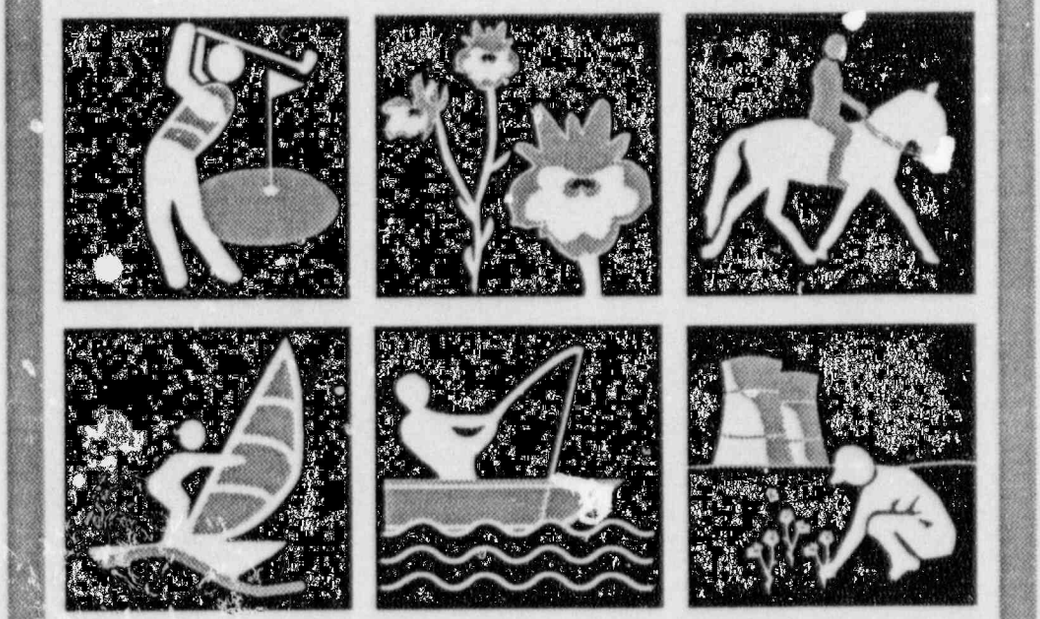
Draft
Environmental Impact Report

Rancho Seco Park



Master Plan

Lead Agency:

SMUD
Sacramento Municipal Utility District

Facilitator:

California Muni Golf

State Clearinghouse Number 93092046

January 1994

SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT ☐ 6201 S Street, P.O. Box 15830, Sacramento CA 95852-1830, (916) 452-3211
AN ELECTRIC SYSTEM SERVING THE HEART OF CALIFORNIA

January 19, 1994

Interested Persons:

SUBJECT: **DRAFT EIR FOR THE RANCHO SECO PARK MASTER PLAN STATE CLEARINGHOUSE NUMBER 93092046**

The Sacramento Municipal Utility District is forwarding this document for review and comment. Reviewers should focus on the comprehensiveness and accuracy of the draft Environmental Impact Report (EIR) in identifying and analyzing the possible impacts on the environment and ways in which the significant effects of the project might be avoided or mitigated. Comments are most helpful when they suggest additional specific mitigation measures or alternatives that would provide better ways to avoid or mitigate the significant environmental effects.

This document is being circulated for a 45-day public review period. Reviewers who wish to comment on the draft EIR are urged to submit written comments to SMUD no later than 5:00 p.m. March 9, 1994. Comments should be submitted to:

Ken Miller
SMUD
14440 Twin Cities Road
Herald, CA 95638-9799

Individuals and agencies are also invited to attend a public meeting to discuss the project:

Date: Tuesday, February 15, 1994
Time: 7:00 p.m.
Place: Consumer Education Center
6201 S Street, Sacramento, CA

All comments and responses to comment will be contained in a separate final EIR to be prepared prior to any final decisions on the proposed project. A copy of the final EIR will be sent to those who comment, therefore, it is requested that you keep this document for reference.

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JE25

RANCHO SECO NUCLEAR GENERATING STATION ☐ 14440 Twin Cities Road, Herald, CA 95638-9799; (209) 333-2935

Accommodations are available for disabled individuals. If you need assistance, or have any questions regarding the EIR project, please contact Ken Miller at (916) 452-3211, extension 4513.

The draft and final EIR will be presented to the SMUD Board of directors for certification prior to a decision on the project.

Sincerely,

Kenneth R. Miller
Senior Project Manager

Draft
Environmental Impact Report
for the
Rancho Seco Park Master Plan

State Clearinghouse Number 93092046

Lead Agency:

Sacramento Municipal Utility District
Rancho Seco Park
14440 Twin Cities Road
Herald, CA 95638-9799
Contact: Kenneth Miller
916/452-3211, Ext. 4513

Project Facilitator:

California Muni Golf
5 Park Plaza, Suite 1170
Irvine, CA 92714
Contact: Tim Palmquist
714/476-2246

Environmental Consultants:

Jones & Stokes Associates, Inc.
2600 V Street, Suite 100
Sacramento, CA 95818-1914
Contact: Kim Smith
916/737-3000

In Association with:

Foothill Resources, Ltd.

January 1994

Sacramento Municipal Utility District. 1994. Draft environmental impact report for the Rancho Seco Park master plan. January. (JSA 93-202.) Sacramento, CA. Environmental consultant: Jones & Stokes Associates, Inc., Sacramento, CA.

Table of Contents

List of Tables

List of Figures

Acronym List

$\mu g/m^3$	micrograms per cubic meter
af	acre-feet
APE	area of potential effect
ARS	Archaeological Resource Service
B.P.	before present
BMPs	best management practices
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
cm	centimeters
CMG	California Muni Golf
CO	carbon monoxide
Corps	U.S. Army Corps of Engineers
CPRR	Central Pacific Railroad
CSA	county service area
DFG	California Department of Fish and Game
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
FSC	Folsom South Canal
gpd	gallons per day
gpm	gallons per minute
LOS	level of service
m	meters
mg/l	millgrams per liter
mph	miles per hour
NDDB	Natural Diversity Data Base
NHPA	National Historic Preservation Act
NOI	notice of intent
NOP	notice of preparation
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OHP	Office of Historic Preservation
PDN	predischarge notification
PM10	inhalable particulate matter
ppd	pounds per day
ppm	parts per million
ROG	reactive organic gases

RWQCB	regional water quality control board
SACOG	Sacramento Area Council of Governments
SCS	U.S. Soil Conservation Service
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMUD	Sacramento Municipal Utility District
SWPPP	stormwater pollution prevention plan
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
USLE	Universal Soil Loss Equation
VMT	vehicle miles traveled

Chapter 1. Introduction

Sacramento Municipal Utility District (SMUD) is proposing to adopt a park master plan for Rancho Seco Park. SMUD has developed a master plan, which includes a public golf course, an equestrian center, a wetlands preserve, a nature center, hiking trails, and expansion of the existing recreational facilities (fishing, boating, sailboarding, and picnicking).

This draft environmental impact report (EIR) has been prepared to assess the impacts of the proposed park master plan. As presented in Chapter 2, "Project Description", SMUD's goals for the project are to:

- continue to provide public park uses in compliance with the development agreement with the State of California,
- expand existing public park uses to meet the identified needs of the public,
- identify and provide long-term protection for the identified waters of the United States and various special-status plant and animal species on the site, and
- develop recreational uses that are fiscally self-supporting at buildout.

PURPOSE OF THE ENVIRONMENTAL IMPACT REPORT

This draft EIR has been prepared by SMUD as the lead agency pursuant to the California Environmental Quality Act (CEQA) (Public Resources Code 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations 15000 et seq.), as amended. CEQA requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority. Approval of the park master plan constitutes a "project" under CEQA.

An EIR is an informational document used in the planning and decision-making process. It is not the purpose of an EIR to recommend either approval or denial of a project.

An EIR is a public document that assesses the environmental effects related to the planning, construction, and operation of the project and indicates ways to reduce or avoid possible environmental damage. The EIR also discloses significant environmental impacts

that cannot be avoided, growth-inducing impacts, effects found not to be significant, and significant cumulative impacts of all past, present, and reasonably anticipated future projects.

INTENDED USES OF THE ENVIRONMENTAL IMPACT REPORT

This EIR will be used by SMUD to determine whether adoption and associated implementation of the park master plan will result in significant environmental impacts. CEQA requires the decision makers to balance the benefits of a proposed project against its unavoidable environmental risks. If environmental impacts are identified as significant and unavoidable, SMUD may still approve the project if it believes that social, economic, or other benefits outweigh the unavoidable impacts. SMUD would then be required to state in writing the specific reasons for approving the project based on information in the EIR and other information in the record. This reasoning is called, according to Section 15093 of the State CEQA Guidelines, a "statement of overriding considerations."

As allowed by the State CEQA Guidelines, this EIR is a project EIR. This type of EIR focuses primarily on the changes in the environment that would result from the development project. The EIR examines all phases of the project, including planning, construction, and operation.

FOCUS OF THE ENVIRONMENTAL IMPACT REPORT

As provided for in the State CEQA Guidelines, the focus of the EIR is limited to specific issues and concerns identified by SMUD as possibly significant. SMUD circulated a notice of preparation (NOP) of a draft EIR in September and October 1993. The NOP included an initial study with a project description, a discussion of existing and proposed recreational development, and an environmental checklist (Appendix A). The initial study identified the following issues to be addressed in the EIR:

- geology and soils,
- water resources,
- biological resources,
- land use, and
- cultural resources.

SMUD mailed the NOP to numerous affected agencies, organizations, and individuals. Comments received on the NOP (Appendix B) requested that the access needs of the project site to State Route 104 be addressed in greater detail and that the air quality analysis contained in the NOP be transferred to the text of the EIR; therefore, this draft EIR includes separate chapters on transportation and circulation and on air resources. It should be noted that the air quality analysis has been updated to reflect changes in the assumptions about construction activities.

TERMINOLOGY USED IN THE ENVIRONMENTAL IMPACT REPORT

This EIR recognizes the following terminology that may be used to denote the significance of environmental impacts of a proposed project:

- "no change" means that no change from existing conditions is expected to occur;
- a "less-than-significant" impact would cause no substantial adverse change in the environment (no mitigation is recommended);
- a "significant" impact would or could cause a substantial adverse change in the environment (mitigation is recommended); and
- a "significant and unavoidable" impact is one that would cause a substantial adverse change in the environment and cannot be avoided if the project is implemented; mitigation may be recommended but will not reduce the impact to a less-than-significant level.

The EIR also identifies mitigation measures. The State CEQA Guidelines (Section 15370) define mitigation as:

(a) avoiding the impact altogether by not taking a certain action or parts of an action;

(b) minimizing impacts by limiting the degree or magnitude of the action and its implementation;

(c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

(d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and

(e) compensating for the impact by replacing or providing substitute resources or environments.

AGENCIES THAT MAY USE THE ENVIRONMENTAL IMPACT REPORT

The EIR may be used by several responsible agencies that also have review authority over the project. As stated in the State CEQA Guidelines (Section 15231):

A final EIR prepared by a lead agency or a negative declaration adopted by a lead agency shall be conclusively presumed to comply with CEQA for purposes of use by responsible agencies that were consulted pursuant to Sections 15072 or 15082, unless one of the following conditions occurs:

(a) The EIR or negative declaration is finally adjudged in a legal proceeding not to comply with the requirements of CEQA, or

(b) A subsequent EIR is made necessary by Section 15162 of these Guidelines.

Permits, agreements, and coordination necessary for project implementation will include the following:

1. A grading and erosion control permit will be required from Sacramento County Department of Public Works for the golf course, clubhouse, maintenance compound, and other uses.

2. A streambed alteration agreement (Fish and Game Code Section 1600 et seq.) will need to be obtained from the California Department of Fish and Game (DFG) for any work within the 100-year floodplain consisting of, but not limited to, diversion or obstruction of the natural flow or changes to the channel, bed, or bank of any river, stream, or lake.

3. A National Pollutant Discharge Elimination System (NPDES) general construction activity stormwater permit will be required from the RWQCB.

In addition to these permits, building permits will be required from Sacramento County for construction of the clubhouse, maintenance building, comfort stations, and other structures.

Sacramento County Department of Public Works also commented in response to the NOP that if the project is approved, SMUD should comply with the following conditions:

- Prior to issuance of a building permit, provide drainage easements pursuant to the Sacramento County Interim Urgency Ordinance relating to floodplain management and the Sacramento County Improvement Standards, including any fee required by Ordinance No. 1 of the Sacramento County Water Agency.

- Prior to issuance of a building permit, provide minimum pad/flood elevations pursuant to the Sacramento County Interim Urgency Ordinance relating to floodplain management.

- Prior to grading or building activity, obtain applicable DFG and Corps permits.

A Section 404 nationwide permit number 26 was authorized on November 29, 1993, by the Corps to allow the filling of wetlands under Corps jurisdiction. The permit was issued with eight special conditions. The permit will be effective upon receipt of the Section 401 water quality certification or waiver. Water quality certification (Section 401 of the Clean Water Act) or a waiver of the certification from the regional water quality control board (RWQCB) is required for all Section 404 permits.

PUBLIC REVIEW PROCESS

SMUD has been encouraging public review during the environmental review process. The NOP was distributed for a 30-day comment period. SMUD also held a scoping meeting on September 28, 1993, to receive comments; notice of the public scoping meeting was published in several local newspapers. In addition, SMUD posted information at the entrance booth to Rancho Seco Park to inform individuals using the park.

This draft EIR is being circulated for a 45-day public review period. During the public review period, SMUD will hold a public hearing in the evening at SMUD offices at 6201 S Street, Sacramento, to receive written and oral comments. The purposes of review include sharing expertise, disclosing agency analyses, checking for accuracy, detecting omissions, identifying public concerns, and soliciting counterproposals.

In reviewing draft EIRs, readers should focus on the sufficiency of the document in identifying and analyzing the possible impacts on the environment and ways in which the significant effects of the project might be avoided or mitigated. Comments are most helpful when they suggest additional specific mitigation measures that would provide better ways to avoid or mitigate significant environmental impacts.

Comments may be made on the draft EIR either in writing before the end of the comment period or at the public hearing. Following the close of the public comment period, SMUD will prepare and publish a second document that contains all the responses to significant environmental points raised in the review and consultation process. The draft EIR and the final EIR (responses to comments) will then be forwarded to the SMUD board of directors for certification.

Chapter 2. Project Description

PROJECT LOCATION

Rancho Seco Park is located immediately south of Twin Cities Road (State Route 104) and 11 miles east of State Route 99 in a rural area of southeastern Sacramento County (Figure 2-1). The site is located in Township 6N, Range 8E, west of the Sierra Nevada mountain range (Figure 2-2). This location is approximately 10 miles west of the community of Ione, 10 miles south of the community of Rancho Murieta, 13 miles southeast of the community of Elk Grove, 14 miles northeast of the City of Galt, and 25 miles southeast of the City of Sacramento. Boundaries of the Rancho Seco site extend eastward to within 3 miles of the Amador County line and southward to within 3 miles of the San Joaquin County line.

SITE DESCRIPTION

SMUD owns and operates the 2,480-acre site that includes a shut-down nuclear power plant, a solar power generating facility, and an existing 433-acre Rancho Seco Park and Lake complex. The proposed project is the adoption of a park master plan for 1,600 acres of the Rancho Seco site, of which the existing 433-acre park is a part.

The project site is located in an area of flat to rolling rangeland that has been used primarily for cattle grazing. The site is in a broad alluvial plain that slopes westward from the Sierra Nevada mountains at an approximate rate of 30 feet per mile. Site elevation ranges from 150 feet to 280 feet above mean sea level. Streambeds for Hadselville Creek (bounding the site to the north) and Dry Creek (to the south) have been eroded to an elevation approximately 100 feet below that of the west-sloping upland surface.

The project site is characterized by rolling hills of grassland with seasonal wetlands scattered throughout low-lying areas. The center of the park site supports the 164-acre Rancho Seco Lake, which was constructed to provide emergency cooling water storage for the downslope Rancho Seco nuclear power facility and is used for recreation.

Undeveloped portions of the site support an extensive and relatively dense occurrence of vernal pools and swales interspersed with annual grasslands. Portions of the site are seasonally grazed by livestock, and several stock ponds have been created to provide

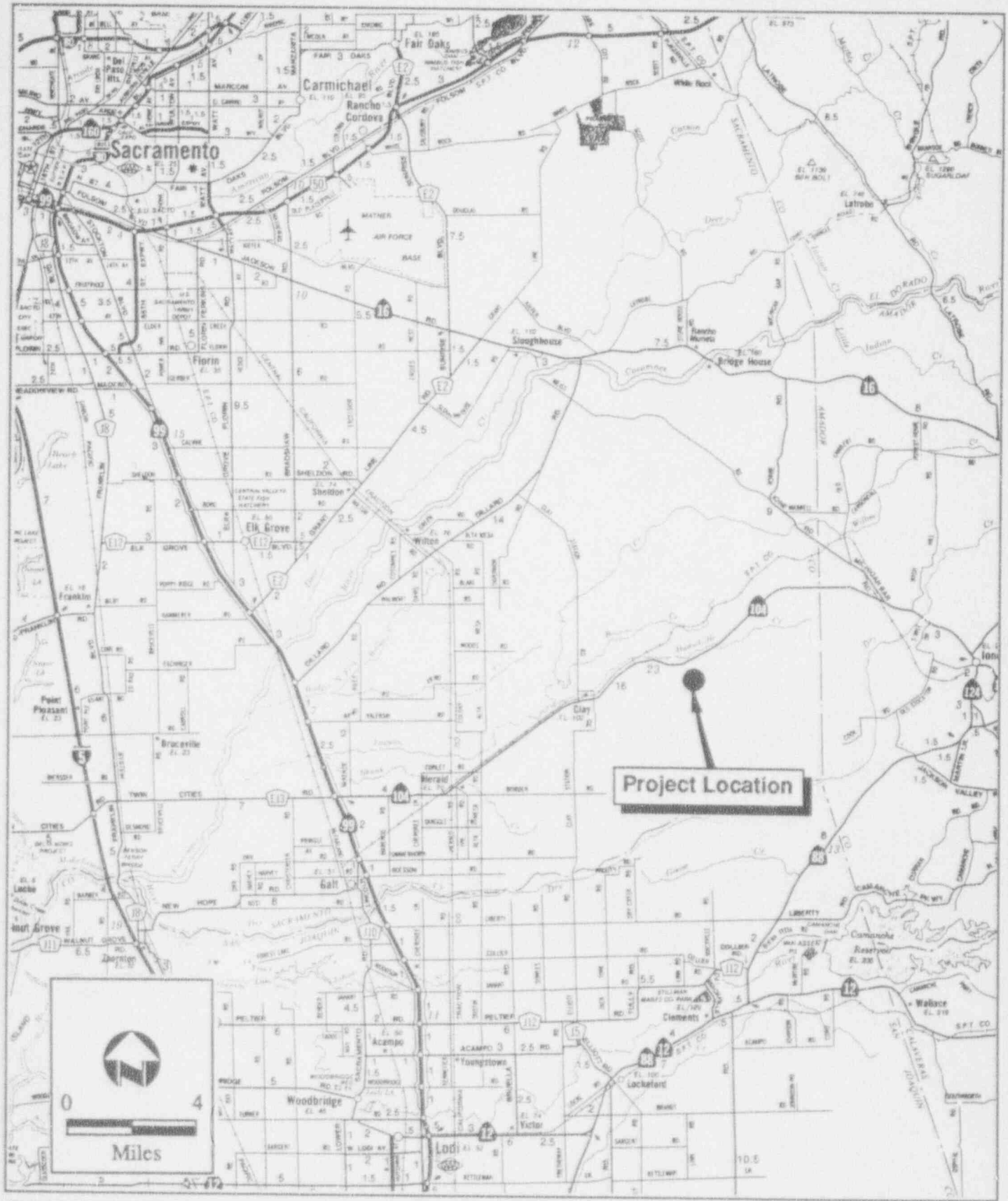


Figure 2-1. Regional Location

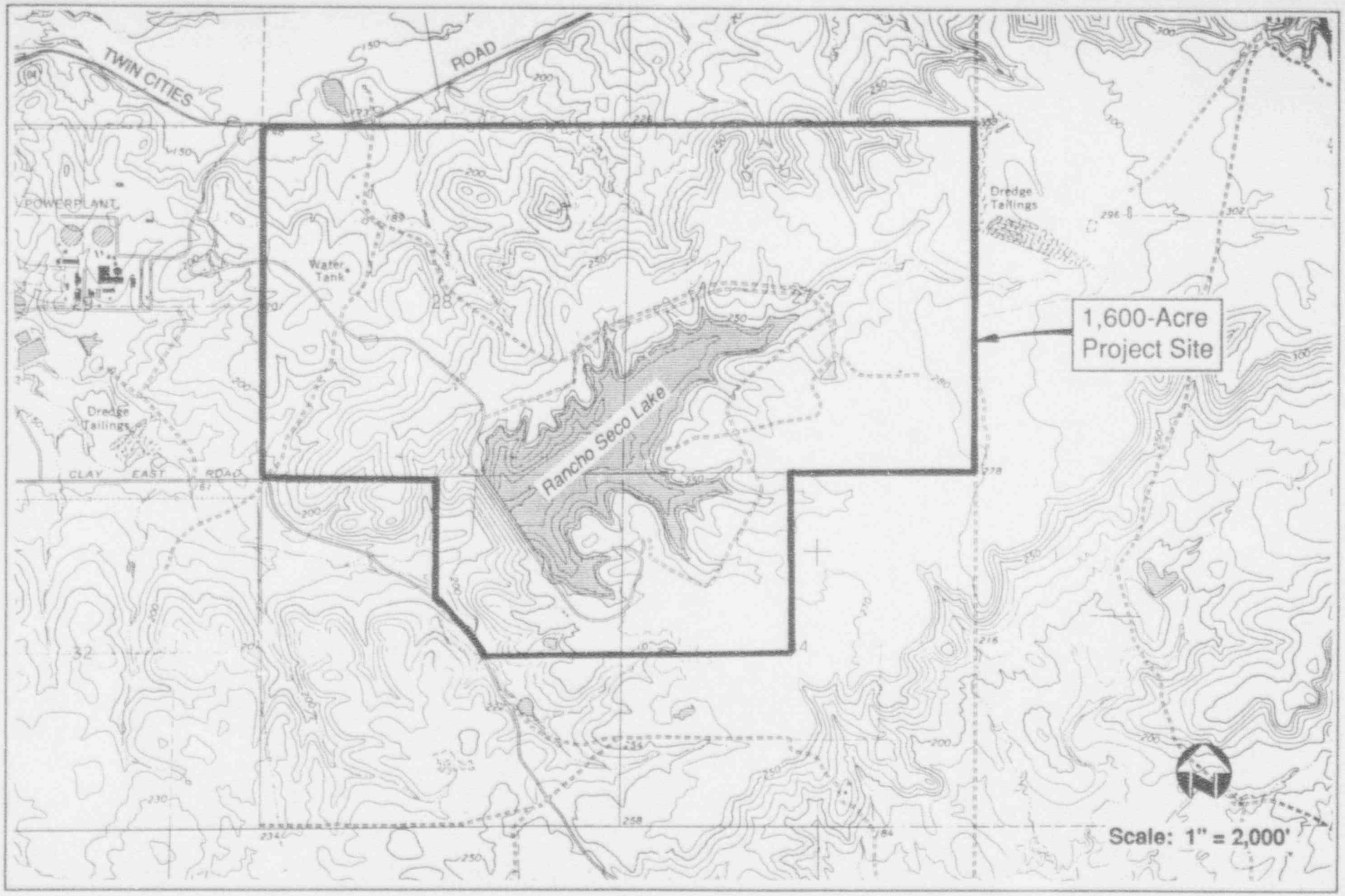


Figure 2-2. Project Location

water to livestock. Small irrigated pasture areas, some of which are fallow, are found in the southeastern quarter of the site.

The most common wildlife in the area, which are generally found near water, include skunks, brush rabbits, raccoons, several species of waterfowl (mallards, teals, and gadwalls), and wading birds. Grassland birds, including sparrows, finches, blackbirds, meadowlarks, and raptors, have also been observed in the area.

A detailed description of the site's environmental setting is contained in the following focused studies:

- Special-Status Plant and Wildlife Species Surveys and Habitat Assessments for the Rancho Seco Project Site (Jones & Stokes Associates 1993a).

- Final Delineation of Waters of the United States, Including Wetlands, for the Rancho Seco Project Site (Jones & Stokes Associates 1993b).

These reports are available for review at SMUD's headquarters and are incorporated herein.

BACKGROUND

Construction of the Rancho Seco nuclear power plant began in 1969, commercial operation began in April 1975, and the plant ceased operating in 1989. SMUD has adopted a decommissioning plan that anticipates termination of SMUD's Nuclear Regulatory Commission license by 2011 and restoration of the nuclear power plant site (Sacramento Municipal Utility District 1991). As part of the development agreement to construct and operate the power plant, SMUD contracted with the State of California to operate a portion of the site as a public park for 50 years. The focus of this EIR is the master plan for this park. Existing park facilities include group campgrounds; recreational vehicle sites; group and family picnic areas; and the Rancho Seco Lake with fishing and swimming amenities (Figure 2-3).

In 1971, SMUD entered into the contract with the State of California that granted SMUD funding for the construction of the Rancho Seco dam and reservoir, recreational facilities, and water and sanitary facilities associated with the recreation plan. This contract requires SMUD to maintain these facilities in a manner that supports public recreational uses and fisheries. The reservoir may not be drawn down below an elevation of 237 feet without the prior written consent of the state. The contract remains in effect until December 31, 2022.

In accordance with the state contract, SMUD entered into a contract with Sacramento County in 1971. Under terms of the contract with the county, SMUD agreed

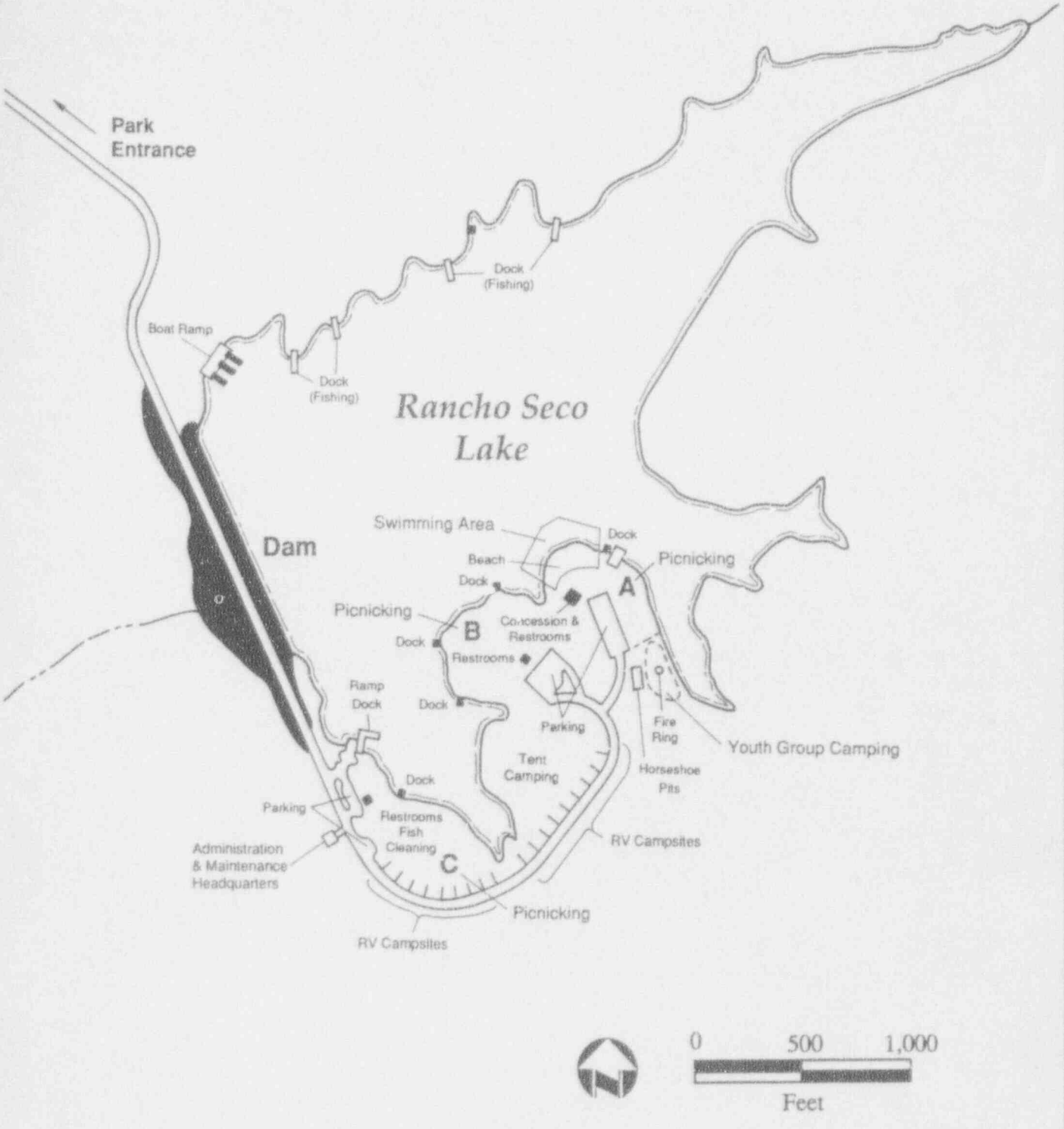


Figure 2-3. Rancho Seco Park: Existing Development

to construct water, sanitary, and recreation facilities and to operate the reservoir in accordance with SMUD's state contract. The County of Sacramento agreed to manage these facilities for the full term of SMUD's contract with the state. However, as a result of a budget shortfall in 1992, Sacramento County discontinued management of the park facilities in September 1992 and SMUD assumed these responsibilities.

GENERAL DESCRIPTION OF THE PROJECT

The project is the adoption of a park master plan. SMUD's goals for the project are to:

- continue to provide public park uses in compliance with the development agreement with the State of California,
- expand existing public park uses to meet the identified needs of the public,
- identify and provide long-term protection for the identified waters of the United States and various special-status plant and animal species on the site, and
- develop recreational uses that are fiscally self-supporting at buildout.

The purpose of the project is to develop an array of recreational facilities that meet the needs of the public, are fiscally self-supporting at buildout, and are sensitive to the environment. One of the reasons the project is needed is to provide revenue to cover ongoing operation and maintenance costs associated with the public park, which SMUD is contractually obligated to operate.

Existing Recreational Development

Rancho Seco Park offers multiple-use facilities and activities: group camping, 10 individual camp sites, 18 recreational vehicle sites for fully self-contained vehicles, two reservable picnic areas for groups of up to 250 people, and more than 100 family picnic sites. The park includes a store/snack bar (operated by a concessionaire), three restrooms (two with solar-heated shower facilities), and a pay phone.

The park is open year round, 7 days per week, from 7:00 a.m. until sundown. The lake is stocked with trout twice a month in winter, making it a popular fishing spot for catfish, blue gill, bass, crappie, and trout (seasonal). Electric motorboats and rowboats are allowed on the lake and paddleboats are available for rental. Windsurfing lessons and equipment rentals have been provided in 1992 and 1993.

Two boat launches are located on the lake, one on the north side and one on the south. Six fishing piers are at various locations around the lake. A swimming area with a sandy beach is separated by buoys from the rest of the lake on the east shore. Lifeguards are provided by SMUD during summer.

Windsurfing lessons and equipment rentals were provided at Rancho Seco Lake from May to October (the windsurfing season) in 1992 and 1993 through a concession contract. In 1993, the following windsurfing events were provided at Rancho Seco Lake:

April 17	-	Concession grand opening
May 8	-	Spring up on a plane party - balloon races and raffle
July 5	-	Demonstration day - windsurfing equipment, barbecue, and raffle
August 7	-	Midsummer madness party - balloon races, barbecue, and raffle
September 11	-	Windsurfing swap meet
September 18	-	Alumni day - student reunion, barbecue, balloon race, raffle, open-class speed race

The lake contains four types of fish: catfish, bluegill, bass, and trout (planted seasonally). The catfish, bluegill, and bass have been established in the lake for years and maintain a steady population. Larger fish weigh up to 18 pounds for bass, 4 pounds for bluegill, and 30 pounds for catfish. Trout weighing up to 5 pounds have recently been planted.

Most lake facilities are located on the south and west shores of the lake. The peak number of persons at Rancho Seco Lake on a summer weekend is approximately 5,000.

Proposed Recreational Development

SMUD has completed a park master plan. The park master plan includes a public golf course, equestrian center, wetlands preserve, nature center, hiking trails, multi-use open space/picnic area, and par course and expansion of the existing recreational facilities (Figure 2-4).

In terms of size, the primary uses will be the open space preserve, golf course, and equestrian center. Other uses identified in the park master plan include camping sites, a nature center, hiking trails, and a multi-use open space/picnic area.

Golf Course

SMUD's intention is to provide a public play course that will provide the community with a high-quality, new facility and provide revenue for SMUD to continue park operations and finance development of the park master plan. The golf course will be designed by Palmer Course Design Company, providing a signature Arnold Palmer Golf Course.

The golf course will include a clubhouse sited to enable users to view the lake and the 18th green. The clubhouse will include offices, locker rooms, a pro shop, a snack bar, and a restaurant. The interior seating is anticipated to accommodate 60 people in the main dining area and 40 people in the bar/lounge.

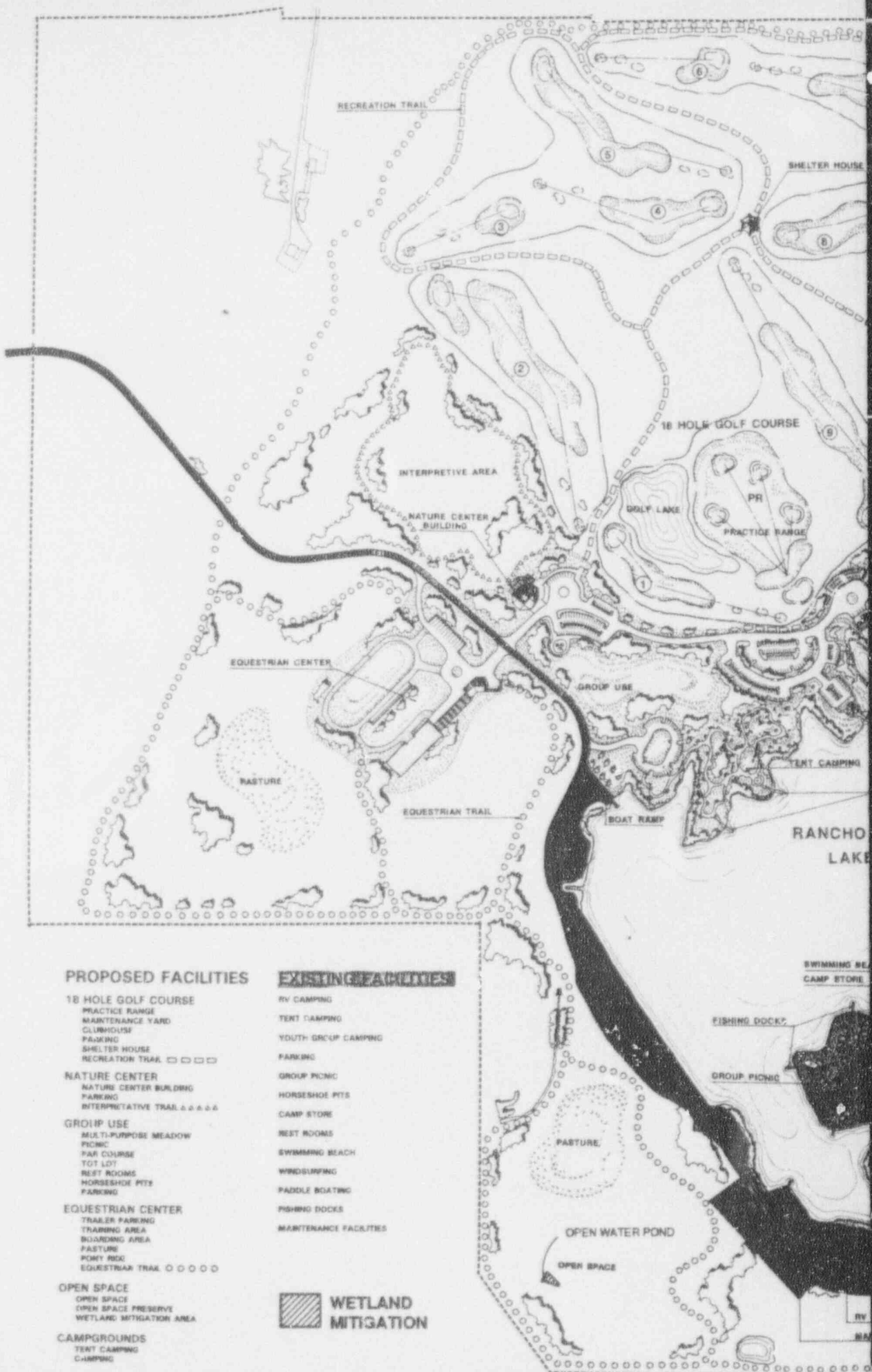
The golf course maintenance facility will include a golf course superintendent's office, mechanic's office and parts room, chemicals room, fertilizer room, and irrigation room. A vehicle washing area will also be provided at the maintenance site. Gas and diesel fuel tanks, a refuse disposal area, and a mechanics' area will be located in the 0.5-acre asphalt area adjacent to the maintenance building.

Comfort stations will be provided at two locations on the course. Each station will include restrooms that are proposed to operate with septic tanks and leach fields or seepage pits.

A gradual transition at the golf clubhouse to native ornamental trees will enhance the appearance of the entry drive, frame building features, screen the parking lot, shade the parking area, and provide user interest.

The goal of the Palmer Course Design Company is to create a golf course that can be played by all levels of golfers but is difficult enough to interest the better players. In addition, the golf course architect plans to use the existing topography in the course design to the fullest extent possible.

The rolling topography of the site provides a natural setting in which to construct a golf course. The golf course site will require approximately 100,000 cubic yards of grading for the golf course, clubhouse, and maintenance facility. The park's existing landscape features, such as vernal pools, rolling grasslands, ponds, and the lake, will provide aesthetic enhancements as well as playing hazards and challenges. The playable areas of the golf course will be of hybrid Bermuda grass, which will be well maintained in heavily played areas, with a transition in the rough to a more natural condition that will blend into the native bunch grass.



PROPOSED FACILITIES

18 HOLE GOLF COURSE
- PRACTICE RANGE
- MAINTENANCE YARD
- CLUBHOUSE
- PARKING
- SHELTER HOUSE
- RECREATION TRAIL

NATURE CENTER
- NATURE CENTER BUILDING
- PARKING
- INTERPRETATIVE TRAIL

GROUP USE
- MULTI-PURPOSE MEADOW
- PICNIC
- PAR COURSE
- TOT LOT
- REST ROOMS
- HORSESHOE PITS
- PARKING

EQUESTRIAN CENTER
- TRAILER PARKING
- TRAINING AREA
- BOARDING AREA
- PASTURE
- PONY RIDE
- EQUESTRIAN TRAIL

OPEN SPACE
- OPEN SPACE
- OPEN SPACE PRESERVE
- WETLAND MITIGATION AREA

CAMPGROUNDS
- TENT CAMPING
- CAMPING

EXISTING FACILITIES

- RV CAMPING
- TENT CAMPING
- YOUTH GROUP CAMPING
- PARKING
- GROUP PICNIC
- HORSESHOE PITS
- CAMP STORE
- REST ROOMS
- SWIMMING BEACH
- WINDSURFING
- PADDLE BOATING
- FISHING DOCKS
- MAINTENANCE FACILITIES

WETLAND MITIGATION

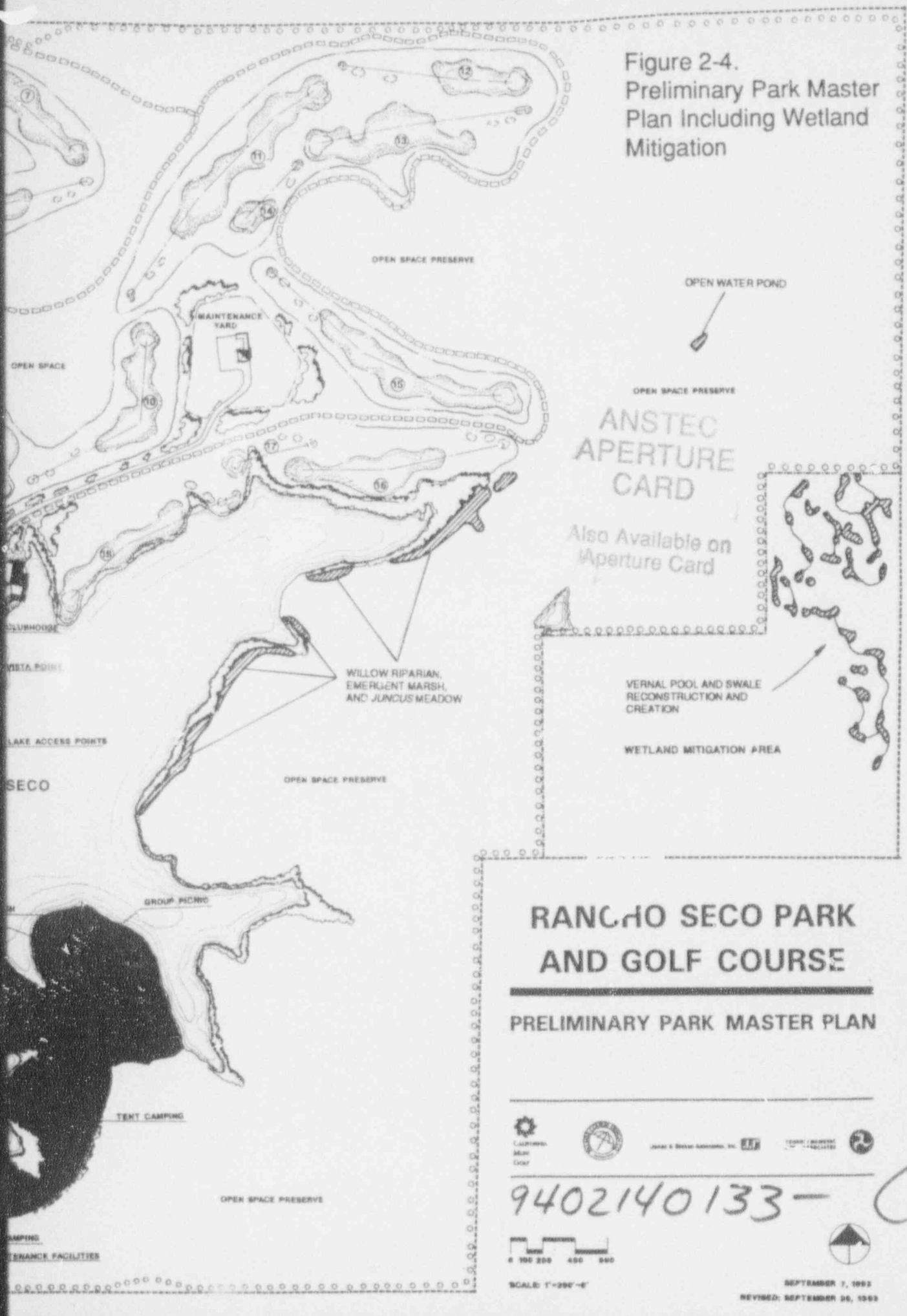


Figure 2-4.
Preliminary Park Master Plan Including Wetland Mitigation

RANCHO SECO PARK AND GOLF COURSE

PRELIMINARY PARK MASTER PLAN

9402140133- 01

SCALE: 1"=200'-0"

SEPTEMBER 7, 1993
REVISED: SEPTEMBER 30, 1993

Open Space

The park master plan identifies three types of open space: open space, open space preserve, and wetland mitigation area. Open space is located in the golf course and south of the pasture near the dam. This open space will not be developed any further but will be open to the public with recreational trails and will not be fenced.

Open space preserve areas are located along the east and southeast sides of the lake. These preserve areas will be fenced to restrict public access. The preserve areas south and east of the lake contain the highest concentration and quality of vernal pools. This open space area includes three sensitive plant species, Boggs Lake hedge-hyssop, Greene's legenere, and viscid orcutt grass. Also, three species of special-status fairy shrimp were located throughout the site. The species tend to occur in the deeper pools on the site; most of the deeper pools are located in the open space preserve.

The wetland mitigation area is located on the east side of the park and is the location where wetlands will be constructed. These wetlands will be monitored for 5 years, after which time this area will revert to open space preserve.

Nature Center/Recreational Trail

The character and uniqueness of Rancho Seco Park would be enhanced by a nature center, which will inform and educate the public on the ecological aspects of the site. Wildlife, wetlands, and native plant materials are logical subjects. The development of the park itself will set an example of development that is compatible with nature.

A nature center building is proposed with areas for exhibits, lectures, meetings, group tours, and a gift shop. The building should be near an open space preserve and wetlands area to accommodate an interpretive area. Adequate parking should be provided, with provisions for school buses and other visiting groups.

The nature center building can also serve as the gateway to the proposed recreation trail, which would go through and around the golf course. The trail layout will take into consideration preserving wetlands and avoiding conflict with the golfers. The Palmer Course Design Company is enthusiastic about the dual use of the land; the course layout allows for the safe use of golf and a recreation trail.

The trail will be controlled, possibly with separate materials or lanes for walkers, joggers, and bicycles. The trail materials and layout must be sensitive to and compatible with the existing environment.

A shelter house is proposed on a knoll in the middle of the golf course. This observation point could be a focal point for golfers and recreationalists.

Group Use

The group use area will provide a wide array of recreational facilities on the west side of the lake. It will be centrally located, close to parking, camping, the golf course, the nature center, and the equestrian center.

A large, turfed, open meadow will provide multi-use opportunities for day-use groups, adjacent campers, and related special events for the nature center and golf course.

Recreational facilities will include, but not be limited to, picnic tables, tot lots, par course, horseshoe, volleyball, badminton, and softball. Parking, restrooms, and the existing boat ramp and fishing docks will be located nearby.

Equestrian Center

The location of the Rancho Seco Park is rural in character. One of the needs of the nearby residents is an equestrian center. Ample room at the park enables providing proposed access, boarding, and trailer parking areas. The equestrian center will include, but not be limited to, an arena for training, horse boarding area, horse shoeing area, storage sheds, trailer parking, pasture(s), and trail network. A prime location exists near the access road that is away from the other proposed recreational development and wetland mitigation areas.

An equestrian concessionaire will probably be retained to operate the facility to serve the needs of the region and the park users.

Campgrounds

A new camping area is proposed along the north/west shore, adjacent to the group use area. The boat ramp and fishing docks will be nearby. The equestrian center, nature center, and golf course will be within easy walking distance.

The new campsites could be developed for overnight facilities. Parking, rest rooms, and solar-heated shower facilities could also be developed for the benefit of park users.

Space is available for additional tent camping and recreation vehicle campsites at the existing campsites on the east side of the lake.

Other Recreational Facilities

As the recreational facilities are developed, minor additions/revisions may be needed to serve the needs of the public. For example, a par course is proposed for the new group use area. A par course usually consists of a jogging trail with exercise stations. A revision may be to incorporate all the exercise stations into one location.

The basic conceptual layout should remain. The proposed recreational development is concentrated near the west shore of the lake, leaving the east side of the park for open space preserve and wetland mitigation.

Wetland Mitigation Plan

The wetland mitigation plan consists of the predischarge notification (PDN), wetland preservation and compensation plan, and conceptual mitigation plan. This project has been assigned the identification number 1999300366 by the U.S. Army Corps of Engineers (Corps).

Predischarge Notification

On October 28, 1993, SMUD submitted the PDN for the proposed Rancho Seco park master plan project to the Corps for review and approval. SMUD applied for a nationwide permit, rather than an individual permit, because the project meets the following special conditions for nationwide permit 26 (33 Code of Federal Regulations [CFR] 330):

- The project affects less than 10 acres of waters of the United States, including wetlands.
- The discharge is part of a single and complete project.
- The project affects nontidal, intermittent streams and seasonal wetlands above headwaters within the Hadselville Creek watershed.
- The project does not affect interstate or navigable waters of the United States.

As part of preparing the PDN application, SMUD assessed the feasibility of offsite and onsite alternatives. The offsite alternative was considered impractical because, under contractual obligations with the state, SMUD is required to operate the Rancho Seco site as a public park. Various onsite alternatives were evaluated from 1990 to 1993 as part of the park design process. Implementation of the original plan would have resulted in direct impacts on 17.18 acres of waters of the United States, including wetlands. Following completion of the jurisdictional wetland delineation and receipt of comments from the

Corps, U.S. Fish and Wildlife Service (USFWS), and the U.S. Environmental Protection Agency (EPA), SMUD prepared a park master plan that reduced the affected wetland area from 17.18 to 4.28 acres.

To ensure that no net loss of wetland habitat values will occur, onsite wetland mitigation is proposed.

A copy of the PDN is on file at the Corps Sacramento District office, 1325 J Street, 14th Floor, Sacramento.

Wetland Preservation and Compensation Plan

The primary objective of the wetland preservation and compensation plan is to minimize impacts on existing jurisdictional areas and their functions and values to the maximum extent practicable, while allowing the development of the park master plan.

For vernal pools and swales, willow riparian woodland, emergent marshes, and open water areas affected by the project, the plan's objective is to mitigate by in-kind replacement to ensure that no net loss occurs in wetland area, function, and value. For seeps and ephemeral drainages, the objective is to provide out-of-kind mitigation that will result in improved wetland functions and values over those of the affected areas. An overall mitigation-to-impact acreage ratio of 1.6:1 for the mitigation effort is proposed.

Three general types of mitigation will be implemented for the project:

- reconstructing previous vernal pool, swale, and mound microtopography and creating new vernal pools and swales;
- excavating upland areas along the shore of Rancho Seco Lake to create willow riparian woodland, emergent marsh, and *Juncus* meadow areas; and
- constructing two small earthen dams on ephemeral drainages to create open water ponds.

Mitigation areas will be monitored for 5 years to document the extent of successful wetland habitat establishment. The use of a 5-year monitoring period is based on the assumption that the performance criteria will be achieved within 5 years after construction of mitigation wetlands. The monitoring period will be complete when the Corps verifies in writing to SMUD that the performance criteria have been met and no further monitoring is required.

The monitoring program primarily involves monitoring of mitigation areas for hydrology, vegetation, and special-status invertebrates. Monitoring of natural, undisturbed vernal pools and swales on the site will also be conducted to serve as a control against which

the mitigation pool and swale data will be compared. Potential problems with accelerated soil erosion and site intrusion will be documented in the annual monitoring report.

All mitigation areas will be located on land owned and managed by SMUD. The primary management objective for the mitigation areas and the open space preserve includes protection of existing and created wetland resources. To support this objective, public access will be discouraged. The proposed equestrian trail, following the existing firebreak, will be the only public access trail on the east side of the lake. Guided nature walks, proceeding from the proposed nature center, could take people through the open space preservation areas, following the existing firebreaks, to further educate the public on natural resource values.

The open space preservation area in the eastern portion of the project site will continue to be fenced. This open space preserve on the east side of the lake will include interpretive signs to educate the public and discourage human impacts on natural resources. The site will continue to be managed for livestock grazing; however, grazing will be managed so it will not diminish open space or wetland functions, values, or long-term sustainability.

Conceptual Wetland Mitigation Plan

The project will affect 4.28 acres of jurisdictional waters of the United States, including vernal pools, vernal swales, ephemeral drainages, seeps, emergent marshes, willow riparian woodland, and open water. The project has been designed to avoid 195.20 acres of waters of the United States, including wetlands, on the project site. The mitigation plan describes the construction of 6.9 acres of wetlands as mitigation for the 4.28 acres of jurisdictional areas affected by the project. A summary of the delineated, avoided, affected, and mitigated waters of the United States is found in Table 2-1.

Areas proposed for mitigation are shown in Figure 2-4. Vernal pools and vernal swales will be created in the 87-acre leveled pasture area in the southeastern portion of the site. About 3.03 acres of vernal pools and 0.90 acre of vernal swales will be created in this area to compensate for the filling of 1.31 acres of vernal pools and 0.45 acre of vernal swales, respectively. Topsoil will be salvaged from all wetlands that would be affected by the project. The salvaged topsoil will be spread onto newly created wetland areas to provide a source of wetland plant seeds and invertebrates.

Loss of emergent marsh and willow riparian woodland will be mitigated by creation of in-kind habitat along the eastern shore of Rancho Seco Lake. The loss of ephemeral drainages and seeps will be mitigated by creation of approximately 3.0 acres of emergent marsh, willow riparian woodland, and *Juncus* meadow along the shoreline.

Loss of stock ponds in the golf course area will be mitigated by the construction of two open water ponds in the northeast and southwest portions of the site.

Table 2-1. Summary of Delineated, Avoided, Affected, and Mitigated Waters of the United States (Acres)

Jurisdictional Habitat Type	Delineated	Affected	Avoided	Mitigated
Vernal pool[a]	20.252	1.273	18.979	3.026
Vernal swale[a]	3.376	0.446	2.930	0.904
Ephemeral drainage[b]	3.756	0.876	2.880	2.021[c]
Seep[a]	0.530	0.298	0.232	0.596[c]
Emergent marsh[a]	1.917	0.125	1.792	0.125
Willow riparian[a]	13.749	0.078	13.671	0.078
Juncus meadow[a]	1.147	0	1.147	N/A
Seasonal wetland[a]	0.111	0	0.111	N/A
Open water[b]	154.593	1.188	153.405	0.150
Total	199.431	4.284	195.147	6.900

[a] Waters of the United States - wetlands.

[b] Other waters of the United States.

[c] Mitigated out-of-kind by creation of willow riparian woodland, emergent marsh, and *Juncus* meadow.

To avoid inadvertent impacts on special-status wildlife, preconstruction surveys in the impact and mitigation areas for nesting raptors before the beginning of all grading work for the project and implementation of the mitigation plan.

The goals and objectives of the mitigation plan are to:

- minimize impacts of the proposed golf course and associated recreational facilities on existing jurisdictional areas by establishing preserve areas, and avoid areas with high concentrations of vernal pools and swales and maintain them in their natural condition;

- mitigate for the loss of wetlands and other waters of the United States by creating wetlands onsite, with a net increase in wetland habitat acreage;

- mitigate for the loss of wetland functions and values for the various jurisdictional habitat types to the maximum extent practicable;

- sustain no net loss in vernal pool fairy shrimp, California linderiella, and vernal pool tadpole shrimp, which occur in vernal pools throughout the site;

- preserve populations of special-status species, including Greene's legenere, Boggs Lake hedge-hyssop, viscid orcutt grass, vernal pool fairy shrimp, California linderiella, and vernal pool tadpole shrimp, and preserve suitable habitat for other special-status plant and animal species not presently known to occur on the site;

- reduce fragmentation of wetland habitats by preserving large areas of wetlands and by locating created wetlands adjacent to existing wetlands;

- ensure the long-term viability and self-sustaining capacity of the created wetlands by locating them on appropriate landforms and soil conditions, relying on natural hydrologic functioning, and establishing design criteria to mimic natural environmental conditions;

- locate and construct compensation wetlands so that existing wetlands will not be adversely affected; and

- establish monitoring procedures, performance standards, and corrective measures to ensure the success of the mitigation efforts.

REQUIRED PERMITS AND AGREEMENTS

Permits, agreements, and coordination necessary for project implementation will include the following:

1. A grading and erosion control permit will be required from Sacramento County Department of Public Works for the golf course, clubhouse, maintenance compound, and other uses.

2. A streambed alteration agreement (Fish and Game Code Section 1600 et seq.) will need to be obtained from DFG for any work within the 100-year floodplain consisting of, but not limited to, diversion or obstruction of the natural flow or changes to the channel, bed, or bank of any river, stream, or lake.

3. An NPDES general construction activity stormwater permit will be required from the RWQCB.

In addition to these permits, building permits will be required from Sacramento County for construction of the clubhouse, maintenance building, comfort stations, and other structures.

Sacramento County Department of Public Works also commented in response to the notice of preparation (NOP) that if the project is approved, SMUD should comply with the following conditions:

- Prior to issuance of a building permit, provide drainage easements pursuant to the Sacramento County Interim Urgency Ordinance relating to floodplain management and the Sacramento County Improvement Standards, including any fee required by Ordinance No. 1 of the Sacramento Co[illegible] Water Agency.

- Prior to issuance of a building permit, provide minimum pad/flood elevations pursuant to the Sacramento County Interim Urgency Ordinance relating to floodplain management.

- Prior to grading or building activity, obtain applicable DFG and Corps permits.

A Section 404 nationwide permit number 26 was authorized on November 29, 1993, by the Corps to allow the filling of wetlands under Corps jurisdiction. The permit was issued with eight special conditions. The permit will be effective upon receipt of the Section 401 water quality certification or waiver. Water quality certification (Section 401 of the Clean Water Act) or a waiver of the certification from the RWQCB is required for all Section 404 permits.

REQUIRED MITIGATION MEASURES

In September 1993, SMUD prepared an initial study and NOP of an EIR. That document included a discussion of potential environmental impacts associated with adoption of the park master plan. The analysis in the initial study concluded that impacts in various issue areas could be reduced to a less-than-significant level if the following mitigation measures were implemented:

Noise

1. Hours of construction activity throughout the duration of project construction will be limited to 6:00 a.m. to 7:00 p.m. Monday through Saturday (non-holidays). A telephone number will be made available for noise complaints.

2. All construction equipment powered by internal combustion engines will be properly muffled and maintained to minimize noise. Equipment will be turned off when not in use.

Light and Glare

1. All outdoor lighting will be directed downward and shielded such that no lighting is directed upward or toward wetland preserve areas.

Risk of Upset

1. Fertilizer and pesticide storage will be limited to available covered space only. Outdoor storage of excess quantities will not be allowed.

2. Only chemicals approved for use on the golf course will be stored in the maintenance facility at any time. Storage of chemicals will follow best management practices.

3. Maintenance vehicles will transport only sufficient quantities of fertilizers and/or pesticides to complete the current day's work. All leftover chemicals and application equipment will be returned to the maintenance facility when not in use and at the end of every workday.

4. Records will be kept of all chemical applications, in accordance with California Department of Food and Agriculture requirements.

5. No applicator rinse waters or any other waters known to contain fertilizer or pesticides will be allowed to enter surface waters, including any storm drains or other conveyances that drain to surface waters, at any time. Disposal of such waters will be directed to the wastewater system.

6. The golf course superintendent will develop and implement a chemical spill response plan. The plan will include at a minimum:

   a. Posting of a requirement for immediate notification of the Sacramento County Department of Environmental Health in the event of a spill.

   b. Specifications for spill cleanup equipment that is adequate to contain and clean up any solid or liquid spill and that will be stored at the maintenance facility.

   c. Description of procedures to be followed in the event of a solid or liquid spill, including procedures to prevent spilled material from entering a storm drain, wetland, or waterway.

7. The design of the golf course maintenance facility will be submitted to the Herald Fire District and Sacramento County Health Department for review and approval.

8. Any storage tanks (gasoline, diesel, or other hazardous materials) will be designed to the satisfaction of the Sacramento County Department of Environmental Health. Any storage of gasoline in aboveground or underground tanks is required to have Phase I and Phase II vapor recovery equipment.

9. If required by state law because of the amount of hazardous materials to be stored onsite, SMUD will submit a business plan to the Sacramento County Health Department.

Public Services

1. SMUD will submit a site plan to the Herald Fire District and CDF for review. the Herald Fire District will review the site plan to determine the need for emergency circulation and possibly an emergency exit.

2. SMUD will submit a site plan to the Sacramento County Sheriff's Department for review. The site plan design will include landscaping plans and locations of comfort stations and trails. The Sheriff's Department will be asked to comment and make suggestions to reduce demands for law enforcement services.

Energy

1. Design of the clubhouse, comfort stations, and maintenance buildings will incorporate energy-efficient designs, such as passive and active solar designs for heating, cooling, and lighting of building facilities.

Utilities

1. SMUD will provide recycling receptacles throughout the park to encourage recycling and minimize the amount of solid waste.

2. SMUD will implement management practices to minimize the need to dispose of grass clippings, leaves, and other organic materials offsite. Management practices to be considered include recycling grass clippings and composting leaves.

Chapter 3. Executive Summary

This chapter presents a summary project description, impact conclusions as required by the California Environmental Quality Act (CEQA) (State CEQA Guidelines, Sections 15123 and 15126), and a summary of project impacts and recommended mitigation measures.

PROJECT DESCRIPTION

SMUD owns and operates the 2,480-acre site that includes a shut-down nuclear power plant, a solar power generating facility, and the existing 433-acre Rancho Seco Park and Lake complex. The proposed project is the adoption of a park master plan for 1,600 acres of the Rancho Seco site.

Annual grasslands predominate around a 164-acre lake, with over 800 vernal pools, covering a total of 20 acres, and vernal swales interspersed throughout. Other wetlands on the project site include about 14 acres of willow riparian, one acre of juncus meadow, 154 acres of open water, 2 acres of emergent marsh, 4 acres of ephemeral drainages, and 0.5 acre of seeps.

Two vernal pools on the project site support Sacramento orcutt grass, a plant species proposed for listing as endangered under the federal Endangered Species Act. Two other federal candidate plant species, Greene's legenere and Boggs Lake hedge-hyssop also occur in vernal pools on the project site. Boggs Lake hedge-hyssop is a state-listed endangered species.

The vernal pool fairy shrimp, California linderiella, and vernal pool tadpole shrimp inhabit vernal pools on the project site. These freshwater animal species are currently proposed for federal listing as endangered under the federal Endangered Species Act.

SMUD is proposing to construct an 18-hole public golf course, an equestrian center, an interpretive nature center, a group use area, and hiking trails and to expand the existing recreational facilities around Rancho Seco Lake. The proposed project will result in the loss of 4.28 acres of waters of the United States and wetlands. SMUD is proposing to construct 6.9 acres of wetland to offset project impacts on existing wetlands. Open space preserves will be set aside to protect other onsite wetlands and wildlife habitat areas.

The purpose of the project is to develop an array of recreational acilities that meet the needs of the public, are fiscally self-supporting at buildout, and are sensitive to the environment. One of the reasons the project is needed is to provide revenue to cover ongoing operation and maintenance costs associated with the public park, which SMUD is contractually obligated to operate.

On November 29, 1993, the U.S. Army Corps of Engineers (Corps) authorized a Section 404 nationwide permit number 26 to allow the filling of wetlands under Corps jurisdiction. The permit was issued with eight special conditions. SMUD will also need a grading and erosion control permit from Sacramento County, a streambed alteration agreement from the California Department of Fish and Game, and a National Pollutant Discharge Elimination System general construction activity stormwater permit from the regional water quality control board.

CEQA-REQUIRED CATEGORIES

Growth Inducement

Section 15126 (g) of the State CEQA Guidelines provides the following guidance in determining the growth-inducing impacts of a proposed action:

> The discussion should include the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may further tax existing community service facilities so consideration must be given to this impact. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

1. Will the project foster economic or population growth?

   Yes. The purpose of the project is to develop an array of recreational facilities that meet the needs of the public, are fiscally self-supporting at buildout, and are sensitive to the environment; therefore, the project will foster economic growth. The project will create eight permanent jobs; however, no population growth is anticipated.

2. Will the project foster the construction of additional housing in the surrounding environment?

   No. The site is located in southeastern Sacramento County. No housing is allowed or proposed on the park site. Construction of housing on the surrounding lands is subject to review and approval by Sacramento County and the general plan does not envision housing development in this area for 20 years.

3. Will the project further tax existing community service facilities?

   No. Water and wastewater services are provided onsite by SMUD. No other existing community service facilities have been identified that will be taxed by the project.

4. Will the project encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively?

   No. Approval of the project would not stimulate any development in the area.

Known Areas of Controversy

The State CEQA Guidelines (Section 15123) require an EIR to identify areas of controversy known to the lead agency, including issues raised by agencies and the public. There are no known areas of controversy. Circulation of the notice of preparation (NOP) of an EIR generated very few comments and few individuals attended the scoping meeting.

Cumulative Impacts

CEQA Requirements

Section 15130 of the State CEQA Guidelines provides the following guidance regarding cumulative analysis:

(a) Cumulative impacts shall be discussed when they are significant.

(b) The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided of the effects attributable to the

project alone. The discussion should be guided by the standards of practicality and reasonableness.

(c) With some projects, the only feasible mitigation for cumulative impacts may involve the adoption of ordinances or regulations rather than the imposition of conditions on a project-by-project basis.

Cumulative Analysis

List Approach. The cumulative analysis for this EIR used the list approach for identifying past, present, and reasonably anticipated future projects producing related or cumulative impacts. The list was developed through discussions with the SMUD staff, Sacramento County staff, and Corps staff. SMUD has not identified any reasonably anticipated future projects. In August 1993, Sacramento County staff members stated that there are no other projects near the Rancho Seco site that would contribute to cumulative land use impacts (Dakins pers. comm.). The Corps staff identified the Borden Ranch project as a reasonably anticipated future project producing related impacts.

Borden Ranch Project. On October 26, 1993, Predischarge Notification (PDN) 199300605 was filed with the Corps describing a proposal to discharge fill into wetlands to plant vineyards on Borden Ranch south of the Rancho Seco site. Under nationwide permit number 26, the project applicant proposed to plant about 404 acres of vineyards on a 411-acre site. That proposed project would result in the loss of 6.85 acres of vernal pools and other seasonal wetlands. As habitat replacement for these wetland losses, the project applicant proposed to create 2.3 acres of perennial marsh onsite and 4.55 acres of seasonal marsh offsite.

