

**SACRAMENTO MUNICIPAL UTILITY DISTRICT
UPPER AMERICAN RIVER PROJECT
(FERC NO. 2101)**

**BLACK BEAR
TECHNICAL REPORT**

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LIST OF APPLICABLE STUDY PLANS

Description

- Black Bear Study Plan

6.4 Black Bear Study Plan

6.4.1 Pertinent Issue Questions

The black bear study addresses Terrestrial Resource Issue Questions:

2. "How and where does SMUD's infrastructure and operations affect wildlife movement?"
4. "What are the relevant and known factors affecting bear behavior in the Project area and how/where are these factors influenced by Project operation and maintenance?"
9. "What are the effects on terrestrial resources of having year-round roads in the Project area? (e.g., what are the effects related to bear hunters having access to the Project area because of road clearing?"
13. "What are the impacts on terrestrial resources due to secondary use of project access roads (e.g., OHV use)?"
30. "Relative to effects on wildlife, what is the use of off-road vehicles by season? By month?"

6.4.2 Background

California's black bear population has increased over the past 15 years and is conservatively estimated at between 17,000 and 23,000 animals (CDFG 1998). The species is widespread and relatively common throughout the Sierra Nevada, from foothill habitats to alpine zones. They generally occur in fairly dense, mature stands of many forest types, valley foothill riparian, and wet meadow. Black bears are omnivorous, feeding largely on grasses and forbs, fruits, nuts, insects, and carrion. They generally require large trees and suitable den sites in tree and snag hollows, stumps, logs, caves, or holes in the ground. These habitat elements must be in mature, dense vegetation, and on sheltered slopes for suitable denning. Most young are born in winter dens from late January to early February.

The black bear is a legally hunted species in California. In the Project area, the bear hunting season currently extends from the fourth Saturday in September (same as the General deer hunting season) until the last Sunday in December, but the season closes automatically when 1,500 bears have been taken based on mandatory tag returns. The California Department of Fish and Game (CDFG) regulates bear harvest and management in California, and as such, strives to maintain bear harvest rates within the reproductive capacity of the population to compensate for hunting mortality (i.e., "Threshold of Mortality"; Elowe and Dodge [1989]). Bear populations managed below the "threshold of mortality" can sustain continued, regulated hunting harvest (Claar et al. 1999). However, year-round access on Project roads may increase hunter opportunities and success beyond what would be available if roads were not maintained free of snow during the latter weeks of the bear season. Such increased potential for success will vary among years depending on arrival of snowfall and the date when CDFG receives the allotted 1,500 tags and closes the hunting season. Based on CDFG records, the number of bears taken by hunters in El Dorado County from 1991-2000 were: 39, 34, 50, 27, 47, 23, 44, 44, 29, and 61. Bear populations have been increasing in this region over the last couple of decades, consistent with the statewide bear population (personal communication, D. Updike, CDFG, December 8, 2001).

Conflicts between humans and black bears in high-density recreation areas are a source of concern for managers (Claar et al. 1999). Black bears consume human garbage and hazardous human/bear encounters are increasing in many campgrounds and mountain residential areas, including within the Project area. Measures implemented in such areas as Yosemite National Park to reduce this problem include installation of larger bear-proof food storage boxes, increased enforcement, increased frequency of garbage pick-up, and better environmental education for the public (Thompson and McCurdy 1995). The Eldorado National Forest (ENF) uses similar approaches to black bear management at recreation sites they manage within the Project area.

Year-round access on Project roads may have a more direct influence on bears through increased potential for disturbance at den sites due to chance encounters by winter recreationists (e.g., snowmobiles, cross-country skiers). High intensity winter recreation may cause flight, physiological stress, and/or loss of young (Youmans 1999). Bears, however, generally select den sites away from possible disturbance (Tietje and Ruff 1980), but will abandon dens following subsequent human disturbance (Lindzey and Meslow 1977, Hamilton and Marchington 1980,

LeCount 1983, Manville 1983). Den abandonment has been shown to increase overwinter weight loss to 25 percent of a bear's body weight compared to 16 percent loss for bears that do not abandon their dens (Tietje and Ruff 1980).

Beecham and Rohlman (1994) found that black bears in Idaho may react to increases in road densities by shifting the location of their home ranges to areas of lower road density. In general, female bears avoided roads, while males used roads in proportion to their availability. Kasworm and Manley (1990) reported that black bears in Montana avoided habitat within about 300 yards of open roads, while Beecham and Rohlman (1994) found that both sexes prefer to stay at least 50 yards from roads, except when feeding. In a North Carolina study, crossing of roads by bears was found to be directly related to traffic volume but the frequency of crossings did not vary by sex, age, or season (Brody and Pelton 1989). The North Carolina study also found that bears did not restrict their movements in reaction to road density within established home ranges.

