Appendix C

NMFS Correspondence

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

SEP 27 2000

In Your Response Please
Refer To:
F-LB-00-16:DRB

Robert E. Koplin
U.S. Army Corps of Engineers
Los Angeles District
PO Box 532711
Los Angeles, California 90053-2325

Dear Mr. Koplin:

Enclosed is the National Marine Fisheries Service's (NMFS) biological opinion for the U.S. Army Corps of Engineers' (Corps) Santa Paula Creek Flood Control Project in the City of Santa Paula, Ventura County, California. The biological opinion addresses the effects of the proposed action on steelhead (*Oncorhynchus mykiss*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.).

The biological opinion concludes the Corps' action and the resulting construction, operation, and maintenance of the project is not likely to jeopardize the continued existence of the endangered Southern California Evolutionarily Significant Unit (ESU) of steelhead, or result in the destruction or adverse modification of critical habitat. However, NMFS believes the action is likely to result in take of steelhead present in the Santa Clara River system. Therefore, an incidental take statement is attached to the biological opinion. The incidental take statement includes reasonable and prudent measures that NMFS believes are necessary and appropriate to minimize and monitor incidental take of steelhead. Please contact Darren Brumback at (562) 980-4026 if you have comments or questions.

Sincerely,

R. Lent

Rebecca Lent, Ph. D.
Regional Administrator

Enclosure

DRAFT - BIOLOGICAL AND CONFERENCE OPINION

Agency: U. S. Army Corps of Engineers (Corps)

Activity: U. S. Army Corps of Engineers' construction, operation, and maintenance of the Santa Paula Creek Flood Control Project, including flood channel, inlet structure/fish ladder, and in-channel sediment basin, in Santa Paula Creek, Ventura County, California.

Consultation Conducted By: Southwest Region, National Marine Fisheries Service (NMFS).

Date Issued: SEP 27 2000

BACKGROUND

The U. S. Army Corps of Engineers (Corps) has a long history of flood control activities along the Santa Clara River and Santa Paula Creek. The present Santa Paula Creek Flood Control Project (Project) is a continuation of this effort. The Corps and Ventura County Flood Control District (VCFCD) prepared a Final EIS/EIR for the proposed construction of a flood control channel in Santa Paula Creek (Corps 1995). Following this Final EIS the Corps prepared several Supplemental Environmental Assessments/EIR Addendums. Phase I construction was conducted between June 1997 and October 1998; this included removal of the existing concrete flood control channel and 38 energy dissipaters, and construction of a grouted stone trapezoidal, natural bottom flood control channel in the lower reach of Santa Paula Creek from the Santa Clara River confluence to approximately river mile (RM) 0.8. Phase II began in March 1999, following lifting of a court injunction. This phase of the project includes construction, and associated activities, of the upper reaches of the flood control channel and inlet structure/fish ladder, and is anticipated to be completed in March 2001. The in-channel construction is anticipated to be completed prior to January 2001 based on the project description submitted by the Corps (2000). However, subsequent personal communication with the Corps suggests that the in-channel work may not be completed until August 2001.

The Corps requested consultation on the Project in November, 1997. The NMFS concluded section 7 consultation in December, 1997, in concurring with the Corps' determination that the Project may affect, but was not likely to adversely affect endangered steelhead of the Southern California Evolutionarily Significant Unit (ESU). This determination was based on information suggesting that steelhead presence in Santa Paula Creek was unlikely to occur during construction of the Project, habitat conditions downstream of Harvey Dam likely do not support suitable spawning or rearing conditions, areas upstream of Harvey Dam that support suitable steelhead spawning and rearing habitat have continued to be inaccessible for a number of decades, and the Corps' commitment to providing adequate fish passage at the stabilizing/inlet

structure. Phase I construction was completed under this section 7 consultation.

Subsequent to completing informal consultation, observations and experiences relative to the operation of traditional style fish ladders in high sediment transport systems such as Santa Paula Creek, and the functional flow range and entrance/exit orientation of the proposed fish ladder facilitated the need for further Project review. Technical and biological staff from the Corps, NMFS and California Department of Fish and Game (CDFG) coordinated efforts to evaluate and modify the proposed fish ladder to better accommodate anticipated sediment and flow conditions in Santa Paula Creek (Corps 2000). Subsequent to the original consultation on the Project, the Corps released the Operation, Maintenance, Repair, Replacement, and Rehabilitation Manual (December, 1998) for the Project. This document provided little to no specific guidance for post-construction/sediment removal low flow channel configuration. In addition to the original fish ladder design and proposed Operations and Maintenance Manual concerns, critical habitat was designated for the Southern California Steelhead ESU in February, 2000. The Corps requested reinitiation of section 7 consultation with NMFS on April 17, 2000, and submitted the Draft Supplemental Environmental Assessment of Rock Source, Low Flow Channel and Redesigned Fish Ladder for Santa Paula Creek Flood Control Project as the Biological Assessment.

DESCRIPTION OF THE PROPOSED ACTION

The federal action includes demolition of the existing flood control channel, construction of a new flood control channel and in-channel sediment basin, and development and authorization of an operation and maintenance manual to be implemented by the Ventura County Flood Control District (VCFCD). The action area is estimated to extend from the Santa Clara River, approximately one-half mile downstream of the Santa Paula Creek confluence, upstream to approximately river mile (RM) 2.5 on Santa Paula Creek.

The proposed flood control channel encompasses approximately the lower 2 miles of Santa Paula Creek. The new channel design consists of natural gravel/cobble substrate bottom, 2:1 grouted stone side slopes, and a grouted stone/concrete stabilizing inlet structure (RM 1.82). Construction of the project includes the removal of an estimated 624,000 cubic yards of existing bed material to accommodate channel design and in-channel sediment basin specifications. This material serves as the source for the grouted stone side slopes as well. Up to an additional 100,000 cubic yards of bed material are proposed for excavation from the Santa Paula Creek terrace/flood prone area in the one-half mile reach upstream of the flood control channel, approximately RM 2.0 to RM 2.5, as needed for grouted stone side slope construction. The Draft Supplemental Environmental Assessment of Rock Source, Low Flow Channel and Redesigned Fish Ladder for Santa Paula Creek Flood Control Project (Corps 2000) estimates Project completion in March 2001. However, the Corps has suggested that construction may not be completed until August 2001. No construction activities will occur during January through March within flowing water.

The in-channel sediment basin involves increasing channel capacity in lower 2 miles of Santa Paula Creek, and installation of a stabilizing inlet structure for channel grade control, to allow for accumulation of bed material. The reach downstream from the inlet structure (RM 1.82 to RM 1.28) has a design capacity of 120,000 cubic yards, with an allowable accumulation ranging from 2 to 13 feet in depth. From RM 1.28 to RM 0.73, the allowable accumulation profile ranges from 2 to 4 feet. Only one foot of sediment accumulation would be allowed to accumulate in the reach downstream of RM 0.73 due to flood capacity constraints. The anticipated sediment removal frequency is three to four years, with a volume ranging from 120,000 to 350,000 cubic yards. The Corps proposal indicates that operations and maintenance activities would occur during the months of April through December, weather permitting (Corps 1996); periodic removal of sediment would take about 60 to 120 days (Corps 1999).

The Operations and Maintenance manual will be formulated based on the purpose and need of the project, and relative to the analysis of this biological opinion. The Operations and Maintenance manual will be subject to final approval by NMFS.

The Corps proposed the following measures to reduce impacts of the Santa Paula Creek Flood Control Project on steelhead and their habitat (Corps 2000):

Fish Passage Facility: The stabilizing inlet structure designed to prevent channel degradation (head cutting) upstream from the in-channel sediment basin is of sufficient height (> 15 feet) to constitute a barrier to upstream migrating steelhead. The Corps proposes to incorporate a fish passage structure (ladder) into the inlet structure to accommodate upstream and downstream migrating steelhead. The ladder consists of a series of in-line pools with notched weirs designed to facilitate upstream adult steelhead passage at discharges ranging from 10 cfs to 150 cfs, and anticipated to function, with decreasing efficiency, up to and in excess of 300 cfs.