The PDN for the Borden Ranch project was circulated to various commenting agencies, including the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and California Department of Fish and Game. Initial comments on the PDN did not support issuance of a nationwide permit for several reasons, including:

- the wetland analysis methodology used for the wetland delineation was not sensitive to the habitat variables of vernal pools and their endemic fauna;
- the replacement of vernal pool habitat with an open water pond would not provide habitat adequate for reestablishment of vernal pool flora;
- the replacement of vernal pool/grassland complex with a vineyard results in a reduction of foraging habitat value for such raptor species as Swainson's hawk (*Buteo swainsoni*), which is listed by the state as threatened and is a candidate for federal listing;

- the project does not qualify for authorization under the nationwide permit regulations;

- the applicant did not survey for the presence of the California tiger salamander (*Ambystoma californiensis*); and

- the PDN did not make clear whether adequate surveys had been performed on the site to determine the extent of distribution and abundance of the vernal pool fairy shrimp (*Branchinecta lynchi*), the California linderiella (*Linderiella occidentalis*), and the vernal pool tadpole shrimp (*Lepidurus packardii*).

Expected Environmental Effects. Given the preliminary status of the Borden Ranch project, it is difficult to anticipate impacts; however, the project, if approved, would probably result in the loss of wetlands, loss of foraging habitat for raptors, and the possible loss of special-status shrimp species. The Borden Ranch project is a reasonably anticipated future project producing related or cumulative biological impacts. The Borden Ranch project is outside the control of SMUD. It also appears to be outside the control of Sacramento County because it is an agricultural project that does not require land use approval. Additional information on the Borden Ranch project is available for review at the Corps' Sacramento Office, 1325 J Street, Regulatory Section, Sacramento, CA.

Conclusions. The NOP stated that cumulative issues of concern were biological resources and water resources. Because of the isolated location of the project site, the Borden Ranch project was the only project identified in the project vicinity that would produce related impacts.

The project engineer has prepared an engineering analysis of the proposed park project and concluded that cumulative impacts as they relate to water resources are not of concern because of the isolated location of the project and the fact that no other development projects are proposed in the area.

SIGNIFICANT EFFECTS OF THE PROJECT

Approval of the project would result in various impacts on the environment as identified and described in the initial study (Appendix A) and this report. Impacts are identified in the following categories:

- less-than-significant impacts that do not have any identified mitigation measures;

- impacts considered significant before mitigation and for which mitigation measures are proposed that would reduce impacts to a less-than-significant level;

- impacts considered significant both before and after mitigation, which are considered significant and unavoidable if the project is approved; and

- impacts considered beneficial to the environment.

All the impacts, levels of significance both before and after mitigation, and recommended mitigation measures are identified in Table 3-1.

Table 3-1. Summary of Impacts and Mitigation Measures

Issue Area	Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
LAND USE	Expansion of the existing public park and a minor conversion of open space to developed park uses; however, most of the site will remain undeveloped either as open space use or open space preserve.	Less than significant	No mitigation is recommended.	–
	No conflicts with the policies of the Sacramento County general plan.	–	No mitigation is recommended.	–
WATER AND WASTEWATER SERVICES	Increased water demand to support expanded park development.	Significant	5.1 Design the park expansion to conserve water.	Less than significant
	Increase in the amount of wastewater generated at the park.	Less than significant	No mitigation is recommended.	–
TRANSPORTATION AND CIRCULATION	Increased potential for rear-end accidents.	Significant	6.1 Improve the intersection of Twin Cities Road and the Rancho Seco project site access road.	Less than significant
AIR QUALITY	Generation of substantial air emissions during construction, including 95 pounds per day of PM10 emissions.	Significant	7.1 Prepare and implement a dust control plan. 7.2 Minimize air emissions during construction.	Less than significant
	Generation of ozone precursor emissions from new vehicle trips and landscape maintenance activities.	Less than significant	No mitigation is recommended.	–
GEOLOGY, SEISMICITY, AND SOILS	Substantial increase in soil erosion, resulting in decreased soil fertility and increased sedimentation.	Significant	8.1 Prepare and implement an erosion and sediment control plan.	Less than significant
	Loss of soil fertility and reduced revegetation potential as a result of grading activities.	Significant	8.1 Prepare and implement an erosion and sediment control plan.	Less than significant
	Possible damage to building foundations, roads, and parking areas constructed on expansive clay soil.	Significant	8.2 Prepare and implement the recommendations of a geotechnical engineering report.	Less than significant

Issue Area	Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
WATER RESOURCES	Minor alterations to the existing drainage patterns and existing network of ephemeral channels, drainages, and tributaries draining the site.	Less than significant	No mitigation is recommended.	--
	A decrease in the amount of runoff to Hadselville Creek after development by approximately 10% to 15% because of increased percolation and infiltration.	Less than significant	No mitigation is recommended.	--
	A minor decrease in the amount of runoff to Rancho Seco Lake because of the installation of a drainage system to collect golf course drainage and route it to the golf course reservoir for reuse on the golf course.	Less than significant	No mitigation is recommended.	--
	No adverse hydrologic affects from alteration or removal of vernal pools on the site because the loss and modification is small relative to the watershed area, and the project includes onsite creation of new vernal pools.	Less than significant	No mitigation is recommended.	--
	No change in 100-year floodplains because the site is not located in a 100-year flood hazard area and runoff would decrease by 10% to 15% after development of the proposed project.	Less than significant	No mitigation is recommended.	--
	Minor modifications to local floodplains on the site.	Significant	9.1 Comply with Sacramento County proposed conditions of development.	Less than significant
	Little to no effect on groundwater recharge because the existing drainages would remain intact and infiltration in some areas of the site would actually increase.	Less than significant	No mitigation is recommended.	--
	A temporary decrease in water quality during construction because of erosion and sedimentation and because of pollutants, such as suspended solids and oil and grease, possibly being released into onsite waterways, as well as being flushed downstream into offsite creeks.	Significant	8.1 Prepare and implement an erosion and sediment control plan.	Less than significant
	A probable degradation in water quality of onsite streams resulting from the application of	Significant	9.2 Design the golf course to maximize infiltration and minimize runoff.	Less than significant

Issue Area	Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
			9.3 Develop and implement a water quality monitoring program for the golf course.	
	A probable decrease in water quality in the golf course reservoir because of the storage and use of reclaimed wastewater in the reservoir.	Less than significant	No mitigation is recommended.	–
	A decrease in water quality in the drainages in the equestrian center area.	Significant	9.4 Design the storm drainage system so that runoff from the equestrian center is collected and transported to the wastewater treatment facility.	Less than significant
	A potential decrease in water quality at the golf course maintenance facility because of the inclusion of a vehicle washing area and the storage and use of chemicals and fertilizers.	Significant	9.5 Design the golf course maintenance facility to include best management practices (BMPs) to improve water quality.	Less than significant
	Unlikely potential for groundwater contamination resulting from pollutants from the project facilities because of the relatively low leaching potential, the presence of clay soils on the site, and the low recharge capability at the site.	Less than significant	No mitigation is recommended.	–
BIOLOGICAL RESOURCES	Loss of 4.28 acres of wetland habitats, creation of 6.90 acres of wetland habitats, and protection of the remaining 195.15 acres of wetland habitats at the site.	Significant	10.1 Implement the conceptual wetland mitigation and monitoring plan for the project.	Less than significant
			10.2 Obtain a streambed alteration agreement from DFG.	
	Conversion of approximately 200 acres of annual grassland to recreation facilities.	Less than significant	No mitigation is recommended.	–
	Conversion of previously irrigated pasture that supports Mediterranean barley to wetland and annual grassland habitats.	Beneficial	No mitigation is recommended.	–
	Increase in ornamental plantings at the site.	Less than significant	No mitigation is recommended.	–
	No impacts on special-status plant species because the special-status plant populations will be protected in the open space areas as a condition of the Section 404 permit authorization.	–	No mitigation is recommended.	–

Issue Area	Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
	Short-term disturbance to common wildlife species during construction.	Less than significant	No mitigation is recommended.	--
	No impacts on western pond turtle, American badger, and western spadefoot toad.	--	No mitigation is recommended.	--
	Elimination of 10 vernal pools that support special-status shrimp.	Significant	10.1 Implement the conceptual wetland mitigation and monitoring plan for the project.	Less than significant
	Loss of potential habitat for the California tiger salamander.	Significant	10.1 Implement the conceptual wetland mitigation and monitoring plan for the project.	Less than significant
	Conversion of approximately 200 acres of annual grassland, which is potential foraging habitat for the Swainson's hawk.	Less than significant	No mitigation is recommended.	--
	Conversion of approximately 200 acres of annual grassland foraging habitat for the black-shouldered kite and Northern harrier.	Less than significant	No mitigation is recommended.	--
	Conversion of approximately 200 acres of suitable foraging habitat for various birds of prey, including red-tailed hawks and great horned owls.	Less than significant	No mitigation is recommended.	--
	Potential loss of active raptor nests, including burrowing owl nests, that could be disturbed or eliminated during construction.	Significant	10.3 Conduct preconstruction raptor nest surveys and avoid raptor nests where found.	Less than significant
	Loss of approximately 200 acres of suitable tricolored blackbird foraging habitat.	Less than significant	No mitigation is recommended.	--

Issue Area	Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
CULTURAL AND HISTORICAL RESOURCES	Potential damage to RS-1 (prehistoric quarry site) because of the design of the tee area for the 4th hole and intentional and/or accidental damage to the site from opening the location to public access.	Significant	11.1 Conduct archaeological test excavation of RS-1 to determine significance of the site and, if the site is significant, conduct data recovery excavations.	Less than significant
	Potential destruction of RS-2 (ditch and placer mining site) and PR-1 (placer mining tailings).	Significant	11.2 Conduct additional historical research of RS-2 and PR-1.	Less than significant
	Possible disturbance to RS-3 (Skully Dairy site).	Less than significant	No mitigation is recommended.	--
	Possible damage to PR-2 (mortars from the creekbed) during construction of the project.	Significant	11.3 Monitor PR-2 during ground disturbing activities.	Less than significant
	Potential damage or destruction of identified survey features and standing structures on the project site.	Less than significant	No mitigation is recommended.	--
	Possible impacts on unknown cultural resources that are covered by soil deposition or vegetation and could not be found during the field survey.	Significant	11.4 Stop work if cultural resources are discovered during construction.	Less than significant

Chapter 4. Land Use

SETTING

The Rancho Seco site is located in the southeast area of Sacramento County due east of the town of Clay. The land use in the project area is primarily large-lot (80-acre) agricultural use. Urban services are generally not provided in this area.

Sacramento County has recently updated the general plan. The land use diagram of the general plan (adopted December 15, 1993) designates the site for public and quasi-public use and resource conservation area. The county staff does not envision any changes to the agricultural land use designations in this area for the next 20 years (Morse pers. comm.).

The Rancho Seco Park site is zoned AG-20 (permanent agriculture with a 20-acre minimum parcel size) (Dakins pers. comm.). Lands surrounding the Rancho Seco site are also designated and zoned for agricultural use, with lands to the north, south, and east zoned for 80-acre minimum parcel sizes and lands to the southwest zoned for agricultural-residential use (5-acre minimum parcel sizes).

Sacramento County has prepared a residential-open space land use table to designate the uses permitted in each of the zoning classifications. According to this table, public parks and ancillary uses are considered a permitted use in the agricultural zones. Other permitted uses in the agricultural zone include commercial riding stables and boarding stables and wildlife preserves.

IMPACTS

Criteria for Determining Significance

According to the State CEQA Guidelines, a project will normally have a significant effect on the environment if it will:

- conflict with adopted environmental plans and goals of the community where it is located.

Change in Land Use

The SMUD staff considers expansion of the public park at the site to be consistent with the general plan land use designation and zoning classification.

The Sacramento County staff submitted a comment letter on the notice of preparation (NOP) to confirm that the Rancho Seco Park master plan, including the golf course and equestrian center, is considered a public park (Item E.1 in the Residential Use Table of the Sacramento County Zoning Code). This use is a permitted use in the AG-80 zone; no land use entitlements from Sacramento County are needed for the project to proceed. (Stevens pers. comm.)

Impact Summary. Implementation of the project would result in an expansion of the existing public park and a minor conversion of open space to developed park uses; however, most of the site will remain undeveloped either as open space use or open space preserve. No mitigation is recommended.

General Plan Concerns

The following three elements of the 1993 Sacramento County general plan were reviewed to determine if the project would be consistent with the proposed policies:

- public facilities element,
- open space element, and
- conservation element.

The public facilities element addresses water facilities, wastewater collection and treatment, solid waste services and facilities, public schools, library facilities and services, sheriff, fire protection and emergency services, and energy facilities siting. No information was found that relates to the proposed expansion of the Rancho Seco Park uses.

The open space element discusses existing public parks and recreation sites, open space preservation strategy, and open space implementation policies. The Rancho Seco Park is identified as an open space area that is bordered on the north, east, and south by land under Williamson Act contract and is identified as public utility buffer lands; portions of the site are identified as an existing public park and recreation site, as having some recharge capability, and as having a high vernal pool concentration. The composite open space resource diagram shows the site as having a high vernal pool concentration. The eastern portion of the site is identified on the open space preservation strategy diagram as being under public ownership. Review of the element identified no conflicts with the proposed expansion of the Rancho Seco Park uses.

The conservation element discusses water resources, mineral resources, materials reuse, soil resources, vegetation and wildlife, and cultural resources. The vegetation and wildlife section includes detailed discussion of vernal pool preserves and policies (Table 4-1).

Impact Summary. Implementation of the project would result in no conflicts with the policies of the Sacramento County general plan. No mitigation is recommended.

MITIGATION MEASURES

No land use mitigation is recommended.

Table 4-1. Sacramento County General Plan
Conservation Element: Vernal Pool Policies
That Relate to the Rancho Seco Park

CO-78. Focus vernal pool preservation in permanent open space areas beyond the urban area.

CO-79. Strive to link preserves in the county system and create a network that encompasses all vernal pool types.

CO-80. Select vernal pool preserves based on the following evaluation criteria: representativeness, habitat quality, watershed integrity, defensibility, buffer, preserve size, plant species variety, and presence of special-status species.

CO-81. Ensure that vernal pool preserves are large enough to protect vernal pool watersheds, provide an adequate buffer, have sufficient number and extent of pools to support adequate species populations and a range of vernal pool classes.

CO-82. Establish criteria and guidelines addressing the need for siting and management of natural preserves. At a minimum, the following should be considered:

- resource(s) to be lost, restored, and/or replaced;
- functional values; and
- mitigation alternatives, including mitigation banks.

CO-83. Ensure no net loss of vernal pool acreage, and/or values and functions, and mitigate any loss in relation to the values of quality of habitat.

CO-84. Evaluate feasible onsite alternatives in the environmental review process that reduce impacts on vernal pools and provide effective onsite preservation in terms of minimum management requirements, effective size, and evaluation criteria identified in the report "Sacramento County Vernal Pools" (1990).

CO-85. Require in-kind compensation for the type and functional values of vernal pools eliminated by development.

CO-86. When onsite preservation or mitigation is infeasible or undesirable, require offsite mitigation at county-approved mitigation banks within Sacramento County.

CO-87. Mitigation for vernal pool loss shall be considered in the environmental review process, and mitigation shall be required based on information contained within the environmental documents on the quality of those resources and their ability to be sustained within an urban setting.

CO-97. Limit land uses within established preserves to activities deemed compatible with maintenance of the vernal pool resource, which may include ranching, grazing, passive recreation, scientific study, and education.

CO-98. Preserves shall be planned and managed so as to protect adjacent agricultural activities and avoid conflicts.

CO-99. Ensure that minimum management requirements for vernal pool preserves and mitigation banks include protection in perpetuity through acquisition of fee title or a permanent conservation easement; a funding source for long-term operation, maintenance, and management; preparation and implementation of a management plan; and establishment of an interagency oversight committee.

Chapter 5. Water and Wastewater Services

This chapter discusses water and wastewater services; other public services are discussed in the initial study (Appendix A). Information used for this chapter came from SMUD; Psomas and Associates, the engineers (Psomas and Associates 1993) for the proposed project; and the California Muni Golf conceptual development plan (California Muni Golf 1993).

WATER

Setting

The water supply at Rancho Seco Park is provided by two sources: a large pumping facility at Folsom South Canal (FSC) and one onsite well. The large pumping facility at FSC provides water to the power plant via a 66-inch-diameter pipeline. After entering the SMUD property, the pipeline splits into a 66-inch-diameter line and a 48-inch-diameter line. The 66-inch-diameter pipeline continues on to supply water to the power plant cooling ponds; a 48-inch-diameter pipeline supplies water to the onsite reservoir, Rancho Seco Lake. The water can be delivered to the plant or reservoir or both simultaneously.

Rancho Seco Lake is an earthfill dam, approximately 60 feet high. The lake covers 164 acres; retains 2,850 acre-feet (af) of water; and is used as a public recreational facility for fishing, swimming, and other water-related activities.

The existing park well is 400 feet deep with a 40 horsepower motor and a pumping capacity of 250 gallons per minute (gpm). The park well water is chlorinated and stored in a hydropneumatic tank, supplying water for two permanent residences and a snack bar. Although this well has been reported to contain chloroform contamination, the chlorination system is effectively treating the contamination.

Impacts

Criteria for Determining Significance

According to the State CEQA Guidelines, a project will normally have a significant effect on the environment if it will:

- substantially degrade or deplete groundwater resources,
- encourage activities which result in the use of large amounts of water, or
- use water in a wasteful manner.

Impact Analysis

Components of the park master plan that would increase water consumption at Rancho Seco Park include the golf course and clubhouse, maintenance facility, comfort stations, equestrian center, group use area, and nature center. Most of the water needed for the project would be used for irrigation of the golf course and other park facilities.

The irrigation system for the golf course is proposed to be state of the art. The facilities would consist of a computerized system that would water at precise times to reduce evaporation and monitor the amount of water applied by means of soil moisture sensors to eliminate overwatering (Psomas and Associates 1993). The sprinkler layout would be specifically designed to reduce overspray and reduce spray subject to evaporation. These measures would minimize irrigation water use and minimize irrigation runoff on the golf course facilities.

All park and golf course facilities would be irrigated from the golf course reservoir. The reservoir would receive water from the following primary sources:

- treated wastewater from the park wastewater treatment plant,
- runoff collected from the golf course and surrounding area that would be stored in the golf course reservoir, and
- runoff collected from Clay Creek drainage that would be stored in Rancho Seco Lake.

Water from a new park well would be used for domestic water for the clubhouse and other park uses. The annual flows generated by the primary water sources and the new park well are shown in Table 5-1.

The golf course reservoir would also use FSC water that is stored in Rancho Seco Lake as a secondary source. Water from the FSC is already delivered to Rancho Seco Lake to replace water lost by evaporation. The proposed park expansion and golf course would use an additional 73.6 af/yr (23.9 million gallons) of FSC water.

The proposed golf course would have an irrigated surface of 109 acres and an irrigation system that would require approximately 500,000 gallons per day (gpd) of water, considerably less than the typical course that is sized at 150 acres and requires 750,000 gpd (Psomas and Associates 1993). The group use area and equestrian and nature centers would have 20 acres of irrigated land and would require approximately 92,000 gpd during irrigation

Table 5-1. Estimated Annual Water Flows Generated by the Primary Water Sources and the Park Well

	Acre-Feet	Million Gallons
Treated wastewater	5.1	1.68
Golf course drainage	108	35.2
Clay Creek drainage	620	202.1
Park well	403	131.4

Source: Psomas and Associates 1993.

season. Irrigation season is usually from mid-March to mid-October. The total amounts of water required (demand) and the available supplies are presented in Table 5-2.

As indicated in Table 5-2, a total of 381.4 acre-feet per year (af/yr) would be required to irrigate the park facilities. The figures for the golf course and Clay Creek drainages shown in the table have been adjusted for evaporation and loss due to runoff. The 108 af generated by golf course drainage would be reduced by evaporative losses of 51.3 af to a total of 56.7 af/yr available.

SMUD would revise its current lake management practices to allow the lake level to be lowered 6 inches during summer and to rise an additional 12 inches during winter, which would allow an additional 246 af of the 620 af of available runoff from Clay Creek to be stored in Rancho Seco Lake (Psomas and Associates 1993).

The new park well would be used primarily to supply domestic water uses at the clubhouse, maintenance facility, group use area, and equestrian and nature centers. The estimated demand for these facilities is 3,000 gpd, with a peak daily demand of 7,500 gpd and a peak hourly demand of 12,000 gpd. The new well would be designed to deliver a minimum of 20 gpm. (Psomas and Associates 1993.)

The project would use an additional 73.6 af/yr of water from the FSC, which is a small amount relative to power plant usage. The exact amount of water use at Rancho Seco Lake is not quantified (Psomas and Associates 1993). The project would also use the new park well for domestic water supply; this could constitute a relatively large volume of water if needed. The additional irrigation water from the golf course and Clay Creek drainages would be obtained from increased storage of existing runoff.

Impact Summary. Implementation of the project would result in increased water demand to support expanded park development. This impact is considered significant. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

5.1 Design the park expansion to conserve water.

Mitigation Measures

5.1 Design the Park Expansion to Conserve Water

SMUD will incorporate the following measures into the design of the project to reduce water consumption:

1. SMUD will design the golf course to minimize the number of acres requiring irrigation.

Table 5-2. Irrigation Water Supply and Demand

	Acre-Feet Per Year	Million Gallons
Irrigation water demand		
Golf course	322.1	105
Other park uses	59.3	19.3
Total demand	381.4	124.3
Irrigation water supply		
Treated wastewater[a]	5.1	1.68
Golf course drainage[a]	56.7	18.5
Clay Creek drainage[b]	246	80.2
Folsom South Canal[b]	73.6	23.9
Total supply	381.4	124.3

[a] to be stored in golf course reservoir.
[b] to be stored in Rancho Seco Lake.

Source: Psomas and Associates 1993.

2. SMUD will design the irrigation system to include a state-of-the-art system and computerized controls to avoid unnecessary watering.

3. The landscape plans for the golf course will emphasize drought-resistant grasses wherever possible.

4. SMUD will design the park master plan to retain as much stormwater runoff as possible to be pumped into storage lakes for use in watering the golf course.

5. SMUD will install low-flow toilets, sinks, and showers in the comfort stations and clubhouse locker rooms.

WASTEWATER SERVICE

Setting

Sewage at the park site is generated by two permanent residences, the disposal site for 18 recreational vehicle spaces, the park restroom and shower facility, and the snack bar. This sewage is collected by gravity pipelines and discharged to an onsite oxidation/evaporation pond for treatment and disposal; there is no surface discharge of this wastewater. The oxidation/evaporation pond is located southwest of the existing park amenities, adjacent to the existing maintenance trailer site.

Impacts

Criteria for Determining Significance

According to the State CEQA Guidelines, a project will normally have a significant effect on the environment if it will:

- substantially degrade water quality or
- extend a sewer trunk line with capacity to serve new development.

Impact Analysis

Sources of wastewater generation from the proposed project include the comfort stations and the golf course clubhouse and maintenance facility. Wastewater generated by the comfort stations and golf course maintenance facility will be collected and disposed of by two septic tank/infiltration pit systems.

Wastewater generated by the clubhouse will be collected and piped to the existing collection system and then discharged into the existing treatment disposal site. This wastewater will then be treated in an expanded wastewater treatment plant to meet

California Administrative Code, Title 22 requirements for use as reclaimed water. As mentioned above, 5.1 af of this treated wastewater will be used annually for irrigation of the proposed project.

Title 22 states that reclaimed water used for irrigation of golf courses shall be adequately disinfected and oxidized at all times. Adequate disinfection is considered to exist if the medium number of coliform organisms in the effluent does not exceed 23 per 100 milliliters. The treatment facility will consist of a facultative pond followed by chlorination and a polishing package filter system. The treatment facility discharge will be pumped to the golf course reservoir.

Impact Summary. Implementation of the project would result in an increase in the amount of wastewater generated at the park. This impact is considered less than significant because the project includes expansion of the existing park wastewater plant to accommodate the increase in wastewater generated. No mitigation is recommended.

Mitigation Measures

No mitigation is recommended.

Chapter 6. Transportation and Circulation

SETTING

This section describes and analyzes the existing traffic conditions in the project area. It presents a description of the critical facilities, an explanation of methodology used in the analysis of these facilities, and the results of the analysis of existing traffic conditions.

Existing Roadway Network

The existing access point for the park is off Twin Cities Road (State Route 104), a two-lane roadway maintained by the California Department of Transportation (Caltrans). Twin Cities Road connects the project site to State Route 99 and Interstate 5 to the west and State Routes 24 and 88 to the east. The access road was designed to accommodate approximately 1,200 employees associated with previous operation of the nuclear power plant.

In the immediate vicinity of the project access, Twin Cities Road is about 22 feet wide, with 2-foot paved shoulders west of the project access and no paved shoulders east of the access. Approximately 150 feet west of the project access, Twin Cities Road widens to provide a short deceleration pocket for vehicles turning right. A large turn radius is also provided for vehicles making the northbound-to-eastbound right-turn movement. The intersection of Twin Cities Road and the project access is not signalized.

For drivers waiting at the project access road to turn onto Twin Cities Road, the sight distance is approximately 1,500 feet on the east side and 1,000 feet on the west side. This is more than the minimum required corner sight distance of 660 feet recommended for highways with design speed of 60 miles per hour (mph) (California Department of Transportation 1978).

The City of Galt is in the process of widening Twin Cities Road from its interchange with State Route 99 to about 1.7 miles east of this interchange. This segment will be widened to accommodate a two-way center left-turn lane. Caltrans has also realigned about 0.5 mile of Twin Cities Road near Rancho Seco Park to remove some sharp curves. No other improvements are currently planned for Twin Cities Road in the project vicinity. (Forga pers. comm.)

Methodology

For the intersection of Twin Cities Road and the project access road, the analysis was conducted using the procedure recommended in the 1985 Highway Capacity Manual (Transportation Research Board 1985) assessing the conflicts between turning movements to and from the leg of the intersection with the stop sign (minor street) and those on the legs without stop signs (major streets). This procedure assesses the probability and frequency of gaps occurring in the major street traffic stream that would allow minor street traffic to proceed.

The quality of traffic service provided by an intersection is measures by its level of service (LOS). This method uses a letter rating to describe the peak-period driving conditions for a particular intersection. The letters A through F represent the best to worst driving conditions, respectively. LOS A indicates free-flow operation with little or no delay; LOS F denotes jammed flow with substantial delay.

The quantitative measure of LOS at one-way or two-way stop-sign-controlled intersections is determined by estimating the remaining "reserve" capacity at the intersection. Reserve capacity represents the extent to which cars on the minor street approaches can proceed through the intersection and generally decreases as the volume of through traffic on the major street increases. A reserve capacity of less than 0 indicates an intersection operating at LOS F. The characteristics of traffic flow associated with each LOS for unsignalized intersections are described in Table 6-1.

Acceptable Level of Service

Sacramento County and Caltrans define acceptable operation levels for rural highways to be LOS D. Therefore, a facility operating at LOS E or F is considered unacceptable.

Signal Warrant Analysis

A signal warrant analysis was conducted on the unsignalized intersection of Twin Cities Road and the project access road. This analysis was based on established guidelines that assist in determining the need for traffic signal control (California Department of Transportation 1985).

The signal warrant guidelines specify 11 criteria that indicate the need for traffic signal installation:

- minimum vehicular volume,
- interruption of continuous traffic,

Table 6-1. Level of Service Definitions for Unsignalized Intersections

Level of Service	Reserve Capacity	Description
A	>400	Little or no delay
B	300-399	Short traffic delays
C	200-299	Average traffic delays
D	100-199	Long traffic delays
E	0-99	Very long traffic delays
F	<0	Failure - extreme congestion

Source: Transportation Research Board 1985.

- minimum pedestrian volume,
- school crossing,
- progressive movement,
- accident experience,
- systems,
- combination of warrants,
- 4-hour volumes,
- peak-hour delay, and
- peak-hour volume.

Fulfillment of any one or a combination of these criteria may indicate that signal control is needed. The guidelines emphasize that the criteria should be considered only as a guide in determining the need for traffic signal control in conjunction with other project-specific factors. A comprehensive investigation of traffic conditions and physical characteristics of the intersection in question is required to determine the necessity for a signal and to furnish necessary data for the proper design and operation of a signal that is found to be warranted. Such data are listed in the Manual on Uniform Traffic Control Devices for Streets and Highways (U.S. Department of Transportation 1988). The analysis conducted for this study focused on peak-hour volumes.

Study Conditions

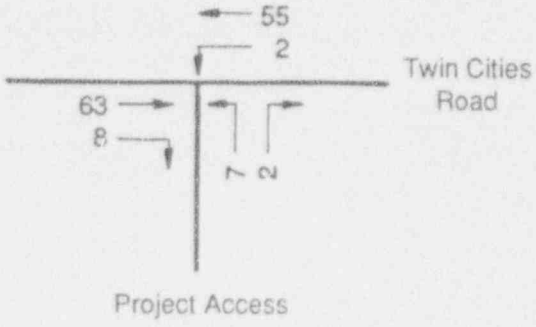
To evaluate the traffic impacts of the proposed project, intersection analyses were performed for existing (1993), existing plus-project, and cumulative plus-project (2015) conditions. The traffic analysis was performed for the a.m. and p.m. peak hours on a weekday and the peak hour on a Saturday.

Existing Traffic Conditions

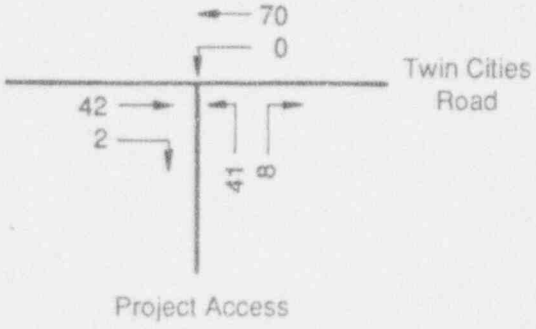
Existing a.m. and p.m. peak-hour traffic counts were conducted on a weekday in November 1993 at the intersection of Twin Cities Road and the project acc s road. An all-day Saturday count was also performed at this intersection to determ e the existing Saturday peak-hour volume. Figure 6-1 shows the existing traffic volumes at ne intersection of Twin Cities Road and the project access road.

Table 6-2 shows the results of the existing capacity analysis at the intersection of Twin Cities Road and the project access road. The results show that this intersection is currently operating at LOS A, indicating free-flow conditions with little or no delay.

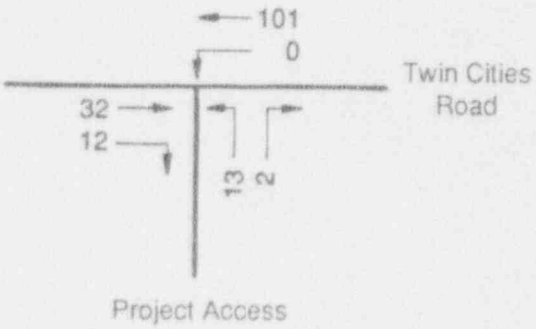
In the project vicinity, the average accident rate on Twin Cities Road from 1988 through 1990 was 1.09 accidents per million vehicle-miles traveled (California Department



Weekday A.M. Peak Hour



Weekday P.M. Peak Hour



Saturday Peak Hour

Figure 6-1. Existing Traffic Volumes: Twin Cities Road and Rancho Seco Park Project Access

Table 6-2. Summary of Intersection Capacity Analysis:
Twin Cities Road and Rancho Seco Park Project Access

	A.M. Peak Hour		P.M. Peak Hour		Saturday Peak Hour	
	LOS	Reserve Capacity	LOS	Reserve Capacity	LOS	Reserve Capacity
Existing Conditions						
Twin Cities Road/Project Access						
Westbound left	A	990	A	997	A	997
Northbound movement	A	614	A	557	A	587
Existing Plus-Project Conditions						
Twin Cities Road/Project Access						
Westbound left	A	910	A	979	A	945
Northbound movement	A	555	A	487	A	516
Cumulative Plus-Project Conditions						
Twin Cities Road/Project Access						
Westbound left	A	783	A	894	A	884
Northbound movement	B	388	B	323	B	348

of Transportation 1991). The statewide average accident rate for this type of facility is 2.03 accidents per million vehicle-miles traveled.

IMPACTS

Criteria for Determining Significance

According to the State CEQA Guidelines, a project will normally have a significant effect on the environment if it will:

- cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.

Based on professional standards, a project will also normally have a significant effect on the environment if it will:

- result in an intersection operating at an acceptable LOS (A, B, C, or D) to deteriorate to an unacceptable LOS (E or F);
- result in the reduction of reserve capacity at an unsignalized intersection that is already operating at an unacceptable LOS;
- substantially alter present patterns of vehicle circulation or movement; or
- increase traffic hazards to motor vehicles, bicycles, or pedestrians.

Impact Analysis

Trip Generation

The trip generation rates used for the proposed golf course were obtained from 1991 Trip Generation (Institute of Transportation Engineers 1991). To estimate the trips generated with expansion of the existing recreational facilities, the number of trips generated by the golf course was increased by 10%. Results of the trip-generation analysis are shown in Table 6-3.

Table 6-3. Trip Generation Analysis for the Rancho Seco Park Master Plan

Land Use	Trip Generation Rates (Trip Ends per Hole)				Trip Ends			
	Weekday	Weekday A.M. Peak	Weekday P.M. Peak	Saturday Peak Hour	Weekday	Weekday A.M. Peak	Weekday P.M. Peak	Saturday Peak Hour
18-hole golf course	37.6	3.2	3.4	4.6	677	58	61	83
Other recreational facilities (10% of the golf course trips)					68	6	6	8
Total					745	64	67	91

Trip Distribution and Assignment

A trip distribution pattern was developed for the proposed project based on the location of developments surrounding the project site. This pattern estimates that 70% of the people visiting the site would use Twin Cities Road west of the site, and the remaining 30% would use Twin Cities Road east of the site to reach the project site.

Existing Plus-Project Conditions

To determine the impact of the project on the intersection of Twin Cities Road and the project access road, the traffic estimated to be generated by this project was added to the existing traffic volumes. To analyze the worst-case traffic conditions on Saturdays, it was assumed that the peak traffic generating hour of the project would occur at the same time as the existing peak hour of Twin Cities Road. Figure 6-2 shows the existing plus-project traffic volumes at the intersection of Twin Cities Road and the project access road.

Table 6-2 shows the results of the existing plus-project capacity analysis at the intersection of Twin Cities Road and the project access road. This table shows that the additional traffic associated with the project would not degrade the existing level of service at the intersection of Twin Cities Road and the project access road.

The low volume of traffic traveling on Twin Cities Road and also entering and exiting the project site during peak hours does not warrant signalization of the intersection of Twin Cities Road and the project access road. However, the speed limit on Twin Cities Road is 55 mph, and the high speed of vehicles traveling past the access road would create a potential safety hazard. Vehicles decelerating to enter the project site and vehicles accelerating to leave the site would be forced to travel on Twin Cities Road at speeds well below the speed limit of passing vehicles. Additionally, because most people visiting the golf course would not be very familiar with the access location, they may suddenly slow down when reaching the access road. This difference in speeds results in the potential for rear-end accidents.

Impact Summary. Implementation of the project could result in an increased potential for rear-end accidents. This impact is considered significant because of the increased traffic hazards to motor vehicles. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

6.1 Improve the intersection of Twin Cities Road and the Rancho Seco project site access road.

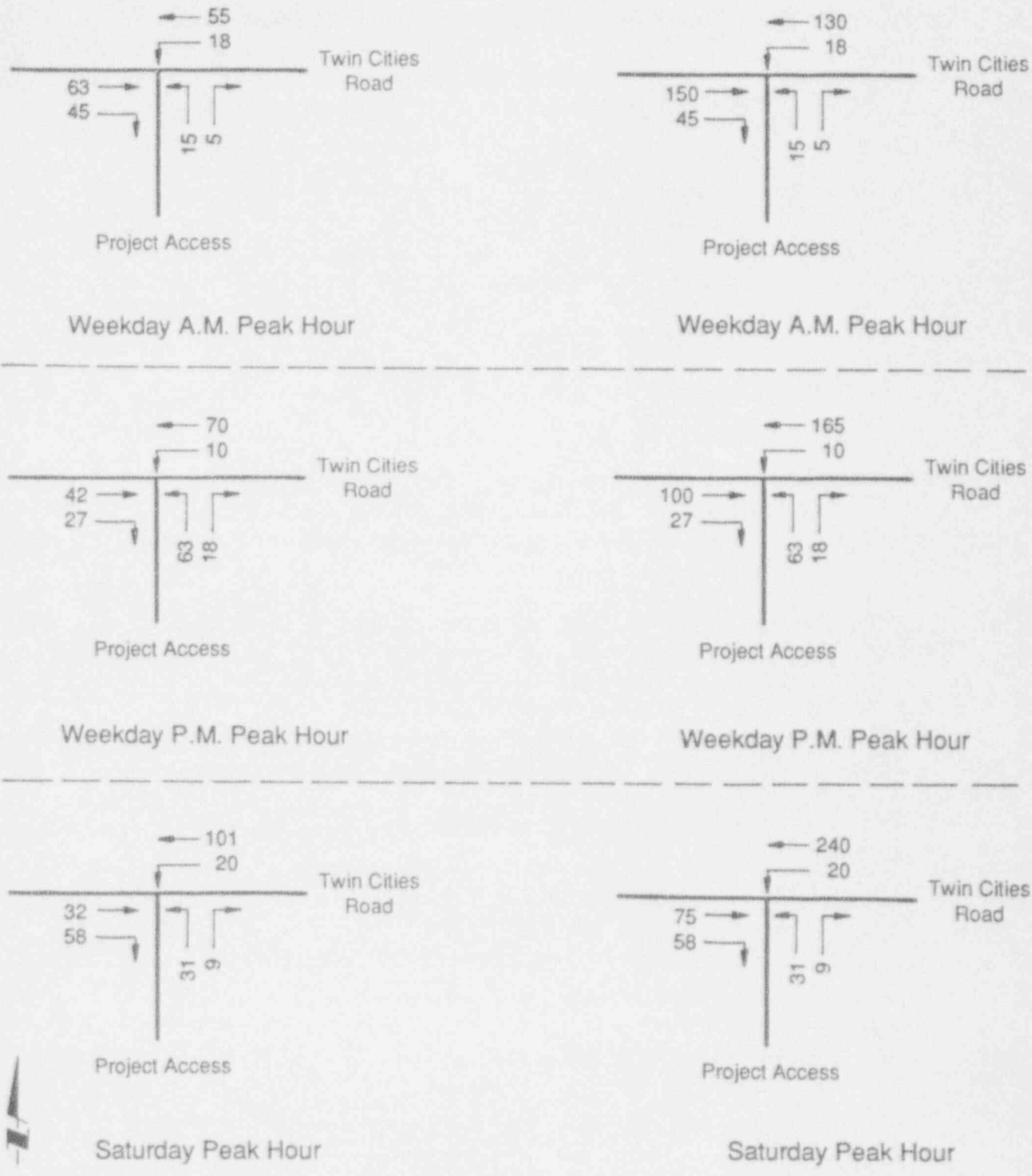


Figure 6-2. Existing Plus-Project and Cumulative Plus-Project Traffic Volumes: Twin Cities Road and Rancho Seco Park Project Access

Cumulative Plus-Project Conditions

The 2015 traffic volume projection for Twin Cities Road was obtained from Sacramento Area Council of Governments (SACOG) (Garry pers. comm.). Using the SACMET traffic model, SACOG has projected that the traffic volume on Twin Cities Road would be expected to increase to between 2,500 and 3,000 vehicles per day by 2015. The 3,000 vehicles per day on this road represents a growth of 4% per year over the 1991 daily traffic volumes presented in the Route Segment Report (California Department of Transportation 1991).

To determine the 2015 peak-hour volumes on Twin Cities Road, the 4% growth rate was applied to the 1993 peak-hour through volumes on this road. To determine the cumulative plus-project turning movement volumes, the traffic generated by the project was added to the estimated 2015 traffic volumes on Twin Cities Road. Figure 6-2 shows the cumulative plus-project traffic volumes at the intersection of Twin Cities Road and the project access.

Table 6-2 shows the results of the cumulative plus-project capacity analysis at the intersection of Twin Cities Road and the project access. This table shows that this intersection would continue to operate at acceptable levels of service under the cumulative plus-project conditions. Additionally, based on the estimated peak-hour traffic volumes, a traffic signal would not be warranted at this intersection.

Impact Summary. The impacts of the proposed project on the cumulative traffic conditions are the same as those described under "Existing Plus-Project Conditions".

MITIGATION MEASURES

Existing Plus-Project and Cumulative Plus-Project Conditions

6.1 Improve the Intersection of Twin Cities Road and the Rancho Seco Project Site Access Road

SMUD will make the following improvements at the intersection of Twin Cities Road and the Rancho Seco project site access road. All improvements would have to be coordinated with Caltrans for SMUD to obtain an encroachment permit and also coordinated with the Sacramento County Department of Public Works Transportation Division.

1. Add a westbound-to-southbound left-turn lane.

2. Add an eastbound deceleration lane along Twin Cities Road west of the project access.

3. Add a westbound acceleration lane on Twin Cities Road west of the project access.

4. Add an eastbound acceleration lane along Twin Cities Road east of the project access.

The first two auxiliary lanes listed above would allow vehicles entering the project site to decelerate in a lane out of the high-speed flow on Twin Cities Road. The last two auxiliary lanes listed above would allow vehicles turning west and east, respectively, onto Twin Cities Road to accelerate before merging with the through traffic.

The timing of this mitigation measure is as follows:

- Within 1 year of certifying the EIR, SMUD will decide where the permanent access point of Twin Cities Road will be located.

- Within 2 years of certifying the EIR, SMUD will secure an encroachment permit from Caltrans.

- Within 3 years of certifying the EIR, SMUD will complete the construction of the improvements to Caltrans standards.

Chapter 7. Air Quality

SETTING

Regional Topography and Climate

The project site is located in southeastern Sacramento County at the eastern edge of the Central Valley. The topography of the area consists of gently rolling hills. The climate of the area is characterized by hot, dry summers and cool, moist winters. Winds in the area tend to be fairly strong and predominate from the west through the Carquinez Strait from the Pacific Ocean.

Federal and State of California Ambient Air Quality Standards

Both the State of California and the federal government have established ambient air quality standards for several different pollutants in California (Table 7-1). For some pollutants, separate standards have been set for different time periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values, such as protection of crops, protection of materials, or avoidance of nuisance conditions.

Ozone Standards

State and federal standards for ozone have been set for a 1-hour averaging time. The state 1-hour ozone standard is 0.09 parts per million (ppm), not to be exceeded. The federal 1-hour ozone standard is 0.12 ppm, not to be exceeded more than three times in any 3-year period.

Ozone is a public health concern because it is a respiratory irritant that increases susceptibility to respiratory infections. Ozone can cause significant damage to leaf tissues of crops and natural vegetation and can damage many materials by acting as a chemical oxidizing agent.

Table 7-1. Ambient Air Quality Standards Applicable in California

Pollutant	Symbol	Averaging Time	Standard, as parts per million		Standard, as micrograms per cubic meter		Violation Criteria	
			California	National	California	National	California	National
Ozone	O_3	1 hour	0.09	0.12	180	235	If exceeded	If exceeded on more than 3 days in 3 years
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
		1 hour	20	35	23,000	40,000		
(Lake Tahoe only)		8 hours	6	--	7,000	--		
Nitrogen dioxide	NO_2	Annual average	--	0.053	--	100		If exceeded
		1 hour	0.25	--	470	--	If exceeded	
Sulfur dioxide	SO_2	Annual average	--	0.03	--	80		If exceeded
		24 hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year
		1 hour	0.25	--	655	--		
Hydrogen sulfide	H_2S	1 hour	0.03	--	42	--	If equaled or exceeded	
Vinyl chloride	C_2H_3Cl	24 hours	0.010	--	26	--	If equaled or exceeded	
Inhalable particulate matter	PM10	Annual geometric mean	--	--	30	--	If exceeded	
		Annual arithmetic mean	--	--	--	50		If exceeded
		24 hours	--	--	50	150		If exceeded on more than 1 day per year
Sulfate particles	SO_4	24 hours	--	--	25	--	If equaled or exceeded	
Lead particles	Pb	Calendar quarter	--	--	--	1.5		If exceeded on more than 1 day per year
		30 days	--	--	1.5	--	If equaled or exceeded	

Notes: All standards are based on measurements at 25° C and 1 atmosphere pressure.
National standards shown are the primary (health effects) standards.

Ozone is of concern primarily during summer, when high temperatures, the presence of sunlight, and an atmospheric inversion layer induce photochemical reactions. Photochemical reactions convert ozone precursor emissions (reactive organic gases [ROG] and nitrogen oxides [NO_x]) into ozone.

Particulate Matter Standards

State and federal standards for inhalable particulate matter have been set for two time periods: a 24-hour average and an annual geometric mean of the 24-hour values. Until recently, the federal and state particulate matter standards applied to a broad range of particle sizes. The high-volume samplers used at most monitoring stations were most effective in collecting particles smaller than 30 microns (one micron is about 0.00004 inch in diameter) (Powell 1980). Health concerns associated with suspended particles focus on those particles small enough to reach the lungs when inhaled. Few particles larger than 10 microns in diameter reach the lungs. Consequently, both the federal and state air quality standards for particulate matter have been revised to apply only to these small particles (generally designated as PM10).

The state PM10 standards are 50 micrograms per cubic meter ($\mu g/m^3$) as a 24-hour average and 30 $\mu g/m^3$ as an annual geometric mean. The federal PM10 standards are 150 $\mu g/m^3$ as a 24-hour average and 50 $\mu g/m^3$ as an annual arithmetic mean.

Carbon Monoxide Standards

State and federal carbon monoxide (CO) standards have been set for both 1-hour and 8-hour averaging times. The state 1-hour CO standard is 20 ppm; the federal 1-hour standard is 35 ppm. Both state and federal standards are 9 ppm for the 8-hour averaging period. State CO standards are phrased as values not to be exceeded. Federal CO standards are phrased as values not to be exceeded more than once per year.

CO is a public health concern because it combines readily with hemoglobin, reducing the amount of oxygen transported in the bloodstream. CO binds to hemoglobin 200-250 times more strongly than does oxygen. Thus, relatively low concentrations of CO can significantly affect the amount of oxygen in the bloodstream. Both the cardiovascular system and the central nervous system can be affected when 2.5-4.0% of the hemoglobin in the bloodstream is bound to CO rather than to oxygen. State and federal ambient air quality standards have been set at levels to keep CO from combining with more than 1.5% of the blood's hemoglobin (U.S. Environmental Protection Agency 1979, California Air Resources Board 1982).

CO is of concern primarily during winter, when vehicle-related emissions are greatest and atmospheric stability allows the buildup of high concentrations.

Existing Air Quality Conditions

The California Air Resources Board (CARB) publishes summaries of air quality monitoring data from locations throughout the state. Following is a summary of monitoring data from locations in Sacramento County.

Ozone

Table 7-2 shows a summary of ozone air quality monitoring data from several locations in Sacramento County. Many locations frequently exceed the state 1-hour standard of 0.09 ppm. The highest levels and most exceedances over the last 5 years have occurred at the Folsom and Citrus Heights stations. Locations that are not downwind of the Sacramento metropolitan area (downwind during the ozone season is generally east and northeast) should have ozone levels somewhat lower than those of most of the monitoring locations.

PM10

Table 7-3 shows a summary of PM10 air quality monitoring data from several locations in Sacramento County. Many of the locations exceed both the state geometric mean standard of 30 $\mu g/m^3$ and the state 24-hour standard of 50 $\mu g/m^3$. Sacramento County is classified by the CARB as a nonattainment area for PM10.

Carbon Monoxide

Table 7-4 shows a summary of CO air quality monitoring data from several locations in Sacramento County. These data show that CO levels exceed standards primarily in the urban Sacramento area. Data from most of the Sacramento County stations show only a few exceedances of the state 8-hour standard.

Air Quality Management Programs

Air pollution control programs were established in California before the enactment of federal requirements. Federal Clean Air Act legislation in the 1970s resulted in a gradual merger of local and federal air quality programs, particularly industrial-source air quality permit programs. Air quality management planning programs developed during the past decade have generally been in response to requirements established by the federal Clean Air Act. Enactment of the California Clean Air Act in 1988, amendments to it in

Table 7-2. Summary of Ozone Air Quality Monitoring Data for Sacramento County: 1988-1992

Monitoring Station	Parameter	Ozone Levels (ppm) 1988	1989	1990	1991	1992
North Highlands	Peak-hour value[a]	0.15	ND	0.12	0.13	0.12
	Days above standard[b]	34		10	9	3
Meadowview Road	Peak-hour value[a]	0.13	0.13	0.14	0.12	0.11
	Days above standard[b]	15	26	17	11	4
Folsom	Peak-hour value[a]	0.17	0.17	0.11	0.19	0.15
	Days above standard[b]	61	48	3	52	42
Citrus Heights-Sunrise Boulevard	Peak-hour value[a]	0.17	0.12	0.15	0.15	0.13
	Days above standard[b]	51	12	21	23	21
Del Paso Manor	Peak-hour value[a]	0.13	0.12	0.15	0.18	0.13
	Days above standard[b]	63	10	21	27	21

Note: ND = no data.

[a] Peak-hour values given as ppm.

[b] Days with a peak 1-hour value exceeding the state standard of 0.09 ppm.

Source: California Air Resources Board 1993.

Table 7-3. Summary of PM10 Air Quality Monitoring Data for Sacramento County: 1988-1992

Monitoring Station	Parameter	PM10 ($\mu g/m^3$) 1988	1989	1990	1991	1992
Citrus Heights-Sunrise Boulevard	Annual geometric mean	43.0	42.6	36.0	34.1	29.3
	24-hour - 2nd highest	78.0	118.0	116.9	88.0	82.0
Sacramento-Del Paso Manor	Annual geometric mean	33.0	40.3	28.6	31.9	24.4
	24-hour - 2nd highest	78.0	104.0	135.0	75.0	67.0
Sacramento Health Department - Stockton Boulevard	Annual geometric mean	35.5	47.0	ND	29.1	26.9
	24-hour - 2nd highest	102.0	155.0	ND	96.0	70.0

Note: ND = no data.

Source: California Air Resources Board 1993.

Table 7-4. Summary of Carbon Monoxide Air Quality Monitoring Data for Sacramento County (ppm): 1988-1992

Monitoring Station	Parameter	1988	1989	1990	1991	1992
Citrus Heights-Sunrise Boulevard	Peak 1-hour value	10	9	10	8	9
	Peak 8-hour value	7.5	6.9	6.5	5.9	5.1
	Days above standard	0	0	0	0	0
North Highlands	Peak 1-hour value	12	ND	8	9	7
	Peak 8-hour value	11.4	ND	5.3	5.3	3.9
	Days above standard	3	ND	0	0	0
Sacramento-Del Paso Manor	Peak 1-hour value	12	15	12	11	9
	Peak 8-hour value	9.7	13.0	11.3	8.0	7.3
	Days above standard	1	13	4	0	0
Sacramento-El Camino Avenue	Peak 1-hour value	15	18	15	15	11
	Peak 8-hour value	11.6	15.9	14.0	12.3	8.6
	Days above standard	7	17	13	6	0
Sacramento-T Street	Peak 1-hour value	ND	14	16	12	12
	Peak 8-hour value	ND	11.3	11.4	9.6	6.5
	Days above standard	ND	7	4	2	0

Notes: ND = no data.
Peak 1-hour and peak 8-hour values given as ppm.
Days above standard is days with a peak 8-hour average value exceeding the federal and state CO standard of 9 ppm.

Source: California Air Resources Board 1993.

1992, and passage of the federal Clean Air Act Amendments of 1990 have produced additional changes in the structure and administration of air quality management programs.

The California Clean Air Act requires preparation of an air quality attainment plan for areas that violate state air quality standards for CO, sulfur dioxide, nitrogen dioxide, or ozone. No locally prepared attainment plans are required for areas that violate the state PM10 standards. PM10 attainment issues are being addressed by the CARB.

In July 1991, the Sacramento Metropolitan Air Quality Management District (SMAQMD) published its air quality attainment plan, which was found to be consistent with the California Clean Air Act. The plan does not address golf course or park land uses, however, and therefore does not pertain to the SMUD Rancho Seco project.

It is important to note that the air quality attainment plan requirements established by the California Clean Air Act are based on the severity of air pollution problems caused by locally generated emissions. Upwind air pollution control districts are required to establish and implement emission control programs commensurate with the extent of pollutant transport to downwind districts. The broader Sacramento area has been identified as a source of pollution transport to the upper Sacramento Valley and the San Joaquin Valley and a receptor of pollutant transport from the San Francisco Bay Area.

IMPACTS

Criteria for Determining Significance

According to the State CEQA Guidelines, a project will normally have a significant effect on the environment if it will:

- violate any ambient air quality standard;
- contribute substantially to an existing or projected air quality violation;
- expose sensitive receptors to substantial pollutant concentrations;
- result in substantial air emissions or deterioration of air quality (substantial emissions would be emissions above the thresholds of significance contained in the SMAQMD environmental review program; those thresholds equal 550 pounds per day [ppd] of CO, 150 ppd of ROG and NO_x, and 80 ppd of PM10);
- create objectionable odors; or

- alter air movement, moisture, or temperature, or result in any change in climate either locally or regionally.

Impact Analysis

The air quality analysis for the proposed project focuses on construction impacts and ozone precursor impacts. CO is not expected to be a problem because high CO levels are primarily found during winter near congested intersections. During winter, project traffic generation is expected to be much lower than peak summer levels. Also, the roads and intersections in the project vicinity operate without congestion.

Construction-Related Air Emissions

Construction of the proposed project would generate emissions of PM10 from site grading and earthmoving activities and emissions of total organic gases, CO, NO_x, sulfur oxides, and PM10 from construction vehicle exhaust emissions.

As described in the initial study, construction-period emissions were calculated using U.S. Environmental Protection Agency (EPA) emission rate data and calculation procedures (U.S. Environmental Protection Agency 1985). Since preparation of the initial study and circulation of the notice of preparation (NOP) of an EIR, several assumptions relating to construction activity have changed. The revised construction program assumes three scrapers, one water truck, one loader, and three track-type tractors being operated 8 hours per day; a 30% PM10 portion of total suspended particulates; and a 90-day period during which grading would occur. An average of 5 acres per day would be actively disturbed during this 90-day period. Calculations of total daily emissions also include a 50% reduction for dust control program effectiveness.

As shown in Table 7-5, construction-period emissions are estimated to be 10 ppd of total organic gases, 40 ppd of CO, 129 ppd of NO_x, 95 ppd of PM10, and 15 ppd of sulfur oxides.

Impact Summary. Implementation of the project would result in the generation of substantial air emissions during construction, including 95 ppd of PM10 emissions. This impact is considered significant because the levels of PM10 emissions would be above SMAQMD thresholds, Sacramento County is classified by the CARB as a nonattainment area for PM10, and the analysis already assumes a 50% reduction for effectiveness of proposed dust control measures. To reduce this impact to a less-than-significant level, implement the following mitigation measures:

7.1 Prepare and implement a dust control plan.
7.2 Minimize air emissions during construction.

Table 7-5. Typical Construction-Period Emissions during Major Site Disturbance Activities (Pounds per Day)

Emission Source	TOG	CO	NO_x	PM10	SO_x
Construction vehicle exhaust emissions	10	40	129	12	15
PM10 fraction of fugitive dust	0	0	0	83	0
Total daily emissions	10	40	129	95	15

Notes: Emission rate data and procedures from U.S. Environmental Protection Agency 1985 (AP-42, Volumes I and II).

TOG = total organic gases.
NO_x = nitrogen oxides.
CO = carbon monoxide.
PM10 = inhalable particulate matter.
SO_x = sulfur oxides.

Ozone Precursor Emissions

New vehicle trips associated with the golf course, campground, and park expansion would generate emissions of the ozone precursor pollutants ROG and NO_x. Also, a relatively minor amount of emissions would be produced by landscape maintenance activities, primarily lawn mowing, and miscellaneous activities associated with the master plan.

A summary of ozone precursor emissions is shown in Table 7-6. Emissions have been calculated for 1995 by multiplying vehicle miles traveled (VMT) for the peak day (Saturday) by the ROG and NO_x emission rates. ROG and NO_x emission rates are based on a temperature of 75 degrees Fahrenheit and a speed of 45 mph. The project is expected to produce 30 ppd of ROG and 70 ppd of NO_x.

Impact Summary. Implementation of the project would result in the generation of ozone precursor emissions from new vehicle trips and landscape maintenance activities. This impact is considered less than significant because these emissions would be below the SMAQMD thresholds. No mitigation is recommended.

MITIGATION MEASURES

7.1 Prepare and Implement a Dust Control Plan

SMUD will prepare a dust control plan before groundbreaking occurs. This plan will ensure that adequate dust control measures are implemented during project construction. The following measures will be included in the dust control plan:

1. The 90-day period proposed for site grading will be lengthened to 120 days to minimize the daily intensity of PM10 emissions to below the SMAQMD PM10 significance threshold.

2. Water will be applied to exposed earth during clearing, grading, earthmoving, and other site preparation work. Water will be applied at least twice a day with complete coverage of surfaces, preferably in the late morning and at the end of the work day, the number of applications depending on wind conditions and the amount of dust generated.

3. Water will be the only type of dust suppressant used. Any change in dust suppressant will be reviewed and approved by a wetlands consultant to ensure that no impacts would result on wetlands or vernal pools.

4. Mud and dirt clinging to truck wheels will be cleaned up on a daily basis and also at the end of the job so that no dirt is carried onto public streets.

Table 7-6. Emissions of Ozone Precursors (Pounds per Day)

Land Use	Saturday Trip Generation	Vehicle Miles Traveled	ROG	NO_x
Park Master Plan	840	25,203	30	70

Notes: ROG = reactive organic gases.
NO_x = nitrogen oxides.

Park master plan includes an 18-hole golf course, a campground, a nature preserve, and a park.

Trip generation rate obtained from Institute of Transportation Engineers 1991.

5. All clearing, grading, earthmoving, and excavation activities will be minimized during periods of winds exceeding 30 mph velocity for more than 1 hour.

6. During construction, onsite vehicle speed in the construction area will be limited to 15 mph.

7. Dry weather wetting and/or paving (with gravel) of heavily traveled roads will be performed as needed to reduce dust emissions throughout construction and the life of the project.

8. The ground surface will be left undisturbed to the extent possible by minimizing the area to be graded and cleared.

9. Bare earth surfaces will be treated to minimize dust; grassing of the golf course will occur as soon after grading as possible.

10. SMUD will combine grading, shaping, drainage and irrigation, feature construction, finish grading, and grassing in distinct units throughout the course and will phase unit construction to minimize the length of time disturbed earth is exposed.

7.2 Minimize Air Emissions during Construction

SMUD will incorporate the following measures into the contract specifications for construction:

1. Construction equipment engines will be tuned according to manufacturers' specifications and kept in proper working condition.

2. Ridesharing and transit incentives for the construction crew will be supported and encouraged.

3. Open burning of wood/vegetative waste materials from construction of the project will be minimized.

Chapter 8. Geology, Seismicity, and Soils

SETTING

Geology

The Rancho Seco Park project site is located on two distinct landforms, the Laguna Formation and the Mehrten Formation (Wagner et al. 1987). Soil types and soil characteristics vary in correlation with the two landforms. Most of the project site is on the Laguna Formation but a small north-central portion of the site is on the Mehrten Formation.

The Laguna Formation is the oldest landform resulting from alluvial deposition on the east side of the Sacramento Valley. The Laguna Formation originated 2-3 million years ago and is associated with the uplift of the Sierra Nevada from a low range of hills to its present height. The Laguna Formation consists of gravelly alluvium. The deposition of alluvium resulted from erosion, stream channel downcutting, and the initial period of glaciation following uplift. In a later period, the original land surface itself underwent considerable erosion that formed the pronounced mound-depression-swale topography that is characteristic today. The duripan that is present in many soil profiles is the result of a later volcanic ashfall. The volcanic ash weathered rapidly in a humid paleoclimate, and silica and iron washed down through the soil profile to cement the lower layers into a duripan.

The Mehrten Formation, the next oldest landform in the Sacramento Valley after the Laguna Formation, is entirely the result of volcanic ashfalls and mudflows. The volcanic eruptions originated in the area of the Sierra Nevada before uplift; the most recent occurred approximately 4 million years ago. The formation consists primarily of andesitic tuffaceous sandstone.

Seismicity

The fault system nearest the project area is the Bear Mountain Fault Zone, 11 miles to the northeast. The Bear Mountain Fault Zone and the Melones Fault Zone further east constitute the Foothills Fault System (California Division of Mines and Geology 1992). Although past studies have indicated that portions of the Foothill Fault System could be

active, the California Division of Mines and Geology has concluded that insufficient evidence exists to classify it as active (i.e., earthquake occurrence within the last 11,000 years).

The Willows and Stockton faults in the main part of the Central Valley are nearest the project area to the west, but these faults are not well defined and are considered inactive.

Active faults distant from the project area would not be expected to cause substantial ground shaking in the project area. Ground shaking from a regional earthquake would likely have a maximum modified Mercalli scale intensity of VII-VIII. Structures designed according to present earthquake standards would suffer only slight damage. No unconsolidated sandy sediments with a high water table are present to pose a liquefaction hazard. Neither are active or recent landslides evident, and no landslide hazard exists.

Topography

The central portion of the project site is a gently undulating terrace with pronounced mound-intermound microrelief, creating numerous shallow depressions with vernal pools and swales. The terrace has a gently sloping inner drainage tributary to Hadselville Creek, now dammed and inundated by Rancho Seco Lake. Slopes on the terrace reach a maximum of approximately 8%. On the northeast side of the terrace and project site, steeper slopes and drainages with a maximum slope of 30% descend to Hadselville Creek.

Soils

The Redding and Corning soil series are the two series associated with the Laguna Formation (Tugel 1993). The Redding series predominates on the lower slopes of the old terrace along the creek tributary to Hadselville Creek that is now dammed to form Rancho Seco Lake. The Corning series predominates on the high, broad portion of the old terrace and, where unleveled, has the densest network of intermound vernal pools and swales.

The Redding series typically has a strong brown gravelly loam or sandy loam surface horizon about 7 inches thick. The clay content ranges from 10-25% and the gravel content from 5-25%. The upper part of the subsoil is a yellowish red loam or gravelly loam an average of 13 inches thick. The lower part of the subsoil is a claypan consisting of reddish brown and yellowish red gravelly clay an average of 8 inches thick. Below the claypan, at a depth of 20-40 inches, is a very gravelly, strongly silica-cemented duripan.

Water perches over the impermeable duripan and the very low permeable claypan during the rainy season. Plant roots are unable to penetrate the duripan and are restricted

to cracks in the claypan; plant rooting is therefore shallow. The organic matter content and native fertility of the Redding soil is moderately low and the vegetation is largely dependent on nutrient cycling processes in the surface horizon. Nitrogen and phosphorus tend to be limiting nutrients.

The Corning series typically has a strong brown to yellowish red gravelly loam or sandy loam surface horizon with an average thickness of 28 inches. The clay content is similar to the clay content of the surface horizon of the Redding soil, but the gravel content is higher. The subsoil is a claypan consisting of yellowish red gravelly clay loam or clay ranging from 35% to 55% clay and averaging 19 inches in thickness. No duripan is present below the claypan. In seasonal perching over the claypan, rooting depth, and soil fertility, the Corning series is similar to the Redding series.

Two soil series are associated with the Mehrten Formation in the project area. The land surface of the Mehrten Formation also has a mound-intermound pattern, with the Pentz series on the mounds and the Hadselville series in the intermounds.

The Pentz series typically has a brown, fine sandy loam to loam surface horizon an average of 9 inches thick, with 8%-18% clay content. The subsoil is typically a brown fine sandy loam to sandy clay loam averaging 7 inches in thickness, with 10%-20% clay content. Depth to weakly consolidated andesitic sediments ranges from 10 to 20 inches. Native fertility of this soil is expected to be low to moderate.

The Pentz series has a surface horizon with a darker color and higher organic matter content than those of the Redding and Corning series. The Pentz series does not have a duripan or a claypan.

The Hadselville series typically has a grayish brown sandy loam surface horizon averaging 7 inches in thickness. The clay content and organic matter content are in the same ranges as those of the Pentz series. Depth to weakly consolidated andesitic sediments ranges from 4 to 10 inches. Native fertility of this soil is expected to be low to moderate.

Even though the Hadselville soil lacks a claypan and duripan, water still perches over the paralithic andesitic bedrock. Because of the shallower mound-intermound characteristic of the land surface and extreme shallowness of the soil, vernal pools on the Mehrten Formation are shallow, pond quickly with the onset of rainfall, and dry out quickly after rainfall.

A summary of the general characteristics of the soils at the Rancho Seco site is found in Table 8-1; locations of the map units are found in Figure 8-1.

Table 8-1. General Characteristics of the Soils at the Rancho Seco Park Site

Soil Series	Map Unit	Depth[1] (inches)	Permeability	Hydrologic Soil Group	Erosion Potential[2]	Septic System Limitation	Expansive Clay Soil?	Hardwood Tree Suitability
Corning	#125, 126	20-40	very slow	D	slight-severe	severe	yes	very poor
Redding	#126, 198	20-40	very slow	D	slight-severe	severe	yes	very poor
Pentz	#156	10-20	moderately rapid[3]	D	slight-severe	severe	no	very poor

[1] Depth is to claypan, hardpan, or bedrock.
[2] See text and Table 8-2 for a more specific evaluation.
[3] Permeability is moderately rapid only to bedrock.

