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

APR 2 7 2007

In response refer to:
2007/01232

Mr. Francis Piccola
Chief, Planning Division
U.S. Army Corps of Engineers
1325 J Street
Sacramento, California 95814-2922

Dear Mr. Piccola:

This letter is regarding the ongoing consultation between NOAA's National Marine Fisheries Service (NMFS) and the U.S. Army Corps of Engineers (Corps) concerning the operation of Englebright and Daguerre Point Dams on the Yuba River in Yuba and Nevada Counties, California (proposed project). On March 27, 2002, NMFS issued a biological opinion (BO) which analyzed the effects of the proposed project on threatened Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*), threatened Central Valley steelhead (*O. mykiss*), and the respective designated critical habitats for these species over a five-year period. The conclusion of the 2002 BO found that the proposed project was not likely to jeopardize the continued existence of the listed species, and was not likely to destroy or adversely modify designated critical habitat for these species over that time period. The 2002 BO was scheduled to expire on March 27, 2007.

On March 23, 2007, the Corps delivered to NMFS' Sacramento Area Office, an initiation package including a cover letter requesting the initiation of formal consultation under section 7 of the Endangered Species Act for the proposed project along with a biological assessment and essential fish habitat assessment for the proposed project. Included in the Corps' March 23, 2007, cover letter was a request for the extension of the timeframe covered by the 2002 BO in order to maintain coverage for the project until the current consultation is completed and a new BO is issued.

Enclosure 1 is a condensed BO which analyzes the effects of continuation of operation of the proposed project for one year (or until a new long-term BO is issued, superseding this document) on Central Valley spring-run Chinook salmon and Central Valley Steelhead. This BO, like the 2002 BO, does not address project effects on threatened southern distinct population segment of North American green sturgeon (*Acipenser medirostris*).

If you have any questions regarding this document, please contact Mr. Michael Tucker at (916) 930-3604 or via email at michael.tucker@noaa.gov.

Sincerely,

for Rodney R. McInnis
Regional Administrator

cc: Copy to file: ARN151422SWR2006SA00071
NMFS-PRD, Long Beach, CA
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Enclosure 1

BIOLOGICAL OPINION

ACTION AGENCY: U.S. Army Corps of Engineers

ACTIVITY: Operation of Englebright and Daguerre Point Dams on the Yuba River, California, for a 1-Year Period.

CONSULTATION CONDUCTED BY: NOAA's National Marine Fisheries Service, Southwest Region

FILE NUMBER: 151422-SWR-2006-SA00071:MET (PCTS # 2007/01232)

DATE ISSUED: April 27, 2007

I. CONSULTATION HISTORY

On March 27, 2002, the National Marine Fisheries Service (NMFS) issued a biological opinion (BO) which analyzed the effects of the proposed project on threatened Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*), threatened Central Valley steelhead (*O. mykiss*), and the respective designated critical habitats for these species over a 5-year period. The conclusion of the 2002 BO found that the proposed project was not likely to jeopardize the continued existence of the listed species, and was not likely to destroy or adversely modify designated critical habitat for these species over that time period. The 2002 BO was scheduled to expire on March 27, 2007.

On March 23, 2007, the U.S. Army Corps of Engineers (Corps) delivered to NMFS' Sacramento Area Office, an initiation package including a cover letter requesting the initiation of formal consultation under section 7 of the Endangered Species Act (ESA) for the proposed project along with a biological assessment (BA) and essential fish habitat (EFH) assessment for the proposed project. Included in the Corps' March 23, 2007, cover letter was a request for the extension of the timeframe covered by the 2002 BO in order to maintain coverage for the proposed project until a new consultation is completed and a new long-term BO is issued.

II. DESCRIPTION OF THE PROPOSED ACTION

A. Delineation and Description of the Action Area

The action area is defined in 50 CFR 402.02 as all areas to be affected directly or indirectly by the Federal action, and not merely the immediate area involved in the action. The action area for this project includes the active stream channels and riparian corridors of the Yuba River starting at and including Englebright Dam and Reservoir (39°14'18"N, 121°16'07"W, Yuba River mile

23.9), downstream to the confluence with the Feather River (39°07'46"N, 121°35'56"W, Yuba River mile 0), including Daguerre Point Dam and all water diversion facilities associated with the two dams. This area shall be referred to as the lower Yuba River.

B. Description of the Proposed Action

The proposed action considered in this BO is the continuation of current Corps operations associated with Englebright and Daguerre Point Dams on the Yuba River in Yuba and Nevada counties, CA. An important component of the Corps operations is the issuance of permits, licenses, and easements to non-Federal entities for their operations of water diversion facilities at or near the dams.

1. Englebright Dam

Englebright Dam is 260 feet high, stores 70,000 acre-feet of water as designed, and was constructed in 1941 to retain hydraulic mining debris. The Corps administers the operation and maintenance of Englebright Dam, which plays only a small role in the flood control operations on the Yuba River. Although hydraulic mining is no longer active in the upper reaches of the Yuba River, Englebright Dam continues to capture any hydraulic mining debris remaining in the upstream areas. Englebright Dam has no fish ladders making it a complete barrier to upstream fish passage. The majority of releases from the reservoir are made through two hydroelectric power facilities, one of which (Narrows II) is located just below the base of the dam and the other (Narrows I), is located approximately 0.2 mile downstream. Water releases from the reservoir are administered by the Yuba County Water Agency (YCWA) and Pacific Gas and Electric Company (PG&E) for hydroelectric power generation, irrigation and maintenance of the downstream riverine ecosystem. The Corps has issued Easement No. DACW05-9-95-604 to PG&E for Narrows I and Easement No. DACW05-2-75-716 to YCWA for Narrows II, granting permission for the powerhouses to be constructed, operated, and maintained at the dam. Furthermore, on March 28, 1994, the Corps entered into an agreement with PG&E for operation and maintenance of the Narrows I Hydroelectric Project. The 1994 agreement states that the Corps is responsible for maintaining Englebright Dam and the outlet facilities in good order and repair, while PG&E is responsible for operation and maintenance of the hydroelectric facility.