Low Flow Channel: The Corps proposes low flow channel design specifications to be implemented for the completed project and all subsequent excavation activities associated with Operations and Maintenance. The intent of the channel design is to create and maintain a single, low flow channel to facilitate upstream and downstream steelhead migration through the Santa Paula Creek Flood Control Project from the confluence with the Santa Clara River (RM 0.0) to the inlet structure/fish ladder (RM 1.82). The channel design provides for a meandering low flow channel with boulders randomly spaced every few meters to simulate riffle : pool sequence. The "low flow" channel configuration specifies a bottom width of 8 to 11.5 feet, a depth of 2 to 3.25 feet, and side slopes of 1:1.5 to 1:1.2.5.

In addition, the project sponsor (VCFCD) has committed to preserve approximately 15 acres of alluvial scrub and 5 acres of riparian habitat located in the reach upstream from the inlet structure.

California Department of Fish and Game (Corps 2000) established further requirements relative

to the Project with the Project co-sponsor, VCFCD, that the Corps has indicated adoption of:

> Item #35. When operations require moving of equipment across a flowing stream, such operations shall be conducted without increasing turbidity. For repeated crossings, the operator shall install a bridge, culvert, or rock-fill crossing. The minimum diameter of culverts shall be 24 inches. The maximum lengths of culverts shall not exceed 35 feet. Flow velocities shall not be increased above ambient levels. Any such installation shall be approved by the Department's (CDFG) fishery biologist prior to placement....The crossings shall be removed by November 1st.
>
> Item #36. If the streambed has been altered during the operations, its low flow channel shall be reconfigured to simulate natural meanders, with a rough and irregular bottom, and with pools, riffles, falls, etc.
>
> Item # 39. Permanent structures shall be designed, constructed, and maintained such that they do not constitute a barrier to upstream or downstream movement of aquatic life, or cause an avoidance reaction by fish that impedes their upstream or downstream movement. This includes, but is not limited to, the supply of water at an appropriate depth, temperature, and velocity to facilitate upstream and downstream fish migration. If any aspect of the proposed project results in a long term reduction in fish movement, the Operator shall be responsible for all future activities and expenditures necessary to secure passage of fish across the structure.
>
> Item #63. The Operator **shall not** allow any activity within FLOWING WATER from November 1 to March 31...ANY WORK IN FLOWING WATER during the period from April 1 to June 1 shall be either approved by the Department's (CDFG) or surveyed ... to avoid impacts to steelhead.

Although the Streambed Alteration Agreement issued by CDFG identified above indicates the use of electrofishing for the purpose of surveying steelhead presence (Item #63) in the action area, NMFS has not provided any approval of this activity to the Corps.

LISTED SPECIES/CRITICAL HABITAT

Status

Steelhead, an ocean-going form of rainbow trout, are native to Pacific Coast streams from Alaska south to northwestern Mexico (Moyle 1976; NMFS 1997). Wild steelhead populations in California have decreased significantly from their historic levels (Swift et al. 1993). This decline prompted listing of the Southern California ESU of steelhead as endangered on August 18, 1997 (NMFS 1997), for naturally spawned populations of steelhead and their progeny residing below long-term impassible barriers. Critical habitat was designated on February 16, 2000 (NMFS

2000), and includes all waters and substrates below naturally impassable barriers, and several dams that block steelhead from using historical habitat areas.

Current estimated run sizes for the major rivers in the Southern California ESU (Busby et. al., 1996):

Santa Ynez River.....< 100
Ventura River.....< 200
Santa Clara River.....< 100
Malibu Creek.....< 100

Little escapement or trend data are available. The run estimates above are not based on survey data and cannot be used to quantitatively assess the effects of actions. Extensive habitat loss due to water development, land use practices, and urbanization are largely responsible for the current population status. In addition, hatchery practices and rainbow trout planting may have led to genetic introgression, but documentation is lacking to fully assess the situation (Busby et. al., 1996).

Life History and Habitat Requirements

The major life history stages of steelhead, relative to this discussion, involve freshwater rearing and emigration of juveniles, upstream migration of adults, spawning, and incubation of embryos (Shapovalov and Taft 1954; Moyle 1976; Cederholm and Martin 1983; Barnhart 1991; Meehan and Bjornn 1991; Busby et al. 1996; NMFS 1997). Steelhead rear in freshwater for one to three years before migrating to the ocean, usually in the spring, where they may remain for up to four years. Steelhead grow and reach maturity at age two to four while in the ocean. Adults immigrate to natal streams for spawning during October through March, but some adults do not enter coastal streams until spring. Adult immigration appears to be associated with winter/spring storm events. Adults may migrate several miles, hundreds of miles in some watersheds, to reach their spawning grounds. Although spawning may occur from December to June, the specific timing of spawning may vary among and between years, as well as, streams within a region. Migration and life history patterns of Southern California steelhead depend more strongly on rainfall and stream flow than is the case for steelhead populations farther north (Moore, 1980a). Busby, et al. (1996) identified adult migration ranges from November through June, with peak spawning occurring in February and March, in the Santa Clara River system. Spawning and smolt migration may continue through June (Busby et. al., 1996). Steelhead do not necessarily die after spawning and may return to the ocean, sometimes repeating their spawning migration one or more years. Female steelhead dig a nest in the stream and then deposit their eggs. After fertilization by the male, the female covers the nest with a layer of gravel; the embryos incubate within the gravel pocket. Hatching time varies from about three weeks to two months depending on water temperature. The young fish emerge from the nest about two to six weeks after hatching.

Habitat requirements of steelhead in streams generally depend on the life history stage

(Cederholm and Martin 1983; Bjornn and Reiser 1991). Generally, stream flow, water temperature, and water chemistry must be appropriate for adult immigration and juvenile emigration (specific habitat requirement data can be found in Bjornn and Reiser 1991). Low stream flow, high water temperature, physical barriers, low dissolved oxygen, and high turbidity can delay or halt upstream migration of adults and timing of spawning, and downstream migration of juveniles and subsequent entry into estuary, lagoon, or ocean. Suitable water depth and velocity, and substrate composition are the primary requirements for spawning, but water temperature and turbidity are also important. Dissolved oxygen concentration, pH, and water temperature are factors affecting survival of incubating embryos. Fine sediment, sand and smaller particles, can fill interstitial spaces between substrate particles, thereby reducing water-flow through and dissolved oxygen levels within a nest. Juvenile steelhead require living space (different combinations of water depth and velocity), shelter from predators and harsh environmental conditions, food resources, and suitable water quality and quantity, for development and survival. Young-of-the-year and yearling steelhead generally use riffles and runs (e.g., Roper et al. 1994) during much of a given year where these habitats exist. However, young-of-the-year and older juveniles may seek cover and cool water in pools during the summer (Nielsen et al. 1994), particularly as discharge and, therefore, space declines in summer and fall (Kraft 1972).

ENVIRONMENTAL BASELINE

Status of the Listed Species in the Action Area

Historical estimates of steelhead abundance for the Santa Clara River have been approximated by comparison of historical (pre-1948) run size estimates in the Ventura River System and habitat availability. Based on this information, the historical run size is assumed to have averaged 9000 adult steelhead (Moore, 1980b). However, the Vern Freeman Diversion located on the Santa Clara River (RM 10.5) has been operated since 1928. Prior to the early 1990's, the facility provided only incidental steelhead passage when the earthen berm was breached by river flows. In 1991, the facility was upgraded to a permanent concrete diversion structure that included a fish passage facility. The fish ladder is operated relative to Santa Clara River discharge and generally provides upstream steelhead passage opportunities when flows exceed 415 cfs at the facility. Fish trapping data has been collected at the Vern Freeman Diversion and Fish Passage Facility on the Santa Clara River, located downstream of Santa Paula Creek, from1994-1998, but is not comprehensive enough to be used to specifically estimate the size of the Santa Clara River steelhead population. These data indicate that 0 to 2 adult steelhead annually migrated to upstream spawning habitat of the Santa Clara River system during the study period. Smolts returning to the ocean each year ranged in number from 81 to 404 when the smolt trap was heavily used. Both the numbers of adults and smolts counted at the diversion probably represent a subset of the total population based on a number of factors including when trapping was done in the fish ladder, when the smolt trap was operated, and the possibility for smolts to pass directly over the diversion sill. The Sespe Creek watershed is recognized as providing the largest

portion of historic and current steelhead spawning and rearing habitat in the Santa Clara River system (Table 1 - Moore 1980b). Analysis of juvenile *O. mykiss* collected in August, 1999 from the upper reaches of the Sespe Creek system identified the presence of juvenile steelhead (Zimmerman 1999). These samples appear to represent two age classes, 0+ and 1, implying the current limited population of adult steelhead migrating into the Santa Clara River system are spawning and rearing in the Sespe Creek drainage.