In summary, impacts of recreation on black bears are not well understood. Separating effects from the various types of potential disturbances is difficult, yet research has shown that black bears are relatively tolerant of human use of roads and trails, especially outside of the denning season (Claar et al. 1999). Disturbance at den sites, however, can result in abandonment of the den, possible loss of young, and/or physiological stress.

6.4.3 Study Objectives

The objectives of this study are as follows: 1) Based on consultations with CDFG, determine if the agency is concerned about Project-related effects on bear harvest (both legal and illegal) or about effects of winter recreation on denning bears (Phase I); 2) If CDFG raises specific concerns about these Project-related effects then implement studies to determine the significance of these effects. Studies, if necessary, will focus on: 1) the relationship between harvest of bears and the availability of year-round access roads maintained free of snow for access to UARP facilities; and 2) the type, frequency, duration, intensity, and distribution of Project-related recreational use during the winter denning season in relation to the distribution of suitable denning habitat.

6.4.4 Study Area and Sampling Sites

The study areas for each objective are as follows:

- Objective No. 1: Roads maintained free of snow for year-round access to Project facilities;
- Objective No. 2: Distribution of Project-related recreation sites to be determined by the Recreation Technical Working Group (TWG) with input from the Terrestrial Resources TWG. The study area for determining distribution of suitable denning habitat corresponds to that used for the Vegetation Mapping Study (i.e., 0.5-mile from Project features).

Field studies will be restricted to those lands where the Licensee has legal access (e.g., ownership/easement rights, public lands) and will not occur on private lands without prior permission from the landowner.

6.4.5 Information Needed From Other Studies

Information on winter recreation patterns will be obtained from the various Recreation studies. The location of Project-access roads maintained free of snow will be obtained from the Licensee. The extent and distribution of human/black bear encounters will be obtained from the ENF and CDFG. Bear harvest and management information will be determined from CDFG.

6.4.6 Study Methods and Schedule

This study consists of two Phases:

Phase I: The Licensee will consult with bear experts and enforcement personnel at CDFG (i.e., Doug Updike and Rob Pirtle) to determine if CDFG, as the agency responsible for managing black bear populations in the State, has any concerns over Project-related effects on bear harvest (both legal and illegal) or potential effects of winter recreation on denning bears..

Phase II: If concerns are raised by CDFG during Phase I, the Licensee will implement the following studies:

Hunting Access: CDFG bear harvest and management records will be examined for known locations and dates of bear kills within the Project area. A map will be prepared showing the spatial relationship of bear kill locations with Project-access roads. The literature will be reviewed and summarized for information pertaining to hunter success in relation to road access. CDFG will be contacted regarding bear management objectives within the Project area and to determine the agency's concerns, if any, over the availability of year-round access roads and bear harvest, including poaching.

Winter Recreation: The type, distribution, and extent of winter recreation in the study area will be obtained from the Recreation TWG. A map will be prepared showing the spatial relationship of this recreation relative to the distribution of suitable denning habitat (i.e., dense, mature vegetation on sheltered slopes) within the study area. The distribution of denning habitat will be based on the results of the Vegetation Mapping Study and a literature review to determine the key habitat characteristics of suitable denning habitat.

In addition to the methods mentioned above, incidental observations of bears reported by field biologists, SMUD and ENF personnel, and the public will be summarized for analysis of bear distribution within the Project area. To the extent available, these records will be supported by information on sex, age, activity, and all other parameters of significance to bear management in the area.

6.4.7 Analysis

If Phase II is determined to be necessary by Phase I, analysis will be conducted for each of the study components as follows:

Hunting Access: The bear harvest data will be analyzed to determine if Project access roads have a substantial influence over hunter success. This information will be discussed with CDFG to determine if a need exists for a road management plan that considers hunter access and black bear management. If a plan is deemed necessary, it will be developed by the ENF in consultation with the Licensee and CDFG.

Winter Recreation: The spatial relationship between winter recreation patterns and distribution of suitable denning habitat will be evaluated by the Licensee in collaboration with ENF and CDFG biologists to determine if a need exists for a winter recreation management plan that considers recreational access and bear management concerns.

6.4.8 Study Output

Study results will be presented to the Terrestrial Resources TWG and Plenary Group toward the end of 2002. However, the ultimate study output will be a written report that includes the issues addressed, objectives, study area, methods, analysis, results, discussion, and conclusions. The reports will be prepared in a format that allows the information to be inserted directly into the Licensee-prepared Draft Environmental Assessment that will be submitted to FERC with the Licensee's application for a new license.