Following the construction of New Bullards Bar Dam in 1969, the burden of flood control for the Yuba Basin was shifted from Englebright Lake to New Bullards Bar Reservoir, and Englebright Lake has since been kept nearly full most of the time (Federal Energy Regulatory Commission [FERC] 1992). As water is released from New Bullards Bar Dam for uses such as hydroelectric power, irrigation, and fisheries, the typical drawdown from July to December in Englebright Lake is about 9 feet. Water is released either through the Narrows I powerhouse (capacity of 730 cubic feet per second [cfs]) or through the Narrows II powerhouse (capacity of 3,425 cfs). If Englebright Lake is full, surface water from the lake spills over the dam in excess of what can be handled through the hydroelectric power facilities. The flows into Englebright Lake are managed upstream at New Bullards Bar Reservoir and to a lesser extent, at other upstream reservoirs, which are filled by natural runoff from the North, Middle, and South Yuba River sub-basins.

2. Daguerre Point Dam

The Rivers and Harbors Act of 1902 authorized the construction of the Yuba River Debris Control Project, of which Daguerre Point Dam is a part. Daguerre Point Dam is an overflow concrete ogee ("s-shaped") spillway with concrete apron and concrete abutments. The ogee spillway section is 575 feet wide and 25 feet tall. The purpose of Daguerre Point Dam was to retain hydraulic mining debris. This purpose was later modified to include diversion of water for irrigation purposes. The dam is not operated for flood control and there is no water storage capacity as the entire reservoir has been filled with hydraulic mining debris and sediments. When the California Debris Commission was decommissioned, they turned administration of the dam over to the Corps. There are two irrigation diversions licensed by the Corps and a third diversion that does not require a license, which depend on the elevated head created by the dam to gravity-feed their canals. The park personnel of the Corps administer the operation of the fish ladders and maintenance of Daguerre Point Dam.

The Corps has issued easements and/or licenses for two diversions in the vicinity of Daguerre Point Dam. Initially, License DACW05-3-83-593 was first issued to Brophy Water District on August 29, 1983. This license is no longer in force since it was discovered to be a duplicate. License number DACW05-3-85-537 was issued to South Yuba Water District on March 15, 1985, and it is currently in a hold-over status, as it expired in March 2000. Easement No. DACW05-2-98-612 was issued to YCWA on October 19, 1998, but it was revoked in March 1999. On November 3, 1911, a perpetual license was issued to the Hallwood Irrigation Company. The Corps has assigned License No. DAW05-3-97-549 to this perpetual license.

About 1,000 feet upstream of Daguerre Point Dam on the south side of the river, the South Yuba-Brophy diversion diverts water through an excavated channel from the Yuba River's south bank. The South Yuba-Brophy diversion is fitted with a loose cobble weir which was intended to protect juvenile fish from becoming entrained into the canal but does not meet California Department of Fish and Game (DFG) or NMFS screening criteria. The Brophy Water District uses the South Yuba-Brophy diversion for drawing 35,330 acre-feet of water annually from the Yuba River. It is gravity fed with some lift stations. The service area is being expanded to 16,000 acres. The area covered along the Yuba River is in the southern portion of the county from the Yuba Goldfields southward to Erle Road and west to about Griffith Avenue.

Approximately 4,200 feet upstream of Daguerre Point Dam, the Brown's Valley Canal diverts water from the north bank of the river at estimated flows of up to 100 cfs. The water enters an excavated side channel and is then pumped up into the canal. Currently, these pumps are screened with a device that meets DFG and NMFS screening criteria. Although this diversion depends on the elevated head provided by Daguerre Point Dam to draw its water, it is not licensed by the Corps as it has no direct physical link to Corps property. The Brown's Valley Diversion serves a 50,000-acre area for irrigation from Englebright Dam to the Brown's Valley and Loma Rica areas north to the Butte County line. The Brown's Valley Irrigation District is entitled to 25,687 acre-feet annually. The water is drawn primarily from Merle Collins Reservoir and some from the Yuba River.

The Hallwood-Cordua diversion is located on the north side of Daguerre Point Dam with the intake facilities directly connected to the superstructure of the dam. There is an interim fish screen on the Hallwood-Cordua Canal approximately 0.25 mile down the canal from the river which was rebuilt in the spring of 2000 by the Cordua Irrigation District. Although the new screen does not fully meet all DFG and NMFS criteria, the rehabilitation efforts have greatly improved the effectiveness of the screen by creating favorable hydrological conditions along the face of the screen, allowing continuous operation of the screen throughout the irrigation season and providing direct return of entrained fish back to the river below the dam. The Hallwood-Cordua diversion provides irrigation water to the District 10 - Hallwood area. The Hallwood Irrigation District is entitled to 78,000 acre-feet of Yuba River water annually, and the Cordua District is entitled to 82,000 acre-feet annually.

YCWA has contractual agreements to deliver water to these irrigation districts (QUAD Consultants, 1994). The three diversions have a combined capacity of 1,085 cfs.

The fish ladders on Daguerre Point Dam have been destroyed by floods several times over the life of the dam. The current ladders which were constructed in 1938 consist of 8- by 10-foot bays arranged in steps with about 1 foot of difference in elevation between steps. Extensions to the fish ladders were added in 1964, and slide gates, which also permit the passage of fish, were added to both upstream ends of the ladders in 1965 (Corps 2001).

Under project authority, the Corps implements conservation measures while working with DFG to maintain the two fish ladders by clearing debris when needed. In 2000, the Corps also implemented dredging of the sediment in the area immediately above the exit of the north fish ladder as a conservation measure to provide improved fish passage. In coordination with the U.S. Fish and Wildlife Service (FWS), DFG, and NMFS, the Corps has participated in a fish passage improvement study of Daguerre Point Dam (Corps 2001). Alternatives examined include a wide range of actions ranging from removal of the dam to constructing new state-of-the-art fish ladders.