Table 1. Historic and current miles of suitable and seasonably accessible steelhead spawning and rearing habitat, Santa Clara River system, from Moore (1980b).

Drainage	**Santa Paula Creek**		**Sespe Creek**		**Piru Creek**	
Historic Habitat	11 miles	12%	53 miles	60%	25 miles	28%
Current Habitat	2 miles	8%	47 miles	90%	0 miles	0%

Santa Paula Creek is a tributary to the Santa Clara River (RM 15.5). Available information suggests that Santa Paula Creek historically provided steelhead habitat and production to the Southern California Steelhead ESU. However, it is assumed that steelhead production has not occurred in the last few decades as a result of a migration barrier (Harvey Dam), that has blocked passage to suitable upstream spawning an rearing habitat. The reach downstream of this diversion, including the action area, is assumed to function as a migration corridor for steelhead, although steelhead spawning and rearing is possible (NMFS 1999).

Factors Affecting Species Environment within the Action Area

The action area identified above is or may be affected by alteration or modification of stream flow and instream habitat, passage barriers, agricultural activities, flood control activities, urbanization, high intensity flood events, poor water quality, and sedimentation in Santa Paula Creek. Moore (1980b) estimated relative spawning and rearing habitat of the Santa Clara River system (Table 1). The reduction of available habitat in Santa Paula Creek is likely the result of the Harvey Diversion Dam located approximately 3.5 miles upstream from the confluence with the Santa Clara River. Although a fish ladder was previously incorporated into this facility in1950, downstream aggregate mining operations apparently initiated head cutting up lower Santa Paula Creek and degraded the channel to an elevation that prevented steelhead use of the ladder for the last few decades. However, construction of a new fish ladder was completed at this facility in February, 2000, that should provide access to upstream suitable spawning and rearing habitat. Subsequent to completing the fish ladder at the Harvey Diversion Dam, an oil transport truck crashed and discharged approximately 4,000 gallons of partially refined crude oil into Santa Paula Creek upstream of the facility. Emergency response efforts resulted in closing the ladder, and construction of temporary detainment ponds in lower Santa Paula Creek, approximately 0.5 mile from the Santa Clara River. This further reduced the likelihood of steelhead migration into Santa Paula Creek during the peak migration period of spring 2000.

Although channel features have not been quantified, the lower 3.5 miles appears entrenched and generally absent of flood plain features. This is likely the result of previous management, such as channel and riparian vegetation manipulation associated with Santa Clara River aggregate mining and flood control efforts, and high intensity storm discharge that facilitated degradation of lower Santa Paula Creek. Rincon (1998) reported an estimated 10 feet of channel degradation at the Harvey Dam facility since 1950. Further, the present condition of this stream reach appears to lack desirable steelhead spawning and rearing components such as habitat complexity and cover. In addition, Mud Creek, a tributary at approximately RM 3.5 and immediately downstream from Harvey Dam, contributes excessively turbid water to this reach of Santa Paula Creek. The NMFS considers the habitat in the action area to function as a seasonal migratory corridor for steelhead.

As previously stated, a fish ladder was constructed upstream of the action area in February, 2000, and analyzed pursuant to section 7, Endangered Species Act (NMFS, 1999). This facility provides steelhead access to spawning and rearing habitat, and should facilitate the future presence of steelhead in Santa Paula Creek. The diversion operations may divert all flows from Santa Paula Creek upstream of the Mud Creek confluence, during summer and fall months. This further reduces the likelihood of suitable salmonid rearing habitat in the action area.

EFFECTS OF THE ACTION

Methodology for Effects Analysis

As previously indicated, population data for the Southern California Steelhead ESU are limited. Consequently, the number of steelhead that could be delayed, harmed or killed as a result of the proposed project can not be accurately estimated. The presence of a migration barrier upstream of the action area (Harvey Dam), the pre-project concrete channel and energy dissipaters in the lower 0.75 mile reach of Santa, and the existing/preconstruction channel conditions in the action area likely have limited or precluded the use of Santa Paula Creek for steelhead spawning and rearing. In addition, the action area has and will be surveyed by a biologist prior to work in flowing water during the period when construction and fish presence were most likely to overlap, April 1 to June 1. No adult steelhead were observed during surveys conducted in 1999 and 2000. Therefore, the assumption is that steelhead and their progeny are not likely to be in Santa Paula Creek during the construction phase of this project through December 2000. However, the construction of the Harvey Dam fish ladder may increase the potential for steelhead presence in winter/spring, 2001. This analysis focuses primarily on post construction effects to migrating steelhead and their habitat through the action area based on Draft Supplemental Environmental Assessment of Rock Source, Low Flow Channel and Redesigned Fish Ladder for Santa Paula Creek Flood Control Project (Corps 2000). Construction related turbidity in Santa Clara River is also discussed.

Effects on Steelhead and Critical Habitat

The project action may affect steelhead that may be migrating, spawning or rearing in the action area, and habitat parameters associated with these life history phases. Under pre-construction and proposed project conditions, steelhead that may be perceived to utilize the action area other than migration, such as rearing, are likely the result of stranding. Stranding issues are addressed relative to migration. Steelhead migration through the action area is the primary concern relative to the proposed action. Duration of opportunity, delay and stranding (temporary or permanent) of upstream and downstream migrating steelhead may result from construction activities, post construction features (such as the inlet structure/fish ladder and flood control channel), and operations and maintenance activities. These effects could result in lethal and/or non-lethal take of steelhead. In addition, artificially armored banks and frequent disturbance of the stream channel and riparian area resulting from the proposed construction, maintenance and operation is anticipated to preclude natural channel evolutionary processes that could improve habitat conditions for steelhead.

Construction

Construction activities associated with flowing water have generally occured between April 1 to December 31 since construction began in 1997. Construction was anticipated to be completed March 2001 (Corps 2000); however, the Corps subsequently indicated that the inlet structure/fish ladder may not be completed until August 2001 (Rey Farve, personal communication, 11 Sept. 2000). Adult steelhead or their progeny, rearing or outmigrating smolts, are not anticipated to have been appreciably affected by the construction phase of the project due to the limited likelihood of steelhead spawning in the reach downstream of Harvey Dam, and the fact that migration to suitable spawning and rearing habitat upstream of Harvey Dam was not possible prior to completion of the fish ladder in February, 2000. Steelhead observations, while not conclusive, conducted at the Vern Freeman Diversion Dam, Santa Clara River, indicate upstream migrating adults occurred in March, and juveniles were observed from February through June from 1994 to 2000. Further, CDFG has required that any activities that occur in flowing water during the period from April 1 to June 1 be surveyed for steelhead presence, and that no work is to occur in flowing water if steelhead are present. Although steelhead were not observed in Santa Paula Creek during construction, there is the possibility that steelhead may come in contact with construction equipment or turbidity, and delayed or stranded due to temporary water diversions related to construction activity. This is particularly a concern if construction activities occur between April and June, 2001. Although there was only a limited time when adult steelhead could have ascended Santa Paula Creek this past migration season (winter/spring 2000) and accessed suitable spawning and rearing habitat upstream of the Harvey Dam fish ladder, juvenile steelhead/smolt may be emigrating during this period through the Project area and may be harmed or killed by construction related activities. Adult and juvenile steelhead migrating through Santa Clara River near the confluence of Santa Paula Creek are likely to be temporarily present in the Santa Clara River during the construction period and exposed to increased turbidity. However, the level of turbidity contributed as a result of project construction is believed minimal relative to Mud Creek sediment contributions and back ground levels in the

Santa Clara River when steelhead are likely to be present. This is not anticipated to impact migrating steelhead in the Santa Clara River.

