



United States Department of the Interior

FISH AND WILDLIFE SERVICE

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MPWMD

January 2, 2004

In Reply, Refer To: PAS 542.880.1125

Calvin C. Fong, Chief, Regulatory Branch
San Francisco District, U.S. Army Corps of Engineers
Department of the Army
333 Market Street
San Francisco, California 94105-2197

Attn: Bob Smith, Regulatory Branch

Subject: Biological Opinion on the Regional General Permit for River Maintenance and Restoration on the Carmel River, Monterey County, California, No. 24460S (1-8-03-F-45)

Dear Mr. Fong:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of your proposed issuance of a regional general permit (RGP), pursuant to section 404 of the Clean Water Act, for the proposed maintenance and restoration activities along the Carmel River in Monterey County, California, and its effects on the federally threatened California red-legged frog (*Rana aurora draytonii*), in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Your August 15, 2003 request to reinstate formal consultation was received on August 21, 2003. The Monterey County Peninsula Management District (MPWMD) is the applicant for the proposed project.

The proposed project lies within Unit 18 of the critical habitat for the California red-legged frog that was designated on March 13, 2001 (66 *Federal Register* 14625). On November 6, 2002, the United States District Court for the District of Columbia set aside the designation and ordered the Service to publish a new final rule with respect to the designation of critical habitat for the California red-legged frog (*Home Builders Association of Northern California et al. versus Gale A Norton, Secretary of the Department of Interior et al.* Civil Action No. 01-1291 (RJL) U.S. District Court, District of Columbia). Because critical habitat for the California red-legged frog has been vacated, the effects of your action on critical habitat do not need to be considered at this time.

This biological opinion was prepared using the following sources of information: the U.S. Army Corps of Engineers' (Corps) public notice on issuance of regional general permit (RGP) number 24460S, dated July 14, 2000; the permit application package submitted to the Corps by the Monterey Peninsula Water Management District (MPWMD) for Carmel River maintenance and restoration projects, dated May 20, 1999; additional information submitted by the MPWMD dated January 23, 2001, May 3, 2001, and November 5, 2001; the final project description dated July 3, 2003 (MPWMD 2003b); Guidelines for Vegetation Management and Removal of Deleterious Materials for the Carmel River Riparian Corridor (MPWMD 2003a); informal correspondence with MPWMD staff; and, our files at the Ventura Fish and Wildlife Office. A complete administrative record of this consultation is on file at the Ventura Fish and Wildlife Office.

CONSULTATION HISTORY

Extensive flooding in the winter of 1995 prompted the Monterey County Water Resources Agency, acting on behalf of landowners along the Carmel River (river) whose property was threatened by erosion, to seek authorization from the Corps for bank stabilization and excavation activities. The Corps requested formal consultation with us pursuant to Section 7 of the Act, due to the presence of the California red-legged frog within the proposed project area. We issued a non-jeopardy biological opinion (1-8-96-F-42) on September 20, 1996. The Corps authorized this project under permit number 21793S09.

The winter of 1997/1998 was also severe, exacerbating past erosion problems and creating new ones along the river. The Monterey Peninsula Water Management District (MPWMD), acting on behalf of numerous property owners along the river, agreed to facilitate permitting from various agencies so that stream bank stabilization and repair projects could be completed before the next rainy season. The MPWMD and the Corps concluded that the work could be authorized under RGP 23081 issued by the Corps' San Francisco District office in response to the damage from storms in central California in 1998. The Corps again requested formal consultation with us pursuant to Section 7 of the Act, due to the presence of the California red-legged frog within the proposed project area. We issued a non-jeopardy biological opinion (1-8-98-F-65) on September 11, 1998. The Corps authorized this project under RGP 23783S .

In addition to streambank repair and stabilization projects, the MPWMD has implemented restoration and enhancement projects over the past 10 years. The MPWMD proposes to continue to restore, maintain, enhance, and comprehensively manage the riparian corridor of the lower 18 miles of the river below the existing San Clemente Dam. The MPWMD has applied for RGP 24460S from the Corps to conduct channel maintenance and river restoration activities and to streamline the permit process for numerous property owners along the river. You requested formal consultation with us in a letter dated September 15, 2000. On October 17, 2000, the MPWMD requested that you suspend processing the application to resolve concerns raised by agencies in response to the public notice. In a letter dated January 12, 2001, we requested additional information required to initiate the formal consultation process. We received the

requested information on May 7, 2001 in a letter from the MPWMD, and since that time have been coordinating with the MPWMD and the National Oceanic and Atmospheric Administration - Fisheries (NOAA Fisheries) (formerly National Marine Fisheries Service) to clarify and improve upon the proposed project description. The project description was revised numerous times. We have worked extensively with the MPWMD to develop the proposed avoidance, minimization, and mitigation measures to benefit the California red-legged frog. The National Oceanic Atmospheric Association concurrently provided minimization and mitigation measures for the steelhead trout (*Oncorhynchus mykiss*), which were also added to the project description.

In a letter dated July 7, 2003, the MPWMD submitted the final project description and requested that you continue processing the RGP application. You requested that we resume formal consultation in letter dated August 15, 2003 that we received on August 21, 2003.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The MPWMD is requesting authorization to act on behalf of the Corps as the local agency with authority to accept, review, authorize, and conduct maintenance and restoration projects along approximately 16.3 miles of the river. Authorized activities under RGP 24460S (RGP) would involve projects from the upstream boundary of the coastal zone at approximately river mile (RM) 1.3 to the vicinity of Sleepy Hollow near RM 17.6, which is approximately one mile downstream of San Clemente Dam ("RGP area"). The MPWMD is requesting authorization under the RGP for a 10-year period.

In general, the objectives of the projects to be permitted under the RGP would be to restore and maintain bank stability and channel meanders in unstable areas, prevent resource degradation, and reestablish or enhance riparian resources. Activities authorized under the RGP are designed to work together in a comprehensive approach to channel maintenance and restoration. The proposed RGP would streamline the permit process for those agencies and landowners who are interested in the following types of projects:

- channel restoration in unstable areas;
- installing limited erosion protection in unstable, degraded areas;
- reestablishing riparian vegetation along stream banks and adjacent areas;
- limited removal of vegetation and debris from the active channel;
- maintenance or repairs of existing and proposed restoration activities; and,
- fisheries enhancement projects.

The proposed RGP would not cover activities such as:

- channelization for flood control;
- lining of the main stem of the river with rock rip-rap, concrete rubble, or other permanent

- erosion protection (except as noted below in *Streambank stabilization*); and,
- installation or maintenance of levees.

Projects within these categories that are not covered under the RGP would require independent review and permitting.

For projects to be authorized under the RGP, the MPWMD proposes the following protocol. For MPWMD-sponsored restoration projects, MPWMD staff would be responsible for planning, environmental review, securing permits, construction management, revegetation, irrigation system installation, monitoring, and project maintenance. For projects sponsored by other parties, the MPWMD would act as an agent on behalf of the Corps to streamline the regulatory process. In this role, the MPWMD would review proposed project designs for conformance with existing standards and issue a permit to conduct activities in accordance with the terms and conditions of the RGP.

The MPWMD would be responsible for the preparation of annual notification and compliance reports. These reports would contain information on all projects constructed under the RGP. Prior to carrying out activities in the channel, the MPWMD would prepare project descriptions, schedules, maps, pre-construction photos, and habitat evaluations. On an annual basis, we would have the opportunity to review planned projects for consistency with this biological opinion and require additional protective measures for the California red-legged frog, if necessary. During project work, the MPWMD would inspect for compliance with RGP terms and conditions. After completion of work, the MPWMD would provide post-construction photographs, estimates of quantities of fill placed and/or acreage of Federal jurisdictional wetlands affected, and evaluation of compliance with the RGP.

The proposed maintenance and restoration program would consist of the activities described below. Detailed descriptions of proposed actions are included in the permit application package submitted to the Corps by the MPWMD for Carmel River maintenance and restoration projects, dated May 20, 1999, and in additional information submitted by the MPWMD, and referenced earlier as a source of information for this biological opinion. Descriptions of management activities are contained in MPWMD's Guidelines for Vegetation Management and the Removal of Deleterious Materials for the Carmel River Riparian Corridor (MPWMD 2003a).

Three basic types of activities are proposed: (1) channel restoration projects requiring heavy construction equipment (e.g., bulldozer, loader, backhoe, excavator) to restore channel geometry and repair streambanks; (2) project maintenance and vegetation management carried out primarily with hand tools (e.g., chainsaw); and (3) riparian and aquatic habitat enhancement projects, such as vegetation planting or spawning gravel injection, that may require use of some heavy equipment (e.g. a backhoe). Proposed construction activities in the channel and riparian areas would be implemented primarily during low-flow periods on the river (i.e., July 1 to October 31). Some activities such as planting and irrigation in the floodplain may be conducted during the winter and spring.

