to Local Agency Formation Commission, Oroville, from B.P. Enterprise Archaeology Consultants, Chico, CA. Northeast Information Center file no. 4-191.

Manning. 1983. No Title.

Manolis, T. 1998. Breeding Bird Census. Submitted to Bidwell-Sacramento River State Park. Maslin, P., M. Lennox, J. Kindopp, and W. McKinney. 1997. Intermittent Streams as Rearing
Habitat for Sacramento River Chinook Salmon (Oncorhynchus tshawytscha). Chico, California State University, Chico.

McGaugh, Richard K., Stephen W. Feazel, William B. Stewart, and Richard D. Clark. 1997. Bidwell-Sacramento River State Park, Interpretive Prospectus. Manuscript on file at Northern Butte District, California State Department of Parks and Recreation, Oroville, CA.

Minor and Underwood. 1987. Cultural Resources Survey for the US Sprint Fiber Optic Cable Project, Oroville, California to Eugene, Oregon.

Nakamura, G. and J. Kierstead Nelson, eds. 2001. Illustrated Field Guide to Selected Rare Plants of Northern California. University of California Agriculture and Natural Resources Publication 3395.

Nelson, N.C. 1907. Original Notes on Tehama-Red Bluff Mounds. Berkeley: University of California Archeological Survey Manuscripts #350.

Olsen, William H., and Francis A. Riddell. 1963. The Archeology of the Western Pacific Railroad Relocation: Oroville Project, Butte County, California. California State Department of Parks and Recreation, Archaeological Resources Section Report 7, Sacramento.

Oswald, V.H. and L. Ahart. 1994. Manual of the Vascular Plants of Butte County, California. California Native Plant Society. Sacramento, CA.

Point Reyes Bird Observatory (PRBO). 2002. Riparian Bird Communities in the Sacramento Valley: A Report of the 2001 Field Season.

Poland, J.F. and R.E. Evenson. 1966. Hydrogeology and Land Subsidence, Great Central Valley, California. In Geology of Northern California. California Division of Mines and Geology Bulletin 190, edited by E.H. Bailey, pp. 239-247.

QUAD Consultants, Brown-Buntin Associates, Inc., and Dowling Associates. 1993 (June). Glenn County General Plan, Vol I through IV. Prepared for the Glenn County Board of Supervisors.

Riddell, F. 1978. Maidu and Konkow. In Handbook of North American Indians Volume 8: California. Edited by R.F. Heizer, pp. 370-386. Smithsonian Institute, Washington D.C.

Ritter, E.W. 1970. Northern Sierra Foothill Archaeology: Culture History and Culture Process. In papers on California and Great Basin Prehistory, edited by E.W. Ritter, P.D. Schulz, and R. Kautz, pp. 171-184. University of California Center for Archaeological Research Publications 2. Davis.

Sacramento River Advisory Council. 2002 (January). Sacramento River Conservation Area Forum Handbook. Prepared for the State of California Resources Agency.

Sacramento River Conservation Area Forum (SRCAF). 2002. Sacramento River Conservation Area Handbook. Prepared for the State of California Resources Agency by the Sacramento River Advisory Council. Revised and updated by the Sacramento River Conservation Area Forum in June 2002. Latest version is found on-line at http://www.sacramentoriver.ca.gov

Sacramento River Partners. 2000 (February). Vegetation Management Plan for the Peterson Addition; Bidwell-Sacramento River State Park.

Sawyer, J.O and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society. Sacramento, CA.

Sawyer, J.O and T. Keeler-Wolf. 2003. A Manual of California Vegetation. Second edition to be published by the California Native Plant Society. Sacramento, CA.

Small, A. 1994. California Birds: Their Status and Distribution. Ibis Publishing Company, Vista, CA.

Small, S.L., N. Nur, A. Black, G.R. Geupel, D. Humple, and G Ballard. 2000. Riparian Bird Populations of the Sacramento River System: Results from the 1993-1999 Field Seasons. A report of the Point Reyes Bird Observatory, Stinson Beach, CA.

Thompson, Kenneth. 1961. Riparian Forest of the Sacramento Valley, California. Annals of the Association of American Geographers 51:294-315.

Treganza, A.E. 1954. Salvage Archaeology in Nimbus and Redbank Reservoir Areas, California. University of California Archaeology Survey Reports 26:1-30). University of California, Berkeley.

U.S. Army Corps of Engineers (USACE). 2003 (June 16). Hamilton City Flood Damage Reduction and Ecosystem Restoration Fact Sheet. <http://www.compstudy.org/docs/hamilton/ham_city_fact_sheet_1-16-03.pdf>

U.S. Department of Transportation (DOT). 1978. Archaeological Evaluation of a Proposed Bridge Replacement and Approach Realignment on SR 32, Glenn and Butte Counties, California.

DOT. 2003. Federal Highways Administration, National Scenic Byways Program. <http://www.byways.org/> Accessed April 22, 2003.

U.S. Environmental Protection Agency (EPA). 1971. Noise from Construction Equipment and Operations, Building Equipment and Home Appliances.

EPA. 2003. EPA EnviroMapper. EnviroMapper website query. <http://www.epa.gov/enviro/html/em/index.html> Accessed October 9, 2003.

U.S. Fish and Wildlife Service (USFWS). 1999. Draft Recovery Plan for the Giant Garter Snake (Thamnopsis gigas). Portland, OR.

Vaghti, Mehrey. 2003. Riparian Vegetation Classification in Relation to Environmental Gradients, Sacramento River, CA. MS thesis, pp. 111-112. University of California, Davis.

Voegelin, E. 1942. Culture Element Distributions, XX: Northeast California. University of California Anthropological Records 7(2):47-252.

Warner, R. E. and K.M. Hendrix. 1985. Riparian Resources of the Central Valley and California Desert. California Department of Fish and Game. Sacramento, CA.

White, Gregory G. 2003. Final Report of Testing and Mitigation at Four Sites on the Level (3) Long Haul Fiber Optic Alignment, Colusa County, California. Archaeological Research Program Report No. 42. Archaeological Research Program, California State University, Chico.

5.2 PERSONAL COMMUNICATIONS

Dempsey, Jim. 2003. Head of Habitat Restoration Crew at Bidwell-Sacramento River StatePark. Personal Communication with Woody Elliott of State Parks.

Dittes, John. 2003. Botanist. Dittes and Guardino Consulting. Personal communications with Misa Ward of EDAW regarding Bidwell flora. Summer 2003.

Elliott, Woody. 2003. State Parks, Northern Buttes District, Senior State Park Resource Ecologist. Personal communication with Misa Ward of EDAW and John Dittes of Dittes and Guardino Consulting regarding floristic inventory.

Elliott, Woody. 2002 and 2003. District resource ecologist. California Department of Parks and Recreation, Northern Buttes District, Oroville, CA. Personal communication with Anne King and Ron Unger of EDAW, in person, by phone, and by email between October 2002 and October 2003.

McGaugh, Rick. 2003. Ranger, Bidwell-Sacramento River State Park. Personal communication with Steven Huang of EDAW, regarding existing utilities and public services, on April 25, 2003.

Peplow, Jim. 2003. Senior Planner, Butte County Association of Governments. Personal communication with Steven Huang of EDAW, regarding future bike improvement projects, on April 29, 2003.

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7

Glossary of Terms and Acronyms

7 GLOSSARY OF TERMS AND ACRONYMS

Adaptive use: use of a historic structure for a purpose other than for which it was originally intended.

Aesthetics: refer to the visual, audible, and other sensory factors within the park setting and its surrounding landscapes that, taken together, establish character or sense of place.

Active fault: a fault that has moved recently and which is likely to move again. For planning purposes, an "active fault" is usually defined as one showing movement within the last 11,000 years and can be expected to move within the next 100 years.

Alluvium: a general term for all detrital deposits resulting from the operations of modern rivers, thus including the sediments laid down in riverbeds, flood plains, lakes, fans at foot of mountain slopes and estuaries.

Ambient air quality: the atmospheric concentration (amount in specified volume of air) of a specific compound as actually experienced at a particular geographic location that may be some distance from the source of the relevant pollutant emissions.

Ambient noise level: the composite of noise from all sources near and far.

Archaeological: pertaining to the material remains of past human life, culture, or activities.

Aquifer: the underground layer of water-bearing rock, sand, or gravel through which water can seep or be held in natural storage. Such water holding rock layers hold sufficient water to be used as a water supply.

Bedrock: the solid rock underlying unconsolidated surface materials.

Best available control technology (BACT): the most stringent emission limits or control technique that has been achieved in practice that is applicable to a particular emission source.

Bikeways: bicycle travel way, encompasses bicycle lanes, bicycle paths, and bicycle routes.

Best management practices (BMP): the most current methods, treatments, or actions in regards to environmental mitigation responses.

Biodiversity: biological diversity in an environment as indicated by numbers of different species of plants and animals, as well as the relative abundance of all the species within a given area.

Buffer: land that protects natural and/or cultural values of a resource or park from adverse effects arising outside the buffer.

California Coastal Commission: established by the 1972 Coastal Act to review and approve projects and actions within a defined zone along the California coastline for compliance with the Coastal Act.

California State Parks and Recreation Commission: established in 1927 to advise the Director of Parks and Recreation on the recreational needs of the people of California. In 1928 it gathered support for the first state park bond issue. The Commission schedules public hearings to consider classification or reclassification and the approval of State Parks' general plan (and amendments) for each park unit.

California Environmental Quality Act (CEQA): a state law (PRC §21000 et al.) requiring state and local agencies to take actions on projects with consideration for environmental protection. If a proposed activity may result in a significant adverse effect on the environment, an EIR must be prepared. General Plans require a "program EIR" and park development projects require a project environmental document.

Classification: official designation of units of the State Park System. Classification are established by the State Parks and Recreation Commission at the recommendation of Department staff and are based on the sensitivity and kind of unit's most important resources and what types of use the unit will receive from the public.

Clean Water Act (CWA): enacted in 1972 to create a basic framework for current programs to control water pollution; provide statutory authority for the National Pollutant Discharge Elimination System (NPDES).

Concession: a contract with persons, corporations, partnerships, or associations for the provision of products, facilities, programs, and management and visitor services that will provide for the enhancement of park visitor use, enjoyment, safety, and convenience. Concession developments, programs, and services must be compatible with a park unit's classification and general plan provisions.

Conservation easement: acquisition of rights and interests to a property to protect identified conservation or resource values using a reserved interest deed. Easements may apply to entire parcels of land or to specific parts of the property. Most are permanent, although term easements pose restrictions for a limited number of years. Land protected by a conservation easement remains on the tax rolls and is privately owned and managed; landowners who donate conservation easements are generally entitled to tax benefits.

Constraints: (1) the state of being restricted or confined within prescribed bounds (2) one that restricts, limits, or regulates; a check.

County Route: a segment of roadway that has been officially designated by the Director of California Department of Transportation as a scenic corridor.

Cultural heritage point of interest: human activity site, interpretive exhibit. Utilizes both preservation and interpretation.

Cultural landscape: a geographic area (including both the cultural and natural resources) associated with a historic event, activity, or person or exhibiting cultural or aesthetic values. This type is a landscape that evolved through use by people whose activities or occupancy shaped it.

Cultural resource: a resource that exists because of human activities. Cultural resources can be prehistoric (dating from before European settlement) or historic (post-European contact).

Cultural preserve: the subclassification protects areas of outstanding historic interest in state parks, including such features as sites, buildings, or zones where significant events in the flow of history in California occurred. They need to be large enough to protect resources from potential damage and to permit effective management and interpretation and must also have complete integrity of the resources; no conflicting improvements, such as roads, are permitted. Natural resources values are secondary to historical values in cultural preserves.

Culvert: a drain, ditch, or conduit not incorporated in a closed system that carries drainage water under driveway, roadway, railroad, pedestrian walk or publicway. Culverts are often built to channelize streams and as part of flood control systems.

Cumulative Impact: as defined by the state CEQA Guidelines (§15355) two or more individual effects which, when considered together are considerable or which compound or increase other environmental impacts.

Degradation: the reduction of environmental quality in an area through a lessening of diversity, the creation of growth anomalies, or the supplanting of native species by nonnative plant and animal species.

Demographic: having to do with a particular characteristic of a segment of the public at large; may be connected to the group's age, the region where the group resides, a particular recreational interest, economic status, etc.

Ecology: the study of the interrelationship of living things to one another and their environment.

Ecosystem: a community consisting of all biological organisms (plant, animals, insects, etc.) in a given area interacting with the physical environment (soil, water, air) to function together as a unit of nature.

Ecotone: a transition area between two adjacent ecological communities, usually exhibiting competition between organisms common to both; often a rich biological area.

Effect/impact: an environmental change; as defined by State CEQA Guidelines §15358: (1) Direct or primary effects are caused by the project and occur at the same time and place (2) Indirect or secondary effects that are caused by the project and are late in time or farther removed in distance, but still reasonably foreseeable. Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water quality and other natural systems including ecosystems.

Endangered species: a species of animal or plant is considered to be endangered when its prospects for survival and reproduction are in immediate jeopardy form one or more causes. The U.S. Fish and Wildlife Service and/or the California Department of Fish and Game make this designation.

Endemic: indigenous to, and restricted to, a particular area.

Environment: as defined in State CEQA Guidelines §15360, "the physical conditions which exist within the area which will be affected by a proposed project, including land, air, water, mineral, flora, fauna, noise, and objects of historical and aesthetic significance."

Environmental impact report (EIR): a report required by CEQA that assesses all the environmental characteristics of an area and determines what effects of impacts will result if the area is altered or disturbed by a proposed action. If a proposed activity may result in a significant adverse effect on the environment, an EIR must be prepared. General plans require the preparation of a "program" EIR appropriate to its level of specificity.

Environmentally sensitive: an area in which plant or animal life or their habitats are either rare or especially valuable because of their role in an ecosystem. Such areas can be easily disturbed or degraded by human activities and developments.

Ethnographic: a multi-format group of materials gathered and organized by an anthropologist, folklorist, or other cultural researcher to document human life and traditions.

Exotic species: a species occurring in an area outside of its historically known natural range that has been intentionally introduced to or have inadvertently infiltrated into the system. Also known as non-native, ornamental, or introduced species. Exotic animals prey upon native species and compete with them for food and habitat. Exotic plant species can convert native ecosystems into a non-native dominated system that provides little benefit to other species in the ecosystem.

Floodplain: a lowland or relatively flat area adjoining inland or coastal waters that is subject to

a one or greater chance of flooding in any given year (i.e., 100-year flood).

Floodway: the channel of a natural stream or river and portions of the flood plain adjoining the channel, which are reasonable required to carry and discharge the floodwater or flood flow of any natural stream or river.

Forbes: any herbaceous (non-woody) plant having broad leaves, and therefore excluding grasses and grass-like plants.

Geology: the scientific study of the origin, history, and structure of the earth.

General plan (GP): a general plan is a legal planning document that provides guidelines for the development, management, and operation of a unit of the state park system. A general plan evaluates and defines land uses, resource management, facilities, interpretation, concessions, and operations of a park unit as well as addressing environmental impacts in a programmatic manner. A park unit must have an approved general plan prior to implementing any major development project.

Grade: the degree of rise or descent of a sloping surface.

Habitat: the physical location or type of environment, in which an organism or biological population lives or occurs. It involves an environment of a particular kind, defined by characteristics such as climate, terrain, elevation, soil type, and vegetation. Habitat typically includes shelter and/or sustenance.

Hazardous material: any substance that, because of its quantity, concentration, physical or chemical characteristics, poses a significant presence or potential hazard to human health and safety or to the environment. Lead-based paint is an example of a hazardous material.

Historic character: the sum of all visual aspects, features, materials, and species associated with a structure or cultural landscape's history, i.e., the original configuration together with losses and later changes. These qualities are often referred to as character defining.

Hydrology: pertaining to the study of water on the surface of the land, in the soil and underlying geology, and in the air.

Impervious surface: any material, which reduces or prevents absorption of water into land.

Infrastructure: public services and facilities, such as sewage-disposal systems, water supply systems, other utility systems, road and site access systems.