Flood Control Channel

The Corps developed guidelines for the proposed low flow channel, within the designed flood channel, intended to simulate natural conditions occurring in Santa Paula Creek upstream of the flood control channel. However, the reach upstream of the flood control channel has been subject to disturbance, such as channel manipulation by Ventura County Flood Control Department and recent high intensity flood flows (1998). Although the channel design parameters are not based on a natural channel in the sense of an undisturbed stream reach, the configuration is assumed to mimic pre-project conditions of Santa Paula Creek due to the similar nature of the landscape setting and previous management activities. The specifications of the low flow channel include a width of 2.5 to 3.5 meters, and depth of 0.6 to 1.0 meters with side slopes of 1:1.5 to 1:2.5. The channel alignment will meander as a series of simple reverse curves with a radius that varies from 200-350 meters. Small boulders will be randomly placed every few meters along the channel bottom to simulate a riffle:pool sequence. The Corps calculated that a channel bottom width of 3.0 meters and a side slope of 1 vertical to 2 horizontal for discharges of 10, 50, and 150 cfs would provide flow depths of 0.3, 0.9, and 1.7 feet, respectively. The corresponding average flow velocities would be 3.1, 4.7, and 6.6 ft/s. The Corps calculated Santa Paula Creek flows to meet or exceed 15 cfs 50% of time from January through April, the anticipated primary adult steelhead upstream migration period. A discharge of 15 cfs yields an approximate depth of 0.5 foot for the designed low flow channel which approaches the general recommended minimum passage depth of 0.6 foot. The velocities are within the general swimming abilities for adult steelhead reported in the literature, although these specifications are based on fish lengths (>24 inches) which are believed larger than steelhead typically observed in southern California rivers. Orsborn (1992) reported sustained (<4.6 ft/s), prolonged (<13.7 ft/s) and burst (26.5 ft/s) swimming speeds for adult steelhead. These are defined respectively as normal functions without fatigue, activities lasting 15 seconds to 200 minutes resulting in fatigue, and activities resulting in fatigue in 15 seconds or less. Further, the randomly placed boulders may provide low velocity resting areas for migrating fish, and scour undulations in the low flow channel providing areas of increased depth.

The proposed channel design may result in delays for migrating steelhead when water depths and velocities are not within a suitable range. Minimum recommended passage depths are estimated to occur on average about 50% of the time when adult steelhead are likely to be ascending the stream (January through April). However, this does not account for steelhead behavioral responses that suggest upstream migration is associated with storm generated flow events when suitable passage depths are more likely to occur as a result of increased flows. Velocities estimated to occur in the proposed channel appear to be within the swimming capabilities of steelhead for more than 90% of the anticipated discharges (<150 cfs). Downstream migrating smolts require less depth for passage than adults and should generally have suitable passage to the Santa Clara River greater than 50% of the time on average from January through April.

However, downstream migration may occur through June, during a period when flows are lower than those estimated above. Winter/spring flows may develop a thalweg, thus providing an opportunity for smolt passage at flows less than those identified for the designed low flow channel. Timing, duration, and amount of flows are influenced by local watershed conditions and character, seasonal precipitation, and water uses.

In addition, NMFS is concerned about the channel maintaining the configuration described above for which the analysis and assumptions for fish passage are based: interruption of surface flow resulting from channel aggradation, or channel braiding. The accumulation of unconsolidated gravels and cobbles in the flood control channel / in-channel sediment basin could facilitate a condition of subsurface flow by raising portions of the streambed above the elevation of local surface water resulting in interrupted flow. Development of multiple channels or braiding would increase width to depth ratios, thus reducing stream depth. These scenarios would likely adversely affect adult and juvenile steelhead through delay of migration and stranding, thus resulting in lethal and/or non-lethal take.

Inlet Structure/Fish Ladder

The Corps has incorporated a fish ladder into the inlet structure. The ladder consists of a single row of weir pools 10 feet long, 46 feet wide and 2 feet minimum depth at 10 cfs, with an overall slope of 0.741. The ladder is designed to function at flows from 10 cfs to 150 cfs; however, the ladder will likely provide passage up to 300 cfs with decreasing efficiency. The weir notches are at pool invert elevation, and the ladder is not expected to retain water if stream flows cease. The Corps flow analysis indicates that the fish ladder should generally function throughout the range of flows between the 10% and 90% exceedence levels during the anticipated upstream migratory period, January through April. The concrete weirs will be configured with a gradual slope (1 vertical:10 horizontal) from each side to a center notch, and designed for a maximum of 1 foot drop between pools.

The fish ladder design was developed in coordination among the Corps, NMFS and CDFG to accommodate steelhead passage. However, the fish ladder may result in steelhead migration delay and stranding. Upstream migrating adults may be temporarily delayed as a result of travel through the series of weir pools and/or when depth or velocities through the ladder do not facilitate passage. Flow analyses and design specifications indicate this occurrence to be less than 20% of the period when upstream migration is anticipated. In addition, upstream migration of adult steelhead is often associated with storm events, particularly the receding limb of the hydrograph which would likely be within the designed flow range. Outmigration of juvenile and adult steelhead is anticipated to occur as late as mid-June when reduced flows are likely. The notch and weir configuration is designed to detain water in the pool while providing a flow through system that does not result in residual pool formation. The ladder is anticipated to provide downstream migration to a point of near zero flow. However, if aggradation occurs between the weirs that forms residual pools during low flow periods, steelhead may be stranded and subject to desiccation and death.

Supplemental Material Excavation

The Corps proposes to excavate 65,000 to 100,000 cubic yards of alluvial material from Santa Paula Creek bed and terrace areas, upstream of the flood control channel, to supply additional material for the grouted stone side slopes. The material proposed to be excavated is reported to have primarily been deposited in the 1997-98 storm events. Only rock, size not disclosed, would be removed from the site; all fine material (sand and silt) would be left at the site. This action would remove portions of the existing terrace/floodplain area to a depth of 10 feet, including vegetation, to an elevation below the flow line along approximately 0.5 mile of Santa Paula Creek.

Limited existing site condition information and no post-construction channel parameters are provided to evaluate the proposal. In addition, there seems to be conflicting descriptions for this site. The Corps identified that the proposed excavation would occur in an area that was previously, as recent as1995, excavated and re-shaped by VCFCD. However, this reach appears to be where the Corps surveyed channel parameters for developing the low flow channel configuration and that the Corps determined was natural and undisturbed. Therefore, analysis of this aspect of the project are qualitative in nature. Excavation of material from this reach is anticipated to result in a wider, shallower wetted stream channel, and may develop unstable multiple low flow channels or braided configuration. This could increase the amount of flows necessary for migration, thus resulting in migration delay or barriers. Further, excavation may result in channel depressions that could strand migrating steelhead as flows recede and depression pools become isolated from the main flow. Concentrated deposits of fine alluvial material (sand and silt) resulting from the excavation could increase fine sediment loads and turbidity to lower Santa Paula Creek and Santa Clara River. Disturbance and/or removal of vegetation may further reduce channel stability in this reach of Santa Paula Creek; the Corps states that conditions will stabilize within two years. The Corps (Rey Farve, personal communication by electronic mail, June 9, 2000) did not identify any specific measures to facilitate revegetation of the excavated area; however, the Corps can commit to salvaging native vegetation and stockpiling the upper 6 to 12 inches of material for redistribution during final grading activity. The Corps expects that the excavated area would begin natural re-vegetation within months following disturbance.

