United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2014-F-0327

September 18, 2014

Beatrice L. Kephart
30 CES/CEI
1028 Iceland Avenue
Vandenberg Air Force Base, California 93437-6010

Subject: Biological Opinion for the 13th Street Bridge Replacement Project, Vandenberg Air Force Base, Santa Barbara County, California (8-8-14-F-34)

Dear Ms. Kephart:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion regarding the U.S. Air Force's (Air Force) proposal to replace a bridge over the Santa Ynez River at 13th Street on Vandenberg Air Force Base, and its effects on the federally threatened tidewater goby (*Eucyclogobius newberryi*) and California red-legged frog (*Rana draytonii*). Your request, dated June 10, 2014, and received in our office on June 12, 2014, and our response are in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et seq.).

This biological opinion was prepared using information you provided in your letter requesting initiation of formal consultation (Air Force 2014a), the biological assessment (Air Force 2014b), correspondence and information in our files. A complete record for this biological opinion can be made available at the Ventura Fish and Wildlife Office.

CONSULTATION HISTORY

On June 12, 2014, we received the Air Force's request for formal consultation for the proposed 13th Street bridge replacement project. On August 25, 2014, the Service provided the base with a draft biological opinion. The Air Force (2014c) provided comments on the draft biological opinion on September 9, 2014; we have incorporated the Air Force's comments into this biological opinion, as appropriate.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Air Force proposes to replace a mission-essential vehicle bridge over the Santa Ynez River at 13th Street on Vandenberg Air Force Base. The existing bridge was constructed in 1970 and

serves as the only on-base transport route and vehicle link between the north and south portions of Vandenberg Air Force Base. The existing 13th Street bridge is unsafe and at risk of failure. Collapse of the existing structure is unavoidable and would sever communications and utility links between north and south Vandenberg Air Force Base, temporarily ceasing space launch operations and potentially causing loss of life and expensive mission assets.

The proposed bridge replacement project includes: (1) construction of a new bridge and corresponding approach roads; (2) demolition and removal of the existing 13th Street bridge and existing approach roads; (3) installation of fiber optic communications cable under the Santa Ynez River; and (4) establishment of a wetland modification area at the Santa Ynez River Estuary to offset any potential project related impacts to wetlands that cannot be restored within the project area. The area encompassing the bridge replacement and fiber optic line installation is approximately 122.4 acres. The area designated for wetland mitigation encompasses 19.1 acres approximately 2 miles downstream of the 13th Street bridge (see figure 1-2 in Air Force 2014b).

Construction of the new bridge and demolition of the existing bridge is anticipated to begin in late spring or early summer 2015 and last approximately 12 to 20 months. Demolition and removal of the existing approach roads are estimated to begin in April 2016 and last between 5 to 6 months. Installation of the fiber optic cable under the Santa Ynez River is estimated to begin in April 2015 and last approximately 4 months. The wetland mitigation activities site at the designated area within the Santa Ynez River Estuary would begin after completion of the aforementioned activities.

Construction activities in the river channel would be completed or paused prior to the forecast and onset of significant rainfall (0.5 inch within a 24 hour period). All temporary fill, water diversion, and materials placed in the river channel would be removed prior to the onset of a rainfall event greater than 0.5 inch. If necessary, in-channel construction would recommence in spring 2016 with the reinstallation of access roads into the channel.

Construction of the New 13th Street Bridge

The replacement bridge would be approximately 650 feet in length and be located between 50 to 80 feet west of the existing bridge. New approach roadways would be constructed on the north and south ends of the new bridge. The finished two lane roadways would be between 45 and 48 feet wide with rock slope protection, or equivalent protection, on either side of the approach ways. The existing communication lines, electrical line, water line, and natural gas line that the existing bridge supports would be replaced on the new bridge.

The new bridge would have two piers, both within the channel, spaced between 200 to 270 feet apart. The native material in the river bed would require the piers to be 10 feet in diameter and 210 feet deep. The abutments would be anchored at the top of the slopes on the north and south banks. The north abutment would be protected by adding approximately 12.5 feet of rock riprap as well as leaving the existing rock, gabion baskets, concrete, and steel wall associated with the

existing abutment in place. The south abutment would be protected by installing approximately 12.5 feet of new ungrouted rock riprap at the base of the abutment. Soil would be removed from the embankments to embed in the rock riprap. A layer of soil, mixed with native plant material, would be placed on top of the embankments to promote native plant growth. Native willow trees would emerge among the rock riprap to create cover habitat.

As part of the bridge design, eight 30 foot tall light poles would be located along the edge of the east side of the bridge spaced approximately 83 feet apart. The poles would be fitted with LED fixtures that provide light over the entire bridge to satisfy the Illuminating Engineering Society Recommended Practice. The design of the light fixtures would cut off backlight to minimize light spill behind the fixtures and would not exceed 2.15 lux at the bridge edge or 1.1 lux within 10 feet north or south of the bridge's edge; the maximum illumination at the ground level below the bridge would not exceed 1.1 lux.

Staging areas would be established on the terrace above the riparian corridor for storage of equipment, materials, and temporary personnel facilities, as well as establishing a dewatering area. Temporary access roads would be constructed into the riparian corridor and riverbed to enable construction equipment, materials, and temporary supports to be moved into position during construction. Prior to the construction of access roads and staging areas, vegetation within the project area would be cleared. The project site would be dewatered by installing up and down stream dams and pumping the water within the project area out of the channel to the adjacent agricultural field. Integrated into the process of dewatering would be the diversion of the active river channel through culverts passing through the project site to keep soil and debris out of the riverbed, prevent flowing water from flooding the column excavations, and allow species to travel around the project area by way of the diversion.

Demolition and Removal of the Existing 13th Street Bridge

The existing bridge is 500 feet long, 42.5 feet wide, and supported by 8 concrete pier walls. After completion of the new bridge, the existing bridge and approach roadways would be demolished and removed. Demolition would occur during the dry season and the project area would again be dewatered, as described above for the construction of the new bridge.

The existing approach roads would also be removed; holes and depressions left as a result of removal of the approach roads and railings would be backfilled with clean fill and graded to blend with the surrounding terrain. Temporary support shoring, temporary bracing, and protective covers would be installed to support portions of the bridge as the existing support structures are removed during the process. With the exception of the north abutment and its associated riprap and support structures, the concrete bridge abutments and piers would be removed below grade. The riprap at the base of the pilings, within the river channel, and at the piers at the south abutment would also be removed in their entirety.

Installation of the Fiber Optic Cables

Communication lines on the existing bridge would be relocated to the new bridge. An existing overhead fiber optic cable is located approximately 1,100 feet west of the existing bridge. In 2006, the Service issued a biological opinion for this line; however, the existing line has since been found to be insufficient and a new underground fiber optic cable would be installed in the same location.

The new cables would be installed via one directional drilling/boring; all ducts would be watertight when assembled. The entry and exit bore locations would be located outside of Jurisdictional waters of the U.S. and riparian habitat. Within the river channel, the conduit would be installed at a minimum of 25 feet below the surface over approximately 1,100 feet; outside the channel, the conduit would be installed at a minimum of 60 inches below the surface.

Measures to Offset Adverse Effects

Per the requirements of the Clean Water Act Section 401 and 404 permits that would be issued for the proposed project, measures to offset temporary and permanent impacts to wetlands will be implemented. Temporary impacts to wetlands would be offset at a 1:1 ratio by restoring disturbed areas within the project area to pre-construction conditions. Permanent impacts to wetlands would be offset at a 2:1 ratio for restored or enhanced wetlands. The design of the new bridge and demolition of the existing bridge will improve wetland and aquatic habitat by reducing the obstruction of flow. However, the Air Force anticipates that the mitigation area required to offset the permanent impacts cannot be achieved within the 13th Street bridge project area. Re-establishment of up to four acres of currently impaired estuarine habitat along the southeast portion of the Santa Ynez River estuary is therefore included as a component of the proposed action. The final acreage of re-establishment of wetland and/or other aquatic characteristics and functions within the designated mitigation area would depend on the acreage of the final permanent impacts during construction of the new bridge.

More than 70 years of sediment accretion caused by river flow influenced by the old 35th Street bridge abutments has resulted in ground elevations that are 1.5 to 4 feet higher than the elevation needed to create habitat that supports a broad spectrum of native salt marsh plant and animal species. Although the bridge was demolished in 1970, the structural abutments on either bank still remain in place. Decades of high flow events have caused a gradual buildup of sediment immediately downstream of these barriers. This has caused the southwest portion of the estuary to transition from estuarine habitat to upland habitat, dominated by a mix of invasive broadleaf plants and native central coast scrub species. As a result, this area no longer functions as wetland habitat and does not support obligate estuary species.

The Air Force proposes to grade the area encompassing the old 35th Street bridge abutments (referred to as the wetland mitigation site) to an elevation of approximately 3.15 meters to allow the habitat to transition from invasive upland species to intermittently flooded middle salt marsh wetland habitat. The proposed action would require grading and relocation of approximately

10,000 to 11,000 cubic yards of accumulated sediment at the south eastern edge of the estuary (see figure 1-2 in Air Force 2014b).

In addition to the wetland mitigation site, restoration of temporarily disturbed areas and areas impacted during installation of the new bridge and demolition of the existing bridge would be implemented. A Habitat Restoration and Monitoring Plan would be implemented to restore all disturbed areas, at a minimum, to the original condition, and, if feasible, enhance the wetlands and riparian corridor within the project footprint to compensate for the net loss of wetlands or other sensitive plant communities that may occur due to the proposed action. The plan would include post-construction monitoring to assess the effectiveness of revegetation efforts and provide guidance for follow-up maintenance.

Avoidance and Minimization Measures

To minimize adverse effects to the tidewater goby and the California red-legged frog, the Air Force proposes to implement the following protective measures. To some degree, we have collated protective measures from throughout the biological assessment (Air Force 2014b) and the programmatic biological opinion (Service 2011), and changed the wording of some measures to improve clarity, but we have not changed the substance of the measures the Air Force has proposed. The biological assessment (Air Force 2014b), programmatic biological opinion (Service 2011), and additional correspondence with the Air Force staff (Kaisersatt 2014) contain additional details of the following proposed protective measures.

1. At least 15 days prior to ground-disturbing activities, the applicant will submit to the Service the names and credentials of biologists for approval to conduct the minimization measures outlined below. No project activities will begin until the applicant has received approval from the Service that the biologists are qualified to do the work.