6.4.9 Preliminary Estimated Study Cost

A preliminary estimated study cost will be prepared after the Plenary Group approves the plan.

6.4.10 TWG and Plenary Group Endorsement

On April 16, 2002 the following entities gave approval to the plan: USFS, BLM and SMUD.

On May 1, 2002 the following participants gave Plenary Group approval to the plan: USFS, BLM, USFWS, Taxpayers of El Dorado County, Friends of El Dorado County, Camp Lotus, El Dorado County Water Agency, El Dorado County, Placer County Water Agency, California Department of Fish and Game, California State Water

Resources Control Board, Pacific Gas and Electric and Friends of the River. None of the participants at the meeting said they could not “live with” this study plan.

6.4.11 Literature Cited

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BLACK BEAR TECHNICAL REPORT

SUMMARY

This technical report describes the results of the black bear study implemented for relicensing of SMUD's Upper American River Project (UARP). SMUD met with black bear experts from the California Department of Fish and Game (CDFG) on August 29, 2002 to determine if CDFG, as the agency responsible for managing black bear populations in California, had any concerns with UARP-related effects on bear harvest (both legal and illegal) or potential effects of winter recreation on bears in dens. SMUD's consultation with CDFG (Phase 1) resulted in a determination by CDFG that additional studies (Phase 2) were unwarranted. CDFG's experts noted that there were no UARP-related effects on bear harvest or on bears in winter dens. However, CDFG expressed concern over increasing numbers of bear/human interactions in developed campgrounds associated with the UARP. The issue of bear attraction to garbage deposits and visitor food supplies was categorized as a recreation issue and as such, will be addressed within the UARP Recreation Technical Working Group (TWG).

1.0 INTRODUCTION

This technical report is one in a series of reports prepared by Devine Tarbell & Associates, Inc. (DTA) for the Sacramento Municipal Utility District (SMUD) as an appendix to SMUD's application to the Federal Energy Regulatory Commission (FERC) for a new license for the Upper American River Project (UARP or Project). The report addresses black bear (*Ursus americanus*), a USDA Forest Service, Region 5 Management Indicator Species (USDA 1989) and a legally hunted species (California Fish and Game Code), within the UARP area. This report includes the following sections:

- **BACKGROUND** – Summarizes the applicable study plan approved by the UARP Relicensing Plenary Group; a brief description of the issue questions addressed, in part, by the study plan; the objectives of the study plan; the study area, and agency information requests. In addition, requests by resource agencies for additions to this technical report are described in this section.
- **METHODS** – A description of the methods used in the study.
- **RESULTS** – A summary of pertinent consultations with agencies.
- **LITERATURE CITED** – A listing of all literature cited in the report.

This technical report does not include a detailed description of the UARP Alternative Licensing Process (ALP) or of the Project, which can be found in the following sections of the Licensee's application for a new license: the UARP Relicensing Process, Exhibit A (Project Description), Exhibit B (Project Operations), and Exhibit C (Construction).

Also, this technical report does not include a discussion of the effects of the UARP on black bear and related environmental resources, nor does the report include a discussion of appropriate protection, mitigation and enhancement (PM&E) measures. An impacts discussion regarding the UARP is included in the applicant-prepared draft environmental assessment (PDEA) document, which is part of SMUD's application for a new license. Development of resource measures will

occur in settlement discussions, and will be reported in the PDEA. However, the report does include measures proposed by the Terrestrial Resources Technical Working Group (TWG) for due consideration in settlement discussions.

2.0 BACKGROUND

2.1 Black Bear Study Plan

In response to the management emphasis for black bear stated in the Eldorado National Forest (ENF) Land and Resource Management Plan (LRMP; USDA 1989) and the California Fish and Game Code, the UARP Terrestrial Resources TWG developed the UARP Black Bear Study Plan, which was approved by the TWG on April 16, 2002 and by the UARP Relicensing Plenary Group on May 1, 2002. The study plan was designed to address, in part, the following issue questions developed by the Plenary Group:

- Issue Question 2. How and where does SMUD's infrastructure and operations affect wildlife movement?
- Issue Question 4. What are the relevant and known factors affecting bear behavior in the Project area and how/where are these factors influenced by Project operation and maintenance?
- Issue Question 9. What are the effects on terrestrial resources of having year-round roads in the Project area? (e.g., what are the effects related to bear hunters having access to the Project area because of road clearing?)
- Issue Question 13. What are the impacts on terrestrial resources due to secondary use of project access roads (e.g., OHV use)?
- Issue Question 30. Relative to effects on wildlife, what is the use of off-road vehicles by season? By month?