Source: Tugel 1993.

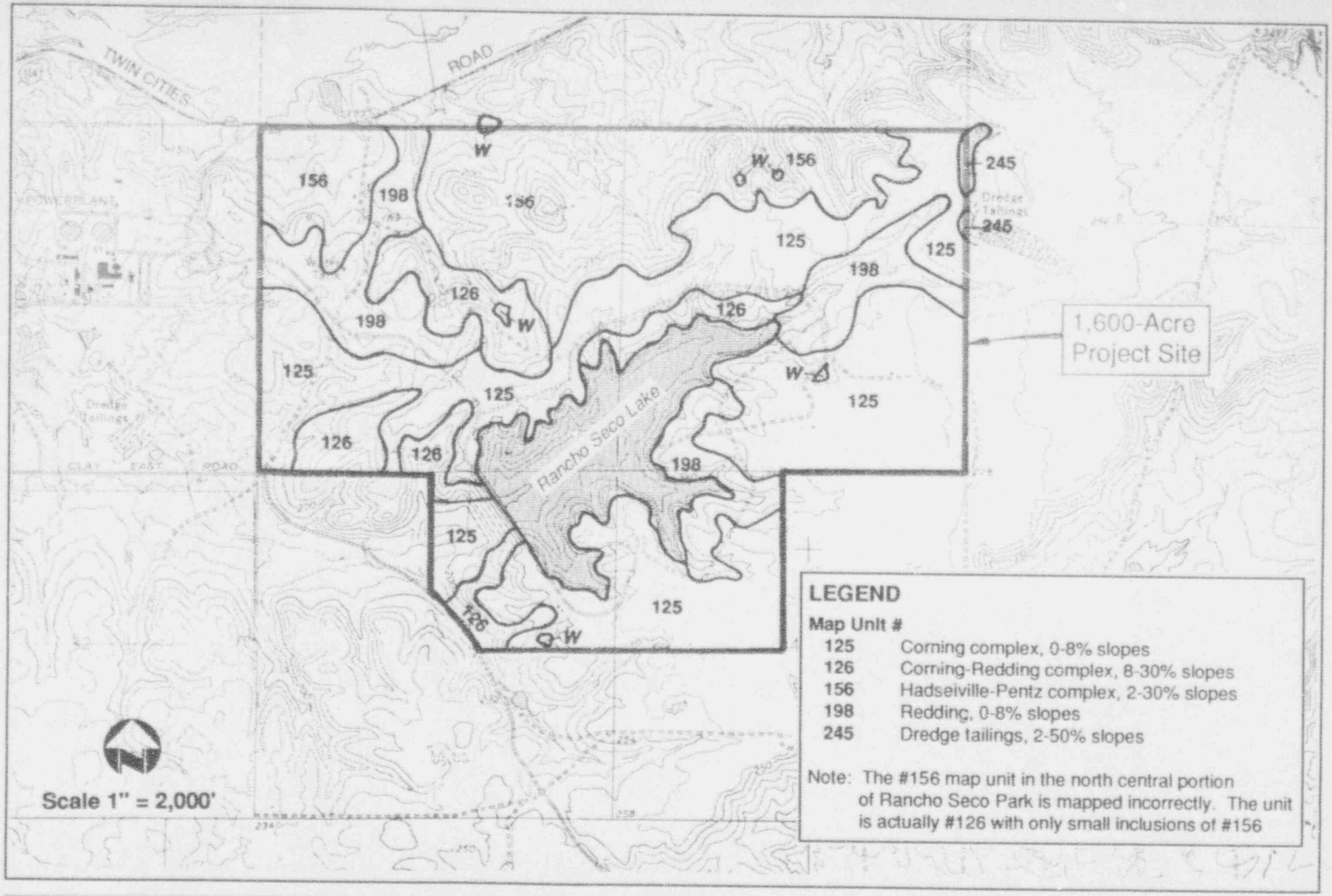


Figure 8-1. Rancho Seco Soils

Runoff

The soil types present at the project site have horizons and layers (claypan, hardpan, and bedrock) that impede the downward movement of water through the soil profile; the permeability is rated very slow for Corning and Redding series and seasonal perched water tables form in these soils (Tugel 1993). The permeability rate is higher for the Pentz series but this is counteracted by a shallow depth to a relatively impermeable volcanic bedrock. Altogether, the water-holding capacity of these soils is low to very low.

These soil characteristics mean that the surface soil horizons quickly saturate in the rainy season, and water runs off and ponds in the shallow pool depressions and swales. Where the slopes are steeper and pool depressions are few, such as on the northeast slope of the Laguna Formation terrace, runoff rates can be medium to rapid. The hydrologic soil group classification for all of the project soil types is category D, which indicates the highest potential for runoff to occur.

Additional information about hydrology is found in Chapter 9, "Water Resources."

Erosion Potential

Somewhat correlated with runoff potential is water erosion potential. The erosion potential is dependent on the soil type, percent and length of slope, degree of vegetative cover and land management practices, and climate (U.S. Science and Education Administration 1978). The same soil characteristics that result in a high runoff potential also result in a high erosion potential. The erosion hazard is rated as slight to moderate for the Corning, Redding, and Pentz series for patterned ground with slopes of 8% or less, but is rated moderate to severe for Corning and Redding soils on longer slopes of 8% to 30% (Tugel 1993).

All the soil types found on the project site are rated in Wind Erodibility Group 8, the classification for the lowest wind erosion potential. The potential for severe wind erosion, even under disturbed soil conditions, is therefore very low.

Natural Vegetation and Soil Revegetation Potential

All the soil types found on the project site are naturally suitable for the support of grassland and vernal pool vegetation communities, and these communities are found throughout most of the site. Trees are naturally absent from the soil types present or occur only in rare or isolated locations. The shallow rooting depths to claypan, hardpan, and bedrock, the low water-holding capacity, low native fertility, and root-damaging effect of expansive clay soil horizons all act to limit the potential for tree growth. The U.S. Soil Conservation Service (SCS) rates the revegetation potential of these soils as very poor for hardwood trees and poor for shrubs (Tugel 1993). Valley oaks naturally occur on some

valley soils to the west and in floodplain soils bordering larger creeks in the area. Blue oak and interior live oak occur naturally on foothill soils to the east, and black oak is found farther east at a higher elevation.

IMPACTS

Criteria for Determining Significance

According to the State CEQA Guidelines, a project will normally have a significant effect on the environment if it will:

- cause substantial flooding, erosion, or siltation or
- expose people or structures to major geologic hazards.

Based on professional standards, a project will also normally have a significant effect on the environment if it will:

- result in a substantial reduction in soil fertility and site revegetation potential;
- result in rates of soil erosion substantially higher than sustainable levels, causing substantial sedimentation of adjacent water bodies; or
- result in damage to structures because of the presence of expansive clay soil.

Impact Analysis

Soil Erosion

The golf course construction plan anticipates grading and shaping to begin in August 1994. Feature construction and finish grading would continue through spring 1995, when grassing would take place. This schedule would result in the exposure of graded, unvegetated soil to increased soil erosion during the winter rainy season of 1994-1995.

Table 8-2 quantifies the anticipated soil erosion in the graded project areas, varying according to soil type, soil horizon exposure, and percent and length of slope. The equation used is the Universal Soil Loss Equation (USLE) and variable values chosen are specified in SCS and other documentation and are specific to the project site. Calculations were based on assumptions that there would be complete vegetation removal in graded areas and bulldozer trackwalking or raking on the contour.

Table 8-2. Calculations of Potential Soil Erosion

Map Unit	Soil Series	USLE[1] Factors							
		R[2]	K[3]	L[4]	S[5]	LS[6]	C[7]	P[8]	A[9]
#125, 126	Corning	25	0.20 (A,C)	100	8%	0.99	1.0	0.9	4.5
		25	0.20	600	8%	2.42	1.0	0.9	10.9
		25	0.20	100	30%	5.87	1.0	0.9	26.4
		25	0.20	550	30%	13.76	1.0	0.9	61.9
		25	0.28 (E)	550	30%	13.76	1.0	0.9	86.7
#126, 198	Redding	25	0.24 (A)	100	8%	0.99	1.0	0.9	5.3
		25	0.24	800	8%	2.80	1.0	0.9	15.1
		25	0.24	550	15%	5.54	1.0	0.9	29.9
		25	0.20 (B)	100	8%	0.99	1.0	0.9	4.5
		25	0.20	800	8%	2.80	1.0	0.9	12.6
		25	0.20	550	15%	5.54	1.0	0.9	24.9
#156	Pentz	25	0.28 (A)	50	8%	0.70	1.0	0.9	4.4
		25	0.28	600	30%	14.37	1.0	0.9	90.5
		25	0.37 (B)	600	30%	14.37	1.0	0.9	119.6

[1] Universal Soil Loss Equation.
[2] R = Rainfall and runoff factor (U.S. Soil Conservation Service 1992).
[3] K = Soil erodibility factor (Tugel 1993).
[4] L = Slope length in feet (U.S. Soil Conservation Service 1992).
[5] S = Slope percent (Tugel 1993).
[6] LS = Topographic factor (U.S. Soil Conservation Service 1991).
[7] C = Cover and management factor (Goldman et al. 1986).
[8] P = Support practice factor (Goldman 1986 et al., U.S. Soil Conservation Service 1991).
[9] A = Soil loss in tons/acre/year.

Results of USLE calculations are expressed in tons per acre per year. (The removal of one ton of soil per acre is roughly equivalent to the removal of 0.01-inch depth of soil uniformly over the whole acre.) Each soil type has an established rate of soil erosion that could be expected to occur on an annual basis on agricultural land without a substantial impairment of soil productivity. The rate is two tons per acre per year for Corning and Redding soils and one ton per acre per year for Pentz soil (Tugel 1993). The potential average erosion rate values for the project site soils during one rainy season under construction conditions are given in the last column of the table.

Although the time period of elevated potential for soil erosion under construction conditions is of limited duration, the potential calculated rates of soil loss are substantial and would result in decreased soil fertility and in eroded soil material being transported offsite and contributing to sedimentation of local stream channels.

Impact Summary. Implementation of the project could result in a substantial increase in soil erosion, resulting in decreased soil fertility and increased sedimentation. This impact is considered significant. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

8.1 Prepare and implement an erosion and sediment control plan.

Soil Fertility

The park master plan proposes the construction of a golf course that will be designed to use natural topography to the fullest extent possible. A site-specific grading plan has not been prepared. Construction of all the components of the park master plan has been estimated to require the grading of approximately 100,000 cubic yards of soil, the equivalent of moving soil 1 foot deep over an area of 62 acres.

The soil types present on the project site are naturally low to moderate in fertility, with most nutrients concentrated in the surface horizons. The duripan of the Redding series and the volcanic bedrock of the Pentz series are infertile, and the claypan of the Corning and Redding series is of low fertility. This is evidenced at the park site in the area proposed for the equestrian center and pasture. Some portions of the Redding series soil in this area were previously graded down to expose the duripan and are now barren. Areas where some claypan remains over the duripan support sparse, poor vegetative growth. It will be very difficult and costly to develop a horse pasture in these areas.

The range in depth of the relatively fertile surface horizons in the respective soil series are as follows: Corning series, 20-40 inches; Redding series, 20-40 inches; and Pentz series, 10-20 inches. Unless the topsoil is preserved during grading activities, the likelihood of successful revegetation would be low, unless substantial amounts of soil amendments were applied. Only the surface layers (10-40 inches thick) have the proper physical and biochemical properties for successful revegetation. In their present condition, the other

soil/rock layers are poorly suited for plant growth, mostly because of unsuitable physical structure and lack of organic matter that do not allow nutrient cycling to occur.

Impact Summary. Implementation of the project could result in the loss of soil fertility and reduced revegetation potential as a result of grading activities. This impact is considered significant. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

8.1 Prepare and implement an erosion and sediment control plan.

Expansive Soils

The Corning series soil has a claypan with expansive clay properties generally occurring at a depth of 20 to 40 inches and ending at a depth of 26 to 52 inches (Tugel 1993). The total thickness in the Corning soil of the expansive clay layer therefore could range from 6 to 32 inches. The Redding soil also has an expansive clay layer, but it is generally less thick and at a shallower depth than the expansive clay layer of the Corning soil and is absent in some Redding soil profiles. Placement of building foundations, roads, and parking areas on excavated surfaces of expansive clay could result in damage to those structures.

Impact Summary. Implementation of the project could result in possible damage to building foundations, roads, and parking areas constructed on expansive clay soil. This impact is considered significant. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

8.2 Prepare and implement the recommendations of a geotechnical engineering report.

MITIGATION MEASURES

Recommended Mitigation Measures

8.1 Prepare and Implement an Erosion and Sediment Control Plan

The Land Grading and Erosion Control Ordinance, Sacramento County Code, Chapter 16.44, requires SMUD to obtain a grading and erosion control permit for the project. An erosion and sediment control plan must be prepared prior to issuance of a grading and erosion control permit. Many of the elements of the grading and erosion control plans developed to comply with the county's ordinance can be used in implementing a stormwater pollution prevention plan (SWPPP) and a monitoring plan as required by the

state. Prior to the commencement of any construction projects resulting in a land disturbance of 5 acres or more, the state requires that a notice of intent (NOI) be filed with the regional water quality control board (RWQCB) for coverage under the state's general construction activity stormwater permit that requires implementation of an SWPPP.

An erosion and sediment control plan approved by the Sacramento County Department of Public Works will be implemented during the construction phase with the goal of minimizing erosion and transport of sediments. The plan should be prepared in accordance with the county's Guidance Manual for Development of Erosion and Sediment Control Plans. The plan should include the type and location of best management practices (BMPs) placement, time schedule for BMP implementation relative to the wet season, and schedule for BMP maintenance. The erosion and sediment control plan is required to be prepared by a California-registered civil engineer.

All BMPs should be implemented and operational no later than the start of the wet season. The wet season is defined as the period between October 1 and April 15. Variance from the October 1 implementation start date may be allowed, provided written approval of the director of the department of public works or a designated representative is obtained prior to the date implementation was to occur. Some BMPs should be implemented year round because of concerns related to site runoff not associated with rainfall.

The following measures will be considered to minimize erosion and sedimentation:

1. Only essential golf course grading will occur during the months of October through April. Nonessential grading for utilities, roads, or other features will be scheduled to avoid construction during the wet season.

2. To the maximum extent feasible, the grading plan for the golf course will be developed to limit grading activity to slopes of 15% and less. It is recommended on slopes of Corning soil of 15% that graded portions not exceed 50 feet in length, on slopes of 10% that graded portions not exceed 125 feet in length, and on slopes of 5% that graded portions not exceed 800 feet in length. Corresponding slope lengths could be slightly higher for the Redding soil but would be substantially less for the Pentz soil. This will limit the calculated soil loss to a maximum of five times the sustainable rate. Slope length limitation may be achieved by leaving ungraded strips with existing vegetation.

3. To the maximum extent feasible, grading in areas to be landscaped outside the golf course will be limited to a depth of 5 to 10 inches to limit the removal and displacement of the soil surface horizons. This would limit grading to a depth of 10 inches in most of the project site that has Corning and Redding soils. In the portions of the project site that have Pentz soil,

grading would be limited to a depth of 5 inches. This minimal grading would leave enough of the soil surface horizons to facilitate revegetation.

4. Consideration shall be given as much as possible to retaining existing vegetation and conducting grading in phases, thus minimizing the extent of disturbed soil.

5. Upon completion of rough grading, soils should be tested in various locations throughout the graded area. If the newly created topsoil layer is found to be deficient when compared with undisturbed existing topsoil, this newly created topsoil layer will be amended with the appropriate materials to improve the final topsoil characteristics. To compensate for any nutrient deficiencies, during the course of golf course operations, commercial slow-release fertilizers should be applied as part of an overall fertilization program using appropriate BMPs.

6. The plan will include erosion control BMPs to control soil erosion and sediment control BMPs to control the transport of sediment. Erosion control BMPs include, but are not limited to, hydroseeding, maintaining existing vegetation, and matting. Sediment control BMPs include, but are not limited to, providing stabilized access and installing straw bale barriers, straw bale inlet filters, filter barriers, silt fences, sediment traps, and sediment basins.

7. Any stockpiled soil (including topsoil, subsoil, or other material) should be placed such that it will not be subject to accelerated erosion. If the stockpiles are to be in place more than 4 months, they should be seeded with a legume cover crop.

8. Grading should be conducted such that no soil material is disposed of in any of the open space or wetlands areas.

9. Drainage outfalls should be designed and positioned to avoid erosion. Energy dissipators should be installed where necessary.

10. Small sediment basins or traps should be constructed to prevent sediment from being transported into onsite drainages or open space areas. The locations and sizes of these basins will be shown on the erosion and sediment control plan.

8.2 Prepare and Implement the Recommendations of a Geotechnical Engineering Report

A soils and geotechnical engineering investigation report produced by a California registered soils engineer or geotechnical engineer experienced and knowledgeable in the

practice of soils engineering will be prepared prior to submittal of the grading plans to Sacramento County. The report will address and make recommendations on the following:

1. road, pavement, and parking area design;
2. structural foundations;
3. grading practices for structural uses;
4. erosion/winterization;
5. special problems discovered onsite (i.e., expansive soils);
6. slope stability; and
7. septic tank/leach field/seepage pit designs.

The effects of soil expansion resulting from seasonal changes in moisture content can be mitigated by one or more of the following: removing expansive clay material from excavated areas and backfilling with other excavated material, supporting foundations on nonexpansive material, extending footings below the depth of seasonal moisture change, using pier and grade beam foundations, and treating the soil with lime. The most practical and economical solution for the specific expansive soils on the site appears to be removal and backfilling.

Other Recommended Measures

Soil Fertility

The following measure is recommended to take advantage of the native soil fertility.

The golf course grading plan should provide for removing and stockpiling topsoil. All soil material above the claypan, duripan, and volcanic bedrock in the respective soil series should be removed and stockpiled before the commencement of final grading activity. The stockpiled surface soil should then be replaced uniformly over the graded surface. This measure would result in an increase in total grading volume and increased grading difficulty in claypan, duripan, and bedrock. However, this measure will take advantage of the native soil fertility and minimize the amount of applied fertilizers that will be required.

Alternatively, graded areas should be dressed with topsoil or organic amendments or fertilized such that soil fertility is not substantially less than that of the native soils at the site.

Chapter 9. Water Resources

This chapter discusses water resource issues relating to hydrology and water quality. Information for this chapter came from two sources, Psomas and Associates (1993), by the engineers for the proposed project, and a review of the files of the Central Valley Regional Water Quality Control Board (RWQCB). Additional information on water services is provided in Chapter 5, "Water and Wastewater Services."

SETTING

Hydrology

Surface Water

The terrain of the project site consists of rolling gentle slopes with many small collection tributaries that drain runoff from incident rainfall. Rainfall in the site vicinity averages 18.6 inches per year (Psomas and Associates 1993). The site ranges in elevation from 130 to 280 feet above sea level. All land on the site drains eventually to Hadselville Creek; most drains generally to the north-northwest to Hadselville Creek via five small tributaries (Figure 9-1). A small portion of the site, including Rancho Seco Lake, drains to Clay Creek, which is also tributary to Hadselville Creek. Flow data for Clay and Hadselville Creeks were not available at the time this report was prepared. Hadselville Creek drains into Laguna Creek, which conveys flow westerly to the Cosumnes River and then into the Mokelumne River.

The project site and vicinity have not historically been prone to flooding and are not likely to flood even under heavy rainfall (Sacramento Municipal Utility District 1991). The site itself is not located in a 100-year floodplain; however, the Hadselville Creek corridor and the immediate area where tributaries enter it are designated as 100-year flood hazard areas (Zone A), according to flood insurance rate maps for Sacramento County.

The estimated peak runoff from the five tributaries under existing conditions is presented in Table 9-1.

Rancho Seco Lake has a tributary area of approximately 1,000 acres in the upper reaches of Clay Creek. The lake covers an area of approximately 164 acres and has a minimum storage capacity of 2,850 acre-feet (af) (Sacramento Municipal Utility District file

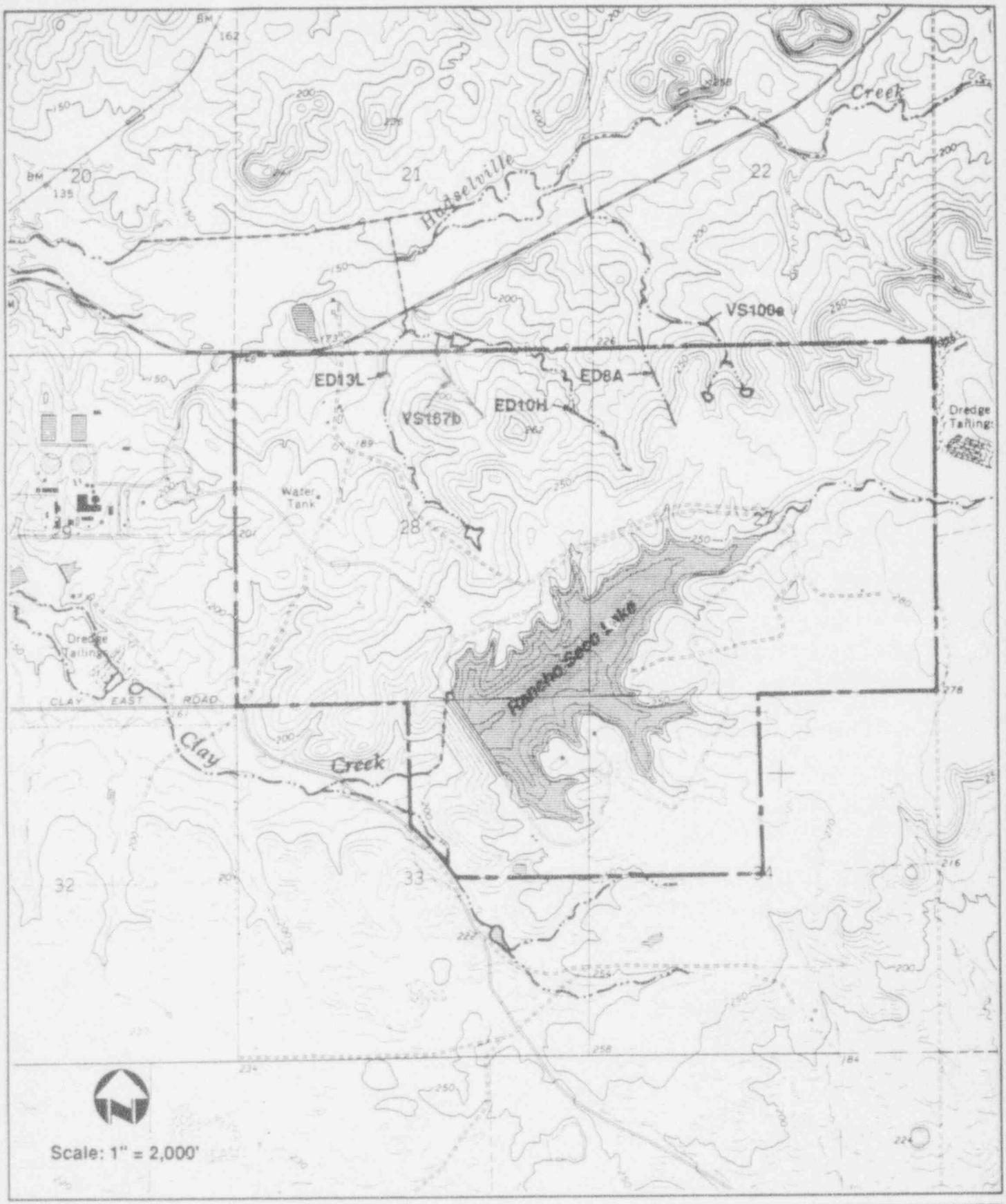


Figure 9-1. Surface Water Features on the Project Site and Vicinity

Table 9-1. Tributary Peak Runoff Flows: Existing Conditions

Tributary	10-Year Event (cfs)[a]	25-Year Event (cfs)[a]
ED 8A	7.7	9.5
ED 10H	57.7	71.0
ED 13L	45.6	56.1
VS 100e	19.7	24.3
VS 167b	3.8	4.7

[a] cfs = cubic feet per second.

Source: Psomas and Associates 1993.

data). The annual volume of water collected in the lake from precipitation in the tributary area has been estimated at approximately 620 af per year (af/yr) (Psomas and Associates 1993). The rainfall intensity and return frequency to produce this runoff estimate were not identified.

The flow in Clay Creek, which was an ephemeral stream before construction of Rancho Seco, is dominated downstream of the site by cooling water discharge from the Rancho Seco nuclear power plant. The Nuclear Regulatory Commission requires that 8,500 gallons per minute (gpm) of water flow through the Rancho Seco power plant on a continual basis. Water is supplied to the power plant via the Folsom South Canal (FSC) (Figure 9-2). Water can be transported either to the power plant or to Rancho Seco Lake, which is used to maintain an emergency standby water source for the power plant. FSC water is used to maintain the lake level in Rancho Seco Lake. The amount of water transported to Rancho Seco Lake is not quantified, but is very small relative to the amount delivered to the power plant (Psomas and Associates 1993).

Vernal Pools

The site contains 20.25 acres of vernal pools, which are considered typical of vernal pools throughout the Sacramento Valley. Vernal pools provide important hydrologic functions, in addition to substantial biological resources, by linking the flow of precipitation, surface water, and groundwater between the upstream and downstream portions of a watershed. Vernal pools may retard the flow of surface runoff, reduce flow velocities, and reduce erosion potential. Vernal pools can also contribute to groundwater recharge and discharge as surface water.

In general, direct precipitation is the main source of water filling vernal pools and evaporation is the main cause of water loss. Overland and subsurface flow can also contribute to filling vernal pools. Water may also be lost by subsurface flow. This is especially true for vernal pools not connected to an upstream channel or swale. Overland flow between vernal pools on the project site is probably not a major hydrologic pathway, although the soils have a low infiltration rate, because the gentle slopes allow water to be retained in the soil. This condition can result in the presence of perched groundwater. For more information on vernal pools and wetlands, refer to Chapter 10, "Biological Resources".

Groundwater

The site is found in the Pliocene Laguna Formation and is underlain by 1,500 to 2,000 feet of Tertiary or older sediments, which were deposited on a basement complex of granitic to metamorphic rocks (Sacramento Municipal Utility District file data). Groundwater in this area is present under free or semiconfined conditions as a part of the Sacramento Valley groundwater basin. Water is stored primarily in the Mehrten Formation. The sand and gravel zones of this formation yield water readily and groundwater is heavily

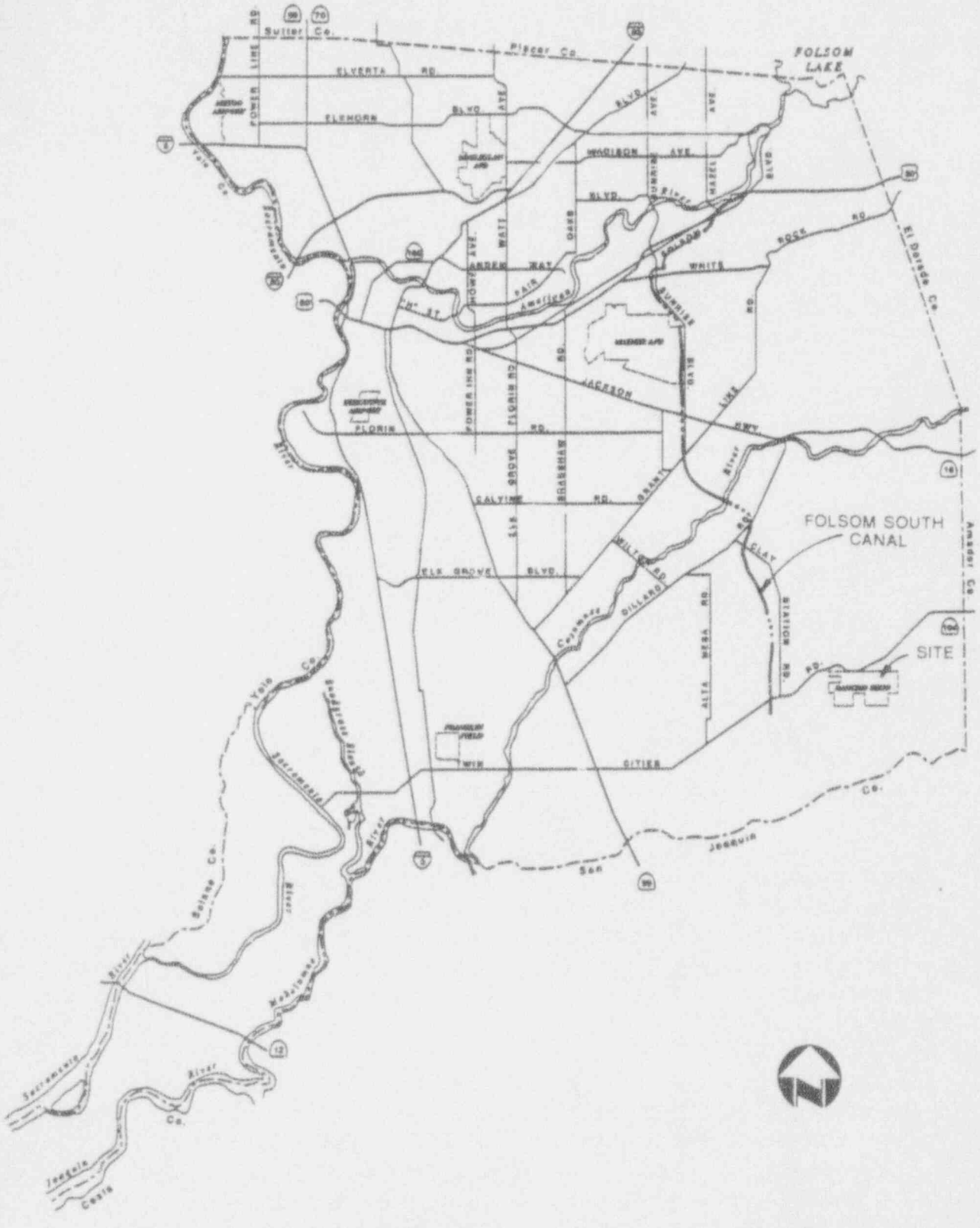


Figure 9-2. Location of Folsom South Canal

relied on in many areas of Sacramento County. The average overdraft for the Sacramento area is 0.5 foot per year, with groundwater levels dropping approximately 35 feet since 1930 (County of Sacramento 1992). The area around Galt and Elk Grove is considered one of the three major overdraft areas in the county. Groundwater levels at the site have been dropping approximately 2 feet per year since 1976, with potable water now at depths of 230 to 350 feet (Sacramento Municipal Utility District 1991).

Sustained yield is defined as the amount of groundwater that can be withdrawn without lowering groundwater levels. The sustained yield for the Folsom South service area, which includes the Galt Irrigation District, Omochumne, and other south service subareas, is 215,000 af/yr. These subareas have estimated sustained yields of 33.4, 33.9, and 18.5 af/yr, respectively (County of Sacramento 1992).

Only a relatively small portion of Sacramento County is underlain by materials with sufficient infiltration capacity to provide natural groundwater recharge. Recharge areas usually exist mainly along active large stream channels with sands and gravels. Some limited areas of the site along Clay Creek have moderate recharge capability, especially with the power plant discharge, but most of the site is characterized as having poor recharge capability because of clay or hardpan soils (County of Sacramento 1992).

An onsite well supplies domestic water to the park. The park well supplies a current demand of approximately 600 gpd (Psomas and Associates 1993).

Water Quality

Surface Water

The beneficial uses of Clay, Hadselville, and Laguna Creeks are municipal water supply, recreation, groundwater recharge, and fish and wildlife habitat. Water quality must be maintained to support these uses and meet the requirements of the Central Valley RWQCB basin plan. Refer to "Regulatory Background" below for more information about the basin plan. Only very limited water quality data were available for surface waters on or adjacent to the site. There are no known problems in the site streams, tributaries, or Rancho Seco Lake.

The Nuclear Regulatory Commission and SMUD conduct water quality sampling in Clay, Hadselville, and Laguna Creeks downstream of the project site. Dissolved oxygen, pH, chlorine residual, and temperature are monitored monthly in Clay Creek near the power plant discharge as a requirement of a National Pollutant Discharge Elimination System (NPDES) permit for the power plant discharge. All parameters were in compliance with the permit limits in 1992 and 1993, as indicated by RWQCB file reports.

Water quality of the site streams and lake is considered good because of the lack of urban activities or other potential sources of pollution. Water quality in the lake is highly influenced by the FSC and drainage from the upper Clay Creek watershed. Water quality in the FSC is considered very good, reflecting that of Folsom Lake and Lake Natoma. The pH of FSC water is frequently high (at or above 8.0-8.5) because of the alkalinity of the concrete lining of the FSC. Data collected on the power plant discharge in 1990, which was 98% FSC water, indicate total dissolved solids concentrations ranging from 52 to 264 milligrams per liter (mg/l) and conductivity values ranging from 53 to 125 micromhos per centimeter; copper and zinc concentrations were less than 0.1 mg/l. A recent study conducted by SMUD at the request of the RWQCB analyzed toxic organic compounds and heavy metals in Clay Creek. Most compounds were not detected. Cadmium, chromium, copper, zinc, and chloroform were detected but were all below State Water Resources Control Board (SWRCB) Inland Surface Water Plan (ISWP) limits (Central Valley Regional Water Quality Control Board file data). The ISWP is discussed further under "Regulatory Background" below.

Groundwater

Groundwater quality at the site is generally good and is within federal and state limits. The water is a sodium bicarbonate type with a low total dissolved solids concentration of less than 200 mg/l; groundwater is very soft, with hardness less than 50 mg/l (as calcium carbonate). Iron and manganese usually do not exceed 0.3 mg/l (Sacramento Municipal Utility District file data). No other data on groundwater quality at the site are available. There are no known reports of contamination or other water quality problems. Groundwater contamination of the Mehrten Formation aquifer in the vicinity of the site is unlikely because of the lack of urbanization and the low soil permeability and because the finer-grained materials above the formation would effectively prevent substantial migration of contaminants (Sacramento Municipal Utility District file data).

Septic disposal systems and their leach fields are an important potential source of nitrates and must be designed to prevent groundwater contamination (County of Sacramento 1992). The density and spacing of septic systems and the design and materials used to construct the system are all factors in providing groundwater protection. Sacramento County General Plan policies specify that septic systems on new parcels of less than 5 acres be redesigned or replaced if future testing shows increasing nitrate levels.

Regulatory Background

Wastewater Discharge

All discharges of wastewater or cooling water to surface waters are regulated by the RWQCB through the NPDES permit process. The power plant uses approximately

8,500 gpm of FSC water for dilution, which is then discharged to Clay Creek. The power plant wastewater treatment facility, which discharges effluent combined with the cooling water discharge into Clay Creek, has a maximum discharge limit of 10,000 gallons per day (gpd). This facility averaged 6,000 gpd of discharge in 1991 and decreased by May 1993 to about 3,000 gpd. The power plant wastewater treatment facility discharge is a minute portion of the overall discharge to the creek. The effluent stream is monitored for conductivity, pH, and radioactivity. If any of these parameters exceed the NPDES permit limit, the discharge is diverted into one of two 500,000-gallon retention basins (Sacramento Municipal Utility District 1991). The power plant wastewater facility operates under its own NPDES permit and is in compliance with all provisions of the permit (Central Valley Regional Water Quality Control Board file data).

Rancho Seco Park also has its own wastewater treatment facility, which consists of screens and ponds. This facility has no NPDES permit because it does not discharge to surface waters.

The County of Sacramento Department of Environmental Health (DEH) regulates individual wastewater disposal systems consisting of septic tanks. DEH regulations specify the allowable density for placement of septic tanks. DEH regulations also stipulate the minimum requirements for design, construction, and installation of septic tanks. Percolation testing must be performed by a geotechnical engineer and should be used to guide the design. Policies in the Sacramento County General Plan specify mitigation in the form of new design and type of septic systems if testing indicates a trend in increase in nitrate levels.

Stormwater Discharge

Stormwater discharges were added to the NPDES in 1990 under regulations promulgated by the U.S. Environmental Protection Agency (EPA). The regulations require NPDES permits for two types of stormwater discharges, construction sites and certain industrial activities. The SWRCB is the agency responsible for issuing these two types of permits. The RWQCB administers the NPDES program for stormwater discharges. There is currently no regulation of stormwater discharge from the site and vicinity. However, an NPDES permit for stormwater discharges from construction activities is required if project construction would disturb 5 or more acres of land.

The construction NPDES permit requires project proponents to:

- eliminate or reduce nonstormwater discharges to stormwater systems and other waters of the nation,

- develop and implement a stormwater pollution prevention plan (SWPPP), and

- perform inspections of stormwater control structures and pollution prevention measures.

The construction activities covered by the permit include clearing, grading, and excavation. Portions of a project that are subject to regulation under Section 404 of the Clean Water Act may be excluded from the NPDES construction permit but would still be subject to Section 401 of the Clean Water Act. To be covered by the construction permit, the property owners must submit a Notice of Intent and a $500 filing fee to the SWRCB.

The major provisions of the permit are meeting effluent limitations through the use of controls that reduce pollutants, preparing and implementing an SWPPP, implementing a monitoring program to evaluate the effectiveness of the SWPPP, and maintaining records.

Water Reclamation

All wastewater to be reclaimed for irrigation or other uses must meet the requirements of Title 22 of the California Code of Regulations. This regulation states that reclaimed water used for irrigation shall be at all times adequately disinfected and oxidized. The wastewater shall be considered adequately disinfected if the median number of coliform organisms in the effluent does not exceed 23 per 100 milliliters. Any treatment facilities must provide the appropriate chlorination, or another type of disinfection process, and filtration for additional solids removal.

General State Regulations

The RWQCB basin plan contains general water quality standards and objectives for water bodies in the Sacramento area. In many cases, specific standards for pollutants are not given. In these cases, EPA water quality standards or drinking water standards may be used as guidelines to evaluate pollutants.

The SWRCB also develops water quality standards, which have been implemented through the ISWP. This plan contains specific numeric objectives for toxic pollutants. These objectives ensure the maintenance of beneficial uses of state waters. The ISWP has recently been set aside by legal challenges and its current numeric limitations may be revised. However, numeric water quality objectives will be incorporated as revised when the ISWP is readopted in the future.

IMPACTS

Criteria for Determining Significance

According to the State CEQA Guidelines, a project will have a significant effect on the environment if it will:

- substantially alter drainage patterns or the rate and amount of surface water runoff,
- cause substantial flooding,
- interfere substantially with groundwater recharge,
- result in substantial depletion of groundwater resources, or
- result in substantial degradation of surface water or groundwater quality.

Impact Analysis

Surface Water Hydrology

Approval of the park master plan would result in construction of the golf course, equestrian center, group use area, and nature center. Turf grass and other ornamental landscape plantings associated with these facilities would be anticipated to increase percolation and infiltration. Most of the precipitation runoff from the golf course would follow natural drainage courses such as ephemeral drainage ways or vernal swales. Landscaped areas in the golf course would be drained using surface grass swales or piping under grass surfaces (Psomas and Associates 1993). In areas other than the golf course, these drainages would remain natural.

Runoff from the golf course would be routed away from Rancho Seco Lake by either diversion or collection and would be transported to the golf course reservoir (Figure 9-3). This will prevent herbicides from entering the lake. A small portion of the runoff from the tributary area of Clay Creek (10 acres) would be diverted to the golf course reservoir so that this area of the golf course would not drain into the lake. Some small areas of the golf course would still drain offsite via the existing tributaries; these runoff flows are included in Table 9-2 that shows postproject runoff. The total estimated volume of runoff from the golf course available for collection in the golf course reservoir is 108 af/yr.

Runoff from a small area of the clubhouse and maintenance facilities (approximately 14 acres) would increase as a result of the increase in impervious surfaces, but this water would also be collected and routed to the golf course reservoir for irrigation (Psomas and Associates 1993). Runoff from the group use area would also be collected and transported to the golf course reservoir. Runoff from the equestrian and nature centers would discharge through natural drainages to Clay Creek, although runoff from small controlled areas of the equestrian center is proposed to be collected and pumped to a gravity wastewater pipeline and onto the wastewater treatment plant to control expected high nutrient levels (Psomas and Associates 1993).

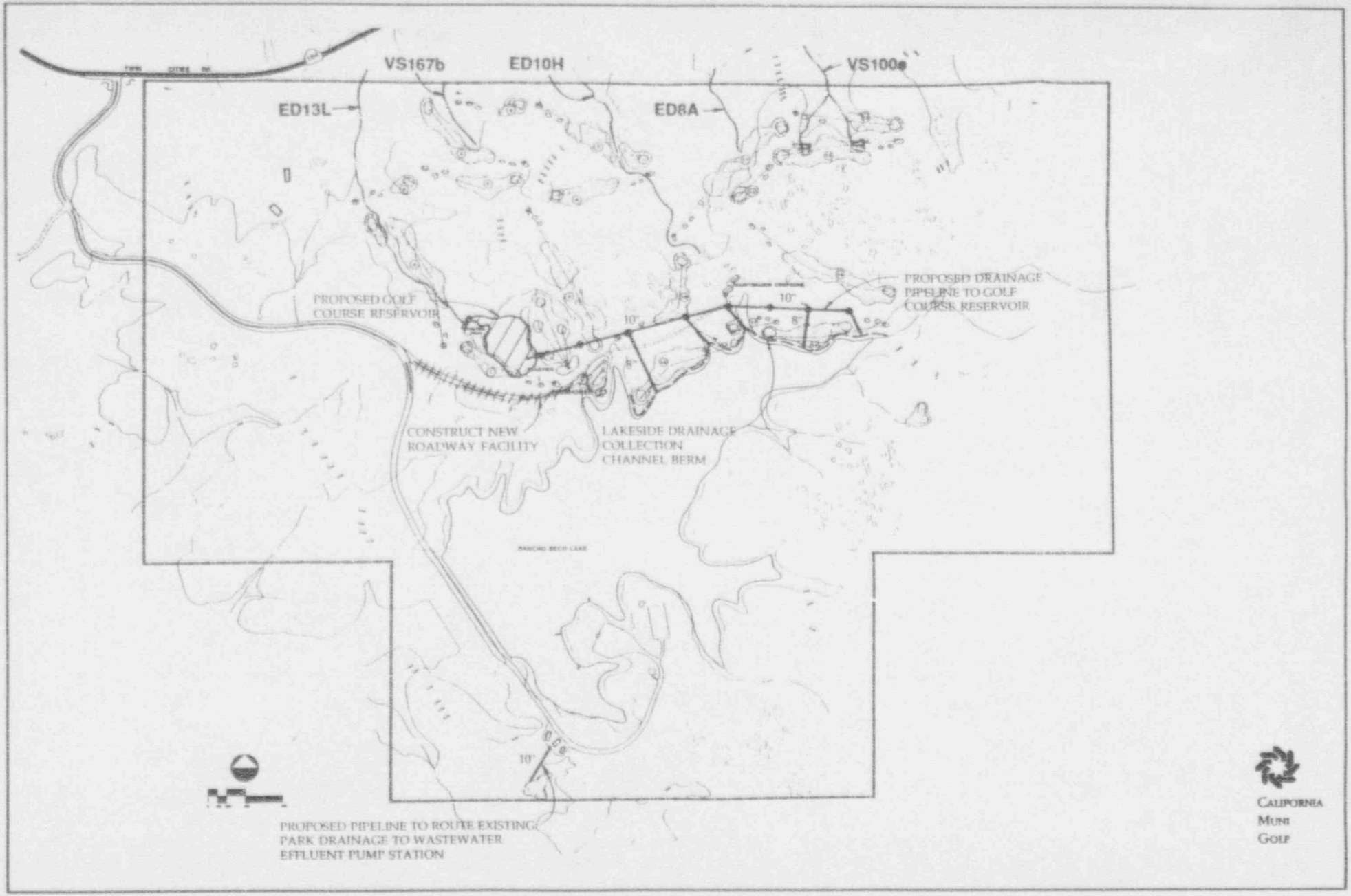


Figure 9-3. Proposed Golf Course Drainage Facilities

Table 9-2. Tributary Peak Runoff Flows: Comparison of Existing and Postproject Conditions

Tributary	10-Year Event		25-Year Event	
	Existing	Postproject	Existing	Postproject
ED 8A	7.7	6.7	9.5	8.3
ED 10H	57.7	50.5	71.0	62.1
ED 13L	45.6	39.9	56.1	49.1
VS 100e	19.7	17.2	24.3	21.3
VS 167b	3.8	3.3	4.7	4.1

All flows in cubic feet per second.

Source: Psomas and Associates 1993.

The total runoff from the site after the proposed development would decrease by approximately 10% to 15% because of increased percolation and infiltration. The overall effect on Hadselville Creek would not be measurable because of the small change in flows and the small size of the tributary area (Psomas and Associates 1993). The estimated runoff flows in the five tributaries after construction of the proposed facilities are presented in Table 9-2.

Impact Summary. Implementation of the project would result in the following impacts:

- Minor alterations to the existing drainage patterns and existing network of ephemeral channels, drainages, and tributaries draining the site. This impact is considered less than significant because the majority of the drainage patterns and drainage swales will be protected by the Section 404 nationwide permit number 26 conditions. No mitigation is recommended.

- A decrease in the amount of runoff to Hadselville Creek after development by approximately 10% to 15% because of increased percolation and infiltration. This impact is considered less than significant because it would not result in any flooding and would not require any modifications to offsite drainage improvements. No mitigation is recommended.

- A minor decrease in the amount of runoff to Rancho Seco Lake because of the installation of a drainage system to collect golf course drainage and route it to the golf course reservoir for reuse on the golf course. This impact is considered less than significant because the decrease in surface drainage to Rancho Seco Lake is minor and will result in less water going over the spillway and will be compensated for by a change in lake management practices. No mitigation is recommended.

Vernal Pools

The project is described as adoption of the park master plan, which includes development of the public golf course, equestrian center, nature center, and other developed uses. The project also includes a wetland preservation and compensation plan that provides for the long-term protection for the identified waters of the United States and various special-status plant and animal species on the site. Based on the delineation of wetlands under U.S. Army Corps of Engineers (Corps) jurisdiction, the project will affect 4.28 acres of wetlands, including vernal pools; however, the project also includes avoidance of 18.979 acres of vernal pools and the creation of 3.026 acres of vernal pools. Most of the vernal pools on the site are located in open space preserves on the south and east sides of the lake.

Impact Summary. Implementation of the project would result in no adverse hydrologic affects from alteration or removal of vernal pools on the site because the loss

and modification is small relative to the watershed area, and the project includes onsite creation of new vernal pools. No mitigation is recommended.

Flooding

The project site and vicinity are not prone to flooding and the proposed project would not substantially change drainage patterns or flood potential. Total runoff from the site to the five tributaries would decrease by 10% to 15% after development. The site is not located in a 100-year floodplain, and the project would not affect areas on Hadselville Creek that are designated 100-year flood hazard areas.

Sacramento County Department of Public Works Water Resources Division provided the following comments on the notice of preparation of an EIR (Appendix B):

> The majority of the project site (north of Rancho Seco Lake) drains north to Hadselville Creek. The site is located outside the federally regulated 100-year floodplain (Zone X), as identified on the FEMA [Federal Emergency Management Agency] FIRM [Flood Insurance Rate Map] map number 060262-0525C, dated September 30, 1988. The majority of the site is located in a local floodplain, as determined by this division. This determination was made due to the existence of the drainage swales that exist on the site.
>
> If the project is approved, the subject application should be conditioned on the following:
>
> - STD #191 (E, F) - Provide drainage easements pursuant to the Sacramento County Interim Urgency Ordinance relating to Floodplain Management, and the Sacramento County Improvement Standards, including any fee required by Ordinance No. 1 of the County Water Agency.
>
> - STD #193 (Minimum Pad) - Provide minimum pad/floor elevations pursuant to the Sacramento County Interim Urgency Ordinance relating to Floodplain Management prior to building permit issuance.
>
> - (Fish and Game, Corps permits) - Obtain applicable State Fish and Game and U.S. Army Corps of Engineers permits prior to grading or building permit issuance.

Impact Summary. Implementation of the project would result in the following impacts:

- No change in 100-year floodplains because the site is not located in a 100-year flood hazard area and runoff would decrease by 10% to 15% after development of the proposed project. No mitigation is recommended.

- Minor modifications to local floodplains on the site. This impact is considered significant. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

  9.1 Comply with Sacramento County proposed conditions of development.

Groundwater Recharge

Recharge areas usually exist along active significant stream channels with sands and gravels. Only limited areas of the site have moderate recharge capability; most of the site is characterized as having poor recharge capability because of clay or hardpan soils. Most of the site probably has a low groundwater recharge capability. The project would have little to no effect on groundwater recharge because the existing drainages would still be intact and infiltration in some areas of the site would actually increase (e.g., golf course turf areas). Flow in Clay Creek above and below Rancho Seco Lake would not change substantially. Additionally, much of the site would be left in a natural or open space condition.

Impact Summary. Implementation of the project would result in little to no effect on groundwater recharge because the existing drainages would remain intact and infiltration in some areas of the site would actually increase. This impact is considered less than significant. No mitigation is recommended.

Groundwater Resources

The proposed new well would be designed to supply a minimum of 20 gpm. Groundwater levels at the site have been dropping approximately 2 feet per year since 1976, with potable water now at depths of 230 to 350 feet. This area is considered by Sacramento County to be in one of the three major problem areas for groundwater overdraft in the county.

Refer to Chapter 5, "Water and Wastewater Services", for a discussion of water supply.

Surface Water Quality

Short-term Construction Impacts. Grading and construction of the golf course and park facilities would result in degradation of water quality in tributaries, creeks, and Rancho Seco Lake because of increased erosion and sedimentation. Suspended solids and turbidity could increase in these waters as a result of these activities. Oil and grease and other pollutants could also be released if spilled onsite. These pollutants could also be carried downstream in Hadselville and Laguna Creeks.

Impact Summary. Implementation of the project would result in a temporary decrease in water quality during construction because of erosion and sedimentation and because of pollutants, such as suspended solids and oil and grease, possibly being released into onsite waterways, as well as being flushed downstream into offsite creeks. This impact is considered significant. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

8.1 Prepare and implement an erosion and sediment control plan.

Long-Term Operational Impacts. The following activities of the project could result in long-term water quality impacts:

- use of reclaimed wastewater on the golf course and storage in the reservoir,
- equestrian center runoff,
- maintenance facility and parking lot runoff, and
- golf course runoff.

Reclaimed wastewater proposed to be stored in the golf course reservoir and used for irrigation would be highly diluted with water cycled through the pond from Rancho Seco Lake and the golf course drainage. Use of reclaimed wastewater would also be required to meet Title 22 requirements, which are designed to protect water quality and beneficial uses. The wastewater would be further treated by chlorination and filtration to comply with the Title 22 limits.

The equestrian center would have small controlled areas of animal activity that would contribute high nutrient levels to runoff. However, it is proposed that the runoff be captured from these areas and pumped to the park wastewater treatment facility.

The maintenance facility and parking lot would contribute pollutants in onsite runoff that would be more typical of urban runoff, such as oil and grease, metals, nutrients, and sediments. Nutrients such as nitrogen and phosphorus and oxygen-demanding substances are also commonly present in urban runoff. These pollutants would incrementally add to the total pollutant load from other sources. Although this facility has a small area, runoff from the facility could still degrade water quality in the golf course drainage area.

Golf course landscaping, particularly turfed areas, requires intensive irrigation and application of pesticides and fertilizers. The application of these chemicals has the potential to degrade water quality of onsite streams where drainage would be contained within the golf course reservoir boundary, and also those areas where drainage would still flow offsite. Under most circumstances, there would be little runoff from managed areas from irrigation because of the efficiency of the irrigation system and the infiltration capacity of turf grass. However, there would still be some runoff during storm events or periods of irrigation system problems, or under other unforeseen drainage conditions. Nitrates from fertilizers and many pesticides are soluble in water and easily leached in runoff. Others adhere to sediment and could be released into runoff with eroded soil particles.

Impact Summary. Implementation of the project would result in the following impacts:

- A probable degradation in water quality of onsite streams resulting from the application of fertilizers and pesticides on the golf course. This impact is considered significant. To reduce this impact to a less-than-significant level, implement the following mitigation measures:

  9.2 Design the golf course to maximize infiltration and minimize runoff.

  9.3 Develop and implement a water quality monitoring program for the golf course.

- A probable decrease in water quality in the golf course reservoir because of the storage and use of reclaimed wastewater in the reservoir. This impact is considered less than significant because the reclaimed wastewater would need to meet the Title 22 requirements. No mitigation is recommended.

- A decrease in water quality in the drainages in the equestrian center area. This impact is considered significant. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

  9.4 Design the storm drainage system so that runoff from the equestrian center is collected and transported to the wastewater treatment facility.

- A potential decrease in water quality at the golf course maintenance facility because of the inclusion of a vehicle washing area and the storage and use of chemicals and fertilizers. This impact is considered significant. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

  9.5 Design the golf course maintenance facility to include best management practices (BMPs) to improve water quality.

Groundwater Water Quality

There could be an incremental increase in pollutant loads in runoff from several project sources infiltrating into the soil. Several areas of the project site, including the equestrian center, the septic tanks/seepage pits, and the golf course, could contribute additional nitrate loading in this runoff or discharge. However, contamination of groundwater by nitrates from these sources is unlikely because of the relatively impermeable nature of the soils on the site and the depth to groundwater. Recharge capability is also generally low on the site, especially in the area of the golf course where stream channels are not present. Additional measures to protect against groundwater contamination by nitrates from septic tanks are provided by DEH design requirements and Sacramento County General Plan policies. Other types of potential contamination would also be unlikely to reach groundwater because of the onsite conditions described above and the mitigation measures recommended for surface water quality impacts.

Contamination from pesticides is also unlikely because the pesticide must be dissolved in the water in soil to leach to groundwater. Pesticides, in general, adsorb well to organic clay-type soils. Turf grass also has a high capacity to bind many pesticides and commonly applied pesticides rarely penetrate deeply into the soil (Balogh and Walker 1992). The relatively low leaching potential coupled with the site soil and recharge conditions make groundwater contamination at the site unlikely.

Impact Summary. Implementation of the project would result in an unlikely potential for groundwater contamination resulting from pollutants from the project facilities because of the relatively low leaching potential, the presence of clay soils on the site, and the low recharge capability at the site. This impact is considered less than significant. No mitigation is recommended.

MITIGATION MEASURES

Geology, Seismicity, and Soils

8.1 Prepare and Implement an Erosion and Sediment Control Plan

Many of the elements of the erosion and sediment control plan will protect water quality. Implementation of the NPDES stormwater construction permit would also serve to reduce impacts on water quality. The NPDES permit would require the discharger to identify pollutant sources and implement practices to reduce pollutants in stormwater discharges as part of the SWPPP, and monitor the effectiveness of measures identified in the SWPPP by inspecting the site before and after storm events. The details of this mitigation measure can be found in Chapter 8, "Geology, Seismicity, and Soils."

9.1 Comply with Sacramento County Proposed Conditions of Development

SMUD will include the following measures in the design of the project:

1. Provide drainage easements pursuant to the Sacramento County Interim Urgency Ordinance Relating to Floodplain Management, and the Sacramento County Improvement Standards, including any fee required by Ordinance No. 1 of the Sacramento County Water Agency.

2. Provide minimum pad/floor elevations pursuant to the Sacramento County Interim Urgency Ordinance Relating to Floodplain Management before building permit issuance.

9.2 Design the Golf Course to Maximize Infiltration and Minimize Runoff

SMUD will design the golf course to incorporate the following measures to reduce water quality degradation in onsite streams, the golf course reservoir, and those streams where golf course drainage would still flow offsite:

1. Maintain existing native vegetation, where possible, and replace with same.

2. Create transition buffer zones with natural vegetation between play areas and ephemeral drainages as much as possible; transition zones should be strips at least 20-25 feet wide adjacent to the rough, consisting of vegetation and cultivated or native grasses mowed to approximately 6 inches in height.

3. Design golf course drainage patterns to maximize infiltration, avoiding runoff to existing ephemeral drainages where possible, by routing runoff from managed areas through vegetated transition areas; landscaped, grassy nonmanaged areas; and grassy swales.

4. Break up downsloping areas within the golf course with mounds, greens, bunkers, and swales to reduce runoff volume and velocity.

5. Limit intensive management to greens, tees, and fairways as much as possible.

6. Use slow-release fertilizers in managed areas; select herbicides, insecticides, and other pesticides that degrade rapidly, have a low solubility, have strong adsorptive properties, and have a low toxicity rating.

9.3 Develop and Implement a Water Quality Monitoring Program for the Golf Course

SMUD will develop and implement a long-term monitoring program once construction is completed and operation begins. The monitoring program would provide a warning system to prevent potential toxicity to aquatic life and eutrophication of streams and the reservoir. The monitoring program should include periodically monitoring water quality immediately downstream of golf course drainage points and in the golf course reservoir for pesticide residues, nitrates, and phosphates. One stream can be selected that drains the most intense management area, has the most runoff potential, and is representative of the project as a whole. Monitoring should be conducted during a storm event, as described in the SWPPP, or during a significant occurrence of runoff from irrigation. Monitoring should begin during the second year of operation. If no pesticide residues are detected and nutrients are below background levels, it can be assumed that BMPs are effective and the monitoring frequency can be reduced to once every 3 years. Monitoring should also be conducted if water quality problems are known or suspected.

Additional details of the monitoring program would be developed during the preparation of the SWPPP and other related activities, in consultation with regulatory agencies, other consultants, designers and builders of the facility, and operations staff.

9.4 Design the Storm Drainage System So That Runoff from the Equestrian Center is Collected and Transported to the Wastewater Treatment Facility

SMUD will design the equestrian center and storm drainage system so that areas of concentrated use or areas that collect stormwater runoff from horse manure areas will be collected and transported to the wastewater treatment facility.

9.5 Design the Golf Course Maintenance Facility to Include Best Management Practices to Improve Water Quality

SMUD will incorporate the following measures into the design of the golf course maintenance facility:

1. Drainage from parking lots and maintenance areas will be routed to an area where BMPs would be located. The BMPs would include oil and grease traps, vegetated buffer strips, and a parking lot cleaning and maintenance program.

2. A buffer strip or vegetated strip should be at least 20 feet wide to further reduce suspended solids and oil and grease loadings.

3. Parking lot areas should be swept and cleaned on a regular basis before the wet season. Parking lot sweeping would reduce the suspended solids levels because it is relatively efficient at removing this pollutant. The levels of oil and grease would also be reduced through this practice, but to a lesser degree because of the higher solubility of oil and grease in stormwater.

Chapter 10. Biological Resources

This chapter discusses the plant communities and wildlife at the 1,600-acre Rancho Seco Park site, assesses the impacts on these resources from various project alternatives, and recommends mitigation measures to minimize or compensate for expected impacts.

Jones & Stokes Associates' biologists conducted extensive field surveys, reviewed pertinent literature, and contacted knowledgeable individuals to accumulate the information in this chapter. Sources consulted include a records search of the California Department of Fish and Game's (DFG's) Natural Diversity Data Base (NDDB), Smith and Berg (1988), Jones & Stokes Associates file information (including information on surveys conducted by Jones & Stokes Associates for SMUD on an adjacent parcel), and knowledgeable individuals (Skinner, Brewer, and Brode pers. comms.).

Field surveys to delineate wetlands, map plant communities, and located special-status species were conducted between February and August 1993. Surveys for special-status plants employed methods recommended by DFG (1984) and Nelson (1987). Surveys for special-status plants were conducted in 1993 on April 28 and 30, May 1 through May 7, and May 12 for early-blooming plant species and on June 3, 11, 15, and August 10 for late-blooming species. Survey timing was adjusted to accommodate the later flowering period observed throughout the Central Valley in 1993.

Surveys for special-status wildlife species were conducted on February 8, 9, 10, and 19; March 5 and 19; April 3; and May 19, 20, and 21, 1993, to target the different wildlife species with potential to occur at the site.

SETTING

The project site is characterized by rolling hills of grassland with seasonal wetlands interspersed in low-lying areas. Undeveloped portions of the site support an extensive and relatively dense occurrence of vernal pools and swales interspersed with annual grasslands. Portions of the site are seasonally grazed by livestock, and several stock ponds have been created to provide water to livestock. Larger stock ponds support riparian woodland vegetation. Small irrigated pasture areas, some of which are fallow, are found in the southeastern quarter of the site.

The project site supports 12 plant communities: annual grassland, irrigated pasture, ornamental plantings, vernal pool, vernal swale, seasonal wetland, seep, emergent marsh,

juncus meadow, willow riparian, ephemeral drainage, and open water. Each plant community and its associated vegetation and wildlife functions and value are briefly described below. A summary of plant communities and acreages is provided in Table 10-1.

Nonwetland Communities

Nonwetland communities at the site (i.e., communities that were determined not to be jurisdictional wetlands by the U.S. Army Corps of Engineers [Corps] pursuant to Section 404 of the Clean Water Act [Jones & Stokes Associates 1993b]) include annual grassland, irrigated pasture, and ornamental vegetation.

Annual Grassland

Annual grasslands dominate the project site and are dry through summer. This seasonally dry habitat is characterized by a dominance of naturalized non-native grasses that cover the hilltops and well-drained uplands and surrounding areas. Annual grasslands have a dominance of wild oat, ripgut brome, soft chess, small fescue, and medusa-head grass.

Annual grasslands provide most of the forage for livestock; grazing pressure varies from moderate to heavy in the area. Grazing enhances community quality for some wildlife species (e.g., savannah sparrows, horned larks, and California ground squirrels) but reduces it for others (e.g., northern harriers, gopher snakes, and western rattlesnakes).

Many wildlife species use grasslands for foraging and breeding. Grasslands near open water, wetlands, and riparian communities are used by the greatest number of wildlife species. Grasslands adjacent to wetlands are used for foraging, breeding, and overwintering by the tricolored blackbird and western pond turtle and possibly by the tiger salamander (see "special Status Wildlife Species", below); these species and are found in communities similar to those found on the project site. Amphibian and reptile species living in grasslands include the Pacific treefrog, western fence lizard, and gopher snake. Birds known to forage in grasslands include the horned lark, savannah sparrow, tricolored blackbird, Brewer's blackbird, and western meadowlark. Mammals that forage or breed in grasslands include deer mice, California ground squirrels, striped skunks, and coyotes.

Small mammals in grasslands are important prey for a variety of predatory birds and mammals, such as American kestrels, red-tailed hawks, black-shouldered kites, northern harriers, and coyotes.

Table 10-1. Summary of Plant Communities and Acreages at the Rancho Seco Park Site

Habitat Types	Wetland Communities[a] (acres)	Nonwetland Communities (acres)	Total Acres
Annual grassland/developed areas[b]	--	1,310.63	
Vernal pool	20.25	--	
Vernal swale	3.37	--	
Emergent marsh	1.92	--	
Open water	154.59	--	
Willow riparian woodland	13.75	--	
Irrigated pasture	--	89.89	
Juncus meadow	1.15	--	
Seep	0.53	--	
Ephemeral drainage	3.81	--	
Seasonal wetland	0.11	--	
Subtotal	199.48	1,400.52	
Total			1,600.00

[a] Wetland communities include areas identified by the Corps as jurisdictional waters of the United States, including wetlands (Jones & Stokes Associates 1993b).

[b] Acres reported for annual grassland/developed areas include roads, buildings, and existing landscaped park facilities.

Source: Jones & Stokes Associates 1993a.

Irrigated Pasture

The four irrigated pastures on the site are large parcels that are currently or were historically irrigated during the dry season, grazed by livestock, and dominated by non-native grass and forbs species. One pasture has been abandoned and is no longer irrigated; this pasture is dominated by Mediterranean barley. The other three irrigated pastures have a prevalence of sedge, bird's-foot trefoil, Burmuda grass, rabbit's-foot grass, and annual bluegrass.

Although cattle grazing keeps the irrigated pasture vegetation too low and sparse for it to provide good nesting habitat, it does provide some foraging habitat for raptors, songbirds, rodents, and snakes. Raptor species that may forage in the irrigated pasture include red-tailed hawks, northern harriers, American kestrels, great horned owls, and barn owls. Wildlife species observed in the irrigated pastures include black-tailed hares, killdeer, savannah sparrows, Brewer's blackbirds, brown-headed cowbirds, tricolored blackbirds, black-shouldered kites, and western meadowlarks.

Ornamental Vegetation

Ornamental vegetation was planted for or "volunteered" as a result of landscaping of the park and rural residential areas on the project site. The ornamental community is dominated by cultivated tree species, including weeping willow, fruitless mulberry, elm, juniper, oleander, magnolia, redwood, and blue gum.

Ornamental trees growing near houses and in the park are used for perching by raptors such as red-tailed hawks and American kestrels. Ornamental trees provide nesting and foraging habitat and cover for common bird species that use non-native plant species, including American robins, American crows, northern mockingbirds, white-crowned sparrows, Anna's hummingbirds, and house finches. Mammals such as Virginia opossums and brush rabbits were also observed during surveys visiting this plant community.

Wetland Communities

Wetland communities (i.e., those communities determined to be jurisdictional wetlands by the Corps pursuant to Section 404 of the Clean Water Act [Jones & Stokes Associates 1993b]) include vernal pool, vernal swale, seasonal wetland depression, seep, emergent marsh, juncus meadow, willow riparian, ephemeral drainage, and open water habitat.