Initial study: as defined by State CEQA Guidelines §15365, an analysis of a project's potential environmental effects and their relative significance. An initial study is preliminary to deciding

whether to prepare a negative declaration or an EIR.

Interpretation: in this planning document, it refers to a communication process, designed to reveal meanings and relationships of our cultural and natural heritage, through involvement with objects, artifacts, landscapes, sties, and oral histories.

Kilowatt: a measure of the rate of electrical flow equal to one thousand watts.

Kilowatt–hour: a measure of quality of electrical consumption equal to the power of one kilowatt acting for one hour.

Landform: configuration of land surface (topography).

Mean sea level: the average altitude of sea surface for all tidal stages.

Mitigation measure: a measure proposed that would eliminate, avoid, rectify, compensate for, or reduce significant environmental effects (see State CEQA Guidelines §15370).

Morphology: form and structure of a plant that is typical.

Mycology: the study of fungi.

National Register of Historic Places (NRHP): the official federal list of buildings, structures, objects, sites and districts worthy of historic preservation. The register recognizes resources of local, state, and national significance. The register lists only those properties that have retained enough physical integrity to accurately convey their appearance during their period of significance. Crystal Cove was listed on the NRHP as a Historic District on June 15, 1976.

Native species: a plant or animal that is historically indigenous to a specific site area.

Negative declaration: when a project is not exempt from CEQA and will not have a significant effect upon the environment a negative declaration must be written (see State CEQA Guidelines §15371).

Natural preserve: a subclassification within a unit of the State Park System that requires parks and Recreation Commission approval. Its main purpose is to maintain such features as rare and endangered plants and animals and their supporting ecosystems in perpetuity.

Office of Historic Preservation (OHP): the governmental agency primarily responsible for the statewide administration of the historic preservation program in California. Its responsibilities include identifying, evaluating, and registering historic properties and ensuring compliance with federal and state regulatory obligations.

Open Space: an area with few or no paved surfaces or buildings, which may be primarily in its natural state or improved for use as a park.

Project: as defined by the State CEQA Guidelines §15378, a project can be one of the following a) activities undertaken by any public agency; b) activities undertaken by a person which are supported in whole or in part through contracts, grants, subsidies, loans or other forms of assistance from one or more public agencies; c) activities involving the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies.

Public Resources Code (PRC): in addition to the State Constitution and Statues, California Law consists of 29 codes covering various subject areas. The PRC addresses natural, cultural, aesthetic, and recreation resources of the State.

Riprap: a loose assemblage of broken rock or concrete often used to prevent erosion.

Riparian: riparian habitat represents the vegetative and wildlife areas adjacent to perennial and intermittent streams and are delineated by the existence of plant species normally found near fresh water.

Runoff: that portion of rainfall or surplus water that does not percolate into the ground and flows overland and is discharged into surface drainages or bodies of water.

Septic system: an on-site sewage treatment system that includes a settling tank through which liquid sewage flows and in which solid sewage settles and is decomposed by bacteria in the absences of oxygen. Septic systems are often used where a municipal sewer system is not available.

Significant effect on the environment: as defined by State CEQA Guidelines §15382, substantial or potentially substantial, adverse change on any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to physical change may be considered in determining whether the physical change is significant.

Shoulder season: the months of the year immediately before and after the park's busy recreation season. This term generally refers to April and October, but could also shade into late March and early November, depending upon activities under discussion.

Siltation: the process of silt deposition. Silt is a loose sedimentary material composed of finely divided particles of soil or rock, often carried in cloudy suspension in water.

Solid waste: term used to describe the mixture of items, discarded by agricultural,

residential and non-residential activities.

Special-status species: plant or animal species that are typically listed (State and Federal) as endangered, rare and threatened, plus those species considered by the scientific community to be deserving of such listing.

State Historic Preservation Officer (SHPO): the chief administrative officer for the OHP and is also the executive secretary of the State Historic Resources Commission.

Subclassification: a separate classification for a portion or unit of the State Park System. The State Parks and Recreation Commission establish these at the recommendation of Department staff. Cultural Preserves and Wilderness are subclassifications.

Subsidence: the gradual sinking of land as a result of natural or man-made causes.

Threatened species: an animal or plant species that is considered likely to become endangered throughout a significant portion of its range within the foreseeable future because its prospects for survival and reproduction are in jeopardy from one or more causes. The U.S. Fish and Wildlife Service and/or the California Department of Fish and Game make this designation.

Topography: graphic representation of the surface features of a place or region on a map, indicating their relative positions and elevations.

Trailhead: the beginning of a trial, usually marked by information signs.

Viewshed: the area that can be seen from a specified location.

Watershed: the total area above a given point on a watercourse that contributes water to the flow of the watercourse; entire region drained by a watercourse.

Wetland: includes the environment of subtidal, mudflats, tidal salt marsh, periodically inundated or brackish marsh, diked marshland, associated upland, and freshwater marsh.

Wilderness: within state parks, this is a subclassification requiring approval by the State Parks and Recreation Commission. It provides protection for plants and animals and their supporting ecosystems while also encouraging recreational use. Its provision includes no permanent facilities other than “semi-improved campgrounds” and possible retention of structures existing when the land was designated. No mechanical equipment may be used in a wilderness (including bicycles), and there is a 2000-foot no-fly zone above.

ACRONYMS

AADT	average annual daily trip
ACSC	areas of critical state
concern ADA	Americans with Disabilities
Act ADT	average daily traffic
APCD	Air Pollution Control District
AQMD	Air Quality Management
District ARB	California Air Resource Board
BACT	best available control technology
BCAQMD	Butte County Air Quality Management District
BLM	Bureau of Land Management
BMP	best management practices
C	Celsius
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality
Standards Caltrans	California Department of
Transportation CBC	California Building Code
CCC	California Coastal Commission
CCP	Comprehensive Conservation
Plan CCR	California Code of Regulations
CDF	California Department of Forestry and Fire
Protection CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFP	California Fully Protected Species as designated by the California Fish and Game Code
CFR	Code of Federal Regulation

cfs	cubic feet per second
CHFT	California Heritage Task Force
CHP	California Highway Patrol
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
Commission	California Parks and Recreation Commission
CORRP	California Outdoor Recreation Resource Plan
CUP	Conditional Use Permit
CRHR	California Register of Historic Resources
CRMP	Cultural Resource Management Plan
CVP	Central Valley Project
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibel
dBA	A-weighted decibel
DEIR	draft environmental impact report
DFG	State of California, Department of Fish and Game
DOC	Department of Conservation
DOE	Department of Energy (U.S.)
DOF	Department of Finance
DPR	California Department of Parks and Recreation
du	dwelling units
DWR	State of California, Department of Water Resources
EIR	environmental impact report
F	Fahrenheit
FCAA	Federal Clean Air Act
FEIR	final environmental impact report
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act

FIRM	Flood Insurance Rate Map
FIP	Federal Implementation Plan
gal	gallon
GCAPCD	Glenn County Air Pollution Control District
GIS	Geographic Information System
GP	General Plan
GPS	Global Positioning System
HAPs	Hazardous Air Pollutants
HC	hydrocarbons
HCP	Habitat Conservation Plan
ISO	Insurance Services Offices (Rating)
kW	kilowatt
kWh	kilowatt-hour
LAFCO	Local Agency Formation Commission
L_{eq}	energy-equivalent noise level
L_{dn}	day-night average noise level
LOS	level of service
M	Richter Scale Magnitude
mgd	million gallons per day ml milliliters
mm	millimeter
MOU	Memorandum of Understanding
MRZ	Mineral Resource Zone
msl	mean sea level
MW	megawatts
N	nitrogen
NA	not applicable
NAAQS	National Ambient Air Quality Standards
NCCP	Natural Communities Conservation Program
NEPA	National Environmental Policy Act

NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NO_X	nitrogen oxide(s)
NO_2	nitrogen dioxide
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NSVAB	Northern Sacramento Valley Air Basin
NTHP	National Trust for Historic Preservation
O_3	ozone
OHP	State of California, Office of Historic Preservation
OHV	off-highway vehicle
PG&E	Pacific Gas and Electric Company
$PM_{2.5}$	fine particulate matter
PM_{10}	respirable particulate matter ppb parts per billion
ppm	parts per million
PRC	Public Resources Code
ROG	reactive organic gasses
RV	recreational vehicle
RWQCB	Regional Water Quality Control Board
SB	State Beach
SHPO	State Historic Preservation Officer
SMARA	California Surface Mining and Reclamation Act of 1975
SO_2	sulfur dioxide
SP	State Parks
SR	State Route
SRCA	Sacramento River Conservation Area
SRCAF	Sacramento River Conservation Area Forum
SRA	State Recreation Area

SRNWR	Sacramento River National Wildlife Refuge
SSC	Species of Special Concern
SVAB	Sacramento Valley Air Basin
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
THC	total hydro carbons
TCM	Transportation Control Management/Measures
TNC	The Nature Conservancy
TSM	Transportation Systems Management
UC	University of California
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
USDA	U.S. Department of Agriculture
USDI	U.S. Department of the Interior
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
V	volts
Valley	Sacramento Valley
V/C	volume to capacity ration (of traffic volume to roadway capacity)

Appendices

A Environmental Regulations and Permit Requirements

B Floristic Inventory of Bidwell-Sacramento River State Park

C Chico State University Herbarium (CHSC) Database Query Results for Bidwell-Sacramento River State Park

D Bidwell-Sacramento River State Park Interpretive Prospectus (1997)

E Memorandum of Understanding between the Department, USFWS, and CDFG (2001)

APPENDIX A

ENVIRONMENTAL REGULATIONS AND PERMIT REQUIREMENTS

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ENVIRONMENTAL REGULATIONS AND PERMIT REQUIREMENTS

Many biological resources in California are protected by Federal and State laws and regulations. During the project planning and pre-implementation process, surveys and other assessments may be needed to determine site sensitivities and compliance measures to minimize environmental impacts or effects on protected resources. Key environmental regulatory requirements and permits applicable to implementation of the General Plan are discussed below.

FEDERAL REGULATIONS

Endangered Species Act

Pursuant to the federal Endangered Species Act (ESA), the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) have authority over projects that may result in take of a federally listed species. Under the ESA, the definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." USFWS has also interpreted the definition of "harm" to include significant habitat modification that could result in take. If a project has a reasonable likelihood that it would result in take of a federally listed species, either one of two take approvals is required: an incidental take permit, under Section 10(a) of the ESA (if no other federal action is involved), or a federal interagency consultation and Biological Opinion, under Section 7 of the ESA (if another federal approval is needed).

The recreation facilities improvements and recreation activities discussed in this report have the potential to affect federally listed threatened or endangered, and candidate or proposed species.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, implements a series of treaties that provide international migratory bird protection, and authorize the Secretary of the Interior to regulate the taking of migratory birds. The MBTA states it shall be unlawful, except as permitted by regulations, “to pursue, take, or kill…any migratory bird, or any part, nest or egg of any such bird, included in the terms of conventions” with certain other countries (16 U.S. Code [USC] 703). The current list of species protected by the MBTA contains several hundred species and essentially includes all native birds. Section 3513 of the California Fish and Game Code provides for adoption of the MBTA’s provisions. Although neither the MBTA nor this state code offers statutory or regulatory mechanisms for obtaining an incidental take permit for the loss of nongame migratory birds, a Section 10(a) permit issued under the ESA may constitute a special purpose permit for the take of a listed species that is also covered by the MBTA. Sometimes CDFG and USFWS seek measures that demonstrate avoidance of loss of

MBTA-covered species. USFWS and CDFG have discretion whether or not to pursue an MBTA action, if some migratory birds would be lost, but have decided not to pursue action when agencies demonstrate that all reasonable loss avoidance measures have been incorporated into a project.

Section 404 of the Clean Water Act

Section 404 of the Clean Water Act (CWA) establishes a requirement to obtain a permit from USACE prior to initiating any activity that involves any discharge of dredged or fill material into "waters of the United States," including wetlands. Waters of the United States include navigable waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Wetlands are defined as those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Jurisdictional wetlands must meet three wetland delineation criteria: hydrophytic vegetation, hydric soil types, and wetland hydrology. Many surface waters and wetlands in California meet the criteria for waters of the United States, including intermittent streams and seasonal lakes and wetlands.

Pursuant to Section 404 of the CWA, the U.S. Army Corps of Engineers (USACE) regulates and issues permits for activities that involve the discharge of dredged or fill materials into waters of the United States. In addition, under Section 10 of the Rivers and Harbors Act, USACE issues permits for structures and/or work in or affecting navigable waters of the United States. Fills of less than ½ acre of non-tidal waters of the United States for residential, commercial, or institutional development projects can generally be authorized under the USACE's nationwide permit (NWP) program, provided the project satisfies the terms and conditions of the particular NWP. Fills that do not qualify for a NWP require a Letter of Permission of an individual permit.

STATE

California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA) and Section 2081 of the Fish and Game Code, an incidental take permit from the California Department of Fish and Game (CDFG) is required for projects that could result in the take of a state-listed Threatened or Endangered species. Under CESA, "take" is defined as an activity that would directly or indirectly kill an individual of a species, but the definition does not include "harm" or "harass," as the federal act does. As a result, the threshold for a take under the CESA is higher than that under the ESA.

Section 401 of the Clean Water Act (CWA)

Section 401(a)(1) of the Clean Water Act (CWA) specifies that any applicant for a Federal license or permit to conduct any activity, including but not limited to the construction or operation of facilities that may result in any discharge into navigable waters, shall provide the federal licensing or permitting agency a certification from the State in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable water at the point where the discharge originates or will originate, that any such discharge will comply with the applicable provisions of the Clean Water Act. Succinctly, this means that in California, the Regional Board must certify that the project will comply with water quality standards (defined below). In some instances, the need for certification may be waived if the action is shown to have minimal water quality effects.

Section 3503.5 of the California Fish and Game Code - Protection of Raptors

Section 3503.5 of the Fish and Game Code states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders Falconiformes and Strigiformes), including their nests or eggs. Violations include destruction of active raptor nests as a result of tree removal and disturbance to nesting pairs by nearby human activity that causes nest abandonment and reproductive failure.

Section 1600 of the California Fish and Game Code - Streambed Alteration Agreement

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream or lake in California that supports wildlife resources and/or riparian vegetation are subject to regulation by CDFG, pursuant to §1600 through §1603 of the California Fish and Game Code. Under §1601 for public projects and §1603 for projects proposed by nonpublic entities, it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake designated by CDFG, or use any material from the streambeds, without first notifying CDFG of such activity. Authorization from CDFG would be in the form of a Streambed Alteration Agreement.

APPENDIX B

FLORISTIC INVENTORY OF BIDWELL-SACRAMENTO RIVER STATE PARK

APPENDIX B
FLORISTIC INVENTORY OF BIDWELL-SACRAMENTO RIVER STATE PARK

GROUP Family Scientific Name	Common Name(s)	Comments (Observed by J. Dittes in 2003)
FERNS AND ALLIES		
Azollaceae		
Azolla filiculoides	mosquito fern	CL, GB, IF, PC; floating or stranded on mud along sloughs, seasonally stranded on littoral zone of main river
Equisetaceae		
Equisetum arvense	common horsetail	CL, GB, PA, PC; moist soil of point bars, openings in woodland and willow scrub
Equisetum hyemale ssp. affine	common scouring rush	CL
Equsetum laevigatum	Smooth scouring rush	GB, PA; moist edges and openings in woodland, willow scrub
LICHENS[3]		
Parmeliaceae		
Evernia prunastri		
Flavopunctelia flaventior		
Melanelia subolivacea		
Parmelina quercina		

Management Unit
CL=Chico Landing GB=Gravel Bar IF=Indian Fishery PA=Peterson Addition PC=Pine Creek

*= Non-native species within the park
[1]= Species not observed by J. Dittes in 2003
[2]= Species could be misidentified because it was not observed by J. Dittes and does not occur in the County according to the Butte County Flora (Oswald and Ahart 1994; J. Dittes, pers. comm. 2003;).
[3]= Species added to inventory based on a query of the Chico State University Herbarium database performed by J. Dittes (See Appendix C).