The MPWMD proposes an annual maximum scope of work under the RGP. Each year that the RGP is in place, channel repair, restoration, and enhancement projects that require the use of heavy equipment would be limited to 0.7 mile (3,500 feet) of the river. Of this length, MPWMD-sponsored projects would occur within 0.5 mile (2,500 feet), and projects sponsored by other parties would be limited to 0.2 mile (1,000 feet). In any given year, maintenance and enhancement activities that involve selective modification or removal of vegetation and debris (using primarily hand tools) would affect no more than a total of 3 miles of the river. These activities would not be limited to a contiguous 3-mile reach of the river but may be conducted in various reaches of the river in a discontinuous pattern and on alternating streambanks, as necessary. Fisheries enhancement projects sponsored by the MPWMD would be unlimited because they would be beneficial to aquatic resources and result in only minor and temporary impacts during implementation.

Reestablishment of meander geometry of floodplain

Excavation in active channel

A meandering "low-flow" channel, capable of carrying dominant or frequent flows, with a pool and riffle sequence would be excavated within the main stem. Excavation of sand and gravel bars may be carried out to realign the active channel into a more stable configuration. The channel would be graded and designed to carry excess sediment stored in point bars located within and upstream of the project. Pools would be excavated at appropriate intervals (usually five to seven channel widths) to provide areas for migrating steelhead trout to rest and feed and to provide habitat for California red-legged frogs. In addition, if existing ponds are filled in during channel and floodplain construction efforts, this action would be offset by the creation of new pools and/or low-lying floodplain areas adjacent to the low-flow channel.

Project boundaries would be delineated before work is initiated to limit heavy equipment to the work site. Grading would be initiated by scraping off the upper layer of the riverbed, which contains the largest proportion of cobbles and gravel. Contractors would be required to skim the top four- to twelve-inch layer of gravel, stockpile it, and replace it back onto the channel bed after restoration work is completed to reestablish suitable substrate for spawning by steelhead trout. Foreign objects such as auto parts, various metal objects, and refuse would be removed and taken to an appropriate dump site. Prior to the start of channel grading, salvagable vegetation within the project reach may be removed with mechanized equipment and relocated to bank stabilization work sites. Large equipment such as a front loader, dump truck, backhoe, bull dozer or excavator would be used to restore channel geometry to a more stable alignment. Temporary fill for access paths may be required to allow equipment into the work site.

Channel diversion

When necessary, in order to divert flow around a work site in areas of perennial flow, a trench would be excavated, usually in a dry portion of the channel bottom. Material excavated from the trench (primarily sand, gravel, and cobble) would be used to divert flow into the excavated trench for the duration of the project. After construction is completed, the diversion berm would be removed and the excavated trench area filled in to pre-existing contours.

Streambank stabilization

Areas with significant loss of property due to streambank failure would be backfilled to a pre-loss configuration with sand, gravel, and soil material obtained from off-site sources. Streambanks would be stabilized with structural and/or biotechnical erosion protection tools. Grading of the river banks may be necessary to recontour or reduce the slope of the existing bank to 1.5:1 (horizontal:vertical) grade or flatter.

Installation of structural bank protection materials

The majority of unstable sites requiring bank protection on the river are located on the outsides of the meander bends, or in areas where bank vegetation has eroded away. Traditional slope protection techniques utilizing rip-rap would be limited primarily to areas that are four feet vertically below the toe and up to eight feet vertically above the toe of the active channel. The MPWMD recommends the use of gabion baskets filled with rock primarily in slope areas higher than eight feet above the toe of the active channel. Structural bank protection materials may be installed in additional areas where public or private infrastructure is at risk from bank failure, such as active channel slopes within 25 feet of structures, if necessary. Slopes with structural erosion protection would be built at a 1.5:1 grade or flatter.

Installation of biodegradable bank protection

All projects utilizing rip-rap conducted under this permit would incorporate bioengineering techniques. In critical erosion areas, a combination of erosion resistant materials, log deflectors, rip-rap, and vegetation would be installed to provide bank protection. Sloped areas that do not require the use of structural slope protection materials (e.g., rip-rap) would be constructed at a 2:1 grade or flatter, utilizing bioengineering techniques and materials such as geotextiles (e.g., coconut fiber), live plant material, logs, and rootwads. Filter fabrics that act as a barrier to root penetration will not be allowed; other filtering materials such as biodegradable fabric filters, gravel filters or "backing rock" would be used. Native substrate material (i.e., sand, silt, gravel, and cobble) would be used to rebuild stream banks, when possible. All graded slopes, including areas reinforced with rip-rap, would be revegetated with appropriate native riparian vegetation, according to current MPWMD guidelines.

Vegetation removal

Mature vegetation may be removed during grading to construct floodplains or rebuild streambanks. Vegetation would be trimmed or removed from the active channel when determined necessary to reduce obstruction of river flows and the potential for bank erosion. Heavy equipment may be used to remove fallen trees, debris, and clear critical areas for the placement of slope protection. Vegetation would be cut by hand crews using hand tools and power tools, and cleared material would be chopped on the terraces above the riverbank or used in bank stabilization projects elsewhere along the river. Material that is too large to chip would be cut into shorter lengths, and some material may be burned. Cottonwood and willow saplings may be salvaged and replanted to stabilize banks within the work site. To offset vegetation removal, the MPWMD proposes to revegetate degraded streambank areas, areas adjacent to the main-stem, and areas within the riparian corridor connecting to upland areas. Revegetation will be implemented on a 3:1 ratio basis.

Debris and Large Wood modification

Large wood is defined as wood that is greater than 4 inches in diameter and 3.3 feet in length. Large wood and debris would be relocated to a different location in the river or modified but not removed. Relocation may include linear dispersal along the channel margins or wide dispersal in areas adjacent to the main stem. Work would be conducted when the channel is dry, when possible, or as late in the dry season as possible. When appropriate, large wood and debris that poses a potential erosion hazard would be notched and left in place.

Riparian restoration

The primary objectives of proposed MPWMD-sponsored riparian restoration projects are to stabilize eroded stream banks with native vegetation and to enhance wildlife habitat values on floodplain and terrace areas. Banks and low floodplain terraces would be revegetated with willow (*Salix* spp.), cottonwood (*Populus* spp.), California sycamore (*Platanus racemosa*), desert elderberry (*Sambucus mexicana*), and other riparian species native to the Carmel River drainage basin, with special emphasis on plants appropriate for specific bank or terrace elevation and moisture conditions. Willow cuttings may be available for revegetation from previous MPWMD restoration projects along the river. Top-soil may be integrated into the slope to assist in the retention of moisture, and provide a nutrient-rich medium for root development. As a component of reestablishing native riparian cover, an irrigation system would be installed, operated, and maintained for a minimum of three years, if necessary. If feasible, appropriate low-lying areas may be irrigated to provide refugia for wildlife. Weeds would be removed for a minimum of three years. The MPWMD may apply herbicides by hand at irrigation sites to control poison oak (*Toxicodendron diversilobum*) and non-native invasive species, primarily French broom (*Genista monspessulana*), giant reed (*Arundo donax*), pampas grass (*Cortaderia jubata*), and cape ivy (*Senecio mikanioides*). Only Rodeo® or a technical grade of glyphosate (without surfactant) will

be allowed. MPWMD standards for the river include replanting of native riparian vegetation in areas that do not achieve a 70 percent success rate by the third year, following initial planting.

Fisheries enhancement

To enhance or restore habitat for steelhead trout, the MPWMD proposes to include the following elements in its projects: excavation of a pool and riffle sequence after reestablishment of a stream channel; installation of habitat features such as large wood and boulders; and injection of spawning gravels at various locations between Carmel Valley Village and the upstream limit of the proposed RGP area. Dump trucks would deliver gravels to the channel, and the gravels would then be distributed downstream naturally by high flows.