Santa Paula Creek Flood Control Project Operations and Maintenance

The draft Operations and Maintenance Manual (December, 1998) did not adequately disclose procedures to be considered in this opinion. Coordination between NMFS and the Corps concluded that the development of an O&M Manual would follow this biological opinion and reflect the analysis of this opinion.

The Corps proposal indicates that operations and maintenance activities could occur during the months of April through December, weather permitting (Corps 1996); periodic removal of sediment would take about 60 to 120 days (Corps 1999). A primary aspect of maintenance and

operations of the Project is the excavation of 120,000 to 350,000 cubic yards of streambed material at a frequency of 3 to 4 years. Low flow channel maintenance is implied in various Corps documents relative to the periodic excavation and disturbance of the flood control channel. However, the language was in vague terms regarding low flow channel maintenance, such as "construct a low flow channel that meanders within the middle third of the stream bottom" (Final Environmental Assessment for Santa Paula Creek Flood Control Project, Corps 1996). The low flow channel design specifications proposed by the Corps (2000) should outline specific criteria for the Operations and Maintenance Manual. Although the Final Supplemental Environmental Assessment of Rock Source, Low Flow Channel, and Redesigned Fish Ladder has not been received by NMFS, the Corps has indicated that this document will commit them to not remove vegetation less than 3 inches diameter at breast height (DBH) between sediment cleanouts required to maintain the channel's design capacity (Rey Farve, personal communication by electronic mail, June 9, 2000). The Corps further indicates that any removal of vegetation between maintenance cleanouts will be coordinated with NMFS and CDFG.

Operations and maintenance of the Project is anticipated to maintain the lower 2 miles of Santa Paula Creek riparian in an immature condition through the periodic removal of sediment and associated riparian vegetation that may establish. This may result in unstable channel conditions such as accelerated lateral migration and/or braiding. This is similar to pre-construction conditions identified by the Corps. The effects on steelhead and their habitat relative to maintenance and operation activities parallel those identified under the discussion of construction. However, the increasing likelihood of steelhead presence in Santa Paula Creek, resulting from the Harvey Dam fish ladder, elevates the anticipated affects beyond those considered in the construction phase. Potential effects of operation and maintenance activities are increased turbidity and physical impact of equipment during sediment removal, and potential migration delay and stranding associated with temporary water diversion if maintenance is conducted while steelhead are migrating through this reach of Santa Paula Creek. In addition, steelhead stranded due to low water conditions may be present beyond anticipated migration period. These adverse effects could result in non-lethal and lethal take of steelhead.

The Corps will submit the proposed Operations and Maintenance Manual for the Santa Paula Creek Flood Control Project, addressing appropriate measures to avoid or reduce potential impacts to endangered steelhead and their habitat, following receipt of this biological opinion and prior to any operation or maintenance activities associated to the Project. This document is subject to NMFS approval and shall amend this biological opinion to analyze potential impacts that were not considered in this biological opinion.

Summary of Effects

As previously discussed, Santa Paula Creek has likely not provided steelhead habitat or contributed to steelhead production for several decades. Although not quantifiable due to the

lack of information on steelhead abundance and distribution in the action area, the nature of anticipated take is primarily non-lethal and associated to migration delay. The inlet structure/fish ladder and low flow channel are designed to accommodate migration during the majority of the total annual migratory period, including the primary period of adult upstream migration. The number of steelhead that could be stranded and potentially killed in the flood control channel and inlet structure/fish ladder would likely be associated with the low flow period that may occur at the latter portion of the annual steelhead outmigration, and would be a relatively small portion of total number of steelhead migrating through the action area. The effects on steelhead and critical habitat from the project action are not likely to preclude the primary function of this habitat - migration, thus, not anticipated to preclude steelhead recolonization and use of suitable spawning and rearing habitat in Santa Paula Creek.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. NMFS maintains general familiarity with actions affecting steelhead in Santa Paula Creek, and is unaware of any such actions that are reasonably certain to occur within the proposed action area that would not require section 7 consultation. Consequently, we believe no cumulative effects are likely to occur except the following impact of potential recreational harvest. The California Department of Fish and Game regulates sportfishing activities in Santa Paula Creek. The current (2000) regulations allow for "trout" angling upstream of Harvey Diversion Dam with a year long open season and 5-fish bag limit. Although this area has been inaccessible to steelhead, passage capabilities were provided with the Harvey Dam Fish Ladder in February, 2000. The CDFG and NMFS are discussing interim and long term options to this issue.

CONCLUSION

After reviewing the best scientific and commercial data available, the current status of steelhead, the environmental baseline for the action area, the effects of the Santa Paula Creek Flood Control Project, and the cumulative effects, it is NMFS' biological opinion that the proposed project action is not likely to jeopardize the continued existence of the Southern California steelhead ESU, and is not likely to destroy or adversely modify critical habitat.

INCIDENTAL TAKE STATEMENT

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. NMFS interprets the term "harm" as any which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, 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 7(o)(2), taking that is incidental to and not intended as part of the proposed action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are nondiscretionary, and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to the County of Ventura Public Works Department (Project co-sponsor), as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the County of Ventura Public Works Department to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement. (50 CFR §402.14(i)(3))

AMOUNT OR EXTENT OF TAKE

The NMFS believes the proposed construction, operation, and maintenance of the Santa Paula Creek Flood Control Project may result in the incidental take of steelhead. Take is possible in the form of stranding, migration delay, harassment, capture and collection, stress, injury, and mortality of juvenile and adult steelhead. The NMFS anticipates incidental take of steelhead due to the project may be difficult to detect because steelhead occur in riverine habitats which makes finding a dead or impaired specimen unlikely. In addition, take in the form of migration delay is likely not possible to measure directly, and therefore quantitative and qualitative surrogates, such as low flow channel configuration, inlet structure/fish ladder design parameters, and associated water depth and velocity, were used in this analysis. These design parameters, and associated stream flow depths and velocities, are described in the accompanying biological opinion and the Corps (2000) project description.

Due to the lack of data on steelhead numbers in the ESU and action area; and the lack of data to estimate the Project's exact effects on migration, NMFS can not estimate the amount of migration delay or specific numbers of steelhead that could be injured or killed using the flood

control channel or inlet structure/fish ladder. As noted in the accompanying biological opinion, the amount of take is expected to be small and primarily in the form of non-lethal take. However, some level of lethal take resulting from stranding and dessication of individuals could occur, particularly when outmigration and low flow conditions overlap. Therefore, relocation of stranded steelhead has been identified as a Reasonable and Prudent Measure to further minimize the likelihood of lethal take resulting from the Santa Paula Creek Flood Control Project. Mortality of individual steelhead could occur during relocation or as a result of relocation efforts, but is assumed to be 2 percent or less.

The discovery of one or more injured or dead adult or juvenile steelhead in the action area including the flood control channel, inlet structure/fish ladder, and reach associated with the supplemental gravel supply would constitute exceeding the level of incidental take anticipated to occur and may require reinitiation of section 7 consultation. In addition, the accompanying biological opinion does not anticipate any form of take that is not incidental to the proposed project action.

EFFECT OF TAKE

In the accompanying biological opinion, the NMFS concluded the anticipated level of take associated with the project action is not likely to jeopardize the continued existence of the federally endangered Southern California steelhead ESU.

REASONABLE AND PRUDENT MEASURES

The NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize and monitor incidental take of steelhead:

1 Develop and submit the Santa Paula Creek Flood Control Project Operations and Maintenance Manual for NMFS approval by June 1, 2001.

2. Conduct in-channel work in a manner and time that avoids or reduces disruption of steelhead migration.

3. Develop, monitor, and maintain the low flow channel configuration as defined in Draft Supplemental Environmental Assessment of the Rock Source, Low Flow Channel & Redesigned Fish Ladder for the Santa Paula Creek Flood Control Project (Corps 2000) for the reach between the inlet structure and Santa Clara River confluence.

4. Monitor and maintain the inlet structure/fish ladder to minimize delay and stranding.

5. Employ a fisheries biologist for the purposes of assessing steelhead presence/absence in the Santa Paula Flood Control Project prior to construction, and operations and maintenance activities; and for removing and relocating steelhead from the affected area.