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FLORISTIC INVENTORY OF BIDWELL-SACRAMENTO RIVER STATE PARK

GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
Physciaceae		
Physcia adscendens		
Physcia stellaris		
Ramalinaceae		
Ramalina farinacea		
Ramalina leptocarpha		
Teloschistaceae		
Xanthoria fallax		
Xanthoria polycarpa		
DICOTS		
Aceraceae		
Acer negundo var. californicum	box elder	GB; frequent in riparian woodland
Acer saccharinum *	sugar maple	PC; Infrequent
Amaranthaceae		
Amaranthus albus *	tumble pigweed	CL, PA, PC; disturbed sites and gravel bar
Amaranthus blitoides	mat amaranth	CL, GB, IF, PA, PC; disturbed road and trail edges
Amaranthus californicus[1]	California amaranth	
Amaranthus deflexus *	Large-fruited amaranth	PA; infrequent
Amaranthus retroflexus *	redroot pigweed	GB, PA, PC; Infrequent

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GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
Amaranthus rudis *	tall amaranth	GB, PA; this taxon is not in Jepson Manual; upper bank of Chico Creek
Anacardiaceae		
Toxicodendron diversilobum	poison oak	CL, GB, IF, PA, PC; frequent understory component and woodland edges, can climb vinelike into riparian canopy
Apiaceae		
Anthriscus caucalis *[1]	bur chervil	
Conium maculatum *	poison hemlock	CL, GB, IF, PA, PC; disturbed moist areas and understory in valley oak woodland
Daucus carota *	wild carrot, Queen Anne's-lace	GB, PA; infrequent in disturbed sites
Torilis arvensis *	hedge-parsley	CL, GB, IF, PA, PC; frequent in drier disturbed sites, part of ruderal grassland
Torilis nodosa[1]	knotted hedge-parsley	
Apocynaceae		
Vinca major *	periwinkle	PC, IF; noxious weed in valley oak woodland
Araliaceae		
Hedera helix *[1]	English ivy	Plants removed in 2001-2002
Aristolochiaceae		
Aristolochia californica	California pipevine	CL, GB, IF, PA, PC; frequent vine in riparian

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FLORISTIC INVENTORY OF BIDWELL-SACRAMENTO RIVER STATE PARK

GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
		woodland
Asteraceae		
Ambrosia artemisifolia	annual ragweed	GB, PA; Infrequent on gravel bars
Ambrosia psilostachya	western ragweed	CL, GB, IF, PA, PC
Anthemis cotula *[1]	mayweed	
Artemisia biennis*[3]	biennial sagewort	
Artemisia douglasiana	common mugwort	CL, GB, IF, PA, PC: frequent in all riparian habitats
Aster chilensis[1]	California aster	
Aster subulatus var. ligulatus	annual water-aster	CL, GB, PC; inconspicuous in moist sunny areas
Baccharis douglasii[1]	salt marsh baccharis	
Baccharis pilularis	coyote brush	CL, GB, IF, PA, PC
Baccharis salicifolia	mule-fat	PC
Bidens frondosa	sticktight	CL, GB, IF, PA, PC; frequent in littoral zone and shaded cottonwood forest
Centaurea solstitialis *	yellow star-thistle	CL, GB, IF, PA, PC; frequent in dry disturbed sites
Chamomilla suaveolens	pineapple weed	CL. GB; disturbed sites and occasional on gravel bars
Cichorium intybus *	chicory	CL, GB, IF, PA, PC; frequent in dry disturbed sites
Cirsium arvense *	Canada thistle	IF
Cirsium vulgare *	bull thistle	PA

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GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments (Observed by J. Dittes in 2003)**
Conyza canadensis	Canada horseweed	CL, GB, PA; frequent in dry disturbed sites
Conyza floribunda *	many-flowered horseweed	CL, GB, PA, PC
Conyza sp.	horseweed	CL, GB, IF, PA, PC
Eclipta prostrata *	False daisy	CL, GB, PA; inconspicuous in moist sunny sites, littoral zone
Erigeron annuus *	annual daisy	CL, PC; Infrequent in moist sunny sites, littoral zone
Eriophyllum lanatum var. grandiflorum	large-flowered wooly-sunflower	CL; several scattered individuals on gravel bar
Euthamnia occidentalis	western goldenrod	CL, GB, IF, PA, PC; common on gravel bars and in willow scrub, moist disturbed road edges
Filago californica[1]	California filago	
Gnaphalium luteo-album *	weedy cudweed	CL, GB; sunny moist areas
Gnaphalium palustre	western marsh cudweed	CL, GB, PC
Grindelia camporum var. camporum	gumweed	CL
Hemizonia pungens	common spikeweed	CL
Heterotheca oregona	Oregon golden-aster	CL, GB, IF
Hypochaeris glabra *	smooth cat's ear	CL
Lactuca serriola *	prickly lettuce	CL, GB, IF, PA, PC
Picris echioides *	bristly ox-tongue	IF, PA
Rudbeckia hirta var. pulcherrima *[3]	black-eyed susan	

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GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
Senecio vulgaris *	common groundsel, old-man-of-spring	CL, GB, IF, PA, PC; disturbed areas and occasional on gravel bars
Silybum marianum *	milk thistle	CL, GB, PC, IF;
Sonchus arvensis *[1]	perennial sow thistle	
Sonchus asper ssp. asper *	prickly sow thistle	CL, GB, PC;
Sonchus oleraceus *	sow thistle	IF
Taraxacum officinale *	dandelion	CL, GB, IF, PA, PC
Xanthium strumarium	cocklebur	CL, GB, IF, PA, PC; frequent in moist sunny sites
Betulaceae		
Alnus rhombifolia	white alder	CL, GB; infrequent on gravel bars
Bignoniaceae		
Catalpa speciosa*	northern catalpa	PA, PC; Scattered individuals near upper banks of Chico Creek
Boraginaceae		
Heliotropum curassavicum	wild heliotrope	CL, GB, IF; disturbed sites and gravels bars
Plagiobothrys bracteatus	bracted popcorn-flower	CL; scattered individuals on moist sand on gravel bar
Brassicaceae		
Brassica nigra *	black mustard	IF;
Brassica rapa *[1]	field mustard	
Capsella bursa-pastoris *	shepherd's purse	IF; disturbed sites

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GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
Cardamine oligosperma.	annual bittercress	CL, GB
Cardaria chalapensis *	lens-pod hoarycress	CL, PA, IF
Cardaria draba *[2]	hoary cress	Not known from Butte County
Coronopus didymus *	lesser swinecress	IF
Draba verna *	spring whitlow-grass	CL, GB: open sites on gravel bar
Hirschfeldia incana *	hoary mustard	CL, GB, IF, PA, PC
Lepidium latifolium *	perennial pepperweed	
Lepidium nitidum var. nitidum	shining pepper-grass	CL, GB
Raphanus raphanistrum *	jointed charlock	CL, GB, IF, PA, PC
Raphanus sativus *	wild radish	IF
Rorippa curvisiliqua var. occidentalis	western yellowcress	CL, GB
Calycanthaceae		
Calycanthus occidentalis[1]	spicebush	Planted at PA
Capparaceae		
Polanisia dodecandra ssp. trachysperma	Clammyweed	CL, GB, PA; occasional on gravel bar and road/levee embankment
Caprifoliaceae		
Sambucus mexicana	blue elderberry	CL, GB, IF, PA, PC
Caryophyllaceae		
Cerastium glomeratum	mouse-eared chickweed	

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GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
Herniaria hirsuta ssp. hirsuta	gray herniaria	CL, GB
Petrorhagia dubia *	grass pink	CL, GB, IF
Spergularia bocconii	Boccone's sandspurry	
Spergularia rubra *	ruby sandspurry	CL, GB, PC, IF
Stellaria media *	common chickweed	IF
Stellaria nitens *	mouse-ear chickweed	GB
Chenopodiaceae		
Atriplex triangularis	spearscale	CL, PA
Chenopodium album *	white goosefoot, lamb's-quarters	CL, GB, IF, PA, PC
Chenopodium ambrosioides *	Mexican tea	CL, GB, PA, PC
Chenopodium botrys *	Jerusalem oak	CL, GB, IF
Chenopodium murale *[1]	nettle-leaved goosefoot	
Chenopodium strictim var. glaucofolium *	glaucus-leaved goosefoot	GB, PA
Cycloloma atriplicifolium *	winged pigweed	CL, GB; syn. Atriplex atriplicifolium
Kochia scoparia *[3]	common red sage	
Salsola tragus *	Russian-thistle	CL, GB, PA
Convolvulaceae		
Convolvulus arvensis	bindweed	CL, GB, IF, PA, PC

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GROUP Family Scientific Name	Common Name(s)	Comments (Observed by J. Dittes in 2003)
Crassulaceae		
Crassula sp.	pygmyweed	CL, GB
Curcurbitaceae		
Cucurbita pepo *	field pumpkin	PA
Marah fabaceus	California manroot	CL, GB, IF, PA, PC
Dipsacaceae		
Scabiosa atropurpurea*[3]	pincushion plant	
Elatinaceae		
Bergia texana[3]	Texas bergia	
Euphorbiaceae		
Chamaesyce maculata *	spotted spurge	CL
Chamaesyce serpyllifolia ssp. serpyllifolia	thyme-leaved spurge	CL, GB, PA
Eremocarpus setigerus	doveweed, turkey-mullein	CL, GB, IF, PA, PC
Euphorbia peplus *	petty spurge	CL
Fabaceae		
Albizia julibrissin *	silktree	PC
Hoita macrostachya	leather root	
Lathyrus jepsonii var. californicus	California pea	IF, PC
Lotus corniculatus	bird's foot trefoil	
Lotus micranthus	small-flowered lotus	

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GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
Lotus purshianus	Chile-lotus	CL, IF, GB, PC
Lupinus spp.	lupines	
Medicago polymorpha *	common bur-clover	CL, GB, IF, PA, PC
Medicago praecox *	Mediterranean bur-clover	CL
Melilotus alba *	white sweet-clover	CL, GB, IF, PA, PC
Melilotus indica *	sour-clover	
Robinia pseudoacacia*	black locust	PC
Trifolium dubium *	rose clover	CL, GB, IF
Trifolium variegatum	white-tipped clover	
Sesbania punicea[1,3]*	Sesbania	Invasive weed
Vicia villosa *	hairy vetch	CL, GB, IF, PC
Fagaceae		
Quercus lobata	valley oak	CL, GB, IF, PA, PC
Quercus wislizenii	interior live oak	
Gentianaceae		
Centaurium muehlenbergii	June centaury	CL, PA, PC
Geraniaceae		
Erodium botrys	long-beaked filaree	
Erodium cicutarium *	red-stemmed filaree	

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GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
Geranium molle *	dove's-foot geranium	CL, IF, PC
Geranium dissectum *	cut-leaved geranium	GB
Haloragaceae		
Myriophyllum sp.	water milfoil	IF
Hydrocharitaceae		
Elodea canadensis	Canadian waterweed	CL, IF, PC
Hypericaceae		
Hypericum perforatum *	Klamathweed	CL, IF, PA
Juglandaceae		
Carya illinoinensis	pecan	
Juglans californica varieties*	California black walnut (orchard rootstock or hybrids)	CL, GB, IF, PA, PC; (Varieties californica, hindsii, californica x hindsii hybrids, and/or hybrids with J. regia. Identification unclear)
Juglans regia	English walnut	GB, PC
Lamiaceae		
Lamium amplexicaule *	henbit	IF, PC
Lycopus americanus	cut-leaved bugle-weed	CL, GB, PC
Marrubium vulgare *	horehound	CL, GB, IF, PA, PC
Melissa officinalis *	bee-balm	PC
Mentha arvensis	wild mint	PC
Mentha pulegium *	pennyroyal	PC, CL

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GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
Mentha sp.	mint	
Trichostema lanceolatum	vinegar-weed	CL, GB
Loasaceae		
Mentzelia laevicaulis	blazing star	CL, GB
Lythraceae		
Ammannia coccinea[3]	purple ammannia	
Ammannia robusta[3]	grand ammannia	
Lythrum hyssopifolium *	hyssop loosestrife	CL, GB, PA, PC
Rotala indica *	Indian toothcup	CL
Rotala ramosior[3]	lowland rotala	
Malvaceae		
Abutilon theophrasti *	velvetleaf	PA, GB
Hibiscus lasiocarpus[1]	rose-mallow	Planted at PA
Malva nicaeensis *	bull mallow	IF, PC
Malva parviflora	cheeseweed	CL, PC
Molluginaceae		
Mollugo verticillata *	Indian-chickweed	CL, GB, PC
Moraceae		
Ficus carica *	edible fig	CL, GB, IF, PC
Maclura pomifera	osage-orange	

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GROUP Family Scientific Name	Common Name(s)	Comments (Observed by J. Dittes in 2003)
Morus alba *	white mulberry	GB, PC
Myrtaceae		
Eucalyptus camaldulensis*	red gum	
Eucalyptus sp.*	eucalyptus	
Oleaceae		
Fraxinus latifolia	Oregon ash	CL, GB, IF, PA, PC
Onagraceae		
Epilobium brachycarpum	panicle willow-herb	CL, GB, IF, PA, PC
Epilobium ciliatum ssp. ciliatum	fringed willow-herb	
Epilobium densiflorum[3]	dense-flowered willow-herb	
Ludwigia peploides ssp. montevidensis *	Montevideo waterweed	CL, GB, IF, PA, PC; emergent and littoral mud; forms dense impenetrable mats
Ludwigia peploides ssp. peploides	floating water-primrose	
Oenothera elata ssp. hirsutissima	hairy evening primrose	PA
Orobanchaceae		
Orobanche vallicola	valley broom-rape	CL; one single plant observed under blue elderberry next to old boat ramp
Oxalidaceae		
Oxalis corniculata *	creeping wood-sorrel	GB
Phytolaccaceae		
Phytolacca americana *	pokeweed	CL, GB, IF, PA, PC

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FLORISTIC INVENTORY OF BIDWELL-SACRAMENTO RIVER STATE PARK

GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
Plantaginaceae		
Plantago lanceolata *	English plantain	CL, GB, PA, PC
Plantago major *	common plantain	GB
Platanaceae		
Platanus racemosa	California sycamore	CL, GB, IF, PA, PC
Platanus x acerifolia*	London plane tree	
Polygonaceae		
Polygonum arenastrum *	common knotweed	CL, GB, IF, PA, PC
Polygonum hydropiperoides	mild water-pepper	CL, PA, PC, GB; emergent along Chico Creek,
Polygonum lapathifolium	willow-weed	CL, GB, PA, PC
Polygonum persicaria	lady's thumb	CL, GB, IF, PA, PC
Polygonum punctatum	punctate smartweed	
Rumex acetosella *	sheep sorrel	IF
Rumex conglomeratus	sharp dock	
Rumex crispus *	curly dock	CL, GB, IF, PA, PC
Rumex pulcher *	fiddle dock	CL, GB, IF, PA, PC
Portulacaceae		
Claytonia perfoliata	miner's lettuce	CL, GB, IF, PA, PC
Portulaca oleracea *	common purslane	GB, PA

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FLORISTIC INVENTORY OF BIDWELL-SACRAMENTO RIVER STATE PARK

GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
Primulaceae		
Anagallis arvensis	scarlet pimpernel	
Ranunculaceae		
Clematis ligusticifolia	virgin's bower	CL, GB, IF, PA, PC
Clematis pauciflora	few-flowered clematis	
Ranunculus aquatilis	water buttercup	CL, GB, IF, PC
Rhamnaceae		
Rhamnus tomentella ssp. tomentella	hoary coffeeberry	IF
Rosaceae		
Heteromeles arbutifolia	toyon	CL
Prunus cerastifera	cherry plum	CL
Prunus dulcis *	almond	CL, IF, PA, PC
Prunus persica	peach	
Prunus sp.*	prune orchard rootstock	GB
Pyrus communis*[3]	pear	
Rosa californica	California wild rose	CL, IF, PA, PC
Rosa sp. *	rose	
Rubus discolor *	Himalayan blackberry	CL, GB, IF, PA, PC
Rubus leucodermis	white-bark raspberry	
Rubus ursinus	California blackberry	CL, GB, IF, PA, PC