Minimization Measures

The MPWMD will adopt the following minimization measures, which are based primarily on modified terms and conditions provided in biological opinions previously issued to the Corps for projects along the Carmel River (1-8-96-F-42; 1-8-F-98-65) and subsequently revised by the MPWMD through coordination with us:

1. Prior to or during submission of projects proposed to be implemented within the following year, the MPWMD will submit to us the qualifications of the biologist(s) who would conduct the minimization activities. We would approve the biologist(s), and any personnel who may be hired in the future to conduct activities associated with implementing California red-legged frog minimization measures. Only approved biologists will be authorized to handle California red-legged frogs. Prior to handling any California red-legged frogs, these individuals will be trained to handle the species by a qualified herpetologist familiar with ranids, if necessary.
2. For each proposed project, the MPWMD will conduct an assessment of California red-legged frog habitat within the proposed work site according to habitat assessment forms developed by the MPWMD. This assessment will include documentation of incidental observations of California red-legged frogs. The results of the habitat assessment will be submitted to us along with other project-related information. The habitat assessment will extend a minimum of one pool and riffle sequence up and downstream of the work site (i.e., through the end of the closest pools up and downstream of the work site). Biologists with the MPWMD, or other approved biologists, will conduct the habitat assessments. The MPWMD will also provide an assessment of potential impacts to habitat from proposed activities. The proposed field habitat assessment forms are enclosed in this biological opinion.
3. For all project-related construction activities that occur within the channel and the floodplain, a Service-approved biologist will survey the work site twice at night and twice in daylight hours using the Service's *Guidance on Site Assessment and Field Surveys for*

California Red-legged Frogs, dated February 18, 1997, within one week before the onset of activities. Should the survey guidance be revised by the Service, the MPWMD will use the updated guidance, according to our recommendations. The survey will extend a minimum of one pool-riffle sequence up and downstream of the work site. If California red-legged frogs are found, the approved biologist will identify potential translocation sites and will contact us to ensure that translocating adults is appropriate. If we approve moving animals, the approved biologist will be allowed sufficient time to move California red-legged frogs from the work site before work activities begin. Only Service-approved biologists will participate in activities associated with the capture, handling, and monitoring of California red-legged frogs. If feasible, the MPWMD will tag translocated animals to evaluate the success of translocation. Tagging methods will not include permanent removal or disfigurement of any parts of the body.

4. Project activities will be completed primarily between July 1 and October 31, with exceptions noted in measure 5 below. For activities proposed to be conducted between July 1 and October 31, the following measures will be taken.
 - a. If any California red-legged frogs or tadpoles are observed during pre-construction surveys within a particular work site and translocation is determined to be inappropriate, the area will be inspected by a Service-approved biologist for California red-legged frogs daily prior to the onset of activities. If any California red-legged frogs or tadpoles are detected during daily inspections, the approved biologist will delay work activities until they move from the immediate work site.
 - b. If translocation of tadpoles is determined to be appropriate, a Service-approved biologist will conduct daily inspections of the work site to ensure all tadpoles have been successfully removed.
 - c. If translocation of California red-legged frog adults or juveniles is determined to be appropriate prior to the onset of construction, a Service-approved biologist will be present at the work site until such time as all removal of California red-legged frogs, instruction of workers, and habitat disturbance have been completed. After this time, the contractor or permittee will designate a person to monitor on-site compliance with all minimization measures. The Service-approved biologist will ensure that this individual receives training outlined in measure 7 below, and in the identification of California red-legged frogs. The monitor and the Service-approved biologist will have the authority to halt any action that might result in impacts that exceed the levels anticipated by the Corps and us during review of the proposed action. If work is stopped, we will be notified immediately by the Service-approved biologist or on-site biological monitor.
5. Activities that may be completed outside of the proposed July 1 to October 31 work period consist of those described below.

- a. Revegetation of graded areas using construction equipment will be completed within a year following project implementation, provided the following measures are taken: work will not occur within or adjacent to the flowing stream or in standing water; no existing native vegetation will be removed or disturbed; a Service-approved biologist will inspect the restoration site for the presence of California red-legged frogs prior to the onset of revegetation activities; and, if any California red-legged frogs are detected, the approved biologist will stop work activities until they move out of the work site or are translocated.
 - b. During revegetation activities with construction equipment, additional inspections of a work site for the presence of California red-legged frogs by a Service-approved biologist may be required if weather conditions change in a manner that may cause individuals to move into or through the site (i.e., during rainy conditions). The MPWMD will contact us prior to the onset of such activities to determine whether additional inspections (e.g., on a daily basis) by a Service-approved biologist will be required.
 - c. No work will occur within 25 feet of any area known to be occupied by California red-legged frogs or known to provide breeding habitat, unless otherwise approved by us.
 - d. Revegetation by hand methods can be conducted at any time by MPWMD biologists and/or restoration maintenance staff.
 - e. Monitoring, including activities such as surveys for topography, water and sediment movement, wildlife, and vegetation can be conducted at any time. Such surveys will use passive methods.
6. Should the proponent or applicant demonstrate a need to conduct activities beyond the July 1 to October 31 work period, in addition to those specified in measure 5, such activities will be conducted only after obtaining our approval.
 7. Prior to implementation of any construction activities, a MPWMD or Service-approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include a description of the California red-legged frog and its habitat, the importance of the California red-legged frog and its habitat, the general measures that are being implemented to conserve the California red-legged frog as they relate to the project, and the boundaries within which the project may be accomplished. Brochures, books, and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.

8. During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work sites.
9. All fueling and maintenance of vehicles and other equipment and staging areas will occur at least 66 feet from any riparian habitat or water body. The permittee will ensure contamination of habitat does not occur during such operations. Prior to the onset of work, the permittee will prepare a plan to allow a prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to take, should a spill occur.
10. Prior to beginning construction activities, final design plans will be reviewed by the MPWMD. Final design plans will incorporate restoration of natural channel morphologic features including, but not limited to shallow floodplains, backwater areas, off-channel ponds, pool-riffle sequences, and meanders, to the extent possible. Structural protection, such as rip-rap or similar hard streambank lining, will be minimized. Where structural protection is necessary, it will include features to enhance aquatic habitat, such as rootwads and live vegetation.
11. To the maximum extent possible, existing vegetation will be preserved during construction activities. Existing vegetation in areas that receive fill material for stream bank repair or stabilization will not be removed except for trimming to provide equipment access to place fill material. No trees will be removed from these areas for access or during grading or placement of rip-rap. Vegetation trimmings will either be stockpiled for use in revegetation or will be disposed of off-site. In areas where soil is removed, vegetation will be salvaged and placed in areas that receive fill material as near to the surface of the fill as possible.
12. A planting and monitoring plan will be included with the final project design for review and approval by the MPWMD. Such a plan will include the location of the proposed restoration, species to be used, restoration techniques, time of year the work will be done, identifiable success criteria for completion, and remedial actions if the success criteria are not achieved. Project sites will be revegetated with an appropriate assemblage of native riparian and upland vegetation suitable for the area. Plants will be selected from a species list maintained by the MPWMD. The details of a monitoring program will depend on the nature and extent of habitat disturbance.
13. A MPWMD or Service-approved biologist will ensure that the spread or introduction of invasive exotic plant species will be avoided to the maximum extent possible. When practicable, invasive exotic plants within the work sites will be removed.
14. The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project goal. Routes and

boundaries will be clearly demarcated. Access routes and staging areas will be located in a way that minimizes impacts to riparian resources. Where impacts occur in these staging areas and access routes, restoration will occur as identified in measures 10 and 12 above.

15. To control erosion during and after project implementation, the applicant will implement best management practices, as identified by the appropriate Regional Water Quality Control Board or the Monterey County Planning and Building Inspection Department.
16. If a work site is to be temporarily dewatered by pumping, intakes will be completely screened with wire mesh not larger than 0.2 inch (5 millimeters) to minimize the risk of California red-legged frogs entering the pump system. Water will be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction activities, any barriers to flow will be removed in a manner that will allow flow to resume with the least disturbance to the substrate.
17. A MPWMD or Service-approved biologist will permanently remove, from within the project area, any individuals of exotic species, such as bullfrogs (*Rana catesbeiana*), crayfish (*Procambarus clarkii*), and centrarchid fishes, to the maximum extent possible. The permittee will have the responsibility to ensure that their activities are in compliance with all local, State, and Federal laws, ordinances, and statutes.

STATUS OF THE SPECIES

The California red-legged frog was federally listed as threatened on May 23, 1996 (61 *Federal Register* 25813). The Service issued a final recovery plan in 2002 (Service 2002). Critical habitat for the California red-legged frog was designated on March 13, 2001 (66 *Federal Register* 14625). On November 6, 2002, the United States District Court for the District of Columbia set aside the designation and ordered us to publish a new final rule with respect to the designation of critical habitat for the California red-legged frog (*Home Builders Association of Northern California et al., v. Gale Norton, Secretary of the Department of the Interior, et al.* Civil Action No. 01-1291 (RJL) U.S. District Court, District of Columbia).

Detailed information on the biology of California red-legged frogs can be found in Storer (1925), Stebbins (1985), and Jennings et. al. (1992). This species is the largest native frog in the western United States, ranging from 1.5 to 5.1 inches in length. The abdomen and hind legs of adults are largely red; the back is characterized by small black flecks and larger irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background color. Dorsal spots usually have light centers, and dorsolateral folds are prominent on the back. Tadpoles range from 0.6 to 3.1 inches in length, and are dark brown and yellow with dark spots.

California red-legged frog habitat consists of permanent and ephemeral water sources, with emergent and/or submergent aquatic vegetation. California red-legged frogs spend most of their lives in and near sheltered backwaters of ponds, marshes, springs, streams, and reservoirs.