Vernal Pool

Vernal pools are seasonally flooded landscape depressions that support a distinctive biota adapted to periodic or continuous inundation during the wet season and have an absence of either ponded water or wet soil conditions during the dry season. The vernal pools on the site are typical of vernal pools throughout the Sacramento Valley. Vernal pool basins are dominated by coyote thistle, Fremont's goldfield, stipitate popcorn flower, woolly marbles, spike-primrose, common spike rush, hedge-hyssop, toad rush, water-starwort, and American pillwort. One vernal pool supports a large population of Greene's legenere and a small population of Boggs Lake hedge-hyssop, both Category 2 candidates for federal listing. Another vernal pool supports a small population of viscid orcutt grass, proposed for federal listing as endangered.

Vernal pools support a wide diversity and abundance of aquatic invertebrates and plant species, which in turn are food for vertebrate wildlife. Wildlife species observed foraging in vernal pools include great blue herons, mallards, cinnamon teals, common snipes, killdeer, greater yellowlegs, bullfrogs, Pacific treefrogs, and western garter snakes.

Vernal Swale

The project site is traversed by swales arranged in integrated or dendritic drainage patterns with vernal pools. Vernal swales convey runoff during and for short periods after rainfall. Some vernal swales connect some vernal pools, thus filling or draining them, while others meander through vernal pool terrains but do not physically connect with individual vernal pools. Vernal swales are dominated by Mediterranean barley, coyote thistle, Italian ryegrass, toad rush, slender fescue, hairgrass, quaking grass, tarweed, and spikeweed.

Vernal swales have wildlife values similar to those of vernal pools and provide some foraging habitat and drinking water for birds, mammals, and other wildlife during the rainy season. Vernal swales are usually too ephemeral, however, to support an abundance of wildlife. Species observed using this habitat include Pacific treefrogs (tadpoles), western meadowlarks, western kingbirds, western bluebirds, scrub jays, and a variety of aquatic invertebrates.

Seasonal Wetland Depression

Seasonal wetland depressions are characterized as seasonally wet areas that exist in shallow to deep depressions underlain by slowly permeable soils. Ruderal seasonal wetlands are present on the project site in the irrigated pasture. The largest seasonal wetland is an abandoned agricultural ditch that was originally used to return sheet flow from the irrigated pasture to an adjacent stock pond. Seasonal wetlands support mostly non-native species, including bird's-foot trefoil, curly dock, manna grass, common spike rush, and Mediterranean barley.

Seasonal wetlands on the project site provide some foraging habitat and drinking water for birds, mammals, and other wildlife during winter and spring. Amphibians such as Pacific tree frogs and western toads may be dependent on these wetland types.

Seep

Seeps on the project site are present below stock pond dams where water slowly oozes or seeps from the ground to the surface, saturating the soil. Seeps are dominated by toad rush, Mediterranean barley, Italian ryegrass, common spike rush, Bermuda grass, bird's-foot trefoil, sedge, quaking grass, Baltic rush, yellow sweetclover, bog rush, slender fescue, and Dallas grass.

Seeps provide foraging habitat and cover for aquatic invertebrates and amphibians. Aquatic invertebrates inhabiting seeps are fed on by small mammals, amphibians, reptiles, and insectivorous birds.

Emergent Marsh

Emergent marsh is dominated by perennial monocots that grow in permanently or semipermanently flooded/saturated soil conditions. Emergent marshes are dominated by common spike rush; however, some have broad-leaved cattail or tule. Emergent marsh is present along the margins of the lake and around larger stock ponds.

Emergent marshes provide high-quality foraging habitat, breeding habitat, and cover for many water birds, small mammals, reptiles, and amphibians. Emergent marshes in the project area provide important foraging habitat for fish-eating bird species, such as American bitterns, great blue herons, great egrets, and belted kingfishers. These aquatic habitats also attract mallards, American coots, common moorhens, and other water birds. Several species, such as marsh wrens, song sparrows, and red-winged blackbirds, nest in cattails and other emergent vegetation.

Wildlife species commonly using these habitats include great blue herons, mallards, cinnamon teals, marsh wrens, red-winged blackbirds, raccoons, common garter snakes, and Pacific treefrogs. Skunks, California voles, and house mice may also frequent the marsh habitats in the project area.

Juncus Meadow

Juncus meadows are dominated entirely by bog rush. Juncus meadow habitats offer wildlife values similar to those of seeps, with the addition of escape and roosting cover provided by dense vegetative growth of juncus.

Willow Riparian

The willow riparian woodland is found in a thin band bordering the lake and is characterized by native willow species with an overhead canopy cover exceeding 20%. The dominant species are Goodding's willow, with an occasional Fremont's cottonwood.

Willow riparian habitats provide cover, breeding, and foraging habitat in an area with little tree or shrub cover and are therefore used by a variety of wildlife species. The proximity of willow riparian habitat to the adjacent annual grassland in the project area increases its value to wildlife. Foliage-gleaning birds such as warblers and vireos forage in cottonwoods and thickets of willows, and purple finches and lesser goldfinches feed on willow buds and catkins. Flycatchers, northern orioles, and western kingbirds nest in the taller riparian trees and forage out over the surrounding juncus meadow, open water, and emergent marsh.

This community provides nesting and rearing cover for a variety of common birds, including scrub jays, song sparrows, house wrens, and Bewick's wrens. The trees in this community are used as perches by a variety of bird species, including double-crested cormorants, belted kingfishers, northern harriers, western kingbirds, barn swallows, tree swallows, red-tailed hawks, and great horned owls.

This community produces abundant aquatic and terrestrial invertebrates that are prey for amphibians and reptiles, such as Pacific treefrogs, common garter snakes, and western terrestrial garter snakes, and for insectivorous birds, such as yellow-rumped warblers, northern flickers, and Nuttall's woodpeckers. Small mammals found in riparian communities include shrews, voles, and mice.

Ephemeral Drainage

Ephemeral drainages are unvegetated or sparsely vegetated channels with well-defined beds and banks that convey storm runoff only during and for a brief period after storms but are dry for the remainder of the year. The majority of the ephemeral drainages are narrow (1-3 feet wide) and deeply cut (1-3 feet deep); however, a few have average widths exceeding 5 feet. Although most ephemeral drainages are unvegetated, sparsely vegetated drainages are often dominated entirely by coyote thistle. Mediterranean barley, Italian ryegrass, toad rush, and common spike rush were also found during surveys in ephemeral drainages on the project site.

Ephemeral drainages, like vernal swales, provide habitat for a variety of wildlife species. Ephemeral drainages in the project area may provide seasonal habitats for amphibians; small mammals, such as raccoons and striped skunks; and water birds, such as egrets and herons, that feed on amphibians, aquatic reptiles, and invertebrates. Species observed using this community in the project area include Pacific treefrogs (tadpoles),

western meadowlarks, western kingbirds, western bluebirds, scrub jays, and a variety of aquatic invertebrates.

Open Water Habitat

Open water habitat includes Rancho Seco Lake and several large stock ponds. This habitat typically has a water depth greater than 2 feet, which intergrades with emergent marsh at its fringes. Open water habitat is unvegetated or is sparsely vegetated with free-floating and submerged rooted aquatic plants, including pondweeds, lesser duckweed, mosquito fern, and mare's-tail water-milfoil.

The open water component of the stock ponds and Rancho Seco Lake provides moderate- to high-quality habitat for wildlife species. Rancho Seco Lake provides valuable year-round drinking, foraging, bathing, resting, and breeding opportunities for a variety of wildlife species. The willow riparian forest and tule/cattail marsh established around the ponds provide wildlife cover. This community provides drinking water for mammalian species such as mule deer, coyote, and gray fox. It also provides foraging habitat for raccoons and striped skunks that could feed on amphibians in the ponds, such as bullfrogs and Pacific tree frogs. The open water provides suitable foraging and resting habitat for dabbling ducks (mallards, gadwalls, and northern pintails) and other water birds, including American coots and pied-billed grebes.

Although stock ponds were developed to provide drinking water for livestock, they greatly enhance wildlife diversity in the area. Water birds, including a variety of waterfowl and shorebird species, use the ponds in winter. Mallards, cinnamon teals, gadwalls, and common goldeneyes use the ponds for foraging and resting. Other water-dependent animals forage or breed at stock ponds in the project area; these include great blue herons, snowy egrets, American coots, greater yellowlegs, belted kingfishers, bullfrogs, and Pacific treefrogs.

Special-Status Plant Species

Methodology

Botanists compiled a list of special-status plant species that could occur at the Rancho Seco project site using several sources: a records search of the DFG's NDDB (1993), Smith and Berg (1988), Jones & Stokes Associates (1990), Hoover (1935), Stone et al. (1988), Skinner (pers. comm.), and Jones & Stokes Associates file information (Table 10-2).

Species identified as having potential to occur at the site during the initial investigation were then targeted during field surveys, using the methods described below. Field surveys were conducted at the site throughout spring and summer 1993, during the

appropriate identification period for each species targeted. Vegetation surveys employed floristic methods, as advocated by DFG (1984) and Nelson (1987). Botanists identified all plant species encountered at the project site to the extent necessary to determine if the plant had any legal protective status. Such floristic survey methods helped ensure that special-status plant species were not inadvertently overlooked because they were not expected at the site.

In areas proposed for development, every vernal pool was surveyed to determine presence or absence of special-status plants in individual pools. Areas proposed as open space preserves were subsampled, with approximately every third vernal pool surveyed. Subsampling was undertaken to determine presence or absence of special-status plants in the proposed open space area but not to identify individual population occurrences. All habitats present at the site were investigated. All plant species observed were recorded, and a species list and description was prepared for each habitat encountered (Jones & Stokes Associates 1993a).

Additional detail on the methods and results of special-status species surveys and of wetland delineations and plant community evaluations are presented in Special-Status Plant and Wildlife Species Surveys and Habitat Assessments for the Rancho Seco Project Site (Jones & Stokes Associates 1993a) and Final Delineation of Waters of the United States, Including Wetlands, for the Rancho Seco Park Site (Jones & Stokes Associates 1993b), respectively.

Results

A total of 13 special-status plant species have potential to be present at the project site. Of these species, three were located at the site during the field surveys: Boggs Lake hedge-hyssop, Greene's legenere and viscid orcutt grass.

Boggs Lake Hedge-Hyssop. One population of Boggs Lake hedge-hyssop was found in a vernal pool at the eastern edge of the project site. A total of six plants were found in the deepest portion of a vernal pool basin in an area with a relatively low vegetation cover (estimated at 25% absolute vegetation cover). Associated plant species observed include wire rush, downingia, whitehead navarretia, and smooth goldfields.

Greene's Legenere. In the same pool, approximately 125 Greene's legenere plants were also found. This plant species was found in the bottom of densely vegetated portions of the pool, associated mostly with wire rush and smooth goldfields. The dense vegetation mat provides shade or structural support for the species.

Viscid Orcutt Grass. One population of viscid orcutt grass with 250 plants was identified in a large vernal pool in the southeast portion of the project site, in an area proposed as open space. This population is suspected to be a known occurrence (Natural Diversity Data Base 1993). The population was found in a relatively shallow arm of Vernal

Table 10-2. Special-Status Plant Species with Potential to Occur on the Rancho Seco Project Site, Sacramento County

Species	Status[a] Federal/State/CNPS	Distribution	Habitat Association	Identification Period
Hoover's spurge (*Chamaesyce hooveri*)	P/--/1B	Central Valley from Tehama County south to Tulare County	Below high-water mark of large vernal pools	July-October
Dwarf downingia (*Downingia humilis*)	C3c/--/1B	Infrequent in valley bottoms from Merced County north to Placer County, west to Sonoma County	Vernal pools in valley grasslands	March-May
Tuolumne coyote-thistle (*Eryngium pinnatisectum*)	C2/--/1B	Central Valley from Amador, Calaveras, Tuolumne, and Sacramento Counties	Vernal pools and swales, seasonal wetlands	June-August
Boggs Lake hedge-hyssop (*Gratiola heterosepala*)	C2/--/1B	From Oregon south to northern Sacramento Valley	Vernal pools and swales	April-June
California hibiscus (*Hibiscus californicus*)	C2/--/1B	San Joaquin-Sacramento Delta, Butte sink, and creeks of Cascade foothills	Freshwater marsh	August-September
Ahart's rush (*Juncus leiospermus* var. *ahartii*)	C2/--/1B	Central Valley from Butte County south to Calaveras County	Vernal pools in valley grasslands	April-May
Greene's legenere (*Legenere limosa*)	C2/--/1B	Central Valley	Vernal pools in valley grasslands	May-June
Hairy orcutt grass (*Orcuttia pilosa*)	P/E/1B	Eastern edge of the Central Valley from Tehama County to Madera County	Bottoms of large vernal pools	May-July
Slender orcutt grass (*Orcuttia tenuis*)	P/E/1B	Eastern Siskiyou, Lake, Sacramento, and Shasta Counties	Bottoms of vernal pools underlain with volcanic substrates	May-June
Viscid orcutt grass (*Orcuttia viscida*)	P/E/1B	Sacramento County	Bottoms of deep vernal pools with heavy clay soils	May-June
Hartweg's pseudobahia (*Pseudobahia bahiifolia*)	1R/E/1B	Southern Central Valley	Valley foothill grasslands	March-May
Sanford's sagittaria (*Sagittaria sanfordii*)	C2/--/3	Del Norte, Butte, Fresno, and Sacramento Counties	Freshwater marsh	May-June
Greene's tuctoria (*Tuctoria greenei*)	C1/R/1B	Eastern edge of Central Valley from Tehama County to Tulare County	Bottoms of large vernal pools	May-July

* Status explanations:

Federal

C1 = Category 1 candidate for federal listing. Category 1 includes species for which USFWS has on file enough substantial information on biological vulnerability and threat to support proposals to list them.

C2 = Category 2 candidate for federal listing. Category 2 includes species for which USFWS has some biological information indicating that listing may be appropriate but for which further biological research and field study are usually needed to clarify the most appropriate status. Category 2 species are not necessarily less rare, threatened, or endangered than Category 1 species or listed species; the distinction relates to the amount of data available and is therefore administrative, not biological.

C3 = no longer a candidate for federal listing. Category 3 species have been dropped from the candidate list because they are extinct (C3a), taxonomically invalid or do not meet the USFWS definition of a "species" (C3b), or too widespread or not threatened at this time (C3c).

1R = recommended by USFWS for inclusion in the next update of the candidate species list (Category 1).

P = under petition for federal listing by USFWS.

State

E = listed as endangered under the California Endangered Species Act.

R = listed as rare under the California Endangered Species Act. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.

– = no designation.

California Native Plant Society

1B = List 1b species: rare, threatened, or endangered in California and elsewhere.

3 = List 3 species: plants about which more information is needed to determine their status.

Species	Status[a] Federal/State	Preferred Habitats	Distribution	Occurrence at the Rancho Seco Project Site
Invertebrates				
Vernal pool fairy shrimp (*Branchinecta lynchi*)	PE/--	Vernal pools	Central Valley; central and south Coast Ranges from Tehama County to Santa Barbara County; isolated populations in Riverside County	Observed in vernal pools
California linderiella (*Linderiella occidentalis*)	PE/--	Vernal pools	East side of Central Valley from Red Bluff to Madera County, across the Sacramento area, and through the central and south Coast Ranges from Lake County to Riverside County	Observed in vernal pools and one stock pond
Vernal pool tadpole shrimp (*Lepidurus packardi*)	PE/--	Vernal pools	Observed from Shasta County to Merced County	Observed in vernal pools and one stock pond
Amphibians				
California tiger salamander (*Ambystoma tigrinum californiense*)	C2[+]/SSC	Vernal pools and ponds for breeding; ground squirrel and gopher burrows required in upland habitat for winter retreats	Butte County in the north to Santa Barbara County in the south	None observed; project site provides marginal habitat; very few ground squirrel burrows; ponds contain predatory fish; and most vernal pools do not hold water long enough for successful breeding
Western spadefoot toad (*Scaphiopus hammondi*)	2R/SSC	Vernal pools for breeding and underground burrows for most of the year	Inhabits the Central Valley, adjacent foothills, and the Coast Ranges from Santa Barbara south to Mexican border	None observed during surveys; potential habitat occurs in vernal pools and adjacent uplands
Reptiles				
Western pond turtle (*Clemmys marmorata*)	C1[+]/SSC	Still waters such as ponds, reservoirs, and sluggish streams; breeds in upland habitat within 0.25 mile of water	Western Washington south to Baja California	None observed during field surveys; stock ponds and Rancho Seco Lake provide suitable habitat

Species	Status[a] Federal/State	Preferred Habitats	Distribution	Occurrence at the Rancho Seco Project Site
Birds				
Swainson's hawk (*Buteo swainsoni*)	–/T	Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields	Uses the lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley; most nesting occurs in Yolo County	None observed during field surveys; potential foraging habitat in grasslands
Black-shouldered kite (*Elanus caeruleus*)	–/CP	Nests in riparian habitats, woodlands and isolated trees; forages in agricultural fields, grasslands, and wetlands	Open habitats throughout California, except deserts	Several observed during field surveys; in grasslands, which provide foraging habitat
Burrowing owl (*Athene cunicularia*)	–/SSC	Nests in abandoned ground squirrel burrows in dry, flat grasslands, deserts, and agricultural areas	Permanent resident throughout California valleys and lowlands; summer range includes Siskiyou, Modoc, Lassen, Plumas, and Sierra Counties	None observed during field surveys; project site lacks ground squirrel burrows except in a few locations around rock outcrops and roads
Northern harrier (*Circus cyaneus*)	–/SSC	Uses marshes, meadows, and seasonal and agricultural wetlands	Either a permanent or winter resident over all of California, except in the Klamath, Cascade, and Sierra Nevada ranges	Several observed during field surveys; in grasslands and wetlands, which provide foraging and nesting habitats
Cooper's hawk (*Accipiter cooperii*)	–/SSC	Nests primarily in riparian forests dominated by deciduous species; also nests in densely canopied forests from digger pine-oak woodland up to ponderosa pine; forages in open woodlands	Found in all parts of California except high altitudes in the Sierra Nevada; winters in the Central Valley, southeastern desert regions, and plains east of the Cascade Range; permanent residents occupy the rest of the state	None observed during field surveys; riparian habitat provides potential nesting and foraging habitats
Ferruginous hawk (*Buteo regalis*)	C2/SSC	Found in open terrain in plains and foothills where ground squirrels and other prey are available	Only winters in California; can be seen along the coast from Sonoma County to San Diego County, eastward to the Sierra Nevada foothills and southeastern deserts, the Inyo-White mountains, the plains east of the Cascade Range, and Siskiyou County	Potential winter visitor
Golden eagle (*Aquila chrysaetos*)	–/SSC	Nests on cliffs, escarpments, or large oaks; forages over annual grasslands	Permanent resident over most of California; occurs in the Sierra Nevada and Coast Ranges in the summer and the Central Valley in winter	Potential winter visitor

Species	Status[a] Federal/State	Preferred Habitats	Distribution	Occurrence at the Rancho Seco Project Site
Sharp-shinned hawk (*Accipiter striatus*)	–/SSC	Uses dense canopy ponderosa pine or mixed conifer forest as well as riparian habitats	Permanent resident in the Sierra Nevada, and Cascade, Klamath, and north Coast Ranges at midelevations, as well as along the coast in Marin, San Francisco, San Mateo, Santa Cruz, and Monterey Counties; winters over the rest of the state except in very high elevations	Potential winter visitor
Merlin (*Falco columbarius*)	–/SSC	Open grasslands and farmland with scattered trees	Only winters in California; occurs throughout California but concentrated along the coast and in the Central Valley	P ntial winter visitor
Prairie falcon (*Falco mexicanus*)	–/SSC	Nests on cliffs or escarpments adjacent to dry, open terrain; uplands, marshes, or seasonal agricultural wetlands	Permanent resident on the south Coast, Transverse, Peninsular, and northern Cascade Ranges; the southeastern deserts; Inyo-White ntains; Modoc, Lassen, and Plumas nties; and the foothills s ng the ntral Valley; winters in th Valley, along the coast from Santa l County to San Diego County and in N , Sonoma, Humbolt, Del Norte, and Inyo Counties	ential winter visitor
Short-eared owl (*Asio flammeus*)	–/SSC	Uses freshwater and saltwater marshes, lowland meadows, and irrigated alfalfa fields; needs dense tules or tall grass for nesting and daytime roosts	Permanent resident along the coast from Del Norte County to Monterey County, in the Sierra Nevada north of Nevada County, the plains east of the Cascades Ranges, and Mono County; winters on the coast from San Luis Obispo County to San Diego County, in the Central Valley from Tehama County to Kern County, in the eastern Sierra Nevada from Sierra County to Alpine County, the Channel Islands, and Imperial County; small isolated populations also nest in the Central Valley	Potential rare visitor

Species	Status[a] Federal/State	Preferred Habitats	Distribution	Occurrence at the Rancho Seco Project Site
Yellow warbler (*Dendroica petechia*)	–/SSC	Nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders; may also use oaks, conifers, and urban areas in or near streamcourses	Nests over all of California except the Central Valley, the Mohave Desert region, and high altitudes in the Sierra Nevada; winters along the Colorado River and in parts of Imperial and Riverside Counties; two small permanent populations are in San Diego and Santa Barbara Counties	None observed during field surveys; riparian habitat provides potential nesting habitat
Tricolored blackbird (*Agelaius tricolor*)	C2/SSC	Nests in freshwater marshes with heavy growths of cattails and tules; other forms of dense vegetation, including blackberry thickets, may also be used for nesting; nesting areas must be large enough to support a colony of at least 50 pairs; birds forage in grasslands and fields surrounding the colony	Permanent residents in the Central Valley from Butte County through Kern County, on the south Coast and Peninsular Ranges, and in parts of San Diego, Los Angeles, Alameda, Sonoma, and Lake Counties; breeding colonies are in Siskiyou, Modoc, and Lassen Counties; around the San Francisco Bay from Marin County to Santa Cruz County, and east through the Delta to Solano County	Observed a flock of 150 tricolored blackbirds during field surveys; project site grasslands provide foraging habitat; no suitable nesting habitat present at project site
Mammals				
American badger (*Taxidea taxus*)	–/SSC	Occurs in a variety of habitats, including grasslands and oak woodlands with friable soils for digging	Uncommon, permanent resident found throughout much of the state; several records for Placer County	None observed during field surveys; suitable habitat limited by lack of friable soils and limited prey

[a] Status explanations

Federal

E = listed as endangered under the federal Endangered Species Act.

T = listed as threatened under the federal Endangered Species Act.

PE = proposed for federal listing as endangered under the federal Endangered Species Act.

C1 = Category 1 candidate for federal listing. Category 1 includes species for which USFWS has on file enough substantial information on biological vulnerability and threat to support proposals to list them.

C2 = Category 2 candidate for federal listing. Category 2 includes species for which USFWS has some biological information indicating that listing may be appropriate but for which further biological research and field study are usually needed to clarify the most appropriate status. Category 2 species are not necessarily less rare, threatened, or endangered than Category 1 species or listed species; the distinction relates to the amount of data available and is therefore administrative, not biological.

2R = recommended by USFWS for inclusion in the next update of the candidate species list (Category 2).

\+ = under petition to be considered for federal listing as threatened or endangered.

-- = no designation.

State

CP = fully protected under the California Fish and Game Code.

T = listed as threatened under the California Endangered Species Act.

SSC = species of special concern.

-- = no designation.

Pool 44, where the pool supports a relatively sparse vegetative cover of woolly marbles, whitehead navarretia, and downingia.

Special-Status Wildlife Species

Methodology

To determine the presence of special-status wildlife species and suitable habitat for wildlife species, biologists first compiled a list of species known from the region and from the habitat types present at the site (Table 10-3). Sources consulted during preparation of the wildlife species list include Taylor (1983), Remsen (1978), Williams (1986), knowledgeable individuals (White, Brewer, and Brode pers. comms.), and Jones & Stokes Associates file information. Species identified during the initial investigation were then targeted during field surveys. Field surveys were conducted at the site throughout spring and summer 1993, during the appropriate identification period for each species targeted. Habitat suitability was also assessed for wildlife species that are expected to use the site for foraging or nesting during a portion of the year.

Wildlife biologists walked the entire project site, using zig-zag transects to sample all habitats present. All wildlife species and signs of wildlife use observed during the field survey were recorded and mapped. Areas proposed as open space preserves were subsampled; all vernal pools encountered that were considered suitable for special-status wildlife species were surveyed. In addition, approximately every third vernal pool in areas proposed for open space were randomly surveyed. Additional survey methodology is described in the following sections.

Shrimp and Amphibian Survey Methods. Field surveys were conducted on February 8, 9, 10, and 19; March 5 and 19; April 3; and May 19, 20, and 21, 1993. Sample timing was based on shrimp and amphibian life cycles. Each water body that could potentially support shrimp or amphibian species was sampled a minimum of three times at approximately 2-week intervals.

Water bodies were quietly approached and visually searched for shrimp and amphibians. Visible shrimp and amphibians were immediately netted with either a 12-inch-diameter or a 5-inch-diameter net, both of which have 173 threads per inch (80-μm aperture). Pools were then systematically sampled with dip nets using the following procedure: nets were pulled from shore to shore and at a minimum of three locations along the perimeter of the water body. Occasional variations of this procedure were used if initial attempts failed to capture shrimp or amphibians.

The contents of each dip net sample were observed for shrimp or amphibian larvae. Amphibian larvae were quickly identified to species, then returned immediately to the same water body from which they were captured. Shrimp were initially identified to species in

Table 10-3. Special-Status Wildlife Species with Potential to Occur on the Rancho Seco Project Site, Sacramento County

Species	Status[a] Federal/State	Preferred Habitats	Distribution	Occurrence at the Rancho Seco Project Site
Invertebrates				
Vernal pool fairy shrimp (*Branchinecta lynchi*)	PE/--	Vernal pools	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County; isolated populations in Riverside County	Observed in vernal pools
California linderiella (*Linderiella occidentalis*)	PE/--	Vernal pools	East side of Central Valley from Red Bluff to Madera County, across the Sacramento area, and through the central and south Coast Ranges from Lake County to Riverside County	Observed in vernal pools and one stock pond
Vernal pool tadpole shrimp (*Lepidurus packardi*)	PE/--	Vernal pools	Observed from Shasta County to Merced County	Observed in vernal pools and one stock pond
Amphibians				
California tiger salamander (*Ambystoma tigrinum californiense*)	C2[*]/SSC	Vernal pools and ponds for breeding; ground squirrel and gopher burrows required in upland habitat for winter retreats	Butte County in the north to Santa Barbara County in the south	None observed; project site provides marginal habitat; very few ground squirrel burrows; ponds contain predatory fish; and most vernal pools do not hold water long enough for successful breeding
Western spadefoot toad (*Scaphiopus hammondi*)	2R/SSC	Vernal pools for breeding and underground burrows for most of the year	Inhabits the Central Valley, adjacent foothills, and the Coast Ranges from Santa Barbara south to Mexican border	None observed during surveys; potential habitat occurs in vernal pools and adjacent uplands
Reptiles				
Western pond turtle (*Clemmys marmorata*)	C1[*]/SSC	Still waters such as ponds, reservoirs, and sluggish streams; breeds in upland habitat within 0.25 mile of water	Western Washington south to Baja California	None observed during field surveys; stock ponds and Rancho Seco Lake provide suitable habitat

Species	Status[a] Federal/State	Preferred Habitats	Distribution	Occurrence at the Rancho Seco Project Site
Birds				
Swainson's hawk (*Buteo swainsoni*)	–/T	Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields	Uses the lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley; most nesting occurs in Yolo County	None observed during field surveys; potential foraging habitat in grasslands
Black-shouldered kite (*Elanus caeruleus*)	–/CP	Nests in riparian habitats, woodlands and isolated trees; forages in agricultural fields, grasslands, and wetlands	Open habitats throughout California, except deserts	Several observed during field surveys; in grasslands, which provide foraging habitat
Burrowing owl (*Athene cunicularia*)	–/SSC	Nests in abandoned ground squirrel burrows in dry, flat grasslands, deserts, and agricultural areas	Permanent resident throughout California valleys and lowlands; summer range includes Siskiyou, Modoc, Lassen, Plumas, and Sierra Counties	None observed during field surveys; project site lacks ground squirrel burrows except in a few locations around rock outcrops and roads
Northern harrier (*Circus cyaneus*)	–/SSC	Uses marshes, meadows, and seasonal and agricultural wetlands	Either a permanent or winter resident over all of California, except in the Klamath, Cascade, and Sierra Nevada ranges	Several observed during field surveys; in grasslands and wetlands, which provide foraging and nesting habitats
Cooper's hawk (*Accipiter cooperii*)	–/SSC	Nests primarily in riparian forests dominated by deciduous species; also nests in densely canopied forests from digger pine-oak woodland up to ponderosa pine; forages in open woodlands	Found in all parts of California except high altitudes in the Sierra Nevada; winters in the Central Valley, southeastern desert regions, and plains east of the Cascade Range; permanent residents occupy the rest of the state	None observed during field surveys; riparian habitat provides potential nesting and foraging habitats
Ferruginous hawk (*Buteo regalis*)	C2/SSC	Found in open terrain in plains and foothills where ground squirrels and other prey are available	Only winters in California; can be seen along the coast from Sonoma County to San Diego County, eastward to the Sierra Nevada foothills and southeastern deserts, the Inyo-White mountains, the plains east of the Cascade Range, and Siskiyou County	Potential winter visitor
Golden eagle (*Aquila chrysaetos*)	–/SSC	Nests on cliffs, escarpments, or large oaks; forages over annual grasslands	Permanent resident over most of California; occurs in the Sierra Nevada and Coast Ranges in the summer and the Central Valley in winter	Potential winter visitor

Species	Status[a] Federal/State	Preferred Habitats	Distribution	Occurrence at the Rancho Seco Project Site
Sharp-shinned hawk (*Accipiter striatus*)	–/SSC	Uses dense canopy ponderosa pine or mixed conifer forest as well as riparian habitats	Permanent resident in the Sierra Nevada, and Cascade, Klamath, and north Coast Ranges at midelevations, as well as along the coast in Marin, San Francisco, San Mateo, Santa Cruz, and Monterey Counties; winters over the rest of the state except in very high elevations	Potential winter visitor
Merlin (*Falco columbarius*)	–/SSC	Open grasslands and farmland with scattered trees	Only winters in California; occurs throughout California but concentrated along the coast and in the Central Valley	Potential winter visitor
Prairie falcon (*Falco mexicanus*)	–/SSC	Nests on cliffs or escarpments adjacent to dry, open terrain; uplands, marshes, or seasonal agricultural wetlands	Permanent resident on the south Coast, Transverse, Peninsular, and northern Cascade Ranges; the southeastern deserts; Inyo-White mountains; Modoc, Lassen, and Plumas Counties; and the foothills surrounding the Central Valley; winters in the Central Valley, along the coast from Santa Barbara County to San Diego County and in Marin. Sonoma, Humbolt, Del Norte, and Inyo Counties	Potential winter visitor
Short-eared owl (*Asio flammeus*)	–/SSC	Uses freshwater and saltwater marshes, lowland meadows, and irrigated alfalfa fields; needs dense tules or tall grass for nesting and daytime roosts	Permanent resident along the coast from Del Norte County to Monterey County, in the Sierra Nevada north of Nevada County, the plains east of the Cascades Ranges, and Mono County; winters on the coast from San Luis Obispo County to San Diego County, in the Central Valley from Tehama County to Kern County, in the eastern Sierra Nevada from Sierra County to Alpine County, the Channel Islands, and Imperial County; small isolated populations also nest in the Central Valley	Potential rare visitor

Species	Status[a] Federal/State	Preferred Habitats	Distribution	Occurrence at the Rancho Seco Project Site
Yellow warbler (*Dendroica petechia*)	–/SSC	Nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders; may also use oaks, conifers, and urban areas in or near streamcourses	Nests over all of California except the Central Valley, the Mohave Desert region, and high altitudes in the Sierra Nevada; winters along the Colorado River and in parts of Imperial and Riverside Counties; two small permanent populations are in San Diego and Santa Barbara Counties	None observed during field surveys; riparian habitat provides potential nesting habitat
Tricolored blackbird (*Agelaius tricolor*)	C2/SSC	Nests in freshwater marshes with heavy growths of cattails and tules; other forms of dense vegetation, including blackberry thickets, may also be used for nesting; nesting areas must be large enough to support a colony of at least 50 pairs; birds forage in grasslands and fields surrounding the colony	Permanent residents in the Central Valley from Butte County through Kern County, on the south Coast and Peninsular Ranges, and in parts of San Diego, Los Angeles, Alameda, Sonoma, and Lake Counties; breeding colonies are in Siskiyou, Modoc, and Lassen Counties; around the San Francisco Bay from Marin County to Santa Cruz County, and east through the Delta to Solano County	Observed a flock of 150 tricolored blackbirds during field surveys; project site grasslands provide foraging habitat; no suitable nesting habitat present at project site
Mammals				
American badger (*Taxidea taxus*)	–/SSC	Occurs in a variety of habitats, including grasslands and oak woodlands with friable soils for digging	Uncommon, permanent resident found throughout much of the state; several records for Placer County	None observed during field surveys; suitable habitat limited by lack of friable soils and limited prey

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E = listed as endangered under the federal Endangered Species Act.

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– = no designation.

State

CP = fully protected under the California Fish and Game Code.

T = listed as threatened under the California Endangered Species Act.

SSC = species of special concern.

– = no designation.

the field with the aid of a 15-x hand lens. A representative sample of each shrimp species was placed into a sample container filled with 70% ethanol. Each sample container was marked with the species name, sample site number, and date. All sample containers were transported to Jones & Stokes Associates' laboratory for further analysis of shrimp specimens. Specimens were viewed under an Olympus SZ40 10- to 160-x zoom stereoscope to verify identification of species made in the field using current taxonomic keys (Eng et al. 1990, Belk 1975, and Pennak 1978) and by comparison with voucher specimens in the Jones & Stokes Associates' collection. Specimens were stored in containers labeled with the collection date, location, sample pool number, species, order, name of the person who did the collecting, and name of the person who identified the collection.

Other Wildlife Survey Methods. Surveys for other wildlife species (e.g., raptors, other bird species, reptiles, and badgers) were conducted on April 3 (concurrent with shrimp surveys) and on May 19, 20, and 21, 1993. The site was systematically walked, using zig-zag transects. All indications of wildlife use, including locations of dens and burrows, were noted and mapped.

Results

A total of 20 wildlife species were identified during the initial investigation as having potential to occur at the site. Of these species, five special-status wildlife species were located during field surveys; an additional 15 wildlife species have suitable foraging or nesting habitat at the project site.

Shrimp Species. Three species of special-status shrimp were located in vernal pools on the site: vernal pool fairy shrimp (*Branchinecta lynchi*), California linderiella (*Linderiella occidentalis*), and vernal pool tadpole shrimp (*Lepidurus packardi*). These species are currently proposed for listing by USFWS as endangered under the federal Endangered Species Act and could be listed within the life span of the project.

These species were typically found in vernal pools where maximum ponding reached or exceeded 4 inches. Most of the vernal pools located in proposed development areas are relatively shallow (less than 4 inches deep) and contained comparatively fewer populations of shrimp. In general, the largest concentrations of shrimp were observed in the larger, deeper vernal pools in proposed open space areas of the project site.

Western Pond Turtle. The western pond turtle is a state species of special concern and is the subject of a petition for listing as endangered under the federal Endangered Species Act, and could be listed within the life span of the project. Western pond turtle is currently divided into two subspecies: the northwestern pond turtle and the southwestern pond turtle. The project site is in an area of intergrade between the two subspecies. The U.S. Fish and Wildlife Service (USFWS) is currently considering new information on the taxonomic status of the species and may decide not to recognize these two subspecies (Brewer pers. comm.). Western pond turtle has the potential to occur on the project site.

Western pond turtles prefer the quiet waters of ponds, reservoirs, and sluggish streams (Stebbins 1985). Terrestrial habitat is required for breeding, and pond turtles may travel up to 0.25-0.5 mile upslope from a permanent water source to lay eggs in terrestrial habitat (Brewer and Brode pers. comms.).

Although no western pond turtles were observed, suitable aquatic habitat occurs in the stock ponds and in Rancho Seco Lake, and suitable adjacent nesting habitat is present on annual grassland of the project site.

California Tiger Salamander. The California tiger salamander is the subject of a petition for listing as endangered under the federal Endangered Species Act and could be listed within the life span of the project. Adult California tiger salamanders are terrestrial and spend most of the year in underground burrows (typically California ground squirrel burrows), emerging for only brief periods to breed (Stebbins 1985). Breeding occurs in temporary and permanent waters in grassland and open woodland habitats (Stebbins 1985). Individuals may travel as far as 1 mile to breeding sites during the first heavy rains, mainly from December to February. The range of the tiger salamander has been reduced in much of the Central Valley because of conversion of grasslands to agricultural and urban uses. (Stebbins 1985, Brode pers. comm.)

Suitable breeding and overwintering habitat is present in grasslands, stock ponds, and vernal pools on the project site; however, no California tiger salamanders were found on the project site. The low number of California ground squirrel burrows, which are used by the species for estivation, reduces the potential for occurrence on the site. However, NDDB (1993) records indicate historical occurrences of California tiger salamanders approximately 2 miles west of the project site.

Western Spadefoot Toad. The western spadefoot toad is a state species of special concern and a candidate (Category 2) for listing under the federal Endangered Species Act. Western spadefoot toads are in California's Central Valley from Shasta County to northern Baja California. Western spadefoot toad is primarily a lowland species, frequenting washes and floodplains of rivers but ranging into the foothills and mountain valleys (Stebbins 1985). Western spadefoot toads prefer areas of open vegetation and short grass, where the soil is sandy and gravelly (Stebbins 1985). Spadefoot toads survive dry periods by inhabiting gopher burrows, ground squirrel holes, or self-made burrows. With winter rains, adults become active when they migrate to water bodies. Spadefoot toads breed in pools that form after heavy rains, in slow streams, or in reservoirs. The period from egg laying until tadpoles metamorphose into adults lasts approximately 1 month, this rapid development being an excellent adaptation to life in vernal pools (Stebbins and Major 1965).

Although the seasonal wetlands on the project site provide suitable habitat for western spadefoot toads, no spadefoot toads were found during Jones & Stokes Associates surveys.

Swainson's Hawk. The Swainson's hawk is a state-listed threatened species. The species historically nested in woodland habitat and foraged in native grassland habitat of the Central Valley. Loss of these habitats is attributable to conversion of native grassland and woodland habitats to agricultural uses. This conversion has contributed to the estimated 90% decline in the statewide population of Swainson's hawk (Bloom 1980). Currently, Swainson's hawks in the Central Valley forage in large, open agricultural habitat compatible with their foraging needs and nest primarily in remnant riparian woodlands. Loss and fragmentation of native grassland and woodland habitats are resulting in further losses of historical nesting and foraging territories. (Estep 1989.)

No Swainson's hawks were observed during field surveys. However, the annual grasslands within the project site offer moderate-quality foraging habitat, and an active nest is known within 10 miles of the project area, along Dry Creek (Jones & Stokes Associates 1990). DFG considers all suitable lands within a 10-mile radius of an active Swainson's hawk nest to be foraging habitat.

Black-Shouldered Kite. The black-shouldered kite is a fully protected species. Black-shouldered kites are found primarily in open agricultural or grassland habitats. This species declined noticeably during the early part of this century (Grinnell and Miller 1944) but is now fairly common, particularly in the Central Valley.

Several black-shouldered kites were observed on the project site during field surveys. The annual grasslands provide foraging habitat and, although no nests were found, the riparian woodland surrounding Rancho Seco Lake could provide adequate nest habitat for the black-shouldered kite.

Northern Harrier. The northern harrier is a species of special concern to DFG. The northern harrier nests in marshes, meadows, and undisturbed grasslands in the Central Valley throughout California (Remsen 1978).

Several northern harriers were observed on the project site during field surveys. No nests were located and suitable nesting habitat is limited to areas of dense herbaceous vegetation on the project site.

Cooper's Hawk. The Cooper's hawk is a third-priority species of special concern to DFG. This designation indicates that the species is not in any present danger of extirpation in California but populations are small and vulnerable to extirpation should threats increase (Remsen 1978). Cooper's hawks historically nested in lowland riparian woodlands throughout the Central Valley. Pesticide contamination and loss of Central Valley riparian habitat have restricted the breeding populations to foothill and midelevation oak and montane hardwood forests.

No Cooper's hawks were observed during field surveys. Current records reveal that few Cooper's hawks nest in Central Valley riparian habitat, and the occurrence of the

species at the project site as a breeding bird is unlikely because of the lack of dense canopy trees.

Sharp-Shinned Hawk. The sharp-shinned hawk is a third-priority species of special concern to DFG. This species does not breed in the Central Valley and is an uncommon breeding bird throughout the state (Remsen 1978). However, this species does winter in the Central Valley.

Although no sharp-shinned hawks were observed during field surveys, the riparian habitat on the project site is considered suitable winter roosting and foraging habitat.

Golden Eagle. The golden eagle is a species of special concern to DFG. The golden eagle is a resident species throughout California and nests in cliffs or trees on the slopes of hills, preferably overlooking grasslands. Eagles forage in unfragmented grasslands and oak savannas. The golden eagle is a species of special concern because of habitat loss, persecution by humans, and declines in abundance of the prey species.

No golden eagles or their nests were observed during field surveys. Although the annual grasslands may provide moderate-quality foraging habitat, the project site is considered low-quality nesting habitat for golden eagles because no cliffs or suitable trees on hillsides are present.

Ferruginous Hawk. The ferruginous hawk is a state species of special concern and a Category 1 candidate for federal listing. The ferruginous hawk winters in the Central Valley and the foothills of the Sierra Nevada and Coast Ranges. Ferruginous hawks forage in open grasslands with perch sites (e.g., mature trees and utility poles).

No ferruginous hawks were observed during surveys; however, suitable foraging habitat is present on the site and may attract wintering birds.

Prairie Falcon. The prairie falcon is a species of special concern to DFG. Prairie falcons occur throughout California, nesting on cliff ledges and foraging in open habitats, including grasslands, open brushlands, and rocky areas. No prairie falcons were observed during surveys, although the annual grasslands on the project site are suitable for foraging. However, the project site is unsuitable breeding habitat for prairie falcons because it lacks suitable cliffs for nesting.

Merlin. The merlin is a first-priority species of special concern to DFG. This designation indicates that the species faces immediate extirpation of its entire California population or its California breeding population if current trends continue. The merlin does not breed in California, although it is present throughout the Central Valley during winter.

Although no merlins were observed during field surveys, the riparian habitat on the project site is considered suitable winter roosting habitat, and surrounding annual grasslands are considered suitable foraging habitat.

Burrowing Owl. The burrowing owl is designated by DFG as a state species of special concern. The conversion of annual grasslands to agricultural and urban uses have contributed to its decline in the Central Valley. Burrowing owls typically nest and winter in burrows excavated by California ground squirrels. Burrowing owls continue to occupy nesting burrows year round. They forage in the short grassland or agricultural habitats.

No burrowing owls or evidence of burrowing owl presence were observed on the project site. An active ground squirrel colony is located below the dam face; however, very few ground squirrels and burrows are present outside this area. Field survey results and the limited amount of burrowing habitat on the site indicate that the presence of burrowing owls is unlikely.

Although burrowing owls were not observed in the project area during the Jones & Stokes Associates surveys, several burrowing owls have been observed by SMUD personnel just north of the project site (Palmquist pers. comm.).

Short-Eared Owl. The short-eared owl is designated by DFG as a state species of special concern. This owl forages in freshwater and saltwater marshes, lowland meadows, and irrigated alfalfa fields and nests and roosts in dense tules or tall grasses. Although the short-eared owl is mostly a coastal species, small isolated breeding populations also occur in the Central Valley.

No short-eared owls were observed at the project site and none are expected because of the lack of dense cover for nesting and the limited availability of suitable foraging habitat.

Other Raptors. Two types of common raptors, the red-tailed hawk and great horned owl, were found nesting just outside the project site. Although these species have no state or federal legal status, raptor nests are protected by state law (California Fish and Game Code, Section 3503.5).

Yellow warbler. The yellow warbler is a second-priority species of special concern in California. Once abundant in riparian habitats throughout California, this species is now uncommon in the Central Valley. The yellow warbler has declined as a breeding bird because of the destruction of riparian habitats and nest parasitism by brown-headed cowbirds (Remsen 1978). The southern portion of the Sacramento Valley is no longer considered to be within the breeding range of the yellow warbler; however, the species may be observed in the Central Valley during migration.

No yellow warblers were observed during field surveys, but the species could use the riparian woodland along Rancho Seco Lake during migration.

Tricolored Blackbird. The tricolored blackbird is a candidate (Category 2) for listing under the federal Endangered Species Act and is designated as a state species of special concern by DFG.

Tricolored blackbird populations have declined significantly in this century, dropping 90% from the 1930s to the 1980s. Colonies have also declined in size and have been replaced by smaller, fragmented colonies. The sizes of the largest colonies reported in the 1970s and 1980s averaged 10% of the adults contained in the largest colonies observed in the 1930s. The loss of wetland habitats, disturbance by humans near nesting colonies, and poisoning may be the primary reasons for the population decline (Beedy et al. 1991).

The tricolored blackbird's breeding range includes lowlands and valleys throughout California. This blackbird breeds in freshwater marshes and blackberry thickets and forages in wetlands, grasslands, agricultural fields, and pastures. Proximity to concentrated insect food supplies is probably the major factor in the tricolored blackbird's selection of nesting sites (Neff 1937 Payne 1969, Beedy et al. 1991). Tricolored blackbirds exploit locally abundant food sources and minimize the distance of their foraging flights (Crase and DeHaven 1977), although they are known to forage up to 4 miles from the nesting colony to consume large concentrations of grasshoppers (Orians 1961). The lack of concentrated insect sources near suitable nesting sites could account for many observed tricolored blackbird nesting failures (Beedy et al. 1991).

Numerous tricolored blackbirds were observed foraging throughout the grasslands on the project site but the blackbirds were present in higher numbers (approximately 200) near the lake. Although no nesting was observed, the marshes around stock ponds and on the edges of Rancho Seco Lake are considered suitable breeding sites for the tricolored blackbird. Human activities, however, would preclude blackbirds from nesting in areas adjacent to Rancho Seco Lake. The annual grasslands, irrigated pastures, and lawns on the project site are considered high-quality foraging habitat for these blackbirds.

American Badger. The American badger is a state species of special concern. Badgers in California occupy a variety of habitats, including grasslands and savannas. The species' principal requirements seem to be sufficient food, friable soils, and relatively open, uncultivated ground. American badgers occur from northern Alberta southward to central Mexico. Historically in California, badgers ranged throughout the state except in the humid coastal forests. Badgers were numerous in the Central Valley but now survive only in low numbers in peripheral parts of the valley and adjacent lowlands to the west in eastern Monterey, San Benito, and San Luis Obispo Counties. (Williams 1986.) Badger populations have declined drastically in California within the last century (Grinnell et al. 1937). Agricultural and urban development has been the primary cause of the decline and extirpation of populations of badgers in California (Williams 1986).

American badgers have not been observed on the project site and are not expected to occur because few ground-dwelling rodents, which are the main food source for the species, are present. The site also lacks suitable friable soils favored by this species.

IMPACTS

Criteria for Determining Significance

According to the State CEQA Guidelines, a project will normally have a significant effect on the environment if it will:

- substantially affect a rare or endangered species of animal or plant or the habitat of the species or
- substantially diminish habitat for fish, wildlife, or plants.

Species that meet CEQA criteria for rare or endangered status must be considered even if they are not on an official government list (State CEQA Guidelines). Impacts on federal candidate species (Category 1 or 2), California species of special concern, or CNPS List 1B or 2 species are considered significant if the following substantially affect portions of local or regional populations:

- direct mortality;
- permanent loss of existing habitat (i.e., breeding, foraging, nesting);
- temporary loss of habitat that may result in increased mortality or lower reproductive success; or
- avoidance by wildlife of biologically important habitat for substantial periods, which may increase mortality or lower reproductive success.

Impact Analysis

The Rancho Seco Park master plan includes a conceptual wetland mitigation plan as part of the project description. The conceptual mitigation plan addresses impacts on wetland communities that are considered jurisdictional pursuant to Section 404 of the Clean Water Act, including wetland habitats that support special-status shrimp species. In summary, the conceptual mitigation plan compensates for the loss of 4.28 acres of wetland habitats through creation of 6.90 acres of wetland habitats, and provides for the protection of the remaining 195.15 acres of wetland habitats at the site from future development.

Ten vernal pools that support special-status shrimp would be adversely affected by the project. Loss of the 10 vernal pools that support special-status shrimp would be compensated for by inoculating 10 created vernal pool habitats with soil containing shrimp

eggs collected from the affected pools. The goal of shrimp mitigation is to achieve no net loss of shrimp populations.

The wetland mitigation emphasizes creation of wetland habitats on lands that were modified for agricultural or industrial purposes but that likely supported wetland habitats in the past. Wetland creation sites are located near, but not within, existing wetland habitats to avoid disrupting the ecology or hydrological functioning of existing habitats and to facilitate natural establishment of similar plant, invertebrate, and wildlife species.

Wetland Communities

The wetland mitigation plan is included in the Predischarge Notification (PDN) for the Proposed Rancho Seco Park Master Plan Project as submitted to the Corps on October 28, 1993. Copies of the PDN are available from SMUD. The Corps has authorized the project under Nationwide Permit Number 26, provided that SMUD complies with the special conditions of the permit. A copy of the letter of authorization is included as Appendix C.

Impact Summary. Implementation of the project would result in the loss of 4.28 acres of wetland habitats, creation of 6.90 acres of wetland habitats, and protection of the remaining 195.15 acres of wetland habitats at the site. This impact is considered significant. To reduce this impact to a less-than-significant level, implement the following mitigation measures:

10.1 Implement the conceptual wetland mitigation and monitoring plan for the project.

10.2 Obtain a streambed alteration agreement from DFG.

Nonwetland Communities

Annual Grassland. Approval of the project would result in the conversion of approximately 200 acres of annual grassland to recreational facilities. However, approximately 84 acres of annual grassland would be restored as part of the conceptual wetland mitigation plan. Restoration of a grassland-vernal pool habitat complex would be conducted as part of recontouring and reseeding of the wetland mitigation sites, as described in the conceptual wetland mitigation plan. Implementation of the concept plan is expected to increase the species diversity of the existing annual grassland in this area, thereby improving habitat quality for dependent wildlife species and offsetting some of the habitat values lost from facility construction.

The annual grassland converted by the project represents a fraction of a percent of the annual grassland present at the site and in the surrounding region and is not expected

to substantially reduce the amount of foraging habitat available for raptors and other special-status wildlife species. Some additional annual grassland could be temporarily disturbed in areas outside facility locations identified in the park master plan through stockpiling of materials in staging areas or construction of temporary access roads. Although the amount of annual grassland temporarily disturbed by construction activities cannot be determined, it is expected to be minimal because construction staging areas are likely to be located in previously developed areas such as parking lots, and site access is expected to primarily consist of existing roads.

Impact Summary. Implementation of the project would result in the conversion of approximately 200 acres of annual grassland to recreation facilities. This impact is considered less than significant because the annual grasslands at the site do not support unique botanical resources and the proposed mitigation for wetlands would also result in restoration of approximately 84 acres of annual grassland located in a previously irrigated pasture. No mitigation is recommended.

Irrigated Pasture

Impact Summary. Implementation of the proposed project, specifically the conceptual wetland mitigation plan, would result in the conversion of previously irrigated pasture that supports Mediterranean barley to wetland and annual grassland habitats. This impact is considered beneficial because conversion of irrigated pasture to a more diverse mixture of annual grassland species increases habitat values for dependent wildlife species. No mitigation is recommended.

Ornamental Plantings. Approval of the project is expected to increase ornamental plantings at the site. Ornamental plantings associated with the golf course will emphasize use of native oak species (including coast live oak, valley oak, black oak, blue oak, and interior live oak); evergreens (coast live oak and holly oak); and non-native, compatible ornamental trees. Increasing tree number and density at the site is expected to improve nesting habitat and foraging habitat (by providing perches) for raptor species. From a botanical perspective, introduction of species native to California, but not necessarily known historically from the project site, is considered neither a beneficial nor an adverse impact because introduction of such species does not improve the existing botanical attributes or substantially decrease suitable habitat for dependent plant or wildlife species.

Impact Summary. Implementation of the project would result in an increase in ornamental plantings at the site. This impact is considered less than significant. No mitigation is recommended.

Special-Status Plant Species

Impacts on special-status plants are not expected to result from project implementation because plant populations are located in proposed open space areas on the

eastern half of the project site where no development is proposed and human access will be restricted. Impacts on these species from subsequent use of the recreation facilities, especially the golf course, is considered unlikely because the plants are located in vernal pools from over a quarter of a mile to over 1 mile away from recreation facilities and are separated from recreation facilities by Rancho Seco Lake. Subsequent human access to the vernal pools that support special-status plant species is expected to be restricted by SMUD as a condition of the Section 404 permit authorization.

Impact Summary. Implementation of the project would result in no impacts on special-status plant species because the special-status plant populations will be protected in the open space areas as a condition of the Section 404 permit authorization. No mitigation is recommended.

Common Wildlife Species

Impact Summary. Implementation of the project would result in short-term disturbance to common wildlife species during construction. This impact is considered less than significant because its effects are temporary and the species affected are locally and regionally abundant. No mitigation is recommended.

Special-Status Wildlife Species

Implementation of the project would result in no impacts on western pond turtle, American badger, and western spadefoot toad; no mitigation is recommended.

The following section describes short-term impacts on special-status wildlife species, including shrimp, amphibians, Swainson's hawk and other raptors, and tricolored blackbird.

Shrimp Species. The conceptual mitigation plan includes compensatory mitigation consisting of constructing one vernal pool for every vernal pool occupied by shrimp that will be affected, and salvaging the top 2 inches of soil from affected vernal pools occupied by shrimp as inoculant for created vernal pools.

Impact Summary. Implementation of the project would result in the elimination of 10 vernal pools that support special-status shrimp. This impact is considered significant because the three species of shrimp found in these pools are proposed for listing as threatened or endangered by the USFWS and may be listed before completion of the project. It should be noted, however, that because of previous efforts to avoid and minimize impacts on special-status shrimp populations, only 10 of the estimated 306 shrimp populations on the project site will be affected. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

10.1 Implement the conceptual wetland mitigation and monitoring plan for the project.

California Tiger Salamander. Surveys for California tiger salamander and western spadefoot toad in 1993 did not find these animals on the site; however, the USFWS remains especially concerned about the cumulative impacts of the Rancho Seco project and other projects in this area on the long-term viability of existing salamander populations in southeast Sacramento County. (Pierce pers. comm.) The USFWS has been petitioned to list the salamander as endangered under the federal Endangered Species Act. A 90-day finding concluded the action may be warranted, and a formal review of the animal's status has been initiated.

Construction of the project would result in the loss of about 1.2 acres of open water ponds which are seasonal in nature. To compensate for these wetland losses, the wetland plan proposes creation of two ponds totaling about 0.2 acre.

Impact Summary. Implementation of the project could result in loss of potential habitat for the California tiger salamander. This impact is considered significant. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

10.1 Implement the conceptual wetland mitigation and monitoring plan for the project.

Swainsons' Hawk

Impact Summary. Implementation of the project would result in conversion of approximately 200 acres of annual grassland, which is potential foraging habitat for the Swainson's hawk. This impact is considered less than significant even though the Swainson's hawk is a state listed species, because the wetland mitigation plan preserves a substantial amount of annual grassland (over 1,000 acres), more than three times the 1:1 replacement suggested by DFG guidelines. Additionally, the wetland mitigation plan provides riparian enhancement along Rancho Seco Lake, which will improve potential perching, roosting, and nesting habitat for Swainson's hawk. No additional mitigation is recommended.

Black-Shouldered Kite and Northern Harrier

Impact Summary. Implementation of the project would result in the conversion of approximately 200 acres of annual grassland foraging habitat for the black-shouldered kite and Northern harrier. This impact is considered less than significant because the loss of this habitat would not substantially reduce black-shouldered kite or northern harrier populations in the local area or statewide, over 1,000 acres of suitable foraging habitat for these species will remain as open space, and the project site is surrounded by thousands of acres of annual grasslands. No mitigation is recommended.

Other Raptors

Impact Summary. Implementation of the project would result in the conversion of approximately 200 acres of suitable foraging habitat for various birds of prey, including red-tailed hawks and great horned owls. This impact is considered less than significant because the amount of acreage lost is relatively small and its loss would not substantially reduce populations of raptor species, including Cooper's hawk, sharp-shinned hawk, golden eagle, ferruginous hawk, prairie falcon, merlin, and short-eared owl, in the local area or statewide. No mitigation is recommended.

Special-Status Raptor Species. Because the project site is habitat for black-shouldered kite, northern harrier, and tricolored blackbird, construction activities could potentially cause short-term disturbance to these special-status species. Although the construction activities would be temporary, the disturbance could cause the above-mentioned species to forage away from the construction areas or leave the project site temporarily. This impact is considered less than significant because construction activities would be temporary and the short-term displacement of these birds to adjacent areas would not cause local or regional decreases in populations of black-shouldered kite, northern harrier, or tricolored blackbird. In contrast, the disturbance of soil during construction can allow additional short-term foraging opportunities for these three species because of the removal of cover for their prey. No mitigation is recommended.

All known active raptor nests are located within preserve areas; therefore, no impacts on raptor nests are expected to result from project implementation. However, the potential exists for the establishment of new raptor nests on the project site before construction begins.

Impact Summary. Implementation of the project would result in the potential loss of active raptor nests, including burrowing owl nests, that could be disturbed or eliminated during construction. This impact is considered significant. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

10.3 Conduct preconstruction raptor nest surveys and avoid raptor nests where found.

Tricolored Blackbird

Impact Summary. Implementation of the project would result in the loss of approximately 200 acres of suitable tricolored blackbird foraging habitat. This impact is considered less than significant because over 1,000 acres of suitable tricolored blackbird foraging habitat on the project site will remain as open space under the proposed project and the proposed golf course greens (approximately 100 acres) would probably be used by tricolored blackbirds (there are numerous tricolored blackbird sitings at other golf courses). No mitigation is recommended.

Recommended Mitigation Measures

10.1 Implement the Conceptual Wetland Mitigation and Monitoring Plan for the Project

SMUD will implement the conceptual wetland mitigation and monitoring plan for the Rancho Seco Park master plan project dated October 28, 1993. The plan shall be implemented with the additions, changes, and clarifications included in the Nationwide Permit Number 26 authorized by the Corps on November 29, 1993.

10.2 Obtain a Streambed Alteration Agreement from DFG

SMUD will obtain a Section 1601 streambed alteration agreement from DFG prior to construction.

10.3 Conduct Preconstruction Raptor Nest Surveys and Avoid Raptor Nests where Found

To avoid inadvertent impact on special-status wildlife, SMUD will retain a qualified biologist to conduct preconstruction surveys for nesting raptors before beginning all grading work for the project and mitigation plan implementation. The timing of construction should be adjusted if sensitive species cannot be relocated.

Other Recommended Measures

Annual Grassland

No mitigation is required for permanent loss of annual grassland; however, the location of staging areas and temporary access roads should be restricted to developed areas such as parking lots and fire roads to ensure that temporary disturbance of annual grasslands from construction activities is minimized.

Wildlife Enhancement

No mitigation is required for wildlife enhancement; however, the following measures are presented to encourage wildlife-compatible revegetation and development.

1. When possible, use native plants when landscaping. Once established, native plant species usually require less watering and care and offer more suitable forage and cover to wildlife species then exotic cultivated species. A list of suitable native plants is provided in Table 10-4.

2. Place wood duck nest boxes in trees near or overhanging the water edge of Rancho Seco Lake and appropriate stock ponds to attract wood ducks. Wood duck boxes do, however, require a minimal amount of care. A local Boy Scout group or other volunteer group could adopt the boxes and perform the routine annual cleaning. A detail of a wood duck nesting box is provided in Figure 10-1.

3. When possible, leave dead standing (snags) and fallen trees in place. They are habitat for a variety of wildlife species.

4. Place raptor perches in the annual grasslands. There are a limited number of perches used by raptors in the area. Additional perches for raptors would increase raptors' effectiveness as predators and would allow bird watchers a greater chance of observation of these birds of prey. A detail of a raptor perch is provided in Figure 10-2.

Table 10-4. Recommended Species to Plant in Landscaped or Open Space Areas at the Rancho Seco Project Site

Common Name	Botanical Name	Remarks	Wildlife Uses			
			Food	Cover	Roost/ Nesting	Beneficial Insects
DRY, SUNNY SITES (UPLANDS)						
Trees						
Blue oak	*Quercus douglasii*	dec,**	X	X	X	
Interior live oak	*Quercus wislizenii*	ev,**	X	X	X	
Shrubs						
Buck brush	*Ceanothus cuneatus*	ev,**	X	X		X
Western redbud	*Cercis occidentalis*	dec,**	X	X		
Flannel bush	*Fremontodendron californicum*	ev,*		X		
Toyon	*Heteromeles arbutifolia*	ev,**	X	X		X
Coffeeberry	*Rhamnus californicus*	ev,**	X	X		X
MOIST OR SHADY SITES (RIPARIAN)						
Trees						
Box elder	*Acer negundo ssp. californicum*	dec,**,M		X	X	
White alder	*Alnus rhombifolia*	dec,**,H		X		
Buttonbush	*Cephalanthus occidentalis*	ev,**,H		X	X	X
Oregon ash	*Fraxinus latifolia*	dec,**,H		X	X	
Sycamore	*Platanus racemosa*	dec,*,L			X	X
Cottonwood	*Populus fremontii*	dec,**,M		X	X	
Valley oak	*Quercus lobata*	dec,**,L	X	X	X	
Arroyo willow	*Salix lasiolepis*	dec,**,M		X		X
California bay	*Umbellularia californica*	ev,**,M	X	X		
Vines						
Wild rose	*Rosa californica*	dec,**,M	X	X		
Wild grape	*Vitis californica*	dec,**,H	X	X		
Grasses						
California brome	*Bromus carinatus*	per,**	X	X		
Blue wildrye	*Elymus glaucus*	per,**	X	X		
Creeping wildrye	*Elymus triticoides*	per,**	X	X		
Red fescue	*Festuca rubra*	per,**	X	X		
Meadow barley	*Hordeum brachyantherum*	per,**	X	X		
Purple needlegrass	*Stipa pulchra*	per,**	X	X		

dec = deciduous
ev = evergreen
per = perennial
* = native to northern California
** = native to local region
H = high flood tolerance
M = medium flood tolerance
L = low flood tolerance

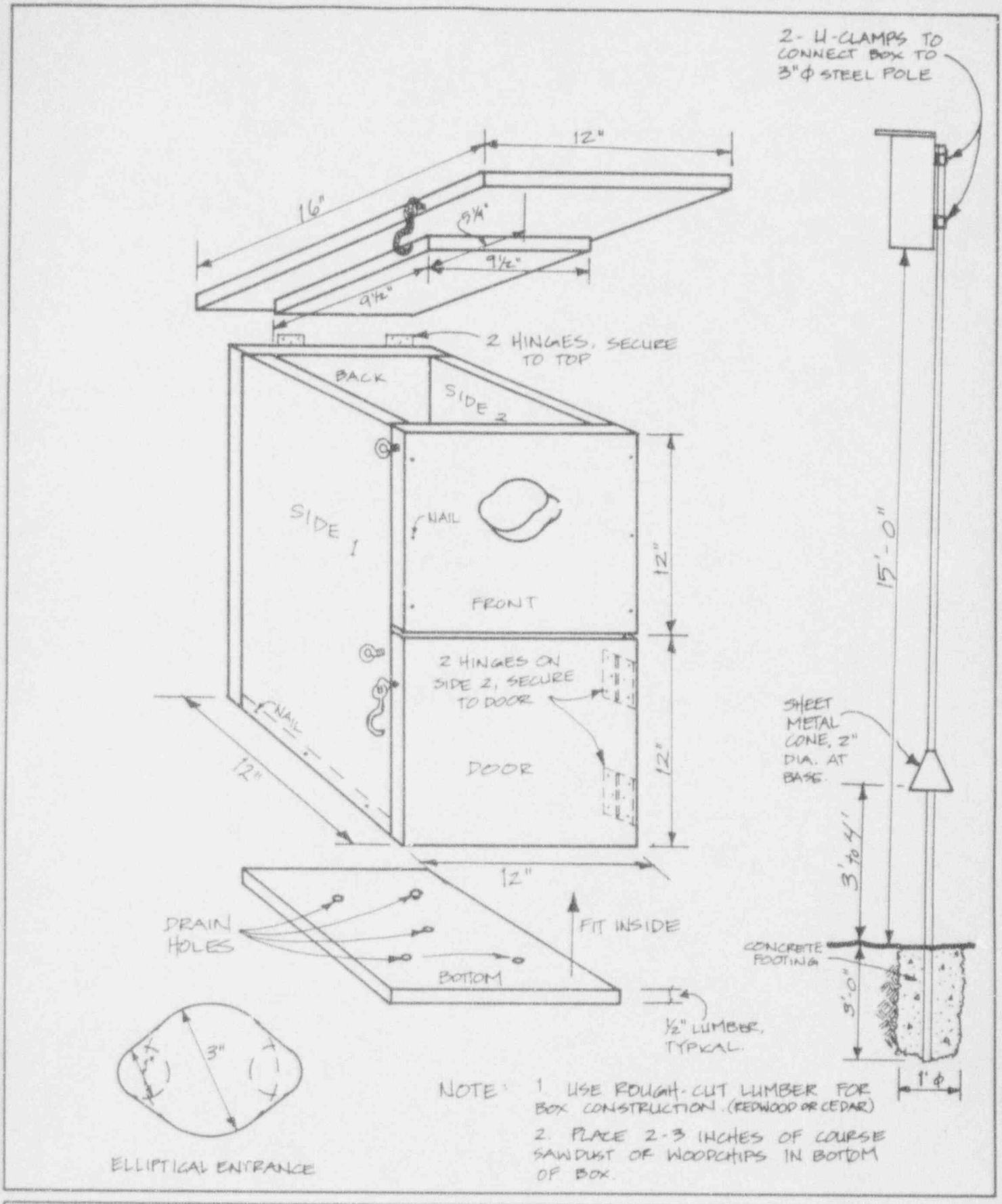

Figure 10-1. Wood Duck Nesting Box Detail

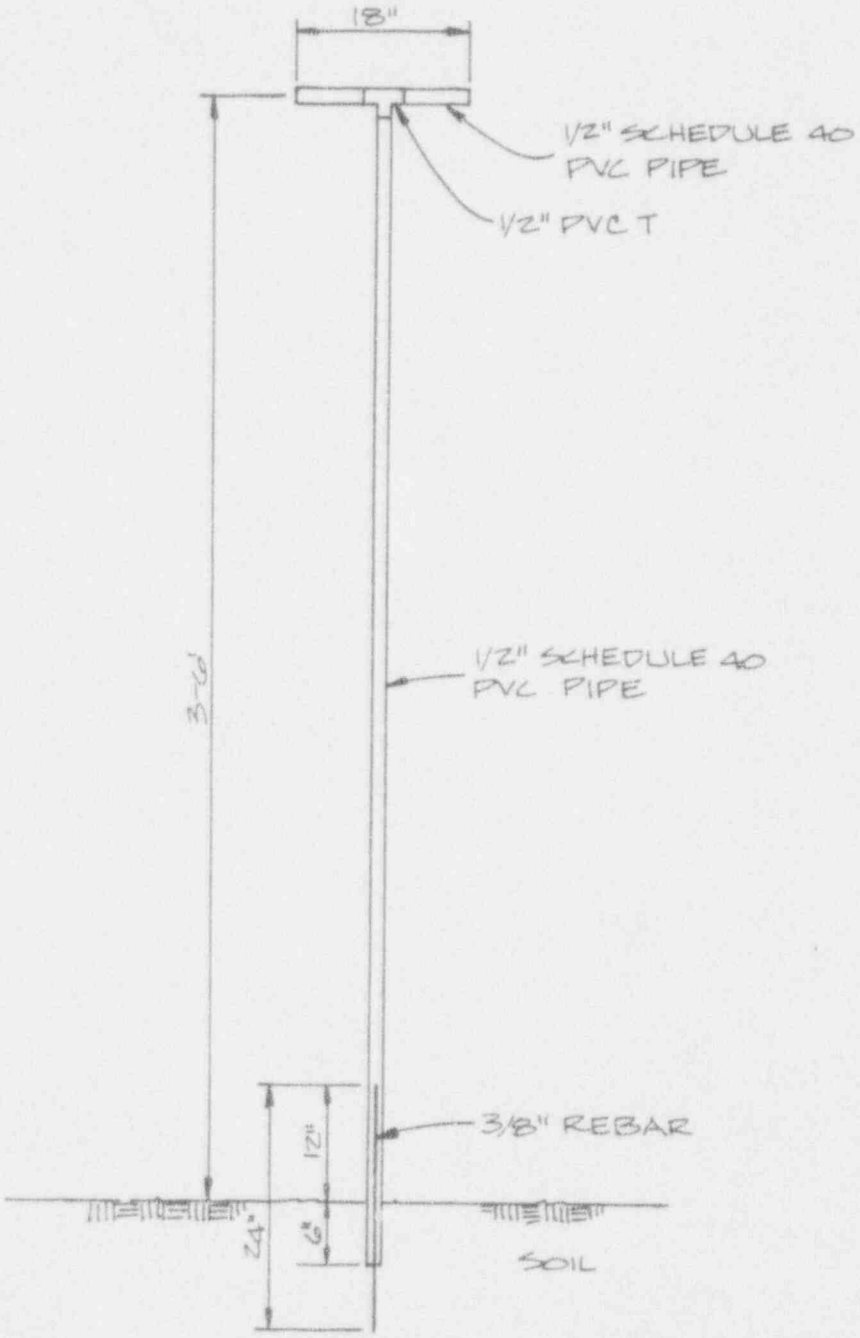

Figure 10-2. Raptor Perch Detail

Chapter 11. Cultural and Historical Resources

SETTING

The "Setting" section is based on the Cultural Resources Survey Report for Rancho Seco Park, Sacramento, California, prepared by Foothill Resources, Ltd. (1993). A copy of the report is available from the North Central Information Center of the California Archaeological Inventory, California State University, Sacramento.