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GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
Rubiaceae		
Cephalanthus occidentalis var. californicus	California buttonbush	CL, GB, IF, PA, PC
Galium aparine *	common bedstraw	CL, GB, IF, PA, PC
Galium parisiense *	bedstraw	IF
Salicaceae		
Populus fremontii ssp. fremontii	Fremont cottonwood	CL, GB, IF, PA, PC
Salix exigua	sandbar willow	CL, GB, IF, PA, PC
Salix gooddingii	Goodding's black willow	CL, GB, IF, PA, PC
Salix laevigata	red willow	CL, GB, IF, PA, PC
Salix lasiolepis	arroyo willow	CL, GB, IF, PA, PC
Salix lucida ssp. lasiandra	shining willow	CL, PC
Salix melanopsis	dusky willow	CL, GB
Scrophulariaceae		
Antirrhinum cornutum[3]	spurred snapdragon	
Castilleja attenuata	valley-tassels	CL
Kickxia elatine*	sharp-leaved fluellin	CL, GB, IF, PA, PC
Lindernia dubia var. anagallidae	false pimpernel	CL, GB, PA, PC
Mimulus glaucescens	shield-bracted monkeyflower	CL
Mimulus guttatus	seep monkeyflower	CL, GB
Mimulus pilosus	downy mimetanthe	CL, GB

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GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
Verbascum blattaria *	moth mullein	CL, GB, IF, PA, PC
Verbascum thapsus *	woolly mullein	CL, GB, PA
Veronica anagallis-aquatica	water speedwell	CL, GB
Veronica peregrina ssp. xalapensis	purselane speedwell	CL, GB
Simaroubaceae		
Ailanthus altissima*	tree-of-heaven	
Solanaceae		
Datura ferox	Chinese thornapple	CL, GB, PA
Datura stramonium var. tatula	purple-stemmed jimson-weed	CL, PA
Nicotiana acuminata var. multiflora	Many-flowered tobacco	CL, GB, IF
Physalis lanceifolia	lanceleaf groundcherry	
Physalis philadelphica *	tomatillo	PA
Solanum americanum	American nightshade	CL, GB, PA
Solanum nigrum[1]	black nightshade	Not known from Butte County
Tamaricaceae		
Tamarix parviflora*	tamarisk	
Ulmaceae		
Celtis sp.*	hackberry	PC

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GROUP Family Scientific Name	Common Name(s)	Comments (Observed by J. Dittes in 2003)
Urticaceae		
Urtica dioica ssp. holosericea	hoary creek nettle, stinging nettle	CL, GB, IF, PA, PC
Urtica urens	burning nettle	GB
Verbenaceae		
Phyla lanceolata	lance-leaf lippia	
Phyla nodiflora var. nodiflora	creeping lippia	GB, IF, PA, PC
Phyla nodiflora var. rosea	matted tribe	
Verbena bonariensis *	South American vervain	CL, PA
Verbena littoralis	shore vervain	CL, GB, IF, PA, PC
Violaceae		
Viola sp. *	violet	GB, IF, PC
Viscaceae		
Phoradendron macrophyllum	big-leaved mistletoe	CL, PC; on Fremont's cottonwood
Vitaceae		
Parthenocissus cinquefolia*[2]	Virginia creeper	This is not known from Butte County
Vitis californica	California wild grape	CL, GB, IF, PA, PC
Zygophyllaceae		
Tribulus terrestris *	puncture vine	GB, PA, PC

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GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
MONOCOTS		
Alismataceae		
Sagittaria latifolia	broad-leaf arrowhead	
Sagittaria longiloba	long-lobed arrowhead	
Araceae		
Arum italicum *	Italian arum	CL, GB
Cyperaceae		
Carex barbarae	Santa Barbara sedge, valley sedge	CL, GB, IF, PA, PC
Cyperus bipartitus	Two-parted cyperus	GB
Cyperus difformis *	Small-flowered cyperus	CL, PC
Cyperus eragrostis	tall flatsedge, tall cyperus	CL, GB, IF, PA, PC
Cyperus erythrorhizos[3]	red-rooted cyperus	
Cyperus esculentus	yellow nutsedge	CL, GB, IF, PA, PC
Cyperus niger	black cyperus	CL, GB, PC
Cyperus squarrosus	awned cyperus	
Cyperus strigosus	false nutsedge	
Eleocharis acicularis var. acicularis	needle spike-rush	CL
Eleocharis coloradoensis[3]	spike-rush	
Eleocharis macrostachya	common spike-rush	CL, GB, PC

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FLORISTIC INVENTORY OF BIDWELL-SACRAMENTO RIVER STATE PARK

GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments (Observed by J. Dittes in 2003)**
Eleocharis radicans[3]	creeping spike-rush	
Eleocharis sp.	spike-rush	GB, CL, PC
Fimbristylis autumnalis*[3]	fimbristylis	
Lipocarpha micrantha	small-flowered lipocarpha	CL, PC
Scirpus acutus var. occidentalis	common tule	CL, GB, IF, PA, PC
Scirpus americanus[2]	common three-square	not known from Butte County
Scirpus californicus[2]	California bulrush	not known from Butte County
Scirpus fluviatilis[1]	river bulrush	
Scirpus mucronatus[1]	bog bulrush	
Scirpus robustus[2]	big bulrush	not known from Butte County
Iridaceae		
Iris sp. *	iris	PC
Juncaceae		
Juncus acuminatus	sharp-fruited rush	
Juncus balticus	Baltic rush	CL
Juncus bufonius	toad rush	CL, GB, PA, PC
Juncus effusus var. pacificus	Pacific rush	CL, GB, PA
Juncus patens	spreading rush	
Lemnaceae		
Lemna sp.	common duckweed	CL, GB, IF, PC; Likely to be L. minuta

Management Unit

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APPENDIX B
FLORISTIC INVENTORY OF BIDWELL-SACRAMENTO RIVER STATE PARK

GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
Liliaceae		
Asparagus officinalis *	garden asparagus	CL, PC
Smilax californica	California greenbriar	CL
Poaceae		
Agrostis avenacea[1]	Aven's bentgrass	
Agrostis exarata[1]	spiked bentgrass	
Alopecurus aequalis	short-awned foxtail	CL
Arundo donax *	giant reed	GB
Avena fatua *	wild oats	CL, GB, IF, PA, PC
Bromus catharticus *	rescue grass	IF, PA, PC
Bromus diandrus *	ripgut brome	CL, GB, IF, PA, PC
Bromus hordeaceus *	soft chess	CL, GB, IF, PA, PC
Chloris virgata *	silky chloris	CL, GB, PA, PC
Cynodon dactylon *	Bermuda grass	CL, GB, IF, PA, PC
Cynosurus echinatus *	hedgehog dogtail-grass	CL, GB, IF, PA, PC
Cortaderia selloana *[1]	pampas grass	Plants removed in 2001-2002
Crypsis schoenoides *	swamp pricklegrass	GB
Dactylis glomerata *	orchardgrass	IF
Deschampsia danthonioides	annual hairgrass	GB, IF
Digitaria sanguinalis *	hairy crabgrass	GB, PC

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FLORISTIC INVENTORY OF BIDWELL-SACRAMENTO RIVER STATE PARK

GROUP Family Scientific Name	Common Name(s)	Comments (Observed by J. Dittes in 2003)
Echinochloa colona	jungle-rice	CL, PA
Echinochloa crus-galli	barnyard grass	IF, GB, PA, PC
Elymus glaucus ssp. glaucus	blue wild-rye	CL, GB, IF, PA, PC
Elytrigia repens *	quackgrass	
Eragrostis mexicana ssp. virescens	Green lovegrass	CL, GB, PA, PC
Eragrostis pectinacea var. pectinacea	purple lovegrass	CL, GB, PA
Gastridium ventricosum	nitgrass	CL, GB
Hordeum jubatum[1]	squirreltail barley	
Hordeum marinum ssp. gussoneanum *	Mediterranean barley	IF, PC
Hordeum murinum ssp. leporinum *	barley	CL, GB, IF, PA, PC
Leptochloa fascicularis	bearded sprangletop	CL, IF, GB, PA
Leptochloa uninerva	Mexican sprangletop	PA
Leymus triticoides	creeping wild-rye	CL, IF, PA
Lolium multiflorum *	Italian rye-grass	CL, GB, IF, PA, PC
Muhlenbergia rigens	deergrass	PA
Panicum capillare	witchgrass	CL, GB
Panicum dichotomiflorum	smooth witchgrass	GB
Paspalum dilatatum *	dallisgrass	CL, GB, IF, PA, PC
Paspalum distichum	knotgrass	IF, GB; slough margin, infrequent
Phalaris aquatica *	Canary-grass	IF

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FLORISTIC INVENTORY OF BIDWELL-SACRAMENTO RIVER STATE PARK

GROUP **Family** **Scientific Name**	**Common Name(s)**	**Comments** **(Observed by J. Dittes in 2003)**
Piptatherum miliaceum *	smilograss	CL, GB, IF, PA, PC
Poa annua *	annual bluegrass	CL, GB, IF, PA, PC
Poa pratensis	Kentucky bluegrass	
Polypogon monspeliensis *	rabbit's-foot grass, annual beardgrass	CL, GB, PC
Setaria pumila *	yellow bristlegrass	CL, GB, PA, PC
Sorghum halepense *	Johnson grass	CL, GB, IF, PA, PC
Vulpia myuros var. myuros *	rattail fescue	CL
Potamogetonaceae		
Potamogeton crispus *	crispate-leaved pondweed	CL, GB, IF, PA, PC
Potamogeton nodosus	long-leaved pondweed	
Typhaceae		
Typha angustifolia	narrowleaf cattail	CL, GB, IF, PA, PC
Typha latifolia	broadleaf cattail	CL, GB, IF, PC
Sources: GIC 1998a; 1998b; 2003; Sacramento River Partners 2000; Elliott, pers. comm. 2003; Dempsey, pers. comm. 2003; Dittes and Guardino Consulting 2003		

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APPENDIX C

CHICO STATE UNIVERSITY HERBARIUM (CHSC) DATABASE QUERY

RESULTS FOR BIDWELL-SACRAMENTO RIVER STATE PARK

Appendix C

Chico State University Herbarium Database Query Results for Bidwell-Sacramento State Park

Acc. No.	Division	Family	Genus	Epithet	Rank	Infraspecific	Collector	More Collectors	Coll'n No	Date	County	T-R-S	Elev.	Elev Units	Locality
47964	Anthophyta (flowering plants)	Amaranthaceae	Amaranthus	deflexus			Vernon Oswald		1062	10/10/1983	Butte				Bidwell State Park on the e side of the Sacramento R. w of Chico. The Indian Fishery at the jct. Of W. Sacramento Ave & River Rd.
43782	Anthophyta (flowering plants)	Araceae	Arum	italicum			Vernon Oswald		2369	5/4/1987	Butte	T22N R01W S35	135	ft.	Bidwell River State Park near the boat ramp just n of the Washout.
47851	Anthophyta (flowering plants)	Asteraceae	Artemisia	biennis			Vernon H. Oswald		4030	12/6/1989	Butte	T22N R01W S22 SE1/4 of NW1/4	140	ft.	Arroyo Chico. Pine Creek Landing Site of Bidwell River Park, west of Chico.
21059	Anthophyta (flowering plants)	Asteraceae	Baccharis	pilularis			M. S. Taylor		948	10/3/1975	Butte		120	ft.	On Sacramento River, ca. 1/2 mi N of washout on River Rd, ca. 10 mi W of Chico.
28424	Anthophyta (flowering plants)	Asteraceae	Bidens	frondosa			M. S. Taylor		2208	10/2/1979	Butte		100	ft.	Sacramento River at Chico Landing, ca. 5 mi W of Chico.
28743	Anthophyta (flowering plants)	Asteraceae	Eclipta	prostrata			R. A. Schlising		3511	10/14/1979	Butte	T22N R01W S			Along Sacramento River w of Chico, just n of Chico Landing Site in Bidwell River State Park.
28422	Anthophyta (flowering plants)	Asteraceae	Euthamia	occidentalis			M. S. Taylor		2215	10/2/1979	Butte		100	ft.	On sandbar in Sacramento River, at Chico Landing, ca. 5 mi w of Chico.
28621	Anthophyta (flowering plants)	Asteraceae	Gnaphalium	palustre			M. S. Taylor		2211	10/2/1979	Butte		100	ft.	On Sacramento River, at Chico Landing, ca. 5 mi w of Chico.
29803	Anthophyta (flowering plants)	Asteraceae	Heterotheca	oregona	var.	compacta	M. S. Taylor		2210	10/2/1979	Butte		100	ft.	Sacramento River, at Chico Landing, off River Rd, ca. 5 mi w of Chico.
43631	Anthophyta (flowering plants)	Asteraceae	Rudbeckia	hirta	var.	pulcherrima	Vernon Oswald		3003	6/17/1987	Glenn	T21N R01W S	125	ft.	West side of Sacramento River opposite the Washout (site of Chico Landing).
34565	Anthophyta (flowering plants)	Brassicaceae	Raphanus	raphanistrum			R. E. Preston	L. E. Preston	157	1/1/1982	Butte	T22N R01W S35			In almond orchard, e side of River Rd. ca. 1 mi s of Sacramento Ave.; Chico Landing site, ca. 5 mi w of Chico.
48287	Anthophyta (flowering plants)	Chenopodiaceae	Atriplex	triangularis			Vernon Oswald		1077	10/10/1983	Butte				Indian Fishery, Bidwell River State Park w of Chico at the jct. of W. Sacramento Ave. & River Rd.
21254	Anthophyta (flowering plants)	Chenopodiaceae	Chenopodium	ambrosioides			M. S. Taylor		933	10/3/1975	Butte		120	ft.	Abundant ca. 1/4 mi n of the washout, between River Rd and the Sacramento River, ca. 10 mi w of Chico.
28484	Anthophyta (flowering plants)	Chenopodiaceae	Chenopodium	atriplicifolium			R. Schlising		3497	10/13/1979	Butte	T22N R01W S			Along Sacramento River w of Chico. Just n of Chico Landing Site in Bidwlel River State Park.
34193	Anthophyta (flowering plants)	Chenopodiaceae	Chenopodium	botrys			R. A. Schlising		3510	10/14/1979	Butte	T22N R01W S			Along Sacramento River w of Chico. Just n of Chico Landing Site in Bidwell River State Park.
34200	Anthophyta (flowering plants)	Chenopodiaceae	Chenopodium	ambrosioides	var.	ambrosioides	J. D. Jokerst		1490 B	9/26/1981	Butte				Locally abundant in dry sand bars adjacent to and E of Sacramento River at the Bidwell River State Park (Chico Landing) ca. 5.0 mi W of Chico.
48291	Anthophyta (flowering plants)	Chenopodiaceae	Chenopodium	ambrosioides			Vernon Oswald		913	7/25/1983	Butte				River Road at the washout w of Chico.