Based on a review and discussion of the initial issue questions, the Terrestrial Resources TWG developed the following study objectives:

1. Consult with CDFG to determine if the agency is concerned about UARP-related effects on bear harvest (both legal and illegal) or about effects of winter recreation on denning bears (Phase 1); and
2. If CDFG raises specific concerns about these UARP-related effects, then implement studies to determine the significance of these effects (Phase 2). Studies, if necessary, will focus on: 1) the relationship between harvest of bears and the availability of year-round access roads maintained free of snow for access to UARP facilities; and 2) the type, frequency, duration, intensity, and distribution of UARP-related recreational use during the winter denning season in relation to the distribution of suitable denning habitat.

The area evaluated for Phase 1 included the entire UARP area, including the Iowa Hill Development area. The more specific study area for Phase 2 studies, if necessary based on Phase 1 consultations, was identified in the study plan as: 1) roads maintained free of snow for year-round access to UARP facilities; and 2) an area 0.5-mile from UARP features for determination of suitable denning habitat and effects of UARP-related recreational use during the winter denning season.

2.2 Agency Requested Information

In a May 13, 2004 letter, the agencies stated in regards to the *Black Bear Technical Report* (February 2004) the following:

- Project-related bear/human interactions are being addressed within the Recreation TWG. The discussion in the Terrestrial Resource *Black Bear Technical Report* focused upon bear/human interactions in campgrounds associated with the Project. There is also a concern regarding bear/human interaction in Project-related dispersed recreation areas. As bear populations remain stable or continue to increase and as bear management is more fully integrated into recreation management of Project facilities, there is an increased potential for bear/human interactions in undeveloped recreation areas. This concern should be fully addressed by the Recreation TWG.

The Terrestrial Resources TWG concurred with the agencies that the Recreation TWG should address the issue of bear/human interactions, both in developed and undeveloped areas. Rick Williams, attended a meeting of the Recreation TWG on June 13, 2004, and briefed the TWG members on the issue, including their responsibilities for addressing the issue. The Recreation TWG had not yet taken action on this issue at the time of this report.

3.0 METHODS

3.1 Phase 1 (Agency Consultation)

SMUD met with black bear experts from CDFG on August 29, 2002 to determine if CDFG, as the agency responsible for managing black bear populations in California, had any concerns with UARP-related effects on bear harvest (both legal and illegal) or potential effects of winter recreation on bears in dens. Representatives from CDFG at this meeting were Mr. Douglas Updike, Mr. Robert Pirtle, and Ms. Terri Weist.

3.2 Phase 2 (Field Studies)

Phase 2 was determined to be unwarranted based on Phase 1 consultations.

4.0 RESULTS

The Phase 1 consultation with CDFG resulted in a determination by CDFG that Phase 2 studies were unwarranted. CDFG's bear experts expressed no concern over UARP-related effects on

harvest of bears or on potential winter recreation effects on bears in dens. The only substantive concern pertained to bear/human interactions in campgrounds associated with the UARP. Numbers of bears attracted to garbage deposits and visitor food supplies in campgrounds has increased in recent years. Visitation by bears poses a threat to human safety, can result in damage to campground facilities, automobiles and recreation equipment, and subjects a bear to potential killing by law enforcement officers when a real threat to human safety exists. UARP and Terrestrial Resources TWG waiver of Phase 2 studies was contingent upon SMUD agreeing to address the issue of UARP-related bear/human interactions within the Recreation TWG, giving due consideration to the following measures for reduction of future bear/human conflicts as identified by the CDFG during Phase 1 and endorsed by the Terrestrial Resources TWG at a meeting on June 21, 2004:

- SMUD should coordinate with the Forest Service and CDFG on development of a bear management plan that includes the following:
 - Install bear-proof garbage containers and food storage lockers at all campgrounds;
 - Establish adequate garbage disposal services at all campgrounds;
 - Establish and enforce rules and procedures for the use of garbage containers, food storage lockers, and backcountry food canisters by recreationists. (This measure acknowledges the need to educate the public on proper procedures and to dedicate law enforcement personnel to carry out the intended enforcement responsibility); and
 - Ensure that contracts with concessionaires mandate compliance with these rules and procedures

SMUD requested that CDFG submit a formal letter for the record to document CDFG's waiver of Phase 2 studies. However, CDFG had not prepared this letter by the date this revised technical report was issued.

5.0 LITERATURE CITED

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