Regulatory Framework

In addition to meeting the requirements for CEQA, a portion of this project requires compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 Code of Federal Regulations (CFR) Part 800. Section 106 requires that federal agencies take into account the effects of their actions on properties that may be eligible for listing or are listed in the National Register of Historic Places (NRHP). The Rancho Seco Park master plan project is considered a federal undertaking because of the necessity for a permit from the U.S. Army Corps of Engineers (Corps), pursuant to Section 404 of the Clean Water Act. To determine if an undertaking could affect properties eligible for NRHP listing, cultural sites (including archaeological, historical, and architectural properties) within the Corps' area of potential effect (APE) must be inventoried and evaluated for the NRHP. The Corps has determined that the APE for the project and resources within the APE must be treated in accordance with Section 106 of the National Historic Preservation Act (NHPA); resources outside the APE must be treated in accordance with CEQA guidelines regarding cultural resources (Appendix K of the State CEQA Guidelines). Compliance with Section 106 is the responsibility of the Corps as the lead federal agency.

Previous Cultural Resource Investigations

No portion of the project site has been previously surveyed for cultural resources and there are no previously recorded archaeological sites on the site. As part of the conceptual development plan for the project, a records search and sensitivity study was undertaken by LSA Associates (1993). This study recommended that an archaeological survey be conducted for the project site.

Some archaeological research has been conducted in the vicinity of the project site, including an archaeological survey of a portion of the Rancho Seco property to the west conducted by Archaeological Resource Service (ARS) (Flynn 1985). The subject of this study was a 75-acre parcel on which evaporation ponds were proposed for construction. The survey focused on the project area's potential to contain vernal pool exploitation sites, a site type that ARS had identified elsewhere in northern and central California in the early 1980s (Moratto 1984). This site type consists of patterned distributions of battered or other minimally modified rocks believed to represent expedient tools associated with processing the pool's seasonally changing resources.

Although no archaeological sites were identified by ARS at vernal pools on the Rancho Seco survey, ARS submitted a site record for a prehistoric artifact scatter consisting of cobble tools situated along the banks of Clay Creek (temporary number ARS 85-15-1); the artifacts were said to be associated with the initial processing of plant materials. Avoidance or further study of the site was recommended. Because project plans could not avoid impacts to ARS 85-15-1 and because of the ephemeral nature of the materials, SMUD requested an evaluation of the site by the North Central Information Center and the Office of Historic Preservation (OHP). Based on the consensus of archaeologists who visited the location, OHP recommended that ARS-85-15-1 not be assigned a site trinomial but that one flaked cobble be recorded as an isolated find.

An earlier study of adjacent Rancho Seco lands conducted by Peak & Associates in 1984 included a survey of land in the southeast quarter of Section 29. This study was also guided by an expectation of the presence of vernal pool archaeological sites. No prehistoric archaeological sites or isolated finds were identified within this approximately 100-acre project area. Despite these negative findings on adjacent Rancho Seco lands, the current study recognizes the potential for vernal pool exploitation sites on the Rancho Seco Park property and considers the possibility that historical prospecting or other mining activity in the area may have masked evidence of prehistoric use of these features.

Documentary Research

A records search for the project area was conducted by LSA Associates in 1992 at the North Central Information Center of the California Archaeological Inventory (LSA Associates 1993). The records indicated that no sites had been identified within 3 miles of the project site. The following directories were also consulted, and no listings of cultural resources were found for the project area:

- California Historical Landmarks,
- California Points of Historic Interest,
- California Inventory of Historic Resources,
- Office of Historic Properties Directory, and
- National Register of Historic Places.

For the current study, archival and oral history research was conducted at repositories in Sacramento and San Andreas by Foothill Resources, Ltd. Research focused on examining historical maps, secondary histories, card catalogues, and mining reports. Repositories consulted include:

- U.S. Bureau of Land Management office, Sacramento;
- California Room, California State Library, Sacramento;
- Environmental Division, California Department of Transportation (Caltrans) headquarters, Sacramento; and
- Calaveras County Historical Society, San Andreas.

The reports of the state mineralogist (on file at the Calaveras County Historical Society) contained no information on mining in the project area. A search of the card catalogues at the California Room was also equally unrewarding regarding both mining and ranching history. Most of the information on the area was obtained from Thompson and West's History of Sacramento (1880). Historic roads and homesteads were depicted on the United States Geological Survey (USGS) 1907 map of the Goose Creek Quadrangle.

Prehistoric Period Overview

The Rancho Seco Park project area is near the eastern limits of the Cosumnes archaeological district (Bennyhoff 1977) in an area peripheral to the major archaeological investigations of the Central Valley. It is roughly equidistant from the two major watercourses in this portion of the Sierra, being about 12 miles south of the Cosumnes River and about 12 miles north of the Mokelumne River. In the north, the confluence of Deer Creek and the Cosumnes River near Sloughhouse was the setting for some major prehistoric occupation sites; excavations of these sites by Sacramento Junior College archaeologists in the 1930s led to the development of the first chronological sequence for central California prehistory (Lillard and Purves 1936; Lillard et al. 1939).

Farther downstream on the Cosumnes River, about 10 miles northwest of Rancho Seco, is the Windmiller site (CA-Sac-107), the site type for this sequence's Early Horizon, beginning about 5,000 years before present (B.P.). Recently, archaeological site CA-Sac-133 near Sloughhouse was intensively investigated for a Caltrans road-improvement project (Bouey and Waechter 1992). South, on the Mokelumne River, more recent investigations conducted prior to inundation of Camanche Reservoir identified 77 prehistoric sites; most sites dated to the Late prehistoric period, but some evidence of Early- and Middle-period use by Central Valley populations was recovered (Johnson 1967). At the valley-foothill interface, virtually no archaeological investigation has taken place in the 24-mile stretch between these rivers; archaeological work has been limited to relatively small surveys, primarily those associated with Rancho Seco development.

Native American Ethnographic Overview

At the time of historic contact, the Rancho Seco area was within the lands held by the Plains Miwok, near their eastern boundary with the Northern Sierra Miwok of the foothills. Linguistic evidence indicates that the Miwokan family once held a continuous band of land from the coast to the Sierra foothills, with the Sierra group splitting off perhaps as early as 2,000 years ago (Moratto 1984) and ultimately developing distinct languages.

Very little is known about the nonmaterial culture of the Plains Miwok people because of their population losses during an 1833 epidemic and subsequent episodes of disease, followed by the gold rush and loss of their land base to non-Indian populations in the mid-19th century. The material culture they left behind and their position in the geographic center of the California culture area allow some inference about their lifeways despite a virtual lack of ethnographic data. The ethnogeography of the Plains Miwok has been reconstructed by Bennyhoff (1977), using mission records, exploration diaries, and other historical documents.

The Plains Miwok lived in large, semi-sedentary villages along the major river courses of the delta system and were organized politically into tribelets, groups characterized by a sense of cohesion, local autonomy, and use and ownership of a certain territory (Bennyhoff 1977; Kroeber 1962). Practicing what is generally termed a hunter-gatherer subsistence mode, the Plains Miwok focused on plant collecting, with fishing and hunting being subsidiary activities. The large valley oaks of the delta plains provided the staple acorn to the Plains Miwok, and a variety of seeds, roots, and other plant products would have been drawn from a larger area that probably included the extensive grasslands of the Rancho Seco area. Unlike the foothill groups that shifted to almost exclusive use of bedrock mortars, Plains Miwok and other valley groups continued to use bowl mortars, which were often made of wood because of the absence of lithic materials in the delta area.

Historical Period Overview

Sacramento County, one of California's original 27 counties, was named by the Spanish explorer Gabriel Moraga after the Sacramento River, which he named in honor of the Holy Sacrament. The Spanish had made five expeditions into the region by the early 1800s, mostly in search of inland mission sites (Hoover et al. 1966).

The first Anglo-American to travel into the region that is now Sacramento County was Jedediah Strong Smith, who opened up the northward Sacramento Trail to trade and immigration in 1828. Members of the Hudson's Bay Company soon made use of the trail, establishing an annual pattern of trapping and trading between California and Vancouver.

New Helvetia, the first non-Indian settlement in the central valley, was established by Captain John A. Sutter in 1839. Sutter, a native of Switzerland, was granted 11 leagues of land by the Mexican government in what is now the City of Sacramento. Soon to be

known as Sutter's Fort, Sutter's settlement was a trading post and place of refuge for the newest wave of immigrants to California. Exhausted and needing food or a place to stay, these overland travelers found shelter at Sutter's settlement after the arduous trek over the Sierra Nevada.

Gold was discovered at Sutter's mill on the American River in January 1848. Within 2 years, gold seekers from all walks of life and from virtually every state in the Union and from Mexico, South and Central America, Europe, Asia, Hawaii, and numerous other areas had established a bustling community on Sutter's lands.

By 1854, Sacramento had become so populous and important as the gateway to the mines that the state capital was finally settled there. It became the transportation center for California, with the Sacramento Valley Railroad, the first railroad in the state, constructed between Sacramento and Folsom by 1856. The first transcontinental railroad was started in 1853 and completed in 1869, when the Central Pacific Railroad (CPRR), linking Sacramento with Promontory, Utah, met the Union Pacific Railroad, which had been building west from the eastern states.

Settlement, which in the earliest years of the gold rush, had been clustered in mining camps and the transportation centers of San Francisco, Sacramento, and Stockton, soon expanded to take in most of the arable lands in the Central Valley and foothills. Disillusioned miners, often former farmers and ranchers, saw an opportunity to make a living by providing meat, produce, and fodder to the new settlers. The availability of free land, in 164-acre parcels, was an added inducement to settlement to those whose dream of finding gold had ended in disappointment.

Southeastern Sacramento County, in which the project site is located, was settled in the 1850s by growers of hay and barley, the principal crops in the area until 1877. The lands in the project area were in the eastern Alabama Township, established October 20, 1856, which extended westerly from the Arroyo Seco Land Grant to the CPRR Amador Branch line which ran from Galt to Ione. Most of the early settlers established their farms on the watercourses, mainly Laguna and Dry Creeks.

The primary agricultural industry in the township was stock raising, until the passage of the "no-fence law" made it uneconomical. Sheep raising was introduced into the area in 1858 and quickly became the largest livestock interest. By 1880, wheat had supplanted hay and barley as the major crop under production.

During the mid-1800s to late 1800s, large tracts of land in the township were owned by the CPRR, a land grant railroad. The nearest settlement to the project site was to the west at Clay Station, on the Ione and Amador Branch of the CPRR. A post office, store, and blacksmith shop were established here by the late 1870s. By 1880, Alabama Township had a population of 300, divided into three school districts, but had no church (Thompson and West 1880).

There were no roads in the project lands during the early years of settlement (U.S. Geological Survey 1856; Thompson and West 1880), but by 1907, several roads and two ranches were noted (U.S. Geological Survey 1907). Farming and ranching, which in the earliest years had been confined to the stream courses, were now established over most of the township.

Thompson and West noted in 1880 that mining debris (from hydraulic mining upstream) was affecting the value of the bottom lands. The Sawyer Decision, rendered in 1884, effectively put an end to hydraulic mining in the state. After hydraulic mining ceased, some small-scale mining was carried on in the Rancho Seco area by miners who prospected up the small streams. The gold was very fine, however, and provided only a marginal return at best. In later years, dredging operations recovered additional amounts of gold from the late Pleistocene streams and channels (Fuller pers. comm.).

Within the project site boundaries, ranching was the major economic endeavor until purchase of the land by SMUD in the late 1960s. Construction of the Rancho Seco nuclear power plant began in 1969. A 164-acre lake, built on adjacent Clay Creek as an emergency cooling facility, was developed at the same time as a public park through agreement with the State of California. Commercial operation of the nuclear facility began in 1975 and was terminated in 1989; the park continues to be a popular recreational area. Surrounding the power plant and park, cattle still graze in winter on the rolling grasslands.

Field Survey Methods

The entire project site, with the exception of portions covered with water and dense vegetation, were intensively surveyed by a four-person field crew between August 30, 1993, and September 3, 1993. All areas within the property boundaries were covered by north-south or east-west transects 25-30 meters apart, with special attention being given to hilltops and areas along drainages. The only exception to this strategy was a plowed field covering approximately 50 acres in the southeastern portion of the project site and the southern and eastern lakeshore areas covered by park landscaping and dense vegetation; these areas were covered in transects 35-40 meters apart.

Ground visibility throughout the project site varied from excellent to poor, with moderate visibility prevailing over most of the open areas. Excellent visibility occurred in areas around ranch reservoirs and on hilltops where cattle traffic has hindered the growth of vegetation. At the eastern end of the lake, inspection of the ground surface over 50-60 acres was prevented by dense mats of wild oats and trees with dense undergrowth along the shoreline. Ground visibility within the park was hindered by lawns and landscaping.

All identified cultural resources were flagged and their locations noted on the project field map and a decision was made regarding whether the resources should be recorded as sites (complex cultural resources), recorded on primary record forms (single-activity cultural

resources or sites outside the project site), or simply noted as survey features (isolated or individually unimportant resources). Primary record forms containing simple descriptive and locational information are received and recorded by the Archaeological Information Centers, but the resources are not accorded the status of archaeological sites. The forms were developed to identify potential sites that may later be fully recorded or to identify cultural resources that may contain research value but are not complex enough to be recognized as sites. Recording resources on primary record forms does not preclude the possibility that they contain research value; nor does it imply that no mitigation would be required if they are adversely affected by a project.

Survey Findings

Three archaeological sites were identified on the project site: a prehistoric quarry site (RS-1), a late 19th-century ditch and placer mining site (RS-2), and an early 20th century dairy (RS-3). These sites have been recorded on official Archaeological Site Inventory Forms and filed at the California Archaeological Information Center at California State University, Sacramento.

Four resources were identified that warranted recordation on Primary Record forms. Two of these are located on the project site. PR-1 designates an area of placer mining remains, and PR-2 identifies the possible location of a buried prehistoric site. PR-3 and PR-4 are possible prehistoric sites identified by informants but are located outside the project boundaries and are not discussed further here. For information about these resources, see Foothill Resources (1993).

RS-1: Prehistoric Quarry Site

Description. This prehistoric site is located on two prominent knolls and a connecting saddle in the north-central portion of the project site, at elevations of about 220 to more than 230 feet above mean sea level. The site consists of a moderately dense scatter of pecked and battered cobbles and pebbles, some incipient formal tools, and a small amount of flaking debris. The cultural materials are clustered in two loci, each around the upper slopes of a knoll where abundant rounded cobbles of quartz, rhyolite, and andesite are eroding out of a relict streambed. Artifacts are consistent with use of the location as a quarry, where materials were assayed and some milling tool blanks and other tools were produced.

About 30 definite prehistoric artifacts and numerous probable cultural items were noted on the surface. The most numerous artifact type consists of minimally flaked cobbles and pebbles, primarily of quartz and rhyolite, that exhibit scars from removal of one to several flakes. The most distinctive artifact type, however, appears to be a roughed-out handstone blank of rhyolite, which is present in various stages of completion. The only fully pecked stone noted is the appropriate size and shape of a classic, shaped handstone, lacking

only finishing and use wear. Larger items appear to be in the early stages of cortex removal, with some or all of one margin or face exhibiting regular pecking/flaking. (Measurements and field sketches of a sample of these artifacts are presented in the confidential site record.) Although some primary flakes are present at the site and at least one core was noted, there is little evidence to suggest that the quarry served as an important source for flaked-stone tool material.

Of interest to archaeologists at RS-1 is the presence of lichen growing over the pecked surfaces of nearly all shaped cobbles noted, suggesting some antiquity for RS-1. The fact that lichen was noted only on the upper, exposed surfaces also gives support to the conclusion that the site has physical integrity; with the exception of an approximately 9-meter by 5-meter by 20-centimeter-deep mechanical cut on the southeastern knoll, the site seems to be in relatively pristine condition.

As one of the westernmost extensions of the Mehrten formation in this area, the location may have served valley residents, whose stoneless setting would have required procurement of lithic resources from elsewhere. Similar rock types are present in abundance in nearby gullies and creekbeds, suggesting that this site location was chosen as much for its hilltop setting, which commands long views, as for its lithic resources.

Preliminary Evaluation of RS-1. The relatively homogeneous archaeological assemblage noted on the surface of prehistoric site RS-1 appears to represent a single-component site, perhaps one of relatively short duration of use. This characteristic, along with the site's apparent stratigraphic integrity, gives RS-1 the potential to address a number of questions regarding resource use, stages in ground-stone tool production, settlement systems, and other issues of research interest, despite the apparent absence of clearly datable materials or culturally distinctive artifacts.

Site RS-1 appears to represent a previously unreported site type for this region: a quarry exploited for procuring the raw material for ground-stone, rather than flaked-stone, tools. Until a more large-scale survey has been conducted along this stretch of the valley-foothill interface, the uniqueness or representativeness of this site type for this region cannot be assessed. The activities suggested at RS-1 appear to represent production of formal milling equipment, rather than the expedient items common in the Sierra foothills; this suggests a valley orientation for the people using the site. Also suggested is an early date of site use. Although handstone use continued in some localities throughout the known chronological sequence, virtually exclusive milling slab/handstone use dates to the Early period. The inferences made here suggest that RS-1 has the potential to yield information regarding a currently unique resource, one which may date to the poorly understood Early period of the Central Valley.

Site RS-1 appears to meet criteria of "importance" and "significance" as defined by CEQA and the NRHP. The site has the potential to address scientifically consequential research questions because it appears to contain information on prehistoric use in an area about which no data are currently available (CEQA Criterion B; NRHP Criterion D). The site also has the potential to meet CEQA Criterion C, which addresses questions of

uniqueness; to date, this particular site type (milling tool quarry site) appears not to have been investigated or reported in central California. Site RS-1 clearly exhibits some antiquity and appears to possess substantial stratigraphic integrity (CEQA Criterion D; NRHP integrity requirement).

RS-2: Ditch and Placer Mining Site and PR-1

Description. The site consists of a main ditch, dams and reservoirs, and two areas of associated placer mining activity likely dating to the late 1800s. Only the southernmost portion of this site, within the boundaries of the Rancho Seco golf course project, was surveyed. Six features were identified. Feature 1, the main ditch, brings water from the east to the project area, likely from Hadselville Creek about 5 miles to the northeast. Features 2 and 3 are reservoirs at the end of the main ditch and Feature 4 is an area of placer mining on the drainages below them. Feature 5 consists of three small ditches that skirt the hillside between the two reservoirs. Feature 6 is another area of placer mining along an adjacent drainage. It is also located below, and was fed by, the Feature 1 ditch. Presumably, other drainages below the ditch in unsurveyed areas of the site, outside the project boundaries, also contain evidence of placer mining.

Preliminary research into mining records provided no direct references to the project area. Patterns of historical mining activity and knowledge of local geology, however, permit a general reconstruction of the site's history. Placer deposits in and near the project area contained little gold compared with those upstream to the west. The gullies draining the Mehrten formation in the project area evidently yielded sufficient gold for miners to build a ditch into the area and work the gullies feeding both Hadselville Creek (RS-2) and Clay Creek (PR-1). These hand placer-mining activities likely exhausted the deposits in less than a decade. Local oral history attributes these workings to the Chinese (Marciel pers. comm.).

Preliminary Evaluation of RS-2. Site RS-2 and associated resource PR-1 may meet NRHP and CEQA criteria for significance if historical documentation verifies that these mining remains are associated with Chinese prospectors. This immigrant group, although one of the most populous in the placer gold mining regions of California in the late 1800s, is poorly documented in traditional sources. Its contributions to the history of the state have only recently been the object of substantial research efforts. One of the most productive avenues of research has been archaeological investigations of sites occupied by Chinese. Analysis of artifacts, structural remains, economic and domestic activities, and settlement patterns have filled in important information gaps in the historical record.

The mining remains represented by RS-2 and PR-1 are typical of those associated with Chinese. Pushed out of richer diggings, the Chinese typically worked marginal gold deposits, eking out a modest living in small groups. The low technologies, labor intensive methods, and small capital investment suggested in the features of sites RS-2 and PR-1 correspond with Chinese gold mining practices of the late 19th century. The 1880 census also shows the highest percentage of Chinese in Sacramento County (14.2%), coinciding with the post-1884 date suggested for the mining activities.

If this site can be associated with Chinese miners, it might satisfy criteria for significance under CEQA and NRHP. The ditch and mining remains, although weathered, are largely undisturbed by subsequent human use of the land. Exceptions to this generally good preservation are found in the rebuilt dams of Features 2 and 3 at site RS-2 and in the inundation of the lower reaches of PR-1 by Rancho Seco Lake. These alterations do not detract substantially from the integrity of the resources (CEQA Criterion D and NRHP integrity evaluation). The resources also satisfy CEQA Criterion D by appearing to date to circa 1884, therefore being over 100 years old.

Because of the paucity of primary information on California's 19th-century Chinese immigrants, it is likely that the site may contain data important for answering questions about the history of the Chinese in California that cannot be answered through documentary research (CEQA Criterion E). Although no associated artifact deposits were identified, precluding the application of numerous categories of questions that require analysis of portable material cultural items, the site may be determined to contain data important for establishing understanding of the mining technologies used by the Chinese (CEQA Criterion E; NRHP Criterion D). The site may also be of genuine interest to modern populations of Chinese who have recently shown considerable enthusiasm for unearthing the history of their forebears (CEQA Criterion B).

RS-3: Skully Dairy Site

Description. This site consists of the remains of the Skully Dairy, which was operating into the 1950s. The following remnants of the dairy are extant: a rectangular outline of stone footings for a barn (Feature 1); a concrete floor section of a dairy barn (Feature 2); a concrete water trough (Feature 3), scattered artifacts (Feature 4), and a horizontal silage trench (Feature 5).

Roy Marciel, manager since 1964 of the ranch that surrounds the Rancho Seco facility, provided a synopsis of the site's history and identified Features 1-3 described above. He related that the portion of the present ranch located in Section 28 was previously owned and operated as a dairy by a Mr. Skully. His house reportedly sat at the location of the present ranch house (this may be the structure depicted on the 1909/1917 USGS Goose Creek Quadrangle map). Mr. Jacobs, the developer of nearby Rancho Murieta, purchased the ranch in the 1950s. He tore down Skully's buildings and built virtually everything present on the ranch today between 1959 and 1960. When Roy and Sue Marciel and their family moved to the ranch in 1964, it was owned by Mr. O'Connell, a resident of San Jose. O'Connell sold the ranch to SMUD and then leased back the grazing lands, keeping Marciel as manager. When O'Connell gave up the lease, Marciel continued to manage the ranch as a SMUD employee, with the lands leased to other ranchers for grazing. The current ranch consists of about 2,000 acres and supports about 300 pair of cattle (cows and calves) during the winter. (Marciel pers. comm.).

Preliminary Evaluation of RS-3. This site does not appear to satisfy significance criteria of either the NRHP or CEQA. The major elements of the site have been destroyed,

leaving few remnants without integrity. There does not appear to be any data potential or any important historical associations in the remaining features.

PR-1: Placer Mining Tailings

Description. Hand-stacked v[illegible]es from placer mining extend along the upper reaches of Clay Creek and tw[illegible]drainages in the northeast portion of the project site. A breached earthen d[illegible]ne of the small drainages. It is likely that the placer tailings extend under the [illegible]e and outside the project site to the east. These remains appear similar to ti[illegible] S-2 (see above discussion), and are likely associated with the same episode of mining.

Preliminary Evaluation of PR-1. Please refer to the preliminary evaluation discussion for Site RS-2.

PR-2: Mortars from Creekbed

Description. Three ground-stone artifacts were found at this location by Roy Marciel and his son over a span of several years. The collection consists of one large bowl mortar, a smaller bowl mortar, and a mortar fragment. The area was closely inspected and showed no overt surface indications of a cultural deposit.

Preliminary Evaluation of PR-2. Two mortars were collected from this location, each apparently having washed out of the creek bank approximately 1 year apart. Although no cultural materials were noted during a careful examination of the creek terrace, creek bed, cut banks, and upper adjacent slopes, it is possible that further buried or cached milling tools or other prehistoric artifacts are present.

Survey Features Not Containing Significant Historical Value

During the course of the survey, several features were noted but not recorded. It has been determined that these features do not contain significant historical values or data potential:

A. Ranch-related items (identified by Ron Marciel).

1. Large timbers remaining from a feedlot associated with the Jacobs ranching period.

2. A modern ranch dump. The dump was begun by the Jacobs and used by the Marciels until circa 1983, when burning of trash was prohibited. Identified items include a chrome bumper, a Michelob bottle, bolts,

carpet, asphalt siding, glass bottle fragments (brown, clear, and green), leather, aluminum cans, and lumber.

B. Rhyolite chopping/scraper tool. This artifact was found at the south edge of a ranch dam in a highly disturbed context including introduced dam fill and riprapping material. Eighty percent of the surface cortex has been removed by flaking. The item is 10 centimeters (cm) long, 8 cm wide, and 6 cm thick.

C. Vegetated areas below dam. Two dense concentrations of exotic plants are remnants of a wildlife/bird sanctuary that was envisioned as a 5-acre project by the County of Sacramento at the time the dam was built. The project faded and these two areas were fenced and are periodically watered by rancher Marciel.

D. Pit. A small excavated pit with adjacent back dirt measures 2.5 meters (m) long, 1.5 m wide, and about 6 inches deep sloughed in. Its function is unknown.

E. Core. A spherical core of mustard-colored chert with black streaks measures 11-12 cm in diameter. Material has been removed from two-third of its surface area. It appears to have been tested for tool material and rejected.

F. Borrow area for dam construction. Earth fill for the dam on Clay Creek was removed from this knoll, leaving a level, bare surface with no soils.

G. Old road remnants. Portions of roads depicted on the 1907 USGS Goose Creek Quadrangle map were identified in the project area.

All standing structures in the project area were determined to be less than 50 years of age and thus exempt from significance evaluations.

IMPACTS

Criteria for Determining Significance

According to the State CEQA Guidelines, a project will normally have a significant effect on the environment if it will:

- disrupt or adversely affect a prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group; or a paleontological site except as a part of a scientific study.

According to Appendix K, "Archaeological Impacts", of the State CEQA Guidelines, for the purposes of CEQA, if a project may cause damage to an important archaeological resource, the project may have a significant effect on the environment. Two resources, RS-1 and PR-2, are subject to the requirements of CEQA, Appendix K. For the purposes of CEQA, an "important archaeological resource" is one that:

a. is associated with an event or person of:

   1. recognized significance in California or American history, or

   2. recognized scientific importance in prehistory.

b. can provide information which is both of demonstrable public interest and is useful in addressing scientifically consequential and reasonable or archaeological research questions;

c. has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind;

d. is at least 100 years old and possesses substantial stratigraphic integrity; or

e. involves important research questions that historical research has shown can be answered only with archaeological methods.

Because the Rancho Seco Park master plan also requires a federal Clean Water Act Section 404 permit from the Corps, compliance with Section 106 of the National Historic Preservation Act is also required for a portion of the project. Compliance with the National Historic Preservation Act is proceeding concurrently with preparation of this EIR for RS-2 and PR-1, which are in the Corps' APE and require compliance with Section 106. Sites subject to Section 106 compliance are evaluated in terms of their eligibility for listing in the NRHP. Sites eligible for NRHP listing are described as possessing the following characteristics:

> The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling and association, and that:
>
> (a) are associated with events that have made a contribution to the broad pattern of our history;
>
> (b) are associated with the lives of people significant in our past;
>
> (c) embody the distinct characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high

artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) have yielded, or are likely to yield, information important in prehistory or history (36 CFR 60.6).

In cases such as the Rancho Seco Park master plan project in which both CEQA and NRHP evaluation criteria apply, federal standards prevail. Resources assessed as eligible for the NRHP are considered important under CEQA, and procedures for managing these properties, as outlined by Section 106 of the NHPA and its implementing regulations (36 CFR Part 800), satisfy the State CEQA Guidelines as well.

Impact Analysis

RS-1: Prehistoric Quarry Site

The proposed golf course design places the tee area for the 4th hole and associated features directly within portions of prehistoric archaeological site RS-1; other aspects of golf course design (grading, grass planting, and maintenance) would affect all portions of the site. Thus the project, as currently designed, would directly affect RS-1.

Public access, in the case of a public, multiuse facility such as the proposed project, can result in direct impacts on the site even if no ground-disturbing activities are undertaken. Intentional and/or accidental damage to the site, from casual artifact collecting to systematic subsurface "pot hunting", can result from opening the location to public access. Accidental disruption of artifact context can also occur through use of the area for hiking or horseback riding.

Impact Summary. Implementation of the project would result in potential damage to RS-1 (prehistoric quarry site) because of the design of the tee area for the 4th hole and intentional and/or accidental damage to the site from opening the location to public access. This impact is considered significant because the site has the potential to provide information to address scientifically consequential research questions, exhibits some antiquity, and appears to possess substantial stratigraphic integrity. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

11.1 Conduct archaeological test excavation of RS-1 to determine significance of the site and, if the site is significant, conduct data recovery excavations.

RS-2: Ditch and Placer Mining Site

The western portion of site RS-2 (Features 2, 3, 4, 5, and parts of Feature 1) are located in the area of holes 12 and 13 of the proposed golf course. Portions of PR-1 are

included within the proposed fairways for holes 15 and 16 and are crossed by a road. The areas of direct impact will likely be completely destroyed by fairway construction and adjacent landscaping activities. Secondary impacts resulting from increased visitation are not likely to cause substantial damage to these relatively durable remains.

Impact Summary. Implementation of the project would result in potential destruction of RS-2 (ditch and placer mining site) and PR-1 (placer mining tailings). This impact is considered significant because the site may be associated with Chinese miners and the site is over 100 years old. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

11.2 Conduct additional historical research of RS-2 and PR-1.

RS-3: Skully Dairy Site

Impact Summary. Implementation of the project would result in possible disturbance to RS-3 (Skully Dairy site). This impact is considered less than significant because the site does not appear to satisfy significance criteria of either the NRHP or CEQA; the major elements of the site have been destroyed, leaving few remnants without integrity; and there does not appear to be any data potential or any important historical associations in the remaining features. No mitigation is recommended.

PR-2: Mortars from Creekbed

Although no development is currently proposed within or adjacent to the location of PR-2, improvements to the dirt access road that crosses the creek in this location may occur during construction. Indirect impacts on this location are not considered likely because of the apparent absence of surface artifacts to attract collectors.

Impact Summary. Implementation of the project would result in possible damage to PR-2 (mortars from the creekbed) during construction of the project. This impact is considered significant. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

11.3 Monitor PR-2 during ground disturbing activities.

Survey Features Not Containing Significant Historical Value

Impact Summary. Implementation of the project would result in potential damage or destruction of identified survey features and standing structures on the project site. This impact is considered less than significant because the identified survey features do not contain significant historical values or data potential and the standing structures in the

project site were determined to be less than 50 years of age. No mitigation is recommended.

Undiscovered Cultural Resources

Impact Summary. Implementation of the project could result in possible impacts on unknown cultural resources that are covered by soil deposition or vegetation and could not be found during the field survey. This impact is considered significant. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

11.4 Stop work if cultural resources are discovered during construction.

MITIGATION MEASURES

The following mitigation measures have been developed to comply with the regulatory requirements of Section 106 of the National Historic Preservation Act (NHPA) and are sufficient to comply with the requirements of CEQA.

11.1 Conduct Archaeological Test Excavation of RS-1 to Determine Significance of the Site and, If the Site Is Significant, Conduct Data Recovery Excavations

Prior to the beginning of any clearing, grading, or excavation work on the project site, SMUD shall perform an archaeological test excavation of RS-1. A test investigation by a qualified archaeologist is recommended to better identify the nature of the site, determine its subsurface extent, and assess its integrity. The investigation would include more detailed site mapping, along with sufficient subsurface excavation to obtain a representative sample of the two main loci and the connecting saddle. Analysis of the results should be used to determine whether additional mitigation is necessary. Additional mitigation for archaeological sites usually consists of data recovery excavation. If the site proves to be significant, SMUD should conduct data recovery excavations to extract the important data from the site that would be lost as a result of implementing the project.

11.2 Conduct Additional Historical Research of RS-2 and PR-1

Prior to the beginning of any clearing, grading, or excavation work on the project site, SMUD shall conduct additional historical research for RS-2 and PR-1. Archives and government repositories should be reviewed to identify mining claims, water rights, and ownership of both the placer deposits and the ditch. Research into contemporary newspaper accounts and interviews with local families may also be necessary to reconstruct the project area's mining history. Prior to the beginning of any clearing, grading, or excavation work, SMUD shall prepare a report on the findings of the historical research and the significance

of RS-2 and PR-1. This report will be submitted to the Corps for transmittal to the SHPO. If the research proves the site is significant, it may be necessary to implement additional mitigation, depending on the value of the site. Additional mitigation might include detailed recordation such as that done for the Historic American Engineering Record or the development of an interpretive disposal of the site.

11.3 Monitor PR-2 during Ground Disturbing Activities

Although no cultural materials were noted during a careful examination of the creek terrace, creek bed, cut banks, and upper adjacent slopes at PR-2, it is possible that further buried or cached milling tools or other prehistoric artifacts are present. Monitoring of this location should be carried out by a qualified archaeologist during all ground disturbing activities within 100 feet of PR-2. If additional cultural materials are identified during monitoring, all work should stop within 100 feet of PR-2 until a qualified archaeologist can assess their significance and make mitigation recommendations.

11.4 Stop Work If Cultural Resources Are Discovered during Construction

Appendix K of the State CEQA Guidelines provides the following direction for archaeological sites accidentally found during construction:

1. If archaeological sites (artifacts of stone, bone or shell, glass, or ceramics) are found during construction, SMUD will stop all work immediately within 100 feet of the find and consult a qualified archaeologist for an immediate evaluation of the find. If the find is determined to be an important archaeological resource, contingency funding and a time allotment sufficient to allow recovering an archaeological sample or to employ one of the avoidance measures will be made available by SMUD. Construction work could continue on other parts of the building site while archaeological mitigation takes place.

2. In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:

    a. The coroner of the county in which the remains are discovered has been informed and has determined that no investigation of the cause of death is required, and

    b. If remains are of Native American origin,

        1) The descendants from the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with

appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98, or

2) The Native American Heritage Commission was unable to identify a descendent or the descendant failed to make a recommendation within 24 hours after being notified by the commission.

Chapter 12. Alternatives to the Proposed Project

CEQA REQUIREMENTS

The State California Environmental Quality Act (CEQA) Guidelines (Section 15126 [d]) describe the alternatives to a proposed action as follows:

> Describe a range of reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic objectives of the project, and evaluate the comparative merits of the alternatives.
>
> (1) If there is a specific proposed project or a preferred alternative, explain why the other alternatives were rejected in favor of the proposal if they were considered in developing the proposal.
>
> (2) The specific alternative of "no project" shall also be evaluated along with the impact. If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.
>
> (3) The discussion of alternatives shall focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level of insignificance, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.
>
> (4) If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed but in less detail than the significant effects of the project as proposed.
>
> (5) The range of alternatives required in an EIR is governed by "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. They key issue is whether the selection and discussion of alternatives fosters informed decision making and informed public participation. An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative.

PROJECT GOALS AND OBJECTIVES

SMUD's goals and objectives for the project are detailed in Chapter 2, "Project Description", as follows:

- continue to provide public park uses in compliance with the development agreement with the State of California,
- expand existing public park uses to meet the identified needs of the public,
- identify and provide long-term protection for the identified waters of the United States and various special-status plant and animal species on the site, and
- develop recreational uses that are fiscally self-supporting at buildout.

The purpose of the project is to develop an array of recreational facilities that meet the needs of the public, are fiscally self-supporting at buildout, and are sensitive to the environment. One of the reasons the project is needed is to provide revenue to cover ongoing operation and maintenance costs associated with the public park.

DESIGN PROCESS

Expansion of the public park has been considered for several years. In 1990, the Sacramento County Department of Parks and Recreation proposed recreational uses for the entire 1,600-acre site and developed facilities on approximately 550 acres (Figure 12-1). Although this proposal was never formally evaluated for environmental impacts, implementing this initial plan would have resulted in direct impacts on approximately 18 acres of waters of the United States, including wetlands, and an undetermined number of direct impacts resulting from human use across the entire site.

As a result of a budget shortfall in 1992, Sacramento County discontinued management of the park facilities in September 1992 and SMUD assumed these responsibilities. SMUD then hired California Muni Golf (CMG) to initiate a feasibility study to investigate the implementation and construction of an 18-hole championship-level public golf course and other potential park uses. CMG evaluated the alternative proposed by Sacramento County Department of Parks and Recreation and rejected it for various reasons, including its lack of environmental sensitivity.

In March 1993, CMG developed a preliminary park master plan that proposed developed recreational uses on approximately 450 acres across the entire northwest portion of the property and additional camping facilities along the south and east lake shore. This

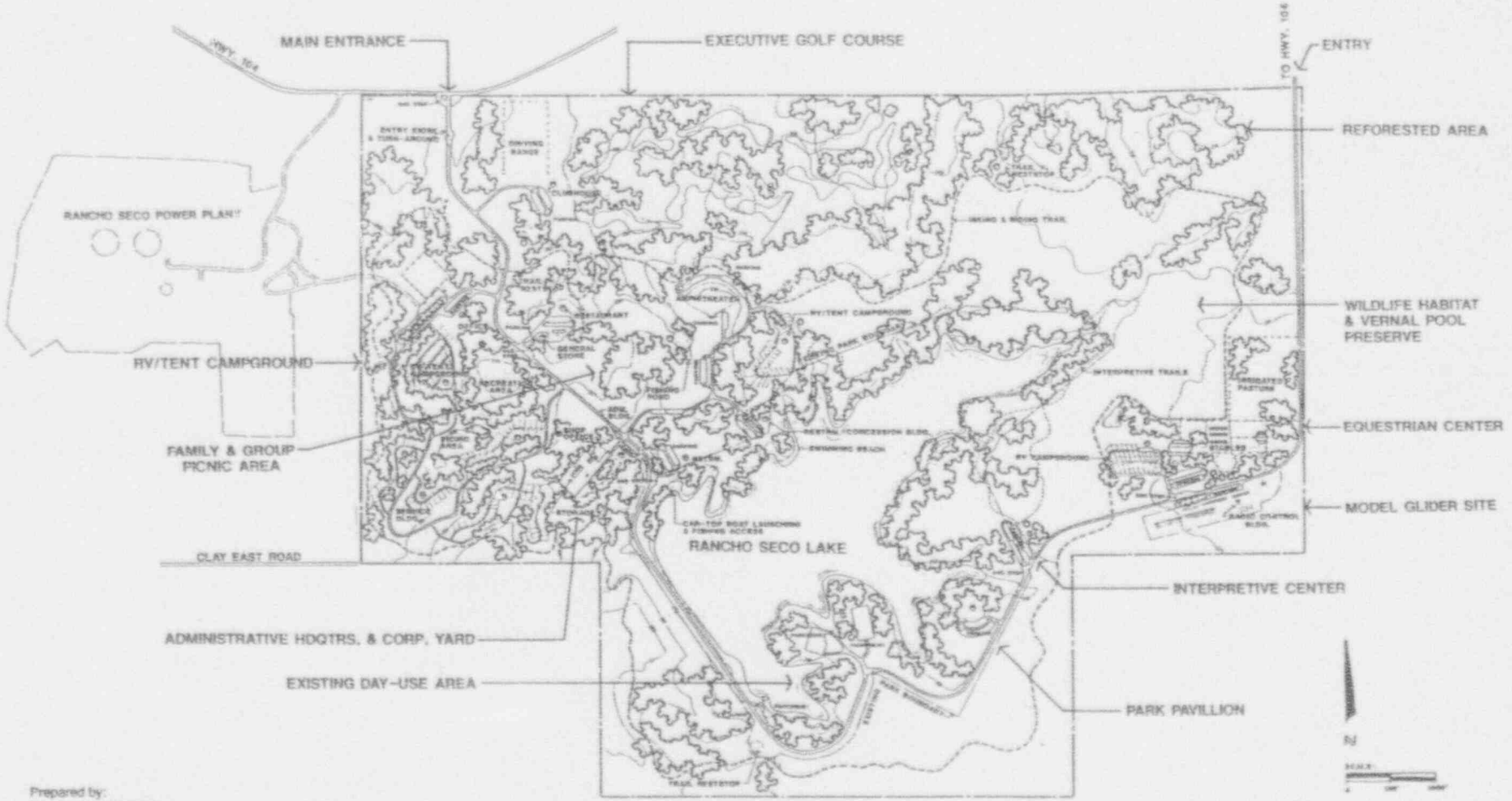

Figure 12-1. Initial Master Plan

plan incorporated approximately 50 acres of open space to preserve natural resource values on a portion of the site (Figure 12-2). This plan was presented to various agencies, including the U.S. Army Corps of Engineers (Corps), to obtain preliminary comments. By this time, the Corps, CMG, and SMUD were aware that the site contains extensive natural resources, totaling over 800 vernal pools and other types of Corps-jurisdictional wetlands and plant and animal species of concern to the regulatory agencies.

The preliminary master plan was reviewed by the various agencies, including the Corps, U.S. Fish and Wildlife Service, and California Department of Fish and Game. These agencies expressed concerns about the amount of fill required for this alternative because this plan would have resulted in direct impacts on 17.18 acres of waters of the United States, including wetlands. Following completion of a delineation of wetlands under Corps jurisdiction and special-status species surveys and in response to the concerns expressed by agencies, CMG and SMUD revised the project design to:

- decrease the size of the project to avoid or minimize adverse impacts on waters of the United States, including wetlands;
- relocate the recreational facilities to avoid and minimize impacts on waters of the United States, including wetlands; and
- mitigate impacts on waters of the United States, including wetlands, through restoration and creation of compensatory wetland habitats.

The proposed Rancho Seco Park master plan was developed as a result of identifying the project goals and objectives and minimizing the impacts on wetland resources. Clarification of the project goals and objectives in combination with identification of the natural resources on the site resulted in a reduction of the size of developed recreational facilities proposed in the 1990 concept by Sacramento County Department of Parks and Recreation to approximately 250 acres with a total of 4.28 acres of impacts on jurisdictional wetland resources.

PROJECT ALTERNATIVES

No-Project Alternative

The no-project alternative is defined as maintenance of the existing environment. No impacts identified in this report would occur under this alternative.

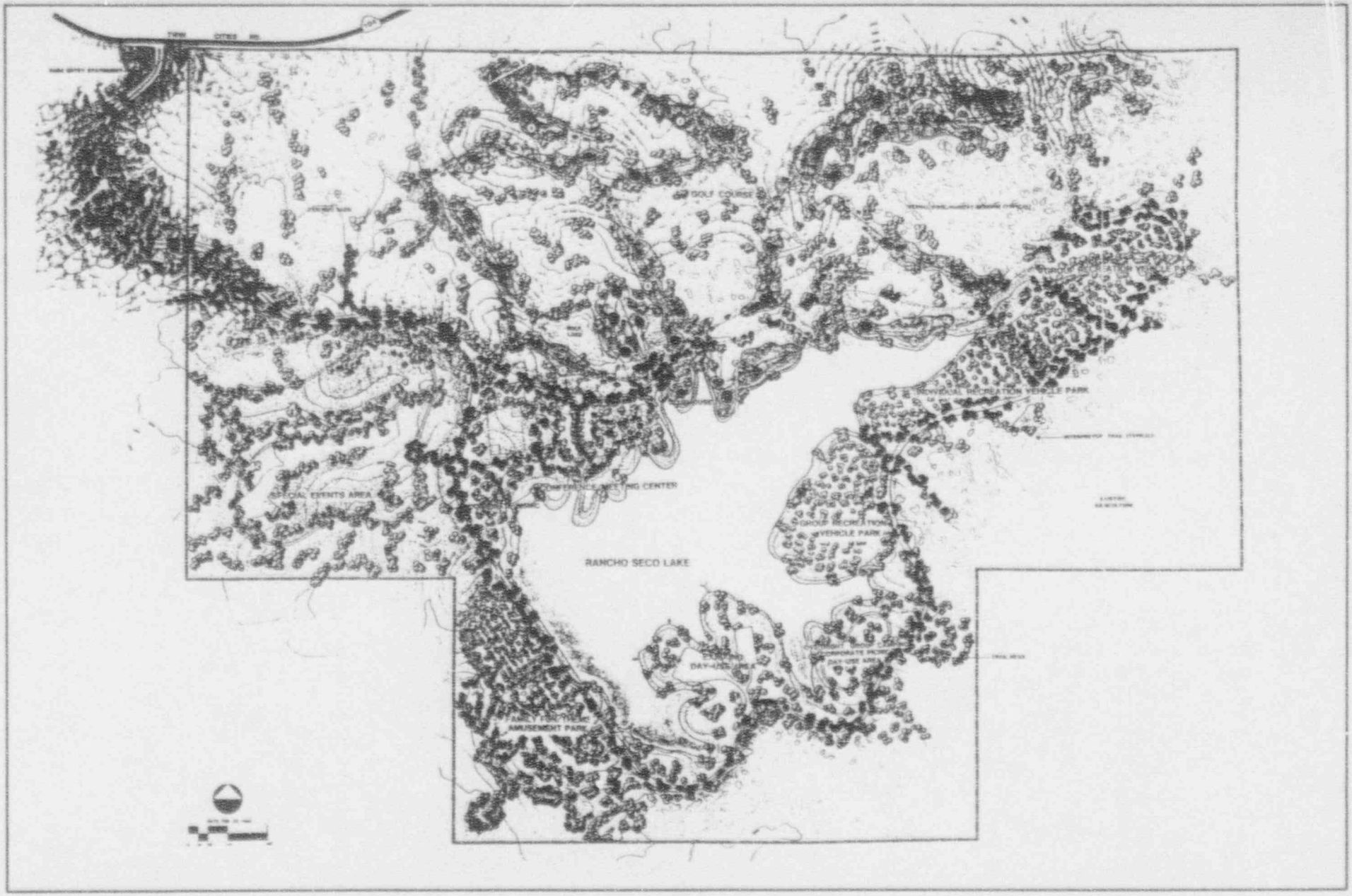

Figure 12-2. Preliminary Master Plan

Offsite Alternative

The State CEQA Guidelines state that an EIR should evaluate a range of reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic objectives of the project. The location of the project is dictated by the location of the existing park and SMUD's commitment to operate and maintain the park for public uses. No offsite locations have been identified that would satisfy the basic project goals and objectives and, because SMUD is a public utility, it has no other financial programs available to support the park operations or offset operational deficits.

No reasonable or feasible offsite location for the project has been identified.

Reduced Project Alternative

During preparation of the park master plan, CMG and SMUD evaluated the following uses for inclusion in the project:

- golf course,
- recreational vehicle camping,
- camping,
- day use area and picnic facilities,
- equestrian uses,
- youth sports complex (possibly including soccer fields, softball fields, and aquatic center),
- family theme amusement park,
- nature center,
- conference center,
- open space preserve, and
- trails (including pedestrian, bicycle, and equestrian).

Some of these originally considered uses were rejected as infeasible or not practical because of the remote location of the site. For example, a youth sports complex was rejected because the demand for such a facility at the site is relatively low and would result in a substantial amount of traffic. Likewise, given the environmental constraints of the site, it was not possible to find an area that could accommodate a family theme amusement park without increasing the number of impacts on wetlands. CMG and SMUD also revised the project to eliminate developed recreational uses on the east side of the lake, thereby providing an undeveloped shoreline that is contiguous with the proposed open space preserve east of the lake. In summary, the size of the developed area has been reduced during project design to minimize environmental concerns.

It is possible to further reduce the amount of developed uses on the site to minimize environmental impacts. A reduced project alternative could be designed to minimize significant air quality, soils, and biological impacts; however, given the amount of project modification that has occurred, it is likely that any reduced project alternative would impede the attainment of the project goals to expand existing public park uses to meet the identified needs of the public and develop recreational uses that are fiscally self-supporting at buildout.

Environmentally Superior Alternative

As outlined under "Design Process", SMUD considered various alternatives before selecting the proposed project. These alternatives were rejected because they did not meet the project's goals and objectives.

The environmentally superior alternative is the no-project alternative because no impacts would result from this alternative.

The only other alternative to the no-project alternative is the proposed project. The proposed project is considered environmentally sensitive because it preserves the highest quality vernal pools and wetlands and creates new vernal pools and wetlands.

Chapter 13. Mitigation Monitoring Plan

CEQA requires that a lead agency establish a monitoring or reporting program at the time of project approval to ensure that "changes to the project" that are "adopted or made a condition of project approval to mitigate or avoid significant effects on the environment" are implemented. Accordingly, a mitigation measure monitoring program has been prepared for this project. This program will be considered by the SMUD Board of Directors in conjunction with project review and will be included as a condition of project approval.

The monitoring program (Table 13-1) includes all the mitigation measures identified in the initial study and notice of preparation of an EIR (Appendix A) as well as the mitigation measures recommended in the draft EIR. It should be noted that these mitigation measures may change during the review of the draft EIR; no commitment to these measures can be made until the project is approved.

All monitoring is the responsibility of SMUD.

It should be noted that the Section 404 predischarge notification for the project also requires that wetland mitigation areas be monitored for a 5-year period following implementation, in accordance with Corps requirements. Copies of the predischarge notification, including the detailed monitoring and maintenance program, are available for review at the SMUD headquarters.

Mitigation Measures	Monitoring Schedule
Mitigation Measures Identified in the Initial Study	
Noise	
1. Hours of construction activity throughout the duration of project construction will be limited to 6:00 a.m. to 7:00 p.m. Monday through Saturday (non-holidays). A telephone number will be made available for noise complaints.	During construction
2. All construction equipment powered by internal combustion engines will be properly muffled and maintained to minimize noise. Equipment will be turned off when not in use.	During construction
Light and Glare	
1. All outdoor lighting will be directed downward and shielded such that no lighting is directed upward or toward wetland preserve areas.	During design
Risk of Upset	
1. Fertilizer and pesticide storage will be limited to available covered space only. Outdoor storage of excess quantities will not be allowed.	Inspect monthly
2. Only chemicals approved for use on the golf course will be stored in the maintenance facility at any time. Storage of chemicals will follow best management practices.	Inspect monthly
3. Maintenance vehicles will transport only sufficient quantities of fertilizers and/or pesticides to complete the current day's work. All leftover chemicals and application equipment will be returned to the maintenance facility when not in use and at the end of every workday.	Inspect monthly
4. Records will be kept of all chemical applications, in accordance with California Department of Food and Agriculture requirements.	As required by California Department of Food and Agriculture
5. No applicator rinse waters or any other waters known to contain fertilizer or pesticides will be allowed to enter surface waters, including any storm drains or other conveyances that drain to surface waters, at any time. Disposal of such waters will be directed to the wastewater system.	Inspect monthly

Mitigation Measures	Monitoring Schedule
6. The golf course superintendent will develop and implement a chemical spill response plan. The plan will include at a minimum:	Prior to operation of the golf course
a. Posting of a requirement for immediate notification of the Sacramento County Department of Environmental Health in the event of a spill.	
b. Specifications for spill cleanup equipment that is adequate to contain and clean up any solid or liquid spill and that will be stored at the maintenance facility.	
c. Description of procedures to be followed in the event of a solid or liquid spill, including procedures to prevent spilled material from entering a storm drain, wetland, or waterway.	
7. The design of the golf course maintenance facility will be submitted to the Herald Fire District and Sacramento County Health Department for review and approval.	Prior to approval of building plans
8. Any st. age tanks (gasoline, diesel, or other hazardous materials) will be designed to the satisfaction of the Sacramento County Department of Environmental Health. Any storage of gasoline in aboveground or underground tanks is required to have Phase I and Phase II vapor recovery equipment.	Prior to approval of building plans
9. If required by state law because of the amount of hazardous materials to be stored onsite, SMUD will submit a business plan to the Sacramento County Health Department.	If required, prior to operation of the golf course
Water and Wastewater Services	
5.1 Design the Park Expansion to Conserve Water	
1. SMUD will design the golf course to minimize the number of acres requiring irrigation.	During design of the golf course
2. SMUD will design the irrigation system to include a state-of-the-art system and computerized controls to avoid unnecessary watering.	During design of the golf course
3. The landscape plans for the golf course will emphasize drought-resistant grasses wherever possible.	During design of the golf course

Mitigation Measures	Monitoring Schedule
4. SMUD will design the park master plan to retain as much stormwater runoff as possible to be pumped into storage lakes for use in watering the golf course.	During design of golf course
5. SMUD will install low-flow toilets, sinks, and showers in the comfort stations and clubhouse locker rooms.	During construction
Transportation and Circulation	
6.1 Improve the Intersection of Twin Cities Road and the Rancho Seco Project Site Access Road	
SMUD will make the following improvements at the intersection of Twin Cities Road and the Rancho Seco project site access road. All improvements would have to be coordinated with Caltrans for SMUD to obtain an encroachment permit and also coordinated with the Sacramento County Department of Public Works Transportation Division.	Within 1 year of certifying the EIR, SMUD will decide where the permanent access point of Twin Cities Road will be located.
1. Add a westbound-to-southbound left-turn lane. 2. Add an eastbound deceleration lane along Twin Cities Road west of the project access. 3. Add a westbound acceleration lane on Twin Cities Road west of the project access. 4. Add an eastbound acceleration lane along Twin Cities Road east of the project access.	Within 2 years of certifying the EIR, SMUD will secure an encroachment permit from Caltrans. Within 3 years of certifying the EIR, SMUD will complete the construction of the improvements to Caltrans standards.
The first two auxiliary lanes listed above would allow vehicles entering the project site to decelerate in a lane out of the high-speed flow on Twin Cities Road. The last two auxiliary lanes listed above would allow vehicles turning west and east, respectively, onto Twin Cities Road to accelerate before merging with the through traffic.	
Air Quality	
7.1 Prepare and Implement a Dust Control Plan	
SMUD will prepare a dust control plan before groundbreaking occurs. This plan will ensure that adequate dust control measures are implemented during project construction. The following measures will be included in the dust control plan.	The plan will be prepared before groundbreaking occurs; measures will be monitored during construction.
1. The 90-day period proposed for site grading will be lengthened to 120 days to minimize the daily intensity of PM10 emissions to below the SMAQMD PM10 significance threshold.	

Mitigation Measures	Monitoring Schedule
2. Water will be applied to exposed earth during clearing, grading, earthmoving, and other site preparation work. Water will be applied at least twice a day with complete coverage of surfaces, preferably in the late morning and at the end of the work day, the number of applications depending on wind conditions and the amount of dust generated.	During construction
3. Water will be the only type of dust suppressant used. Any change in dust suppressant will be reviewed and approved by a wetlands consultant to ensure that no impacts would result on wetlands or vernal pools.	During construction
4. Mud and dirt clinging to truck wheels will be cleaned up on a daily basis so that no dirt is carried onto public streets.	During construction
5. All clearing, grading, earthmoving, and excavation activities will be minimized during periods of winds exceeding 30 mph velocity for more than 1 hour.	During construction
6. During construction, onsite vehicle speed in the construction area will be limited to 15 mph.	During construction
7. Dry weather wetting and/or paving (with gravel) of heavily traveled roads will be performed as needed to reduce dust emissions throughout construction and the life of the project.	During construction
8. The ground surface will be left undisturbed to the extent possible by minimizing the area to be graded and cleared.	During construction
9. Bare earth surfaces will be treated to minimize dust; grassing of the golf course will occur as soon after grading as possible.	During construction
The following measure is recommended to take advantage of the native soil fertility.	
The golf course grading plan should provide for removing and stockpiling topsoil. All soil material above the claypan, duripan, and volcanic bedrock in the respective soil series should be removed and stockpiled before the commencement of final grading activity. The stockpiled surface soil should then be replaced uniformly over the graded surface. This measure would result in an increase in total grading volume and increased grading difficulty in claypan, duripan, and bedrock. However, this measure will take advantage of the native soil fertility and minimize the amount of applied fertilizers that will be required.	If selected, during construction

Mitigation Measures	Monitoring Schedule
Alternatively, graded areas should be dressed with topsoil or organic amendments or fertilized such that soil fertility is not substantially less than that of the native soils at the site.	During construction
7.2 Minimize Air Emissions during Construction SMUD will incorporate the following measures into the contract specifications for construction:	
1. Construction equipment engines will be tuned according to manufacturers' specifications and kept in proper working condition.	During construction
2. Ridesharing and transit ince ives for the construction crew will be supported and encouraged.	During construction
3. Open burning of wood/vegetative waste materials from construction of the project will be minimized.	During construction
Geology, Seismicity, and Soils	
8.1 Prepare and Implement an Erosion and Sediment Control Plan The Land Grading and Erosion Control Ordinance, Sacramento County Code, Chapter 16.44, requires SMUD to obtain a grading and erosion control permit for the project. An erosion and sediment control plan must be prepared prior to issuance of a grading and erosion control permit. Many of the elements of the grading and erosion control plans developed to comply with the county's ordinance can be used in implementing a stormwater pollution prevention plan (SWPPP) and a monitoring plan as required by the state. Prior to the commencement of any construction projects resulting in a land disturbance of 5 acres or more, the state requires that a notice of intent (NOI) be filed with the regional water quality control board (RWQCB) for coverage under the state's general construction activity stormwater permit that requires implementation of an SWPPP.	The plan will be prepared prior to construction; measures will be monitored during construction.