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Chico State University Herbarium Database Query Results for Bidwell-Sacramento State Park

69681	Anthophyta (flowering plants)	Chenopodiaceae	Chenopodium				Vernon Oswald		3171	7/30/1987	Butte	T22N R01W S	120	ft.	Ranch Arroyo Chico. On the edge of the Sacramento River just upstream from the washout (Chico Landing site).
45267	Anthophyta (flowering plants)	Chenopodiaceae	Kochia	scoparia			Vernon Oswald		3702	9/21/1988	Butte	T22N R01W S	135	ft.	Ranch Arroyo Chico. Pine Creek Landing, Bidwell River Park, w of Chico.
13717	Anthophyta (flowering plants)	Chenopodiaceae	Salsola	tragus			M. S. Taylor		332	10/11/1974	Butte				Abundant in weed field, ca. 50 ft e of River Rd, opposite washout on Sacramento River, ca. 10 mi w of Chico.
30916	Anthophyta (flowering plants)	Chenopodiaceae	Salsola	tragus			M. S. Taylor		2207	10/2/1979	Butte		100	ft.	Sacramento River at Chico Landing, off River Road, ca. 5 mi w of Chico.
21134	Anthophyta (flowering plants)	Cyperaceae	Cyperus	erythrorhizos			M. S. Taylor		940	10/3/1975	Butte		120	ft.	Sandbar on Sacramento River, ca. 10 mi w of Chico. Bidwell River State Park at Chico Landing.
34197	Anthophyta (flowering plants)	Cyperaceae	Cyperus	strigosus			J. D. Jokerst	L. Ahart	1494	9/26/1981	Butte				Swale ca 100 m E of Sacramento River at the Bidwell River State Park (Chico Landing) ca 5.0 mi W of Chico.
34198	Anthophyta (flowering plants)	Cyperaceae	Cyperus	difformis			J. D. Jokerst	L. Ahart	1492	9/26/1981	Butte				Moist swale ca 110 m E of Sacramento River at the Bidwell River State Park (Chico Landing) ca 5.0 mi W of Chico.
34199	Anthophyta (flowering plants)	Cyperaceae	Cyperus	bipartitus			J. D. Jokerst	L. Ahart	1493	9/26/1981	Butte				Swale 100 m E of Sacramento River at the Bidwell River State Park (Chico Landing) ca 5.0 mi W of Chico.
37825	Anthophyta (flowering plants)	Cyperaceae	Cyperus	difformis			R. A. Schlising		3503	10/13/1979	Butte	T22N R01W S			Along Sacramento River w of Chico, just n of Chico Landing Site in Bidwell River State Park.
68408	Anthophyta (flowering plants)	Cyperaceae	Cyperus	strigosus			L. P. Janeway	C. A. Janeway	1865	9/14/1986	Butte	T21N R01W S02 NE1/4	120	ft.	On bank along small slough/backwater of the Sacramento River at "the washout."
34211	Anthophyta (flowering plants)	Cyperaceae	Eleocharis	radicans			J. D. Jokerst	L. Ahart	1481	9/26/1981	Butte				At the high water of a back slough at the Sacramento River. Bidwell River State Park (Chico Landing) ca 5.0 mi W of Chico.
45313	Anthophyta (flowering plants)	Cyperaceae	Eleocharis	coloradoensis			Vernon Oswald		3703	9/21/1988	Butte	T22N R01W S Rancho Arroyo Chico	115	ft.	Rancho Arroyo Chico. East side of Sacramento River just upstream from the Washout (Chico Landing Site).
34194	Anthophyta (flowering plants)	Cyperaceae	Fimbristylis	autumnalis			R. A. Schlising		3502	10/13/1979	Butte	T22N R01W S			Along Sacramento River w of Chico, just n of Chico Landing Site in Bidwell River State Park.
38927	Anthophyta (flowering plants)	Cyperaceae	Fimbristylis	autumnalis			Vernon Oswald		911	7/25/1983	Butte				Bidwell State Park, w of the parking area at the boat ramp, River Rd. near the washout.
34201	Anthophyta (flowering plants)	Cyperaceae	Lipocarpha	micrantha			J. D. Jokerst	L. Ahart	1487 B	9/26/1981	Butte				Low lying swale, E of Sacramento River ca 100 m, Bidwell River State Park (Chico Landing) ca 5.0 mi W of Chico.
37824	Anthophyta (flowering plants)	Cyperaceae	Lipocarpha	micrantha			R. A. Schlising		3501	10/13/1979	Butte	T22N R01W S			Along Sacramento River w of Chico, just n of Chico Landing Site in Bidwell River State Park.

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Chico State University Herbarium Database Query Results for Bidwell-Sacramento State Park

43658	Anthophyta (flowering plants)	Dipsacaceae	Scabiosa	atropurpurea			Vernon Oswald		907	7/24/1983	Butte				Boat ramp, Bidwell State Park, on River Rd. w of Chico near the washout.
28459	Anthophyta (flowering plants)	Elatinaceae	Bergia	texana			R. A. Schlising		3507	10/14/1979	Butte	T22N R01W S			Along Sacramento River w of Chico, just n of Chico Landing Site in Bidwell River State Park.
21015	Anthophyta (flowering plants)	Euphorbiaceae	Eremocarpus	setigerus			M. S. Taylor		947	10/3/1975	Butte		120	ft.	Roadsides, ca. 1/4 mi n of the washout, between River Road and the Sacramento River, ca. 10 mi w of Chico.
43671	Anthophyta (flowering plants)	Fabaceae	Sesbania	punicea			Vernon Oswald		2998	6/12/1987	Butte	T21N R01W S	115	ft.	South side of the mouth of Big Chico Creek at the Sacramento River.
34202	Anthophyta (flowering plants)	Juncaceae	Juncus	acuminatus			J. D. Jokerst	L. Ahart	1487	9/26/1981	Butte				Bidwell River State Park (Chico Landing) ca 5.0 mi W of Chico E bank Sacramento River.
21048	Anthophyta (flowering plants)	Lamiaceae	Lycopus	americanus			M. S. Taylor		934	10/3/1975	Butte		120	ft.	Abundant ca. 1/4 mi n of the washout on the Sacramento River, between River Rd and the Sacramento River, ca. 10 mi w of Chico.
19540	Anthophyta (flowering plants)	Lythraceae	Ammannia	coccinea			F. T. Griggs		143	8/8/1974	Butte				Growing in the Sacramento River between the Hamilton City bridge and the mouth of Big Chico Creek.
28620	Anthophyta (flowering plants)	Lythraceae	Ammannia	robusta			M. S. Taylor.		2213	10/2/1979	Butte		100	ft.	Scattered in sandbar in Sacramento River, at Chico Landing, ca. 5 mi w of Chico.
28475	Anthophyta (flowering plants)	Lythraceae	Rotala	ramosior			R. A. Schlising		3508	10/14/1979	Butte	T22N R01W S			Along Sacramento River w of Chico, just n of Chico Landing Site in Bidwell River State Park.
45332	Anthophyta (flowering plants)	Moraceae	Morus	alba			Vernon Oswald		2319	4/9/1987	Butte	T21N R01W S2	125	ft.	Bidwell River State Park between the Washout (Chico Landing Site) and Big Chico Creek.
13714	Anthophyta (flowering plants)	Oleaceae	Fraxinus	latifolia			M. S. Taylor		327	10/11/1974	Butte				Abundant along slough ca. 1/2 mi n of washout on the Sacramento River, ca. 10 mi w of Chico.
13710	Anthophyta (flowering plants)	Onagraceae	Epilobium	densiflorum			M. S. Taylor		333	10/11/1974	Butte				On sandbar in Sacramento River, ca. 1/4 mi n of washout, ca. 10 mi w of Chico.
45528	Anthophyta (flowering plants)	Onagraceae	Ludwigia	peploides	ssp.	montevidensis	L. P. Janeway	C. A. Janeway	1863	9/14/1986	Butte	T22N R01W S22 SE1/4	130	ft.	Pine Creek Landing; backwater of Sacramento River at Pine Creek. Along edges of the slough.
61053	Anthophyta (flowering plants)	Onagraceae	Ludwigia	peploides	ssp.	montevidensis	Vernon H. Oswald		5739	7/29/1993	Butte	T22N R01W S	125	ft.	Chico Landing (site) boat ramp, Bidwell River State Park, along the Sacramento River W of Chico. In slough and leading up to the ramp.
47037	Anthophyta (flowering plants)	Onagraceae	Oenothera	elata	ssp.	hirsutissima	R. A. Schlising		4480	10/6/1985	Butte	T22N R01W S	120	ft.	At Sacramento River, W of Chico, N of Chico Landing site. Along E edge of river.
23542	Anthophyta (flowering plants)	Poaceae	Arundo	donax			M. S. Taylor		936	10/3/1975	Butte		120	ft.	Ca. º mi n of the washout, between River Rd and the Sacramento River, ca. 10 mi w of Chico.

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28737	Anthophyta (flowering plants)	Poaceae	Crypsis	schoenoides			R. A. Schlising		3500	10/13/1979	Butte	T22N R01W S			Along Sacramento River w of Chico, just n of Chico Landing Site in Bidwell River State Park; margin of river.
34195	Anthophyta (flowering plants)	Poaceae	Crypsis	schoenoides			J. D. Jokerst	L. Ahart	1488	9/26/1981	Butte				On sand bars adjacent to and E of Sacramento River at the Bidwell River State Park (Chico Landing), ca. 5.0 mi W of Chico.
29252	Anthophyta (flowering plants)	Poaceae	Digitaria	sanguinalis			M. S. Taylor		2209	10/2/1979	Butte		100	ft.	Sacramento River at Chico Landing, off River Rd., ca. 5 mi w of Chico.
34206	Anthophyta (flowering plants)	Poaceae	Echinochloa	crus-galli			J. D. Jokerst	L. Ahart	1485	9/26/1981	Butte				In swale (old river channel). Bidwell River State Park (Chico Landing) ca. 5. mi W of Chico. E bank Sacramento River.
34204	Anthophyta (flowering plants)	Poaceae	Eragrostis	pectinacea	var.	pectinacea	J. D. Jokerst		1501	9/26/1981	Butte				Swale ca 100 m E of Sacramento River at the Bidwell River State Park (Chico Landing) ca 5.0 mi W of Chico.
34196	Anthophyta (flowering plants)	Poaceae	Leptochloa	fascicularis			J. D. Jokerst	L. Ahart	1496	9/26/1981	Butte				Ca 100 m E of Sacramento River at the Bidwell River State Park (Chico Landing) ca 5.0 mi W of Chico.
34203	Anthophyta (flowering plants)	Poaceae	Panicum	capillare			J. D. Jokerst		1486	9/26/1981	Butte				Bidwell River State Park (Chico landing) ca 5.0 mi W of Chico.
34785	Anthophyta (flowering plants)	Poaceae	Piptatherum	miliaceum			L. Ahart		3207	9/26/1981	Butte		40	m.	Near the Sacramento River s of the washout, ca. 6 mi w of Chico.
49562	Anthophyta (flowering plants)	Poaceae	Piptatherum	miliaceum			Vernon Oswald		1829	6/12/1985	Butte	T21N R01W S02 NE1/4 of NE1/4	125	ft.	Bidwell State Park slightly s of the Washout on River Rd. On a bank of the river.
28622	Anthophyta (flowering plants)	Potamogetonaceae	Potamogeton	crispus			M. S. Taylor		2216	10/2/1979	Butte		100	ft.	On e bank of Sacramento River at Chico Landing, ca. 5 mi w of Chico.
49685	Anthophyta (flowering plants)	Potamogetonaceae	Potamogeton	crispus			Vernon Oswald		3173	8/2/1987	Butte	T22N R01W S Rancho Arroyo Chico	120	ft.	Mouth of the slough leading into the boat ramp just upstream from the Washout (Chico Landing site) on the Sacramento River.
43865	Anthophyta (flowering plants)	Rosaceae	Pyrus	communis			Vernon Oswald		3262	3/24/1988	Butte	T21N R01W S05 SE1/4 of NE1/4	125	ft.	Rancho Arroyo Chico. Bidwell River State Park s of Chico Landing Site, just n of the access road to a gravel bar along the Sacramento River at Chico Creek.
13715	Anthophyta (flowering plants)	Salicaceae	Populus	fremontii			M. S. Taylor		326	10/11/1974	Butte				Ca. 50 ft e of Sacramento River, ca. 1/4 mi n of washout, ca. 10 mi w of Chico.
34210	Anthophyta (flowering plants)	Salicaceae	Salix	melanopsis			J. D. Jokerst	L. Ahart	1480	9/26/1981	Butte				5 mi W of Chico at Bidwell River State Park (Chico Landing).
21049	Anthophyta (flowering plants)	Scrophulariaceae	Antirrhinum	cornutum			M. S. Taylor		937	10/3/1975	Butte		120	ft.	On the Sacramento River, ca. 1/4 mi n of the washout on River Rd, ca. 10 mi w of Chico.
33526	Anthophyta (flowering plants)	Scrophulariaceae	Kickxia	elatine			R. A. Schlising		3512	10/14/1979	Butte	T22N R01W S			Along Sacramento River w of Chico, just n of Chico Landing Site in Bidwell River State Park.
43146	Anthophyta (flowering plants)	Scrophulariaceae	Kickxia	elatine			R. A. Schlising		3512	10/14/1979	Butte	T22N R01W S			Along Sacramento River w of Chico, n of Chico Landing Site in Bidwell River State Park.

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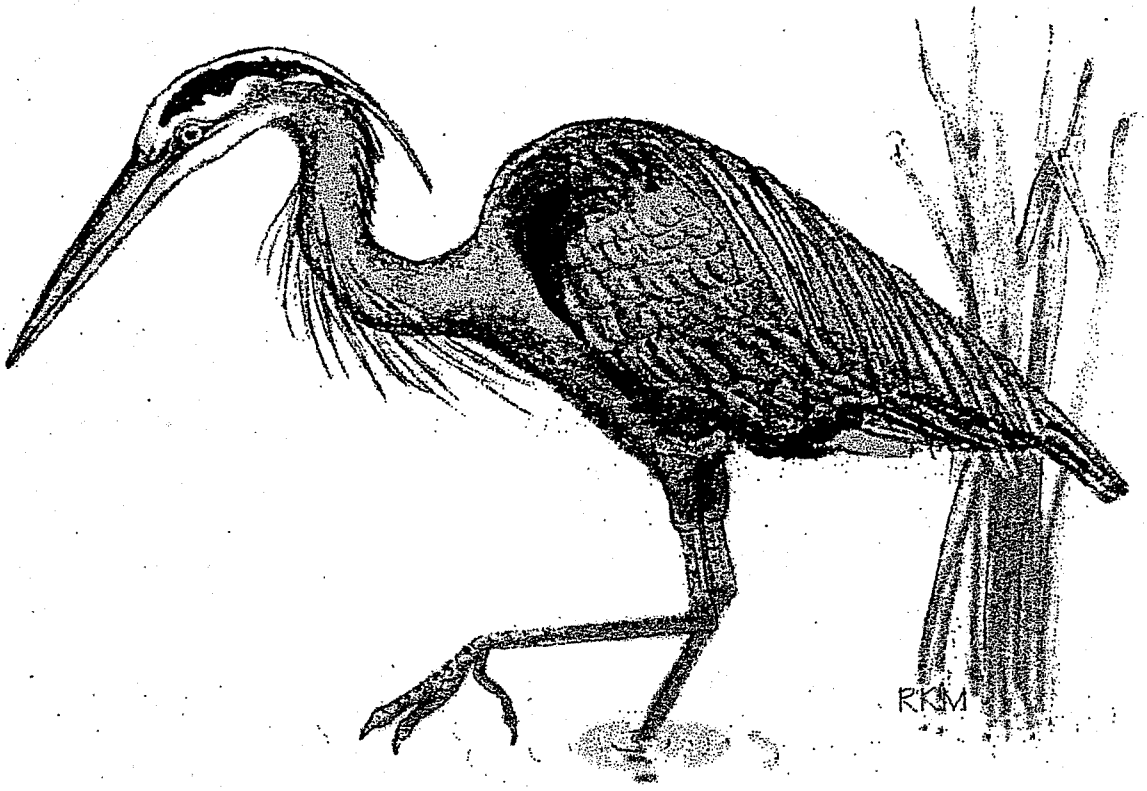
21050	Anthophyta (flowering plants)	Scrophulariaceae	Mimulus	pilosus			M. S. Taylor		938	10/3/1975	Butte		120	ft.	Scattered on sand bar on Sacramento River, ca. 1/4 mi n of the washout on River Rd, ca. 10 mi w of Chico.
28623	Anthophyta (flowering plants)	Scrophulariaceae	Veronica	anagallis-aquatica			M. S. Taylor		2214	10/2/1979	Butte		100	ft.	In sand bar in Sacramento River at Chico Landing, ca. 5 mi w of Chico.
49047	Anthophyta (flowering plants)	Scrophulariaceae	Veronica	anagallis-aquatica			Vernon Oswald		912	7/25/1983	Butte				Bidwell State Park, w of the parking area at the boat ramp on River Rd. near the washout.
49448	Anthophyta (flowering plants)	Verbenaceae	Phyla	nodiflora	var.	nodiflora	Vernon Oswald		3172	7/30/1987	Butte	T22N R01W S	120	ft.	Rancho Arroyo Chico. Mouth of the slough leading into the boat ramp just upstream from the Washout (Chico Landing site) on the Sacramento River.
49449	Anthophyta (flowering plants)	Verbenaceae	Phyla	nodiflora	var.	nodiflora	Vernon Oswald		910	7/25/1983	Butte				Indian Fishery (Tyler Slough), Bidwell State Park, at the w end of W. Sacramento Ave. w of Chico.
47285	lichens	Parmeliaceae	Evernia	prunastri			M. S. Taylor		2	1/30/1975	Butte				River Road at Washout, ca. 10 mi w of Chico.
24089	lichens	Parmeliaceae	Flavopunctelia	flaventior			C. J. Roy		6	1/30/1975	Butte				River Road at Washout.
24094	lichens	Parmeliaceae	Melanelia	subolivacea			C. J. Roy		4	1/30/1975	Butte				River Road at Washout.
24092	lichens	Parmeliaceae	Parmelina	quercina			C. J. Roy		4	1/30/1975	Butte				River Road at Washout.
23997	lichens	Physciaceae	Physcia	adscendens			C. J. Roy		6	1/30/1975	Butte				River Road at Washout.
24002	lichens	Physciaceae	Physcia	stellaris			C. J. Roy		2	1/30/1975	Butte				River Road at Washout.
24006	lichens	Physciaceae	Physcia				C. J. Roy		3	1/30/1975	Butte				River Road at Washout.
48209	lichens	Physciaceae	Physcia	adscendens			G. R. Pintler			1/26/1978	Butte				River Road at Washout.
24036	lichens	Ramalinaceae	Ramalina	leptocarpha			C. J. Roy		3	1/30/1975	Butte				River Road at Washout.
47282	lichens	Ramalinaceae	Ramalina	leptocarpha			M. S. Taylor		13	1/30/1975	Butte				River Road at Washout, ca. 10 mi w of Chico.
47284	lichens	Ramalinaceae	Ramalina	farinacea			M. S. Taylor		16	1/30/1975	Butte				River Road at Washout, ca. 10 mi w of Chico.
24057	lichens	Teloschistaceae	Xanthoria	fallax			C. J. Roy		2	1/30/1975	Butte				River Road at Washout.
24058	lichens	Teloschistaceae	Xanthoria	polycarpa			C. J. Roy		1	1/30/1975	Butte				Sacramento River at Washout, River Road.