2. Prior to the commencement and throughout the period of construction, a qualified biologist will conduct an environmental sensitivity training for all project personnel to provide an overview on the listed species that may be encountered during the project, applicable regulatory policies and provisions regarding their protection, and the avoidance and minimization measures to protect these species. Furthermore, crew members will be briefed on the reporting process in the event that an inadvertent injury should occur to a listed species during construction.

3. Prior to commencing project activities, including excavation in upland areas, a pre-construction survey of the project site will be conducted by a Service-approved biologist immediately preceding the activity. The Service-approved biologist will search all potential hiding spots for California red-legged frogs. If any life stage of the California red-legged frog is found and these individuals are likely to be killed or injured by work activities, the approved biologist will be allowed sufficient time to move them from the site before work begins. Only approved biologists will participate in activities associated with the capture, handling and monitoring of California red-legged frogs. The Service-

approved biologist will follow the Declining Amphibian Population Task Force's Code of Practice.

4. If a California red-legged frog is found in the work area, any work that may kill or injure that animal will stop until it is relocated by a Service-approved biologist. The Service-approved biologist will relocate any California red-legged frogs that are found the shortest distance possible to a location that contains suitable habitat and that will not be affected by activities associated with the proposed project; to the extent practicable, the relocation site will be in the same drainage.

5. Two days prior to beginning project activities, the Air Force will install nets with mesh no larger than 0.0625 inch to exclude tidewater gobies from the project area. These nets will be set up within the main channel of the creek 50 feet upstream and 50 feet downstream of the project area. These nets will be removed immediately following the completion of project activities. Surface water pump intakes will be completely screened with 0.0625 inch mesh to prevent entrainment of tidewater gobies.

6. The dewatering intake will be screened with 0.0625 inch mesh to prevent tidewater gobies from entering the system. Water will be released downstream of the project area at an appropriate rate to maintain downstream flows.

7. The active river channel will be diverted through culverts passing through the project site to keep soil and debris out of the riverbed, prevent flowing water from flooding the column excavations, and allow species to travel through the pipes and around the project area.

8. Block netting will be used to exclude tidewater gobies and other fish from the work area. The netting will be continually monitored and maintained to prevent them from becoming clogged.

9. Prior to any construction activities, a Service-approved biologist will survey the project area for the presence of tidewater gobies of any life stage. A Service-approved biologist will relocate all tidewater gobies observed within the project site to suitable habitat immediately downstream of the project site.

10. A Service-approved biologist will be present during and after the dewatering to relocate tidewater gobies that enter the work area prior to construction. A Service-approved biologist will monitor the project area every work day, including the exclusion nets, until all tidewater gobies are removed from the work site. At that point, the Service-approved biologist may appoint project personnel to periodically monitor the exclusion nets for the duration of the project; however, the Service-approved biologist must be on-call for immediate assistance, if needed, until project completion.

11. No activities will take place below the top of bank until the diversion/dewatering system is in place. These systems will consist of culverts, nets, and screens, as detailed in the biological assessment (Air Force 2014b).

12. A qualified biologist would inspect all work areas including any equipment left overnight within the project area and staging areas prior to the start of work. All materials and equipment would be removed from the Santa Ynez River channel to the staging areas at the end of each day to the greatest extent feasible. If materials are to be staged within the bounds of the river channel overnight, they would be ringed with additional exclusionary fencing.

13. Covered pits and trenches will be inspected prior to or during the removal of coverings before work begins each day. Any excavations left open overnight would be covered or surrounded with 5 feet high silt fencing to prevent the potential entrapment of listed species.

14. The limits of the project area will be staked, flagged, or otherwise marked in the field to prevent impacts outside of the designated work areas. All project work and access will occur within the designated limits of the project area.

15. The fencing would be inspected twice daily by qualified biologists. Prior to the start of work, fencing would be inspected for any breaches that may have been created overnight and allowed species to enter the exclusion area. At the end of the work day, the wind fencing would be inspected again to identify any areas that may need repair prior to nightfall. Compromised fence would be repaired immediately. If breaks are discovered during the morning inspection, a survey would be conducted that night to detect and remove any special status species that may have entered the site.

16. The use of heavy equipment and vehicles will be limited to the proposed project area. To the extent feasible, all construction equipment and machinery would operate on existing paved surfaces, access roads, and staging areas. In the event that any equipment must be operated outside of these areas, a biological monitor would supervise these activities.

17. The construction contractor will submit a Spill Contingency Plan which contains measures to prevent the release of oil and/or other hazardous materials during operational activities in the project area. The Spill Contingency Plan will be implemented during project activities.

18. Equipment maintenance and fueling will occur at least 250 feet away from riparian habitat and wetlands. Fueling and addition of oil/fluids to equipment would be done in pre-designated areas over secondary containment to minimize risks from accidental spillage or release.

19. Construction activities in the river channel will be completed or paused prior to the forecast and onset of significant rainfall (0.5 inches within a 24 hour period) and all temporary fill, water diversion, and materials placed in the river channel would be removed, except for the trestle, which would remain in place for the winter.

20. To the maximum extent possible, non-native species and vegetation within the project areas would be removed during project related activities under the direction of the qualified biologist(s).

21. The amount of in-stream disturbance will be the minimum amount necessary to allow construction to take place. Temporary fencing will be used to delineate the work area, and no vegetation removal will be allowed outside of this area. All construction materials will be stored within the dewatered portion of the channel or at the top of bank in preapproved locations; no vegetation removal will occur for this purpose.
22. The Air Force will return stream contours to their original condition at the end of project activities, unless 30 CES/CEI determine that it is not feasible or beneficial to the species. All temporarily disturbed areas, including access roads, would be restored at a minimum to their original condition. This would include the removal of all imported fill material from the project areas.

23. All herbicides will be used in accordance with the pesticide label and DoD and Air Force Pest Management Regulations. Herbicide application will comply with California Department of Pesticide Regulations, and the U.S. District Court for the Northern District of California (20 October 2006) injunction on pesticide use in California red-legged frog habitat. Glyphosate herbicide will not be applied within 15 feet of aquatic features, and herbicides that leave residue will not be applied within the ordinary high water mark (waters of the U.S.).

24. Herbicide treatment within or adjacent to aquatic resources will use appropriately labeled products only.

25. Herbicides will not be sprayed when wind velocities at the site exceed five miles per hour or in foggy or rainy conditions when ground moisture becomes excessive. Non-target species, especially native species, will be avoided during spraying. A biological monitor familiar with the site will be present to supervise herbicide spraying activities.

26. Boring will be used to install the fiber optic cable to avert encroaching into the river corridor.

27. The 30 CES will prepare a Frac-Out Contingency Plan in coordination with the construction contractor that will be implemented by the construction crew. BMPs and the Frac-Out Plan will be in place and implemented at any location where boring would occur near or beneath Jurisdictional Waters of the U.S.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATION

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the range-wide condition of tidewater goby and California red-legged frog, the factors responsible for that condition, and the species' survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of tidewater goby and California red-legged frog in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of these species; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on tidewater goby and California red-legged frog; and (4) the Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on tidewater goby and California red-legged frog.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed federal action in the context of the current status of tidewater goby and California red-legged frog, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of these species in the wild.

STATUS OF THE SPECIES

Tidewater Goby

Tidewater gobies were listed as endangered on March 7, 1994 (59 Federal Register (FR) 5494). On June 24, 1999, the Service proposed to remove the populations occurring north of Orange County, California, from the endangered species list (64 FR 33816). In November 2002, the Service withdrew this proposed delisting rule and determined it appropriate to retain the tidewater goby's listing as endangered throughout its range (67 FR 67803). A recovery plan for tidewater gobies was completed on December 12, 2005 (Service 2005). A 5-Year Review for tidewater gobies was completed in September 2007 (Service 2007). Detailed information on the biology of tidewater gobies can be found in Wang (1982), Irwin and Soltz (1984), Swift et al. (1989), Worcester (1992), and Swenson (1995); much of the information from this account was taken from these sources.

Tidewater gobies are endemic to California and they typically inhabit coastal lagoons, estuaries, and marshes, preferring relatively low salinities of approximately 12 parts per thousand (ppt). Tidewater goby habitat is characterized by brackish estuaries, lagoons, and lower stream reaches

where the water is fairly still but not stagnant. They tend to be found in the upstream portions of lagoons. Tidewater gobies can withstand a range of habitat conditions and have been documented in waters with salinity levels that range from 0 to 41 ppt, temperatures from 46 to 77 degrees Fahrenheit, and depths from approximately 10 inches to 6.5 feet.

Tidewater gobies are primarily an annual species in central and southern California, although some variation in life history has been observed. If reproductive output during a single season fails, few (if any) tidewater gobies survive into the next year. Reproduction typically peaks from late April or May to July and can continue into November or December depending on the seasonal temperature and amount of rainfall. Males begin the breeding ritual by digging burrows (3 to 4 inches deep) in clean, coarse sand of open areas. Females then deposit eggs into the burrows, averaging 400 eggs per spawning effort. Males remain in the burrows to guard the eggs. They frequently forego feeding, which may contribute to the mid-summer mortality observed in some populations. Within 9 to 10 days, larvae emerge and are approximately 0.20 to 0.27 inch in length. Tidewater gobies live in vegetated areas in the lagoon until they are 0.60 to 0.70 inch long. When they reach this life stage, they become substrate-oriented, spending the majority of time on the bottom rather than in the water column. Both males and females can breed more than once in a season, with a lifetime reproductive potential of 3 to 12 spawning events. Vegetation is critical for over-wintering tidewater gobies because it provides refuge from high water flows.

Tidewater gobies feed on small invertebrates, including mysids, amphipods, ostracods, snails, aquatic insect larvae, and particularly chironomid larvae. Tidewater gobies of less than 0.30 inch in length probably feed on unicellular phytoplankton or zooplankton, similar to many other early stage larval fishes.

Historically, tidewater gobies occurred in at least 135 California coastal lagoons and estuaries from Tillas Slough near the Oregon border south to Agua Hedionda Lagoon in northern San Diego County. The southern extent of its distribution has been reduced by approximately 8 miles. The species is currently known to occur in about 112 locations, although the number of sites fluctuates with climatic conditions. Currently, the most stable populations are in lagoons and estuaries of intermediate size (5 to 124 acres) that are relatively unaffected by human activities. Six regional clades based on morphological differences (Ahnelt et. al. 2004) that are supported by genetic work done by Dawson et al. (2001) have been used to define recovery units for tidewater gobies (Service 2005). The recovery plan describes 26 recovery sub-units for tidewater gobies (Service 2005).