6. Develop and monitor post-construction channel conditions associated with the supplemental rock source excavation upstream of the inlet structure/fish to facilitate fish passage and reduce turbidity.

7. Provide a final construction report and annual monitoring reports to evaluate suitable migration conditions, and develop any necessary modifications to design and/or operations and maintenance activities.

TERMS AND CONDITIONS

In order to be exempt from the take prohibitions of the ESA, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring conditions. These terms and conditions are non-discretionary unless noted otherwise:

The following terms and conditions implement reasonable and prudent measure No. 1.

1) The Corps shall develop and implement an Operations and Maintenance Manual for the Santa Paula Creek Flood Control Project that incorporates all Reasonable and Prudent Measures and associated Terms and Conditions, including a monitoring plan.

2) The Corps shall submit the Santa Paula Creek Flood Control Project Operations and Maintenance Manual to NMFS by June 1, 2001 for approval and incorporation into the biological opinion.

The following terms and conditions implement reasonable and prudent measure No. 2.

1) In-channel work activities, between grouted side slopes, for operations and maintenance activities shall be planned to avoid flowing water during the potential steelhead migration period; the in-channel work period is June 30 through November 1.

a) In-channel work may occur between June 1 and June 30, if the Harvey Diversion ladder has been closed for at least one week, and the area has been surveyed for steelhead presence. If steelhead are found or expected to be present, work shall not proceed until either steelhead are no longer present, or avoidance and/or relocation measures have been established in coordination with NMFS.

b) In-channel work may occur between November 1 and December 31, if winter storm(s) have not generated flows that facilitate the operation of the Vern Freeman Diversion fish ladder on the Santa Clara River.

2) In-channel work and channel diversion activities for remaining construction of the Santa Paula Creek Flood Control Project shall not begin until May 1, 2001, and shall end prior to the following winter storm season or the first operation of the Vern Freeman Diversion

fish ladder; and shall be conducted to reduce potential impacts to migrating steelhead.

a) The area shall be visually surveyed for steelhead presence by a qualified fisheries biologist or technician prior to working in-channel.

b) The channel shall be diverted or piped outside/around the work area. Equipment shall avoid flowing water other than temporary crossing or diverting activities.

c) Residual surface water associated with diverted channel shall be monitored for salmonid presence by a qualified fisheries biologist or technician as soon as flows recede. If salmonids are observed in the isolated channel, they shall be immediately relocated to the flowing reach by a qualified fisheries biologist or technician.

d) Temporary culverts used in construction, maintenance, and/or operations shall be placed at stream grade and of adequate size to not increase stream velocity.

e) Silt fences or mechanisms to avoid sediment input to the flowing channel shall be erected adjacent to flowing water if sediment input to the stream may occur.

The following terms and conditions implement reasonable and prudent measure No. 3.

1) Monitor the low flow channel configuration and associated discharge at least once per year during low/base flow condition.

a) Establish permanent cross-sectional profile index sites between the grouted stone side-slopes to validate maintenance of designed low flow channel width, depth, and channel migration. Monitor annually for a period of five years following project construction, and following all sediment excavation activities.

b) Establish permanent upstream and downstream photo-points for visual reference to channel maintenance; at a minimum, photo-points shall be established to document conditions near the Santa Clara River confluence, Santa Paula Creek between the confluence and the inlet structure/fish ladder, and the inlet structure/fish ladder. Photos should attempt to capture the general condition, and should be taken from vantage positions such as road crossings and/or aerially. Photo documentation shall occur annually during the low flow season (summer/fall) for a period of five years following project construction, and following all sediment excavation activities.

2) Conduct visual observations, necessary photo documentation, and discharge measurements between the Santa Clara River confluence and the inlet structure/fish ladder following bedload transport storm events (>500 cfs), to evaluate post storm channel condition and steelhead passage opportunities.

3) Monitor and evaluate potential bed loss of surface flows associated to zones of aggradation. Determine discharge, and wetted channel width and depth relations associated to sediment aggradation areas and a non-aggraded control upstream of the project area.

4) Maintain the low flow channel at design specifications to facilitate steelhead migration. Contact NMFS (562/980-4020) during channel maintenance evaluation and prior to any

in-channel work activities.

a) Following annual monitoring, conduct necessary maintenance of the low flow channel to meet general design specifications.

b) Following observations subsequent to a bedload transport event (>500 cfs), evaluate steelhead passage opportunities, and conduct any necessary channel maintenance.

The following terms and conditions implement reasonable and prudent measure No. 4.

1) Validate and report inlet structure/fish ladder design specifications, such as depth and velocity, during the first winter/spring flow season following construction.

2) Monitor sediment and debris accumulation upstream, downstream, and between weirs of the inlet structure/fish ladder, and evaluate potential low flow isolated pool formation or other fish migration blockage following all sediment transporting flows (>500 cfs) for a period of five years following project construction.

3) Remove accumulated sediment and debris to insure passage to and from the fish ladder, and drainage between weirs at all flows prior to threat of isolated pool formation or other fish migration blockage.

The following terms and conditions implement reasonable and prudent measure No. 5.

1) If flowing water will be disturbed by the construction, operations or maintenance activities, the Corps shall have a qualified fisheries biologist/technician survey the complete area that may be disturbed, including downstream turbidity, within one week of the beginning of in-water work. The fishery biologist shall be present during activities that occur within flowing water, and be empowered to halt work activity and to recommend measures for avoiding adverse effects to steelhead and their habitat.

a) The fisheries biologist/technician shall have knowledge and experience in anadromous salmonid biology and ecology, fish/habitat relationships, biological monitoring, and handling, collecting, and relocating salmonid species.

b) The fisheries biologist/technician shall rescue any steelhead that may become stranded and relocate them to an appropriate place in Santa Paula Creek or Santa Clara River, depending upon the life history stage of the fish and flow conditions in Santa Paula Creek and the Santa Clara River.

c) The fisheries biologist/technician shall note the number of individuals observed in the affected area, the number of individuals relocated, the approximate size of individuals, and the date and time of the collection and relocation. One or more of the following methods shall be used to capture steelhead: dip net, seine, throw net, minnow trap, hand. Electrofishing may only be used if NMFS has reviewed the biologist's qualifications and given written approval.

d) The Corps shall require the fisheries biologist/technician to contact NMFS (562/980-4026) or 562/980-4054) immediately if one or more steelhead are found dead or injured. The purpose of the contact shall be to review the activities resulting in take and to determine if additional protective measures are required.

The following terms and conditions implement reasonable and prudent measure No. 6.

1) Re-contour low flow channel to mimic pre-project conditions or to the low flow design specifications of the flood control channel.
2) Re-contour flood plain/terrace areas to prevent areas of depressions that may form isolated pools and strand steelhead.
3) Stockpile surface material that may contain native vegetation and/or seed material and redistribute across flood plain/terrace adjacent to channel.
4) Establish permanent photo-points to document pre and post construction; repeat photos following the first and second winter/spring storm season.

a) Revegetate disturbed area to the approximate pre-construction density or greater with native vegetation if the area has not naturally revegetated within the second growing period following construction.

The following term and condition implements reasonable and prudent measure No. 7.

1) The Corps shall provide a written report to NMFS within 45 working days following completion of the construction phase of the project action. The report shall include an "as built" survey of the flood control channel and inlet structure/fish ladder.
2) The Corps shall provide an annual report of all monitoring, including photo documentation, and all in-channel operation and maintenance for a period of five years following project construction and all sediment excavation activities.
3) The Corps shall evaluate all design specifications for performance based on monitoring; and develop new design specifications as needed to facilitate migration of endangered steelhead.

The NMFS believes that relatively few steelhead will be incidentally taken as a result of the proposed action. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. However, if the level of incidental take is greater than expected, reinitiation of consultation will be required to reassess the reasonable and prudent measures. As noted above, if one or more adult or juvenile steelhead is found injured or dead, the level of take anticipated has been exceeded. The Corps must immediately provide an explanation of the causes of the taking and review with NMFS the need for possible modification of the reasonable and prudent measures.