APPENDIX D

BIDWELL-SACRAMENTO RIVER STATE PARK
INTERPRETIVE PROSPECTUS (1997)

BIDWELL-SACRAMENTO RIVER STATE PARK



INTERPRETIVE PROSPECTUS

May 1997

BIDWELL-SACRAMENTO RIVER STATE PARK

INTERPRETIVE PROSPECTUS

By
Richard K. McGaugh,
State Park Ranger I

Stephen W. Feazel,
District Interpretive Specialist

William B. Stewart,
Supervising Ranger
Northern Buttes District

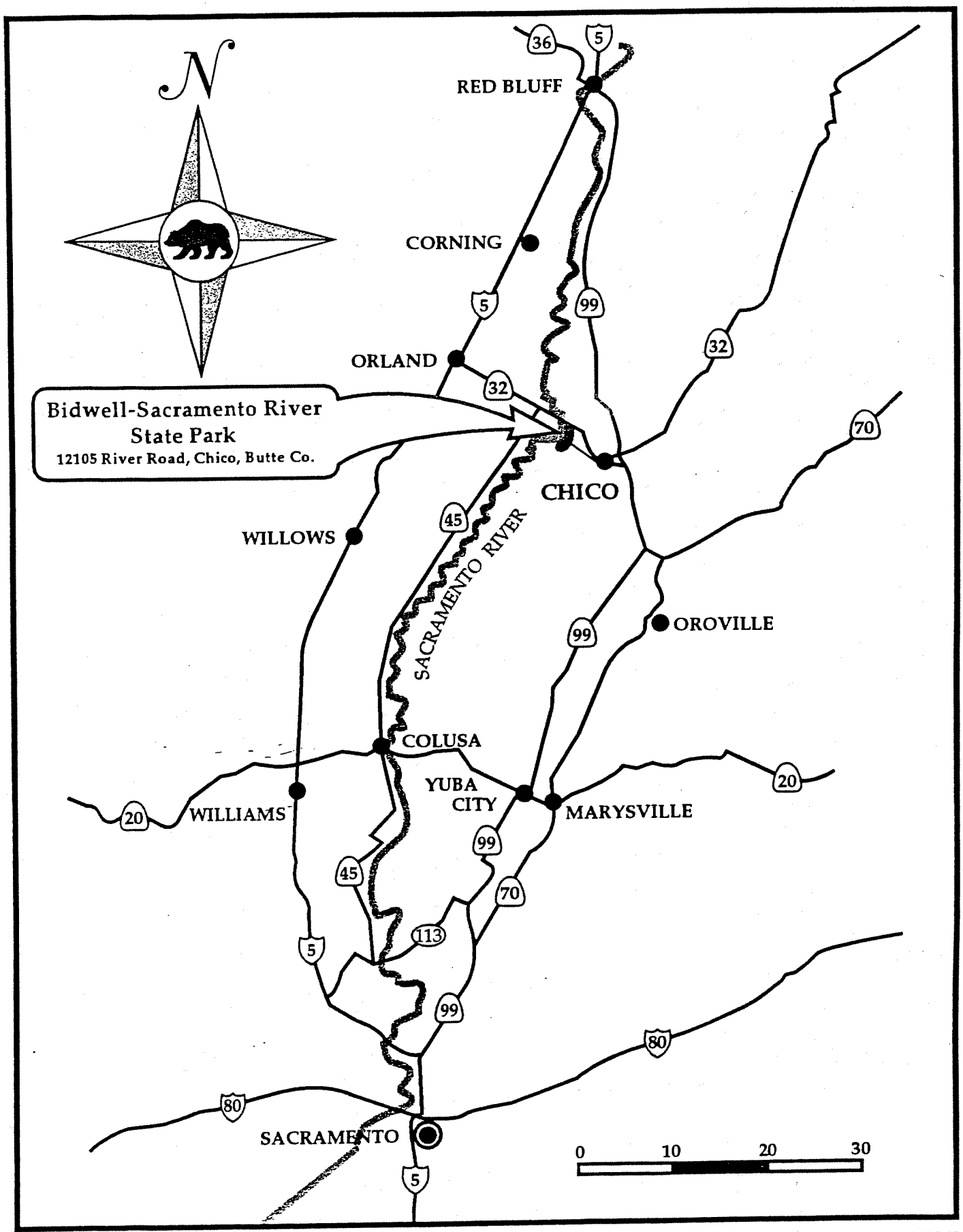
and

Richard D. Clark,
State Park Interpreter II
Northern Service Center

May
1997

Approved David E. Bartlett Date 5/7/97

David E. Bartlett, District Superintendent
Northern Buttes District


N
RED BLUFF
CORNING
ORLAND
Bidwell-Sacramento River
State Park
12105 River Road, Chico, Butte Co.
CHICO
WILLOWS
SACRAMENTO RIVER
OROVILLE
COLUSA
YUBA
CITY
MARYSVILLE
WILLIAMS
SACRAMENTO
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36
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32
70
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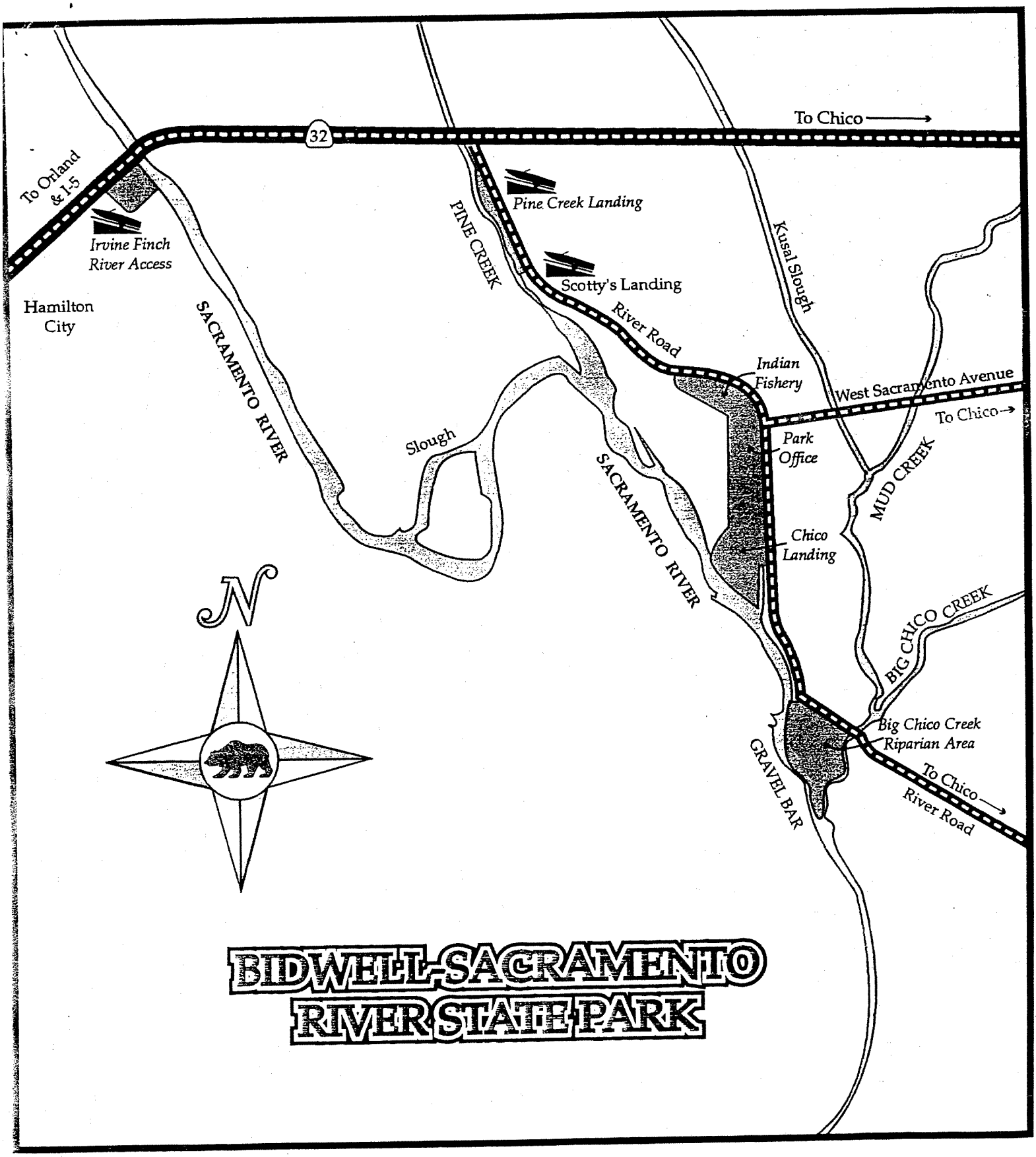
20
113
80

MAP NO.1


To Chico
32
To Orland & I-5
Irvine Finch River Access
Hamilton City
SACRAMENTO RIVER
Slough
PINE CREEK
Pine Creek Landing
Scotty's Landing
River Road
Kusal Slough
Indian Fishery
West Sacramento Avenue
To Chico
Park Office
MUD CREEK
SACRAMENTO RIVER
Chico Landing
BIG CHICO CREEK
Big Chico Creek Riparian Area
GRAVEL BAR
To Chico
River Road
N
BIDWELL-SACRAMENTO RIVER STATE PARK

MAP NO. 2

Introduction

This Interpretive Prospectus provides guidance for immediate interpretive development at Bidwell-Sacramento River State Park. When a General Plan is developed, it is expected that this Interpretive Prospectus will be revisited for possible updating.

This prospectus identifies factors that affect the interpretation of the natural and cultural environment at Bidwell-Sacramento River State Park. It makes recommendations that can positively influence the effectiveness of this interpretation, as well as heightening the public's understanding of natural and cultural history and appreciation of the park.

Interpretive Themes

Interpretation relies on themes to connect the significant natural, cultural, and recreational resources of the park to the visitors in personally meaningful ways. Themes define the point of view, and focus information that will be presented through various interpretive media.

Background Information

Location

Bidwell-Sacramento River State Park is located some six miles west of the City of Chico (see Map 1). It lies mostly on the east bank of the Sacramento River in the County of Butte. One segment, Irvine Finch River Access, lies on the west bank of the Sacramento River in Glenn County.

Service Areas

The park may be conveniently divided into five areas of use and location. Though the park is a whole, such a division provides a useful way of describing and discussing the interpretive needs of the park in workable and logical units. From north to south the areas of the park are: Irvine Finch River Access; Pine Creek Landing; Indian Fishery; Chico Landing; and Big Chico Creek Riparian Area (see Map 2).

Park History

On November 15, 1882, John Bidwell conveyed 11.45 acres of land to the County of Butte to build roads to give access to the river. On July 1, 1908 Mrs. Anne E.K. Bidwell deeded to the state a strip of land running west from

Chico along the north bank of Chico Creek for some five miles to the Sacramento River, a strip running on both banks of the Lindo Channel some six miles to the Sacramento River, and a strip running the length of the east bank of the Sacramento River some four miles. This land was to be under the auspices of the State Forestry Service and was to protect tree growth along the wooded banks.

Partly because of the possible overlapping of areas in deeds and conveyances, and the resultant clouding of titles between the state and the county, it was decided in 1950 that the state would convey its portion to the county and thereby merge the deeds. This was authorized by the State Park Commission March 17, 1950.

The state leased additional properties to the County of Butte for recreational purposes. At this time the park consisted of about 181 acres, but not including Irvine Finch River Access, a later acquisition.

The county did not want to develop a parks and recreation program and so leased some land to the Chico Area Recreation and Park District (C.A.R.D.). C.A.R.D. in turn leased nearly all the property to a rod and gun club. By the 1960s boundary disputes with neighboring land owners frustrated efforts at developing a master facilities plan.

A planned cadastral survey of disputed boundaries was not completed. Hunting, shooting, wood-cutting, dumping and the intrusion of off-road vehicles defiled the park. In 1972, at the request of petitioning local government, the California Department of Parks and Recreation was mandated by the legislature to study alternative methods to preserve Bidwell River Park. A resulting 1974 report recommended that Bidwell River Park be acquired by the state as part of the State Park System. A 1977 bill authorized the acquisition of Bidwell River Park and on August 1, 1979, the park was transferred back to the State Park System. It was named and classified as Bidwell-Sacramento River State Park in 1990.

Boundary concerns have been resolved as a result of an extensive State Park Survey and Agreements with Butte County. There has also been an ongoing effort to recover the park by closing off roads, and installing park boundary fences and boundary markers.

Role In Education

Historically the park has emphasized recreation, but by reclaiming the habitat the department has provided an ideal resource for the study of riparian ecology. Local educators have availed themselves of this resource, from

kindergarten through master's degree programs. One of the goals of this document is to increase interpretation for educational purposes.

Planning Considerations

Themes need to be developed to organize the interpretation of Bidwell-Sacramento River State Park and the region's natural and cultural history and environment. In formulating themes, attention should be given to the following:

- The story of Bidwell-Sacramento River State Park has ancient geologic and hydrologic origins.
- The park area's particular origins and its riparian nature have consequences for the kind of habitat it will support.
- The river park's narrative continues with the interaction and use by various cultures: prehistoric cultures; ethnographic and ongoing interaction by the ~~Konkow~~ peoples; the incursions of Spanish Colonial and Mexican downstream residents; and then arrival and settlement by trappers and pioneers from parts of Europe, but mainly from an expanding United States.
- The river had an important transportation role with river boats, ferries (Bidwell Ferry), roads, bridges (Giannelli Bridge), a railroad bridge, and wharves.
- Agriculture has been important since the days of the Bidwells and includes orchards, livestock raising and dairying, rice crops and other grains, and sugar beets and other row crops.
- Commercial and subsistence fishing, hunting, and trapping were early pre-recreational uses of the river.
- Fishing and hunting were joined by boating, rafting, tubing, bird watching, and water skiing as recreational uses of the river.
- Early recreation uses of the river area included river bank dance halls.