Tidewater gobies enter the marine environment when sandbars are breached during storm events. The species' tolerance of high salinities (up to 60 ppt) for short periods of time enables it to withstand marine environment conditions where salinities are approximately 35 ppt, thereby allowing the species to re-establish or colonize lagoons and estuaries following flood events. However, genetic studies indicate that individual populations rarely have contact with other populations so natural recolonization may be rare. In Santa Barbara County during the fall of 1994, tidewater gobies were reported as common in the Santa Ynez River 4 miles upstream from

the lagoon (Swift et al. 1997); however, by January 1995, they were absent at the upstream sites. Tidewater gobies that are found upstream of lagoons in summer and fall tend to be juveniles. The highest densities of tidewater gobies are typically present in the fall.

Recovery Plan for the Tidewater Goby

The goal of the tidewater goby recovery plan is to conserve and recover the species throughout its range by managing threats and perpetuating viable metapopulations within each recovery unit while maintaining morphological and genetic adaptations to regional and local environmental conditions. The decline of tidewater gobies is attributed primarily to habitat loss or degradation resulting from urban, agricultural, and industrial development in and around coastal wetlands. The recovery plan identifies 6 recovery units: North Coast Unit, Greater Bay Unit, Central Coast Unit, Conception Unit, Los Angeles/Ventura Unit, and South Coast Unit.

The recovery plan specifies that tidewater gobies may be considered for downlisting when:

1. Specific threats to each metapopulation (e.g., coastal development, upstream diversion, channelization of rivers and streams, etc.) have been addressed through the development and implementation of individual management plans that cumulatively cover the full range of the species.

2. A metapopulation viability analysis based on scientifically credible monitoring over a 10-year period indicates that each recovery unit is viable. The target for downlisting is for individual sub-units within each recovery unit to have a 75 percent or better chance of persistence for a minimum of 100 years.

Tidewater gobies may be considered for delisting when downlisting criteria have been met and a metapopulation viability analysis projects that all recovery units are viable and have a 95 percent probability of persistence for 100 years.

5-Year Review for the Tidewater Goby

The 5-year review for the tidewater goby, completed in 2007, stated that the recovery plan reflects up-to-date information; however, the 5-year review reconsidered the downlisting and delisting criteria in the recovery plan. The 5-year review stated that other, currently available information on the species may also be used to determine the appropriate listing status of the species under the Act. These include the current number of occupied localities, current laws and regulations that act to protect the species, and our current understanding of threats and their impact on tidewater gobies. The 5-year review recommended that we reclassify tidewater gobies from endangered to threatened because we concluded that the species was not in imminent danger of extinction. The main reason for this recommendation was that the number of localities known to be occupied had more than doubled since listing. The 5-year review also concluded that the tidewater goby may be more resilient in the face of severe drought events than believed at the time of listing. The 5-year review also stated that threats identified at the time of listing

had been reduced or were not as serious as thought. Although numerous threats to tidewater gobies have been identified (e.g., non-native predation and competition, pollution, cattle grazing), information on the degree of impact these threats may have on tidewater gobies is generally lacking. According to the 5-year review, the increase in occupied localities indicated that these threats appeared to not be having a major impact on tidewater gobies.

On May 18, 2010, we received a petition dated May 13, 2010, from The Pacific Legal Foundation, requesting that tidewater gobies be reclassified as threatened under the Act. Included in the petition was reference to the 5-year review of the tidewater goby's status published by the Service in 2007. We published a 90-day finding on January 19, 2011 (76 FR 3069), that stated our conclusion that the petition presented substantial scientific or commercial information indicating that the petitioned action (reclassification of tidewater gobies) may be warranted. We published a rule on March 13, 2014, proposing to downlist the tidewater goby and soliciting comments from the public (79 FR 14340).

California Red-legged Frog

The California red-legged frog was federally listed as threatened on May 23, 1996 (Service 1996). The Service completed a recovery plan for the species in 2002 (Service 2002). A 5-year review for the California red-legged frog has not been completed. The historical range of the California red-legged frog extended coastally from southern Mendocino County and inland from the vicinity of Redding, California, southward to northwestern Baja California, Mexico (Jennings and Hayes 1985, Storer 1925). The California red-legged frog has been extirpated or nearly extirpated from 70 percent of its former range. Historically, this subspecies was found throughout the Central Valley and Sierra Nevada foothills. Four additional occurrences have been recorded in the Sierra Nevada foothills since listing, bringing the total to five extant populations in that area compared to approximately 26 historical records (61 FR 25813). Currently, California red-legged frogs are known from three disjunct regions in 26 California counties and one region in Baja California, Mexico (Grismer 2002; Fidenci 2004; and Smith and Krofta, 2005).

The diet of California red-legged frogs is highly variable. Hayes and Tennant (1985) found invertebrates to be the most common food item of adults. Vertebrates, such as Pacific chorus frogs (*Pseudacris regilla*) and California mice (*Peromyscus californicus*), represented over half of the prey mass eaten by larger frogs (Hayes and Tennant 1985). Hayes and Tennant (1985) found juveniles to be active diurnally and nocturnally, whereas adults were largely nocturnal.

California red-legged frogs breed from November through March; earlier breeding has been recorded in southern localities (Storer 1925). Males appear at breeding sites from 2 to 4 weeks before females (Storer 1925). Female California red-legged frogs deposit egg masses on emergent vegetation so that the masses float on the surface of the water (Hayes and Miyamoto 1984). Egg masses contain about 2,000 to 5,000 moderately-sized, dark reddish brown eggs (Storer 1925, Jennings and Hayes 1985). Eggs hatch in 6 to 14 days (Storer 1925). Larvae undergo metamorphosis for 3.5 to 7 months after hatching (Storer 1925, Wright and Wright

1949). Sexual maturity can be attained at 2 years of age by males and 3 years of age by females (Jennings and Hayes 1985); adults may live 8 to 10 years (Jennings et al. 1992) although the average life span is considered to be much lower. The California red-legged frog is a relatively large aquatic frog ranging from 1.5 to 5 inches from the tip of the snout to the vent (Stebbins 2003).

The California red-legged frog uses a variety of habitat types, including various aquatic systems, riparian, and upland habitats. Tadpoles, juveniles, and adults have been collected from streams, creeks, ponds, marshes, plunge pools and backwaters of streams, dune ponds, lagoons, and estuaries. California red-legged frogs frequently breed in artificial impoundments such as stock ponds, if conditions are appropriate. Although California red-legged frogs successfully breed in streams and riparian systems, high seasonal flows and cold temperatures in streams often make these sites risky environments for eggs and tadpoles. The importance of riparian vegetation for this species is not well understood. When riparian vegetation is present, California red-legged frogs spend considerable time resting and feeding in it; the moisture and camouflage provided by the riparian plant community provide good foraging habitat and may facilitate dispersal in addition to providing pools and backwater aquatic areas for breeding.

Juvenile and adult California red-legged frogs may disperse long distances from breeding sites throughout the year. They can be encountered living within streams at distances exceeding 1.8 miles from the nearest breeding site, and have been found up to 400 feet from water in adjacent dense riparian vegetation (Bulger et. al 2003). During periods of wet weather, starting with the first rains of fall, some individuals may make overland excursions through upland habitats. Most of these overland movements occur at night. Bulger et al. (2003) found marked California red-legged frogs in Santa Cruz County making overland movements of up to 2 miles over the course of a wet season. These individual frogs were observed to make long-distance movements that are straight-line, point to point migrations over variable upland terrain rather than using riparian corridors for movement between habitats. For the California red-legged frog, suitable habitat is considered to include all aquatic and riparian areas within the range of the species and includes any landscape features that provide cover and moisture (Service 1996).

Habitat loss and degradation, 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. Continuing threats to the California red-legged frog include direct habitat loss due to stream alteration and loss of aquatic habitat, indirect effects of expanding urbanization, competition or predation from non-native species including the bullfrog, catfish (*Ictalurus* spp.), bass (*Micropterus* spp.), mosquito fish (*Gambusia affinis*), red swamp crayfish (*Procambarus clarkia*), and signal crayfish (*Pacifasticus leniusculus*).

An additional threat affecting amphibians worldwide is the chytrid fungus *Batrachochytrium dendrobatidis*. *Batrachochytrium dendrobatidis* causes chytridiomycosis, a skin disease that has been found to disrupt osmoregulatory function in the skin of amphibians, resulting in an imbalance of electrolytes and death (Voyles et al. 2009). Chytridiomycosis in amphibians may be marked by deformed mouthparts in tadpoles, wherein most infected tadpoles will die at

metamorphosis (Service 2002). Infected boreal toads (*Anaxyrus boreas boreas*) showed few clinical signs of the disease but many appeared weak or lethargic, exhibited excessive shedding of skin and were reluctant to flee at the approach of humans (U.S. Geological Service 2000, as cited in Service 2002). Chytrid fungi are widespread in the environment where they act as decomposers of keratin, chitin, cellulose, and other plant material, and are known parasites of fungi, algae, higher plants, protozoa, invertebrates, and most recently in vertebrates. Chytrid fungi reproduce asexually by means of minute, fragile, motile spores, and are probably spread directly from amphibian to amphibian in water. These fungi most likely move from one water source to another on migrating amphibians, waterbirds, or flying insects (Service 2002).

Since its discovery in 1998, chytrid fungus has likely been responsible for die-offs of a number of amphibian species, including remaining populations of the endangered boreal toad in the southern Rocky Mountains, and Chiricahua leopard frogs (*Rana chiricahuensis*) in Arizona (Colorado Herpetological Society 2000, as cited in Service 2002). Occurrences of infection have been observed in two amphibian species in the Sierra Nevada, the mountain yellow-legged frog (*Rana muscosa*) and the Yosemite toad (*Bufo canorus*). An infected California red-legged frog tadpole was collected in Calabasas Pond on the Ellicott Slough National Wildlife Refuge in Santa Cruz County (Service 2002).

The chytrid fungus is now recognized for its ability to spread quickly through amphibian populations and infect numerous species, causing high rates of mortality, and persisting at low host densities (Voyles et al. 2009). These recent findings validate the importance of taking precautions to prevent the spread of chytrid fungus or any disease agent into and/or between amphibian populations. It is considered a threat to California red-legged frog populations.