REINITIATION NOTICE

This concludes formal consultation on the actions outlined in the proposed project (Corps 2000). As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal 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 action that may affect listed species or critical habitat in a manner or to an extent not previously considered in this opinion; (3) the 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, formal consultation shall be reinitiated immediately.

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UNITED STATES DEPARTMENT OF COMMERCE
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SEP - 1 2009

In response, refer to:
2009/04545: DB

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Dear Dr. Axt:

NOAA's National Marine Fisheries Service (NMFS) is responding to the U.S. Army Corps of Engineer's (Corps) August 21, 2009, request to amend NMFS' September 27, 2000, biological opinion for the Corps' Santa Paula Creek Flood Control Project (Project) in the City of Santa Paula, California. This biological opinion was generated as a result of the determination that the Project was likely to adversely affect endangered Southern California steelhead (*Oncorhynchus mykiss*), pursuant to the U.S. Endangered Species Act (ESA). The September 27, 2000, biological opinion concluded the Project was not likely to jeopardize the continued existence of steelhead, or result in destruction or adverse modification of designated critical habitat. NMFS' response provided herein serves to amend the September 27, 2000, biological opinion through a) incorporating the additional conservation measures proposed by the Corps to reduce adverse effects of the Project on the species and designated critical habitat, b) specifying incremental and cumulative Project reviews based on the Corps' monitoring and maintenance budgetary commitment, and c) reassess ongoing Project effects in response to the designation of critical habitat for endangered steelhead in September 2005. Additional background information leading up to the decision to amend the subject biological opinion is presented as follows.

The Corps contacted NMFS via e-mail on June 18, 2009, to discuss the Corps' proposed sediment removal associated with the Project, and subsequently released the Draft Supplemental Environmental Assessment/Addendum for the Santa Paula Creek Flood Control Project Sediment Removal on July 14, 2009. Following NMFS' review of the administrative record and subsequent communication with the Corps, it became apparent that the Corps had not fully implemented the terms and conditions of the September 27, 2000, biological opinion and incidental take statement. In particular, monitoring of the Project effects (e.g. performance of the designed low-flow channel) and maintenance (e.g. sediment removal from the grade-control/fish-passageway structure) had not fully been performed.

During extreme winter storms in 2004/2005, approximately 330,000 cubic yards of sediment were deposited within the flood control channel, including the grade-control/fish-passageway structure. Sediments were removed from the fish-passageway in April 2005. The fish-passageway was observed to have been damaged during the storms and subsequently has not functioned as designed. Observations on August 6, 2009, demonstrate that the fish-passageway is not functioning as result of sediment accumulation and riparian vegetation within the weirs, which has diverted the water around the fish-passageway.

The Corps proposes to remove the accumulated sediments from the Project in conformance with the September 27, 2000, biological opinion. As a result of coordination among the Corps and NMFS staff, the Corps proposed additional measures to reduce Project effects on endangered steelhead and designated critical habitat for this species. The fish-passageway is not part of the proposed Project maintenance (sediment removal) for summer/fall 2009. However, removal of accumulated sediment and vegetation from this structure will facilitate future assessment of the condition and function of the fish-passageway. The Corps proposes to evaluate the condition and function of the fish-passageway and develop alternatives for redesigning the fish-passageway in coordination with NMFS during fiscal year 2010. Upon selecting an appropriate design alternative, the Corps and NMFS will conduct an ESA consultation on proposed modification of the fish-passageway. The ESA consultation on the fish-passageway is expected to require considerable time for appropriate analysis by NMFS staff (biological, hydrological and engineering). Therefore, NMFS urges the Corps to outline a schedule for this proposed action and initiate coordination at the earliest opportunity.

What follows is a description of the conservation measures and monitoring elements that the Corps proposes to incorporate into the Project, as well as the incremental and cumulative reviews that are necessary to assess whether the Project is implemented over time consistent with Project guidelines defined in both the description of the Project, the biological opinion, and this amendment to the biological opinion. Because critical habitat for endangered steelhead was re-designated in 2005, this amendment subsequently presents an assessment of the effects of the Project on designated critical habitat for this species.

Additional Conservation Measures and Monitoring

Conservation Measures

The Corps proposes to incorporate the following measures to better define previous components of the Project and reduce Project effects on steelhead and critical habitat.

Boulder Placement: The Corps' proposed Project resulting in the September 27, 2000, biological opinion specified that boulders would be randomly placed within the low-flow channel every few meters to simulate riffle-pool sequence. The Corps has refined this description to include:

- Boulders ranging from 2 to 4 feet in diameter will be stockpiled during sediment removal.

- Boulders will be strategically clustered or placed under guidance from Corps hydrologist(s) and biologists(s), in coordination with NMFS, to ensure the low-flow channel provides resting refuges for migrating steelhead.

The boulder placement augments the course bed material, including smaller boulders, remaining in the channel following excavation that is expected to provide channel roughness and stream energy dissipation.

Riparian Vegetation: The Corps' proposed Project resulting in the September 27, 2000, biological opinion only included the specification that riparian vegetation less than 3 inches diameter breast height (dbh) that opportunistically established would not be removed between sediment removal (maintenance) activities. The Corps has refined this description to include:

- Surface material that may contain native vegetation and/or seed material will be stockpiled during sediment removal and redistributed across the floodplain adjacent to the low-flow channel.

- Existing willow and mulefat would be collected from the Project area. Root balls and/or limbs bundled and tied with jute fiber will be planted (buried) adjacent to the low-flow channel covering a width of approximately 3 to 10 feet along both sides (similar to the observed existing riparian vegetation band). No planting would occur in the vicinity of bridges or at the confluence of the Santa Clara River.

- Collection, retention and distribution of vegetation will be monitored by a qualified biologist.

- Pre-excavation photos of riparian vegetation will be taken to document width criteria and monitor establishment success.

- Riparian vegetation greater than 2 to 3 inches dbh may be selectively cut to a level of 1 to 2 feet above ground level.

Woody Debris: The Corps' proposed Project resulting in the September 27, 2000, biological opinion provided no discussion of woody debris and was assumed to be removed from the action area during periodic excavation. The Corps has refined this description to include:

- Woody debris will be collected prior to excavation and redistributed across the floodplain similar to pre-excavation condition.

- Woody debris will not be placed near bridges or areas that may cause flooding issues.

<u>Monitoring</u>: The Corps proposes to conduct the following monitoring in addition to that specified in the September 27, 2000, biological opinion and incidental take statement:

- Monitor stream temperature and dissolved oxygen over time during the summer at upstream, downstream and mid section of the low-flow channel to assess rearing habitat suitability/potential.

- Monitor turbidity for 1 to 2 years post-excavation to assess relative contribution of Project generated fine sediment during storm runoff events that may initiate upstream migration of steelhead.

Incremental and Cumulative Project Review

The Corps' project description provided in the August 21, 2009, letter, commits funding for prescribed monitoring and maintenance of the Project for a period of five years. The Corps has been developing a draft monitoring plan, recently in coordination with NMFS, that outlines evaluation of post-excavation stream channel and habitat condition and response on an annual basis. This monitoring plan will integrate the monitoring components defined in the Reasonable and Prudent Measures and implementing Terms and Conditions of the September 27, 2000, biological opinion.

Review of NMFS' administrative record and recent communications with the Corps demonstrate that the monitoring and maintenance prescribed in the September 27, 2000, biological opinion were not fully implemented. Therefore, considering the commitment is limited to a period of five years, the Project will be incrementally reviewed among the Corps and NMFS on an annual basis to evaluate whether the Project is being implemented, maintained and monitored in accordance with the Corps' project description, including the new or refined elements of the project description that are the basis of this amendment, and the terms and conditions of the biological opinion.