3. Conservation and restoration measures

The Corps has also committed to incorporate several conservation and restoration measures as part of their project operations which are intended to reduce take of listed salmonids by alleviating some of the adverse impacts associated with the ongoing projects. The following measures are part of the Corps' project description:

1. The Corps will coordinate with the California Department of Water Resources, U.S. Bureau of Reclamation, YCWA, Federal Energy Regulatory Commission, PG&E, NMFS, DFG, and FWS in managing flows from New Bullards Bar Reservoir and Englebright Lake to further enhance critical habitat and water temperature in the Yuba River downstream of Englebright Lake.

2. The Corps will coordinate with NMFS, DFG, and the FWS on developing and implementing an economical gravel injection program in key areas (*i.e.*, pool/riffle interface) since there is a lack of spawning gravels, especially for steelhead, below Englebright Dam. The draft environmental assessment will be circulated in the spring of 2007 and the pilot gravel injection program is scheduled to begin in spring/summer of 2007.

3. Pending approval and funding for the project, the Corps will provide any further coordination and assistance for YCWA to construct a temperature control device on the intake for the Narrows II powerhouse on Englebright Dam.

4. The Corps will continue to implement its plan of routinely clearing debris from the two fish ladders. In 2003, a log boom was added to the north ladder exit to divert some of the debris away from the ladder. The plan will be added to the requirements contained in the Corps Operation and Maintenance Manual for Daguerre Point Dam during the next regularly scheduled Manual update. The Corps has been implementing the debris management plan since 2003.

5. The Corps will continue to implement its plan to routinely remove the sediment that occasionally accumulates in front of the north ladder exit that could block upstream passage. The plan will be added to the requirements contained in the Corps Operation and Maintenance Manual for Daguerre Point Dam during the next regularly scheduled Manual update. This sediment management plan has been implemented since 2003. Additionally, the Corps is in the process of implementing a new plan to maintain the channels and it will be submitted as an addendum to the March 27, 2007, annual report.

6. The Corps will coordinate with the Brophy Irrigation District, NMFS, DFG, and the FWS to investigate, design, and implement an economical plan to improve conditions for juvenile salmonids at the South Yuba - Brophy irrigation diversion (*i.e.*, reduce predation in a small area near the entrance of the diversion where a pool creates more suitable habitat that attracts warm water fish, clear debris and maintain unimpeded flow-through of return channel, and improve screening function). The Corps sent a letter to NMFS in December 2005 requesting that this item be removed from the 2002 NMFS BO. The Corps requested that it be replaced to require the immediate initiation of a feasibility study to investigate the potential design, location and costs of a replacement screen that will meet all current CDF and NMFS fish screen criteria for anadromous salmonids. The YCWA is currently in the process of selecting its final alternative to meet the screen criteria.

III. STATUS OF LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

The following listed species and designated critical habitats are likely to be affected by the proposed project:

- Central Valley spring-run Chinook salmon - threatened
- Central Valley spring-run Chinook salmon Critical Habitat
- Central Valley steelhead - threatened
- Central Valley steelhead Critical Habitat

Since the 2002 BO became final on March 27, 2002, the status of Central Valley spring-run Chinook salmon and Central Valley steelhead has been updated, but essentially remains the same as previous designations. On June 28, 2005, NMFS issued its final decision to retain the status of Central Valley spring-run Chinook salmon as threatened (70 FR 37160). Critical habitat for Central Valley spring-run Chinook salmon and Central Valley steelhead was designated within the action area for the proposed project on September 2, 2005 (70 FR 52488). On January 5, 2006, NMFS issued a final decision that defined Central Valley steelhead as a Distinct Population Segment (DPS) rather than an Evolutionary Significant Unit (ESU), and retained the status of Central Valley steelhead as threatened (71 FR 834).

A. Central Valley spring-run Chinook salmon

The Central Valley spring-run Chinook salmon ESU has displayed broad fluctuations in adult abundance, ranging from 1,403 in 1993 to 25,890 in 1982 (Table 1). The average abundance for the ESU was 12,590 for the period of 1969 to 1979, 13,334 for the period of 1980 to 1990, 6,554 from 1991 to 2001, and 16,349 since 2002. Sacramento River tributary populations in Mill, Deer, and Butte Creeks are probably the best trend indicators for the Central Valley spring-run Chinook salmon ESU as a whole because these streams contain the primary independent populations within the ESU. Generally, these streams have shown a positive escapement trend since 1991 (Table 2). Escapement numbers are dominated by Butte Creek returns, which have averaged over 7,000 fish since 1995. During this same period, adult returns on Mill Creek have averaged 778 fish, and 1,463 fish on Deer Creek. Although recent trends are positive, annual abundance estimates display a high level of fluctuation, and the overall number of Central Valley spring-run Chinook salmon remains well below estimates of historic abundance. Additionally, in 2003, high water temperatures, high fish densities, and an outbreak of Columnaris Disease (*Flexibacter Columnaris*) and Ichthyophthiriasis (*Ichthyophthirius multifiis*) contributed to the pre-spawning mortality of an estimated 11,231 adult spring-run Chinook salmon in Butte Creek. Because the Central Valley spring-run Chinook salmon ESU is confined to relatively few remaining streams, continues to display broad fluctuations in abundance, and a large proportion of the population (*i.e.*, in Butte Creek) faces the risk of high mortality rates, the population is at a moderate to high risk of extinction.

Table 1. Adult spring-run Chinook salmon indexes for Mill, Deer, and Butte Creeks since 1991.