Recovery Plan for the California Red-Legged Frog

According to the recovery plan for the California red-legged frog, the strategy for the species' recovery involves: (1) protecting existing populations by reducing threats; (2) restoring and creating habitat that will be protected and managed in perpetuity; (3) surveying and monitoring populations and conducting research on the biology and threats to the species; and (4) reestablishing populations of the species within its historical range (Service 2002).

The recovery plan for the California red-legged frog identifies eight recovery units. These recovery units are based on the Recovery Team's determination that various regional areas of the species' range are essential to its survival and recovery. The recovery status of the animal is considered within the scale of Recovery Units as opposed to the overall range. Because of the varied status of this species and differing levels of threats throughout its range, recovery strategies differ per recovery unit to best meet the goal of delisting the species. For example, in areas where California red-legged frog populations appear to be stable, recovery strategies are intended to protect existing population numbers, whereas in areas where frogs have been extirpated or are declining, strategies are to stabilize, increase, augment, or reestablish populations.

The recovery units are delineated by major watershed boundaries as defined by U.S. Geological Survey hydrologic units and the limits of the range of the California red-legged frog. The goal of the recovery plan is to protect the long-term viability of all extant populations within each recovery unit. Within each recovery unit, core areas have been delineated and represent contiguous areas of moderate to high California red-legged frog densities that are relatively free of exotic species such as bullfrogs. The goal of designating core areas is to protect metapopulations that, combined with suitable dispersal habitat, will allow for the long term viability within existing populations. This management strategy allows for the recolonization of habitat within and adjacent to core areas that are naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of the California red-legged frog.

ENVIRONMENTAL BASELINE

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For the purposes of this biological opinion, we consider the action area to include the stretch of the Santa Ynez River and upland area within the 13th Street bridge project area and the downstream wetland mitigation site. Based upon the information provided to us in the biological assessment (Air Force 2014b), we identify the action area as the 122.4 acre project area which encompasses the proposed 13th Street bridge, the existing 13th Street bridge, the proposed fiber optic line, and 19.1 acres wetland mitigation site located approximately 2 miles downstream from the bridge.

The 122.4 acre action area encompassing the 13th Street bridge is characterized by five distinct vegetation types: central coast scrub, non-native habitats, freshwater marsh, willow riparian, and ruderal. The 19.1 acre wetland mitigation site consists of central coast scrub, non-native habitats, coastal salt marsh, and ruderal.

Tidewater Goby

Tidewater goby have been documented in all of the major drainages on Vandenberg Air Force Base including: Shuman Creek, San Antonio Creek, Santa Ynez River, Cañada Honda, and Jalama Creek. The tidewater goby population in the Santa Ynez River is the largest on Vandenberg Air Force Base, but can undergo dramatic seasonal and annual fluctuations.

ManTech SRS Technologies (ManTech) conducted tidewater goby surveys in the vicinity of the 13th Street bridge action area in July and October of 2013. During both survey periods, surface water was not present upstream of the survey area. ManTech conducted sampling at select locations within the action area to assess abundance of tidewater gobies within the hydrated area around the 13th Street bridge. The following table summarizes the survey efforts and results as presented in the biological assessment (Air Force 2014b). Tidewater goby densities in October 2013 were significantly lower than densities reported in July 2013 and reflect natural seasonal fluctuations in abundance that are well-documented in this species. Tidewater gobies were also

documented in pools approximately 850 feet upstream of the bridge during California red-legged frog night surveys during fall 2012.

Survey Period	Number of Locations Sampled	Area Surveyed (Acres)	Tidewater Gobies Captured (# of individuals)	Tidewater Goby Density (#/acre)	Tidewater Gobies estimated within the Project Area (# of individuals)
July 2013	11	3.84	9,831	29.2 per m^2	453,885
October 2013	13	3.27	2,514	7.46 m^2	98,793

During the July survey, young of the year and female gobies in spawning condition were captured, indicating breeding was occurring within the action area. Tidewater gobies were the most abundant fish documented during both survey efforts accounting for 92.8% and 81.3% in July and October, respectively.

ManTech did not conduct tidewater goby surveys within the Santa Ynez River estuary adjacent to the wetland mitigation site action area; however, tidewater goby occurrence in the estuary is well-documented.

Recovery of the Tidewater Goby

The final recovery plan for the tidewater goby subdivides the geographic distribution of the species into six recovery units, encompassing a total of 26 sub-units defined according to genetic differentiation and geomorphology. Santa Ynez River is included in the Conception Recovery Unit. The Conception Recovery Unit is divided into three sub-units; the Santa Ynez River is included in Sub-Unit CO 2, which extends from Point Sal to Point Arguello over a generally sandy coast. Sub-Unit CO 2 is located entirely within Santa Barbara County. Primary tasks for this recovery unit as recommended in the recovery plan include: (1) population monitoring; (2) substantiate Sub-Units based on genetic studies; (3) improve habitat and remove threats; and (4) consider recolonization if there is a 25 percent reduction in the number of inhabited locations. The 5-year review does not specify the recovery function of the Santa Ynez River for the tidewater goby.

The Air Force's Integrated Natural Resources Management Plan provides some protection for the Santa Ynez River population of the tidewater goby. The tidewater goby habitat along the Santa Ynez River is designated as "Water Quality Limited". Pollutants and stressors and their respective potential sources include: nutrients from nonpoint sources, salinity/chlorides from agricultural activities, and sedimentation/siltation from agriculture, runoff, and resource extraction (Service 2005). The introduction of predatory fish, especially centrarchids and channel catfish, crayfish, and mosquito fish may threaten populations through direct predation on

eggs, larvae, and adults (Air Force 2011). The Integrated Natural Resources Management Plan prohibits the introduction of nonnative fish species into Vandenberg Air Force Base streams. Impacts the tidewater goby and its habitat are avoided whenever possible in project planning. Where impacts to habitat cannot be avoided, work is scheduled to avoid peak breeding periods whenever possible (March through July) and management measures are implemented that minimize impacts to the tidewater goby and its habitat. Project-specific monitoring and protection measures are identified in section 7 consultations, and National Environmental Policy Act documents, and implemented as required.

California Red-legged Frog

Vandenberg Air Force Base is located in the relative middle of the current range of the California red-legged frog. Many of the healthiest populations of the species (in terms of numbers of individuals) area located along the central coast of California, and California red-legged frogs are likely to be present in nearly all permanent streams and ponds on the base. The proposed project area consists of marginal habitat for California red-legged frogs due to the presence of invasive species.

ManTech conducted monthly focused California red-legged frog surveys at the 13th Street bridge from October 2012 to October 2013. California red-legged frogs were documented at low densities throughout the area compared to other riverine areas on Vandenberg Air Force Base, ranging from 0 to 11 individuals during each survey. During the breeding season, evidence of breeding (calling males, pairs in amplexus and egg masses) was recorded within the project area from February 2013 to May 2013. Salinities in the 13th Street bridge project area are within acceptable range for California red-legged frog egg development.

No California red-legged frog tadpoles were captured during the tidewater goby surveys and no metamorphs were observed during the 2012-2013 monthly focused California red-legged frog surveys. In 1996, 2004, and 2008, California red-legged frogs were documented within the action area.

No California red-legged frogs were documented during the December 2013 focused night survey of the proposed wetland mitigation area. Salinities of 6.5 parts per thousand have been documented in this area and are likely too high to support California red-legged frogs.

Recovery of the California Red-legged Frog

The action area and Vandenberg Air Force Base in general, are within the Northern Transverse Ranges and Tehachapi Mountains Recovery Unit for the California red-legged frog. The action area is also within the Santa Maria River-Santa Ynez River Core Area defined in the recovery plan (Service 2002). The recovery unit was described in the recovery plan as having a "high recovery status," meaning the unit supports many populations of the species, has many areas of high habitat quality, and threat levels that ranged from low to high. Some protections are afforded to the California red-legged frog on Vandenberg Air Force Base due to implementation

of the Air Force's Integrated Natural Resources Management Plan. So far, the Air Force has implemented several actions that provide a positive conservation benefit: (1) public outreach and education; (2) working with researchers from U.C. Santa Barbara, the U.S. Geological Survey, and Department of the Navy, including chytridiomycosis studies; (3) surveys for new populations; (4) monitoring of known populations; and other actions. These efforts are consistent with the goals from the recovery plan of protecting known populations; protecting suitable habitat, corridors, and core areas; developing land use guidelines; gathering biological and ecological data necessary for conservation of the species; and monitoring existing populations and conducting surveys for new populations.

EFFECTS OF THE ACTION

Tidewater Goby

Tidewater goby adults, fry and eggs within the project area could be inadvertently crushed by workers, construction equipment, or during the placement of riprap, barriers, and fill material. Dewatering activities may result in the death of any tidewater gobies in the dewatered area due to stranding resulting in desiccation, suffocation, or opportunistic predation. The Air Force has proposed to relocate all tidewater gobies out of areas to be dewatered. Tidewater gobies may be injured or killed during capture and relocation activities, from improper handling, physiological stress, increased competition, or from being released into unsuitable habitat. To minimize these potential effects, the Air Force proposes to use a Service-approved biologist to capture and relocate all tidewater gobies from the project area. Relocation sites would be selected within the Santa Ynez River watershed, which supports the necessary environmental conditions for tidewater goby survival. We anticipate the measures proposed by the Air Force will minimize adverse effects from dewatering the project area and relocating tidewater gobies.

The potential exists that some tidewater gobies may not be located or may still be killed or injured during the capture and relocation procedures. Furthermore, tidewater gobies may be breeding during the proposed project, and any eggs located within the dewatering area would not be detectable. These eggs may be destroyed during the proposed project. Tidewater gobies may also be entrained by pump intakes. We anticipate the Air Force's proposal to cover the pump intakes with wire screens with no greater than 0.0625-inch mesh size will minimize the potential for tidewater gobies to be caught in the inflow.

Excavation and backfilling associated with the construction of access roads and staging areas, removal of vegetation, and placement of rock riprap may cause erosion that can lead to sedimentation and habitat alteration that may result in tidewater goby injury, death, and lowered breeding success. Sediment may affect tidewater gobies by impairing the efficiency of their gill filaments and exposing them to higher salinities and/or predation as they flee downstream. Direct effects of sedimentation include mortality, reduced physiological function, and burrow smothering. Indirect effects of sedimentation include potential alteration to the food web which could create cascading effects to higher trophic levels. A reduction in phytoplankton can result from increased turbidity, which can thereafter reduce zooplankton, in turn reducing benthic macroinvertebrates, and thus reduce prey available to tidewater gobies (Henley et al. 2000). The

effects of sedimentation resulting from the proposed project would be minimized by the Air Force's proposal to install silt fencing around the perimeter of the work area, implement best management practices during project activities, and divert the active river channel around the work area to ensure flow is not impeded. We anticipate these measures will control and minimize erosion and sedimentation.

