Enclosure I
Study FWS-5
California Red-Legged Frog Study
Submitted by the U. S. Fish and Wildlife Service
September 8, 2016

Introduction

The Applicant, South Sutter Water District (SSWD) operates the Camp Far West Hydroelectric Project on the Bear River (P-2297). The setting is a reservoir in oak-woodland savanna rangeland with localized and dispersed recreation. Although livestock grazing is not a part of the Federal Energy Regulatory Commission (FERC) license, it is generally compatible with California red-legged frog (*Rana draytonii*) conservation. The California red-legged frog is listed as threatened (61 FR 25813; May 23, 1996) under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531, *et seq.*).

Reservoirs can have adverse effects on California red-legged frogs, because: (1) they are typically populated with bullfrogs (*Rana* [=*Lithobates*] *catesbeiana*) and warm water fishes that feed on California red-legged frogs (Kiesecker and Blaustein 1998); (2) bullfrogs tend to disperse out of reservoir habitat into stream and pond habitat occupied by California red-legged frogs; (3) California red-legged frogs move up and down drainages and seek out water bodies with permanent water (USFWS 2002), which is likely to bring them into predator-infested water.

Hydroelectric project dams, impoundments, afterbays, and changing of aquatic conditions are key factors in the establishment of bullfrogs and suppression of California red-legged frogs (USFWS 2002). Hydroelectric projects enhance habitat conditions for the bullfrog at the expense of native amphibians. Diversion dams also create warm water conditions that allow for establishment of bullfrog populations in areas where they would not exist, or would be in very low numbers, under natural flow conditions (Fuller *et al.* 2010). The USFWS is concerned that the Project provides conditions that favor bullfrog establishment, either extirpating local California red-legged frog populations or putting constant pressure on California red-legged frog populations and keeping their numbers low.

California red-legged frogs are easily extirpated by bullfrogs, which are known to predate upon them, out-compete them at the larval stage, and reduce California red-legged frogs reproductive success by inducing cross-species amplexus. However, California red-legged frogs are able to persist in marginal habitats that have seasonal water (USFWS 2002) and in small stock ponds and other range improvements (USFWS 1996). The sewage treatment ponds and stock ponds associated with the project are typical examples of marginal habitat that could support California red-legged frogs.

This proposed study is intended to gather essential and fundamental information on the occurrence of California red-legged frogs within the FERC Boundary and in areas within one mile of the Project that could be affected by bullfrog dispersal into occupied California red-legged frog habitat.

This is the first step in the FERC Traditional Licensing Process where it would be appropriate for the U. S. Fish and Wildlife Service (USFWS) to make a study request.

Study Goals and Objectives

The study is intended to identify and quantify the location of any California red-legged frogs within the FERC Project Boundary and any accessible lands that would be affected by bullfrog dispersal from the Project. The study will provide data to estimate:

- the abundance of California red-legged frogs at the Project's two sewage treatment ponds within the FERC Boundary;
- the abundance of California red-legged frogs at any stock ponds on South Sutter Water District Lands within the vicinity of the Project;
- the abundance of California red-legged frogs at any stock ponds within one mile of the Project, where landowner permission can be obtained; and
- the abundance and location of breeding bullfrogs within the Project boundary.

This study will obtain the necessary information needed to evaluate the Project effects on the persistence of California red-legged frogs so the USFWS can design adequate protection measures for the species and to ensure compliance with the ESA.

USFWS Management Goal

The USFWS goals for the Project include, but are not limited to, the following:

- Conservation of California red-legged frogs, consistent with ESA sections 2, 4, and 7;
- Protecting, conserving, enhancing and recovering California red-legged frogs and their habitat by providing access to suitable habitats and by restoring fully functioning habitat conditions;
- Providing California red-legged frogs refuge from predators;
- Maintaining habitat conditions that support all life stages of the species;
- Identifying and implementing measures to protect, mitigate or minimize direct, indirect and cumulative impacts to, and enhance native frog habitats, including related spawning, rearing, and migration habitats and adjoining riparian habitats;
- Maintaining, recovering, and restoring riparian resources and aquatic habitat;
- Maintaining, recovering, and restoring streamflow regime sufficient to sustain desired conditions of native riparian, aquatic, wetland, and meadow habitats; and
- Protecting aquatic systems to which species are uniquely adapted.

Existing Information and Need for Additional Information

No surveys have been conducted for the California red-legged frog within the FERC Boundary. Although marginal conditions exist in within the FERC Boundary, high-quality potential habitat is in the Project vicinity. Because Project recreation in the Camp Far West

Reservoir is predominantly for warm water fishes, California red-legged frogs in the area are likely to be susceptible to predation; however, the stock ponds and sewage treatment ponds within the FERC Boundary and Project vicinity may provide habitat for the species.

Project Nexus

The primary Project facilities include the: (1) Camp Far West Dam and spillway; (2) Camp Far West Reservoir (impoundment); (3) 6.8 MW capacity Camp Far West powerhouse; (4) powerhouse afterbay; and (5) recreational development.