Mitigation Measures	Monitoring Schedule
An erosion and sediment control plan approved by the Sacramento County Department of Public Works will be implemented during the construction phase with the goal of minimizing erosion and transport of sediments. The plan should be prepared in accordance with the county's Guidance Manual for Development of Erosion and Sediment Control Plans. The plan should include the type and location of best management practices (BMPs) placement, time schedule for BMP implementation relative to the wet season, and schedule for BMP maintenance. The erosion and sediment control plan is required to be prepared by a California-registered civil engineer.	
The following measures will be considered to minimize erosion and sedimentation:	
1. Only essential golf course grading will occur during the months of October through April. Nonessential grading for utilities, roads, or other features will be scheduled to avoid construction during the wet season.	During construction
2. To the maximum extent feasible, the grading plan for the golf course will be developed to limit grading activity to slopes of 15% and less. It is recommended on slopes of Corning soil of 15% that graded portions not exceed 50 feet in length, on slopes of 10% that graded portions not exceed 125 feet in length, and on slopes of 5% that graded portions not exceed 800 feet in length. Corresponding slope lengths could be slightly higher for the Redding soil but would be substantially less for the Pentz soil. This will limit the calculated soil loss to a maximum of five times the sustainable rate. Slope length limitation may be achieved by leaving ungraded strips with existing vegetation.	During construction
3. To the maximum extent feasible, grading in areas to be landscaped outside the golf course will be limited to a depth of 5 to 10 inches to limit the removal and displacement of the soil surface horizons. This would limit grading to a depth of 10 inches in most of the project site that has Corning and Redding soils. In the portions of the project site that have Pentz soil, grading would be limited to a depth of 5 inches. This minimal grading would leave enough of the soil surface horizons to facilitate revegetation.	During construction
4. Consideration shall be given as much as possible to retaining existing vegetation and conducting grading in phases, thus minimizing the extent of disturbed soil.	During construction

Mitigation Measures	Monitoring Schedule
5. Upon completion of rough grading, soils should be tested in various locations throughout the graded area. If the newly created topsoil layer is found to be deficient when compared with undisturbed existing topsoil, this newly created topsoil layer will be amended with the appropriate materials to improve the final topsoil characteristics. To compensate for any nutrient deficiencies, during the course of golf course operations, commercial slow-release fertilizers should be applied as part of an overall fertilization program using appropriate BMPs.	During construction
6. The plan will include erosion control BMPs to control soil erosion and sediment control BMPs to control the transport of sediment. Erosion control BMPs include, but are not limited to, hydroseeding, maintaining existing vegetation, and matting. Sediment control BMPs include, but are not limited to, providing stabilized access and installing straw bale barriers, straw bale inlet filters, filter barriers, silt fences, sediment traps, and sediment basins.	During construction
7. Any stockpiled soil (including topsoil, subsoil, or other material) should be placed such that it will not be subject to accelerated erosion. If the stockpiles are to be in place more than 4 months, they should be seeded with a legume cover crop.	During construction
8. Grading should be conducted such that no soil material is disposed of in any of the open space or wetlands areas.	During construction
9. Drainage outfalls should be designed and positioned to avoid erosion. Energy dissipators should be installed where necessary.	During construction
10. Small sediment basins or traps should be constructed to prevent sediment from being transported into onsite drainages or open space areas. The locations and sizes of these basins will be shown on the erosion and sediment control plan.	During construction
8.2 Prepare and Implement the Recommendations of a Geotechnical Engineering Report	
A soils and geotechnical engineering investigation report produced by a California registered soils engineer or geotechnical engineer experienced and knowledgeable in the practice of soils engineering will be prepared prior to submittal of the grading plans to Sacramento County. The report will address and make recommendations on the following:	Prior to submittal of grading plans to Sacramento County

Mitigation Measures	Monitoring Schedule
1. road, pavement, and parking area design; 2. structural foundations; 3. grading practices for structural uses; 4. erosion/winterization; 5. special problems discovered onsite (i.e., expansive soils); 6. slope stability; and 7. septic tank/leach field/seepage pit designs. The effects of soil expansion resulting from seasonal changes in moisture content can be mitigated by one or more of the following: removing expansive clay material from excavated areas and backfilling with other excavated material, supporting foundations on nonexpansive material, extending footings below the depth of seasonal moisture change, using pier and grade beam foundations, and treating the soil with lime. The most practical and economical solution for the specific expansive soils on the site appears to be removal and backfilling. 10. Small sediment basins or traps should be constructed to prevent sediment from being transported into onsite drainages or open space areas. The locations and sizes of these basins will be shown on the erosion and sediment control plan.	
Water Resources	
9.1 Comply with Sacramento County Proposed Conditions of Development	
SMUD will include the following measures in the design of the project:	
1. Provide drainage easements pursuant to the Sacramento County Interim Urgency Ordinance Relating to Floodplain Management, and the Sacramento County Improvement Standards, including any fee required by Ordinance No. 1 of the Sacramento County Water Agency.	During design
2. Provide minimum pad/floor elevations pursuant to the Sacramento County Interim Urgency Ordinance Relating to Floodplain Management before building permit issuance.	Prior to issuance of a building permit

	Mitigation Measures	Monitoring Schedule
9.2	Design the Golf Course to Maximize Infiltration and Minimize Runoff SMUD will design the golf course to incorporate the following measures to reduce water quality degradation in onsite streams, the golf course reservoir, and those streams where golf course drainage would still flow offsite: 1. Maintain existing native vegetation, where possible, and replace with same. 2. Create transition buffer zones with natural vegetation between play areas and ephemeral drainages as much as possible; transition zones should be strips at least 20-25 feet wide adjacent to the rough, consisting of vegetation and cultivated or native grasses mowed to approximately 6 inches in height. 3. Design golf course drainage patterns to maximize infiltration, avoiding runoff to existing ephemeral drainages where possible, by routing runoff from managed areas through vegetated transition areas; landscaped, grassy nonmanaged areas; and grassy swales. 4. Break up downsloping areas within the golf course with mounds, greens, bunkers, and swales to reduce runoff volume and velocity. 5. Limit intensive management to greens, tees, and fairways as much as possible. 6. Use slow-release fertilizers in managed areas; select herbicides, insecticides, and other pesticides that degrade rapidly, have a low solubility, have strong adsorptive properties, and have a low toxicity rating.	During design of the golf course

Mitigation Measures	Monitoring Schedule
9.3 Develop and Implement a Water Quality Monitoring Program for the Golf Course	
SMUD will develop and implement a long-term monitoring program once construction is completed and operation begins. The monitoring program would provide a warning system to prevent potential toxicity to aquatic life and eutrophication of streams and the reservoir. The monitoring program should include periodically monitoring water quality immediately downstream of golf course drainage points and in the golf course reservoir for pesticide residues, nitrates, and phosphates. One stream can be selected that drains the most intense management area, has the most runoff potential, and is representative of the project as a whole. Monitoring should be conducted during a storm event, as described in the SWPPP, or during a significant occurrence of runoff from irrigation. Monitoring should begin during the second year of operation. If no pesticide residues are detected and nutrients are below background levels, it can be assumed that BMPs are effective and the monitoring frequency can be reduced to once every 3 years. Monitoring should also be conducted if water quality problems are known or suspected.	Prior to operation of the golf course
Additional details of the monitoring program would be developed during the preparation of the SWPPP and other related activities, in consultation with regulatory agencies, other consultants, designers and builders of the facility, and operations staff.	
9.4 Design the Storm Drainage System So That Runoff from the Equestrian Center is Collected and Transported to the Wastewater Treatment Facility	
SMUD will design the equestrian center and storm drainage system so that areas of concentrated use or areas that collect stormwater runoff from horse manure areas will be collected and transported to the wastewater treatment facility.	During design of the stormwater collection/wastewater collection system
9.5 Design the Golf Course Maintenance Facility to Include Best Management Practices to Improve Water Quality	
SMUD will incorporate the following measures into the design of the golf course maintenance facility:	During design of the golf course, parking lots, and maintenance facilities
1. Drainage from parking lots and maintenance areas will be routed to an area where BMPs would be located. The BMPs would include oil and grease traps, vegetated buffer strips, and a parking lot cleaning and maintenance program.	

Mitigation Measures	Monitoring Schedule
2. A buffer strip or vegetated strip should be at least 20 feet wide to reduce suspended solids and oil and grease loadings.	
3. Parking lot areas should be swept and cleaned on a regular basis before the wet season. Parking lot sweeping would reduce the suspended solids levels because it is relatively efficient at removing this pollutant. The levels of oil and grease would also be reduced through this practice, but to a lesser degree because of the higher solubility of oil and grease in stormwater.	
Biological Resources	
10.1 Implement the Conceptual Wetland Mitigation and Monitoring Plan for the Project	
SMUD will implement the conceptual wetland mitigation and monitoring plan for the Rancho Seco Park master plan project dated October 28, 1993. The plan shall be implemented with the additions, changes, and clarifications included in the Nationwide Permit Number 26 authorized by the Corps on November 29, 1993.	Prior to and during construction; ongoing monitoring required for 5 years
10.2 Obtain a Streambed Alteration Agreement from DFG	
SMUD will obtain a Section 1601 streambed alteration agreement from DFG prior to construction.	Prior to construction
10.3 Conduct Preconstruction Raptor Nest Surveys and Avoid Raptor Nests where Found	
To avoid inadvertent impact on special-status wildlife, SMUD will retain a qualified biologist to conduct preconstruction surveys for nesting raptors before beginning all grading work for the project and mitigation plan implementation. The timing for construction should be adjusted if sensitive species cannot be relocated.	During construction
Annual Grasslands - Recommended Measure	
The location of staging areas and temporary access roads should be restricted to developed areas such as parking lots and fire roads to ensure that temporary disturbance of annual grasslands from construction activities is minimized.	If selected, during construction

Mitigation Measures	Monitoring Schedule
Wildlife Enhancement - Recommended Measures	
1. When possible, use native plants when landscaping. Once established, native plant species usually require less watering and care and offer more suitable forage and cover to wildlife species then exotic cultivated species.	If selected, during project design
2. Place wood duck nest boxes in trees near or overhanging the water edge of Rancho Seco Lake and appropriate stock ponds to attract wood ducks. Wood duck boxes do, however, require a minimal amount of care. A local Boy Scout group or other volunteer group could adopt the boxes and perform the routine annual cleaning.	If selected, inspect annually
3. When possible, leave dead standing (snags) and fallen trees in place. They are habitat for a variety of wildlife species.	If selected, inspect annually
4. Place raptor perches in the annual grasslands. There are a limited number of perches used by raptors in the area. Additional perches for raptors would increase raptors' effectiveness as predators and would allow bird watchers a greater chance of observation of these birds of prey.	If selected, inspect annually
Cultural and Historical Resources	
11.1 Conduct Archaeological Test Excavation of RS-1 to Determine Significance of the Site and, If the Site Is Significant, Conduct Data Recovery Excavations	
Prior to the beginning of any clearing, grading, or excavation work on the project site, SMUD shall perform an archaeological test excavation of RS-1. A test investigation by a qualified archaeologist is recommended to better identify the nature of the site, determine its subsurface extent, and assess its integrity. The investigation would include more detailed site mapping, along with sufficient subsurface excavation to obtain a representative sample of the two main loci and the connecting saddle. Analysis of the results should be used to determine whether additional mitigation is necessary. Additional mitigation for archaeological sites usually consists of data recovery excavation. Reports documenting this work will be submitted to the Corps for transmittal to the State Historic Preservation Officer (SHPO) in compliance with Section 106 of the NHPA. If the site proves to be significant, SMUD should conduct data recovery excavations to extract the important data from the site that would be lost as a result of implementing the project.	Before groundbreaking occurs

Mitigation Measures	Monitoring Schedule
11.2 Conduct Additional Historical Research of RS-2 and PR-1	
Prior to the beginning of any clearing, grading, or excavation work on the project site, SMUD shall conduct additional historical research for RS-2 and PR-1. Archives and government repositories should be reviewed to identify mining claims, water rights, and ownership of both the placer deposits and the ditch. Research into contemporary newspaper accounts and interviews with local families may also be necessary to reconstruct the project area's mining history. Prior to the beginning of any clearing, grading, or excavation work, SMUD shall prepare a report on the findings of the historical research and the significance of RS-2 and PR-1. This report will be submitted to the Corps for transmittal to the SHPO. If the research proves the site is significant, it may be necessary to implement additional mitigation, depending on the value of the site. Additional mitigation might include detailed recordation such as that done for the Historic American Engineering Record or the development of an interpretive disposal of the site.	Before groundbreaking occurs
11.3 Monitor PR-2 during Ground Disturbing Activities	
Although no cultural materials were noted during a careful examination of the creek terrace, creek bed, cut banks, and upper adjacent slopes at PR-2, it is possible that further buried or cached milling tools or other prehistoric artifacts are present. Monitoring of this location should be carried out by a qualified archaeologist during all ground disturbing activities within 100 feet of PR-2. If additional cultural materials are identified during monitoring, all work should stop within 100 feet of PR-2 until a qualified archaeologist can assess their significance and make mitigation recommendations.	During construction
11.4 Stop Work If Cultural Resources Are Discovered during Construction	
Appendix K of the State CEQA Guidelines provides the following direction for archaeological sites accidentally found during construction: 1. If archaeological sites (artifacts of stone, bone or shell, glass, or ceramics) are found during construction, SMUD will stop all work immediately within 100 feet of the find and consult a qualified archaeologist for an immediate evaluation of the find. If the find is determined to be an important archaeological resource, contingency funding and a time allotment sufficient to allow recovering an archaeological sample or to employ one of the avoidance measures will be made available by SMUD. Construction work could continue on other parts of the building site while archaeological mitigation takes place.	During construction

Mitigation Measures	Monitoring Schedule
2. In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until: a. The coroner of the county in which the remains are discovered has been informed and has determined that no investigation of the cause of death is required, and b. If remains are of Native American origin, 1) The descendants from the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98, or 2) The Native American Heritage Commission was unable to identify a descendent or the descendant failed to make a recommendation within 24 hours after being notified by the commission.	

Chapter 14. Citations

CHAPTER 2. PROJECT DESCRIPTION

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CHAPTER 3. EXECUTIVE SUMMARY

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CHAPTER 4. LAND USE AND GROWTH INDUCEMENT

Personal Communications

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Marciel, Roy. Manager of the Rancho Seco ranch lands since 1964. Notes of an interview by J. Costello in September 1993 are on file at Foothill Resources, Ltd., Mokelumne Hill, CA.

Chapter 15. Report Preparation

This draft EIR has been prepared by Jones & Stokes Associates, an environmental consulting firm, under contract to California Muni Golf. California Muni Golf is under contract to SMUD to process and facilitate the project. The firms and individuals who worked on the draft EIR are listed below.

SACRAMENTO MUNICIPAL UTILITY DISTRICT

Kenneth Miller
Jim Shetler
Ron Knierim
J.D. Stack
Ira Saletan

CALIFORNIA MUNI GOLF

Tim Palmquist
Patty Kroll

PALMER DESIGN COURSE COMPANY - GOLF COURSE DESIGNERS

PSOMAS AND ASSOCIATES - PROJECT ENGINEERS

Orin Bennett

JONES & STOKES ASSOCIATES

Jim Jokerst - Principal-in-charge
Albert Herson - Legal review
Kim Smith - Project manager
Ellyn Davis - Wetlands specialist

JONES & STOKES ASSOCIATES - CONT.

Lorie May - Biological resources
Brent Helm - Biological resources
Mike Zanoli - Water resources
Wayne Verrill - Geology, seismicity, and soils
Tim Rimpo and Randy Stegen - Air resources
Angie Raygani - Traffic and circulation
Dana McGowan - Cultural resources

Judy Bell - Word processing
Roberta Childers and Joan Lynn - Editing
Tony Rypich - Graphics

FOOTHILL RESOURCES, LTD.

Julia Costello
Suzanne Stewart
Judith Marvin
Deborah Cook

Appendices

Appendix A. Notice of Preparation and Initial Study

NOTICE OF PREPARATION

To: Responsible Agencies
Trustee Agencies
Interested Parties

Subject: Notice of Preparation of a Draft Environmental Impact Report

Lead Agency:

Sacramento Municipal Utility District
Rancho Seco Park
14440 Twin Cities Road
Herald, CA 95638-9799
Contact: Kenneth Miller
916/452-3211, Ext. 4513

Consulting Firm:

Jones & Stokes Associates
2600 V Street
Suite 100
Sacramento, CA 95818-1914
Contact: Kim Smith
916/737-3000, Ext. 3134

The Sacramento Municipal Utility District (SMUD) will be the lead agency and will prepare an environmental impact report (EIR) for the project identified below. SMUD staff needs to know the views of your agency as to the scope and content of the environmental information that is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR prepared by our agency when considering permit(s) or other approval(s) for the project.

The project description and location and its potential environmental effects are contained in the attached materials. A copy of the initial study is also attached.

SMUD has scheduled a scoping meeting for Tuesday, September 28, 1993, at 10:00 a.m. at SMUD Headquarters, located at 6201 "S" Street, Sacramento, CA, 95817-1899.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but ***not later than 30 days*** after receipt of this notice.

Please send your response to Kenneth Miller at the address shown above and provide a name for a contact person in your agency.

Project Title: Rancho Seco Park Master Plan

Project Location: Rancho Seco Park, Herald, CA

Project Description: Approval of the Rancho Seco Park Master Plan for the Rancho Seco Park, which is owned and operated by SMUD as a public park. The master plan includes a public golf course, equestrian center, wetlands preserve, nature center, hiking trails, and expansion of the existing recreational facilities.

Date: Sept. 9, 1993

Signature: Robert E. Kinnison

Title: Senior Environmental Specialist

SACRAMENTO MUNICIPAL UTILITY DISTRICT
14440 Twin Cities Road
Herald, CA 95638-9799

INITIAL STUDY

In accordance with the policies of the Sacramento Municipal Utility District (SMUD) regarding implementation of the California Environmental Quality Act (CEQA), this document constitutes the initial study for the proposed project. This initial study provides the basis for the determination that the project may have a significant effect on the environment. An environmental impact report (EIR) will be prepared that focuses on the areas of concern identified by this initial study.

PROJECT DESCRIPTION

Project Location

Rancho Seco Park is located immediately south of Twin Cities Road (State Route 104) and 11 miles east of State Route 99 in a rural area of southeastern Sacramento County (Figure 1). The site is located in Township 6N, Range 8E, west of the Sierra Nevada mountain range (Figure 2). This location is approximately 10 miles west of the community of Ione, 10 miles south of the community of Rancho Murieta, 13 miles southeast of the community of Elk Grove, 14 miles northeast of the City of Galt, and 25 miles southeast of the City of Sacramento. Boundaries of the Rancho Seco site extend eastward to within 3 miles of the Amador County line and southward to within 3 miles of the San Joaquin County line.

Site Description

SMUD owns and operates the 2,480-acre site that includes a shut-down nuclear power plant, a solar power generating facility, and an existing 433-acre Rancho Seco Park and Lake complex. The proposed project is the adoption of a park master plan for 1,600 acres of the Rancho Seco site.

The project site is located in an area of flat to rolling rangeland that has been used primarily for cattle grazing. The site is in a broad alluvial plain that slopes westward from the Sierra Nevada mountains at an approximate rate of 30 feet per mile. Site elevation ranges from 150 feet to 280 feet above mean sea level. Streambeds for Hadselville Creek

Figure 1. Regional Location

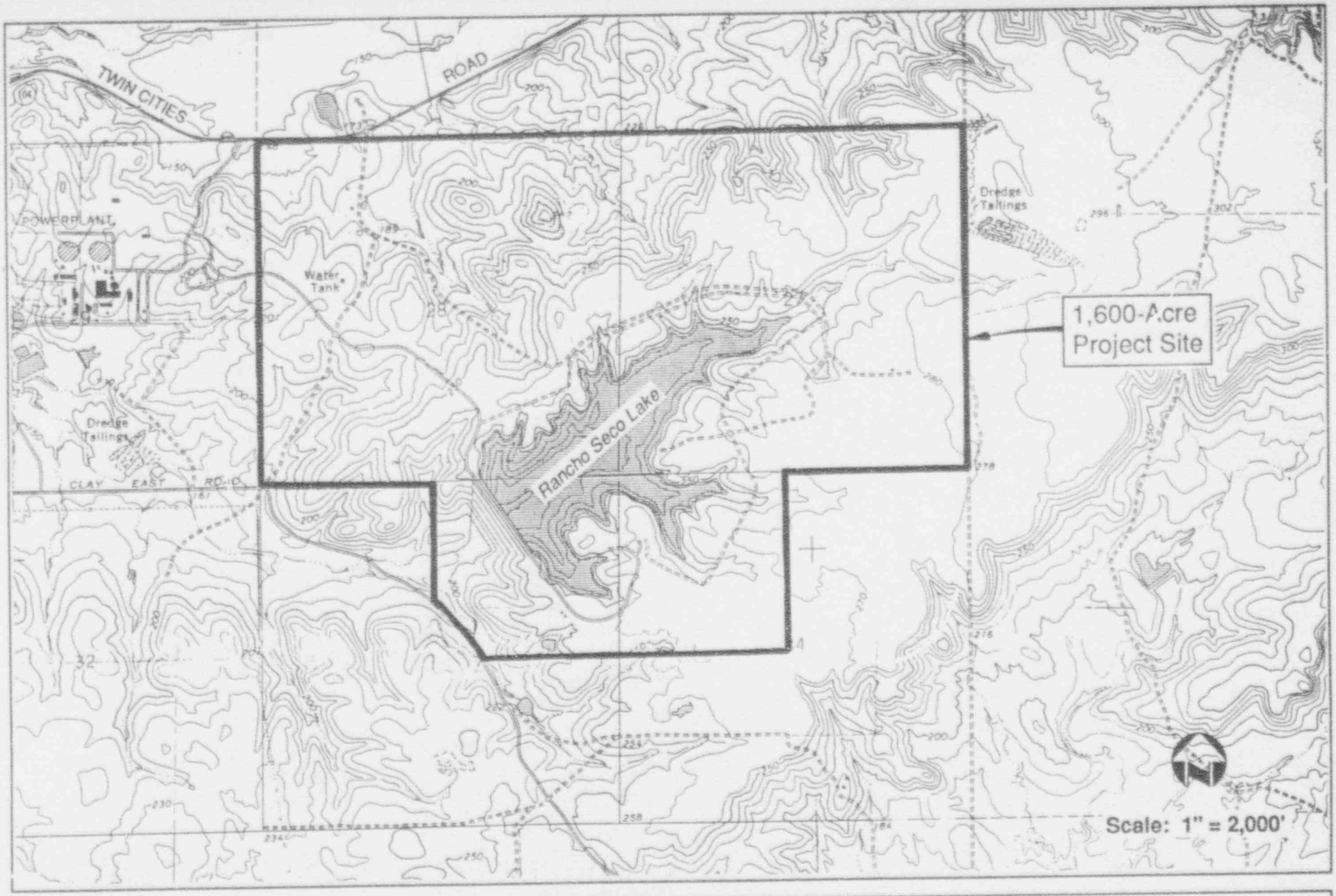


Figure 2. Project Location

(bounding the site to the north) and Dry Creek (to the south) have been eroded to an elevation approximately 100 feet below that of the west-sloping upland surface.

The project site is characterized by rolling hills of grassland with seasonal wetlands interspersed in low-lying areas. The center of the park site supports the 160-acre Rancho Seco Lake, which was constructed as an emergency cooling water storage for the downslope Rancho Seco nuclear power facility.

The park is open year round, 7 days per week, from 7:00 a.m. until sundown. The lake is maintained at the same level year round, making it a popular fishing spot for catfish, blue gill, bass, crappie, and trout (seasonal). Electric motor boats and row boats are allowed on the lake and paddle boats are available for rental.

Undeveloped portions of the site support an extensive and relatively dense occurrence of vernal pools and swales interspersed with annual grasslands. Portions of the site are seasonally grazed by livestock, and several stock ponds have been created to provide water to livestock. Small irrigated pasture areas, some of which are fallow, are found in the southeastern quarter of the site.

The most common wildlife in the area, which are generally found near water, include skunks, brush rabbits, raccoons, several species of waterfowl (mallards, teals, and gadwalls), and wading birds. Grassland birds, including sparrows, finches, blackbirds, meadowlarks, and raptors, have also been observed in the area.

A detailed description of the site's environmental setting is contained in the following focused studies:

- Special-status plant and wildlife species surveys and habitat assessments for the Rancho Seco project site. Prepared by Jones & Stokes Associates. August 4, 1993.

- Preliminary delineation of waters of the United States, including wetlands, for the Rancho Seco Park Master Plan. Prepared by Jones & Stokes Associates. July 15, 1993.

These reports are available for review at the SMUD offices at the Rancho Seco site and are incorporated herein.

Background

Construction of the Rancho Seco nuclear power plant began in 1969, commercial operation began in April 1975, and the plant ceased operating in 1989. SMUD has adopted a decommissioning plan that anticipates termination of SMUD's Nuclear Regulatory Commission license by 2011 and restoration of the nuclear power plant site (SMUD 1991).

As part of the development agreement to construct and operate the power plant, SMUD contracted with the State of California to operate a portion of the site as a public park for 40 years. The focus of this initial study and future EIR is the park master plan for this 1,600 acres. Existing park facilities include group camping, recreational vehicle sites, group and family picnic areas, and the Rancho Seco Lake with fishing and swimming amenities (Figure 3).

In 1971, SMUD entered into the contract with the State of California that granted SMUD funding for the construction of the Rancho Seco dam and reservoir, recreational facilities, and water and sanitary facilities associated with the recreation plan. This contract requires SMUD to maintain these facilities in a manner that supports public recreational uses and fisheries. The reservoir may not be drawn down below an elevation of 237 feet without the prior written consent of the State. The contract remains in effect until December 31, 2022.

In accordance with the State contract, SMUD entered into a contract with Sacramento County in 1971. Under terms of the County-SMUD contract, SMUD agreed to construct water, sanitary, and recreation facilities and to operate the reservoir in accordance with the State-SMUD contract. The County of Sacramento agreed to manage these facilities for the full term of the State-SMUD contract. As a result of a budget shortfall in 1992, Sacramento County discontinued management of the park facilities and SMUD assumed these responsibilities.

General Description of the Project

The project is the adoption of a park master plan. Tentative plans include a public golf course, equestrian center, wetlands preserve, nature center, hiking trails, and expansion of the existing recreational facilities (fishing, boating, and picnicking) (Figure 4).

SMUD's goals for the project are as follows:

- continue to provide public park uses in compliance with the development agreement with the State of California,
- expand existing public park uses to meet the identified needs of the public,
- identify and provide long-term protection for the identified waters of the United States and various special-status plant and animal species on the site, and
- develop recreational uses that are fiscally self-supporting at buildout.

The purpose of the project is to develop an array of recreational facilities that meet the needs of the public, are fiscally self-supporting at buildout, and are sensitive to the environment. One of the reasons the project is needed is because there is insufficient

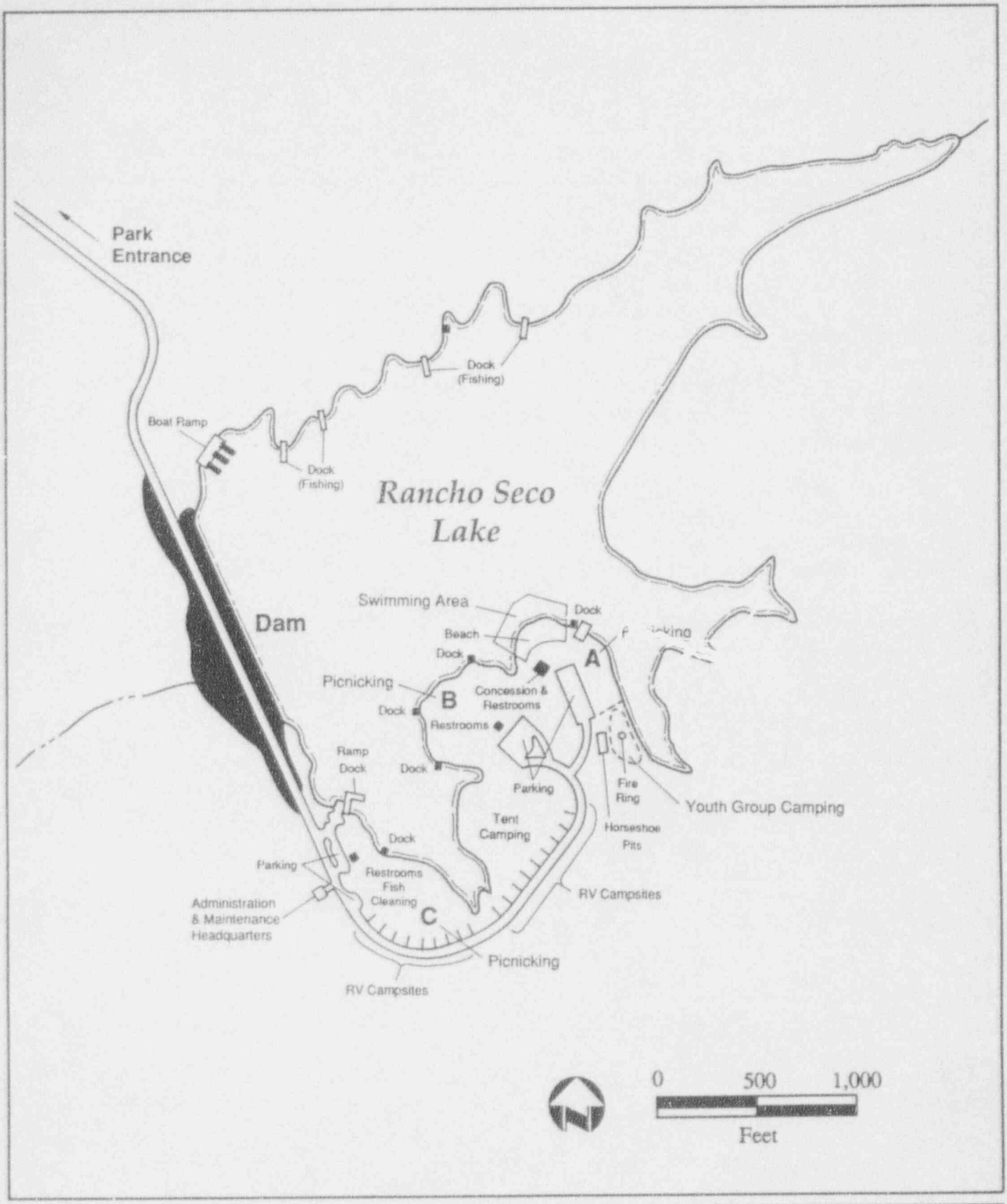
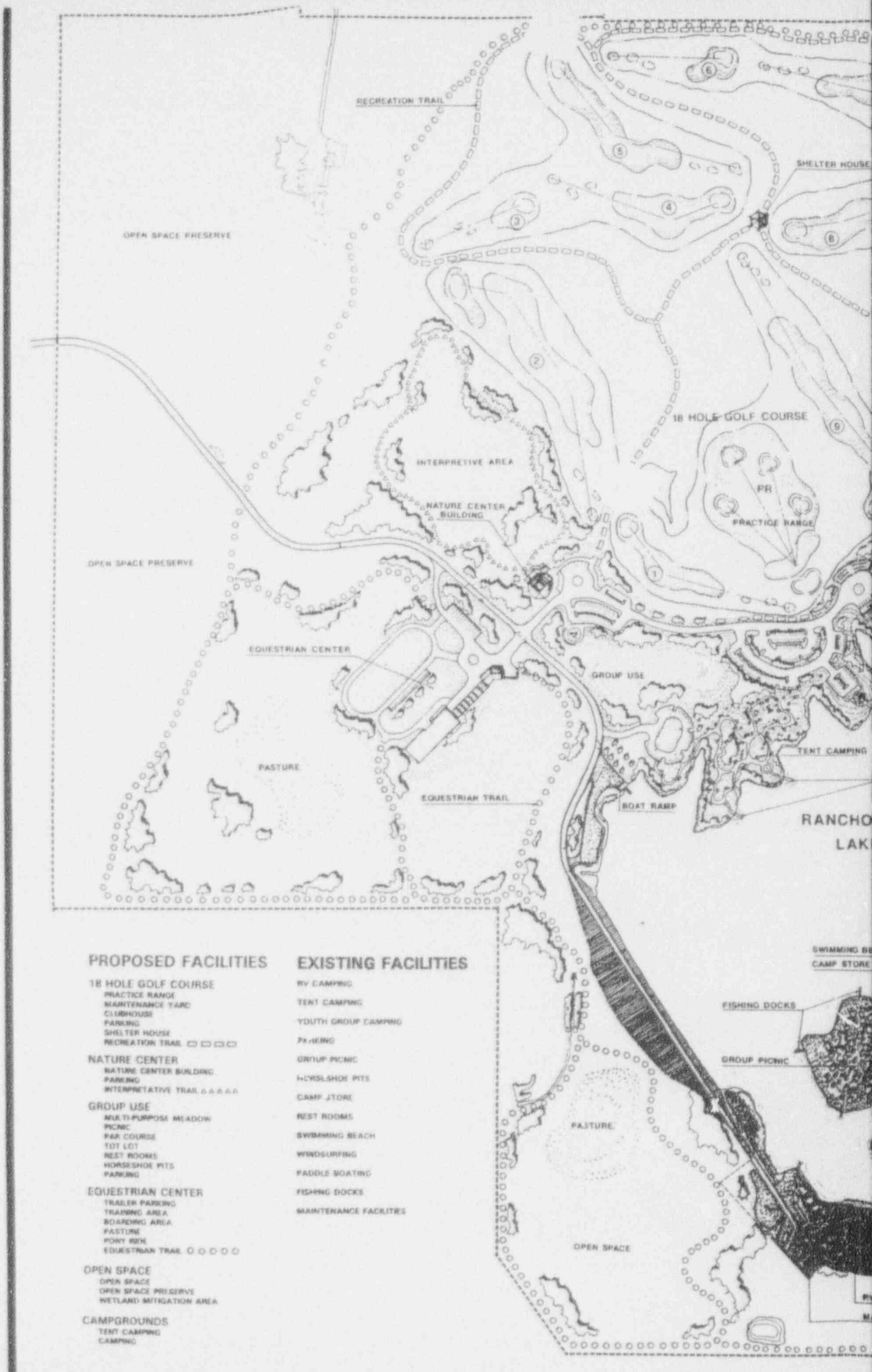


Figure 3. Rancho Seco Park: Existing Development



PROPOSED FACILITIES

18 HOLE GOLF COURSE
- PRACTICE RANGE
- MAINTENANCE YARD
- CLUBHOUSE
- PARKING
- SHELTER HOUSE
- RECREATION TRAIL

NATURE CENTER
- NATURE CENTER BUILDING
- PARKING
- INTERPRETATIVE TRAIL

GROUP USE
- MULTI-PURPOSE MEADOW
- PICNIC
- PAR COURSE
- TOT LOT
- REST ROOMS
- HORSESHOE PITS
- PARKING

EQUESTRIAN CENTER
- TRAILER PARKING
- TRAINING AREA
- BOARDING AREA
- PASTURE
- PONY RIDE
- EQUESTRIAN TRAIL

OPEN SPACE
- OPEN SPACE
- OPEN SPACE PRESERVE
- WETLAND MITIGATION AREA

CAMPGROUNDS
- TENT CAMPING
- CAMPING

EXISTING FACILITIES

- RV CAMPING
- TENT CAMPING
- YOUTH GROUP CAMPING
- PARKING
- GROUP PICNIC
- HORSESHOE PITS
- CAMP STORE
- REST ROOMS
- SWIMMING BEACH
- WINDSURFING
- PADDLE BOATING
- FISHING DOCKS
- MAINTENANCE FACILITIES

Figure 4

RANCHO SECO PARK AND GOLF COURSE

PRELIMINARY PARK MASTER PLAN

9402140133-02

0 100 200 400 600

SCALE: 1"=200'-0"

SEPTEMBER 7, 1993

revenue to cover ongoing operation and maintenance costs associated with the public park, which SMUD is contractually obligated to operate.

Existing Recreational Development

Rancho Seco Park offers multiple-use facilities and activities: group camping, 18 recreational vehicle sites for fully self-contained vehicles, two reservable picnic areas for groups of up to 250 people, and over 100 family picnic sites. The park includes a store/snack bar (operated by a concessionaire), restrooms, and solar-heated shower facilities.

Two boat launches are located on the lake, one on the north side and one on the south. Six fishing piers are at various locations around the lake. All the fishing piers are fixed because the water level in the lake is maintained at the same level year round. A swimming area with a sandy beach is buoyed off from the rest of the lake on the east shore. Lifeguards are provided by SMUD during summer.

The lake contains four types of fish: catfish, bluegill, bass, and trout (planted seasonally). The catfish, bluegill, and bass have been established in the lake for years and maintain a steady population. Larger fish weigh up to 18 pounds for bass, 4 pounds for bluegill, and 30 pounds for catfish.

Most lake facilities are located only on the south and east shores of the lake. The peak number of persons at the Rancho Seco Lake on a summer weekend is approximately 5,000.

Proposed Recreational Development

SMUD is in the process of developing the park master plan. The conceptual plan includes a public golf course, equestrian center, wetlands preserve, nature center, hiking trails, multi-use open space/picnic area, and par course, in addition to other existing park uses. The feasibility and desirability of these uses are being evaluated by SMUD; the final uses may change.

Golf Course. SMUD's goal for the golf course is a public play course that will provide the community with a quality, new construction facility and provide revenue for SMUD to continue park operations and finance development of the park master plan. The course clubhouse will provide meeting facilities as well as tournament and banquet amenities. The golf course will be designed by Palmer Course Design Company, providing a signature Arnold Palmer Golf Course.

Preliminary design of the golf course required a biological assessment of the site and wetlands delineation. A description of each of these studies is included in the "Environmental Checklist".

The golf course will include a clubhouse sited to enable views of t' : lake and the 18th green. The clubhouse will include offices, locker rooms, pro shop, snack bar, and restaurant. The interior seating is anticipated to accommodate 60 people in the main dining area and 40 people in the bar/lounge.

The golf course maintenance facility will include a golf course superintendent's office, mechanic's office and parts room, chemicals room, fertilizer room, and irrigation room. A vehicle washing area complete with drainage designed to include a leach field to avoid possible contamination of the lake will also be provided at the maintenance site. Above-ground fuel tanks for gas and diesel, a refuse disposal area, and a lift and grease pit mechanics area will be arranged within the 0.5-acre asphalt area adjacent to the maintenance building.

Comfort stations will be provided at two locations on the course. Each station will include restrooms that are proposed to operate with septic tanks and leach fields.

Timing for the construction of the golf course is critical since the grassing of the course must occur during the warm spring months. In addition, once the course is grassed, six warm months are required for the grass to grow in before opening for play. Construction of the golf course is anticipated to start in August 1994. Grading and shaping will be initiated at that time and will be followed by drainage and irrigation. Feature construction and finish grading are expected to start in November 1994 and continue through spring 1995. Grassing of the course will take place at that time; the grow-in window will continue through the course opening in September or October 1995.

Theme and Character. The golf course landscape theme and character will be one that is sensitive to the existing terrain and native plant life. The course will be integrated into the existing setting by playing over and through the rolling grasslands. A sharp contrast will be created between irrigated, turfed golf course tees, greens, and fairways and the existing naturalized grasslands. Groves of oaks trees will blend the golf course with the surrounding rolling grasslands. Mixed reintroduced groves of valley oak, black oak, blue oak, and interior live oak will extend from the grassland to the golf course, reinforcing fairway configuration, backdropping dog legs and greens, transitioning tees, and providing much needed summer shade.

Evergreen species of oaks, such as coast live oak and holly oak, and other species will be planted at the irrigated fringes of the golf course.

A gradual transition at the golf clubhouse to native, compatible ornamental trees will enhance the entry threshold, reinforce/frame the entry drive, frame the porte-cochere, screen the parking lot, modulate the parking area, and provide user interest.

Palmer Course Design Company: Philosophy of Golf Course Design and Rancho Seco Park. The goal of the Palmer Course Design Company is to create a golf course that can be played by all levels of golfers but is difficult enough to interest the better

players. In addition, the golf course architect plans to utilize the existing topography in the course design to the fullest extent possible.

The rolling topography of the site provides a natural setting in which to construct a golf course. The site will require approximately 100,000 cubic yards of grading, which is normally the major work item during construction of any golf course. The existing landscape features found at the park, such as vernal pools, rolling grasslands, ponds, and the lake will provide aesthetic enhancements as well as playing hazards and challenges. The playable areas of the golf course will be of hybrid Bermuda grass transitioning in appearance from perfect maintenance in high-play areas to a more brownish/golden-brown look that will blend into the native bunchgrass.

Other Park Uses. In terms of size, the primary recreation uses will be the golf course and wetlands preserve areas. Other park uses that are being considered include camping, equestrian center, nature center, hiking trails, and a multi-use open space/picnic area. These other park uses are being evaluated and will be described in the EIR.

Required Permits and Agreements

SMUD has identified the need for the following permits and agreements:

1. A grading permit will be requested from Sacramento County for the golf course, clubhouse, maintenance compound, and other uses.

2. A Section 404 nationwide permit will be requested from the U.S. Army Corps of Engineers (Corps) to allow the filling of Corps-jurisdictional wetlands. SMUD has completed a wetlands delineation that identified 41.08 acres of wetlands under the Corps jurisdiction, in addition to 158.40 acres of other waters of the United States. The Corps has verified the delineation and determined that a permit will be required prior to any filling of the waters. The Corps has assigned identification number 199300366 to the project. Until the design of the project is complete, it is not possible to determine exactly how much fill may occur; however, SMUD intends to avoid and minimize impacts such that a nationwide, not individual, permit will apply to the project.

   The Section 404 permit will include a Section 401 water quality certification. Water quality certification (Section 401 of the Clean Water Act) or a waiver of the certification from the regional water quality control board (RWQCB) is required for all Section 404 permits.

3. A streambed alteration agreement (Section 1601) will need to be obtained from the California Department of Fish and Game (DFG) for any work within the 100-year floodplain consisting of, but not limited to, diversion or

obstruction of the natural flow or changes to the channel, bed, or bank of any river, stream, or lake.

4. A national pollutant discharge elimination system (NPDES) construction permit will need to be obtained from the RWQCB.

5. A Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) may be required if federally listed species or their critical habitat are potentially affected by the project. Based on the results of special-status surveys completed at the project site in 1993, four species proposed for federal listing (vernal pool fairy shrimp, California linderiella, vernal pool tadpole shrimp, and viscid orcutt grass) are on the site; however, impacts on these species have not been assessed at this time.

In addition to these permits, the following permits will eventually be required to construct the project:

1. Building permits will be required from Sacramento County to construct the clubhouse, maintenance building, comfort stations, and other structures.

Focus of the Environmental Impact Report

SMUD will prepare a focused program-level EIR that addresses the impacts of adoption of the park master plan. Development of the park as allowed by the park master plan will be evaluated against the analysis in this EIR to determine whether an additional environmental document must be prepared.

The EIR will address the following issues:

- geology and soils,
- water resources,
- biological resources,
- land use, and
- cultural resources.

Cumulative impacts will be addressed only as they relate to water and biological resources.

ENVIRONMENTAL CHECKLIST

The following is a discussion of potential environmental impacts associated with adoption of the park master plan. The questions below are answered as follows:

- A "**no**" answer means it has been determined that there is no potential for the subject effect to occur as a result of the project.
- A "**maybe**" answer means it has been determined that there may be some potential for the subject effect to occur as a result of the project.
- A "**yes**" answer means that implementation of the project will result in the particular effect.

A discussion of determination and required mitigation measures is presented after each issue area. If there is no significant impact or the impact is reduced to a less-than-significant level because of implementing required mitigation measures, the issue is "focused out" from further analysis in the EIR. Note: the concept of "focusing" is specifically anticipated by the State CEQA Guidelines in Section 15063.

	Yes	Maybe	No
1. **Earth**. Will the proposal result in:			
a. Unstable earth conditions or changes in geologic substructures?	___	___	X
b. Disruptions, displacements, compaction, or overcovering of the soil?	X	___	___
c. Change in topography or ground surface relief features?	X	___	___
d. The destruction, covering, or modification of any unique geologic or physical features?	X	___	___
e. Any increase in wind or water erosion of soils, either on or off the site?	X	___	___
f. Changes in deposition or erosion of beach sands or changes in siltation, deposition, or erosion which may modify the channel of a river, stream, or lake?	___	X	___
g. Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards?	___	___	X

Environmental Setting

The park site is located on two distinct landforms, the Laguna Formation and the Mehrten Formation. Most of the project site occurs on the Laguna Formation, but two areas in the north-central and northwest project areas are on the Mehrten Formation.

Redding and Corning soil series are the two series associated with the Laguna Formation. Redding predominates on the lower slopes of the old terrace surrounding the tributary to Hadselville Creek that is now dammed to form the Rancho Seco Lake. Corning predominates on the high, broad portion of the old terrace which, where undisturbed, has the densest network of vernal pools and swales.

The Mehrten Formation also has a mound-intermound pattern but supports fewer, shallower vernal pools and swales (compared to the Laguna Formation). Two soil series are associated with the Mehrten Formation in the project area: Pentz soil series on the mounds and Hadselville soil series on the intermounds.

The topography of the site is relatively flat with little variation in surface elevation. The elevation of the site ranges from approximately 150 feet above sea level near the entrance to the site from Twin Cities Road to 280 feet on the east side of the project.

Explanation of Checklist

The proposed project will not result in any unstable earth conditions or create changes in the geologic substructure. The project also will not result in the exposure of people or property to geologic hazards.

The golf course development will result in earth movement and grading to contour fairways, driving range, water hazards, and drainage, which will alter the topography of the existing terrain. Preliminary calculations estimate that 100,000 cubic yards of soil will be moved for the course. Additional grading will be required for the nature center and other park uses.

During construction, there is the potential for erosion and dust generation. After completion of the golf course and construction, erosion and siltation is expected to decrease.

The golf course has been designed to avoid vernal pools and wetlands wherever possible. Preliminary analysis indicates that approximately 2-3 acres of waters of the United States, including wetlands, will be impacted by the current design.

Based on the information provided, it is hereby determined through this initial study that the issue of "Geology and Soils" will require limited further analysis in the program-level EIR. The EIR will discuss site characteristics and topography, soil types and soil

characteristics, and any geotechnical information that may be available. The "Impacts" analysis will focus on increased soil erosion during construction.

Mitigation Measures

The following mitigation measures will be considered in the EIR analysis:

1. A Section 404 permit, including an agency-approved wetland mitigation plan, will be obtained from the Corps before issuance of a grading permit.

2. A Section 1601 streambed alteration agreement will be obtained from DFG before issuance of a grading permit.

3. An erosion and sediment control plan will be submitted to Sacramento County for review and approval before issuance of a grading permit.

4. A soils and geotechnical investigation report prepared by a qualified engineer will be submitted to Sacramento County for review and approval before extension of utilities and/or issuance of a building permit. The soil investigation should include recommendations for site preparation and grading, foundation and soil engineering design, preliminary pavement designs, and septic tank/leach field designs.

	Yes	Maybe	No
2. **Air Quality**: Will the proposal result in:			
a. Substantial air emissions or deterioration of ambient air quality?	___	X	___
b. The creation of objectionable odors?	___	___	X
c. Alteration of air movement, moisture, or temperature, or any change in climate, either locally or regionally?	___	___	X

Environmental Setting

Regional Topography and Climate. The project site is located in southeastern Sacramento County at the eastern edge of the Central Valley. The topography of the area consists of gently rolling hills. The climate of the area is characterized by hot, dry summers and cool, moist winters. Winds in the area tend to be fairly strong and predominate from the west through the Carquinez Strait from the Pacific Ocean.

Federal and State of California Ambient Air Quality Standards. Both the State of California and the federal government have established ambient air quality standards for several different pollutants (Table 1). For some pollutants, separate standards have been set for different time periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values, such as protection of crops, protection of materials, or avoidance of nuisance conditions.

Ozone Standards. State and federal standards for ozone have been set for a 1-hour averaging time. The state 1-hour ozone standard is 0.09 parts per million (ppm), not to be exceeded. The federal 1-hour ozone standard is 0.12 ppm, not to be exceeded more than three times in any 3-year period.

Ozone is a public health concern because it is a respiratory irritant that increases susceptibility to respiratory infections. Ozone can cause significant damage to leaf tissues of crops and natural vegetation and can damage many materials by acting as a chemical oxidizing agent.

Ozone is of concern primarily during summer, when high temperatures, the presence of sunlight, and an atmospheric inversion layer induce photochemical reactions. Photochemical reactions convert ozone precursor emissions (reactive organic gases [ROG] and nitrogen oxides [NOx]) into ozone.

Particulate Matter Standards. State and federal standards for inhalable particulate matter have been set for two time periods: a 24-hour average and an annual geometric mean of the 24-hour values. Until recently, the federal and state particulate matter standards applied to a broad range of particle sizes. The high-volume samplers used at most monitoring stations were most effective in collecting particles smaller than 30 microns (one micron is about 0.00004 inch in diameter) (Powell 1980). Health concerns associated with suspended particles focus on those particles small enough to reach the lungs when inhaled. Few particles larger than 10 microns in diameter reach the lungs. Consequently, both the federal and state air quality standards for particulate matter have been revised to apply only to these small particles (generally designated as PM10).

The state PM10 standards are 50 micrograms per cubic meter (μg/m3) as a 24-hour average and 30 μg/m3 as an annual geometric mean. The federal PM10 standards are 150 μg/m3 as a 24-hour average and 50 μg/m3 as an annual arithmetic mean.

Carbon Monoxide Standards. State and federal carbon monoxide (CO) standards have been set for both 1-hour and 8-hour averaging times. The state 1-hour CO standard is 20 ppm; the federal 1-hour standard is 35 ppm. Both state and federal standards are 9 ppm for the 8-hour averaging period. State CO standards are phrased as values not to be exceeded. Federal CO standards are phrased as values not to be exceeded more than once per year.

CO is a public health concern because it combines readily with hemoglobin, which reduces the amount of oxygen transported in the bloodstream. CO binds to hemoglobin

Table 1. Ambient Air Quality Standards Applicable in California

Pollutant	Symbol	Averaging Time	Standard, as parts per million		Standard, as micrograms per cubic meter		Violation Criteria	
			California	National	California	National	California	National
Ozone	O_3	1 hour	0.09	0.12	180	235	If exceeded	If exceeded on more than 3 days in 3 years
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
		1 hour	20	35	23,000	40,000		
(Lake Tahoe only)		8 hours	6	--	7,000	--		
Nitrogen dioxide	NO_2	Annual average	--	0.053	--	100		If exceeded
		1 hour	0.25	--	470	--	If exceeded	
Sulfur dioxide	SO_2	Annual average	--	0.03	--	80		If exceeded
		24 hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year
		1 hour	0.25	--	655	--		
Hydrogen sulfide	H_2S	1 hour	0.03	--	42	--	If equaled or exceeded	
Vinyl chloride	C_2H_3Cl	24 hours	0.010	--	26	--	If equaled or exceeded	
Inhalable particulate matter	PM10	Annual geometric mean	--	--	30	--	If exceeded	
		Annual arithmetic mean	--	--	--	50		If exceeded
		24 hours	--	--	50	150		If exceeded on more than 1 day per year
Sulfate particles	SO_4	24 hours	--	--	25	--	If equaled or exceeded	
Lead particles	Pb	Calendar quarter	--	--	--	1.5		If exceeded on more than 1 day per year
		30 days	--	--	1.5	--	If equaled or exceeded	

Notes: All standards are based on measurements at 25° C and 1 atmosphere pressure.
National standards shown are the primary (health effects) standards.

200-250 times more strongly than does oxygen. Thus, relatively low concentrations of CO can significantly affect the amount of oxygen in the bloodstream. Both the cardiovascular system and the central nervous system can be affected when 2.5-4.0% of the hemoglobin in the bloodstream is bound to CO rather than to oxygen. State and federal ambient air quality standards have been set at levels to keep CO from combining with more than 1.5% of the blood's hemoglobin (U.S. Environmental Protection Agency 1979, California Air Resources Board 1982).

CO is of concern primarily during winter, when vehicle-related emissions are greatest and atmospheric stability allows the buildup of high concentrations.

Existing Air Quality Conditions. The California Air Resources Board (CARB) publishes summaries of air quality monitoring data from locations throughout the state. Following is a summary of monitoring data from locations in Sacramento County.

Ozone. Table 2 shows a summary of ozone air quality monitoring data from several locations in Sacramento County. Many locations frequently exceed the state 1-hour standard of 0.09 ppm. The highest levels and most exceedances over the last 5 years have occurred at the Folsom and Citrus Heights stations. Locations that are not downwind of the Sacramento metropolitan area (downwind during the ozone season is generally east and northeast) should have ozone levels somewhat lower than most of the monitoring locations.

PM10. Table 3 shows a summary of PM10 air quality monitoring data from several locations in Sacramento County. Many of the locations exceed both the state geometric mean standard of 30 $\mu g/m3$ and the state 24-hour standard of 50 $\mu g/m3$. Sacramento County is classified as nonattainment for PM10 by the CARB.

Carbon Monoxide. Table 4 shows a summary of CO air quality monitoring data from several locations in Sacramento County. These data show that CO levels exceed standards primarily in the urban Sacramento area. Data from most of the Sacramento County stations show only a few exceedances of the state 8-hour standard.

Air Quality Management Programs. Air pollution control programs were established in California before the enactment of federal requirements. Federal Clean Air Act legislation in the 1970s resulted in a gradual merger of local and federal air quality programs, particularly industrial source air quality permit programs. Air quality management planning programs developed during the past decade have generally been in response to requirements established by the federal Clean Air Act. Enactment of the California Clean Air Act in 1988, amendments to it in 1992, and passage of the federal Clean Air Act Amendments of 1990 have produced additional changes in the structure and administration of air quality management programs.

The California Clean Air Act requires preparation of an air quality attainment plan for areas that violate state air quality standards for CO, sulfur dioxide, nitrogen dioxide, or ozone. No locally prepared attainment plans are required for areas that violate the state PM10 standards. PM10 attainment issues are being addressed by the CARB.

Table 2. Summary of Ozone Air Quality Monitoring Data for Sacramento County: 1988-1992

Monitoring Station	Parameter	Ozone Levels (ppm) 1988	1989	1990	1991	1992
North Highlands	Peak-hour value[a]	0.15	ND	0.12	0.13	0.12
	Days above standard[b]	34		10	9	3
Meadowview Road	Peak-hour value[a]	0.13	0.13	0.14	0.12	0.11
	Days above standard[b]	15	26	17	11	4
Folsom	Peak-hour value[a]	0.17	0.17	0.11	0.19	0.15
	Days above standard[b]	61	48	3	52	42
Citrus Heights-Sunrise Boulevard	Peak-hour value[a]	0.17	0.12	0.15	0.15	0.13
	Days above standard[b]	51	12	21	23	21
Del Paso Manor	Peak-hour value[a]	0.13	0.12	0.15	0.18	0.13
	Days above standard[b]	63	10	21	27	21

Note: ND = no data.

[a] Peak-hour values given as ppm.

[b] Days with a peak 1-hour value exceeding the state standard of 0.09 ppm.

Source: California Air Resources Board 1993.

Table 3. Summary of PM10 Air Qeality Monitoring Data for Sacramento County: 1988-1992

Monitoring Station	Parameter	PM10 ($\mu g/m^3$) 1988	1989	1990	1991	1992
Citrus Heights-Sunrise	Annual geometric mean	43.0	42.6	36.0	34.1	29.3
	24-hour - 2nd highest	78.0	118.0	116.0	88.0	82.0
Sacramento-Del Paso	Annual geometric mean	33.0	40.3	28.6	31.9	24.4
	24-hour - 2nd highest	78.0	104.0	135.0	75.0	67.0
Sacramento Health Department - Stockton Boulevard	Annual geometric mean	35.5	47.0	ND	29.1	26.9
	24-hour - 2nd highest	102.0	155.0	ND	96.0	70.0

Note: ND = no data.

Source: California Air Resources Board 1993.

Table 4. Summary of Carbon Monoxide Air Quality Monitoring Data for Sacramento County (ppm): 1988-1992

Monitoring Station	Parameter	1988	1989	1990	1991	1992
Citrus Heights-Sunrise	Peak 1-hour value	10	9	10	8	9
	Peak 8-hour value	7.5	6.9	6.5	5.9	5.1
	Days above standard	0	0	0	0	0
North Highlands	Peak 1-hour value	12	ND	8	9	7
	Peak 8-hour value	11.4	ND	5.3	5.3	3.9
	Days above standard	3	ND	0	0	0
Sacramento-Del Paso	Peak 1-hour value	12	15	12	11	9
	Peak 8-hour value	9.7	13.0	11.3	8.0	7.3
	Days above standard	1	13	4	0	0
Sacramento-El Camino	Peak 1-hour value	15	18	15	15	11
	Peak 8-hour value	11.6	15.9	14.0	12.3	8.6
	Days above standard	7	17	13	6	0
Sacramento-T Street	Peak 1-hour value	ND	14	16	12	12
	Peak 8-hour value	ND	11.3	11.4	9.6	6.5
	Days above standard	ND	7	4	2	0

Notes: ND = no data.
Peak 1-hour and peak 8-hour values given as ppm.
Days above standard is days with a peak 8-hour average value exceeding the federal primary and state CO standards of 9 ppm.

Source: California Air Resources Board 1993.

The Sacramento Metropolitan Air Quality Management District (SMAQMD) published its air quality attainment plan in July 1991, which was found to be consistent with the Clean Air Act. The plan does not address golf course or park land uses, however, and therefore does not pertain to the project.

It is important to note that the air quality attainment plan requirements established by the California Clean Air Act are based on the severity of air pollution problems caused by locally generated emissions. Upwind air pollution control districts are required to establish and implement emission control programs commensurate with the extent of pollutant transport to downwind districts. The broader Sacramento area has been identified as a source of pollution transport to the upper Sacramento Valley and the San Joaquin Valley and a receptor of pollutant transport from the San Francisco Bay Area.

Explanation of Checklist

The air quality analysis focuses on construction impacts and ozone precursor impacts. CO is not expected to be a problem because high CO levels are primarily found during winter near congested intersections. During winter, project traffic generation is expected to be much less than peak summer levels. Also, the roads and intersections in the project vicinity operate without congestion.

Criteria for Determining Significance. According to State CEQA Guidelines (Section 5064[e] and Appendix G), a project will normally have a significant impact if it would:

- violate any ambient air quality standard;
- contribute substantially to an existing or projected air quality violation;
- expose sensitive receptors to substantial pollutant concentrations;
- result in substantial air emissions or deterioration of air quality. Substantial emissions would be emissions above the thresholds of significance contained in the SMAQMD environmental review program. Those thresholds equal 550 pounds per day of CO, 150 pounds per day of ROG and NOx, and 80 pounds per day of PM10;
- create objectionable odors; or
- alter air movement, moisture, or temperature, or result in any change in climate either locally or regionally.

Construction-Related Air Emissions. Construction of the proposed project would generate emissions of particulate matter (PM10) from site grading and earth-moving activities and emissions of total organic gases, CO, NOx, sulfur oxides, and PM10 from construction vehicle exhaust emissions.

Construction period emissions were calculated using U.S. Environmental Protection Agency (EPA) emission rate data and calculation procedures (U.S. Environmental Protection Agency 1985). Assumptions included emissions for three scrapers, one water truck, one loader, and five track-type tractors; each operating 8 hours per day; 10 acres being actively worked each day; and a 30% PM10 portion of total suspended particulates. In addition, the total daily emissions include a 50% reduction for dust control program effectiveness.

As shown in Table 5, construction period emissions are estimated to be 16 pounds per day (ppd) of total organic gases, 68 ppd of CO, 204 ppd of NOx, 184 ppd of PM10, and 23 ppd of sulfur oxides. Because the level of NOx and PM10 emissions would be above the SMAQMD thresholds, this impact is considered significant.

Ozone Precursor Emissions. The park master plan would create emissions of the ozone precursor pollutants, ROG and NOx, from new vehicle trips generated by the golf course, campground, and park expansion. Also, a relatively minor amount of emissions would be produced by landscape maintenance, primarily lawn mowing, and miscellaneous activities associated with the master plan.

A summary of ozone precursor emissions is shown in Table 6. Emissions have been calculated for 1995 by multiplying vehicle miles traveled (VMT) for the peak day (Saturday) by the ROG and NOx emission rates. ROG and NOx emission rates are based on a temperature of 75 degrees Fahrenheit and a speed of 45 mph. The project is expected to produce 30 ppd of ROG and 70 ppd of NOx. Because these emissions would be below the SMAQMD thresholds, this impact is considered less than significant and no mitigation is required.

No objectionable odors are anticipated from the project.

Mitigation Measures

SMUD will comply with the following mitigation measures; no further analysis in the program-level EIR is proposed.

1. SMUD will prepare a dust control plan before groundbreaking occurs. This plan will ensure that adequate dust controls are implemented during project construction. The following measures will be included in the dust control plan:

    a. Water will be applied to exposed earth during clearing, grading, earthmoving, and other site preparation work. Depending on wind conditions and the amount of dust generated, water will be applied at least twice a day with complete coverage of surfaces, preferably in the late morning and at the end of the work day.

Table 5. Typical Construction Period Emissions during Major Site Disturbance Activities (pounds per day)

Emission Source	TOG	CO	NOx	PM10	SOx
Construction vehicle exhaust emissions	16	68	204	19	23
PM10 fraction of fugitive dust	0	0	0	165	0
Total daily emissions	16	68	204	184	23

Notes: Emission rate data and procedures from U.S. Environmental Protection Agency 1985 (AP-42, Volumes I and II).

TOG = total organic gases.
NOx = nitrogen oxides.
CO = carbon monoxide.
PM10 = particulate matter 10 microns or less in diameter.
SOx = sulfur oxides.

Table 6. Emissions of Ozone Precursors (pounds per day)

Land Use	Saturday Trip Generation	Vehicle Miles Traveled	ROG	NOx
Park Master Plan	840	25,203	30	70

Notes: ROG = reactive organic gases.
NOx = nitrogen oxides.

Park Master Plan includes an 18-hole golf course, campground, nature preserve, and park.

Trip generation rate obtained from Institute of Transportation Engineers 1991.

b. The only type of dust suppressant to be used will be water. Any change in dust suppressant will be reviewed and approved by a wetlands consultant to ensure that no impacts would result on wetlands or vernal pools.

c. Mud and dirt clinging to truck wheels will be cleaned up on a daily basis such that no dirt is carried onto public streets.

d. All clearing, grading, earthmoving, and excavation activities will be minimized during periods of winds exceeding 30 mph velocity over 1 hour.

e. During construction, onsite vehicle speed in the construction area will be limited to 15 mph.

f. Dry weather wetting and/or paving (graveling) of heavily traveled roads will be performed as needed to reduce dust emissions throughout construction and the life of the project.

g. The ground surface will be left undisturbed to the extent possible by minimizing the area to be graded and cleared.

h. Bare earth surfaces will be treated to minimize dust; grassing of the golf course will occur as soon after grading as possible.

2. Construction equipment engines will be tuned according to manufacturers' specifications and kept in proper working condition. Diesel-powered, low-sulfur fuel, or electric equipment (whichever is the lowest emitter) will be used, wherever possible and feasible, in lieu of gasoline-powered engines.

3. Ridesharing and transit incentives for the construction crew will be supported and encouraged.

4. Open burning of wood/vegetative waste materials from construction or operation of the project will be minimized. Open burning will be permitted only as part of the recreational activities.

5. Only electric golf carts will be allowed on the golf course.

	Yes	Maybe	No
3. **Water**: Will the proposal result in:			
a. Changes in currents, or in the course or direction of water movements, either in marine or fresh waters?	X	___	___
b. Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?	X	___	___
c. Alterations to the course or flow of flood waters?	X	___	___
d. Change in the amount of surface water in any water body?	X	___	___
e. Discharge into surface waters, or in any alteration of surface water quality including, but not limited to, temperature, dissolved oxygen, or turbidity?	X	___	___
f. Alteration of the direction or rate of flow of groundwater?	___	X	___
g. Change in the quantity of groundwaters, either through direct additions or withdrawals or through interception of an aquifer by cuts or excavations?	___	X	___
h. Substantial reduction in the amount of water otherwise available for public water supplies?	___	X	___
i. Exposure of people or property to water-related hazards such as flooding or tidal waves?	___	___	X

Environmental Setting

Topography. The Rancho Seco site consists of gently rolling hills that are not intersected by any streams but are bounded by well-defined drainage courses that intercept surface runoff from the higher site topography. The plant grade level is at approximately 165 feet elevation above sea level. This elevation permits excellent drainage at all times without danger of flooding.

Storm Runoff. The site is bounded on the north by Hadselville Creek, which intercepts all drainage from the site and empties into Laguna Creek to the west. Laguna Creek conveys this flow westerly to the Cosumnes River and then into the Mokelumne River. The Mokelumne River is a tributary of the southerly flowing Sacramento River and enters the Sacramento River approximately 20 miles south of the City of Sacramento.

Stormwater runoff at the site is controlled primarily by surface ditches. Generally, overland flows are intercepted by the ditches and diverted around the plant to natural stream channels. When this is not possible, runoff is diverted down cut slopes in culvert pipes and discharged to the plant drainage ditch system. The drainage system was designed to accommodate the 25-year recurrence storm with a minimum of 6 inches of freeboard and the 100-year recurrence storm with zero freeboard.

Historical Flooding. Within recent historical times, no flooding or inundation from storms or runoff has occurred within the site boundaries. It is unlikely that the site can be inundated or flooded, even with abnormal rainfall intensities. A hydrologic study of storms that could produce critical floods was conducted to provide the design criteria for construction of an adequate spillway to safeguard the dam embankment of the lake from any danger of overtopping.

Groundwater. Two wells exist on site. The well at the power plant is 600 feet deep with a 40-horsepower motor and pumps approximately 300 gallons per minute (gpm). The well at the park is 400 feet deep with a 40-horsepower motor and pumps approximately 250 gpm. The well water at the park is chlorinated and stored in a hydropneumatic tank. The park well supplies water for two permanent residences, a snack bar, and irrigation for the park grass area.

SMUD also obtains water for the Rancho Seco Lake and power plant from the Folsom South Canal. The U.S. Bureau of Reclamation constructed the canal as part of the Central Valley Project. A 66-inch-diameter pipeline and pumping station convey water from the Folsom South Canal to the site. Upon entering the site, the pipeline splits; the 66-inch diameter pipeline supplies water to the power plant, and a 48-inch diameter pipeline supplies water to the lake. The water can be delivered to either or both simultaneously.

Rancho Seco Lake. The Rancho Seco Lake is a man-made earthfill dam approximately 60 feet high. The lake covers approximately 160 acres, retains 9,000 acre feet of water, and is used as a public recreational facility for fishing, swimming, and other water-related activities.

Folsom South Canal. SMUD has water rights for 15,000 acre feet of water from the Folsom South Canal. Water from the canal is pumped to the Rancho Seco site at a rate of 6,500 gpm or 28.7 acre feet per day (10,480 acre feet annually).

Explanation of Checklist

The proposed project would result in grading for the golf course, club house, and maintenance facilities. This grading would alter the direction of water movement, absorption rates, and drainage patterns. These issues will be addressed in the program-level EIR.

The golf course is proposing to expand an existing stock pond to use as a reservoir for golf course irrigation water. Alteration of the stock pond will change the amount of surface water in the stock pond.

The project is proposing to collect sewage from the golf course and park facilities and pipe it to the existing sewage treatment system. The existing oxidation/evaporation pond will be expanded and followed by filtration to meet State of California Title 22 wastewater reclamation requirements. The effluent will be pumped to the golf course lake for storage and used as golf course irrigation water. Wastewater from the proposed maintenance building and two golf course comfort stations is proposed to be treated and disposed of with individual septic tank leach field systems.

The project is proposing four sources of water for irrigation of the golf course: surface drainage, treated wastewater effluent, existing wells, and water from the Folsom South Canal. Preliminary evaluation indicates the primary sources of water will be surface runoff and treated wastewater effluent stored in the golf course lake. The secondary source of water will be the existing park well. The power plant well and Folsom South Canal water from the Rancho Seco Lake will be available for emergency use only.

The golf course lake will be capable of receiving water from the following sources:

- treated wastewater from both the power plant and park wastewater treatment plants,
- runoff collected from the golf course and surrounding area,
- runoff collected from the Clay Creek drainage basin that is stored in the Rancho Seco Lake,
- well water from the park well,
- well water from the power plant well, and
- water diverted from the Folsom South Canal.

Preliminary estimates are that the golf course will require approximately 500,000 gallons of irrigation water per day during the irrigation season, which is from mid-March to mid-October. The total annual required irrigation water will be approximately 105 million gallons, or 320 acre feet.

Preliminary calculations of annual flows generated by each source to be stored in the golf course reservoir are:

- treated wastewater - 5.5 acre feet
- golf course drainage - 70.0 acre feet
- Clay Creek drainage - 1,500.0 acre feet

- park well - 403.0 acre feet
- power plant well - 483.0 acre feet

It is not anticipated that water from the Folsom South Canal will be required for golf course irrigation.