Furthermore, the existing 13th Street bridge has contributed to increased scour at the site of the bridge. The existing bridge has concentrated flows into fixed paths between narrow abutments and intensified scour downstream. The new bridge will span 650 feet of channel, compared to 500 feet spanned by the existing bridge, and replace the existing eight piers with two hexagonal piers. As a result, the new bridge is expected to decrease downstream scour and sedimentation by allowing the river to meander through a broader, less constricted channel. We anticipate this decrease in sedimentation would be beneficial to the tidewater goby and its habitat.

The proposed bridge replacement project will temporarily disturb aquatic habitat within the project area; there would be no temporary disturbance or removal of aquatic habitat at the wetland mitigation site. The proposed activities would result in the temporary removal of or disturbance to 3.19 acres of tidewater goby feeding and breeding habitat within the action area. The loss of habitat has the potential to cause injury or death of tidewater goby if they are forced into adjacent, less suitable habitat.

Permanent loss of aquatic habitat would be restricted to the area physically occupied by the new 13th Street bridge. The design of the new 13th Street bridge includes two piers as opposed to the existing bridge that has eight piers. After completion of the proposed project and restoration of the project site, the project will result in an estimated net gain of 0.18 acres of tidewater goby breeding habitat. The permanent loss of habitat resulting from the bridge replacement will be more than offset by the removal of the existing bridge and associated riprap. Therefore, we do not anticipate the proposed project will result in permanent reduction of tidewater goby habitat at the project site.

Impacts to tidewater goby habitat are expected to be largely restricted to the duration of construction of the new bridge and demolition of the existing bridge. During construction and demolition activities, which are anticipated to be 12 to 20 months over a two-year period, the area of the channel temporarily diverted would not be available for breeding or foraging habitat. After construction and demolition activities are complete, the area will once again receive river flow and will again function as habitat for tidewater goby. The Air Force would also remove non-native plant and wildlife species in the action area during project related activities, and continue to monitor and eradicate non-native invasive plant species following completion of the project. Given that habitat loss will be short-term in nature and the proposed project will result in a net increase in habitat quality and availability, we anticipate the effects to the tidewater goby of habitat loss will be temporary and minimal.

The project would provide additional benefits to the tidewater goby because the proposed wetland mitigation site would increase lateral marsh habitat in the estuary during prolonged

periods without breaching and high flow events. The increase in lateral marsh habitat would likely benefit the tidewater goby by increasing refugia and foraging habitat during these conditions; however, because the current ground elevations within the wetland mitigation site are a result of sediment accretion caused by river flow conditions influenced by the 35th Street bridge abutments and the Air Force is not proposing to remove the abutments, sedimentation will likely build up in the area again during future high flow events. Therefore, we do not anticipate the wetland mitigation project will provide long-term benefits to the tidewater goby and its habitat.

Accidental spills of hazardous materials, careless fueling or oiling of vehicles or equipment, or a frac-out within the river channel during horizontal directional drilling could degrade aquatic habitat or dispersal habitat to a degree where tidewater gobies are injured or killed. The Air Force proposes to implement several measures to minimize the potential of releasing contaminants into the channel. First, the Air Force would implement a frac-out contingency and Spill Prevention Plan containing measures to prevent the release of hazardous materials during project-related activities. Second, the Air Force would store hazardous materials and stage, repair, and maintain project equipment outside of the riparian corridor in pre-designated areas. Lastly, the Air Force would use secondary containment such as catch pans or protective mats to prevent contamination of the river bed. Given the measures proposed by the Air Force to minimize the risk of releasing contaminants into the channel, we anticipate that the potential for adverse effects to tidewater gobies from spills of hazardous materials would be minimized.

The use of herbicides to control exotic plant species during restoration efforts may adversely affect water quality at, or downstream of, the project site. Herbicides that drift into aquatic areas have to potential to harm tidewater gobies, their eggs, and their prey. The Air Force proposes to use a glyphosate-based herbicide approved for use in aquatic environments (e.g., Rodeo, etc.). Glyphosate is a systemic herbicide that will kill broadleaf and grass species by inhibiting the production of aromatic amino acids in plants and some microorganisms that are necessary to build proteins (Devine et al. 1993). Because many animals lack the amino acid synthesis pathway that glyphosate disrupts, it has low potential to cause toxicity in animals (Devine et al. 1993). No information is available regarding the toxicity of glyphosate products specifically to tidewater goby. Toxicity studies on bluegill sunfish (*Lepomis macrochirus*) and rainbow trout (*Oncorhynchus mykiss*) indicate that Aquamaster herbicide is practically non-toxic to these species (Monsanto 2005). Studies compiled by the Pesticide Action Network indicate that glyphosate ranges from not acutely toxic to moderately toxic depending on the species of fish (Kegley et al., 2010). Because the toxicity of glyphosate-containing products can vary significantly between species, and between specific products and mixes, a conservative assumption would be that glyphosate-containing products are moderately toxic to tidewater gobies. The actual glyphosate concentration that tidewater gobies would be exposed to is anticipated to be much less than the application concentration, due to dilution by estuary/lagoon waters and distance. We anticipate this diluted concentration will not result in toxic effects to tidewater gobies. Additionally, the Air Force proposes to restrict herbicide application within 15 feet of aquatic features and would not apply herbicides during the wet season or windy conditions to reduce potential adverse effects to tidewater goby. Therefore, we expect tidewater gobies would only potentially be exposed to glyphosate through overspray. Given the protective

measure proposed by the Air Force, we anticipate adverse effects resulting from herbicide application will be minimized and controlled.

Noise and vibration generated during the removal of utility structures, barrier rock wall, and the excavation for electric line installation, and construction worker foot traffic would likely disturb tidewater gobies beyond the dewatered area to some degree; however, these effects are temporary, lasting only for the duration of the construction activities. If tidewater gobies are driven from the vicinity of the work activities, we expect that they would return upon the completion of construction.

Lighting on the new bridge could have an indirect effect on tidewater gobies. Responses to artificial lighting vary greatly between species and between age classes of fishes (Rich and Longcore 2006). In general, artificial night lighting influences fish foraging and schooling behavior, spatial distribution, predation risk, migration and reproduction. Effects in these areas collectively influence community ecology of fishes and both their prey and predators across the affected aquatic landscape. Artificial lighting may affect foraging and schooling behavior of diurnal, crepuscular, and nocturnal fishes. Fish display large manipulability in these behaviors; some normally diurnal fish forage at night, and nocturnal fish occasionally may be active during the day.

Becker et al conducted nighttime surveys to test the effects of artificial light on fish abundance and behavior and found a clear difference in the abundance of fish observed between fish exposed to light and those that were not (Rich and Longcore 2006). The occurrence of large-bodied predators increased when the artificial lights were on; the amount of small shoaling fish also increased. Conditions created by artificial lighting may benefit piscivores by concentrating prey and enhancing foraging capabilities. However, this has the potential to create an unnatural top-down regulation of fish populations within estuarine and coastal waters. Becker et al concluded that artificial light has the potential to alter fish communities by creating optimal conditions for predators.

Although studies have not been conducted with tidewater gobies specifically, these studies indicate that artificial night light produced from the bridge may have adverse effects on tidewater gobies in the action area. The light produced by the bridge lights will not exceed 1.1 lux within 10 feet north or south of the bridge deck, which is comparable to natural light produced at dawn or dusk. The light levels reaching the water will be less than 1.1 lux since the water level will typically be 20 to 30 feet below the new bridge deck; however, the light levels reaching the water would be within the range of the brightness of a full moon (0.27 to 1.0 lux). Thus, the addition of artificial night light at the new bridge may influence foraging behavior, shoaling, predation risk, migration, and reproduction of tidewater goby individuals. Because the effects of night lighting will be restricted to a small portion of the action area and the light levels reaching the water would be within the natural ranges that tidewater gobies experience during lunar cycles, we anticipate the adverse effect of night lighting would be minimal.

Recovery of the Tidewater Goby

The goal of the tidewater goby recovery plan is to conserve and recover the tidewater goby throughout its range by managing threats and perpetuating viable metapopulations within each recovery unit while maintaining morphological and genetic adaptations to regional and local environmental conditions. We do not expect the replacement of the 13th Street bridge to substantially affect the conservation of tidewater gobies within the Conception Recovery Unit, in terms of the recovery strategy described in the recovery plan because:

1. The tidewater goby recovery plan emphasizes the importance of the conservation of population units rather than individual fish, and the effects of the replacement of the 13th Street bridge are not expected to cause population-level declines in Santa Ynez River; and

2. The replacement of the 13th Street bridge would not adversely affect the metapopulation dynamics between individual populations within the Conception Recovery Unit.

The proposed action could adversely affect tidewater goby adults, juveniles, and/or eggs that occur within Santa Ynez River through direct injury or mortality, increased sedimentation, contamination, and exposure to artificial night light. These effects will be minimized by the Air Force's implementation of the minimization measures described above, and are not anticipated to substantially affect the survival of the species in Santa Ynez River. Replacement of the 13th Street bridge is not anticipated to compromise the recovery of tidewater gobies.

California Red-legged Frog

California red-legged frogs could be inadvertently injured or killed by workers, construction equipment, or during the placement of riprap, barriers, and fill material. California red-legged frogs dispersing from areas adjacent to the action area are subject to mortality or injury from vehicle strikes and construction activities associated with the proposed project. California red-legged frogs that are not able to disperse from the action area may be crushed by worker foot traffic or the use of heavy equipment. Effects could range from crushing the leg of a California red-legged frog resulting in injury to completely running over or stepping on an individual rendering unrecognizable among excavated soil and vegetation. To minimize effects to this species, the Air Force would have a qualified biologist conduct a pre-construction survey and capture and relocate all California red-legged frogs to the nearest suitable habitat outside of the project area prior to the onset of construction activities. The qualified biologist would monitor project-related activities to minimize adverse effects on California red-legged frogs and their habitat. The Air Force's proposal to restrict work prior to the forecast and onset of significant rainfall events (0.5 inches within a 24 hour period) would further reduce adverse effects to breeding California red-legged frogs, typically laying their eggs during or shortly after large rainfall events. Given the Air Force's proposed protective measures, we anticipate these effects to California red-legged frog would be minimized and controlled.