The Project contributes to direct, indirect, and cumulative effects on native frogs within the FERC Boundary, because warm water fishes are well-established in Camp Far West Reservoir. The sewage treatment pond, which may allow for some level of refugia for California red-legged frogs, is a part of the recreational development for the Project.

Description of Study Methods and Analysis

Study Area

The study area includes all impounded water and riparian areas within the FERC Boundary of the Project, and all accessible impounded water in the vicinity of the Project where SSWD is an owner or has permitted access.

General Concepts

The following general concepts apply to this study:

- Personal safety is an important consideration of each fieldwork team. If the Applicant determines the information cannot be collected in a safe manner, the Applicant will notify FERC and USFWS as soon as possible via email to discuss alternative approaches to perform the study.

- Surveyors shall not touch the water or any organisms observed in the sewage treatment ponds, and surveyors shall not walk through the creek or seepage downstream of the sewage treatment ponds.

- The Applicant may be required to obtain permits from the appropriate federal and/or state agencies to survey for California red-legged frogs.

- The Applicant shall make a good faith effort to obtain permission to access private property where needed well in advance of performance of the study. If access is not granted or river access is not feasible or safe, the Applicant will notify FERC and USFWS as soon as possible via email to determine if USFWS can assist in gaining access or to discuss alternative approaches to perform the study.

- The schedule for each proposed study is reasonably flexible to accommodate unforeseen problems that may affect the schedule. If a schedule changes, the

Applicant will notify FERC and USFWS as soon as possible via email to discuss alternative approaches to perform the study.

- Field crews may make minor modifications to the study proposal in the field to accommodate actual field conditions and unforeseen problems. If modifications are made, the Applicant will provide a detailed description of the conditions that led to the decision to modify the study to FERC and USFWS as soon as possible via email.

- The USFWS shall have permission to attend the surveys or to conduct the surveys independently if they request to do so.

- The Applicant's performance of the study does not presume the Applicant is responsible in whole or in part for resource management measures that may arise from that study.

- The estimated level of effort and cost is not a firm commitment by the Applicant to expend all the funds. If the study costs more, the Applicant is committed to completing the study. If the study costs less, the Applicant is not committed to expending the remaining funds on other Relicensing studies or resource management measures.

- All special-status species observations will be submitted to the California Natural Diversity Database.

Study Methods

Timing – The Applicant shall conduct 6 night surveys for California red-legged frogs, at monthly intervals from February through July. The Applicant shall conduct 3 daytime breeding surveys for bullfrogs in the months of May, June, and July. No surveys shall be closer together than 3 weeks.

Methods for night surveys- The surveyor shall approach each pond and stop within a distance of 30 meters. Using a 40 to 100 lumen flashlight the surveyor shall slowly illuminate the perimeter of the pond (light sweep), looking for eye shine. The surveyor shall count eye-shine and report both the number and variations in the color of eye shine. After a count of eye shines has been made, the surveyor shall follow the same light-sweep path while observing the pond edge using a pair of binoculars. Frogs with a noticeable lip mark, dorsal-lateral fold, or small tympanum should be recorded as California red-legged frogs. Confirmation of identification can be made by performing a second light-sweep of the pond using a 140 to 200 lumen flashlight. If the number of detections diminishes with the brighter light source, discontinue the light-sweep immediately.

This methodology shall be repeated in 6 locations at the Camp Far West Reservoir margin.

Methods for daytime surveys – Starting in the mid-morning, the surveyor listen for and record any adult male bullfrog calls at designated survey locations. The surveyor shall sit quietly for 15 minutes at 6 locations around the margin of Camp Far West Reservoir, 2 locations at the

after-bay/diversion pool, the 2 sewage treatment ponds, and any accessible stock ponds. After the audio survey, the surveyor shall walk around each sewage treatment pond and stock pond at a distance of 2 meters from the edge. Any frogs that chirp when they jump into the water shall be recorded as bullfrogs. The number of frogs that hop without chirping and the number that hop without vocalizing shall be recorded.

Products

- Data will be used to determine areas that have California red-legged frogs or areas that are occupied by bullfrogs.
- Products: Eye-shine report and documentation of Ranid frog occurrences, separated out by species with notes regarding size/life-stage of any observed frogs.

Consultation and Communication

The Applicant will file with FERC and post on its Relicensing Website periodic reports (annual and semiannual reports) as required by the FERC in the Study Plan Determination. The Applicant will collaborate with the USFWS on the following items:

- Staffing of surveyors;
- Site selection; and
- Data analysis methods.

Schedule

First Year Study
Planning and Receiver Site Selection……...……October 2016– December 2016
Night Surveys……February 2017 – July 2017
Field Data Collection…….……..... February 2017 – July 2017
Data Analysis……..August 2017 – October 2017

Consistency of Methodology with Generally Accepted Scientific Practices

The study methods discussed above are consistent with the generally accepted scientific practices and do not require an ESA section 10(a)(1)(A) permit from the USFWS.

Considerations of Level of Effort

As addressed above, existing information is not sufficient for developing protection, mitigation, and enhancement measures, because no California red-legged frog surveys have been conducted within the FERC Boundary or Project vicinity. The USFWS has developed this protocol to provide the maximum amount of information with the least amount of effort.

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