Excellent habitat for adult California red-legged frogs is characterized by deep-water pools (greater than 0.5 m deep) with dense stands of overhanging willows and an intermixed fringe of cattails (*Typha* spp.). California red-legged frog eggs, larvae, transformed juveniles, and adults also have been found in ephemeral creeks and drainages and in ponds that do not have riparian vegetation. In coastal wetland environments, adult California red-legged frogs have been found to select warm, shallow aquatic sites for laying eggs, then subsequently move to deep-water areas (Reis 1999). California red-legged frog larvae have been observed to use aquatic vegetation and mud for cover (Hayes and Jennings 1988). Cattails (*Typha* spp.) and pondweed (*Potamogeton* spp.) are commonly associated with the presence of California red-legged frog larvae (Reis 1999). California red-legged juveniles are often found in sites with shallow water, limited shoreline, and emergent vegetation. It also may be important for juveniles to have small breaks in the vegetation or clearings in the dense riparian cover to permit sunning and foraging, while still having nearby escape from predators (Hayes and Jennings 1988).

California red-legged frogs breed from November through March, with earlier breeding records occurring in southern localities. California red-legged frogs are often prolific breeders, typically laying their eggs during or shortly after large rainfall events in winter and early spring. Embryos hatch 6 to 14 days after fertilization, and larvae require 3.5 to 7 months to metamorphose. For successful reproduction to occur, water must be available long enough for larvae to complete metamorphosis; in coastal environments, water at breeding sites should be present at a minimum from March to July. In the Carmel River watershed, successful breeding is known to occur in areas where water persists until mid-September (Reis 2003a). Reproductive habitat should also contain lentic (still or slow moving) waters between the months of March and mid-September to prevent flushing of eggs and larvae. Larvae probably experience the highest mortality rates of all life stages, with less than one percent of eggs laid reaching metamorphosis. Sexual maturity normally is reached at three to four years of age. California red-legged frogs may live eight to ten years. Juveniles have been observed to be active diurnally and nocturnally, whereas adults are mainly nocturnal.

Accessibility to sheltering habitat is essential for the survival of California red-legged frogs within a watershed and can be a factor limiting population numbers and distribution. Juvenile and adult California red-legged frogs have been observed in areas of riparian vegetation where they may use small mammal burrows, moist litter, and debris such as old boards. During wet periods (particularly winter and spring), California red-legged frogs may move long distances between aquatic habitats, often traveling through habitats previously considered to be unsuitable. California red-legged frogs have been found more than a mile from breeding habitat and may reach isolated aquatic habitats up to a mile away from the nearest known California red-legged frog populations. In addition, California red-legged frogs have been documented to travel more than 2 miles in a virtual straight line migration from nonbreeding to breeding habitats, and are known to inhabit upland habitats within 200 feet of aquatic habitat for continuous durations. California red-legged frogs may exhibit a "homing" behavior. California red-legged frogs captured and translocated during the winter from a pond to nearby habitat (up to 1,770 feet away)

were recently observed returning to the home site, moving either directly overland or from pond to pond (Rathbun and Schneider 2001).

The diet of California red-legged frogs is highly variable. Invertebrates are the most common food items, although vertebrates such as Pacific tree frogs (*Hyla regilla*) and California mice (*Peromyscus californicus*) can constitute over half of the prey mass eaten by larger individuals (Hayes and Tennant 1985). Larvae likely eat algae.

The historical range of the California red-legged frog extended coastally from the vicinity of Point Reyes National Seashore, Marin County, California, and inland from the vicinity of Redding, California, southward to northwestern Baja California, Mexico. The California red-legged frog has been extirpated or nearly extirpated from 70 percent of its former range. Habitat loss and alteration, combined with over-exploitation and introduction of exotic predators, were important factors in the decline of the California red-legged frog in the early to mid-1900s. Several researchers in central California have noted the decline and eventual disappearance of California red-legged frogs once bullfrogs become established at the same site. Bullfrogs prey on all life stages of California red-legged frogs, compete for food, cover, and other resources, and interfere with their reproduction. Additional ongoing threats include fragmentation, degradation, and loss of habitat and establishment of non-native vegetation and predators as a result of urbanization and agricultural activities.

ENVIRONMENTAL BASELINE

The Carmel River can be broadly divided into three reaches. The lower reach encompasses 10 miles from the river mouth at the Pacific Ocean (RM 0) to the "narrows" at RM 10. The middle reach encompasses the length of the river from the narrows to San Clemente Dam at RM 18.6. The upper reach extends from the San Clemente Dam to approximately RM 36, which is in the Ventana Wilderness near the highest point in the drainage basin. The proposed RGP would include projects within the lower and middle reaches of the river.

Observations of California red-legged frog adults, subadults, tadpoles, and eggs have been reported by various individuals at numerous locations throughout the entire Carmel River since the early 1990's (Corps 1994; Nedeff and Hanna 1996; Ecosystems West Consulting Group 2001; Reis 2003a). Based on the available information, the majority of the potential and known breeding habitat on the river is outside of the RGP area, in the following areas: upstream of the San Clemente Reservoir; the Los Padres Reservoir (located at approximately RM 26); and below RM 1 in the Carmel River Lagoon (Ecosystems West Consulting Group 2001). However, despite threats posed by groundwater pumping, floodplain development, channel maintenance activities, and property owner alteration of stream banks and terraces, the lower and middle reaches of the river continue to support a population of California red-legged frogs. While a comprehensive survey has not been conducted to date, the species is expected to utilize the entire RGP area, from the Pacific Ocean to the San Clemente Dam, as habitat for all life history stages. According to the MPWMD's records for the period between 1996 and 2002, a total of 71 sites

containing adults and 5 sites containing tadpoles have been documented between the Carmel River Lagoon (lagoon) and the San Clemente Dam.

In 2000 and 2001, the Ecosystems West Consulting Group (EWCG) compiled all existing information on habitat conditions along the river and observations of California red-legged frogs. They conducted surveys from RM 30 to the lagoon to characterize current habitat conditions for California red-legged frog, and recorded incidental observations of the species. Locations and summaries of existing habitat conditions for the California red-legged frog within the main stem, and in aquatic areas adjacent to the main stem, are contained in aerial photographs and a report prepared by the EWCG (2001). Subsequent surveys of the lower and middle reaches of the river, over the summer of 2002, yielded many more sightings of California red-legged frogs and new habitat locations, and confirmed previously identified sites as breeding habitat (Reis 2003a).

Optimal breeding areas on the Carmel River contain shallow water until mid-September, as well as deep-water refugia for adults. An example of an area with excellent reproductive potential is an off-channel pond or side channel with equal amounts of shallow and deep-water habitat. Another high quality habitat area may consist of a shallow, seasonal, off-channel pool that contains surface water through September and is located adjacent to a deep-water pool in the main stem of the river. Additionally, these breeding habitats contain emergent vegetation that provides substrate for attachment of egg masses. Optimal habitat also contains lentic water that is protected from high flows during winter storms, which could flush out eggs and tadpoles (EWCG 2001).

Within the proposed RGP area, a total of 48 potential and confirmed reproductive habitat sites were identified in 2001 (EWCG 2001). Subsequent field surveys between June 7 and September 27, 2002, from the Highway 1 bridge to RM 17, resulted in documentation of a total of 59 locations containing potential or confirmed reproductive habitat for California red-legged frog tadpoles; 25 of these were occupied by tadpoles. A total of 487 California red-legged frog tadpoles were observed (Reis 2003a).

The areas identified as reproductive habitat are largely associated with off-channel environments that are formed where the floodplain is wide enough for the river to meander. These areas are known to be hydrologically dynamic and change over time. The distribution of reproductive sites changes each year due to winter flows. Aquatic habitat with the potential to support California red-legged frog reproduction changes after large storms due to scour or fill. High stream flows during the 2002-2003 winter season altered the distribution of habitat; some of the reproductive sites identified in 2002 have subsequently been lost, some have persisted, while others have been created (Reis 2003b). For example, in winter/spring of 2002, California red-legged frog tadpoles occurred in three separate pocket pools adjacent to the main stem containing suitable conditions for reproduction. These pocket pools contained still water throughout most of the breeding and tadpole-rearing season of 2002; water spilled over into the pools from the main stem only during the peak winter flows. During the rainy season of 2002-2003, high flows scoured the river bank upstream of the pocket pools and created a side channel which reconnected the pocket pools to

the main stem of the river. As a result, the three pools contained high flows throughout the breeding season, reducing the likelihood of successful reproduction. California red-legged frog egg-masses or tadpoles were not observed there in the surveys of winter/spring 2003 (Reis 2003b).