Relocating California red-legged frogs out of harm's way may reduce injury or mortality from equipment, foot traffic, or ground disturbing activities; however, injury or mortality of individuals may occur as a result of improper handling, containment, or transport of individuals or from releasing them into unsuitable habitat (e.g., where exotic predators are present). Observations of diseased and parasite-infected amphibians are frequently reported. This has given rise to concerns that releasing amphibians following a period of captivity, during which time they can pick up infections of disease agents, may cause an increased risk of mortality in wild populations. Amphibian pathogens and parasites can also be carried between habitats on the hands, footwear, or equipment of fieldworkers, which can spread them to localities containing species which have had little or no prior contact with such pathogens or parasites. We anticipate the Air Force's proposal to use a Service-approved biologist and conduct an educational briefing for all project personnel prior to the start of work activities would reduce or eliminate the risk of improper handling, containment, or transport of California red-legged frogs.

Recent observations suggest that California red-legged frog exhibit strong site fidelity (AECOM 2011). The Air Force's proposal to have a biological monitor present on site to detect any California red-legged frogs attempting to return to the site after relocation and install silt-fencing around the perimeter of the project could minimize the effect of translocated individuals returning to the site. Furthermore, the translocation of individuals from the project area would likely reduce the level of mortality that otherwise would occur if California red-legged frogs were not removed.

Excavation and backfilling associated with the removal of vegetation, construction of access roads and staging areas, and placement of rock riprap may cause erosion that can lead to sedimentation that could smother California red-legged frogs or reduce the availability of plants and insects that serve as their habitat and food sources. The effects of sedimentation resulting from the proposed project would be minimized by the Air Force's proposal to install silt fencing around the perimeter of the work area, implement best management practices during project activities, and divert the active river channel around the work area to ensure flow is not impeded. We anticipate these measures will control and minimize erosion and sedimentation and the effects on California red-legged frogs.

The existing 13th Street bridge has contributed to increased scour at the site of the bridge. The existing bridge has concentrated flows into fixed paths between narrow abutments and intensified scour downstream. The new bridge will span 650 feet of channel, compared to 500 feet spanned by the existing bridge, and replace the existing eight piers with two hexagonal piers. As a result, the new bridge is expected to decrease downstream scour and sedimentation by allowing the river to meander through a broader, less constricted channel. We anticipate this decrease in sedimentation would be beneficial to the California red-legged frog and its habitat.

The proposed bridge replacement project will temporarily disturb California red-legged frog aquatic and upland habitat within the project area. Habitat disturbance at the wetland mitigation site would be restricted to upland habitat adjacent to the channel; there would be no temporary disturbance or removal of aquatic habitat at the wetland mitigation site. Temporary removal of,

or disturbance to, 3.19 acres of California red-legged frog aquatic feeding and breeding habitat within the project area would occur. Up to 61.11 acres of upland California red-legged frog habitat, potentially used for dispersal, foraging, and summer refugia, will be temporarily disturbed within the 13th Street bridge project area. An additional 19.19 acres of upland California red-legged frog habitat will be temporarily disturbed at the wetland mitigation site. The temporary loss of habitat has the potential to cause injury or death of California red-legged frog if they are forced into adjacent, less suitable habitat. After construction and demolition activities are complete, the areas within the 13th Street bridge project area will continue to function as California red-legged frog aquatic and upland habitat.

Permanent loss of aquatic habitat would be restricted to the area physically occupied by the new 13th Street bridge. The design of the new 13th Street bridge includes two piers as opposed to the existing bridge that has eight piers. After completion of the proposed project and restoration of the project site, the project will result in an estimated net gain of 0.18 acres of California red-legged frog breeding habitat. The permanent loss of habitat resulting from the bridge replacement will be more than offset by the removal of the existing bridge and associated riprap. Therefore, we do not anticipate the proposed project will result in permanent reduction of California red-legged frog habitat in the action area.

During the 2012-2013 California red-legged frog surveys, densities within the 13th Street bridge project area were relatively low compared to other riverine areas on Vandenberg Air Force Base. The low densities may be due to the relatively high presence of bullfrogs within the area resulting in high competitive pressure and potential predation from bullfrogs. The Air Force's proposal to eradicate non-native species in the action area would further benefit California red-legged frogs in the area by reducing potential predators.

Impacts to California red-legged frog habitat are expected to be largely restricted to the duration of construction of the new bridge, demolition of the existing bridge, and activities associated with the wetland mitigation project. During construction and demolition activities, which are anticipated to be 12 to 20 months over a two year period, the area of the channel temporarily diverted would not be available for breeding or foraging habitat. The Air Force proposes to remove non-native plant and wildlife species in the action area during project-related activities, and continue to monitor and eradicate non-native invasive plant species following completion of the project. Given that habitat loss will be short-term in nature and the proposed project will result in a net increase in habitat quality and availability, we anticipate the effects of habitat loss to be temporary and minimal.

Accidental spills of hazardous materials, careless fueling or oiling of vehicles or equipment, or a frac-out within the river channel during horizontal directional drilling could degrade aquatic habitat or dispersal habitat to a degree where California red-legged frogs are injured or killed. The Air Force proposes to implement several measures to minimize the potential of releasing contaminants into the channel. First, the Air Force would implement a frac-out contingency and Spill Prevention Plan containing measures to prevent the release of hazardous materials during project-related activities. Second, the Air Force would store hazardous materials and stage,

repair, and maintain project equipment outside of the riparian corridor in pre-designated areas. Lastly, the Air Force would use secondary containment such as catch pans or protective mats to prevent contamination of the river bed. Given the measures proposed by the Air Force to minimize the risk of releasing contaminants into the channel, we anticipate adverse effects to California red-legged frog would be minimal.

Glyphosate is the active ingredient in a variety of herbicides including Roundup, Rodeo, Aquamaster, Buccaneer, Glyfos, Honcho, Touchdown, Vision, Duramax, Rattler, and others. Glyphosate is a systemic herbicide that will kill broadleaf and grass species by inhibiting the production of aromatic amino acids in plants and some microorganisms that are necessary to build proteins (Devine et al. 1993). Because many animals lack the amino acid synthesis pathway that glyphosate disrupts, it is considered to have low potential to cause toxicity in animals (Devine et al. 1993). Most glyphosate products are formulated to contain surfactants that allow the active ingredients to spread over and penetrate the plant cuticles. Surfactants can be the most toxic portion of a pesticide product. The surfactant associated with many glyphosate products is a polyethoxylated tallowamine (POEA) surfactant.

California red-legged frog eggs, tadpoles, juveniles and adults can be exposed to glyphosate products and POEA surfactants in aquatic habitats through direct overspray of wetlands, drift from treated areas, or contaminated runoff from treated areas. The half-life of glyphosate in pond water ranges between 12 days and 10 weeks (Extoxnet 1996). Additionally, juvenile and adult California red-legged frogs can be exposed in terrestrial habitats that have been treated. Glyphosate and POEA readily sorbs to soil particles and can be degraded by microbes in 7 to 70 days depending on soil conditions (Giesy et al. 2000).

No information is available regarding the toxicity of glyphosate products specifically to California red-legged frogs. Studies exploring the lethal and sublethal effects of glyphosate products on other amphibians, including ranids, are available but are largely focused on aquatic stages of the species and formulations of glyphosate that include surfactants. Roundup Original Max, a glyphosate product with POEA surfactant, was demonstrated to be moderately to highly toxic to nine species of frog and toad tadpoles including five Ranidae species: wood frog (*Rana sylvatica*), leopard frog (*Rana pipiens*), Cascades frog (*Rana cascadae*), green frog (*Rana clamitans*), and American bullfrog (*Rana catesbeiana*) (Relyea and Jones 2009). The mortality of tadpoles is hypothesized to be caused by the lysis (i.e. destruction) of gill cells from exposure to surfactants (Lajmanovich et al. 2003, Edington et al. 2004) indicating that the life stage during which frogs and toads have gills may be particularly vulnerable. Glyphosate products containing POEA surfactants have also been shown to have sub-lethal effects to amphibians including decreased size, increased time to metamorphosis, tail malformations, and gonadal abnormalities (Govindarajulu 2008, Howe et al. 2004).

Several studies suggest that the toxicity of glyphosate products is linked with the surfactant, and not the glyphosate. Howe et al. (2004) compared the toxicity of glyphosate alone, to glyphosate with POEA surfactant, and POEA alone, on green frogs. Results indicated that the toxicity of glyphosate with POEA surfactant was similar to the POEA surfactant alone, which was much

greater than glyphosate alone, indicating that the POEA was responsible for the toxic effects. In a comprehensive review of studies involving the effects of glyphosate on amphibians Govindarajulu (2008) concluded that the toxic effect of glyphosate products containing POEA are due to the POEA rather than the active glyphosate ingredient.

These studies indicate that glyphosate products formulated with POEA surfactants will likely kill or injure California red-legged frogs in aquatic habitats, with tadpoles being particularly vulnerable. Because glyphosate and POEA readily bind to soil and sediments, these chemicals may be less available to California red-legged frogs on land; however, research is needed to determine toxicity mechanisms and thresholds from terrestrial exposure. The Air Force proposes to use a glyphosate formulation that does not contain a surfactant. Herbicides would not be applied during the wet season or windy conditions to reduce potential adverse effects to California red-legged frogs. Given these protective measures, we anticipate the adverse effects of herbicide application would be minimized and controlled.

Noise and vibration generated during the removal of utility structures, the barrier rock wall, the excavation for electric line installation, and construction worker foot traffic may cause California red-legged frogs to temporarily abandon habitat adjacent to work areas. Such disturbance may increase the potential for predation and desiccation when California red-legged frogs leave shelter sites; however, these effects would be temporary, lasting only for the duration of the construction activities. If California red-legged frogs are driven from the vicinity of the work activities, we expect that they would return upon the completion of construction or find other suitable refuge nearby.

Because many amphibians are nocturnally active or have biological rhythms regulated by light, light pollution may have significant adverse effects on them. Frogs are nocturnally active, such that reproduction and activity primarily occur during dark periods. Wise (2007) reviewed studies examining the impacts of light pollution on frogs and found that artificial night lighting has the potential to affect foraging and breeding as well as growth and development of frogs. Light pollution increases ambient illumination, disrupts photoperiod, and changes spectral properties of night light that may affect the physiology, behavior, ecology, and evolution of frog populations.