Year	Central Valley Total	Deer	Mill	Butte
1991	1,624	479	319	No data
1992	1,547	209	237	730
1993	1,403	259	61	650
1994	2,546	485	723	474

1995	9,824	1,295	320	7,500
1996	2,701	614	253	1,413
1997	1,433	466	202	635
1998	24,725	1,879	424	20,259
1999	6,069	1,591	560	3,679
2000	5,587	637	544	4,118
2001	13,463	1,622	1,100	9,605
2002	13,220	2,185	1,594	8,785
2003	8,902	2,759	1,426	4,398
2004	9,770	804	998	7,390
2005	14,312	2,239	1,150	10,625
2006	8,716	2,432	1,002	4,579

B. Central Valley Steelhead

Historic Central Valley steelhead run sizes are difficult to estimate given the paucity of data, but may have approached one to two million adults annually (McEwan 2001). By the early 1960s the steelhead run size had declined to about 40,000 adults (McEwan 2001). Over the past 30 years, the naturally spawned steelhead populations in the upper Sacramento River have declined substantially. Hallock *et al.* (1961) estimated an average of 20,540 adult steelhead through the 1960s in the Sacramento River, upstream of the Feather River. Steelhead counts at the Red Bluff Diversion Dam (RBDD) declined from an average of 11,187 for the period of 1967 to 1977, to an average of approximately 2,000 through the early 1990s, with an estimated total annual run size for the entire Sacramento-San Joaquin system, based on RBDD counts, to be no more than 10,000 adults (McEwan and Jackson 1996, McEwan 2001). Steelhead escapement surveys at RBDD ended in 1993 due to changes in dam operations.

Nobriga and Cadrett (2003) compared CWT and untagged (wild) steelhead smolt catch ratios at Chipps Island trawl from 1998-2001 to estimate that about 100,000 to 300,000 steelhead juveniles are produced naturally each year in the Central Valley. In the Updated Status Review of West Coast Salmon and Steelhead (Good *et al.* 2005), the Biological Review Team made the following conclusion based on the Chipps Island data:

> "If we make the fairly generous assumptions (in the sense of generating large estimates of spawners) that average fecundity is 5,000 eggs per female, 1 percent of eggs survive to reach Chipps Island, and 181,000 smolts are produced (the 1998-2000 average), about 3,628 female steelhead spawn naturally in the entire Central Valley. This can be compared with McEwan's (2001) estimate of 1 million to 2 million spawners before 1850, and 40,000 spawners in the 1960s".

C. Critical Habitat

A final rule designating critical habitat for Central Valley spring-run Chinook salmon and Central Valley steelhead in the lower Yuba River was published on September 2, 2005 (70 FR 52488). The rule became effective on January 2, 2006. As the habitat requirements for these

two species are similar, this section will combine the discussion of the status of critical habitat for both species.

Clark (1929) estimated that there were 6,000 miles of salmon habitat in the Central Valley (much of which was high elevation spring-run Chinook salmon and steelhead habitat) and that by 1928, 80 percent of this habitat had been lost. Yoshiyama et al. (1996) determined that, historically, there were approximately 2,000 miles of salmonid habitat available prior to dam construction and mining and that only 18 percent of that habitat remains.

This tremendous loss of habitat and the scarcity of remaining areas that maintain all of the primary constituent elements necessary to support listed salmonids is the primary factor affecting the status of critical habitat for these fish. Since this initial loss of habitat, other factors have continued to impact the remaining critical habitat and affected the ESU/DPS ability to recover. These factors include a combination of physical, biological, and management factors such as insufficient flows, elevated water temperatures, and predation (DFG 1998).

Instream flows in several areas designated as critical habitat for spring-run Chinook salmon and steelhead (Butte Creek, Battle Creek, Yuba River, *etc.*) are controlled by upstream dams. These dams can, at times, release insufficient flows or cause severe flow fluctuations that impact the quality of critical habitat in these streams. Low summer flows (both natural and controlled) can cause elevated water temperatures in spring-run holding and spawning habitat, resulting in pre-spawning mortality and reduced reproductive success.

Increased predation is also a significant factor affecting critical habitat for spring-run Chinook salmon and steelhead. Although predation is a natural component of salmonid life ecology, the rate of predation has potentially increased through the introduction of non-native predatory species such as striped bass (*Morone saxatilis*) and largemouth bass (*Micropterus salmoides*), and through the alteration of natural flow regimes and the development of structures that attract predators, including dams, bank revetment, bridges, diversions, piers, and wharfs (Stevens 1961, Vogel *et al.* 1988). In a very limited study FWS found more predatory fish at rock revetment bank protection sites between Chico Landing and Red Bluff than at sites with naturally eroding banks. On the mainstem Sacramento River, elevated rates of predation are known to occur at RBDD, Anderson-Cottonwood Irrigation Dam, Glenn-Colusa Irrigation District's pumping plant, and at south delta water diversion structures (DFG 1998). From October 1976 to November 1993, DFG conducted 10 mark and recapture experiments at the Clifton Court Forebay to estimate pre-screen losses using hatchery-reared juvenile Chinook salmon. Pre-screen losses ranged from 69 to 99 percent. Predation from striped bass is thought to be the primary cause of the loss (DFG 1998, Gingras 1997).

IV. ENVIRONMENTAL BASELINE

The environmental baseline includes the past and ongoing human and natural factors leading to the current status of the species and designated critical habitat within the action area. When assessing the impacts of an ongoing project such as the Corps' operations of Englebright and Daguerre Point Dams on the Yuba River, the environmental baseline for that assessment

comprises all past impacts including the effects of the project up to the present day. The assessment of future effects of the action (found in the following section of this document) will include the impacts to listed species and their critical habitat which will continue to be caused by operations of the projects in the future. Many of the past project effects described in the environmental baseline section will continue to affect the species in the future and must therefore be included in the assessment of the effects of the action.

A. Status of Spring-run Chinook Salmon within the Action Area

Historic accounts of the spring-run Chinook salmon population in the Yuba River prior to the impacts caused by gold mining, dam construction, and water diversions, show that large numbers of spring-run Chinook salmon were taken by miners and Native Americans as far upstream as Downieville on the North Yuba River, and that during the construction of the original Bullards Bar Dam (1921-1924), so many salmon congregated and died below the dam that they had to be burned (Yoshiyama *et al.* 1996). Due to their presence high up in the watershed, Yoshiyama concluded that these fish were spring-run Chinook salmon.