In the lower and middle reaches, areas that provide the best reproductive habitat include the lagoon and associated wetlands, the "Red-Rock" pools (approximately RM 8), off-channel pocket pools near the De Dampierre ball park (approximately RM 13), and ponds located near the Carmel Valley filter plant (approximately RM 16) (EWCG 2001; Reis 2003a). Most of the river upstream from the Stonepine Resort Bridge at RM 15.5 is rugged and is in canyon and bedrock, and therefore there is little area for the river to form off-channel ponds and other aquatic sites adjacent to the main stem. Most of the potential reproductive habitat within the main stem of the lower reach, between RM 1 and RM 8, appears to be of relatively poor quality due to the presence of mostly shallow water with sandy substrate, few pools with moderate depth, high water flows, and little submergent vegetation or algae cover (EWCG 2001). However, California red-legged frog tadpoles have been observed in the past within this segment of the river by MPWMD biologists.

Numerous areas known to support or with the potential to support, juvenile and adult California red-legged frogs were also recorded in 2001 within the lower and middle reaches (EWCG 2001). At least three non-reproductive habitat types were observed along the river: deep-water refuge sites for adults, shallow water sites late in the dry season for juveniles, and upland areas for foraging and estivation for both adults and juveniles. Upland areas with moist soil or dense leaf litter near the potential reproductive sites were found to be the most likely to contain adults and juveniles. Juvenile California red-legged frogs were observed in shallow water riffles and in shallow off-channel pools. During surveys conducted over the summer of 2002, from the Highway 1 bridge to RM 17, Reis observed 158 young-of-the-year across 16 locations. A total of 42 California red-legged frog adults were identified across 13 locations, and 4 juveniles were found across 3 locations (Reis 2003a).

California red-legged frog habitat is degraded in portions of the river that are damaged by floods, water extraction, or other disturbances, and that require restoration and repair through activities authorized under the RGP. Habitat in these portions is characterized primarily by lack of cover, emergent vegetation, and permanent water. Between 1996 and 2002, more than 20 channel repair and restoration projects were completed in the river over a total of about 3 miles of stream. Only two adult California red-legged frogs were recorded at these sites (MPWMD 2003b). Annual dewatering of the river diminishes successful California red-legged frog reproduction in the lower and middle reaches. Dewatering of the river from pumping activities over the summer of 2002 necessitated the capture and translocation of 76 tadpoles from 15 sites (Reis 2003a).

Other areas of the river, where the MPWMD conducts vegetation management, revegetation, and irrigation, provide higher quality habitat that would likely attract California red-legged frogs. In 2002, during pre-construction surveys at the MPWMD's De Dampierre habitat restoration

project site (near RM 13), 10 adults and 2 juveniles were found over a 2,000-foot reach (MPWMD 2003b). The habitat restoration project has improved conditions for adult California red-legged frogs through the creation of deep water habitat and installation of woody debris for cover (Reis 2003b).

Predators of the California red-legged frog observed in the river include steelhead trout, non-native bullfrogs, crayfish, and garter snakes (*Thamnophis* sp.). Known occurrences of bullfrogs are included in the maps prepared by the EWCG (2001). Large populations of bullfrogs are known to occur and reproduce between RM 1 and RM 9, near golf course ponds, and above the San Clemente Dam, both in the San Clemente Reservoir and in off-channel ponds above the reservoir.

Non-native plants have invaded areas along the river corridor and threaten the quality of California red-legged frog habitat. French broom and cape ivy are of particular concern in upland areas. Currently, there are also about five patches of giant reed, each having a diameter of approximately 10 to 15 feet (Thomas Christensen, MPWMD, personal communication 2003). Non-native plants tend to be concentrated near the bridges along the river corridor (e.g., Robinson Canyon, San Carlos, and Highway 1 bridges). MPWMD removes weeds opportunistically and primarily as follow-up maintenance for habitat restoration projects.

EFFECTS OF THE ACTION

Potential effects to California red-legged frogs resulting from maintenance and restoration activities authorized under the RGP could include harassment, injury, and mortality from construction and restoration activities (e.g., flow diversions, grading and fill activities), from consumption by predators attracted to the project site, and from siltation and pollution of habitat. The type and level of effects would depend on the specific activity and are discussed below. Limiting the geographic scope of project implementation on an annual basis would minimize the level of effects to California red-legged frogs and their habitat. Proposed activities would benefit the California red-legged frog through habitat creation and enhancement.

Direct impacts to California red-legged frog adults, juveniles, tadpoles, and egg masses in the project footprint would include harassment, injury, or mortality from being disturbed or crushed by construction equipment, construction debris, and worker foot traffic during all proposed channel and streambank maintenance and restoration activities, including those associated with revegetation, debris and large wood modification, and fisheries enhancement. Direct impacts in the form of harassment, injury, and mortality to California red-legged frogs may also occur if it is necessary to divert water around or temporarily dewater a work site. To minimize the risk of California red-legged frogs entering the pump system, water intakes will be completely screened with wire mesh not larger than 0.2 inch.

We do not anticipate that take of egg masses will result from project construction activities if they are limited to the proposed work period of July 1 to October 31. Direct impacts to

California red-legged frog tadpoles would be minimized by limiting construction activities to this time period, and conducting work as late in the season as possible. Direct impacts would also be reduced by implementation of the MPWMD's recommendation to survey project sites and to translocate California red-legged frog adults and tadpoles to suitable habitat, if appropriate, prior to construction activities. Training of construction personnel working in areas known to contain California red-legged frogs would help to minimize the direct impacts to the species through improved awareness of the species' presence in the vicinity of the construction area. Implementation of the MPWMD's recommendation to stop any activity that may result in impacts that exceed levels anticipated by regulatory agencies may also help to minimize direct impacts.

Revegetation of graded areas using construction equipment may occur into the breeding season and may result in harassment, injury, or mortality of California red-legged frog tadpoles and egg masses, in addition to adults and juveniles. To minimize direct effects resulting from such activities during the breeding season, work with equipment will not occur within or adjacent to the flowing stream or in standing water, nor within 25 feet of any area known to be occupied by California red-legged frogs or known to provide breeding habitat. A Service-approved biologist will inspect the work site prior to the onset of revegetation activities for the presence of California red-legged frogs and delay work activities as appropriate. Revegetation by hand methods, weed removal, and monitoring activities using passive methods may result in direct impacts in the form of harassment to adult and juvenile California red-legged frogs.

Harassment of California red-legged frogs would also occur while capturing and translocating individuals from work sites to designated suitable habitat. However, this effect would be reduced by limiting the people authorized to handle individual frogs to approved biologists. Injury or mortality may occur as a result of improper handling of individuals or from releasing them into habitat which is fully occupied by other California red-legged frogs or other species, including predators such as bullfrogs. Injury or mortality may be reduced by only allowing release into suitable habitat areas as determined by the Service-approved biologist and us. Biologists with the MPWMD have not observed mortality or injury of California red-legged frogs associated with previous project-related capture and translocation efforts (Larry Hampson, MPWMD, pers. comm., 2003).

Predators of the California red-legged frog may be attracted to the project sites as a result of the construction. Raccoons (*Procyon lotor*) are known to be a major predator of the California red-legged frog in some areas and may be attracted to the construction sites if food-related items and garbage are accessible. To minimize the risk of attracting predators to the project area, the MPWMD recommends that all trash be properly contained, removed from work sites and disposed of regularly. Following construction, all trash and construction debris will be removed from work sites. Habitat modification may make the work sites more desirable to bullfrogs, which also predate upon California red-legged frogs. The spread of bullfrogs and other exotic predators into the work sites would be partially controlled by removing all exotic species observed within the project area, to the maximum extent possible.

Construction activities could cause erosion, siltation, and run-off of hazardous materials from the construction sites into the river and wetlands, especially if heavy rains and runoff occur before the denuded areas have been revegetated and the construction areas have been cleaned. Erosion and sedimentation could result in the asphyxiation of eggs of California red-legged frogs. However, this adverse effect would be minimized by limiting the majority of construction activities to outside of the breeding season. Erosion and sedimentation into streams and wetlands would also alter their conditions and may result in adverse effects to aquatic habitat through filling or disturbance of backwater ponds and deep-water pools. To minimize erosion during and after project implementation, the MPWMD proposes to implement and enforce best management practices, as identified by the appropriate Regional Water Quality Control Board or the Monterey County Planning and Building Inspection Department.

Run-off of hazardous materials would result in adverse effects to aquatic habitat through degradation of water quality throughout wetland areas receiving the run-off. To minimize the potential for spills of hazardous materials, the MPWMD recommends that all staging areas for fueling and maintenance of vehicles and other equipment will occur at least 66 feet from any riparian habitat or water body. In addition, the permittee will be required to prepare a plan prior to the onset of work in order to allow a prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to take in the event of a spill, which would help to minimize the risk of contamination.