Reasonable and Prudent Measure 1 and the associated implementing Terms and Conditions of NMFS' September 27, 2000, biological opinion specified receipt of the Corps' proposed monitoring plan be submitted for NMFS' review and approval by June 1, 2001. Although this monitoring plan was not received by the time frame defined in the biological opinion, NMFS expects receipt of the draft monitoring plan for review and potential agreement no later than November 1, 2009. This expectation is based on recent discussions with the Corps that indicate the Corps will collaborate with NMFS on development and implementation of the monitoring plan. The revised monitoring plan is expected to include methodology, location, frequency and approximate timing of all monitoring components.

Effects of the Project on Designated Critical Habitat

NMFS originally published a final rule designating critical habitat for the Southern California Distinct Population Segment (DPS) of endangered steelhead on February 16, 2000. In response to litigation on the grounds that the agency did not adequately consider economic impacts of the critical habitat designations, NMFS sought judicial approval of a consent decree withdrawing critical habitat designations. The District Court approved the consent decree and vacated critical habitat designations by Court order on April 30, 2002. Subsequent to vacating the original critical habitat designation, NMFS proposed critical habitat on December 10, 2004 and published a final rule designating critical habitat for the Southern California DPS steelhead on September

2, 2005[1] (NMFS 2005). Therefore, NMFS has assessed the effects of the Project on critical habitat. The assessment is described more fully as follows.

The analysis NMFS has undertaken to assess effects of the Project on critical habitat is based on (1) the primary constituent elements of the critical habitat, (2) the current condition of the critical habitat in the action area (i.e., environmental baseline), (3) the effects of the Project, and (4) cumulative effects. This analysis does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR §402.02. Instead, NMFS has relied upon the statutory provisions of the ESA to complete the foregoing analysis with respect to critical habitat. Therefore, destruction or adverse modification involves direct or indirect alteration that appreciably reduces the conservation value of critical habitat. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical. When assessing effects of the Project on steelhead, NMFS relied on the description of the Project that formed the basis of the September 27, 2000, biological opinion, and the new or refined elements of the Project including the additional conservation measures and monitoring.

Primary Constituent Elements of the Critical Habitat

The critical habitat designation identifies primary constituent elements that include sites necessary to support one or more steelhead life stages and, in turn, these sites contain the physical or biological features essential for conservation of the DPS. Specific sites include freshwater spawning sites, freshwater rearing sites, freshwater migration corridors, and estuarine areas. Within the action area, a freshwater migration corridor exists. The action area consists of the lower 2.0 miles of Santa Paula Creek, from the confluence with the Santa Clara River upstream to approximately 0.25 mile upstream of the Corps grade-control/fish-passageway structure, in Santa Paula, California.

Freshwater migration corridors for steelhead are those that are free of obstruction and excessive predation with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival. Activities with the potential to affect critical habitat include road building or maintenance, modifications of the creek channel or bank, urbanization, and wetland loss (NMFS 2005).

Current Condition of the Critical Habitat in the Action Area

Approximately 2.0 miles of steelhead critical habitat lies within the action area. This constitutes approximately 13 percent of the critical habitat designated in the Santa Paula Creek watershed (Santa Paula and Sisar Hydrologic Subunits, inclusive), and a relatively small amount of the total designated critical habitat for the Southern California DPS. The current function of the action area is to provide a corridor for migrating adult and juvenile steelhead.

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1 National Marine Fisheries Service. 2005. Endangered and threatened species: designated critical habitat for seven evolutionarily significant units of Pacific salmon and steelhead in California. Federal Register 70(170): 52488–52586.

Steelhead access to spawning and rearing habitats in the Santa Paula Creek watershed was eliminated as a result of the extreme winter storm events of January 2005 that rendered the Harvey Dam fish ladder impassable. Harvey Dam is located approximately 1.5 miles upstream of the action area. This facility is currently being assessed and alternatives being developed to restore upstream steelhead passage. Additionally, the fish passage structure associated with the Corps' Santa Paula Creek Flood Control Project located at the upstream end of the action area is currently nonfunctional. This facility is scheduled to be assessed and redesigned by the Corps in coordination with NMFS in 2010.

Effects of the Proposed Action

The proposed action is expected to adversely affect one of the primary constituent elements of designated critical habitat for steelhead: a freshwater migratory corridor. Within this primary constituent element, the proposed action is expected to affect the following essential features of critical habitat: water quantity and quality, and natural cover. The following description of effects is presented in the context of these essential features of critical habitat.

Effects on water quantity. - Effects on water quantity are considered in the context of diverting flows outside of existing habitat during excavation activities and as a function of depth following excavation. Dewatering the action area will be necessary during excavation to facilitate working in the dry. However, diversion of water outside of the existing habitat would occur during the period when steelhead are not anticipated to be present. Following excavation, a migratory channel (low-flow channel) would be constructed through the action area to emulate width and depth features of the channel upstream of the action area. Therefore, the Project is not anticipated to appreciably reduce the function of migratory habitat once the migratory channel is constructed.

Effects on water quality. - Effects on water quality are expected as a result of increased fine sediment (silt and sand) remaining on the streambed and adjacent floodplain following excavation activities. This increased volume of fine sediment would be subject to entrainment in flowing water when diverted flows are redirected into the designed channel and during increased stream discharge during storm events. Entrainment of fine sediment would result in increased water turbidity (suspended particulate matter affecting the amount of light that is scattered or absorbed by a fluid). Although the potential increase in turbidity has not been quantified, the increase is not expected to represent an increase over background turbidity levels that are typically elevated during the first few rainfall events of the year as a result of upstream sources such as Mud Creek. Overall, the information available to NMFS indicates the expected increase in turbidity from the Project is not anticipated to appreciably disrupt the function or value of the action area as a migration corridor for steelhead.

Effects on natural cover. - Natural cover for steelhead includes overhanging streamside vegetation, in-channel boulders, and woody debris. For this reason, frequent (every 3 to 5 years) removal of riparian vegetation, boulders and woody debris associated with excavation within the flood control channel are of concern. However, excavation and temporary loss of cover features would be conducted during the period when steelhead are not expected to be present. The Project further incorporates measures to reclaim these features, monitor persistence and

performance of reclaimed features, and maintain these features as needed based on monitoring and coordination with NMFS. Although the Project would maintain the riparian vegetation in an immature condition and no riparian cover during the first migration season following excavation, the placement of boulders and presence of woody debris are expected to provide functional cover for migrating steelhead throughout the action area pending the growth of riparian vegetation.

Cumulative Effects

NMFS is generally familiar with activities occurring in the action area, or in upstream areas that could cause effects extending downstream into the action area. At this time, NMFS is unaware of future State, local, or private actions that would be reasonably certain to occur, beyond the continuing effects of actions described in the original biological opinion (Environmental Baseline) or in the foregoing section entitled, "Current Condition of the Critical Habitat in the Action Area." Therefore, NMFS believes no cumulative effect is likely.

Summary of Effects to Critical Habitat

The proposed Project would result in disturbance to essential features of critical habitat that affect the primary constituent element occurring within the action area – freshwater migration corridor. However, the proposed Project is not anticipated to appreciably disrupt the function or value of migratory habitat due to a) the timing of disturbance, which is outside of the anticipated migration period for steelhead, and b) development of the post-excavation low-flow channel with energy dissipation and cover features that provide a functioning migration corridor for steelhead in Santa Paula Creek.

Conclusion

After reviewing the best available scientific and commercial information, the status of the designated critical habitat (including the environmental baseline), expected effects of the proposed action, and cumulative effects, NMFS concludes the proposed action is not likely to jeopardize the continued existence or result in destruction or adverse modification of critical habitat for the Southern California DPS of endangered steelhead.

This concludes formal consultation. 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 action that may affect listed species or critical habitat in a manner or to an extent not previously considered in this opinion, (3) the 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, any operations causing such take must cease pending reinitiation.

Please call Darren Brumback at (562) 980-4060 if you have any questions concerning this letter or if you would like additional information.

Sincerely,

for Rodney R. McInnis
Regional Administrator

cc: Roger Root, USFWS
Mary Larson, CDFG
Marcin Whitman, CDFG
David Crowder, NMFS
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