The project is proposing to install state-of-the-art golf course grasses, plantings, and irrigation. A computerized irrigation system will provide water at the best time to minimize evaporation. In addition, soil moisture sensors will be used to eliminate the possibility of overwatering. The sprinkler system will be site-specific in design, reducing overspray and spray subject to evaporation.

Based on the information provided, it is hereby determined through this initial study that the issue of "Water Resources" will require limited further analysis in the program-level EIR. The EIR will discuss regional and local hydrology, vernal pool and groundwater hydrology, and surface water and groundwater quality. The "Impacts" section will include an analysis of impacts on the local and regional hydrology and vernal pool hydrology and impacts related to the proposed wastewater reclamation plan. This section will also discuss proposed water facilities and supplies versus project demand.

	Yes	Maybe	No
4. **Plant and Animal Life.** Will the proposal result in:			
a. Change in the diversity of species, or number of any species of plants (including trees, shrubs, grasses, crops, and aquatic plants) or animals (birds, land animals, including organisms, or insects)?	X	___	___
b. Reduction of the numbers of any unique, rare, or endangered species of plants or animals?	___	X	___
c. Introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species, or in a barrier to the migration or movement of animals?	X	___	___
d. Reduction in acreage of any agricultural crop?	___	X	___
e. Deterioration to existing fish or wildlife habitat?	X	___	___

Environmental Setting

The following discussion summarizes information in the Preliminary Delineation of Waters of the United States, Including Wetlands, for the Rancho Seco Park Master Plan (Jones & Stokes Associates 1993a) and the Special-Status Plant and Wildlife Species Surveys

and Habitat Assessments for the Rancho Seco Project Site (Jones & Stokes Associates 1993b).

Habitat Types. The project site is characterized by rolling hills of grassland with seasonal wetlands interspersed in low-lying areas. Undeveloped portions of the site support an extensive and relatively dense occurrence of vernal pools and swales interspersed with annual grasslands. Portions of the site are seasonally grazed by livestock, and several stock ponds have been created to provide water to livestock. Larger stock ponds support riparian woodland vegetation. Small irrigated pasture areas, some of which are fallow, are found in the southeastern quarter of the site.

The project site supports 12 habitat types: annual grassland, vernal pool, vernal swale, seasonal wetland, seep, emergent marsh, juncus meadow, willow riparian, ephemeral drainage, open water, irrigated pasture, and ornamental. Each habitat and its associated vegetation and wildlife is briefly described below.

Annual Grassland. Annual grasslands dominate the project area and are dry through summer. This seasonally dry habitat is characterized by a dominance of naturalized non-native grasses that cover the hilltops and well-drained uplands and surrounding areas. Annual grasslands have a dominance of wild oat, ripgut brome, soft chess, small fescue, and medusa-head grass.

Grassland is the dominant wildlife habitat type in the project area. This habitat type provides most of the forage for livestock; grazing pressure varies from moderate to heavy in the area. Grazing enhances habitat quality for some wildlife species (e.g., savanna sparrows, horned larks, and California ground squirrels) but reduces it for others (e.g., northern harriers, gopher snakes, and western rattlesnakes).

Many wildlife species use grasslands for foraging and breeding. Grasslands near open water, wetlands, and riparian habitats are used by the greatest number of wildlife species. The tricolored blackbird, western pond turtle, and possibly tiger salamander use grasslands adjacent to wetlands for foraging, breeding, and over-wintering and are found in habitats similar to those found on the project site. Amphibians and reptiles residing in grasslands include the Pacific treefrog, western fence lizard, and gopher snake. Birds known to forage in grasslands include the horned lark, savannah sparrow, tricolored blackbird, Brewer's blackbird, and western meadowlark. Mammals that forage or breed in grasslands include deer mice, California ground squirrels, striped skunks, and coyotes.

Small mammals in grasslands are important prey for a variety of predatory birds and mammals, such as American kestrels, red-tailed hawks, black-shouldered kites, northern harriers, and coyotes.

Vernal Pool. Vernal pools are seasonally flooded landscape depressions that support a distinctive biota adapted to periodic or continuous inundation during the wet season and absence of either ponded water or wet soil conditions during the dry season. The vernal pools on the site are typical of vernal pools throughout the Sacramento Valley.

Vernal pool basins are dominated by coyote thistle, Fremont's goldfield, stipitate popcorn flower, woolly marbles, spike-primrose, common spike rush, hedge-hyssop, toad rush, water-starwort, and American pillwort. One vernal pool supports a large population of Green's legenere and a small population of Boggs Lake hedge-hyssop, both Category 2 candidates for federal listing. Another vernal pool supports a small population of viscid orcutt grass, proposed for federal listing as endangered.

Vernal pools support a wide diversity and abundance of aquatic invertebrates and plant species, which in turn are food for vertebrate wildlife. Wildlife species observed foraging in vernal pools include great blue herons, mallards, cinnamon teals, common snipes, killdeer, greater yellowlegs, bull frogs, Pacific treefrogs, and western garter snakes.

Vernal Swale. The project site is traversed by swales arranged in integrated or dendritic drainage patterns with vernal pools. Vernal swales convey runoff during, and for short periods after, rainfall. Some vernal swales connect some vernal pools, thus filling or draining them, while others meander through vernal pool terrains but do not physically connect with individual vernal pools. Vernal swales are dominated by Mediterranean barley, coyote thistle, Italian ryegrass, toad rush, slender fescue, hairgrass, quaking grass, tarweed, and spikeweed.

Vernal swales have wildlife values similar to those of vernal pools and provide some foraging habitat and drinking water for birds, mammals, and other wildlife during the rainy season. Vernal swales are usually too ephemeral, however, to support an abundance of wildlife. Species observed using this habitat include Pacific treefrogs (tadpoles), western meadowlarks, western kingbirds, western bluebirds, scrub jays, and a variety of aquatic invertebrates.

Seasonal Wetland. Seasonal wetlands are characterized as seasonally wet areas that occur in shallow to deep depressions underlain by slowly permeable soils. Ruderal seasonal wetlands occur on the project site in the irrigated pasture. The largest seasonal wetland is an abandoned agriculture ditch that was originally used to return sheet flow from the irrigated pasture to an adjacent stock pond. Seasonal wetlands support mostly non-native species, including bird's-foot trefoil, curly dock, manna grass, common spike rush, and Mediterranean barley.

Seasonal wetlands within the project area provide some foraging habitat and drinking water for birds, mammals, and other wildlife during winter and spring. Amphibians such as Pacific tree frogs and western toads may be dependent on these wetland types.

Seep. Seeps are characterized as areas where water slowly oozes or seeps from the ground to the surface, saturating the soil. Seeps are dominated by toad rush, Mediterranean barley, Italian ryegrass, common spike rush, Bermuda grass, bird's-foot trefoil, sedge, quaking grass, Baltic rush, yellow sweetclover, bog rush, slenderfescue, and Dallas grass.

Seeps provide foraging habitat and cover for aquatic invertebrates and amphibians. Aquatic invertebrates inhabiting seeps are fed on by small mammals, amphibians, reptiles, and insectivorous birds.

Emergent Marsh. Emergent marsh is dominated by perennial monocots that grow in permanently or semi-permanently flooded/saturated soil conditions. Emergent marshes are dominated by common spike rush; however, some have broad-leaved cattail or tule. Emergent marsh occurs along the margins of the lake and around larger stock ponds.

Emergent marshes provide high-quality foraging habitat, breeding habitat, and cover for many waterbirds, small mammals, reptiles, and amphibians. Emergent marshes in the project area provide important foraging habitat for fish-eating bird species, such as American bitterns, great blue herons, great egrets, and belted kingfishers. These aquatic habitats also attract mallards, American coots, common moorhens, and other water birds. Several species, such as marsh wrens, song sparrows, and red-winged blackbirds, nest in cattails and other emergent vegetation.

Wildlife species commonly using these habitats include great blue herons, mallards, cinnamon teals, marsh wrens, red-winged blackbirds, raccoons, common garter snakes, and Pacific treefrogs. Skunks, California voles, and house mice may also frequent the marsh habitats in the project area.

Juncus Meadow. Juncus meadows are dominated entirely by bog rush. Juncus meadow habitats offer similar values to wildlife as seeps, with the addition of escape and roosting cover provided by dense vegetative growth of juncus.

Willow Riparian. The willow riparian woodland is found in a thin band bordering the lake and is characterized by native willow species with an overhead canopy cover exceeding 20%. The dominant species are Goodding's willow, with an occasional Fremont's cottonwood.

Willow riparian habitats provide cover, breeding, and foraging habitat in an area with little tree or shrub cover and are therefore used by a variety of wildlife species. The proximity of willow riparian habitat to the adjacent annual grassland in the project area increases its value to wildlife. Foliage-gleaning birds such as warblers and vireos forage in cottonwoods and thickets of willows, while purple finches and lesser goldfinches feed on willow buds and catkins. Fly-catchers, northern orioles, and western kingbirds nest in the taller riparian trees and forage out over the surrounding juncus meadow, open water, and emergent marsh.

This habitat provides nesting and rearing cover for a variety of common birds, including scrub jays, song sparrows, house wrens, and Bewick's wrens. The trees in this habitat are used by a variety of bird species as perches, including double-crested cormorants, belted kingfishers, northern harriers, western kingbirds, barn swallows, tree swallows, red-tailed hawks, and great horned owls.

This habitat produces abundant aquatic and terrestrial invertebrates that are prey for amphibians and reptiles, such as Pacific treefrogs, common garter snakes, and western terrestrial garter snakes, and for insectivorous birds, such as yellow-rumped warblers, northern flickers, and Nuttall's woodpeckers. Small mammals found in riparian habitats include shrews, voles, and mice.

Ephemeral Drainage. Ephemeral drainages are unvegetated or sparsely vegetated channels with well-defined beds and banks that convey storm runoff only during, and for a brief period after, storms but are dry for the remainder of the year. The majority of the ephemeral drainages are narrow (1-3 feet wide) and deeply cut (1-3 feet deep); however, a few have average widths exceeding 5 feet. Although most ephemeral drainages are unvegetated, sparsely vegetated drainages are often dominated entirely by coyote thistle. Mediterranean barley, Italian ryegrass, toad rush, and common spike rush were also found in ephemeral drainages on the project site.

Ephemeral drainages, like vernal swales, provide habitat for a variety of wildlife species. Ephemeral drainages in the project area may provide seasonal habitats for amphibians; small mammals, such as raccoons and striped skunks; and waterbirds, such as egrets and herons, that feed on amphibians, aquatic reptiles, and invertebrates. Species observed using this habitat in the project area include Pacific treefrogs (tadpoles), western meadowlarks, western kingbirds, western bluebirds, scrub jays, and a variety of aquatic invertebrates.

Open Water. Open water includes the Rancho Seco Lake and several large stock ponds. This habitat typically has a water depth greater than 2 feet, which intergrades with emergent marsh at its fringes. Open-water habitat is unvegetated or is sparsely vegetated with free-floating and submerged rooted aquatic plants, including pondweeds, lesser duckweed, mosquito fern, and mare's-tail water-milfoil.

The open water component of the stock ponds and the Rancho Seco Lake provides moderate- to high-quality habitat for wildlife species.

The Rancho Seco Lake provides valuable year-round drinking, foraging, bathing, resting, and breeding opportunities for a variety of wildlife species. The willow riparian forest and tule/cattail marsh established around the ponds provide wildlife cover. This habitat provides drinking water for mammalia species such as mule deer, coyote, and grey fox. It also provides foraging habitat for raccoons and striped skunks that could feed on amphibians in the ponds, such as bullfrogs and Pacific tree frogs. The open water provides suitable foraging and resting habitat for dabbling ducks (mallards, gadwalls, and northern pintails) and other waterbirds, including American coots and pied-billed grebes.

Although stock ponds were developed to provide drinking water for livestock, they greatly enhance wildlife diversity in the area. Waterbirds, including a variety of waterfowl and shorebird species, use the ponds in winter. Mallards, cinnamon teals, gadwalls, and common goldeneyes use the ponds for foraging and resting. Other water-dependent animals

forage or breed at stock ponds in the project area, including great blue herons, snowy egrets, American coots, greater yellowlegs, belted kingfishers, bullfrogs, and Pacific treefrogs.

Irrigated Pasture. Four irrigated pastures on the site are large parcels that are currently or were historically irrigated during the dry season, grazed by livestock, and dominated by non-native grass and forbs species. One pasture has been abandoned and is no longer irrigated; this pasture is dominated by Mediterranean barley. The other three irrigated pastures have a prevalence of hydrophytic vegetation, including sedge, bird's-foot trefoil, Burmuda grass, rabbit's-foot grass, and annual bluegrass.

Although cattle grazing keeps the irrigated pasture vegetation too low and sparse for good nesting habitat, it does provide some foraging habitat for raptors, songbirds, rodents, and snakes. Raptor species that may forage in the irrigated pasture include red-tailed hawks, northern harriers, American kestrels, great horned owls, and barn owls. Wildlife species observed in the irrigated pastures include black-tailed hares, killdeer, savannah sparrows, Brewer's blackbirds, brown headed cowbirds, tricolored blackbirds, black-shouldered kites, and western meadowlarks.

Ornamental. Ornamental vegetation was planted or "volunteered" and results from landscaping of the park and rural residential areas within the project area. The ornamental habitat is dominated by cultivated plant species, including weeping willow, fruitless mulberry, elm, juniper, oleander, magnolia, redwood, and blue gum.

Ornamental trees growing near houses and in the park are used for perching by raptors, such as red-tailed hawks and American kestrels. Ornamental vegetation provides nesting and foraging habitat and cover for common bird species that use non-native plant species, including American robins, American crows, northern mockingbirds, white-crowned sparrows, Anna's hummingbirds, and house finches. Mammals such as Virginia opossums and brush rabbits were also observed visiting this habitat type.

Wetland Delineation. Wetlands were delineated using the 1987 Corps Wetland Delineation Manual (Environmental Laboratory 1987). A total of 199.48 acres of waters of the United States (41.08 acres of wetlands and 158.40 acres of other waters of the United States) and 89.89 acres of nonjurisdictional wetlands (i.e., irrigated pasture) were delineated at the 1,600-acre site. A summary of the jurisdiction status and acreage habitat is provided in Table 7.

Special-Status Plant and Wildlife Species Surveys. Field surveys were conducted at the site throughout winter, spring, and summer 1993, to identify special-status plant and wildlife species and suitable habitat for wildlife species. A total of 13 special-status plant species and 21 wildlife species were determined to have potential to occur at the project site. Of these species, three special-status plant species were located at the site: Boggs Lake hedge-hyssop, Greene's legenere, and viscid orcutt grass.

Table 7. Summary of Jurisdiction Status and Acreage Habitat

Habitat Types	Jurisdictional Acres		Upland/Non-Jurisdictional Acres	Total Acres
	Other Waters of the U.S.	Wetlands		
Annual grassland/developed areas*	--	--	1,310.63	
Vernal pool	--	20.25	--	
Vernal swale	--	3.37	--	
Emergent marsh	--	1.92	--	
Open water	154.59	--	--	
Willow riparian woodland	--	13.75	--	
Irrigated pasture	--	--	89.89	
Juncus meadow	--	1.15	--	
Seep	--	0.53	--	
Ephemeral drainage	3.81	--	--	
Seasonal wetland	--	0.11	--	
Subtotal	158.40	41.08	1,400.52	
Total				1,600.00

* Acres reported for annual grassland/developed areas include roads, buildings, and existing landscaped park facilities.

Source: Jones & Stokes Associates 1993a.

Three special-status fairy shrimp species were also located: vernal pool fairy shrimp, California linderiella, and vernal pool tadpole shrimp. These species were found in vernal pools throughout the site where maximum ponding was 4 inches or greater.

Black-shouldered kites and northern harriers were observed foraging at the project site. No other special-status wildlife species were located at the site during intensive field surveys, although suitable habitat was located for California tiger salamanders, western spadefoot toads, western pond turtles, Swainson's hawks, burrowing owls, Cooper's hawks, ferruginous hawks, golden eagles, sharp-shinned hawks, merlins, prairie falcons, short-eared owls, yellow warblers, tricolored blackbirds, and American badgers.

Explanation of Checklist

The development of the golf course and related park uses will alter the number, type, and diversity of species on the site. The existing annual grassland will be replaced with turf grasses; ornamental landscaping; and a variety of native and non-native plants, shrubs, and trees.

It is possible that golf course development may reduce the numbers of unique, rare, or endangered plants; this issue will be addressed in the EIR. The golf course will also introduce new species of plants into the area. Development of the park master plan may result in the reduction of irrigated pasture and cattle grazing.

Based on the information provided, it is hereby determined through this initial study that the issue of "Biological Resources" will require further analysis in the program-level EIR. The EIR will discuss wetland and nonwetland communities, including vegetation and habitat types. Special emphasis will be placed on the description of wetlands and vernal pools. The EIR will include a wetland mitigation plan.

Mitigation Measures

The following mitigation measures will be considered in the EIR analysis:

1. A Section 404 permit, including an agency-approved wetland mitigation plan, will be obtained from the Corps before issuance of a grading permit.

2. A Section 1601 streambed alteration agreement from DFG will be obtained before issuance of a grading permit.

3. An erosion and sediment control plan will be submitted to Sacramento County for review and approval before issuance of a grading permit.

	Yes	Maybe	No
5. **Noise.** Will the proposal result in:			
a. Increases in existing noise audible levels?	X	___	___
b. Exposure of people to severe noise levels?	___	___	X
c. Increase in radio or television noise interference?	___	___	X

Environmental Setting

The Rancho Seco Park site is relatively remote from population centers. Noise levels are relatively low and related primarily to ongoing recreational activities at the park.

Explanation of Checklist

Construction of the golf course and related park uses will increase the noise levels onsite; however, people will not be exposed to severe noise levels and no interference in radio or television noise is anticipated. The only noise concern is construction-related noise impacts on residences scattered near the site.

Mitigation Measures

SMUD will comply with the following mitigation measures; no further analysis in the program-level EIR is proposed.

1. Hours of construction activity throughout the duration of project construction will be limited to 6:00 a.m. to 7:00 p.m. Monday through Saturday (non-holidays). A telephone number will be made available for noise complaints.

2. All construction equipment powered by internal combustion engines will be properly muffled and maintained to minimize noise. Equipment will be turned off when not in use.

	Yes	Maybe	No
6. **Light and Glare.** Will the proposal produce:			
a. New light or glare?	X	___	___

Environmental Setting

The Rancho Seco site is relatively remote from population centers and existing lighting levels in the area are low.

Explanation of Checklist

Construction of the golf course and related park uses will increase the amount of lighting in the area. Although plans have not been finalized, it is likely that street lighting will be provided at the site. The clubhouse facility will also probably have security lighting in the parking lot and other clubhouse facilities. Lighting will probably be provided at the restrooms and the golf course maintenance facility. The driving range will also be lighted.

These new sources of light should not be of significant concern because of the limited amount of development in the area.

Mitigation Measures

SMUD will comply with the following mitigation measure; no further analysis in the program-level EIR is proposed.

1. All outdoor lighting will be directed downward and shielded such that no lighting is directed upward or toward wetland preserve areas.

	Yes	Maybe	No
7. **Land Use**. Will the proposal result in:			
a. A substantial alteration of the present or planned land use of an area?	___	___	X

Environmental Setting

The Rancho Seco site is designated for public and quasi-public use by the 1973 Sacramento County general plan (Morse pers. comm.). The site is zoned AG-20 (permanent agriculture - 20-acre minimum parcel size) (Dakins pers. comm.). Lands surrounding the Rancho Seco site are also designated and zoned for agricultural use with lands to the north, south, and east zoned for 80-acre minimum parcel sizes and lands to the southwest zoned for agricultural-residential use (5-acre minimum parcel sizes). County staff do not envision any changes to the agricultural land use designations in this area for the next 20 years (Morse pers. comm.). Urban services are generally not provided in this area.

Sacramento County is in the process of updating the general plan. The revised draft (December 9, 1992) land use element also designates the site as public and quasi-public use.

Sacramento County has prepared a residential-open space land use table to designate the uses permitted within each of the zoning classifications. Based on this table, public parks and ancillary uses are considered a permitted use within the agricultural zones. Other permitted uses within the agricultural zone include commercial riding stables and boarding stables and wildlife preserves. SMUD staff considers expansion of the public park at the site to be consistent with the general plan land use designation and zoning classification.

Sacramento County staff have stated that there are no other projects in the vicinity of the Rancho Seco site that would contribute to cumulative land use impacts (Dakins pers. comm.).

Explanation of Checklist

The Rancho Seco site is presently used as a public park. The land use would remain of an open space character; no substantial alteration of the land use is proposed.

The program-level EIR will discuss the following land use issues:

- consistency with the goals and policies of the Sacramento County general plan, particularly relating to provision of recreational services;
- conversion of vacant land to developed land uses; and
- growth-inducing aspects of the project.

	Yes	Maybe	No
8. **Natural Resources.** Will the proposal result in:			
a. Increase in the rate of use of any natural resource?	X	___	___
b. Substantial depletion of any nonrenewable natural resource?	___	___	X

Explanation of Checklist

Development of the golf course and related park uses will increase the demand for water for irrigation and domestic purposes. This issue will be addressed in the EIR under the topic "Water Resources".

	Yes	Maybe	No
9. **Risk of Upset.** Does the proposal involve:			
a. A risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals, or radiation) in the event of an accident or upset conditions?	X	___	___

Explanation of Checklist

Development of a golf course and related park uses will result in the use and storage of hazardous materials such as petroleum products, pesticides (including herbicides and fungicides), and fertilizers. The golf course maintenance facility will include a chemicals room and a fertilizer room. Aboveground fuel tanks are proposed for gas and diesel, in addition to a lift and grease pit mechanics area. The project is also proposing expanding and revising the wastewater treatment facility to meet State of California Title 22 wastewater reclamation requirements to allow reclaimed wastewater to be used as golf course irrigation water.

Mitigation Measures

SMUD will comply with the following mitigation measures; no further analysis in the program-level EIR is proposed.

1. Fertilizer and pesticide storage will be limited to available covered space only. Outdoor storage of excess quantities will not be allowed.

2. Only chemicals approved for use on the golf course will be stored in the maintenance facility at any time. Leftover chemicals from any one-time application will not be stored but will be properly disposed of.

3. Maintenance vehicles will transport only sufficient quantities of fertilizers and/or pesticides to complete the current day's work. All leftover chemicals and application equipment will be returned to the maintenance facility when not in use and at the end of every workday.

4. Records will be kept of all chemical applications, in accordance with California Department of Agriculture requirements.

5. No applicator rinse waters or any other waters known to contain fertilizer or pesticides will be allowed to enter surface waters, including any storm drains or other conveyances that drain to surface waters, at any time. Disposal of such waters will be directed to the wastewater system.

6. The golf course superintendent will develop and implement a chemical spill response plan. The plan will include at a minimum:

   a. Posting of a requirement for immediate notification of the Sacramento County Department of Environmental Health in the event of a spill.

   b. Specifications for spill cleanup equipment that is adequate to contain and clean up any solid or liquid spill and that will be stored at the maintenance facility.

   c. Description of procedures to be followed in the event of a solid or liquid spill, including procedures to prevent spilled material from entering a storm drain, wetland, or waterway.

7. The design of the golf course maintenance facility will be submitted to the Herald Fire District and Sacramento County Health Department for review and approval.

8. Any storage tanks (gasoline, diesel, or other hazardous materials) will be designed to the satisfaction of the Sacramento County Department of Environmental Health. Any storage of gasoline in aboveground or underground tanks is required to have Phase I and Phase II vapor recovery equipment.

9. If required by state law because of the amount of hazardous materials to be stored onsite, SMUD will submit a business plan to the Sacramento County Health Department.

	Yes	Maybe	No
10. **Population**. Will the proposal:			
a. Alter the location, distribution, density, or growth rate of the human population of an area?	___	___	X

Explanation of Checklist

The park site is relatively remote from population centers. Development in the vicinity of the site has been limited and generally consists of low-density ranchettes. As of 1989, the permanent population within a 2-mile and 5-mile radius of the site was estimated at 80 and 880, respectively. (SMUD 1991.)

Development of the golf course and related park uses is intended to serve existing population and land uses within the 30-mile trade area of the golf course. No extension of utilities offsite is proposed. No further analysis in the program-level EIR is proposed.

	Yes	Maybe	No
11. **Housing**. Will the proposal:			
a. Affect existing housing or create a demand for additional housing?	___	___	X

Explanation of Checklist

As stated earlier, the Rancho Seco Park is relatively remote from population centers and development in the area generally consists of low-density ranchettes. Development of the golf course and related park uses is intended to serve existing population and land uses within the 30-mile trade area of the golf course. No extension of utilities offsite is proposed. No housing will be affected by the project and the project does not create a demand for additional housing. No further analysis in the program-level EIR is proposed.

	Yes	Maybe	No
12. **Transportation/Circulation**. Will the proposal result in:			
a. Generation of substantial additional vehicular movement?	X	___	___
b. Effects on existing parking facilities or demand for new parking?	X	___	___
c. Substantial impact upon existing transportation systems?	___	___	X
d. Alterations to present patterns of circulation or movement of people and/or goods?	___	___	X
e. Alterations to waterborne, rail, or air traffic?	___	___	X
f. Increase in traffic hazards to motor vehicles, bicyclists, or pedestrians?	___	___	X

Environmental Setting

The existing access point for the park is Twin Cities Road (State Highway 104), a two-lane roadway governed by Caltrans. Twin Cities Road connects the project site to State Route 99 and Interstate 5 to the west and State Routes 124 and 88 to the east. This access point was designed to accommodate the employees associated with operation of the nuclear power plant. No modifications to the access point are proposed.

Year 1991 traffic counts (Caltrans 1991a) indicate that the annual average daily traffic on Twin Cities Road is 1,200 vehicles east of the project site and 1,350 vehicles west of the site. The road carries 160 vehicles in the project vicinity during its peak hour.

In the project vicinity, the average accident rate on Twin Cities Road from 1988 through 1990 was 1.09 accidents per million vehicle-miles traveled (Caltrans 1991a). The statewide average accident rate for the same type facility is 2.03 accidents per million vehicle-miles traveled.

The City of Galt is in the process of widening Twin Cities Road from its interchange with State Route 99 to about 1.7 miles east (Forga pers. comm.). This segment will be widened to accommodate a two-way center left-turn lane. Caltrans is also realigning about 0.5 mile of Twin Cities Road near Rancho Seco Park to remove some sharp curves (Forga pers. comm.). No other improvements are currently planned for Twin Cities Road in the project vicinity.

Average daily traffic conditions were analyzed on Twin Cities Road for existing and existing-plus-project conditions. The quality of traffic service provided by a roadway is measured by its level of service (LOS). This method uses a letter rating to describe the driving conditions for a particular roadway. The letters A through F represent the best to worst driving conditions, respectively.

Because Twin Cities Road is a two-lane highway, it was analyzed using standard analysis methods for two-lane rural highways as described in the 1985 Highway Capacity Manual (Transportation Research Board 1985). For a rural highway, LOS A indicates the highest quality of traffic service where motorists can travel at their desired speed with almost no platoons of three or more vehicles. LOS F represents heavily congested flow, with demand exceeding capacity and speeds below capacity speed. The characteristics of traffic flow associated with each level of service for two-lane rural highways are described in Table 8.

Twin Cities Road was evaluated assuming its general conditions to be a level terrain, 65/35 peak-hour directional split, 50% no passing zones, 10-foot travel lanes, no shoulders, 10% trucks, and 60 mph design speeds.

Existing Conditions. Caltrans defines the acceptable level of service for Twin Cities Road to be LOS C or better. The analysis of existing conditions on Twin Cities Road indicates that this roadway is currently operating at LOS B.

The 1991 Route Segment Report (Caltrans 1991b) indicates that Twin Cities Road, between the project access and the Sacramento County line, can carry about four and a half times the traffic it is currently carrying, before its service drops below desirable levels. The segment of this road around Angle Road in the community of Clay can carry about one and a half times the traffic it is currently carrying, before its service drops below desirable levels.

Table 8. Level of Service Definitions
for Two-Lane Rural Highways

Level of Service	Description
A	Represents free-flow conditions. Passing demand is well below passing capacity, and almost no platoons of three or more vehicles are observed. Drivers are delayed no more than 30% of the time by slow-moving vehicles.
B	Flow is stable. Passing demand equals the passing capacity, and the number of platoons forming in the traffic stream begins to increase. Drivers are delayed up to 45% of the time on the average.
C	Flow is stable, but it is susceptible to congestion due to turning traffic and slow-moving vehicles. Chaining of platoons and significant reductions in passing capacity begins to occur. Drivers are delayed up to 60% of the time.
D	Traffic flow approaches unstable conditions. Passing demand is very high, while passing capacity approaches zero. Passing becomes extremely difficult, and platoon sizes of 5-10 vehicles become common. Drivers are delayed up to 75% of the time.
E	Operating conditions at capacity are unstable and difficult to predict. Passing is virtually impossible, and platooning becomes intense when slower vehicles or other interruptions are encountered. Drivers are delayed more than 75% of the time.
F	Represents heavily congested flow. Traffic demand exceeds capacity, and speeds are below capacity speed.

Source: Transportation Research Board 1985.

The existing conditions on Twin Cities Road was also analyzed using the Highway Capacity Manual method of analysis described above. This analysis indicates that this roadway is currently operating at LOS B.

The following criteria were used to determine the level of significance of a traffic and circulation impact. An impact was considered to be significant if it would:

- cause a roadway operating at an acceptable LOS (A, B, or C) to deteriorate to an unacceptable LOS (D, E, or F);
- cause an increase in the traffic volume at a roadway that is already operating at an unacceptable LOS;
- substantially alter present patterns of vehicle circulation or movement; or
- increase traffic hazards to motor vehicles, bicyclists, or pedestrians.

Existing-Plus-Project Conditions. The trip generation rates used for the proposed golf course were obtained from Trip Generation (Institute of Transportation Engineers 1991). The number of trips generated by the golf course was increased by 10% to estimate the trips generated by expanding the existing recreational facilities. The trip generation analysis was conducted for a Saturday, assuming the proposed recreational facilities would generate the highest number of trips on this day. Results of the trip generation analysis indicate that the proposed project would generate 840 trip ends on a Saturday, with 91 trips during its peak traffic-generating hour on that day.

A trip distribution pattern was developed for the proposed project based on the location of developments surrounding the project site. This pattern estimates that 70% of the people visiting the site would use Twin Cities Road west of the site, while the remaining 30% would use Twin Cities Road east of the site.

To analyze the worst-case traffic conditions, the number of trips generated by the project during its peak hour on a Saturday was added to the existing peak-hour volumes on Twin Cities Road. Results indicate that Twin Cities Road east and west of the project site would continue to operate at LOS B with the addition of the project traffic.

The intersection of Twin Cities Road and the project access is controlled by stop signs at the project access. Preliminary analyses indicate that this intersection would operate at an acceptable level under existing-plus-project conditions, and no improvements are required.

Explanation of Checklist

Development of the golf course and park master plan would generate substantial traffic; however, the traffic analysis indicates that no significant adverse impacts on the level

of service or roadway capacity would result from implementing the project. Parking will be provided to accommodate increased use at the facility. No mitigation is required; no further analysis in the program-level EIR is proposed.

	Yes	Maybe	No
13. **Public Services.** Will the proposal have a significant effect upon or result in a need for new or altered governmental services in any of the following areas:			
a. Fire protection?	___	X	___
b. Police protection?	___	X	___
c. Schools?	___	___	X
d. Parks or other recreational facilities?	___	___	X
e. Maintenance of public facilities (other than SMUD's) including roads?	___	___	X
f. Other governmental services?	___	___	X

Environmental Setting

Fire Protection. The Herald Fire District is responsible for providing emergency services and structural fire protection; the California Department of Forestry and Fire Protection (CDF) is responsible for providing wildland fire protection. According to staff at the Herald Fire District, the number of calls has been low since SMUD assumed responsibility for maintenance at the park (Hendrickson pers. comm.). Increase in use would probably increase the demand for emergency and fire protection services.

Law Enforcement. SMUD assumed responsibilities for operation of the Rancho Seco Park on September 8, 1992. SMUD maintains a security force whose primary responsibility is the protection of Rancho Seco nuclear power plant against sabotage and the health and safety of the employees and the general public. The security force patrols the park at least once every hour from 10:00 a.m. to dark. The security force is comprised of security officers, not peace officers, who have the same powers of arrest as a citizen. The Sacramento County Sheriff's Department is contacted immediately for any incidents or altercations. SMUD maintenance people also monitor park users.

The Sacramento County Sheriff's Department was contacted to determine existing demand and possible future demand from development of the golf course and related park uses. According to Sheriff's Department staff, the existing park requires minimal law enforcement services (Manzari pers. comm.). A golf course typically does not demand a lot of service either; however, it is possible that the trails, comfort stations, and other uses could result in increased demand for law enforcement services.

Parks. Rancho Seco Park is a public park that is operated and maintained by SMUD. For additional information the reader is referred to the "Project Description".

Public Facilities. No other public facilities that would be affected by the project have been identified.

Explanation of Checklist

Development of the golf course and other park uses would probably increase the demand for emergency services, fire protection, and law enforcement, depending on the characteristics of the users and the design of the park.

Development of the golf course and park will not have a significant effect on schools, parks, or other recreational facilities; maintenance of public facilities; or other governmental services. No housing is being provided; therefore, no increase in demand for schools is anticipated. Since SMUD is maintaining the park, no increase in maintenance of parks or other recreational facilities provided by the county is anticipated.

Mitigation Measures

SMUD will comply with the following mitigation measures to reduce fire protection and law enforcement demand; no further analysis in the program-level EIR is proposed.

1. SMUD will submit a site plan to the Herald Fire District and CDF for review. the Herald Fire District will review the site plan to determine the need for emergency circulation and possibly an emergency exit.

2. SMUD will submit a site plan to the Sacramento County Sheriff's Department for review. The site plan design will include landscaping plans and locations of comfort stations and trails. The Sheriff's Department will be asked to comment and make suggestions to reduce demands for law enforcement services.

	Yes	Maybe	No
14. **Energy**. Will the proposal result in:			
a. Use of substantial amounts of fuel or energy?	___	___	X
b. Substantial increase in demand upon existing sources of energy or require the development of new sources of energy?	___	___	X

Explanation of Checklist

Energy used for construction and operation of the golf course and related park uses is not significant on a local, regional, or national level.

Mitigation Measures

SMUD will comply with the following mitigation measure; no further analysis in the program-level EIR is proposed.

1. Design of the clubhouse, comfort stations, and maintenance buildings will incorporate energy-efficient designs, such as passive and active solar designs for heating, cooling, and lighting of building facilities.

	Yes	Maybe	No
15. **Utilities.** Will the proposal result in a need for new systems or substantial alterations to the following utilities:			
a. Power or natural gas (other than SMUD's)?	___	___	X
b. Communications systems?	___	___	X
c. Water?	X	___	___
d. Sewer or septic tanks?	X	___	___
e. Stormwater drainage?	X	___	___
f. Solid waste and disposal?	X	___	___

Environmental Setting

Power or Natural Gas. SMUD has a 12-kilovolt (kV) electric system located in or adjacent to the existing roadway on the project site that services the existing uses. The system is fed from the north and south sides of the site and is connected as a back-up to one another. The system enters the site from the north overhead, spans to the southeast where it dips underground and continues to the south property line, where it makes a circuit tie. From this circuit tie, it rises overhead and spans to the southwest property lines where it exits and continues west.

The system is adequate to service the future needs of the project; however, utility locations may conflict with the future site grading and improvement plans, thus requiring their relocation. Additionally, conversion of the overhead poleline to an underground line may be desired to avoid conflict with future site improvements or for aesthetics purposes.

The closest gas source from Pacific Gas and Electric Company (PG&E) is located near Highway 99, approximately 10 miles away from the site. No extension of gas services to the project site is proposed.

Communications Systems. Pacific Bell operates the underground and overhead systems that service the miscellaneous existing uses at the site. The source for the existing and future telephone systems is located on the project's southerly boundary.

Water. The existing park well will supply domestic water to the proposed golf course. The well will be tested and evaluated before it is used; additional treatment and monitoring facilities will be designed and constructed at the well site. Piping systems must be modified and extended to the proposed facilities. The proposed domestic demand will be below the capacity of the well.

The project is considering four sources of water for irrigation of the golf course: surface drainage, treated wastewater effluent, existing wells, and water from the Folsom South Canal. For additional information the reader is referred to Item 3 of this checklist.

Sewer or Septic Tanks. The project is proposing to collect sewage from the golf course and park facilities and pipe it to the existing sewage treatment system. The existing oxidation/evaporation pond will be expanded and followed by filtration to meet State of California Title 22 wastewater reclamation requirements. The project is also proposing septic systems at the comfort stations. For additional information the reader is referred to Item 3 of this checklist.

Stormwater Drainage. Existing stormwater drainage flows to the Rancho Seco Lake or natural waterways. The infrastructure storm drain system required to serve the golf course will consist of piping used to capture storm runoff from the course and park site. The water will be directed to the wastewater treatment effluent pump station for storage in the golf course lake. In addition, drainage from the course will be directed away from the Rancho Seco Lake, collected on the surface, and piped to the golf course reservoir to be stored for irrigation. For additional information, the reader is referred to Item 3 of this checklist.

Solid Waste and Disposal. Solid waste generated at the park is collected and disposed of at the county landfill.

Explanation of Checklist

Development of the golf course and other park uses will increase the demand for water. The golf course is proposing the use of sewers and septic tanks. Stormwater drainage will be used to irrigate the golf course. These issues are addressed under Item 3 of this checklist.

Development of the project would result in an increase in solid waste both from the park use and golf course maintenance activities.

Mitigation Measures

SMUD will comply with the following mitigation measures; no further analysis in the program-level EIR is proposed.

1. SMUD will provide recycling receptacles throughout the park to encourage recycling and minimize the amount of solid waste.

2. SMUD will implement management practices to minimize the need to dispose of grass clippings, leaves, and other organic materials offsite. Management practices to be considered include recycling grass clippings and composting leaves.

	Yes	Maybe	No
16. **Human Health**. Will the proposal result in:			
a. Creation of any health hazard or potential health hazard (excluding mental health)?	___	___	X
b. Exposure of people to potential health hazards?	___	X	___

Explanation of Checklist

People will be exposed to potential health hazards related to pesticides, chemicals, and fertilizers used on the golf course and at the wastewater treatment facility. The reader is referred to Item 9 of this checklist.

	Yes	Maybe	No
17. **Aesthetics**. Will the proposal result in:			
a. The obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site to public view?	___	___	X

Explanation of Checklist

Rancho Seco Park is a public park. Construction of the golf course and related facilities will be open to public view; however, it will not obstruct any scenic vista or view

or create any aesthetically offensive site to public view. This issue will not be addressed in the program-level EIR.

	Yes	Maybe	No
18. **Recreation**. Will the proposal result in:			
a. An impact upon the quality or quantity of existing recreationa opportunities?	___	___	X

Environmental Setting

In 1970, SMUD constructed and filled a storage reservoir (Rancho Seco Lake) to serve as a backup water source for the nuclear power plant. This 165-acre reservoir was designed to hold a capacity of 2,700 acre-feet. Pumping from the Folsom South Canal, in combination with surface runoff, is designed to maintain a stable volume of water in the lake; however, drawdowns from the lake have occurred occasionally when required by reduced pumping from the Folsom South Canal.

Existing facilities at the park include:

- a 160-acre lake,
- group camping facilities,
- 18 campsites,
- two reservable picnic areas,
- family picnic areas that can accommodate 100 or more persons,
- two boat launches, and
- six fishing piers.

Lake water is maintained at the same level year round; the fish population in the lake is catfish, blue gill, bass, and trout (seasonal).

The park has an established set of fees that includes fees for day use, recreational vehicle campsites, boat launch use, and group camping. SMUD has contracts with two concessionaires to provide food, beverages, and other miscellaneous articles and windsurfing equipment and waterfront activities.

Attendance figures for park use from 1985 to 1993 indicate a peak use of 225,343 people in 1987 to a low of 160,000 people in 1992 (Miller pers. comm.).

Expianation of Checklist

Development of the golf course and related park uses will increase the quality and quantity of recreational opportunities. Additional information about the park master plan will be presented in the EIR; however, no analysis in the program-level EIR is proposed.

	Yes	Maybe	No
19. **Archeological/Historical.** Will the proposal result in:			
a. An alteration of a significant archeological or historical site, structure, object, or building?	___	X	___

Environmental Setting

A cultural resource records review of the 1,600-acre site was prepared in January 1993 (LSA Associates 1993). The study assessed the likelihood of prehistoric or historic sites occurring in the study area.

The archeological records search indicated that several archeological surveys have been conducted immediately adjacent to and within a 0.5-mile radius of the site, but the entire project site has not been surveyed for prehistoric remains. The closest archeological surveys to the site found no evidence of prehistoric use; however, prehistoric sites around vernal pools have been recorded in Placer, Merced, Solano, and Napa Counties.

The closest known archeological site is an historic burial. This site is approximately 3 miles north and west of the project site.

A review was also conducted of the historical sources for the area to determine whether any potential historic sites or structures are located within the project area. This research included the following directories: California Historical Landmarks, California Points of Historic Interest, California Inventory of Historic Resources, Office of Historic Properties Directory, and the National Register of Historic Places. No national register or California landmarks are listed for the project area.

Explanation of Checklist

Based on the limited surveys in the area, the known site distribution of vernal pools, the undeveloped condition of the project, and the few prehistoric sites in the immediate 2-mile area, the project site has a moderate potential for finding prehistoric resources.

No potentially historic structures or landmarks have been identified in the project area. Based on the regional history, the potential for finding significant historical resources (resources 50 years or older) is negligible.

Based on the information provided, it is hereby determined through this initial study that the issue of "Cultural Resources" will require further analysis in the program-level EIR. The EIR will include the results of a cultural resources survey of the project site. In compliance with the National Historic Preservation Act, the following tasks will be completed:

- background historical research,
- intensive pedestrian surveys,
- recordation of all identified sites, and
- preparation of a report recording initial significance assessments.

	Yes	Maybe	No
20. **Mandatory Findings of Significance**			
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	X	___	___
b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	___	___	X
c. Does the project have impacts which are individually limited but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.)	X	___	___
d. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	___	___	X

Explanation of Checklist

The project has the potential to degrade the quality of the biological environment; this issue will be addressed in the EIR.

No short-term environmental goals have been identified that would be eliminated with the project; this issue will not be discussed in the EIR.

Sacramento County staff have stated that no other projects in the project area would contribute to cumulative impacts on other resource areas (Dakins pers. comm.). The cumulative issues of concern are biological resources and water resources. These issues will be discussed in the EIR.

DETERMINATION

On the basis of the initial study prepared by SMUD in compliance with CEQA for the Rancho Seco Park Master Plan, I find:

___ that the proposed project **could not** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.

_X_ that the proposed project **may** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.

Kim C. Smith

Kim C. Smith, Project Manager
Jones & Stokes Associates

Concurred by:

Pat Frost
Supervisor, Environmental Services
Sacramento Municipal Utility District

Date: September 9, 1993

CITATIONS

Printed References

California Air Quality Data. 1993. Volume XX-1988 to Volume XXIV-1992 - annual summaries.

California Air Resources Board. 1982. California ambient air quality standards for carbon monoxide (sea level). Sacramento, CA.

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LSA Associates, Inc. 1993. Cultural resources archival review Rancho Seco muni golf course, Sacramento County, January 11, 1993. Prepared by Beth Padon. (LSA Project #CMG201.) Irvine, CA.

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U.S. Environmental Protection Agency. 1979. Air quality criterion for carbon monoxide. (EPA-600/8-79-022.) Washington, DC.

_____. 1985. Compilation of air pollutant emission factors: Volume II mobile sources. Fourth edition. (AP-42.) Ann Arbor, MI.

Personal Communications

Dakins, Don. Planning aide. Sacramento County Department of Planning and Community Development, Sacramento, CA. August 25, 1993 - meeting with Kim Smith.

Forga, Mike. Chief, special-funded studies, Caltrans, District 3, Marysville, CA. August 31 and September 8, 1993 - telephone conversations with Angie Raygani and Kim Smith, respectively.

Hendrickson, Skip. Fire chief. Herald Fire District, Herald, CA. September 3, 1993 - telephone conversation with Kim Smith.

Manzari, Tom. Crime prevention specialist. Sacramento County Sheriff's Department, Sacramento, CA. September 2, 1993 - telephone conversation with Kim Smith.

Miller, Ken. Senior project manager. Sacramento Municipal Utility District, Herald, CA. August 30, 1991 - telephone conversation with Kim Smith.

Morse, Peter. Associate planner. Sacramento County Department of Planning and Community Development. August 26, 1993 - telephone conversation with Kim Smith.

Appendix B. Comments Received on the Rancho Seco Park Master Plan Notice of Preparation

Comments Received on the Rancho Seco Park Master Plan
Notice of Preparation

Date	Agency/Person	Page
October 30, 1993	County of Sacramento, Department of Public Works, Water Resources Division Donna M. Dean	B-55
October 19, 1993	California Department of Transportation Jeffrey Pulverman	B-56
November 4, 1993	County of Sacramento, Planning and Community Development Department Tricia Stevens	B-57

COUNTY OF SACRAMENTO

ENVIRONMENTAL MANAGEMENT DEPARTMENT

NORMAN D. COVELL, DIRECTOR

September 24, 1993

Kenneth Miller
Sacramento Municipal Utility District
Rancho Seco Park
14440 Twin Cities Road
Herald, CA 95638-9799

Subject: **RANCHO SECO PARK MASTER PLAN NOP (930269)**

Dear Mr. Miller:

Thank you for the opportunity to review the above-captioned document. The Air Quality Management Division of the Environmental Management Department has reviewed the Rancho Seco Park Master Plan NOP and offers the following comments.

AIR QUALITY MANAGEMENT

The notice of preparation indicates that the draft EIR will not contain any further air quality analysis than presented in the NOP. Public Resources Code section 21100 requires that the EIR contain a detailed statement of the significant effects of the proposed project and allows only effects found not to be significant to not be discussed in detail. While the District concurs with the air quality analysis presented in the NOP, the analysis of construction activities indicates that PM_{10} emissions will remain significant after proposed mitigation is applied (184 pounds per day which includes a 50 percent reduction for effectiveness of proposed dust control measures; pages 21 and 22). We recommend transferring the NOP air quality discussion to the text of the EIR. Relegating the detailed discussion of significant effects, unavoidable impacts and proposed mitigation to an appendix of the EIR containing the initial study should be reserved only for effect found less than significant. Section 15128 of the state CEQA Guidelines appears to support our recommendation, inferring that only effects found not significant be included in an attached initial study.

The draft EIR should include a discussion of the growth-inducing impacts of the proposed project as they relate to possible impacts on air quality.

8475 Jackson Road, Suite 215 • Sacramento, CA 95826 • (916) 386-6182

Mitigation measure 1(h) (page 24) states that grassing will occur as soon after grading as possible. The project description (page 8) indicates that grassing will not begin until approximately eight months after grading begins (August 1994–spring 1995), leaving disturbed earth exposed for a long period of time. PM_{10} emissions may be further mitigated by combining grading, shaping, drainage and irrigation, feature construction, finish grading and grassing within distinct units throughout the course and phasing unit construction to minimize the length of time disturbed earth is exposed.

If you have any questions regarding the above comments, or if you require further assistance with Air Quality issues please contact Greg Tholen at (916) 386-7025.

Sincerely,

Nancy Ormandy

NANCY ORMANDY
Senior Air Quality Planner

cc: Les Ornelas, SMAQMD
Greg Tholen, SMAQMD
PR930149

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Windcraft
SAILBOARD CENTER

17124 East Sherman Island Levy Road • P.O. Box 877 • Rio Vista, CA 94571

September 27, 1993

Mr. Kenneth Miller
Sacramento Municipal Utility District
14440 Twin Cities Road
Herald, CA 95638

Dear Mr. Miller

Re: Rancho Seco Park Master Plan

Windcraft is writing to indicate its support of the Rancho Seco Park Master Plan proposed by the Sacramento Municipal Utility District. We believe that the plan will increase the value of the park to Sacramento and other nearby communities.

Windcraft is concerned, however, that the initial study overlooked the current extensive use of Rancho Seco Lake by the windsurfing community. Windcraft provided windsurfing lessons and equipment rentals through a concession contract with SMUD in both 1992 and 1993. We operate this concession from May to October, corresponding to the "windsurfing season." In 1993 Windcraft initiated its first comprehensive marketing effort to attract people to learn windsurfing. We also expanded our services to include paddleboat rentals. As a result of marketing efforts this year, Windcraft provided instruction to nearly 200 beginning windsurfers, hosted a number of events, provided complimentary barbecues and marketed (within our means) the benefits of visiting Rancho Seco Park[1] -- quadrupling the number of lessons we provided in 1993 over 1992. Use of Rancho Seco Park by windsurfers was probably its highest ever this season.

We are particularly proud of this accomplishment in light of the publicity in 1992 that the County had closed the park, the dismal condition of our local economy and the distance people have to travel to the park. Windcraft provided summer employment (20 to 40 hours weekly) to six college students. Each of these employees learned valuable skills in teaching, working with the public and operating a small business. We hope to continue our relationship with SMUD in 1994, exceeding the 200 number in 1994 and expanding the level of services we currently provide at the lake.

[1] See attached list of windsurfing events held at Rancho Seco Park in 1993

Windsurfing is a sport that, once initiated, the windsurfer will spend considerable time at their favorite sailing location in order to enjoy the sport. Hundreds of windsurfers faithfully pay the gate fee at Rancho Seco Lake each weekend and on weekdays when the potential for wind draws them away from their work. With the number of windsurfers increasing annually through the instruction program we offer, the revenues collected at SMUD's entry gate will continue to grow.

We hope that SMUD will recognize the significant aesthetic value that windsurfing is providing at Rancho Seco Lake. Windsurfing is an activity that people enjoy seeing. The type of people who windsurf are usually pleasant, social people who are fun and safe to be around. The character of a park can be destroyed by its reputation -- and windsurfing is a sport that provides good, clean fun and a pleasant and attractive character.

Windcraft believes that the Ranch Seco Park Master Plan, modified to include the windsurfing activities,[2] will benefit the local communities and the local economy. Combined with the open space and nature preserves, this plan will also have benefits to the animal and plant species that thrive in this area.

We look forward to SMUD's development of Rancho Seco Park into a premier attraction in the Sacramento area.

Sincerely,

Glenn Giovannoni and Vic Swanson
Owners

Attachment

[2] Figure 3 should indicate the windsurfing building, pages 4, 6, 7 and 26 should include references to windsurfing uses. The list of existing park facilities should indicate that existing facilities also include a pay phone, 3 restrooms (2 with solar-heated showers) and two concession buildings.

Attachment A

WINDCRAFT EVENTS AT RANCHO SECO LAKE
(excerpts from Windcraft's 1993 Event Calendar)

April 17	**Concession grand opening**
May 8	**Spring up on a plane party**. Balloon Races and raffle
July 5	**Demonstration Day** - windsurfing equipment. Barbecue and raffle
August 7	**Midsummer madness party**. Balloon races, barbecue and raffle
September 11	**First windsurfing swap meet at the lake**
September 18	**Alumni Day**. Student Reunion, barbecue, balloon race, raffle, open-class speed race

Susan de Witt
21 Amador Circle
Rio Vista, CA 94571
(916) 654-4173 (days)

September 27, 1993

Mr. Kenneth Miller
Sacramento Municipal Utility District
14440 Twin Cities Road
Herald, CA 95638

Dear Mr. Miller

Unfortunately I will not be able to participate at the scoping meeting on September 28, 1993 to discuss SMUD's Rancho Seco Master Plan. For this reason, I am filing the following written comments.

1. I support the Rancho Seco Master Plan proposed by the Sacramento Municipal Utility District.

   While I personally do not golf and haven't been on a horse in a long time, I know that these activities are favored in this community and that demand exceeds available resources. The golf course and equestrian center proposed in the plan will blend well with the existing uses at the park, thereby allowing increased use without diminishing existing services.

2. The initial study overlooked the windsurfing activities at the lake.

   The only mention of windsurfing I found in the initial study was on page 50. It seems that the windsurfing concession should have been indicated in Figure 3, and that windsurfing equipment can be rented, as well as paddleboats, as indicated on page 26.

   In 1993 I became a certified windsurfing instructor and provided instruction (without compensation) throughout the summer. I taught over 40 people the basics of windsurfing and met hundreds of dedicated Rancho Seco windsurfers.

   I am a correspondent to Windsurfing California, a west-coast magazine, and windsurfing articles I have authored have been published in numerous Northern California magazines. I know a lot about windsurfing and one thing I know is that windsurfing at Rancho Seco is exceptional. The warm water and steady breezes make it comfortable for learning and for recreational windsurfing.

While I cannot estimate the number of windsurfers who used Rancho Seco this summer, I can tell you that windsurfing attracted more visitors than fishing and paddleboats. The parking lot was filled with vehicle racks and cars with windsurfing stickers throughout the summer -- a sure indication of the level of enthusiasm windsurfers have for Rancho Seco Park.

I suggest that SMUD also consider upgrades it could provide to the side of the lake that is currently developed. For example, I understand that SMUD may issue an RFP to develop a second food concession on the south side of the lake. It seems appropriate that, while you are doing the master plan, to consider both sides of the lake at once - rather than to piecemeal development on the south side which doing a full plan on the north. I think there are opportunities to expand and improve services at the lake without eliminating or adversely impacting the services that are already enjoyed by many lake visitors.

3. Why windsurfers are important to Rancho Seco Park

Windsurfers are loyal users of their "favorite" launch site. The windsurfers look out for each other and provide a safety net for all who use the lake and park. They provide significant aesthetic and amusement value. The sails are pretty on the lake and the people who are out on the lake learning new tricks and playing games provide entertainment for people on the shore.

Windsurfers are generally friendly and do not typically create public disturbances. They attract the type of visitor that adds value to a park. You may not recall the time when Rancho Seco was run by the County and had terrible gang problems at the park. Gang members were threatening park visitors with guns and scaring people away. This was the season that I first visited Rancho Seco. The gang problems are a thing of the past, I believe because the place has been taken over by a different kind of visitor -- windsurfers.

Windsurfers support their launch sites. Windsurfers contribute significant revenues to the District in payment of entry fees and purchases made at the concessions. They bring their friends, who also pay fees and make purchases at the lake. Windsurfers contribute significantly to the revenue base that supports the park.

4. Conclusion

I suggest that the consulting firm be asked to include reference to the significant windsurfing activities at the park and include windsurfing in its future work on this plan. I am available to assist in providing further information as needed.

Again, I support the Rancho Seco Park Master Plan proposed by SMUD and hope that future documents will include the importance of maintaining and encouraging windsurfing at the park.

I regret that I did not have an opportunity to contact the "Seco regulars" to tell them about participating. We know each other pretty much on a first name basis only and see each other only when its windy. The season is over now and it is unlikely I'll see many of these people during the EIR phase of this project. I am sure they would also join me in supporting the development and urging you to continue to do things that attract windsurfers to the park. Thank you for your time and consideration.

Sincerely,

Susan de Witt

California Native Plant Society

6006 Keats Circle
Orangevale, CA 95662
29 September 1993

Mr. Kenneth Miller, Senior Project Manager
Sacramento Municipal Utility District
Rancho Seco Park
14440 Twin Cities Road
Herald, CA 95638-9799

Dear Mr. Miller:

The Sacramento Valley Chapter of the California Native Plant Society (CNPS) is pleased to provide the following comments with respect to the Notice of Preparation (NOP) of a draft Environmental Impact Report (EIR) for the Rancho Seco Park Master Plan.

It is of great concern to CNPS that recreational facilities of the proposed Rancho Seco Park expansion could be sited in the vicinity of vernal pools. The vernal pool plant *Orcuttia viscida*, found in at least one pool on the proposed project site, is a state listed endangered plant which is presently under consideration for federal listing as endangered as well. These listings are due to the plant being endemic to Sacramento County, and to its occurrence in only a few scattered vernal pools within its narrow range. As pointed out in the accompanying copy of a letter to the U. S. Fish and Wildlife Service, most of the known occurrences of the plant are threatened. No impacts to the existing pool(s) containing this rare species should be allowed, and project designs should allow a large (at least tens of acres) undisturbed uplands and buffer area around this pool(s).

Two other rare plants found in the on-site vernal pools, *Gratiola heterosepala* and *Legenere limosa*, are State listed endangered plants as well and are Category 2 candidates for federal listing.

Further biological surveys may locate other occurrences of these three and other special status plants. CNPS requests that these surveys be conducted as described in the enclosed CNPS "Mitigation Guidelines Regarding Impacts to Rare, Threatened, and Endangered Plants," and in particular the California Department of Fish and Game's "Guidelines for Assessing Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities" included as Appendix B of the "Mitigation Guidelines..." document.

Some statements in the NOP with regard to vernal pools are disturbing. Paragraph 1 of p. 9 states that "existing landscape features....such as vernal pools...will provide aesthetic enhancements as well as playing hazards and challenges." Using a vernal pool as a golf course playing hazard would adversely

impact the pool and its biota: attempts to retrieve wayward golf balls from wet vernal pools could be destructive to the pool species, and pools this close to the playing course would almost certainly receive unwanted runoff from golf course irrigation. Paragraph 8 of p. 12 states that "2-3 acres of waters of the United States, including wetlands, will be impacted by the current design." Because of the plan to incorporate vernal pools as playing hazards, we suspect that the actual acreage of wetlands, including vernal pools, to be negatively impacted by the current design is probably greater than 2-3 acres. Because of the intense management of wet areas within golf courses, these areas should not be considered as compensatory wetlands in mitigation for damage to other wetlands.

Figure 4 of the NOP shows a proposed "Wetland Mitigation Area," and mitigation measure Number 1 on p. 13 mentions a wetland mitigation plan will be required in the process of obtaining a Section 404 permit. We realize that loss of vernal pool acreage would be included in "wetland mitigation." However, CNPS believes that at present the technology of vernal pool creation is an experimental art and certainly not a well developed science. Creation of vernal pools within natural pool fields has the potential to disrupt the ecology and hydrology of the natural pools with no proven long term benefit to the preservation of vernal pool species. Creation of vernal pools at sites removed from natural pools involves a lower possibility of success, and certainly does not involve simulation of natural pools, or they would be present on the site. In other words, there are few places where placement of vernal pools is appropriate. CNPS thus supports preservation of existing vernal pools, rather than creation of artificial pools.

To expand on the preceding paragraph, we suggest that if loss of vernal pool habitat is a consequence of the proposed park development, mitigation should consist of preservation of natural pools off-site but within the proximity of the site, either by direct purchase or by establishment of suitable conservation easements. Such mitigation should involve at least a three to one ratio of preserved to lost pools. In addition, since a "no net loss of wetlands" policy has been adopted by the county and urged by the federal government, we suggest that wetland creation in the acreage of lost pool area be accomplished. Since mitigation in kind for vernal pool loss is presently highly inappropriate, as discussed above, such wetland creation should not be creation of vernal pools, but might be any other type of suitable wetland. Habitat for wetland species and preservation of natural vernal habitat would be the net result.

Vernal pools exist partly because of a distinctive hydrologic regime in which winter rainwater collects in impermeable basins, slowly evaporating in spring and leaving pools completely dry in summer. The long-term viability of highly specialized vernal pool species depends on this hydrologic regime, as well as on the ability of genetic material to travel from pool to pool via wind, vernal swales, and wildlife. In order to successfully protect vernal pools, this hydrologic regime and flow of

genetic material must be allowed to remain intact. A preservation area must be large enough to include the watershed of an entire group of pools, including vernal swales. A buffer zone separating this preservation area from recreational facilities must completely contain any runoff from golf course vegetation or other landscaping to prevent water from reaching pools during the required dry period, and to prevent fertilizers, pesticides, or herbicides from reaching the pools at any time. In addition, equestrians and hikers must not be allowed to walk through the pools when the pools are wet, nor should golfers be tempted to retrieve balls from wet pools.

CNPS recommends that the expanded Rancho Seco Park facilities be designed to avoid all vernal pools, and to provide protection through the generous use of buffer zones.

We appreciate the opportunity to comment on this NOP, and look forward to reviewing the draft EIR.

Sincerely yours,

George M. Clark

George M. Clark
Conservation Chair
Sacramento Valley Chapter

California Native Plant Society

6006 Keats Circle
Orangevale, CA 95662
24 September 1993

Field Supervisor
U. S. Fish and Wildlife Service
2800 Cottage Way, Room E-1803
Sacramento, CA 95825

Re: Notice of Proposed Endangered or Threatened Status for Eight Vernal Pool Plants from the Central Valley of California

Dear Sir:

I am pleased to respond to your request for information on the status of vernal pool plants under consideration for listing as threatened and endangered. Although three of the plants within the listing package are found within the area of our California Native Plant Society (CNPS) chapter, I only have experience with two of these. Accordingly, I wish to provide comments on the status of *Orcuttia viscida* and *Neostapfia colusana*, based on personal knowledge and field experience. Speaking for myself and for CNPS, the proposed listing of these plants as threatened or endangered is strongly supported.

Considering first the sticky or Sacramento Orcutt grass (*Orcuttia viscida*), the plant is a very appropriate candidate for listing as endangered. As noted in your letter, only seven extant populations of the plant are known (I live within two blocks of the site of the extirpated northernmost population). These populations exist in a very restricted range of eastern Sacramento County, and area under strong development pressure. Several of the remaining populations are threatened by development or environmental factors:

- The northernmost extant population is found in the California Department of Fish and Game's Phoenix Vernal Pool Preserve in Fair Oaks, California. This eight acre preserve was specifically set aside to preserve this population; however, the preservation is tenuous. The single pool containing the Orcutt grass is found at the eastern margin of the preserve, and is immediately adjacent to a residential development. Problems with runoff containing herbicides, pesticides and fertilizers from lawn and garden irrigation have been noted in this preserve, and introduced weedy species resulting from summer irrigation (which is strongly detrimental to vernal pool floral integrity) is a considerable problem. Another factor about this preserve which I find of concern is that the lease of the land to the Department of Fish and Game from the developers of the surrounding Rollingwood estates specifies that in the event of extirpation of the population of *O. viscida*, the land title would revert to Rollingwood. The possibility of developing eight acres of prime real estate as a motivation for assisted population removal cannot be ignored under the circumstances. In any event, the large edge to area ratio of this preserve makes the ultimate viability of the population problematic because of outside impacts.

- A quarter mile southeast of the above population is a population artificially established (I believe by Drs. Tom Griggs and Robert Holland in the early 1970s) at the Phoenix Park Vernal Pool Preserve owned by the Fair Oaks Recreation and Park District. The introduced population is viable and self-sustaining. All though this area is set aside as a preserve for vernal pool plants, the population is not without threats to its viability. The pool containing the introduced *O. viscida* is at the extreme western edge of the preserve, and is immediately adjacent to a set of baseball fields. The pool is also next to the entrance to the natural area from the parking lot of the park. Accordingly, it is visited by

thousands of people annually, with rather strong impacts (particularly on the northern margin) from trampling. In addition, bicycle riding by neighborhood children and those visiting the ball diamonds is an observed problem. The proximity to the irrigated ball diamonds also opens the possibility of runoff of summer water, and water during the winter containing fertilizers and possibly herbicides and pesticides. A substantial portion (over 10% of the total area) of the vernal pools of the park were severely damaged by herbicide (both contact and pre-emergent) sprayed by the County of Sacramento in the spring of 1992. Like the population of the Fish and Game Preserve, this population is greatly susceptible to "edge effects".

- Two pools with populations of *O. viscida* exist on the so-called Sammis Sunrise-Douglas property; the southwest margin of this property, which is slated for development, is at the intersection of Douglas Road and Sunrise Boulevard. The portion of the property containing the *O. viscida* is slated for preservation, according to the mitigation plan submitted by the developers. Unfortunately, the proposed mitigation plan (which has been strongly opposed by CNPS, the U. S. EPA, the U. S. Fish and Wildlife Service, and the California Department of Fish and Game) calls for creation of a highly abnormal number of vernal pools in the area of the natural pools containing the Orcutt grass; the effects of this activity upon the hydrology and integrity of the pool are expected to be strongly detrimental. In addition, although the proposed preserve would be relatively large (300+ acres), the Orcutt grass would be near an edge. The developer has proposed commercial and residential development in close proximity, and has configured the development such that impacts from off-site will be maximized.

- A population of *O. viscida* is found on land which is part of the County of Sacramento's Kiefer landfill. The fact that the population is not near an edge in this case is not comforting; it is difficult to imagine configurations of an expanded landfill which would not directly impact the vernal pool contain the Orcutt grass population. Although the most recent proposed landfill plan does not involve expansion into this area, it will be only a matter of a decade before this area will be required for disposal activities.

- We have only this week received notification of the proposed development of a golf course by the County of Sacramento at a site on the County's Rancho Seco property; the area to be developed includes a pool with a population of the sticky Orcutt grass. Even if the course can be configured to avoid the *Orcuttia* pool, it will doubtless be threatened by runoff from the golf course (including fertilizers, herbicides and pesticides, in addition to out-of-season runoff) and potentially by trampling from golfers retrieving errant balls.

- It is my understanding, although I am uncertain of this, that there is a population or populations of the *O. viscida* on lands east of Grant Line Road and south of Douglas Road. The vernal pools on these properties are subjected to severe trampling by cattle in late spring; the pools may offer the only water available at that time. If the Orcutt grass is indeed there, the impacts of cattle will be strongly detrimental.

Of the seven extant populations of the *O. viscida*, five and possible six are seen to be in a somewhat tenuous state of existence. Accordingly, listing of the plant as endangered seems highly appropriate, and I and CNPS strongly support this action.