There is limited information on the current population size of spring-run Chinook salmon in the Lower Yuba River. Before 2001, when DFG conducted a study to quantify the number of adult spring-run Chinook salmon immigrating into the Yuba River by trapping fish in the fish ladder at Daguerre Point Dam, there was almost no specific information on the run timing and size of the population in the Yuba River. In the 2001 DFG study, which involved limited sampling of fish ascending the north ladder, a total of 108 adult Chinook salmon were estimated to have passed the dam between March 1, 2001, and July 31, 2001 (DFG 2002).

Spawning and carcass surveys conducted by DFG and private consultants funded by YCWA have likewise detected the persistence of spring-run Chinook salmon in the Yuba River, although none of these reports provided population estimates specifically for spring-run Chinooks salmon.

Infrared and videographic sampling on both ladders at Daguerre Point Dam since 2003 has provided more robust estimates of spring-run Chinook salmon numbers migrating into the Yuba River. However, these estimates should be considered as *minimum* numbers, as periodic problems with the sampling equipment have caused periods when fish ascending the ladders were not counted, so it is likely that the true numbers are higher than those reported below (DFG unpublished data). The detection of adipose fin clips on some of these fish indicates that they were hatchery strays, most likely from the Feather River Hatchery.

Table 2. Adult spring-run Chinook salmon counted ascending Daguerre Point Dam.

	April	May	June	Total
2003	–	–	1250	1250
2004	2	53	376	431
2005	3	113	897	1013
2006	0	2	212	214

Limited redd surveys during late August and September have also been conducted by DFG since 1999. These surveys have detected spawning activities starting in the first or second week of September in each year. They have not detected a bimodal distribution of spawning activities (*i.e.*, a distinct spring-run spawning period followed by a distinct Central Valley fall-run Chinook salmon (*O. tshawytscha*) spawning period) but instead have detected a slow build-up of spawning activities starting in early September and building into the main fall-run spawning period. The earliest spawning generally occurs in the upper reaches of the best spawning habitat (bellow the Narrows pool) and progressively moves downstream throughout the spawning season.

In addition to DFG redd surveys, FWS is currently engaged in an effort to collect information for an Instream Flow Incremental Methodology study in the lower Yuba River. Data on the geographical location and bathymetric distribution of 168 spring-run Chinook salmon redds was collected on September 16 to 17, September 19, and September 23 to 26, 2002. The observed 168 redds were located in the Garcia Gravel Pit Reach.

Congregations of adult Chinook salmon (approximately 30 to 100 fish) have been observed in the outlet pool at the base of Narrows II Powerhouse, generally in late August or September when the powerhouse is shut down for maintenance, and the pool becomes clear enough to see the fish (Michael Tucker, NMFS, pers. obs., September, 2003; Steve Onken, YCWA, pers. comm., April, 2004). While it is impossible to visually distinguish spring-run from fall-run Chinook salmon in this situation, the fact that these fish are congregated this far up the river at this time of year indicates that some of them are likely to be spring-run Chinook salmon.

In general, the current data indicate that adult escapement of spring-run Chinook salmon is relatively low and has been greatly reduced from historic levels.

B. Status of Steelhead within the Action Area

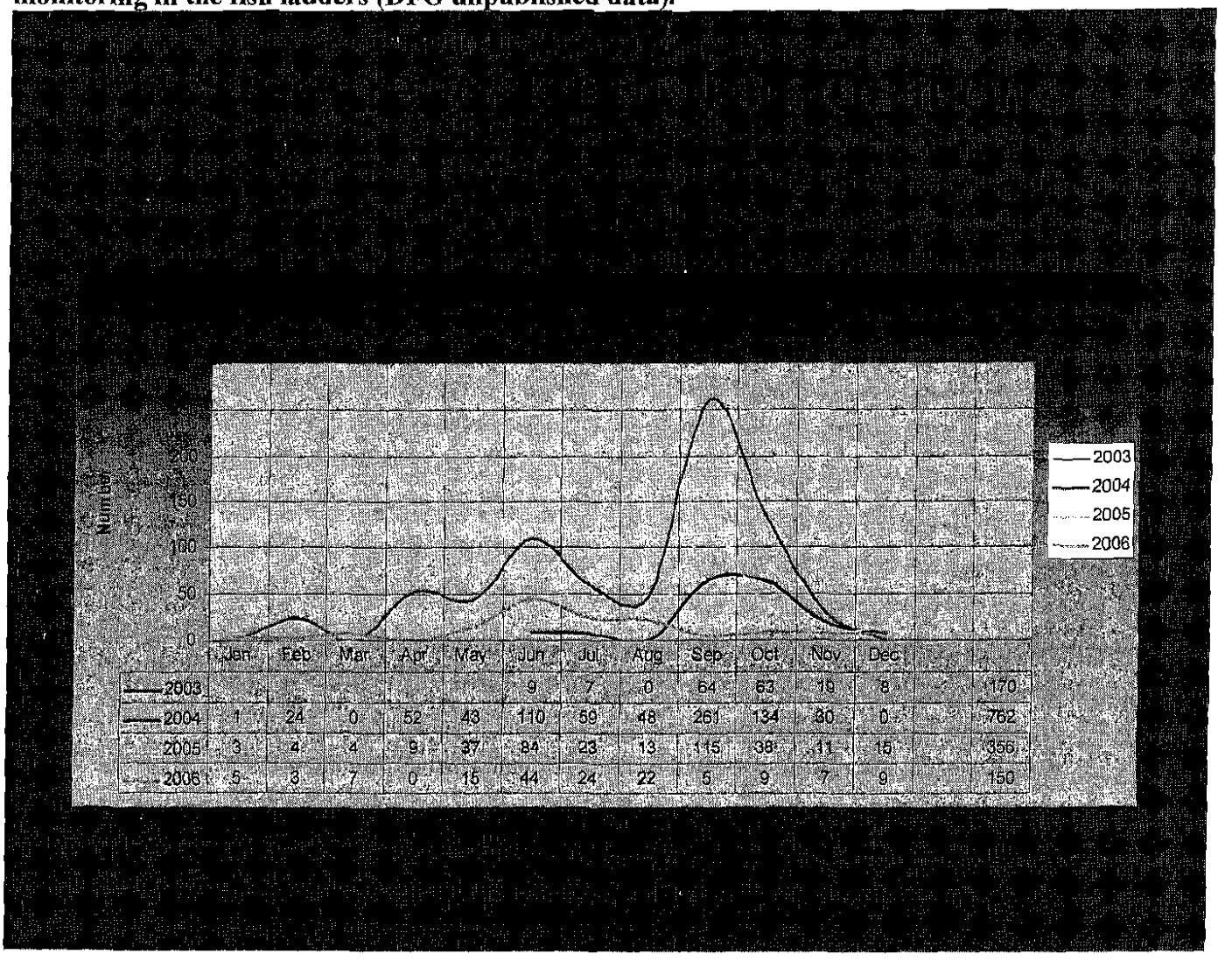
As with the spring-run Chinook salmon, there has been very little information published on population trends and absolute abundance of steelhead in the Yuba River. The vast majority of spawning and rearing habitat for steelhead in the Yuba River was first impacted by gold mining activities and then totally cut off by Englebright Dam. Prior to construction of Englebright Dam, fisheries biologists for DFG stated that they observed large numbers of steelhead spawning in the uppermost reaches of the Yuba River and its tributaries (DFG 1998, Yoshiyama *et al.* 1996).