Proposed RGP activities including channel reconstruction, streambank repair, and debris and large wood modification may temporarily or permanently alter aquatic and riparian habitat within the RGP area. Grading associated with channel reconstruction and streambank repair may reduce existing aquatic habitat through filling and disturbance of off-channel ponds or backwater pools within an individual project area. Such alteration of aquatic habitat may limit the use of specific areas for breeding and result in displacement of California red-legged frogs. We anticipate that this effect would be minor because the amount of habitat that may be affected within any given year that the RGP is in place is small in relation to the amount of suitable habitat that is available within the RGP area. In addition, this effect would be offset by the creation of pools and ponds within and adjacent to the low-flow channel. The MPWMD will ensure that features such as rootwads and live vegetation will be included in project designs in order to enhance aquatic habitat.

Riparian habitat may be permanently altered or removed as a result of streambank repair projects that require the use of hard streambank lining (e.g., rip-rap, gabion baskets). Structural bank protection may prevent or hinder full development of mature riparian vegetation. This impact would be reduced through prohibiting the use of filter fabrics that act as a barrier to root penetration and using alternate filter designs. Riparian habitat would be reestablished in areas reinforced with rip-rap or other structural bank protection materials through revegetation with native plants.

California red-legged frog habitat would also be affected by the removal of vegetation within the project area during construction activities associated with channel reconstruction, streambank repair, and habitat enhancement activities to benefit steelhead trout. Removal of vegetation may limit the use of these areas by California red-legged frogs due to a loss of cover. To minimize the impacts resulting from vegetation removal, the MPWMD proposes to revegetate, at a 3:1 ratio, degraded streambanks, areas adjacent to the main stem, and areas within the riparian corridor connecting to upland areas.

Riparian restoration projects sponsored by the MPWMD would enhance California red-legged frog habitat through revegetation with native species. Project sites would be revegetated with an appropriate site-specific assemblage of native riparian and upland species according to a planting and monitoring plan, and invasive non-native weeds would be removed, resulting in an increase of riparian habitat. Monitoring and maintenance of the project site for a minimum of three years would ensure that establishment of riparian vegetation is successful.

To facilitate the establishment and persistence of native riparian habitat, non-native invasive weeds such as giant reed and French broom would be removed from project sites. Removal of weeds may improve habitat quality, increase the availability of surface water, and, in the long term, prevent the degradation of breeding habitat, both aquatic and riparian, that could result from the continuing spread of giant reed along the river. Giant reed, in particular, provides neither food nor quality habitat for native wildlife species. Removal of giant reed and other weeds may encourage the recruitment of native emergent vegetation that provides substrate for attachment of egg masses.

The primary method of weed control would be mechanical removal, although herbicides may be applied if MPWMD determines that it is necessary for effective eradication. Herbicides may adversely affect California red-legged frogs through contamination of ponds and wetlands. There is some evidence that long-term exposure to herbicides may result in lower hatching success and a higher number of post-hatch deformities in frogs (Service 2000). To minimize any adverse effects that may result from herbicide use, the MPWMD will only apply the herbicide Rodeo® or a technical grade of glyphosate, without surfactant. Although there is no specific information regarding the toxicity of Rodeo® to California red-legged frogs, glyphosate, the active ingredient in Rodeo®, without surfactant is practically non-toxic to amphibians (J. Trumbo, Pesticides Investigations Unit, California Department of Fish and Game, in litt. 2000). In a study involving the effects of glyphosate on amphibians in Oregon, including the northern red-legged frog (*Rana aurora aurora*), Cole et. al. (1997) did not detect any effects of herbicide spraying on amphibian capture rates. The availability and persistence of glyphosate after application does not appear to be a cause for great concern. Although glyphosate can be found in the soil weeks to months after application, it is quickly inactivated by rapid adsorption to soil particles. Additionally, glyphosate is practically immobile in soil and thereby poses no tendency for leaching (Torstensson 1985). We do not anticipate that the use of Rodeo® or a technical grade of glyphosate, without surfactant, would cause direct injury or mortality to California red-legged frogs. However, based on the lack of information on potential effects to California red-legged

frogs, it is difficult to conclude that there would be no adverse effects from the use of herbicides in the Carmel River watershed.

Activities associated with debris and large wood modification may affect existing aquatic and riparian habitat at individual project sites through a modification of cover for California red-legged frog adults, juveniles, and tadpoles. Debris and large wood from the channel would be modified on site or relocated to selected areas along the channel margins or within the adjacent floodplains. The spatial distribution of sheltering habitat would be altered, but we do not anticipate that there would be a net loss of cover within the RGP area. Introduction of debris and large wood to selected areas would increase the amount of sheltering habitat available to California red-legged frogs.

In summary, although habitat may be altered or removed through implementation of individual projects, the comprehensive maintenance and restoration program would likely result in an increase of aquatic and riparian habitat for the California red-legged frog through creation of natural morphological features and revegetation with native species. Restoration projects and maintenance activities conducted over the past 10 years have improved habitat conditions in the river. For privately-sponsored projects, the MPWMD will ensure that final design plans for each work site incorporate restoration of natural channel morphological features such as shallow floodplains (i.e., terrace areas adjacent to the main stem), backwater areas, off-channel ponds, pool-riffle sequences, and meanders. We anticipate that creation of these features would benefit the California red-legged frog through the availability of additional aquatic habitat. Riparian habitat would be created and enhanced through revegetation with native plant species and removal of invasive weeds. Implementation of the proposed comprehensive management program would likely result in increased stability of the streambanks and floodplain, which would allow for creation of aquatic and riparian habitat through the development of mature vegetation and a stable low-flow pool-riffle sequence.

The disturbance from proposed activities with heavy equipment, over a maximum of 0.7 mile each year, is not likely to reduce the ability of California red-legged frogs to thrive along the main stem and adjacent areas within the approximate 16-mile stretch of the Carmel River. We also do not anticipate any substantial effects to the local population from the maintenance and enhancement activities, without the use of heavy equipment, in selected areas totaling no more than 3 miles each year. Although specific areas that are damaged by floods or other disturbances may not be available while habitat in the channel and on streambanks is being restored, the proposed activities would likely result in improved conditions for the local establishment and persistence of California red-legged frogs in the long term. We do not anticipate that activities authorized under the RGP, as planned, would have long-term negative effects on the distribution of California red-legged frogs at a regional or rangewide scale. Rather, long-term benefits to the species through improved habitat conditions are expected.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the Act. We are not aware of any non-Federal projects proposed for the project areas. However, we expect that ongoing pumping of groundwater by numerous parties along the river will continue to reduce the availability of pools during the dry months of the year. The loss of pools resulting from the pumping may result in mortality to individual California red-legged frogs. We have recommended that a comprehensive habitat conservation plan be prepared for these activities. In the interim, the California-American Water Company conducts annual surveys and translocates California red-legged frog tadpoles from ponds that are at risk of drying down from the pumping. Water supply alternatives are being developed that, when achieved, would drastically reduce water extraction from the Carmel Valley. Reinitiation of formal consultation may be required if changes to the river occur such that implementation of the RGP results in effects to the California red-legged frog not considered in this biological opinion.

CONCLUSION

After reviewing the current status of the California red-legged frog, the environmental baseline for the RGP area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the Corps' proposed authorization of the RGP for maintenance and restoration activities along the Carmel River, as proposed, is not likely to jeopardize the continued existence of the California red-legged frog. We have reached this conclusion for the following reasons:

1. The MPWMD has proposed to implement actions to avoid and minimize the take of California red-legged frogs.
2. The MPWMD has proposed to restore, enhance, and maintain California red-legged frog aquatic and riparian habitat throughout the duration of the proposed RGP.
3. Only a portion of the proposed RGP area would be impacted each year that the RGP is in place; the MPWMD has proposed to limit the geographic scope of project implementation on an annual basis.
4. Suitable breeding habitat would be available throughout the RGP area each year that the RGP is in place.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of an incidental take statement contained in a biological opinion.

The measures described below are non-discretionary and the Corps must make these binding conditions of its authorization to the MPWMD for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps fails to require the MPWMD to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the authorization, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Corps or the MPWMD must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

California red-legged frogs will likely be taken through harassment, harm, injury, or mortality as a direct result of implementation of projects under the proposed RGP. However, we cannot determine the number of California red-legged frogs that may be taken as a result of those maintenance and restoration activities permitted by the Corps. Numbers and locations of California red-legged frogs within a population vary from year to year. Incidental take of the California red-legged frog, particularly in the egg and larval stages, would be difficult to detect because of its small body size, and finding a dead or injured specimen is unlikely. Take by predation would likely be impossible to detect. The total amount of habitat supporting California red-legged frogs that may be lost or degraded as a result of the maintenance and restoration activities cannot be determined because aquatic habitat may change in quality or size according to hydrologic conditions and flow patterns.