Baker and Richardson (in Wise 2007) examined the reproductive behavior (calling) and movement activity of male green frogs (*Rana clamitans melanota*), that were exposed to artificial light on moonlit nights (higher natural ambient illumination) or darker nights (lower natural ambient illumination). Baker and Richardson found a reduction in number of calls and an increase in movements by males in the artificially lighted treatment compared to the control treatment, regardless of the natural ambient illumination (moonlight or no moonlight). A reduction in the number of calls by males may affect selection of mates by females (Wise 2007). If such an effect is long-term and widespread, exposing frogs to artificial night lighting may result in changes in population dynamics.

Baker (in Wise 2007) examined the impact of artificial night lighting on distributions of common European toads. During a mass emigration event, Baker counted the number of young toads

aggregating in lighted areas under street lamps and in darker control areas between these lamps. He found more toads under lighted areas than in unlit areas. Baker hypothesized that toads aggregated under street lamps because of the increased insect abundance (prey for toads) found there. While these animals may benefit from increased prey in the lit areas, aggregation may increase the risk of predation as increased illumination may allow predators to see frogs that may not normally be visible to them resulting in increased mortality.

In a recent study, a variety of nocturnal illuminations were used to measure the effect of light at night on growth and metamorphosis in tadpoles (Wise 2007). Tadpoles were exposed to varying nocturnal illuminations of 0.0001 lx (comparable to a very dark night), 0.01 lx (comparable to bright moonlight), 1 lx (comparable to dawn or dusk), and 100 lx (comparable to bright room lighting). Results showed that the tadpoles differed in amount of growth in the different nocturnal light treatments; at the end of the experiment, a greater proportion of frogs in the darkest lighting treatment metamorphosed than in the other lighting treatments. Even small amounts of light at night (comparable to bright moonlight, or artificial lights from anthropogenic sources) may delay metamorphosis.

Although studies have not been conducted with California red-legged frog specifically, these studies indicate that artificial night light produced from the bridge may have adverse effects on California red-legged frogs in the action area. The light produced by the bridge lights will not exceed 1.1 lux within 10 feet north or south of the bridge deck, which is comparable to natural light produced at dawn or dusk. The light levels reaching the water will be less than 1.1 lux since the water level will typically be 20 to 30 feet below the new bridge deck; however, the light levels reaching the water would be within the range of the brightness of a full moon (0.27 to 1.0 lux). Thus, the addition of artificial night light at the new bridge may result in behavioral modification, predation, loss of suitable habitat and decreased fitness of California red-legged frog individuals. Because the effects of night lighting will be restricted to a small portion of the action area and the light levels reaching the water would be within the natural ranges California red-legged frog experience during lunar cycles, we anticipate the adverse effects of night lighting would be minimized and controlled.

Recovery of the California Red-legged Frog

Because the action area is within a recovery unit with "high recovery status," the proposed bridge replacement is not likely to reduce the potential contribution of the action area to the conservation of the California red-legged frog. In other words, the populations of California red-legged frog in the recovery unit are considered plentiful and many of those are of high quality. Overall, the effects to the species and its habitat would be relatively minor and temporary. Additionally, the proposed bridge replacement project will increase the quality and quantity of available California red-legged frog habitat in the action area; therefore, we anticipate that the proposed project will not diminish the species' ability to recover.

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 consultation pursuant to section 7 of the Act. Because the entire Vandenberg Air Force Base is a Federal installation, we are not aware of any non-Federal actions that are reasonably certain to occur in the action area.

CONCLUSION

In determining whether a proposed action is likely to jeopardize the continued existence of a species, we consider the effects of the action with respect to the reproduction, numbers, and distribution of the species. In that context, the following paragraphs summarize the effects of the proposed bridge replacement project on the tidewater goby and the California red-legged frog.

Tidewater Goby

Reproduction

Replacement of the 13th Street bridge would temporarily reduce the amount of available tidewater goby breeding habitat. Such disruptions could potentially affect a proportion of breeding tidewater gobies at Vandenberg Air Force Base. The proposed activities would not cause permanent loss of breeding habitat, and the amount of habitat that would be temporarily affected is a small portion of the species breeding habitat rangewide. In addition, the Air Force would use a Service-approved biologist to survey for and relocate all tidewater gobies out of areas to be dewatered. The relocation sites would be selected within the Santa Ynez River watershed, which supports the necessary environmental conditions for tidewater goby survival. We expect these measures to greatly minimize disturbances to breeding activity. Therefore, we expect few breeding tidewater gobies would be affected by bridge replacement activities and these activities would not appreciably reduce tidewater goby reproduction in the action area or rangewide.

Number

We are unable to determine the precise number of tidewater gobies that could occur in the action area and may be affected by the bridge replacement activities because the numbers of individuals in the action area vary between breeding and non-breeding season, and from year to year. The proposed activities could directly and indirectly affect individual tidewater gobies to the point of injury or death, although we expect injury or mortality to be minimal. We expect all individuals within the action area during bridge replacement activities will be displaced. The Air Force will implement measures to avoid or minimize the likelihood of adverse effects to the species. The number of tidewater gobies we expect to be affected by the proposed activities is very small relative to those present in the Santa Ynez river estuary as a whole. The tidewater goby is an

annual species and thus has the capacity to produce many offspring, enough to replace entire populations each year. This strategy has evolved to compensate for high juvenile mortality due to predation, changing environmental conditions, and their short (typically 1-year) lifespan. This means that minor impacts, like those we anticipate for the subject project, will be masked within the next breeding cycle. Therefore, we do not expect the proposed bridge replacement project to appreciably reduce the number of tidewater gobies rangewide.

Distribution

The proposed bridge replacement project could temporarily displace tidewater gobies from portions of the action area and could cause injury or mortality; however, the Air Force would implement measures to minimize the risk of adverse effects on tidewater gobies. Effects of the project would be temporary as the channel would once again receive water and function as tidewater goby habitat following completion of the project. Furthermore, the project would result in an estimated net gain of 0.18 acres of available tidewater goby habitat. The proposed project would affect a small proportion of the habitat available on Vandenberg Air Force Base and to a lesser degree the geographic range of the tidewater goby. Therefore, we do not expect the effects of the 13th Street bridge replacement project to appreciably reduce the distribution of the tidewater goby.

After reviewing the current status of the tidewater goby, the environmental baseline for the action area, the effects of the proposed bridge replacement project at Vandenberg Air Force Base, and the cumulative effects, it is the Service's biological opinion that the Air Force's proposal to replace the 13th Street bridge at Vandenberg Air Force Base is not likely to jeopardize the continued existence of the tidewater goby. We have determined that the reproduction, numbers, and distribution of the species would not be diminished, and that the proposed project would not interfere with the recovery of the tidewater goby as envisioned in the recovery plan due to the size of the affected area and the measures the Air Force proposes to avoid and minimize the potential effects.

California Red-legged Frog

Reproduction

Replacement of the 13th Street bridge would temporarily reduce the amount of available California red-legged frog breeding habitat. Such disruptions could potentially affect a portion of breeding California red-legged frogs at Vandenberg Air Force Base. The proposed activities would not cause permanent loss of breeding habitat, and the amount of habitat that would be temporarily affected is a small percentage of California red-legged frog breeding habitat rangewide. The Air Force would use a Service-approved biologist to survey for and relocate all California red-legged frogs to the nearest suitable habitat outside of the project area prior to the onset of construction activities. In addition, the Air Force's proposal to restrict work within the river channel prior to the forecast and onset of significant rainfall events (0.5 inches within a 24 hour period) would further reduce adverse effects to breeding California red-legged frogs,

typically laying their eggs during or shortly after large rainfall events. We expect these measures to greatly minimize disturbances to breeding activity. Therefore, we expect few breeding California red-legged frogs would be affected by bridge replacement activities and these activities would not appreciably reduce California red-legged frog reproduction in the action area or rangewide.

Number

We are unable to determine the precise number of California red-legged frogs that could occur in the action area and may be affected by the bridge replacement activities because the numbers of individuals in the action area vary from year to year. The proposed activities could directly and indirectly affect individual California red-legged frogs to the point of injury or death, although we expect injury or mortality to be minimal. We expect all individuals left within the action area following capture and relocation efforts will be displaced during bridge replacement activities. The Air Force will implement other measures to avoid or minimize the likelihood of adverse effects to the species. The number of California red-legged frogs we expect to be affected by the proposed activities is very small relative to those in the entirety of the species' range. Therefore, we do not expect the proposed bridge replacement project to appreciably reduce the number of California red-legged frogs rangewide.

Distribution

The proposed bridge replacement project could temporarily displace California red-legged frogs from portions of the action area and could cause injury or mortality; however, the Air Force would implement measures to minimize the risk of adverse effects on California red-legged frogs. Effects of the project would be temporary as the channel and upland area would function as California red-legged frog habitat following completion of the project. The proposed project would affect a small proportion of the habitat available on Vandenberg Air Force Base and to a lesser degree the geographic range of the California red-legged frog. Therefore, we do not expect the effects of the 13th Street bridge replacement project to appreciably reduce the distribution of the California red-legged frog.

After reviewing the current status of the California red-legged frog, the environmental baseline for the action area, the effects of the proposed bridge replacement project at Vandenberg Air Force Base, the reinitiation request, and the cumulative effects, it is the Service's biological opinion that the Air Force's proposal to replace the 13th Street bridge at Vandenberg Air Force Base, is not likely to jeopardize the continued existence of the California red-legged frog. We have determined that the reproduction, numbers, and distribution of the species would not be diminished, and that the proposed project would not interfere with the recovery of the California red-legged frog as envisioned in the recovery plan due to the size of the affected area and the measures the Air Force proposes to avoid and minimize the potential effects.

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 wildlife 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 wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it 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 this incidental take statement.

The measures described below are non-discretionary, and must be undertaken by the Air Force so that they become binding conditions for the exemption in section 7(o)(2) to apply. The Air Force has a continuing duty to regulate the activity covered by this incidental take statement. If the Air Force fails to assume and implement the terms and conditions, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Air Force 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)]

Tidewater Goby

We anticipate that tidewater gobies could be subject to take in the form of harm, wounding, killing, and capture. Dewatering and diverting the channel could significantly modify tidewater goby habitat. Such an alteration could cause harm by affecting individual gobies to the point of injury or mortality by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. In addition, we expect that some tidewater gobies will be killed or injured by the proposed bridge replacement activities (i.e., crushed by heavy equipment, ground disturbance, etc.). We also conclude that tidewater gobies within the areas where ground disturbance will occur will be killed or injured by the bridge replacement activities because some are likely to not be captured during relocation efforts. Lastly, we anticipate that all tidewater gobies encountered in the project area will be taken when they are captured and relocated, and that a subset of the individuals captured may be killed or injured due to mishandling or stress.