Focus

Interpretation of Bidwell-Sacramento River State Park should provoke an understanding of riparian systems, specifically that of the Sacramento River.

Approach

- To present Bidwell-Sacramento River State Park in the context of a riparian habitat.
- To be cognizant of the mission of State Parks in preserving the riparian habitat while providing quality natural, cultural and recreational experiences.

- To present the Bidwells' story as an important part of the interpretive history of the park.

RECOMMENDATIONS

The approach for interpretive development in the park will be guided by the themes described below.

Riparian/Riverine

UNIFYING THEME

The ~~Riparian~~ Habitat is Dynamic and Critically Important to the Health of the Sacramento River and All Life Associated with It.

The riparian nature of the habitat of Bidwell-Sacramento River State Park is the dominant feature of the park; the existing habitat is representative of what once dominated the rivers and streams of California. Only about 20% of the riparian habitat remains since Euro-American arrival in California.

Primary and Secondary Themes

Primary and secondary themes should be developed for each park area. They should define the use and meaning of that area and reflect its contribution to the whole park. The development of the themes for each area will appear in the subsection concerning that area. Such interpretive themes may be primary to an area, but that does not exclude their applicability to other areas of the park.

Interpretive Periods

The Interpretive Period sets the framework for interpretation in the park, directing and focusing interpretive themes, facilities, and activities to represent appropriate, specific years or groups of years.

Background Information

Natural History

Taken as a whole, Bidwell-Sacramento River State Park is an example of classic riverine, or riparian landscape. The park contains examples of nearly every successional stage of riparian habitat that can be associated with the river— from barren gravel bars, to pioneering thickets of young cottonwoods, willow, and alder, to towering forests of mature cottonwood, and finally, to the

climax oak woodland community. All habitat types and their associated residents can be observed within the park.

The younger successional stages (willow, alder, etc.) are easily observed anywhere along the river's edge. The successional stages are constantly being produced as the river meanders through the valley, creating and shifting gravel bars about, washing away then depositing tons of silt in which the new seedlings will sprout. This is a process that has been repeating itself for many thousands of years. The older, later successional stages, such as the oak woodland, are less evident, as they take years longer to produce. Most of this type of habitat along the river has been replaced in recent human history with agriculture, owing to the richness of the accumulated soils. However, a good example of oak woodland does exist at Indian Fishery.

The riparian habitat along the river course supports many hundreds of species of plants and animals, some of which are unique to the riparian environment. Providing a rich source of food, shelter, and environmental conditions (e.g., temperature, shade, humidity, water for drinking), the riparian forest is important to all its inhabitants for their survival. It is immeasurably important to California today as an educational example of river dynamics and riparian plant community succession.

Native Americans

Archaeologically, there is a time depth of human occupation in the local area of around 4500 years. The peoples residing in the area during the late prehistoric period up to and through contact with Euro-Americans, are known to us today as the Northwestern Maidu or Konkow. The Konkow, along with the Maidu (Northeastern Maidu) and the Nisenan (Southern Maidu), form a sub-group of the California Penutian linguistic family. Konkow territory covered a portion of the Sacramento Valley from somewhat west of the Sacramento River and ran east into the foothills above Oroville and Chico.

Divided into communities of adjacent villages organized for ceremonial and subsistence activities, the Konkow followed a seasonal subsistence cycle. Wintering in permanent villages, they went into the valley in spring for grass seeds and other plant materials. In summer they hunted game and gathered plants from temporary camps. In autumn they located around streams to catch salmon and traveled to oak groves to gather acorns.

Several Konkow village sites are known in the area immediately around the park boundaries. Six archaeological sites have been identified, but are outside the park boundaries.

Euro-Americans

The Konkow may have first met Europeans and Euro-Americans beginning with the Moraga expedition of 1808. Luis Arguello explored the Feather River in 1821, and the Jedediah Smith party spent several months in Konkow territory in 1828. Between 1825 and 1840, Hudson's Bay Company trappers and American fur traders wandered the Sacramento valley. In 1841 Lieutenant George Emmons and a party of 39 members from the Charles Wilkes scientific expedition passed by on the west bank of the Sacramento River. In 1843 John Bidwell first got sight of the area.

During 1844, three land grants were awarded that encompass much of the present-day park: Rancho Arroyo Chico, five square leagues granted to William Dickey, includes most of the current park; Rancho de Farwell, five square leagues granted to Edward A. Farwell, was to the south; and Rancho Capay, ten square leagues granted to Josefa Soto, was to the west of the river. Much of Rancho Capay later became the property of Richard J. Walsh, a Shasta merchant. To the north, along Pine Creek, the land was unclaimed and became part of US public domain. In 1849 John Bidwell acquired Rancho Arroyo Chico from William Dickey.

Planning Considerations

The primary interpretive period should be in harmony with the park's Unifying Interpretive Theme. Secondary interpretive periods can be used to highlight other eras that help tell the story, and help place the park in the appropriate natural and historic context. In setting the park's interpretive periods, it should be noted that:

- The river and its riparian flanks are the story.
- The story is rooted in geological history.
- People eventually interact with the river and its ecology and have an affect on the environment or play a part in the resource management of the park unit.
- The act of giving land to the state and setting in motion those events that turned it into a state park have historical importance.

Primary Interpretive Period: *The Present*

The Primary Interpretive Period is the present, today; what is most important to interpret about the park is how it is now. Though the river and the riparian course are dynamic, what should be interpreted is the immediate.

Secondary Interpretive Period: *Prehistoric origins*

Prehistoric origins should interpret the geologic and hydrologic development of the river and its changing riparian environment.

Secondary Interpretive Period: *Human prehistory*

Human prehistory includes the interaction of the Native Americans with the river and the riparian basin up to the coming of the Euro-Americans.

Secondary Interpretive Period: *Early history and General & Annie Bidwell*

This period includes the early Euro-American period, and focuses on the uses of the river and its surrounding land up to the time of Annie Bidwell's gift to the state.

Secondary Interpretive Period: *Annie's Gift up to the present*

This period covers the changes that went on with the small portion of land Annie Bidwell gave to the state, as well as the other portions that have become a part of the Bidwell-Sacramento River State Park.

GENERAL RECOMMENDATIONS

- Interpretive information should reflect the needs of the user.
- The sub-entrance sign for each area should be replaced with a newer, more "park-like" structure that both identifies the area and identifies it as a part of Bidwell-Sacramento River State Park.
- These sub-entrance signs should also include the park's hours of operation. There should be adequate signing to situate the visitor within the specific area, as well as orienting them to the rest of the park.
- Specific interpretive spots within the site area should be identified. Locations of facilities should be clearly marked.
- Parking and no parking areas need to be clearly marked.
- Programs for presentation on-site or off-site about the area will need to be developed and made available.

Irvine Finch River Access

Background Information

Irvine Finch River Access is the only area of the park in Glenn County. It was created when the old steel Giannelli Bridge, a turn bridge, was replaced by a modern high-arch concrete bridge. A portion of land was acquired to be set aside to provide recreation access to the Sacramento River. This was due, in great part, to the efforts of Irvine Finch, a former Glenn County Supervisor. The five acres provide parking for those wanting to use the launching facilities of the park.

Planning Considerations

Current conditions at Irvine Finch River Access include the following:

- Parking spaces for 295 vehicles.
- A launching ramp.
- Rest rooms.
- Two ramadas for picnickers.
- One notice/interpretive shelter.

Interpretive facilities planned for Irvine Finch River Access should take the following into account:

- The river must be accessible.
- Recreational opportunities must be available.
- Safety is always a primary concern.
- Natural history must not be outweighed by recreation.
- The history of the area also needs to be interpreted.

Area Interpretive Themes

Primary Theme

Access to Recreation: The River Provides the Opportunity to Fish, Hunt, Observe Nature, and Participate in Water Activities.

Irvine Finch River Access is the primary entry to the recreational opportunities of the park. The launching facilities provide entry for fishing boats, ski boats, jet skis, and the ever popular inner tube and similar rafts. The river provides opportunity for all sorts of water craft sports and activities. It is here that visitors launch on to the river to fish for steelhead, salmon, bass, and

sturgeon. In fall and winter the visitors launch boats to hunt for pheasant, ducks, geese, and dove.

Secondary Themes

~

Safety in Recreation: The River Moves Relentlessly and Water Safety is a Principal Concern.

~

History of the River Banks: As the River Flows Through Time, Cultural Changes Occur to the Surrounding Land.

The variety of recreational activities, the variety of water craft used, and the variety of water safety skills the visitor brings to his day on the river make water safety an important concern. This concern needs to be communicated to the visitor.

The variety of changes to the land and the variety of human uses of the land need to be interpreted to the visitor.

Focus

The focus of interpretation at Irvine Finch River Access is recreation.

Approach

Interpretive Panels

- Interpretive panels should be guided by the general and the site specific themes.

Special Events

- Promote special events by local community groups.

PROPOSED INTERPRETATION

The major emphasis of interpretation at Irvine Finch River Access will focus on the interpretive themes using interpretive panels and special events.

Pine Creek Landing

Background Information

The Pine Creek Landing property was part of a parcel of land along the Sacramento River that, along with other streamside parcels throughout the Chico area, was deeded to the state of California by Annie E.K. Bidwell on July 1, 1908.

The park property in State ownership was leased by the Division of Beaches and Parks to Butte County in 1950 by legislative deed, for recreational purposes. Since Butte County did not want to manage these lands for parks and recreation, they leased the property to the Chico Area Recreation District, who sub-leased it to a local rod and gun club.

The property at Pine Creek was sub-sub-leased to private concessionaires who established a boat landing business at the site. The concessions contract was subsequently re-sold to several successive owners through the 1960s and 1970s.

In August of 1979 the park was transferred back into the State Park System and the Pine Creek Landing was once again owned by the State of California. The concessionaire at the time of re-acquisition was occupying the property. He ran a boat launch, landing, mooring business, and a beer bar. He was unable to make necessary improvements to the operation called for by contract with the state, and so relinquished his claim on the property to the state. The property was cleaned up and several run-down structures were removed from the site, including the remains of a dilapidated boathouse which at one time housed a Sea Scout station established at the site in 1944.

Planning Considerations

Current conditions at Pine Creek Landing include the following:

- The current Pine Creek Landing day use area consists of an approximately 4 or 5 acre site adjacent to Pine Creek.
- There is a small, pre-existing boat launch ramp, and a parking area adequate for about 15 vehicles with boat trailers near the ramp.
- There are four picnic sites, with a short trail connecting them, and fishing access to numerous sites along the bank of Pine Creek. A second parking area will accommodate about six vehicles.
- Family use at this site is increasing.
- There is no potable water source or rest room facility in the area.

- The typical activities are fishing, boating related to fishing, canoeing, kayaking, picnicking, relaxing, bird and wildlife watching, and walking.

Interpretive facilities planned for Pine Creek Landing should take the following into account:

- Most of the area's visitors will continue to come for fishing, boating and fishing access.
- There need to be adequate facilities available for the convenience of the park users.
- The presence of the riparian vegetative resources at the site should determine the primary focus of any interpretive panels and/or displays.
- The significant cultural history associated with the area warrants interpretation (e.g., Bidwell's Ferry site; the Sea Scout Station site, or early settlers).
- The area is adjacent to a well-traveled road and will always be subject to the intrusive noise from the presence of automobiles as well as power boats on the water.
- Much of the area adjacent to Pine Creek is subject to annual inundation due to seasonal flooding of both Pine Creek and the Sacramento River. Any facilities installed must be designed with this in mind.

Area Interpretive Themes:

Primary Theme

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Riparian Tributaries: The Riparian Habitat is a Unique Feature of the Sacramento River Tributary System

Secondary Theme

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Habitat Flows into Habitat: The River Meander Creates a Slough at Pine Creek Landing

The presence of the riparian vegetative resources at the site, the nature of Pine Creek tributary, the annual inundation, and the resultant slough provide a special opportunity for interpretation of a river meander system.

Focus

The primary focus for interpretation at Pine Creek Landing should be consistent with the overall theme for the park and emphasize the importance of the riparian forest.

A secondary focus should be on the kinds of recreation engaged in by visitors with emphasis on fishing, boating, and observing nature.

Approach

Since the area is part of the riparian community, it will not be difficult to point out examples of the constituent elements of a riparian area. The riparian zone should be interpreted as a whole, but individual components should also be singled out for a more in-depth explanation.

The various types of fish available and techniques for successful fishing should be interpreted. Tips for safe boating and information about canoeing and kayaking in the area should be made available by panel or brochure. Inclusion as a part of the overall interpretation of the area is essential to properly appreciate the Pine Creek site. There is rich local history associated with the Bidwells and the operation of the area as a Sea Scout station.

Interpretive Trails

- Canoe interpretive trails: "Up the Creek with a Paddle."
- A fisherman's footpath that connects some of the access and fishing sites should be developed to serve as a "mini-interpretive trail"

Interpretive Panels

Panels to be used at the Pine Creek Landing area could include the following topics:

- Value of riparian forest vegetation. from prehistory to now
- Fish and fishing in Pine Creek.
- History of the Sea Scout station at Pine Creek Landing.
- History of John Bidwell's Ferry. - Chico landing, Keaus Ferry & Chico Free Bridge.
- Boating and boating safety.

Brochures

- Interpretive canoe trail brochure: "Up the Creek with a Paddle."

PROPOSED INTERPRETATION

Any interpretation proposed for the Pine Creek Landing area will be new, since there is currently no interpretation taking place at the site. Specific sites for the installation of interpretive facilities need to be investigated and marked.

Locations of all signs, markers, and displays will have to be established. Local historical interest groups should be contacted for assistance with the historical site facilities, markers and displays.

A quality interpretive program at Pine Creek Landing will encourage visits by school groups and the local citizenry. Additionally, existing user groups such as fishermen, picnickers and boaters will find their park experience enhanced by quality, on-site interpretation. A canoe interpretive trail will provide a unique interpretive experience for canoeists.

Indian Fishery

Background Information

In the late prehistory and early Euro-American periods, as folk memory has it, fish weirs were built and used at this location. This memory has manifested itself in the traditional place name for the area. — ~ date —

Indian Fishery is located west of the intersection of River Road and West Sacramento Avenue. It consists of approximately 35 acres, including an ox-bow lake, riparian vegetation on high terrace, and an oak woodland with an understory of mixed grasses and poison oak. California wild grape and California pipevine can be found in abundance throughout the area.

The area is a day-use park for such activities as hiking, fishing, and picnicking. Indian Fishery has a 1/2 mile hiking trail, called Indian Fishery Nature Trail, that winds through the oak woodland understory along the edge of the ox-bow lake. The trail has sixteen trail markers that direct the visitor's attention to various elements of interest along the way. They include characteristic plants, examples of human impact, changes in the river course, animal inhabitants, and evidences of their activities.

The trail which begins and ends at the parking lot, has been established for day-users. The public use area has been fenced to separate it from the surrounding natural wildland area. There are picnic tables and a portable rest room.

Fishing is popular in the ox-bow lake for bluegill, crappie, largemouth blackbass, and catfish. The lake is relatively shallow and quite warm in the summer.

Planning Considerations

Interpretive facilities planned for Indian Fishery should take the following into account:

- This is a multi-use area for hiking, fishing and picnicking.
- Interpretation should address the impact of visitors on the natural resources of Indian Fishery.