California red-legged frogs may be taken only within the defined boundaries of the RGP area: the upstream boundary of the coastal zone at approximately RM 1.3 to the vicinity of Sleepy Hollow near RM 17.6. The following table presents threshold levels of California red-legged frog juveniles or adults that may be detected as killed or injured on an annual basis. These figures do not represent the number of California red-legged frogs that are likely to be killed,

injured, harassed, or harmed; the actual level of incidental take that would occur as a result of project implementation under the RGP would be greater than that indicated in the table. The number of adult and juvenile California red-legged frogs detected as killed or injured within a given year may not exceed the following figures.

Annual threshold levels of incidental take of California red-legged frogs

<i>Project type</i>	<i>Total Area affected</i>	<i>Number of adults, juveniles</i>
Repair and Restoration (a)	3,500 feet (0.7 mile)	2
Maintenance (b)	3 miles	3

(a) Repair, restoration, and enhancement projects that require the use of heavy equipment in the channel

(b) Maintenance and enhancement activities that involve modification or removal of vegetation and debris using primarily hand tools

If more than the specified amounts of juvenile and adult California red-legged frogs are found dead or injured, the Corps or the MPWMD must contact our office immediately so we can review the restoration and activities to determine if additional protective measures are needed. Project activities may continue during this subject period, provided that all protective measures proposed by the Corps and MPWMD and the terms and conditions of this biological opinion have been and continue to be implemented.

REASONABLE AND PRUDENT MEASURES

Our evaluation of the effects of the proposed action includes consideration of the measures to minimize the adverse effects of the proposed action on the California red-legged frog that were developed by the Corps and the MPWMD and repeated in the Description of the Proposed Action portion of this biological opinion. Any subsequent changes in these measures proposed by the Corps and MPWMD may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR 402.16. The following reasonable and prudent measures are intended to supplement the protective measures that were proposed by the Corps and MPWMD as part of the proposed action.

We believe the following reasonable and prudent measures are necessary and appropriate to minimize take of the California red-legged frog:

1. Only qualified biologists that we authorize must survey for, capture, and move California red-legged frogs from work sites.
2. Measures must be taken to reduce effects from herbicide use to aquatic habitat that may contain California red-legged frogs.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Corps and the MPWMD must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

1. The following terms and conditions implement reasonable and prudent measure 1.
 - a. MPWMD biologists Dave Dettman, Beverly Chaney, Cory Hamilton, Thomas Christensen, Tom Lindberg, and Jessica Wheeler are authorized to survey for, capture, and move California red-legged frogs from work sites. The Corps must condition its authorization to require the MPWMD to request our approval of any other biologist it wishes to employ to survey for, capture, and move California red-legged frogs from work sites. The request must be in writing and be received by us at least 15 days prior to any such activities being conducted.
 - b. California red-legged frogs detected during weed removal, planting by hand, irrigation installation, or monitoring activities, and in danger of being taken must be relocated by a Service-approved biologist to nearby appropriate habitat outside of harms way. If a Service-approved biologist is not present upon MPWMD or contracted personnel encountering a California red-legged frog found outside of standing water, then an approved biologist may be contacted by phone to give direct instructions on how to properly move the frog. If no approved biologist can be contacted or the appropriate capture/relocation equipment is not present, the area within 100 feet of the frog must be vacated and treated at a later date when either the approved biologist is present or California red-legged frogs are absent.
 - c. To avoid transferring disease or pathogens between aquatic habitats during the course of surveys and handling of California red-legged frogs, the Service-approved biologists must follow the Declining Amphibian Population Task Force's Code of Practice. A copy of this Code of Practice is enclosed. You may substitute a bleach solution (0.5 to 1.0 cup of bleach to 1.0 gallon of water) for the ethanol solution. Care must be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat.
2. The following terms and conditions implement reasonable and prudent measure 2:
 - a. All herbicides must be mixed, and all containers must be filled or rinsed, outside any open water, wetland, or riparian area within the project area.

- b. Herbicides must not be applied if the any of the following conditions are met: during the rainy season (November to April); if precipitation is occurring or is imminent (within 24 hours of rain forecast); or if wind is more than 5 mph.
- c. Only hand removal of vegetation is permitted in and within 5 feet of any open water that may be occupied by California red-legged frogs.
- d. Within 25 feet of water, herbicide application must consist only of direct application to the stem (e.g., with a hand sprayer, paint brush, or wick applicator) following mechanical trimming of the target plant; spraying must be prohibited in order to prevent herbicide drift from contaminating aquatic sites that may be occupied by California red-legged frogs.

REPORTING REQUIREMENTS

The Corps must ensure that we receive a copy of report(s) prepared by the MPWMD on the status of river maintenance and restoration activities conducted during the previous year, and past projects authorized under the proposed RGP, by June 1 of each year that the RGP is in effect. The report must contain: a brief description of the activities completed and proposed, with maps and "before" and "after" photographs of project sites; a brief description of elements that were incorporated into projects to restore natural channel morphologic features; results of habitat evaluations of proposed project sites; the number of California red-legged frogs, tadpoles, and egg masses observed; any incidental take that resulted from the implementation of projects, including the form of take, when and where the take occurred, and the deposition of the dead or injured animal; information on whether any California red-legged frogs were translocated, including the location of the release sites, habitat types present in the release site, and non-native predators in the release site; the approximate acreage of upland and riparian habitat for California red-legged frogs which has been permanently and temporarily affected; acreage of habitat which has been enhanced or restored and/or is undergoing restoration; problems encountered in implementing avoidance and minimization measures and terms and conditions; recommendations for modifying the terms and conditions to enhance the protection of California red-legged frogs; pertinent results of biological surveys and sighting records; and, any other pertinent information. This document will assist us and the Corps in evaluating future measures for conservation of the California red-legged frog during projects that result in the placement of fill into wetlands and waters of the United States.

DISPOSITION OF INJURED OR DEAD SPECIMENS

Within three days of locating any dead or injured California red-legged frog, you must notify the Service's Division of Law Enforcement by facsimile at (310) 328-6399 and the Ventura Fish and Wildlife Office via telephone at (805) 644-1766 or facsimile (805) 644-3958 and in writing. Notification must include the date, time, location of the carcass, a photograph, cause of death, if known, and any other pertinent information. Care must be taken in handling injured animals to

prevent additional injury. Injured animals may be released to the wild after receipt of concurrence from our office. Care must be taken in handling dead specimens to preserve biological material in the best possible state for later analyses.

The remains of California red-legged frogs must be placed with the California Academy of Sciences Herpetology Department (Contact: Jens Vindum, Collections Manager, California Academy of Sciences Herpetology Department, Golden Gate Park, San Francisco, California, 94118, (415) 750-7037). Arrangements regarding proper disposition of potential museum specimens must be made with the California Academy of Sciences by the project monitor prior to implementation of the action.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The recommendations provided here do not necessarily represent complete fulfillment of your 7(a)(1) responsibilities for this species.

1. Translocated California red-legged frogs should be monitored to determine the success of the translocation. To assess their survival, translocated California red-legged frogs may be fitted with radio transmitters and tracked as part of the monitoring effort. Plans to radio track California red-legged frogs, captured pursuant to this biological opinion, must be approved by us prior to implementation.
2. The on-site biologist(s) should translocate any southwestern pond turtles (*Clemmys marmorata pallida*), California legless lizards (*Anniella pulchra*), western spadefoot toads (*Scaphiopus hammondi*), and any other reptiles or amphibians found within work sites to suitable habitat outside of the construction areas. The on-site biologist(s) should provide a written report to us of these activities including numbers of individuals of each species moved, location and date of capture sites and release sites, sex (if possible) and age class.
3. The on-site biologist(s) should report observations of sensitive plant and animal species, including California red-legged frogs, to the California Natural Diversity Data Base using the appropriate field survey forms.

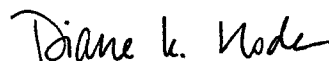
We request notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

REINITIATION NOTICE

This concludes formal consultation on the Corps' proposed authorization of the RGP for maintenance and restoration activities along the Carmel River, Monterey County, California. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (2) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (3) a new species is listed or critical habitat designated that may be affected by the action. Any expansion of activities beyond the scope proposed would be considered reason to reinitiate consultation.

If you have further questions on this matter, please contact S. Diane Gunderson or David Pereksta of my staff at (805) 644-1766.