We cannot quantify the precise numbers of tidewater gobies that may be captured, killed, or injured as a result of the actions that the Air Force has proposed because tidewater gobies move over time; for example, animals may have entered or departed the action area since the time of pre-construction surveys. Other individuals may not be detected due to their cryptic nature, small size, and low mobility. The protective measures proposed by Air Force are likely to

prevent mortality or injury of most individuals. In addition, finding every dead or injured tidewater goby is unlikely because of their small size and cryptic nature.

Consequently, we are unable to reasonably anticipate the actual number of tidewater gobies that would be taken by the proposed project. The quantification of take is difficult because of the species' small size and life history characteristics. The numbers and locations of tidewater gobies within suitable habitat in the action area may vary from day to day or month to month. Despite our inability to anticipate a precise number of tidewater gobies that would be killed or injured during project activities, we anticipate that few tidewater gobies are likely to be killed or injured during this project because the Air Force will implement measures to minimize adverse effects to the tidewater goby and its habitat. However, we must determine a reasonable number for the purpose of establishing a limit beyond which formal consultation must be reinitiated. We recognize that for every tidewater goby found dead or injured, other individuals of this species may have been injured or killed and not detected.

The considerations we used in arriving at the reinitiation trigger include: (1) tidewater goby populations fluctuate greatly in number of individuals; (2) dead or injured individuals are difficult to detect; (3) some tidewater gobies may be killed or injured by equipment, foot traffic, and dewatering activities; (4) because the number of tidewater gobies in a population may be high, many individuals could be taken without a substantial effect on the population; (5) minimization measures implemented by the Air Force will be effective at minimizing adverse effects to tidewater gobies; and (6) the level of take we anticipate must be consistent with a non-jeopardy determination, in that it cannot appreciably reduce the numbers, reproduction, or distribution of the species. Therefore, based upon the proposed project activities, and the number of tidewater gobies observed in the action area, and the uncertainty of how many tidewater gobies would be present and captured and relocated, we have determined that take in the form of injury or mortality by the relocation activities should be less than 10 percent of the total tidewater gobies captured at the project site (assuming a large number of tidewater gobies are captured). We assume that relocated individuals would normally survive, and injury or mortality is the result of unpredictable circumstances or mishandling. If less than 100 tidewater gobies are capture and 10 or more individuals are found dead, the Air Force must contact our office immediately to reinitiate formal consultation. If 100 or more tidewater gobies are captured and10 percent or more are found dead or injured as a result of capture, the Air Force must contact our office immediately to reinitiate formal consultation. In addition, the Air Force should cease conducting actions resulting in take until the formal consultation reinitiation process is concluded. These take levels are consistent with our analysis of the effects of the action and our non-jeopardy conclusion.

We anticipate that some take will occur as a result of dewatering. The actual number of tidewater gobies that may be taken cannot be accurately predicted because of their small size and varying abundance in a given location. Because we are unable to reasonably anticipate the actual number of tidewater gobies that would be taken by the dewatering activities, we are limiting take during dewatering activities to 40 dead or injured tidewater gobies. If 40 tidewater gobies are found dead or injured then the Air Force must contact our office immediately so we can review

the project activities to determine if additional protective measures are needed. Project activities may continue during this review period, provided that all protective measures proposed by the Air Force have been, and continue to be, implemented.

This biological opinion provides an exemption from the prohibition against the taking of listed species, contained in section 9 of the Act, only for the activities described in the Description of the Proposed Action section of this biological opinion. Tidewater gobies may be taken only within the boundaries of the action area as defined in the Environmental Baseline section of this biological opinion.

California Red-legged Frog

We expect that some California red-legged frogs will be killed or wounded by the bridge replacement activities (i.e., crushed by heavy equipment, ground disturbance, etc.). We also conclude that California red-legged frogs within the areas where ground disturbance will occur will be killed or wounded by the bridge replacement activities because they are not likely to be detected during surveys. Lastly, we anticipate that all California red-legged frogs detected will be taken when they are captured and relocated, and that a subset of the individuals captured may be killed or injured due to mishandling or stress.

We cannot quantify the precise numbers of California red-legged frogs that may be captured, killed, or wounded as a result of the actions that Air Force has proposed because California red-legged frogs move over time; for example, animals may have entered or departed the action area since the time of pre-construction surveys. Other individuals may not be detected due to their cryptic nature, small size, and low mobility. The protective measures proposed by Air Force are likely to prevent mortality or injury of most individuals. In addition, finding a dead or injured California red-legged frog is unlikely because of their small size and cryptic nature.

Consequently, we are unable to reasonably anticipate the actual number of California red-legged frogs that would be taken by the proposed project; however, we must provide a number at which formal consultation would have to be reinitiated. The Environmental Baseline and Effects Analysis sections of this biological opinion indicate that adverse effects to California red-legged frogs would likely be low given the nature of the proposed activities and the low number of California red-legged frogs found in the action area during surveys. We therefore anticipate that take of California red-legged frogs would also be low. We also recognize that for every California red-legged frog found dead or injured, other individuals may be killed or injured that are not detected, so when we determine an appropriate take limit we are anticipating that the actual take would be higher and we set the number at a low level.

Similarly, for estimating the number of California red-legged frogs that would be taken by capture, we cannot predict how many may be encountered for reasons stated earlier. Also, the population size fluctuates throughout the year between breeding and non-breading seasons. While the benefits of relocation (i.e., minimizing mortality) outweigh the risk of capture, we must provide a limit for take by capture at which consultation would be reinitiated.

Therefore, if 2 adult, subadult, or juvenile California red-legged frogs are found dead or injured or if 20 are captured and relocated, the Air Force must contact our office immediately to reinitiate formal consultation. Project activities that are likely to cause additional take should cease during this review period because the exemption provided under section 7(o)(2) would lapse and any additional take would not be exempt from the section 9 prohibitions.

REASONABLE AND PRUDENT MEASURES/TERMS AND CONDITIONS

The Service's evaluation of the effects of the proposed action includes consideration of the measures developed by the Air Force, and repeated in the Description of the Proposed Action portion of this biological opinion, to minimize the adverse effects of the proposed action on the tidewater goby and California red-legged frog. The Service believes these measures are adequate and appropriate to minimize the impacts of the incidental take of tidewater goby and California red-legged frog. Therefore, we are not including any reasonable and prudent measures and terms and conditions in this incidental take statement. Any subsequent changes in the minimization measures proposed by the Air Force may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR 402.16.

REPORTING REQUIREMENTS

For each year this biological opinion is in effect, the Air Force must provide a written annual report describing project activities during the previous year to the Service by January 31st. The reports must contain information on: (1) the type of activities that occurred in the action area (e.g., construction activities, monitoring, etc.); (2) the location of these activities; (3) a description of the habitat in which these activities occurred; (4) the number of listed species affected and the manner in which they were affected; (5) steps taken to avoid or minimize effects; (6) the results of any surveys conducted for tidewater goby and California red-legged frog in the previous year; (7) a record of observations of any other listed species observed during project activities; and (8) any other pertinent information. The first report will be due January 31st following the first project activities conducted pursuant to this biological opinion.

DISPOSITION OF DEAD OR INJURED SPECIMENS

Within 3 working days of locating a dead or injured tidewater goby or California red-legged frog, the Air Force must make initial notification by telephone and writing to the Ventura Fish and Wildlife Office in Ventura, California, (2493 Portola Road, Suite B, Ventura, California 93003, (805) 644-1766). The report must include the time and date, location of the carcass, a photograph, cause of death if known, and any other pertinent information.

Care must be taken in handling dead specimens to preserve biological material in the best possible state for later analysis. If any injured tidewater gobies or California red-legged frogs survive, the Air Force should contact us regarding their final disposition.

Any remains of dead tidewater gobies or California red-legged frogs must be placed with educational or research institutions holding the appropriate State and Federal permits, such as the Santa Barbara Natural History Museum (Contact: Paul Collins, Santa Barbara Natural History Museum, Vertebrate Zoology Department, 2559 Puesta Del Sol, Santa Barbara, California 93460, (805) 682-4711, extension 321).

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 Air Force should remove all or part of the existing 35th Street bridge abutments to provide long-term benefits to the tidewater goby, the California red-legged frog, many other species, and their respective habitats. The remnants of the bridge have altered the natural hydrological conditions within the river floodplain such that it has led to severe erosion on the north river bank, restriction, channelization and incision of the mainstem channel, and overall degradation of native habitat in the floodplain. While grading the area to an elevation of approximately 3.15 meters would increase lateral marsh habitat in the estuary during prolonged periods without breaching and high flow events, the Air Force acknowledged in the biological assessment that sediment may build up in the wetland mitigation site during future high flow events because these abutments will remain in place. The Service understands the Air Force is concerned about increasing the bird/animal aircraft strike hazard (BASH) in the area because it is approximately 2.2 miles from the airfield; however, according to the BASH evaluation of the proposed mitigation project (Air Force 2012), the area currently attracts shorebirds, water birds, and other avian species that pose a risk to BASH. Enhancement of riparian habitat would attract passerines and other smaller avian species that tend to stay in the riparian zone, making short low elevation flights from tree to tree. Enhancing or expanding riparian habitat in the area would increase habitat for passerines which could be beneficial to the BASH program because it would reduce habitat for shorebirds. Overall, removal of all or portions of the 35th Street bridge abutments would be a large step towards restoring the habitats essential for the tidewater goby, California red-legged frog, and many other species.

REINITIATION NOTICE

This concludes formal consultation on the effects of the 13th Street bridge replacement project at Vandenberg Air Force Base. 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) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species in a

manner or to an extent not considered in this opinion; (3) 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 (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) will have lapsed and any further take would be a violation of section 4(d) or 9(a)(1)(B). Consequently, we recommend that any operations causing such take cease pending reinitiation.

If you have any questions regarding this consultation, please contact Rachel Henry of our staff at (805) 644-1766, extension 333.

Sincerely,

Stephen P. Henry
Field Supervisory

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