DFG estimated a spawning population of only about 200 fish annually prior to 1969. During the 1970s, DFG annually stocked hatchery steelhead from Coleman National Fish Hatchery into the lower Yuba River, and by 1975 estimated a run size of about 2,000 fish (DFG 1991). DFG stopped stocking steelhead into the lower Yuba River in 1979, and currently manages the river to protect natural steelhead through strict "catch-and release" fishing regulations.

Infrared and videographic sampling on both ladders at Daguerre Point Dam since 2003 has provided estimates of steelhead numbers migrating up the Yuba River (Figure 1). However, these estimates should be considered as *minimum* numbers, as periodic problems with the sampling equipment have caused periods when fish ascending the ladders were not counted.

Additionally, because steelhead can be similar in size to many other species of fish in the Yuba River, only those inferred images that were backed up by photographic images clearly showing that the fish was a steelhead were included in the counts represented in Figure 1. It is therefore likely that the true numbers of steelhead passing Daguerre Point Dam are higher than those reported in Figure 1 (DFG unpublished data).

Figure 1. Steelhead immigration past Daguerre Point Dam as detected through electronic monitoring in the fish ladders (DFG unpublished data).



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
2003						9	7	0	64	63	19	8		170
2004	1	24	0	52	43	110	59	48	261	134	80	0		762
2005	3	4	4	9	37	84	23	13	115	38	11	15		356
2006	5	3	7	0	15	44	24	22	5	9	7	9		150

C. Designated Critical Habitat for Central Valley Spring-run Chinook salmon and Steelhead

Because the habitat requirements and conditions are similar for spring-run Chinook salmon and steelhead in the lower Yuba River, descriptions of the status of critical habitat for the two species

will be discussed together in this section. Many of the baseline habitat conditions in the lower Yuba River have remained relatively unchanged since the completion of the 2002 BO (NMFS 2002) and should therefore be considered to be included by reference of that document. Those baseline habitat elements that have undergone significant changes since the completion of the 2002 BO are discussed below, along with a description of the changes that have occurred. Much of following information on salmonid habitat conditions in the lower Yuba River was taken *verbatim* from the draft Implementation Plan for Lower Yuba River Anadromous Fish Habitat Restoration prepared by the Lower Yuba River Fisheries Technical Working Group (2005).

1. Fish Passage

Daguerre Point Dam can delay or prevent the upstream migration of adult spring-run Chinook salmon and steelhead in the lower Yuba River. Daguerre Point Dam includes suboptimal ladder design and sheet flow across the dam spillway that may obscure attraction to ladder entrances, particularly during high flow periods (January through March). The ladder entrances are located where the overflow from the spillway makes it difficult for adults to find the entrances. Since 2001, wooden flash boards have been periodically affixed to the crest of the dam during low flow periods with the intent of directing the flows towards the fish ladder entrances to provide attraction flows for the ladders. Fish passage monitoring data from 2006 indicated that the installation of the flash boards resulted in an immediate and dramatic increase in the passage of salmon up the ladders, and is thought to have improved the ability for salmon to locate and enter the fish ladders (DFG unpublished data). Both ladders, particularly the north ladder, tend to clog with woody debris during high flow events. A log boom was installed at the north ladder in 2003 to reduce woody debris accumulation and an updated inspection and maintenance plan has allowed the Corps, in coordination with DFG, to inspect the ladders more frequently and to clean out the ladders when they become clogged with debris. Gravel buildup at the top of the ladders can block passage or reduce attraction flows at both ladders. The Corps has implemented a sediment management program to reduce gravel build up in front of the ladders and aid fish passage above the ladders since 2003.

2. Flow Fluctuations and Powerhouse Shutdowns

In 2006, YCWA constructed a full-flow bypass on Narrows II powerhouse which allows approximately 3000 cfs or 88 percent of the full 3400 cfs capacity of the powerhouse to be bypassed around the power generation facilities to maintain river flows during emergency and accidental shut-downs of the powerhouse. Before this bypass was completed, flow reductions resulting from emergency shutdowns of the Narrows II powerhouse were a major concern due to adverse flow and temperature effects on listed spring-run Chinook salmon and steelhead. The ability to manage releases from Englebright Dam during maintenance and emergency operations was limited by the design of Englebright Dam and the bypass capability of the Narrows II powerhouse which was previously only able to bypass 650 cfs or approximately 20percent of the 3400 cfs capacity of the powerhouse.

In the past, uncontrolled flow reductions due to unexpected outages at Narrows II produced extensive adverse effects on listed steelhead and spring-run Chinook salmon in the Yuba River. Such events adversely affected spawning redds and fry/juvenile rearing areas (FERC 2001).