Considering Colusa grass (*Neostapfia colusana*), the plant formerly existed in our CNPS chapter's area in Colusa County (from which it is extirpated), a new population has recently been discovered in Yolo County (the first occurrence for this county), and populations of the plant exist at the Nature Conservancy's Jepson Preserve in Solano County.

- The new Yolo County population occurs on a federal radio transmitter site in the Dixon area. The site is severely degraded, owing to many years of use of herbicide and salt to control weeds in the vicinity of the radio towers, and to discing of firebreaks through the population. Nonetheless a large population exists, although the long term effects of the weed control activities are unknown. The site is potentially on the list of base closures which the federal government is considering; if such action is taken, the future of the population is unknown. It may be noted that a population of the extremely rare *Tuctoria mucronata* also occurs on the site; this factor may assist in preservation of the vernal pool plants, if the herbicide/salt effects do not prove lethal.

- The population of the plant at the Jepson Prairie Preserve is indeed protected, however, the integrity of the population is threatened by a highly invasive exotic plant capable of adapting to the vernal pool habitat. The invasive plant, *Phylla nodiflora* (formerly *Lippia nodiflora* ssp. *rosea*) is rapidly spreading; adequate control measures are at present unknown, as are the ultimate effects of the plant on the Colusa grass.

Because the populations of Colusa grass in our area are potentially under stress, and because many populations of Colusa grass in other areas within its range are potentially threatened by agricultural practices or housing or industrial developments, we support the listing of *Neostapfia colusana* as threatened.

As the discussion above indicates, existing regulatory mechanisms are inadequate to ensure the long term viability of the populations of these plants. When preserves have been set aside, they have proven to be too small and the preserve design such that sitings of the plants within the preserve poorly chosen. Plants at several locales are threatened by development, by invasion of introduced plants, or by questionable mitigation practices

Again, we appreciate the opportunity to comment on the proposed listing of these plants. Please do not hesitate to contact me if we can be of further help.

Sincerely,

George M. Clark
Conservation Chair
Sacramento Valley Chapter
(916) 355-4362

c: Debra Bishop (CNPS/ECOS)
Ray Butler (CNPS)
Terry Roscoe (CF&G)
Karen Wiese (CNPS)
Carol Witham (CNPS)

MITIGATION GUIDELINES

REGARDING IMPACTS TO RARE, THREATENED, AND ENDANGERED PLANTS

by

CALIFORNIA NATIVE PLANT SOCIETY
RARE PLANT SCIENTIFIC ADVISORY COMMITTEE

February 1991

This document is intended to guide in the assessment and mitigation of impacts to rare and endangered plants. It supports the California Native Plant Society Policy Regarding Mitigation of Impacts to Rare and Endangered Plants (Appendix A). The goals of the policy are to prevent decline of rare plants and their habitats and to ensure that effective rare plant preservation measures are implemented.

In California the right to develop land is subject to regulation by public agencies that have discretionary control over project approval. The National Environmental Policy Act of 1969 (NEPA) and the California Environmental Quality Act of 1970 (CEQA) require project applicants to disclose, consider and avoid or reduce significant project impacts to rare or endangered species. Environmental documents required under those laws contain the project disclosures and evaluations and are available for public review.

EVALUATION GUIDELINES

Before identifying mitigation options for a project, the vegetation types, rare plants and habitats, and specialized biotic resource areas must be identified and the project impacts described and assessed. The Society recommends following the Department of Fish and Game's Guidelines for Assessing Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities (Appendix B). An important aspect of the evaluation is determining whether an impact is significant as defined by CEQA and NEPA. Under CEQA, for example, an significant impact is one which would produce a substantial, or potentially substantial, adverse change in the environment.

MITIGATION GUIDELINES

The Society endorses the mitigation concepts in the California Environmental Quality Act, Statutes and Guidelines (1986) because they may be applied specifically to rare plants. The types of mitigation for environmental impacts that are listed in CEQA (Section 15370) are:

(a) Avoiding the impact altogether by not taking a certain action.
(b) Minimizing impacts by limiting the degree or magnitude of the action.
(c) Rectifying the impact by repairing, rehabilitating or restoring the impacted environment.
(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the project.
(e) Compensating for the impact by replacing or providing substitute resources or environments.

These mitigation measures can be applied to a variety of environmental impacts but are not always appropriate to mitigating rare plant impacts. Mitigation measures should be developed on a site-specific basis in consultation with appropriate resources agencies. Under existing laws, a project applicant or a local lead agency may have the responsibility of consulting with public regulatory agencies on matters relating to project impacts on rare species.

For rare plants, effective mitigation options that can avoid or reduce impacts may be limited. The use of more than one measure may be necessary depending upon the type of project and the factors that make plant species rare (e.g., unusual soils, microclimates, or water regimes). Each project must be individually evaluated to determine which mitigation method or methods will avoid or reduce impacts defined by CEQA or NEPA as significant to a less than significant level. Because the life history and ecological information needed to judge whether mitigation measures are adequate is often lacking, additional biological research may be necessary prior to mitigation design and/or implementation in order to determine which measures will be most appropriate.

Of the five mitigation types in the California Environmental Quality Act, the California Native Plant Society fully supports those which avoid net reduction of population size or species viability. For most plant species this requires the protection of habitat essential to the survival of the species. In some instances, this also requires that impacts be fully avoided in order to prevent a significant impact (i.e., a net loss of plant numbers, habitat, or genetic variability essential to the future existence and recovery of the species). Alternatives such as site restoration and off-site introduction are generally unproven, and usually unsuccessful.

Avoidance:

Impacts to rare plants may be avoided by: (1) pre-project planning and design; (2) reconfiguring an existing project design; or (3) adopting the no-project alternative. Project planning and design measures to avoid impacts may include arrangement of facilities on-site to avoid sensitive features. Additional measures are almost always required to protect avoided sites from impacts associated with construction and operation of the project. Such protection can include, but is not limited to, fencing, open space or conservation easements, and transfer of development rights. See Appendix C for a brief discussion of conservation easements.

Each of the other mitigation alternatives included in the CEQA guidelines involves the acceptance of a net loss and/or use of transplantation, artificial propagation, seed transfer, or habitat restoration. The Society believes that these methods do not fully mitigate for significant impacts to rare plants and their habitats for three reasons:

(1) These alternatives compromise and ultimately negate mitigation by allowing net losses of rare plant populations and habitat. Mitigation must, according to CEQA, fully offset or reduce significant impacts to a less than significant level.

(2) Most rare plants are restricted to their known locations because they have specialized, poorly understood, habitat requirements. Creating the exact environmental conditions that these plants require may not be possible.

(3) The Society does not endorse alteration of naturally occurring plant communities through transplantation because the methodology for most rare plants is untested and therefore unreliable and because most past attempts have ultimately failed.

Although the Society does not endorse significant net losses of rare plant numbers or habitat, we recognize that where such losses are allowed or are deemed unavoidable, off-site restoration, compensation, transplantation or other salvage methods should be attempted to enhance degraded populations or provide for partial survival of the sacrificed population. Such measures also provide additional knowledge of the species' horticultural and ecological requirements. Such measures should never be performed so that an otherwise unaffected population is in any way jeopardized, for example by genetic contamination.

Mitigation alternatives other than avoidance are discussed below. These should be used alone or in combination to reduce impacts to less than significant levels. They should also be used in conjunction with monitoring and long-term management agreements.

Reducing Impacts:

The significance of impacts may be minimized by reducing the size of the project (i.e., partial avoidance) and by locating the project in the least environmentally sensitive area. Areas where impacts are avoided should be surrounded by buffer zones where impacts are absorbed, and set aside and permanently protected in conservation or open space easements. Efforts should be made to salvage portions of the population that will be lost.

Restoration:

Restoration can be used to mitigate impacts from projects approved prior to environmental regulations, or impacts allowed through a "statement of overriding considerations."

Depending upon the degree of impact, habitat restoration may be as simple as removing debris and controlling public access. In more complex situations, however, partial or total restoration of degraded habitat may require extensive revegetation, and soil protection and stabilization programs. Restoration must be tailored to the specific project site based on the habitat and species involved. General guidelines for restoration projects involving rare plants are discussed in Appendix D.

Reduction Over Time:

Impacts may be significantly reduced or eliminated by controlling public access and by fencing or staking the habitat area to prevent accidental intrusion into the site. Monitoring rare plants and habitats during all phases of a project will help ensure that construction and operation activities do not encroach on protected habitat.

When project actions have ended, restraints may or may not be removed depending on the completed project's potential for long-term impacts on the sensitive area. In most instances, control of public access to sensitive habitat sites needs to be continued beyond the construction phase of an individual project, especially in moderate and high density development areas. Public education about the value of the protected resources should also be considered for these areas.

Attempts to reduce or eliminate impacts over the life of the project should be required for all projects if the potential exists for secondary impacts due to human access; mitigation agreements that require placement of a conservation or open space easement on the mitigation site should be considered to implement this measure.

Off-site Compensation:

Compensating for the impact by protecting substitute resources or environments has been used in some instances to mitigate unavoidable impacts. In most instances off-site compensation does not fully reduce impacts to an insignificant level because a net loss of individuals or habitat that supports a natural self-sustaining rare plant population results. In spite of this, off-site compensation is a useful tool under specific circumstances where other mitigation alternatives cannot be applied or do not fully mitigate significant impacts.

Off-site compensation has been approached in several different ways, including: 1) permanent protection of an existing off-site native population; 2) permanent protection of an off-site introduced population; 3) a combination of 1) and 2); or 4) mitigation banking.

Determining habitat value for off-site compensation is difficult. The size of the acquisition will vary depending upon the type, condition, extent and rarity of the habitat and species. In any case, the acquisition and

permanent protection of an alternative parcel does not alter the fact that the loss of the initial site brings the rare habitat and species one step closer to ultimate extinction. Species preservation is greatly enhanced when plants are protected at a number of separate sites. Although the permanent protection of a vigorous, self-sustaining population of the species tends to reduce the endangerment potential of the species at that particular site, it does not necessarily fully compensate for the loss of the habitat known to support a viable population. To further reduce the endangerment potential for the species and habitat, the ratio of acquisition to loss must in most cases exceed 1:1 for any species. The ratio should be higher for rarer species, particularly for those that occupy irreplaceable habitats. In addition, enhancing off-site compensation areas (e.g., reducing grazing or OHV impacts) can help to more fully compensate for the net loss of plants at a project site.

If transfer of the threatened population is being attempted, an ecological study of the site, including an inventory of rare species, is needed to identify the feasibility of introduction. Genetic contamination can occur by mixing of populations of the rare plants and needs to be avoided, as does hybridization between the rare plant and close relatives that could occur at the introduction site. In no case are unthreatened populations to be jeopardized by the transfer of genetic material from the threatened site. If the compensation site is considered suitable, acquisition or other permanent protection efforts are required to ensure adequate long-term protection, and therefore to mitigate for a net loss of rare plants or habitat. A propagation program should be developed for the salvage and transfer of rare plant populations from the initial parcel before initiating any activities. Permits may be required from California Department of Fish and Game (DFG) or the U.S. Fish and Wildlife Service. Propagation methods for the salvaged population must be developed on a case-specific basis. The propagation program schedule must provide adequate lead time to plan and carry out transfer at the correct time of the year. In order to serve as mitigation, the transfer must be successfully completed before the project's construction activities eliminate plants or habitats. Maintenance and monitoring programs which include the collection of data to document degree of success should also be developed for the compensation site to ensure the transplanted population is self-sufficient and thereby demonstrate success.

MITIGATION IMPLEMENTATION

The mitigation design, implementation techniques and reporting procedures must be clearly documented. Responsibilities of the landowner/applicant, contractors, and agencies, and criteria that define successful mitigation, should be placed in writing to prevent later confusion or disagreement. The DFG Endangered Plant Program has recently prepared a mitigation plan annotated outline that includes the basic information needed to develop a mitigation plan for State-listed plant species that would be acceptable to the DFG. This document discusses important considerations in designing appropriate mitigation and monitoring plans and establishing appropriate performance criteria, and should be consulted when developing mitigation for impacts to any rare plant species.

Mitigation agreements entered into as a condition of a discretionary permit must contain assurances of implementation, monitoring and maintenance. Permits for development generally require a mitigation plan prior to approval. Project construction is sometimes completed before mitigation is fully implemented, especially where restoration or revegetation is involved. In these and related instances mitigation commitments should be guaranteed by a negotiable performance security. The amount of the negotiable security should be large enough to complete the mitigation and to purchase other rare plant habitat in the event the applicant fails to successfully complete the work in accordance with the approved mitigation agreement.

Clear criteria should be included in the mitigation agreement to define the conditions under which the mitigation measures are to be considered complete or successful, so that the performance security may be returned. Any mitigation effort requiring manipulation of plants or of habitats should be monitored for success or failure for a minimum of five years before relinquishing the performance security. The duration of the evaluation period must be based on the biological constraints of the species involved.

MAINTENANCE AND MONITORING IMPLEMENTATION

Maintenance and monitoring of rare plant populations and habitats are essential even where these are "protected" by mitigation measures. Monitoring enables project applicants and regulatory agencies to document compliance with mitigation agreements. Monitoring also enables scientists to gather valuable knowledge on the effectiveness of rare plant mitigation methods. The financial responsibility for monitoring and maintenance of rare plant populations and habitat is typically that of the project applicant. In all cases, monitoring should be conducted by an experienced botanist. Maintenance responsibilities must be clearly stated in contractual agreements to eliminate any confusion during future maintenance and monitoring.

Maintenance must consider the ecological needs of the species and habitat and the types of mitigation used. Where undisturbed habitat is set aside, maintenance may consist of little more than controlling public access, maintaining fences, or periodic weed removal. Restoration and revegetation programs may require more complex maintenance programs. For example, invasive non-native plants may require specialized control measures to keep them from spreading; herbivores may also need to be controlled to protect the native vegetation.

Monitoring programs must be developed to meet the needs of the specific mitigation program. For example, it may be necessary to monitor the progress of construction activities, if these activities have the potential to damage rare plant habitat. Monitoring of restoration and revegetation projects is essential to document success or failure and identify areas where additional work is needed. Monitoring undisturbed sites that have been set aside and are not likely to suffer direct or cumulative impacts may require only periodic visits to determine if easement violations have occurred. Requirements to correct violations should be described in the conservation easement or mitigation agreement.

In the past, mitigation for many approved projects was not properly implemented and agencies failed to enforce compliance by project developers. To rectify this, legislation passed in 1989 (AB 3180, Cortese) amended CEQA by adding section 21081.6 to allow California agencies to require monitoring of mitigation measures that were defined for a given project. The features to be monitored must be outlined in a formal monitoring plan which must be sufficient to identify failures in mitigation throughout the life of the project, not just during the construction phase. Agencies can enforce compliance with monitoring plans through several means, including specifying penalties for failure to meet monitoring obligations, through the use of existing police power such as fines or restraining orders, and/or by requiring a performance security of the project applicant.

Monitoring a conservation easement is the responsibility of the easement holder, whether this is a nonprofit organization or a public agency. The easement holder is also responsible for seeking redress for violations of the conservation easement contract.

CONCLUSION

The Society supports project alternatives that completely avoid significant project impacts to rare and endangered plant species and their habitats. In cases where other mitigation alternatives are approved, mitigation plans should be designed based on the specific requirements of the species and habitat involved. Although the current limited understanding of the ecological requirements for most rare species makes this task difficult, the use of preliminary ecological studies in mitigation planning will help to develop successful mitigation programs. Emphasis must be placed on conserving not only the rare plant but its habitat. The increased awareness of the need for solutions to problems of human impact on the environment and endangered species is encouraging. This awareness and concern has led to the participation of many agencies, conservation organizations, and concerned individuals in an effort to develop the criteria needed for rare plant protection. The California Native Plant Society has dedicated itself to helping realize this goal, and is always available to assist private individuals, local

governments, public agencies and others in designing truly effective mitigation measures. Some of the references cited in the bibliography contain information relating to studies of specific rare plants and mitigation implementations for specific development projects.

ACKNOWLEDGEMENTS

The CNPS Mitigation Policy and Guidelines were produced through the dedicated effort of many individuals. Special thanks go to Betty Guggolz for her lead role in the production of this document and her patient endurance of innumerable modifications to the text. Others who contributed valuable advice, criticism and support were: Ken Berg, Roxanne Bittman, Fredrica Bowcutt, Susan Cochrane, Charlice Danielsen, Phyllis Faber, Jack Guggolz, James Jokerst, Tim Messick, Mary Meyer, James Nelson, Thomas Oberbauer, David Schonum, Teresa Sholars, Mark Skinner, James Payne Smith, Joan Vilms, Laurie Wickenheiser, and Vernal Yadon.

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RELEVANT LEGISLATION:

California Endangered Species Act. Fish and Game Code, Sections 2050-2098.

Native Plant Protection Act. Fish and Game Code, Sections 1900-1913.

State of California, The California Environmental Quality Act, Statutes and Guidelines. Office of Planning and Research, 1986.

State of California. Tracking CEQA Mitigation Measures Under AB 3180. Office Of Planning and Research, 1989.

The Federal Endangered Species Act of 1973. (Public Law 93-295).

The National Environmental Policy Act of 1969. (42 USC 4321-4347).

APPENDIX A

CALIFORNIA NATIVE PLANT SOCIETY

POLICY REGARDING MITIGATION OF IMPACTS TO RARE AND ENDANGERED PLANTS

The policy of the California Native Plant Society is that all potential direct, indirect, and cumulative impacts to rare, threatened, or endangered plants and their habitats must be assessed and that appropriate measures be implemented to prevent such impacts resulting from projects. The policy of the Society is also that environmental documents and mitigation plans be based on complete, accurate and current scientific information. Viability of rare, threatened, or endangered plants and their habitats takes precedence over economic or political expediency. Because of the tremendous diversity of rare plant habitats in California, and the dependence of rare plants on their local habitats, it is imperative that mitigation measures be developed on a site specific basis. Local environmental conditions, species biology, land use patterns and other factors must be incorporated into the design of mitigation plans.

The goals of this policy are to prevent the decline of rare plants and their habitats and to ensure that effective rare plant preservation measures are implemented.

Of the mitigation measures listed in the California Environmental Quality Act, the Society fully endorses only that of avoiding the impact. Measures to minimize, to rectify, or to reduce or eliminate the impact over time are recognized by the Society as partial mitigation. The Society does not recognize off-site compensation as mitigation.

Guidelines for project review and evaluation of mitigation proposals are available from the California Native Plant Society. The Rare Plant Scientific Advisory Committee will revise the guidelines periodically so that they are easily used with the California Environmental Quality Act and other current legislation.

Adopted by the CNPS Board of Directors: June 6, 1987

APPENDIX B

THE RESOURCES AGENCY
Department of Fish and Game
May 4, 1984

GUIDELINES FOR ASSESSING EFFECTS OF PROPOSED DEVELOPMENTS ON RARE AND ENDANGERED PLANTS AND PLANT COMMUNITIES

The following recommendations are intended to help those who prepare and review environmental documents determine when a botanical survey is needed, who should be considered qualified to conduct such surveys, how field surveys should be conducted, and what information should be contained in the survey report.

1. Botanical surveys that are conducted to determine the environmental effects of a proposed development should be directed to all rare and endangered plants and plant communities. Rare and endangered plants are not necessarily limited to those species which have been "listed" by state and federal agencies but should include any species that, based on all available data, can be shown to be rare and/or endangered under the following definitions.

   A species, subspecies or variety of plant is "endangered" when the prospects of its survival and reproduction are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition or disease. A plant is "rare" when, although not presently threatened with extinction, the species, subspecies or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens.

   Rare plant communities are those communities that are of highly limited distribution. These communities may or may not contain rare or endangered species. The most current version of the California Natural Diversity Data Base's Outline of Terrestrial Communities in California may be used as a guide to the names of communities.

2. It is appropriate to conduct a botanical field survey to determine if, or the extent that, rare plants will be affected by a proposed project when:

   a. Based on an initial biological assessment, it appears that the project may damage potential rare plant habitat;

   b. Rare plants have historically been identified on the project site, but adequate information for impact assessment is lacking; or

   c. No initial biological assessment has been conducted and it is unknown whether or not rare plants or their habitat exists on the site.

3. Botanical consultants should be selected on the basis of possession of the following qualifications (in order of importance):

   a. Experience as a botanical field investigator with experience in field sampling design and field methods;

b. Taxonomic experience and a knowledge of plant ecology;

c. Familiarity with the plants of the area, including rare species; and

d. Familiarity with the appropriate state and federal statutes related to rare plants and plant collecting.

4. Field surveys should be conducted in a manner that will locate any rare or endangered species that may be present. Specifically, rare or endangered plant surveys should be:

a. Conducted at the proper time of year when rare or endangered species are both "evident" and identifiable. Field surveys should be scheduled (1) to coincide with known flowering periods, and/or (2) during periods of phenological development that are necessary to identify the plant species of concern.

b. Floristic in nature. "Predictive surveys" (which predict the occurrence of rare species based on the occurrence of habitat or other physical features rather than actual field inspection) should be reserved for ecological studies, not for impact assessment. Every species noted in the field should be identified to the extent necessary to determine whether it is rare or endangered.

c. Conducted in a manner that is consistent with conservation ethics. Collections of rare or suspected rare species (voucher specimens) should be made only when such actions would not jeopardize the continued existence of the population and in accordance with applicable state and federal permit regulations. Voucher specimens should be deposited at recognized public herbaria for future reference. Photography should be used to document plant identification and habitat whenever possible, but especially when the population cannot withstand collection of voucher specimens.

d. Conducted using systematic field techniques in all habitats of the site to ensure a reasonably thorough coverage of potential impact areas.

e. Well documented. When a rare or endangered plant (or rare plant community) is located, a California Native Species (or Community) Field Survey Form or equivalent written form should be completed and submitted to the Natural Diversity Data Base.

5. Reports of botanical field surveys should be included in or with environmental assessments, negative declarations, EIRs and EISs, and should contain the following information:

a. Project description, including a detailed map of the project location and study area.

b. A written description of biological setting referencing the community nomenclature used, and a vegetation map.

c. Detailed description of survey methodology.

d. Dates of field surveys.

e. Results of survey (including detailed maps).

f. An assessment of potential impacts.

g. Discussion of the importance of rare plant populations with consideration of nearby populations and total species distribution.

h. Recommended mitigation measures to reduce or avoid impacts.

i. List of all species identified.

j. Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms.

k. Name of field investigator(s).

l. References cited, persons contacted, herbaria visited, and disposition of voucher specimens.

APPENDIX C

CONSERVATION EASEMENTS

Open Space or Conservation Easements have been used in a number of jurisdictions throughout California. In open space or conservation easements the landowner transfers the rights to develop a parcel to a conservation organization or public agency. The legal basis for this action is found in Government Code Section 51050 et seq., particularly Section 51083.5 which describes the granting of easements to nonprofit organizations. Easements granted to an impartial third party, interested organization, or resource agency are the only secure types. Those granted to a local public jurisdiction can be eliminated or modified with a majority vote.

Determining the appropriate size of an easement is difficult. It must be large enough to support, in perpetuity, a biologically secure, reproducing population with an adequate bufrer zone. The proposed land use surrounding the easement and current and future land uses of the conservation or open space easement area must also be taken into consideration. A land use or management plan that accounts for the type of rare plant habitat and the biology of the resident species needs to be developed for easement areas. The design of the protection area boundaries and management plan must be scientifically based, utilizing baseline studies and species biology information.

Conservation and open space easement contracts should include a legal description of the easement parcel, the purpose of the easement and describe the specific resources or conditions being protected by the easement. The contract should also include the rights of the grantee, the grantors rights and uses, restrictions of undesirable activities, and a general restriction of all uses inconsistent with the purposes of the easement. Language should be included that states that the conditions of the easement contract are binding not only on the grantor, but also on his heirs, assigns, and all other successors and interests so that the term of the easement runs with the land in perpetuity.

Conservation easement contracts should also include: (1) specific restrictions to protect the site from land use change, introduction of nonnative plant species and public access; and (2) the right of the grantee to enforce compliance with the terms of the easement and to require restoration of the habitat at the grantor's expense should damage to the habitat result from violation of the agreement by the grantor.

Maintenance and monitoring agreements and guideline documents for the conservation easement should be incorporated into the easement contract.

APPENDIX D

BRIEF GUIDELINES FOR RESTORATION PROJECTS

General guidelines for restoration projects are as follows:

1. Prior to the development of a restoration program, the goals of the completed project must be established and a course of action developed to achieve that goal.

2. Pre-impact site conditions should be determined. Clues to this may be found in remnants of the existing habitat, in herbarium research, and from botanists who have collected in the area in the past. Local historical files or societies may be a source of information if the site is near an urban area.

3. Other site factors which may require study are land contours, soil types, erosion control, topsoil protection, and pre-impact hydrologic patterns.

4. An ecological study of the species being considered for reintroduction is necessary, including their total distribution, other habitat sites, associated species and pollinators.

5. Revegetation methodology research may include propagation techniques, material sources, propagule collection and preparation, planting densities, seedling protection, weed and invasive exotics control, site protection, public access and many other factors. The present knowledge of propagation requirements for rare plants is so limited that all efforts to propagate and reintroduce them in the wild should be carried out under the direct supervision of a specialist well versed in the cultural requirements of the genus.

6. A maintenance and monitoring program should also be included in the development of restoration/revegetation plans, and should utilize consistently documented data to further augment the existing knowledge of the species and to develop criteria for other revegetation projects.

APPENDIX E

DEFINITIONS

The following definitions are used in this document:

Maintenance: the process of ensuring that rare plants and their habitats remain viable and in good condition.

Mitigation: actions taken to avoid or reduce significant adverse impacts. Impacts are less than significant if no net loss of population size or habitat quality results.

Mitigation banking: A large preserve or open space which individual developers buy into at a predetermined compensation ratio to satisfy their mitigation debt. Mitigation banking focuses mitigation efforts into significant amounts of habitat rather than permitting establishment of many smaller and less significant or less defensible preserves or open space areas.

Monitoring: periodic assessment of the status of a plant population or habitat to determine its condition and reveal trends in vigor and viability; should be conducted in a scientific and standardized fashion.

Off-site Compensation: preservation in perpetuity of alternate sites containing similar habitat types and species to offset or "compensate" for unavoidable losses. The ratio of acquisition to loss should be greater than one to one for any species. In lieu of this, an equitable sum of money may be paid for the purchase of an alternate site.

Preservation: the maintenance and protection of rare plants and habitats at levels that existed prior to the commencement of a project.

Rare Species: for the purpose of this policy, and to avoid undue repetition, the word "rare" is used to include "rare", "threatened", and "endangered" plant species as defined in Section 3(4)(15) of The Federal Endangered Species Act of 1973, and The California Environmental Quality Act Guidelines, Section 15380 (1986). The latter section is reproduced below:

> (b) A species of plant is:
> (1) "Endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors; or
> (2) "Rare" when either:
> (A) Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or
> (B) The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act.
> (c) A species of plant shall be presumed to be rare or endangered if it is listed in:
> (1) Sections 670.2 or 670.5, Title 14, California Administrative Code; or
> (2) Title 50, Code of Federal Regulations, Section 17.11 or 17.12 pursuant to the Federal Endangered Species Act as threatened or endangered; or
> (d) A species not included in any listing identified in subsection (c) shall nevertheless be considered to be rare or endangered if the species can be shown to meet the criteria in subsection (b).

Division 2, Chapter 1.5 of the California Fish and Game Code (California Endangered Species Act Section 2067) defines a "threatened" species as a native species or subspecies of a plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts required in this chapter.

Transfer of Development Rights (TDR): Under this process, an applicant may gain density bonuses in designated development areas if rare plant populations and habitat are left in permanent open space. This alternative also requires an organized plan by a local agency identifying those areas to be left undisturbed and those that may be used by the applicant for density increases in return for protecting the areas to be left undisturbed. Protection in perpetuity is a necessary requirement of TDR proposals that are implemented to protect rare plant populations. TDR is being used increasingly as a mitigation tool for on-site rare plant protection.

Unavoidable significant impacts: impacts resulting from a "statement of overriding considerations" where the public benefits of a project have been determined to outweigh the significance of the environmental impact, or where an emergency situation or natural disaster may destroy, or has destroyed rare plant habitat and species.

APPENDIX F

CNPS RARE PLANT LISTS (Smith and Berg 1988)

The California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California, lists over 1500 plants that CNPS considers to be endangered, rare, of limited distribution, extinct, or insufficiently known in California. The Inventory is periodically revised and updated.

Lists 1A and 1B: List 1A (Plants Presumed Extinct in California) and List 1B (Plants Rare, Threatened, or Endangered in California) contain many state and federally listed taxa, and also many taxa which are not state or federally listed but which qualify as rare or endangered under the California Environmental Quality Act (Section 15380 (d)).

List 2: Plants that are Rare or Endangered in California but More Common Elsewhere. Although List 2 plants are not eligible for consideration under the Federal Endangered Species Act, they should be considered for state listing and receive consideration when the California Environmental Quality Act is applied.

List 3: Plants About Which We Need more Information. List 3 includes species for which CNPS has inadequate knowledge of abundance, distribution, or rarity. List 3 species do not qualify for protection at this time, but should be considered at the time of project environmental impact evaluation. List 3 species found on a project site should be studied to determine if they qualify for consideration under Section 15380 (d) of the California Environmental Quality Act.

List 4: Plants of Limited Distribution. List 4 plants have limited distribution but their vulnerability or susceptibility to threat appears to be low at this time. Although not endangered at this time, they are uncommon enough that their status is monitored. List 4 species require review in environmental impact assessments under the California Environmental Quality Act. List 4 species found on a project site should be studied to determine if their rarity merits consideration under this law. Mitigation should always be considered for List 4 species to prevent them from becoming so rare that state or federal listing as threatened or endangered is required.

SAVE THE AMERICAN RIVER ASSOCIATION, INC.
P.O. BOX 19496 - SACRAMENTO, CA 95819 - (916) 387-1763

October 7, 1993

California Muni Golf
5 Park Plaza, Suite 1170
Irvine, CA 92714

Attn: Timothy Palmquist - Program Manager

Re: Notice of Preparation - D.E.I.R. Rancho Seco Park Master Plan

Dear Sir:

Reference is made to the September 28, 1993 10:00 a.m. meeting at SMUD Headquarters concerning the subject project which I attended as President of the Save the American River Association.

The following are some brief comments regarding Initial Study for the project:

1. Since SARA's major concern in this project is how it affects the water supply from the Folsom South Canal, we noticed that the study states that "It is not anticipated that water from the Folsom South Canal will be required for golf course irrigation".

2. It appears that the 320 acre feet of water required for golf course irrigation will be obtained from the various sources listed on pages 27 and 28.

3. Vernal pools, seasonal wetlands and wildlife habitats will be addressed in the D.E.I.R.

4. The east side of Rancho Seco Lake will be left undeveloped in order to connect and serve the eastern open space preserve and wetland mitigation area.

SARA wishes to express its acknowledgement that it has been contacted in a timely fashion on this issue. Your cooperation is appreciated.

Sincerely,

Frank F. Cirill

Frank F. Cirill, President
Save the American River Assn., Inc.

Res: 5515 State Avenue
Sacramento, CA 95819
Phone: 455-2880

(cc's next page)

cc: Sacramento County Parks and Recreation
Attn: Gene Andal, Director

Sacramento Open Space
Attn: Ann Kohl

SMUD - Rancho Seco Park
Attn: Kenneth Miller

SARA Board of Directors

COUNTY OF SACRAMENTO
DEPARTMENT OF ENVIRONMENTAL REVIEW AND ASSESSMENT

DENNIS E. YEAST
DIRECTOR

October 7, 1993

Sacramento Municipal Utility District
Rancho Seco Park
14440 Twin Cities Road
Herald, CA 95638-9799
ATTN: Kenneth Miller

SUBJECT: NOTICE OF PREPARATION (NOP) FOR SACRAMENTO MUNICIPAL UTILITY DISTRICT RANCHO SECO PARK

Dear Mr. Miller:

Thank you for the opportunity to comment on the NOP for the above referenced project. We do not have comments at this time, however, we would appreciate receiving a copy of the Draft Environmental Impact Report for our review and comment.

If you have any questions, please contact Mr. Robert Caikoski at 440-7914.
Sincerely,

Dennis Yeast
Environmental Coordinator

DY:ck

cc: Reading File

(RnchSecoltr,,59)

827 SEVENTH STREET • ROOM 220 • SACRAMENTO, CALIFORNIA 95814
TELEPHONE: (916) 440-7914 • FAX: (916) 552-8343

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, *Governor*

DEPARTMENT OF FISH AND GAME
REGION 2
1701 NIMBUS ROAD, SUITE A
RANCHO CORDOVA, CALIFORNIA 95670

(916) 355-7020

October 12, 1993

Mr. Kenneth Miller
Sacramento Municipal Utility District
1440 Twin Cities Road
Herald, California 95638-9799

Dear Mr. Miller:

The Department of Fish and Game (DFG) has reviewed the Notice of Preparation (NOP) for a draft program Environmental Impact Report (EIR) for the Rancho Seco Park Master Plan (SCH# 93092046). The NOP proposes the conversion of 1,600 acres of land surrounding the Rancho Seco Nuclear Power Facility, in Sacramento County, into a park and public golf course.

The DFG is providing these comments as a Trustee Agency having jurisdiction by law over natural resources, affected by a project, which are held in trust for the people of the State of California (California Environmental Quality Act Guidelines Sec. 15385 et sec.). The DFG has the following concerns regarding impacts to fish and wildlife resources from project implementation:

Wetlands

A total of 199.48 acres of jurisdictional wetlands and 89.89 acres of nonjurisdictional wetlands have been identified at the project site. Proposed mitigation measures for potential impacts to wetland resources includes the development of a wetland mitigation plan as part of the Army Corps of Engineers 404 permitting process, obtaining a streambed alteration agreement with the DFG, and preparation of a erosion and sediment control plan for Sacramento County. The authority of these various permits/agreements does not cover, and therefore does not adequately protect, all of the wetlands delineated at the project site (e.g., nonjurisdictional wetlands outside of the 100-year floodplain).

Cumulative impacts from continued loss of wetlands is of serious concern to the Department. Impacts to wetland resources are given special consideration in the California Environmental Quality Act (CEQA) Guidelines (Sec. 15206 (b.) (5)) such that a project containing wetlands is considered of areawide significance. The wetland mitigation plan should provide for no net loss of wetland habitat value and acreage. The mitigation/

compensation plan should include but may not be limited to:

a. Provisions for avoidance and protection of wetland vegetation to the greatest possible extent. Mitigation should include nonconstruction buffer areas adequate to protect the aquatic resource from degradation and disturbance. The DFG recommends a 50-foot minimum buffer area around intermittent watercourses, and 100-foot minimum buffer areas around permanent wetlands. These distances should be expanded to protect any associated riparian vegetation.

b. Unavoidable disturbance/removal of wetland vegetation (after examination of all feasible avoidance alternatives) must be compensated for so that no net loss of habitat value and acreage occurs. Pre-project habitat values should be quantified (acreage) and qualified (type and condition of vegetation). Habitat variables considered during the evaluation should include percent of canopy coverage, amount of shaded aquatic habitat, plant species diversity and dominance, levels of vegetative strata, seral (development) stage of the habitat (pioneer establishment, mature climax etc.), proximity of disturbance factors, special status plant species, and wildlife species associated with the habitat, etc.

c. The Wetland Compensation Mitigation Plan for unavoidably impacted wetlands should include proposed replacement ratios for individual plant species and/or canopy coverage for multi-trunk plants. Replacement ratios are dependent on seral (development) stage of disturbed vegetation/habitat versus seral stage of reestablished vegetation/habitat, types of vegetation proposed for the compensation area, and the location of compensation area. The replacement ratio for on-site, in-kind compensation may be as low as 1:1 to accomplish no net loss of habitat value and acreage. Off-site, out-of-kind replacement ratios must be proportionately higher to provide similar habitat value.

Mitigation must be provided for instream impacts from project activities. Mitigation may include but not be limited to those recommendations used during the Streambed Alteration Agreement (Fish and Game Code Section 1600 et sec.) process (attached). The lead agency is reminded that the Streambed Alteration process is not a CEQA equivalent procedure as certified by the Secretary of Resources. Therefore, instream

impacts must be provided in the EIR and not be deferred as future permit conditions (CEQA Sec. 21080 c.).

Special Status Species

The NOP identifies three special status plant species as occurring at the project site. Boggs Lake hedge-hyssop (Gratiola heterosepela), and Sacramento orcutt grass (Orcuttia viscida) are State-listed as endangered plant species. Greene's legenere (Legenere limosa) is a State candidate species.

Any activity resulting in loss of habitat, decreased reproductive success, or other negative effect on the population level of State-listed endangered or threatened species may be construed as "take" by the DFG. Unavoidable "take" of a threatened or endangered species would require the project proponent to obtain a permit from DFG pursuant to Section 2081 of the California Department of Fish and Game Code. The agreement would require that all feasible avoidance mechanisms be employed. Any unavoidable impacts would require mitigation which results in a net benefit to the continued viability of the species. Similar requirements may apply for federally-listed species pursuant to the Federal Endangered Species Act.

If we can be of further assistance, please contact Mr. Bob Mapes, Associate Wildlife Biologist, at (916) 355-7010 or Mr. Jerry Mensch, Environmental Services Supervisor, at (916) 355-7030.

Sincerely,

L. Ryan Broddrick
Regional Manager

Attachment

cc: Mr. Bob Mapes
Department of Fish and Game
Rancho Cordova, California 95670

Mr. Jerry Mensch
Department of Fish and Game
Rancho Cordova, California 95670

1. Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. The disturbed portions of any stream channel or lake margin within the high water mark of the stream or lake shall be restored to as near their original condition as possible.

2. Restoration shall include the revegetation of stripped or exposed areas.

3. Rock, riprap, or other erosion protection shall be placed in areas where vegetation cannot reasonably be expected to become reestablished.

4. Installation of bridges, culverts, or other structures shall be such that water flow is not impaired and upstream or downstream passage of fish is assured at all times. Bottoms of temporary culverts shall be placed at or below stream channel grade. Bottoms of permanent culverts shall be placed below stream channel grade.

5. Plans for design of concrete sills and other features that could potentially impede fish migrations must be approved by Department engineers.

6. When any dam (any artificial obstruction) is being constructed, maintained, or placed in operation, sufficient water shall at all times be allowed to pass downstream to maintain fishlife below the dam.

7. An adequate fish passage facility must be incorporated into any barrier that obstructs fish passage.

8. Any temporary dam (any artificial obstruction) constructed shall only be built from material such as clean gravel which will cause little or no siltation.

9. No equipment will be operated in live stream channels.

10. Equipment shall not be operated in the stream channels of flowing live streams except as may be necessary to construct crossings or barriers and fills at channel changes.

11. When work in a flowing stream is unavoidable, the entire streamflow shall be diverted around the work area by a barrier, temporary culvert, and/or a new channel capable of permitting upstream and downstream fish movement. Construction of the barrier and/or the new channel shall normally begin in the downstream area and continue in an upstream direction and the flow shall be diverted only when construction of the diversion is completed. Channel bank or barrier construction shall be adequate to prevent seepage into or from the work area. Channel banks or barriers shall not be made of earth or other substances subject to erosion unless first enclosed by sheet piling, rock riprap, or other protective material. The enclosure and the supportive material shall be removed when the work is completed and the removal shall normally proceed from down stream in an upstream direction.

12. Temporary fills shall be constructed of nonerodible materials and shall be removed immediately upon work completion.

13. Equipment shall not be operated in the lake or its margin except during excavation and as may be necessary to construct barriers or fills. If work in the lake is unavoidable, a curtain enclosure to prevent siltation of the lake beyond the immediate working area shall be installed. The enclosure and any supportive material shall be removed when the work is completed.

14. Silt settling basins shall be located away from the stream or lake to prevent discolored, silt-bearing water from reaching the stream or lake.

15. Preparation shall be made so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential. Frequent water checks shall be placed on dirt roads, cat tracks, or other work trails to control erosion.

16. Wash water containing mud or silt from aggregate washing or other operations shall not be allowed to enter a lake or flowing streams.

17. a) A silt catchment basin shall be constructed across the stream immediately below the project site. This catchment basin shall be constructed of gravel which is free from mud or silt.
b) Upon completion of the project and after all flowing water in the area is clear of turbidity, the gravel along with the trapped sediment shall be removed from the stream.

18. If operations require moving of equipment across a flowing stream, such operations shall be conducted without substantially increasing stream turbidity. For repeated crossings, the operator shall install a bridge, culvert, or rock-fill crossing as specified in comments below.

19. If a stream channel has been altered during the operations, its low flow channel shall be returned as nearly as possible to its natural state without creating a possible future bank erosion problem, or a flat wide channel or sluice-like area. If a lake margin has been altered, it shall be returned as nearly as possible to its natural state without creating a future bank erosion problem. The gradient of the streambed or lake margin shall be as nearly as possible the same gradient as existed prior to disturbance.

20. Structures and associated materials not designed to withstand high seasonal flows shall be removed to areas above the high water mark before such flows occur.

21. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any logging, construction, or associated activity of whatever nature shall be allowed to enter into or placed where it may be washed by rainfall or runoff into, waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream or lake.

22. The operator will notify the Department of Fish and Game of the date of commencement of operations and the date of completion of operations at least five days prior to such completion.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Sacramento Field Office
2800 Cottage Way, Room E-1803
Sacramento, California 95825-1846

In Reply Refer To:
PPN 1369

October 15, 1993

Mr. Kenneth Miller
Sacramento Municipal Utility District
Rancho Seco Park
14440 Twin Cities Road
Herald, California 95638-9799

Subject: Notice of Preparation of a Draft Environmental Impact Report; Rancho Seco Park Master Plan, Rancho Seco Lake, Herald, Sacramento County, California

Dear Mr. Miller:

The U.S. Fish and Wildlife Service (Service) has reviewed the Notice of Preparation of a Draft Environmental Impact Report for the Rancho Seco Park Master Plan.

These comments are intended to assist you in your review of the proposal, and will not take the place of any formal comments that may be required under the provisions of the Fish and Wildlife Coordination Act.

Enclosure A provides a list of sensitive species that may occur in the project area and general survey guidelines. Enclosure B recommends general guidelines for identifying and mitigating project impacts to fish, wildlife, and their habitats. We encourage you to use these guidelines to develop a comprehensive environmental document that addresses these needs.

If you have any questions regarding these comments, please contact Jim Browning at (916) 978-5408 (No. 1).

Sincerely,

Dale A. Pierce

Dale A. Pierce
Acting Field Supervisor

Enclosures

cc: Reg. Dir., (ARD-ES)
FWS-HC, Section 7

ENCLOSURE A

Endangered Species. This attachment identifies those listed, proposed, and/or candidate species that may occur in the proposed project area. Information and maps concerning candidate species in California may be obtained from the California Natural Diversity Data Base, a program administered by the California Department of Fish and Game. Requests for information should be addressed to the Marketing Manager, California Department of Fish and Game, Natural Diversity Data Base, 1416 Ninth Street, Sacramento, California 95814. The marketing manager may be contacted by calling (916) 324-0562. You may request additional information from the Chief, California Department of Fish and Game, Non-Game Heritage Program, at (916) 324-8348.

Listed species are fully protected under the mandates of the Endangered Species Act (Act), as amended. Section 9 of the Act and its implementing regulations prohibit the "take" of a federally listed fish and wildlife species by any person, as defined by the Act. Take is defined by the Act "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such species. Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR § 17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures. If a Federal agency is involved with the permitting, funding, or carrying out of this project, initiation of formal consultation is required between that agency and the Service pursuant to Section 7 of the Act if it is determined that the proposed project may affect a federally listed species. Federal agencies must confer if they determine that the continued existence of a proposed species may be jeopardized by the project. Such consultation or conference could result in a biological opinion that addresses anticipated effects of the project to listed and proposed species. The biological opinion may authorize a limited level of incidental take for federally listed species.

If a Federal agency is not involved with the project, and federally listed species may be taken as part of the project, then an "incidental take" permit pursuant to Section 10(a) of the Act should be obtained. The Service may issue such a permit upon completion by the permit applicant of a satisfactory conservation plan for the listed species that may be affected by the project.

We recommend that appropriately designed surveys for listed, proposed, or candidate species be undertaken by qualified biologists. Surveys for plants should not be restricted to the identified species; instead, a complete botanical inventory of the project site should be conducted. Botanical surveys should be conducted at intervals throughout the spring and summer, in order to maximize the likelihood of encountering each species during the season most appropriate for accurate identification. Surveys should be based on field inspection, and not on prediction of occurrence based on habitat or physical features of the site. Guidelines for conducting adequate botanical surveys are available from the Natural Heritage Division of the California Department of Fish and Game at (916) 322-2493.

The results of all biological surveys should be published in the environmental impact report. The report should include a brief discussion of survey methods (including sampling methods and timing of surveys), results (including a list of all species encountered as well as maps of vegetation types, populations of plant species, and breeding, nesting or burrowing sites or other habitat components important to animal species), and conclusions. If it is concluded that a given sensitive species is not present, the justification for this conclusion should be fully explained.

Should these surveys determine that listed, proposed, or candidate species may be affected by the proposed project, the Service recommends that the project proponent, in consultation with this office and the California Department of Fish and Game, develop a plan that mitigates for the project's direct and indirect impacts to these species and compensates for project-related loss of habitat. The mitigation plan also should be included in the environmental impact report.

One of the benefits of considering candidate species as well as listed and proposed species early in the planning process is that by exploring alternatives, it may be possible to avoid conflicts that could develop, should a candidate species become listed before the project is complete. In addition, in instances where the Service addresses proposed projects under its Fish and Wildlife Coordination Act authority, we must also analyze the impacts on candidate species and make recommendations to mitigate any adverse effects.

ENCLOSURE A

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CANDIDATE SPECIES THAT MAY OCCUR IN THE AREA OF THE PROPOSED RANCHO SECO PARK MASTER PLAN, HERALD, SACRAMENTO COUNTY, CALIFORNIA (1-1-93-TA-1501, OCTOBER 15, 1993)

Listed Species

Birds

bald eagle, *Haliaeetus leucocephalus* (E)

Invertebrates

valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

Proposed Species

Invertebrates

vernal pool fairy shrimp, *Branchinecta lynchi* (PE)
vernal pool tadpole shrimp, *Lepidurus packardi* (PE)
California linderiella, *Linderiella occidentalis* (PE)
Conservancy fairy shrimp, *Branchinecta conservatio* (PE)

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (2*)
western spadefoot toad, *Scaphiopus hammondi hammondi* (2R)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (2)

Birds

ferruginous hawk, *Buteo regalis* (2*)
tricolored blackbird, *Agelaius tricolor* (2)

Mammals

Pacific western big-eared bat, *Plecotus townsendii townsendii* (2)
greater western mastiff-bat, *Eumops perotis californicus* (2)
riparian brush rabbit, *Sylvilagus bachmani riparius* (1)
San Joaquin Valley woodrat, *Neotoma fuscipes riparia* (2)

(E)--Endangered (T)--Threatened (P)--Proposed (CH)--Critical Habitat
(1)--Category 1: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.
(2)--Category 2: Taxa for which existing information indicated may warrant listing, but for which substantial biological information to support a proposed rule is lacking.
(1R)-Recommended for Category 1 status.
(2R)-Recommended for Category 2 status.
(▪)--Listing petitioned.
(*)--Possibly extinct.

ENCLOSURE B

The goal of the U.S. Fish and Wildlife Service is to conserve, protect and enhance fish, wildlife, and their habitats by timely and effective provision of fish and wildlife information and recommendations. To assist us in accomplishing this goal, we would like to see the items described below discussed in your environmental documents for the proposed project.

Project Description. The document should very clearly state the purposes of, and document the needs for, the proposed project so that the capabilities of the various alternatives to meet the purposes and needs can be readily determined.

A thorough description of all permanent and temporary facilities to be constructed and work to be done as a part of the project should be included. The document should identify any new access roads, equipment staging areas, and gravel processing facilities which are needed. Figures accurately depicting proposed project features in relation to natural features (such as streams, wetlands, riparian areas, and other habitat types) in the project area should be included.

Affected Environment. The document should show the location of, and describe, all vegetative cover types in the areas potentially affected by all project alternatives and associated activities. Tables with acreages of each cover type with and without the project for each alternative would also be appropriate. We recommend that all wetlands in the project area be delineated and described according to the classification system found in the Service's Classification of Wetlands and Deepwater Habitats of the United States (Cowardin 1979). The Service's National Wetland Inventory maps would be one starting point for this effort.

The document should present and analyze a full range of alternatives to the proposed project. At least one alternative should be designed to avoid all impacts to wetlands, including riparian areas. Similarly, within each alternative, measures to minimize or avoid impacts to wetlands should be included.

Lists of fish and wildlife species expected to occur in the project area should be in the document. The lists should also indicate for each species whether or not it is a resident or migrant, and the period(s) of the year it would be expected in the project area.

Environmental Consequences. The sections on impacts to fish and wildlife should discuss impacts from vegetation removal (both permanent and temporary), filling or degradation of wetlands, interruption of wildlife migration corridors, and disturbance from trucks and other machinery during construction and/or operation. These sections should also analyze possible impacts to streams from construction of outfall structures, pipeline crossings, and filling. Impacts on water quality, including nutrient loading, sedimentation, toxics, biological oxygen demand, and temperature in receiving waters should also be discussed in detail along with the resultant effects on fish and

aquatic invertebrates. Discussion of indirect impacts to fish, wildlife, and their habitats, including impacts from growth induced by the proposed project, should also be addressed in the document. The impacts of each alternative should be discussed in sufficient detail to allow comparison between the alternatives.

The cumulative impacts of the project, when viewed in conjunction with other past, existing, and foreseeable projects, need to be addressed. Cumulative impacts to fish, wildlife, wetlands and other habitats, and water quality should be included.

Mitigation Planning. Under provisions of the Fish and Wildlife Coordination Act, the Service advises the U.S. Army Corps of Engineers on projects involving dredge and fill activities in "waters of the United States", of which wetlands and some riparian habitats are subcategories. Since portions of this proposal may ultimately require a Corps permit, the Service will subsequently be involved under the Coordination Act. Therefore, if you have not done so already, we suggest that you or your representative consult the Corps regarding onsite wetlands and related habitats that may fall under their jurisdiction, and include this information in the draft document. When reviewing Corps public notices, the Service generally does not object to projects meeting the following criteria:

1. They are ecologically sound;

2. The least environmentally damaging reasonable alternative is selected;

3. Every reasonable effort is made to avoid or minimize damage or loss of fish and wildlife resources and uses;

4. All important recommended means and measures have been adopted, with guaranteed implementation to satisfactorily compensate for unavoidable damage or loss consistent with the appropriate mitigation goal; and

5. For wetlands and shallow water habitats, the proposed activity is clearly water dependent and there is a demonstrated public need.

The Service may recommend the "no project" alternative for those projects which do not meet all of the above criteria, and where there is likely to be a significant fish and wildlife resource loss.

When projects impacting waterways or wetlands are deemed acceptable to the Service, we recommend full mitigation for any impacts to fish and wildlife. The Council on Environmental Quality regulations for implementing the National Environmental Policy Act define mitigation to include: 1) avoiding the impact; 2) minimizing the impact; 3) rectifying the impact; 4) reducing or eliminating the impact over time; and 5) compensating for impacts. The Service supports and adopts this definition of mitigation and considers the specific elements to represent the desirable sequence of steps in the

mitigation planning process. Accordingly, we maintain that the best way to mitigate for adverse biological impacts is to avoid them altogether.

The document should describe all measures proposed to avoid, minimize, or compensate for impacts to fish and wildlife and their habitats. The measures should be presented in as much detail as possible to allow us to evaluate their probable effectiveness.

Because of their very high value to migratory birds, and their ever-increasing scarcity in California, our mitigation goal for wetlands (including riparian and riverine wetlands) is no net loss of in-kind habitat value or acreage (whichever is greater).

For unavoidable impacts, to determine the mitigation credits available for a given mitigation project, we evaluate what conditions would exist on the mitigation site in the future in the absence of the mitigation actions, and compare those conditions to the conditions we would expect to develop on the site with implementation of the mitigation plan.

Mitigation habitat should be equal to or exceed the quality of the habitat to be affected by the project. Baseline information would need to be gathered at the impact site to be able to quantify this goal in terms of plant species diversity, shrub and tree canopy cover, stems/acre, tree height, etc. The ultimate success of the project should be judged according to these same measurements at the mitigation site.

Criteria should be developed for assessing the progress of the project during its developmental stages as well. Assessment criteria should include rates of plant growth, plant health, and evidence of natural reproduction. Success criteria should be geared toward equaling or exceeding the quality of the highest quality habitat to be affected. In other words, the mitigation effort would be deemed a success in relation to this goal if the mitigation site met or exceeded habitat measurements at a "model" site (plant cover, density, species diversity, etc.).

The plan should present the proposed ground elevations at the mitigation site, along with elevations in the adjacent areas. A comparison of the soils of the proposed mitigation and adjacent areas should also be included in the plan, and a determination made as to the suitability of the soils to support habitats consistent with the mitigation goals.

Because wetland ecosystems are driven by suitable hydrological conditions, additional information must be developed on the predicted hydrology of the mitigation site. The plan should describe the depth of the water table, and the frequency, duration, areal extent, and depth of flooding which would occur on the site. The hydrologic information should include an analysis of extreme conditions (drought, flooding) as well as typical conditions.

The plan must include a time frame for implementing the mitigation in relation to the proposed project. We recommend that mitigation be initiated prior to the onset of construction. If there will be a substantial time lag between project construction and completion of the mitigation, a net loss of habitat

values would result, and more mitigation would be required to offset this loss.

Generally, monitoring of the mitigation site should occur annually for at least the first five years, semi-annually for years 6 through 11, and every five years thereafter until the mitigation has met all success criteria. The monitoring period should begin again if success criteria are not met during the first five years. Some projects will require monitoring throughout the life of the project. Reports should be prepared after each monitoring session.

The plan should require the preparation of "as-built" plans. Such plans provide valuable information, especially if the mitigation effort fails. Similarly, a "time-zero" report should be mandated. This report would describe exactly what was done during the construction of the mitigation project, what problems were encountered, and what corrections or modifications to the plans were undertaken.

The plan should detail how the site is to be maintained during the mitigation establishment period, and how long the establishment period will be. It will also be important to note what entity will perform the maintenance activities, and what entity will untimately own and manage the site. In addition, a mechanism to fund the maintenance and management of the site should be established and identified. A permanent easement should be placed on the property used for the mitigation that would preclude incompatible activities on the site in perpetuity.

Finally, in some cases, a performance bond may be required as part of the mitigation plan. The amount of the bond should be sufficient to cover the costs of designing and implementing an adequate mitigation plan (and purchasing land if needed) should the proposed plan not succeed.

Reference

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. FWS/OBS-79/31. U.S. Fish and Wildlife Service, Washington, D.C. 103 pp.

DOUGLAS M. FRALEIGH, Director
W. H. HARADA, Deputy Director
F. I. HODGKINS, Deputy Director
TERRY T. TICE, Deputy Director

COUNTY OF SACRAMENTO

DEPARTMENT OF PUBLIC WORKS
COUNTY ADMINISTRATION BUILDING • ROOM 304 • 827 SEVENTH STREET
SACRAMENTO, CALIFORNIA 95814 TELEPHONE: (916) 440-6581
FAX (916) 440-7100

October 1[illegible], 1993

Kenneth Miller
Sacramento Municipal Utility District
Rancho Seco Park
14440 Twin Cities Road
Herald, CA 95638-9799

Subject: **NOTICE OF PREPARATION (NOP) OF A DRAFT ENVIRONMENTAL REPORT (DEIR) FOR RANCHO SECO MASTER PLAN**

Dear Mr. Miller,

In response to your request for comments regarding the above cited project, following is a summary of replies from various Public Works agencies of Sacramento County:

1. Transportation Division - Steve Hetland of the Sacramento County Transportation Division comments as follows: "The Transportation Division has reviewed the NOP and recommends that the DEIR address the access needs to State Route 104. This should be coordinated with Caltrans and the Sacramento County Transportation Division."

2. Water Resources Division - Refer to the attached letter from James Paluck dated October 8, 1993

If you have any questions regarding this response, please call Bob Davison at 440-6525.

Sincerely,

for Douglas M. Fraleigh, Director
Department of Public Works

DMF:MTD/92-61
Attachments

cc: Terry Tice
Warren Harada
Keith Devore
Jim Ray
Kim Smith, Jones and Stokes Associates

COUNTY OF SACRAMENTO
INTER-DEPARTMENT CORRESPONDENCE
WATER RESOURCES DIVISION

MEMORANDUM

DATE: October 8, 1993

TO: Bob Davison
Public Infrastructure Planning and Financing Section

FROM: James Paluck
Water Resources Division

SUBJECT: Comments on the NOP of a DEIR for Rancho Seco Park Master Plan

The Water Resources Division has the following comments on the above project.

EXISTING CONDITIONS:

The project site is located south of Twin Cities Road and approximately 11 miles east of Highway 99 in a rural area of southeastern Sacramento County, as shown on the U.S.G.S. Goose Creek Quadrangle Map. The majority of the site (north of Rancho Seco Lake) drains north to Hadselville Creek. The site is located outside the federally regulated 100-year floodplain (Zone X), as identified on the FEMA FIRM map number 060262-0525C, dated September 30, 1988. The majority of the site is located in a local floodplain, as determined by this Division. This determination was made due to the existence of the drainage swales that exist on the site.

PROPOSED CONDITIONS:

If the project is approved, the subject application should be conditioned on the following:

- STD#191 (E,F)- Provide drainage easements pursuant to the Sacramento County Interim Urgency Ordinance relating to Floodplain Management, and the Sacramento County Improvement Standards, including any fee required by Ordinance No. 1 of the County Water Agency.

- STD#193 (Min. Pad)- Provide minimum pad/floor elevations pursuant to the Sacramento County Interim Urgency Ordinance relating to Floodplain Management prior to building permit issuance.

- (F&G, COE Permits)- Obtain applicable State Fish & Game and U.S. Army Corps of Engineers permits prior to grading or building permit issuance.

Furthermore, in the initial study, the following items were unclear and will need clarification in the EIR:

- Will the amount of runoff to Hadselville Creek increase, decrease, or remain the same due to the project?
- Will the amount of runoff to Rancho Seco Lake increase, decrease or remain the same due to the project?
- Are there any proposed improvements to the existing on site drainage swales?

If you have any questions, please feel free to call me at 440-6851.

DOUGLAS M. FRALEIGH, Director
W. H. HARADA, Deputy Director
F. I. HODGKINS, Deputy Director
TERRY T. TICE, Deputy Director

COUNTY OF SACRAMENTO
DEPARTMENT OF PUBLIC WORKS
827 - SEVENTH STREET • ROOM 301 • PHONE 440-6851
SACRAMENTO, CALIFORNIA 95814
WATER RESOURCES DIVISION . . . KEITH DEVORE, Chief

October 30, 1993

Mr. Kenneth Miller
Sacramento Municipal Utility District
Rancho Seco Port
14440 Twin Cities Road
Herald, CA 95638-9799

Subject: NOP of a Draft EIR for Rancho Seco Master Plan

Dear Mr. Miller,

In addition to the comments from the County of Sacramento, Department of Public Works dated October 15, 1993, we would like to make the following comments on the subject project.

The Draft EIR should identify and describe the existing and proposed monthly American River water diversions for the project area. To the extent that the proposed project will increase American River water diversions, alternate supply sources should be evaluated such as, Sacramento River diversions, groundwater (used solely or conjunctively with surface water), reclamation, and conservation. Also, any additional diversion facilities which may be needed should be identified and evaluated.

We appreciate the opportunity to comment and apologize for the lateness.

Sincerely,

Donna Dean

Donna M. Dean
Senior Civil Engineer

cc: Bob Davison, Public Infrastructure
Keith DeVore, Water Resources
Kim Smith, Jones & Stokes

STATE OF CALIFORNIA — BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 3, SACRAMENTO
MS 41
P. O. BOX 942874
SACRAMENTO, CA 94274-0001
Telephone 916 327-4576
FAX no. 916 323-7669
TDD 916 323-0026

October 19, 1993

ESAC 186/193
Rancho Seco Park Master Plan
NOP
03-SAC-104 PM 012.183

Mr. Kenneth Miller
Sacramento Municipal Utility District
14440 Twin Cities Toad
Herald, CA 95638-9799

Dear Mr. Miller:

We have reviewed the subject document and request inclusion of the following in your Draft Environmental Impact Report (DEIR):

- A determination of Level of Service (LOS) for the Rancho Seco Road/Highway 104 Intersection. This should include the existing LOS as well as projected LOS, i.e., with this project and with anticipated growth in through traffic on Highway 104;

- Turning movement volumes at the same intersection. They should be provided for existing conditions and for "build-out".

Thank you for considering the above as you prepare the DEIR and if you have any questions, please contact Brigitte Jaensch at (916)327-4576.

Sincerely,

JEFFREY PULVERMAN, Chief
Advanced Transportation System
Development Branch

COUNTY OF SACRAMENTO
PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT

827 SEVENTH STREET, ROOM 230
SACRAMENTO, CALIFORNIA 95814
Telephone: (916) 440-6141
FAX: (916) 440-6400

THOMAS W. HUTCHINGS
DIRECTOR

November 4, 1993

Jones and Stokes Associates
2600 V Street, Suite 100
Sacramento, CA 95818-1914

Attention: Kim Smith

Subject: SMUD Rancho Seco Park Master Plan

Dear Ms. Smith:

Pursuant to my prior conversations with Tim Palmquist of California Muni Golf and in response to the Notice of Preparation, this letter is to confirm that the proposed SMUD Rancho Seco Park Master Plan, including the golf course and equestrian center, is considered a public park (Item E.1 in the Residential Use Table of the Sacramento County Zoning Code). This use is a permitted use in the AG-80 zone. No land use entitlements from Sacramento County are needed for this project to proceed.

The Planning Department has no comments on the Notice of Preparation.

Please contact me at 440-6200 if you have any questions.

Sincerely,

Tricia Stevens

Tricia Stevens
Principal Planner

Enclosure

c: Tim Palmquist, California Muni Golf
Tom Hutchings
John O'Farrell
Dennis Yeast
Kenneth Miller, SMUD

TS
ltRanchoSeco

Appendix C. Nationwide Permit Number 26 Authorization

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

REPLY TO
ATTENTION OF

November 29, 1993

Regulatory Section (199300366)

Mr. Tim Palmquist
Project Dimensions
5 Park Plaza, Suite 1170
Irvine, California 92714

Dear Mr. Palmquist:

This letter will reiterate the conference call between yourself, Ms. Ellyn Davis of Jones & Stokes, and Ms. Karen Shaffer of my staff, on November 24, 1993.

Your proposed Rancho Seco Park Master Plan Project can be authorized under Nationwide Permit Number 26, provided you comply with the Special Conditions below. You must also meet the terms and conditions listed on the enclosed information sheet, which includes obtaining state water quality certification or waiver of certification. Since you do not yet have water quality certification or waiver, the proposed project is denied without prejudice and cannot be authorized until either water quality certification or a waiver is obtained.

The Nationwide Permit will be effective upon the receipt of certification or waiver of certification and will remain in effect for two years following that date or until the nationwide permit is modified, reissued, or revoked, whichever comes first. Work may then proceed subject to the terms and conditions of certification.

Special Conditions

1. The permittee shall incorporate all terms and conditions of the Prediscbarge Notification for the Proposed Rancho Seco Park Master Plan Project which includes the Conceptual Wetland Mitigation and Monitoring Plan for the Rancho Seco Park Master Plan Project, both dated October 28, 1993. These plans shall be implemented with the following additions, changes and clarifications.

2. Scientists qualified in restoration practices should be on site at all times during mitigation construction.

3. The as-built plans and annual monitoring reports shall be submitted to the Corps, Fish and Wildlife Service, EPA and Department of Fish and Game.

4. The mitigation monitoring period shall be no less than five years. Should the Corps determine that significant remedial action is necessary, the permittee shall reinitiate monitoring from the date corrective measures are completed continuing for five years. The final success criteria shall not be considered to have been met until three years after all human support has ceased.

5. The rocked slopes of the pond mitigation areas shall be backfilled with soil over the rock and seeded.

6. Since a reduction in rangeland acreage is occurring, there shall be a reduction in the number of cattle and/or time grazed. A grazing management plan shall be developed and submitted to the Corps and reviewing agencies for approval. This plan shall clearly stipulate the livestock class, duration, intensity and location of grazing activities. This plan shall be submitted 60 days prior to construction.

7. Any future change in land use other than that stated in the mitigation plan shall be submitted to the Corps as a modification to this authorization. Upon receipt of a modification, the Corps will determine the need for: 1) an additional predischarge notification process; 2) an informal notification to reviewing agencies; or 3) an internal review and decision.

8. A funding mechanism shall be set up to assure maintenance of open spaces and preserves. The permittee shall set up this mechanism in consultation with the Corps within 60 days of construction.

Number 199300366 has been assigned to this project. Please reference this number in any correspondence pertaining to this work. If you have any questions, please write to Karen Shaffer at the letterhead address, Room 1444, or telephone (916) 557-5269.

Sincerely,

Tom Coe
Chief, Central Valley Office

Enclosure (1)

Copies Furnished: w/o enclosure

Ms. Ellyn Miller Davis, Jones & Stokes Associates, Inc., 2600 V

Street, Suite 100, Sacramento, California 95818-1914

California Regional Water Quality Control Board, 3443 Routier Drive, Sacramento, CA 95827