Area Interpretive Themes

Primary Theme

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Ox-bow Lakes Are Dynamic: The Ox-bow Lake at Indian Fishery is an Offspring of the Ever Changing Sacramento River Hydraulic System

Secondary Themes

~

Oak Woodlands: The Oak Woodland at Indian Fishery is an Integral Part of the Riparian Corridor

~

The Indian Fishery Weir: The Site of the Vanished Historic Weir at Indian Fishery Represents The Native American Uses of the River and its Riparian Habitat

~

Steamboats And Dances: With the Arrival of Euro-Americans on the River the Uses of the River Change and Affect the Riparian Boundaries

The ox-bow lake at Indian Fishery provides a distinct opportunity to interpret the evolution of the Sacramento River hydraulic system. The oak woodland is an important vegetative response to the changing environment of the area. Late pre-historic and early Euro-American uses of the river reflect the history of Indian Fishery.

Focus

The focus of interpretation at Indian Fishery should be for school or educational purposes.

Approach

Interpretive Trails

- Trails should be self-guided.
- Consideration should be given to developing a loop trail around the lake in cooperation with the Department of Fish and Game and The Wildlife Conservation Board.

Interpretive Panels

- Interpretive panels should expound the themes of Indian Fishery.
- Panels should be kept within the general public use area.

Special Events

- Promote special events by local community groups.

PROPOSED INTERPRETATION

A speakers' series would be an appropriate event for Indian Fishery as would guided and self-guided nature walks and school environmental trail experience programs. Interpretive panels and signs are valuable here.

Chico Landing

Background Information

The traditional name for this area, Chico Landing, may be something of a misnomer as the mouth of Big Chico Creek was probably the original Chico Landing site. However, the location of the landing was probably moved several times because of changing conditions of gravel bars, the river bluff, snags, and channel depth. No doubt one of the sites was in this area.

Chico Landing was an important connection point with the Shasta stages in the 1850s, and served as an outlet for the cattle ranch of Richard J. Walsh, a Shasta merchant, and for John Bidwell's agricultural products. The upper Sacramento River was the most convenient and fastest method of moving freight into the upper valley until the completion of the Oregon and Pacific Railroad to Red Bluff in 1872. Down-river traffic to Sacramento and San Francisco assumed importance after 1860.

Present day Chico Landing is located south of the Park Office between River Road and the Sacramento River. It consists of approximately 90 acres including high terrace riparian vegetation and an oak woodland with an understory of mixed grasses and poison oak. California wild grape and California pipevine can be found in abundance throughout the area.

Planning Considerations

Interpretive facilities planned for Chico Landing should take the following into account:

- The riparian environment.
- The historic aspects of Chico Landing.
- The value of a non-intensive, low maintenance environmental camp.
- The value of outdoor education.

Area Interpretive Themes

Primary Theme

The River Is the Laboratory: Chico Landing is an Outdoor Laboratory that Provides a Site for Educational Experiences that Demonstrate and Communicate the Value of Riparian Habitat

The particular opportunity that an outdoor laboratory would provide expands the scope of interpretation for the area and the park.

Focus

Chico Landing provides a site for education and recreation in a riparian environment.

Approach

Chico Landing provides a site for riparian research, outdoor education, recreational opportunities, and a primitive camp for educational groups.

Interpretive Trails

- Use existing trails where possible.

Interpretive Panels

- Interpretive panels should enhance the outdoor laboratory concept.
- Panels should interpret the riparian habitat.

Brochures

- Develop an Outdoor Laboratory brochure.
- Guidelines for use of the area.

PROPOSED INTERPRETATION

The primary interpretive use of this site will be as an outdoor laboratory for all age groups. The site will include space for a low maintenance, removable, primitive camp. This camp will only be available to educational groups who are using the riparian habitat as their teaching laboratory (See Appendix B).

Big Chico Creek Riparian Area

Background Information

Big Chico Creek Riparian Area is on approximately 45 acres between River Road, the Sacramento River, and Big Chico Creek. The site was part of Bidwell's Rancho Chico property. This area consists of a relatively mature riparian forest with inland successional stages present from the bare gravel bar next to the river to the mature cottonwood forest. There are some very old pecan and English walnut trees scattered throughout the area, evidence that this tract was once cleared and planted to orchard. Once abandoned as agricultural land, the area has returned to native riparian forest.

The mouth of the Big Chico Creek was probably the original Chico Landing site, although it is more than likely the location of the landing was moved numerous times. The area is subject to annual flooding of both the Sacramento River and Big Chico Creek. It is thickly vegetated and is important for wildlife habitat. Because public access to the Sacramento River has been established, it is one of the park's most consistently visited areas. Fishermen, sunbathers, and river floaters all take advantage of the adjacent gravel bar.

Planning Considerations

Interpretive facilities planned for Big Chico Creek Riparian Area should take the following into account:

- Boating, skiing, jet skiing, and tubing.
- Gravel bar recreation in the summer.
- School group visitation for riparian forest areas.
- Expansion of game trails into interpretive trails and fisherman's access.
- Serious seasonal flooding and accessibility problems.
- Gravel bars are nurseries for fish fry.

Area Interpretive Themes

Primary Theme

Changing Face of the River: Confluence of the Big Chico Creek and the Sacramento River Dynamically Redefines the Riparian Landscape

Secondary Themes

~

The River Requires Stewardship: With Good Stewardship a Healthy Riparian Environment Allows a Healthy Wildlife Environment to Return

~

Recreation and the Gravel Bar: Recreational Use of the Gravel Bar Interrupts the Natural Cycle as the Gravel Bar Provides Environment for Fish Fry, Fry Feeders, and Pioneer Forests

~

Safety in Recreation: The River Moves Relentlessly and Water Safety is a Principal Concern.

The variety of recreational activities, the water craft used, and the water safety skills the visitor brings to his day on the river make water safety an important concern which needs to be communicated to the visitor.

Focus

Interpreting riparian habitat and recreation in a riparian environment will be areas of focus.

Approach

Much of the interpretation to the general public at Big Chico Creek Riparian Area would be dependent on redefined trails, portable interpretive signs, brochures, and public contact with trained staff.

Interpretive Trails

- Nature walks will interpret the natural and wildland areas using existing trails.

Interpretive Panels

- Develop removable interpretive panels based on the themes for the area

PROPOSED INTERPRETATION

Interpretation at Big Chico Creek Riparian Area will consist of interpretive nature walks, interpretive panels that interpret the themes of the area, and special events as requested.

APPENDICES

A. Partial Outside Resource List

California Department of Fish and Game

The Wildlife Conservation Board

The Nature Conservancy

United States Fish and Wildlife Service

California State University, Chico

Butte County

Sacramento River Preservation Trust

B. Proposal For Special Primitive Group Camp And Outdoor Education Concept

An outdoor education area with sites for overnight camping is proposed for an area within the defined Chico Landing area. There is currently a location referred to by park employees as the "burn-pile", which is what the site was used for in the past. This area is accessible through a locked gate, a controlled entry-point, and has enough open space for a small parking lot, room for portable toilets, and so forth. A footpath leads to a nearby clearing adjacent to a small pond, which is a remnant of the old river channel. This area provides access to many unique examples of riparian habitat and river dynamics and therefore lends itself well to the establishment of an outdoor laboratory or classroom site. There is currently no location like this set up for educational activities in the Sacramento River vicinity near Chico.

There is growing interest in the Sacramento River riparian habitat by university students from California State University, Chico, and by students from schools in the Chico area. Additionally, there are no camping facilities within twenty miles of Chico. There are many requests from organized groups for overnight environmental living studies programs.

It is proposed that this area be developed to include environmental trails, an outdoor environmental classroom or instruction sites, overnight campsites, and parking and sanitary facilities. All facilities would be "primitive" and reversible. This facility would be available on a reservation basis only.

C. Bibliography

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N.D. *Diminishing Riparian Habitat.* Position Paper. State of California - Resources Agency.

—
1973. *Bidwell River Park - Sacramento River Boating Trail, Redding to Colusa Reconnaissance Study.* State of California - Resources Agency, Department of Parks and Recreation.

—
1974. *Bidwell River Park.* Feasibility Study. State of California - Resources Agency, Department of Parks and Recreation.

—
1975. *Observations of Furbearers Within the Riparian Habitat of the Upper Sacramento River.* Memorandum Report. State of California - Resources Agency, Department of Fish and Game.

—
1975. *Land Use Changes in the Sacramento River Riparian Zone, Redding to Colusa.* State of California - Resources Agency, Department of Water Resources.

—
1976, November. *Birds in Riparian Habitat of the Upper Sacramento River,* Memorandum Report. State of California - Resources Agency, Department of Fish and Game.

—
1978. *Sacramento River Environmental Atlas.* State of California - Resources Agency, Department of Water Resources.

Bidwell, John
1877. *Diary for 1877.* Mss., Library, Bidwell Mansion SHP, California Department of Parks and Recreation.

Brumley, Terry D.
1976. *Upper Butte Basin Study 1974-75.* Administrative Report No. 76-1. State of California - Resources Agency, Department of Fish and Game.

Hill, Dorothy

1978. *The Indians of Chico Rancheria.* State of California - Resources Agency, Department of Parks and Recreation.

Hood, Joe D., and Pamela J. McGuire
1981. *Bidwell River Park Project (Chico Landing); A Partial Inventory of Cultural Features.* Cultural Heritage Planning, Department of Parks and Recreation.

Mansfield, George C.
1918. *History of Butte County.* Historic Record Company.

McGaugh, Richard K.
N.D. *Resources Inventory, Bidwell River Park, Chico Landing, California, North Valley Area.* Mss., Bidwell-Sacramento River SP, California Department of Parks and Recreation.

McGaugh, Richard K.
1979. *Interpretive Proposals for the Indian Fishery Area of Bidwell River Park.* Mss., North Valley Area, Department of Parks and Recreation.

McGaugh, Richard K.
1995. *Interpretive Program Needs and Proposals.* Mss., Bidwell-Sacramento River State Park.

Riddell, Francis A.
1978. "Maidu and Konkow" in *Handbook of North American Indians; Volume 8: California.* William C. Sturtevant, editor; Robert F. Heizer, volume editor. Smithsonian Institution, Washington.

APPENDIX E

MEMORANDUM OF UNDERSTANDING BETWEEN THE DEPARTMENT, USFWS, AND CDFG (2001)

MEMORANDUM OF UNDERSTANDING

between

THE U.S. FISH AND WILDLIFE SERVICE
regarding the
SACRAMENTO RIVER NATIONAL WILDLIFE REFUGE

and

THE CALIFORNIA DEPARTMENT OF FISH AND GAME
regarding the
SACRAMENTO RIVER WILDLIFE AREA

and

THE CALIFORNIA DEPARTMENT OF PARKS AND RECREATION
NORTHERN BUTTES DISTRICT

I. PARTICIPANTS

This Memorandum of Understanding (MOU) is an agreement for land management purposes between the U.S. Fish and Wildlife Service regarding the Sacramento River National Wildlife Refuge (Service), the California Department of Fish and Game regarding the Sacramento River Wildlife Area (Department), and the California Department of Parks and Recreation regarding the Sacramento River State Parks (State Parks). In addition to presently owned and managed lands, this MOU will also apply to any future acquisitions by the Service, Department, and State Parks within the designated units.

II. PURPOSE

The purpose of this MOU is to formally document an agreement to mutually manage, monitor, restore and enhance lands managed for fish, wildlife, and plants along the Sacramento River in Tehama, Butte, Glenn, and Colusa Counties, California. An additional purpose is to communicate between agencies regularly to prevent duplicating or prescribing conflicting land management and acquisition efforts.

III. AUTHORITY

Fish and Wildlife Coordination Act of 1958, 16 U.S.C. 661.
Migratory Bird Conservation Act, 16 U.S.C. 715i.
Endangered Species Act of 1973, 16 U.S.C. 1531-1544.

IV. SCOPE OF ACTIONS

The affected area includes all lands owned and managed as the Sacramento River National Wildlife Refuge, Sacramento River Wildlife Area, and State Parks located along the Sacramento River in the designated counties. These lands have been identified in several documents as providing essential habitat for numerous species of fish and wildlife including many threatened and endangered species. The Service, Department, and State Parks mutually agree to manage these lands for the conservation of biological, cultural, and scenic values, and for promoting compatible wildlife-dependent recreational opportunities.

The Service, Department and State Parks agree to cooperate on the following items:

A. General Management:

- Combine efforts to mutually manage, monitor, restore, and enhance fish and wildlife management projects in the designated area.
- Coordinate management between agencies to prevent duplicating or prescribing conflicting management.

B. Public Use:

- Coordinate to provide public use opportunities that are consistent with the goals and needs of both agencies and their respective public.
- Provide clear, non-conflicting, straight-forward information to visitors.
- Cooperate in the development of public use plans. This would include cooperating with signing, brochures, use maps, and regulations.
- Promote mutual environmental education and special event opportunities.

In some instances, an agency may need to change its public use regulations in a specific area to protect natural resources (i.e. sensitive species) and provide a quality outdoor experience for the public. All public use will be offered in a manner that is consistent with land purchase and public trust documents, and is compatible with Service, Department, and State Parks purposes and missions.

C. Acquisition:

- Coordinate on acquisition plans.
- Prevent duplicate or conflicting acquisition efforts.
- Pursue joint funding opportunities when applicable.

D. **Maintenance:**

- Coordinate and share maintenance equipment and staff, whenever possible.
- Negotiate transportation and maintenance/repairs of shared equipment.
- Combine maintenance work parties to address specific concerns in a timely manner and to reduce funding needs for joint project.

E. **Biological Data:**

- SURVEYS. Data collection will be coordinated and standardized between agencies whenever possible to strengthen study results and to aid interpreting trends in wildlife and plant populations. Agencies agree to coordinate efforts in research of threatened and endangered species, migratory birds, fish, wildlife (including predators), and plant surveys. Combining funds for a specific contract, arranging for volunteer and staff assistance, and sharing equipment (i.e. boats, ATV, etc.) may facilitate research projects.

- RESEARCH. Research needs will be identified and efforts combined to initiate and fund specific research projects.

- MONITORING. Monitoring of restoration project sites will be coordinated so that the information is comparable, consistent and complementary. Efforts may be combined to fund and staff specific monitoring components.

F. **Permits:**

The agencies will communicate and cooperate on permits. Combined or regional environmental documents and permits that could benefit both agencies will be considered. Special-Use Permits will be required for all activities on Service lands and the equivalent required for all activities on Department and State Parks lands.

G. **Law Enforcement:**

The agencies will communicate and cooperate on law enforcement issues. Efforts will be made to discuss issues, potential problems, needed support and to exchange phone numbers and current staffing information on a regular basis. Signing efforts will be mutually updated and implemented.

H. **Coordination:**

Formal meetings will be held semi-annually in spring and fall at a minimum. The agencies will alternate hosting and provide agendas and notification for the meeting. The meeting agendas (jointly developed) may be changed under mutual consent of the agencies and additional meetings may be held to discuss specific topics. Suggested agenda topics include:

- Discuss current issues/events
- Provide relevant updates on agency activities
- Highlight a main topic/training opportunity at each meeting
- Set next meeting location, time, and date

V. PROJECT OFFICERS

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VI. MODIFICATION AND TERMINATION

This MOU agreement may be amended with consent all agencies. Amendments will be attached to this document after concurrence of the agencies.

This agreement may be terminated as mutually agreed or upon 6 months written notice by either agency.

VII. APPROVAL

This MOU shall be effective on the date all signatures are received and will be in effect for a period of five years. At that time, the MOU may be reviewed, updated, and extended for an additional five-year period.

Donald Koch — 5/14/01

Don Koch, Regional Manager — Date
Northern California - North Coast Region
California Department of Fish and Game
Redding, California

Banky Curtis — 6/07/01

Banky Curtis, Regional Manager — Date
Sacramento Valley - Central Sierra Region
California Department of Fish and Game
Rancho Cordova, California

Kathryn V. Foley — 7/6/01

Kathryn Foley, District Superintendent — Date
Northern Buttes District
Department of Parks and Recreation
Oroville, California

[signature] — 7/16/01

Kevin S. Foerster, Project Leader — Date
Sacramento National Wildlife Refuge Complex
U.S. Fish and Wildlife Service
Willows, California