With the completion of the full-flow bypass in 2006, these adverse effects are not expected to occur any longer.

3. Minimum Instream Flow Requirements

Flow releases from Englebright Reservoir are subject to provisions of various permits, licenses and contracts, including water right permits and licenses administered by the State Water Resources Control Board (SWRCB), Federal Power Act License 2246, the 1966 Power Purchase Contract with PG&E, a 1965 contract with CDFG concerning instream flows, and a 1966 contract with the DWR under the Davis-Grunsky Act. YCWA determines project operations based on year-to-year analyses.

In 1962, YCWA entered into an agreement with DFG to provide the following minimum instream flows for normal water years for preserving and enhancing the fish resources to areas below Daguerre Point Dam:

- October through December - 400 cfs
- January through June - 245 cfs
- July through September - 70 cfs

Releases required by the agreement were subject to reductions in critical dry years. However, in no event were water releases to be reduced to less than 70 cfs. YCWA's Federal Power Act license also contains these requirements. In most years, the YCWA voluntarily exceeded the 1962 minimum flow requirements. However, when these minimum flows were implemented they often produced water temperatures and habitat conditions which were well outside the optimal preferred ranges for salmonids.

On February 23, 1988, the SWRCB received a complaint filed by a coalition of fishery groups referred to as the United Groups regarding fishery protection and water rights issues on the lower Yuba River. In 1992 and again in 2000, the SWRCB held hearings to receive testimony and other evidence regarding fishery issues in the lower Yuba River and other issues raised in the United Groups complaint.

On July 16, 2003, the SWRCB issued its final decision (RD-1644) regarding the protection of fishery resources and other issues relating to diversion and use of water from the lower Yuba River. Among other requirements, RD-1644 specified new minimum flow requirements and flow fluctuation criteria for the lower Yuba River. Although these minimum flow requirements did not provide the level of flow protection recommended by DFG or NMFS, according to RD-1644 these flows were developed to attempt to enhance habitat for adult attraction and passage, spawning, egg incubation, juvenile rearing, and emigration of Chinook salmon, steelhead, and American shad in the lower Yuba River.

Over the past four years a new set of instream flow schedules for the lower Yuba River has been developed through the Yuba Accord process (Surface Water Resources Inc. 2007), and these flow schedules have been implemented since 2005 under interim Accord agreements. The full Yuba Accord is expected to be finalized and implemented in early 2008. The flow schedules and

other agreements associated with the Yuba Accord will extend through the life of the current FERC license for the Yuba Project (approximately 2016) and have the potential to be extended into the next license period if the Accord provisions remain amenable to the signatory parties. Key elements of the Yuba Accord Fisheries Agreement such as the initiation of improved flow schedules and funding of biological studies and habitat restoration in the lower Yuba River are expected provide habitat benefits for salmonids in the lower Yuba River that are at least equal to but often greater than those provided under RD-1644.

V. EFFECTS OF THE ACTION

Since the issuance of the 2002 BO, there have been no significant changes to the proposed action that would be expected to increase or intensify the level or magnitude of adverse effects caused by the proposed action. Project effects were clearly defined and described in the 2002 BO, and therefore the entire effects section of that document is incorporated by reference to this section (NMFS 2002). However, there have been several important changes to the Corps' operations, and to factors affecting the interrelated and interdependent effects of the action, that are expected to reduce the level of adverse impacts to listed species and critical habitat to a level below that which was described and analyzed in the 2002 BO. Those changes to the effects of the proposed action are described below.

- ***Log boom and ladder cleaning protocols.*** Beginning October 1, 2002, the Corps, in conjunction with DFG, initiated weekly inspections of the fish ladders during periods of high water and during the spring- and fall-run Chinook salmon adult migration period (approximately February through October). During the remainder of the year bi-weekly inspections have been conducted. The purpose of these inspections has been to monitor the flow levels in the ladders and any accumulation of debris in or around the ladders. Any necessary flow adjustments or removal of small debris loads are done immediately, while large debris loads are removed using heavy equipment as soon as the equipment can be mobilized to the site. A log boom was installed across the north ladder exit in April 2003 to help divert floating debris away from the ladder during low and medium flows. These measures have helped to improve passage conditions at Daguerre Point Dam by minimizing debris build-up and blockage of the ladders.

- ***Sediment management above Daguerre Point Dam.*** A comprehensive sediment management plan designed to maintain a clear, open channel (at least 30 feet wide by 3 feet deep) from the fish ladder exits out across the entire width of the river was finalized in March 2007. A similar plan has been implemented since 2003, and has resulted in the maintenance of a clear passage channel allowing fish exiting the ladders to reach the main channel of the river unimpaired.

- ***Narrows II full flow bypass.*** In 2006, YCWA completed construction of a bypass system on the Narrows II powerhouse that allows approximately 90 percent of the total capacity of the powerhouse to be bypassed around the generation facilities and into the river during powerhouse shutdowns. In the past, uncontrolled flow reductions due to unexpected outages at Narrows II produced extensive adverse effects on listed steelhead

and spring-run Chinook salmon in the Yuba River. With the completion of the full-flow bypass, these adverse effects are no longer expected to occur in the future.

- ***Yuba Accord Fisheries Agreement.*** The development of the Yuba Accord was a collaborative process that took place over a period of approximately two and a half years. The stakeholders that participated in the development of the Yuba Accord represent most of the fisheries agencies, water users, and other agencies and organizations concerned with lower Yuba River flows.

  The development of the Accord Fisheries Agreement was the first step taken in the process that led to the Yuba Accord. The Fisheries Agreement focuses on: (1) evaluating key fisheries stressors in the lower Yuba River; (2) developing new instream flow requirements; (3) developing a monitoring and evaluation program to oversee the success of the flow schedules; and (4) creating a funding mechanism to pay for monitoring and study activities and the proposed conjunctive-use program.