Sincerely,



Diane K. Noda
Field Supervisor

Enclosures

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MPWMD California Red-legged Frog Habitat Assessment/Carmel River

SITE/RIVER MILE:

CPS WAYPOINT:

DATA COLLECTOR:

DATE:

Time and Weather:

LIMITING FACTORS FOR CALIFORNIA RED-LEGGED FROGS AT DIFFERENT LIFE HISTORY STAGES														
Habitat Characteristics	Egg and Tadpole		Young-of-Year or Juvenile (Tail-stub or SNVL, 4 cm)		Adult (Resident)		Adult (Temporary Hydration)							
	Y	N	Y	N	Y	N	Y	N	Y	N				
Seasonality of water (in a normal rainfall year)	Y	N	Water dry before July 1	Y	N	Water dry before July 1	Y	N		Y	N			
Flushing Flows (moving water strong enough to scour eggs or tadpoles)	Y	N	Flushing flows during or after the month of March	Y	N	Flushing flows or areas without slow moving water after the month of June	Y	N		Y	N			
Water Salinity (coastal lagoon environments)	Y	N	Greater (>) 4.0 ppt by April, > 6.5 ppt by the end of June. (>7.5 ppt by August only if tadpoles still present)	Y	N	>7.5 ppt year round or between March and September	Y	N	Temporary water sources with surface salinity >9.0 ppt	Y	N			
Water Temperature	Y	N	Above 25 C	Y	N	Above 29 C	Y	N	Above 29 C	Y	N			
Other (Explain)	Y	N		Y	N		Y	N		Y	N			
LIMITING FACTOR	Y	N	Egg and Tadpoles	Y	N	Young-of-Year/Juv	Y	N	Resident Adult	Y	N	Temporary Adult	Y	N

NOTES:

REFERENCES:

Rais, Dawn K. 1999. Habitat characteristics of California red-legged frog (*Rana aurora draytonii*): Ecological Differences between eggs, tadpoles and adults in a coastal brackish and freshwater system. Masters Thesis. San Jose State University, San Jose, CA.

SITE/RIVER MILE:
DATE:

HABITAT QUALITY FOR CALIFORNIA RED-LEGGED FROGS AT DIFFERENT LIFE HISTORY STAGES				
CIRCLE IF PRESENT and TALLY COLUMNS				
Habitat Characteristic	Egg and Tadpole Circle items in column if present between Jan-Jul	Young-of-Year or Juvenile (Tail-stub or SNVL 4 cm) Circle items in column if present between Jul-Sept	Adult (Resident) Circle items in column if present between all year	Adult (Temporary Hydration) Circle items in column if present seasonally
Water depth	Shallow water depth (0.2m to 0.5m)	Both shallow and moderate depth (0.2 m to 1 m)	Deep water (> 1m) perennially	Deep water (> 1m)
Predators (1)	No adult bullfrogs	No adult bullfrogs	No adult bullfrogs	Seasonally
Predators (2)	No bullfrog reproduction	No bullfrog reproduction	No bullfrog reproduction	No or few adult bullfrogs
Predators (3)	No fish or crayfish	No fish or crayfish	No fish or crayfish	No bullfrog reproduction
Cover (1)	Presence of submergent (rooted aquatic plants) especially high oxygenating plants (e.g. <i>Potamogeton</i> sp.)	Low to moderate cover of emergent vegetation and/or moderate to high submergent vegetation.	Moderate cover of emergent vegetation and/or moderate to high submergent vegetation.	No or few or crayfish
Aquatic vegetation				Moderate cover of emergent vegetation and/or moderate to high submergent vegetation.
Cover (2)	Deep mud substrate or benthic algae for cover	Deep mud substrate or algae mats for cover	Deep mud substrate or algae mats for cover	Deep mud substrate or algae mats for cover
Cover (4)	N/A	Under-cut bank, dense veg., or wood (logs, tree roots with craw space for frogs)	Under-cut bank, dense veg., or wood (logs, tree roots with craw space for frogs)	Under-cut bank, dense veg., or wood (logs, tree roots with craw space for frogs)
Upland cover near water's edge				
Other (Explain)				
Ranking:	Numbered Circled _____	Numbered Circled _____	Number Circled _____	Number Circled _____
1 to 2 = low	1 to 2 = low	1 to 2 = low	1 to 2 = low	1 to 2 = low
3 to 4 = moderate	3 to 4 = moderate	3 to 4 = moderate	3 to 4 = moderate	3 to 4 = moderate
over 5 = excellent	over 5 = excellent	over 5 = excellent	over 5 = excellent	over 5 = excellent

CRITICAL HABITAT FOR CALIFORNIA RED-LEGGED FROG*

3 Primary Constituent Elements	Definition (See page 5 for reference and detailed definitions, if need)	Yes	No	Describe Further
A. Suitable aquatic habitat	2 potential CRLF breeding sites within 1.25 miles of each other, or	Y	N	Based on habitat suitability? Y N Based on known reproductive site? Y N
	if one of the above breeding sites does not contain perennial water, then a 3 rd perennial (none-breeding) location must be within 1.25 mile	Y	N	A year-round water source is a breeding site? Y N Year-round water sources location: Corresponding data sheets and locations of all breeding sites.
B. Upland habitat	Some adjacent upland habitat within 150 m (500 ft) from the water's edge. Does not have to continuous.	Y	N	Describe vegetation and estimated % cover.
C. Barrier free dispersal habitat	upland and/or wetland habitats connecting two or more suitable aquatic habitat within 2 km (1.25 miles) of each other.	Y	N	
	Area at least 150 m (500 ft) wide and free of dispersal barriers? Barriers include: • roads with more than 30 cars per hour • moderate to high density urban or industrial developments • reservoirs over 30 acres	Y	N	Partial barriers present? Y N List barrier type(s):

CRITICAL HABITAT PRESENT? Must answer YES to all of the above Y N

SITE/RIVER MILE:

DATE:

DESCRIPTIVE INFORMATION

<p># CRLF Observed focused surveys conducted? Y N</p>	<p>Eggmass: _____ Tadpoles: _____ Young-of Year: _____ Juvenile: _____ Adult _____</p>
<p>Other Amphibians</p>	<p>Circle if present Bullfrog adult juvenile tadpole eggs Tree frog adult juvenile tadpole eggs Western toad adult juvenile tadpole eggs Other adult juvenile tadpole eggs</p>
<p>Aquatic Habitat Type</p>	<p>Circle: Pond Year-round Seasonal Size _____ River-main stem Year-round Seasonal Size _____ Tributary/Creek Year-round Seasonal Size _____ Off channel pocket pool Year-round Seasonal Size _____ Other: _____ Year-round Seasonal Size _____</p>
<p>Aquatic Habitat Features</p>	<p>Aquatic Substrate _____ Submergent species and % cover _____ Emergent species and % cover _____</p>
<p>Upland Habitat</p>	<p>Habitat type/species from water's edged to 500 ft. _____ Circle if present: leaf litter mammal burrow woody debris</p>
<p>Water Quality Velocity/Temp</p>	<p>Time _____ Depth (m) _____ Temp (c) _____ Cage (if present) _____ (surface) 0.0m _____ Flow _____ 0.25m _____ Bottom Depth (m) _____ _____</p>

PHOTOS:

OTHER NOTES:

ENCLOSURE 2:

The Declining Amphibian Populations Task Force Fieldwork Code of Practice

1. Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tires, and all other surfaces. Rinse cleaned items with sterilized (e.g., boiled or treated) water before leaving each work site.
2. Boots, nets, traps, and other types of equipment used in the aquatic environment should then be scrubbed with 70 percent ethanol solution and rinsed clean with sterilized water between study sites. Avoid cleaning equipment in the immediate vicinity of a pond, wetland, or riparian area.
3. In remote locations, clean all equipment with 70 percent ethanol or a bleach solution, and rinse with sterile water upon return to the lab or "base camp." Elsewhere, when washing-machine facilities are available, remove nets from poles and wash in a protective mesh laundry bag with bleach on the "delicates" cycle.
4. When working at sites with known or suspected disease problems, or when sampling populations of rare or isolated species, wear disposable gloves and change them between handling each animal. Dedicate sets of nets, boots, traps, and other equipment to each site being visited. Clean them as directed above and store separately at the end of each field day.
5. When amphibians are collected, ensure that animals from different sites are kept separately and take great care to avoid indirect contact (e.g., via handling, reuse of containers) between them or with other captive animals. Isolation from unsterilized plants or soils which have been taken from other sites is also essential. Always use disinfected and disposable husbandry equipment.
6. Examine collected amphibians for the presence of diseases and parasites soon after capture. Prior to their release or the release of any progeny, amphibians should be quarantined for a period and thoroughly screened for the presence of any potential disease agents.
7. Used cleaning materials and fluids should be disposed of safely and, if necessary, taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags.

The Fieldwork Code of Practice has been produced by the Declining Amphibian Populations Task Force with valuable assistance from Begona Arano, Andrew Cunningham, Tom Langton, Jamie Reaser, and Stan Sessions.

For further information on this Code, or on the Declining Amphibian Populations Task Force, contact John Wilkinson, Biology Department, The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK.

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