  The development of flow schedules for the Fisheries Agreement included biological and other science-based considerations and a stressor analysis of key fisheries species and life stages, prioritized and weighted in a summary matrix. Six flow schedules, plus a conference year schedule, were developed to cover the entire range of Yuba basin water availabilities (Tables 3 and 4). The flow schedules were developed to maximize fisheries benefits during wetter years, and to maintain fisheries benefits to the greatest extent possible for drier years while taking into account other key considerations such as water supply demands, flood control operations, and hydrologic constraints of the system.

  In April of 2005, a statement of support for the proposed Fisheries Agreement was signed by YCWA, DFG, NMFS, FWS, the South Yuba River Citizens League, Friends of the River, Trout Unlimited, and the Bay institute. The Fisheries Agreement flow schedules have been implemented since 2005 under interim Accord agreements, and the full Yuba Accord is expected to be finalized and implemented in early 2008. The Fisheries Agreement and other agreements associated with the Yuba Accord will extend through the life of the current FERC license for the Yuba Project (approximately 2016) and have the potential to be extended into the next license period if the Accord provisions remain amenable to the signatory parties. Key elements of the Yuba Accord Fisheries Agreement such as the initiation of beneficial flow schedules and funding of biological studies and habitat restoration in the lower Yuba River are expected provide habitat benefits for salmonids in the lower Yuba River that are at least equal to but often greater than those provided under RD-1644.

Table 3. Instream Flow Requirements for the Yuba Accord Fisheries Agreement.

Marysville Gage (cfs)

Schedule	OCT		NOV	DEC	JAN	FEB	MAR	APR		MAY		JUN		JUL	AUG	SEP	Total Annual Volume (AF)
	1-15	16-31	1-30	1-31	1-31	1-29	1-31	1-15	16-30	1-15	16-31	1-15	16-30	1-31	1-31	1-30	
1	500	500	500	500	500	500	700	1000	1000	2000	2000	1500	1500	700	600	500	574200
2	500	500	500	500	500	500	700	700	800	1000	1000	800	500	500	500	500	429066
3	500	500	500	500	500	500	500	700	700	900	900	500	500	500	500	500	398722
4	400	400	500	500	500	500	500	600	900	900	600	400	400	400	400	400	361944
5	400	400	500	500	500	500	500	500	600	600	400	400	400	400	400	400	334818
6	350	350	350	350	350	350	350	350	500	500	400	300	150	150	150	350	232155

* Indicated flows represent average volumes for the specified time period. Actual flows may vary from the indicated flows according to established criteria.
* Indicated Schedule 6 flows do not include an additional 30 TAF available from groundwater substitution to be allocated according to established criteria.

Smartville Gage (cfs)

Schedule	OCT		NOV	DEC	JAN	FEB	MAR	APR		MAY		JUN		JUL	AUG	SEP	Total Annual Volume (AF)
	1-15	16-31	1-30	1-31	1-31	1-29	1-31	1-15	16-30	1-15	16-31	1-15	16-30	1-31	1-31	1-30	
A	700	700	700	700	700	700	700	700	-	-	-	-	-	-	-	700	-
B	600	600	600	550	550	550	550	600	-	-	-	-	-	-	-	500	-

* Schedule A used with Schedules 1, 2, 3 and 4 at Marysville.
* Schedule B used with Schedules 5 and 6 at Marysville.

Table 4. Estimated Predicted Probabilities of Occurrence of the Six Flow Schedules and the Conference Year for the Yuba Accord Fisheries Agreement.

Schedule	North Yuba Index (TAF)	Percent Occurrence	Cumulative
1	>1,400	56%	56%
2	1,040 to 1,400	22%	78%
3	920 to 1,040	7%	85%
4	820 to 920	5%	90%
5	693 to 820	5%	95%
6	500 to 693	4%	99%
Conference	<500	1%	100%

- ***Gravel augmentation program.*** In 2004, the Corps completed a draft gravel augmentation/enhancement plan which included several potential alternatives for improving spawning gravel availability in the lower Yuba River. The initial preferred alternative was to implement a pilot project that would re-contour a perched gravel bar to reconnect the stranded gravels with the flowing channel. However, before this alternative could be implemented, the high flows of 2005/2006 cut into the proposed project site and essentially implemented the plan before the Corps had a chance to. Since that time, a second alternative (injection of spawning gravels at the base of Englebright Dam) has been under investigation, and with the help of the University of California, Davis and the Anadromous Fish Restoration Program, a pilot injection of spawning gravels is scheduled to be implemented in the spring of 2007. With the knowledge gained from the study of this pilot injection, the Corps will develop and implement a long term gravel injection program which is expected to improve spawning habitat conditions in the currently gravel starved reach immediately downstream of Englebright Dam.

VI. CUMULATIVE EFFECTS

NMFS is aware of only one significant State or local action that is reasonably likely to occur in the action area. YCWA has proposed, and received approval of $3.15 million in grant funding from DWR for a Yuba Wheatland In-Lieu Groundwater Recharge and Storage Project (Wheatland Project). The purpose of the Wheatland Project is to extend the YCWA surface water delivery capabilities to the Wheatland Water District (WWD) by constructing canal facilities to deliver Yuba River Development Project (YRDP) water to the WWD in southern Yuba County (YCWA 2002).

The total future projected annual agricultural water demand for the WWD that could be served by the Wheatland Project is about 41,000 acre feet. Water will be diverted from the Yuba River at Daguerre Point Dam and conveyed to the project area through the existing South Main Canal. The new facilities will convey water from the South Main Canal to the WWD service area. The diverted water will either be provided through the direct diversion of the natural flow of the Yuba River or, during dry periods, through rediversion of stored water released from New Bullards Bar Reservoir, which is located on the North Yuba River. YCWA anticipates that the Wheatland Project potentially could divert YRDP water for delivery within the next 5 years.

YCWA (2002) estimates that the Wheatland Project would divert a maximum of an additional 160 cfs from the lower Yuba River through the South Yuba/Brophy diversion (a 40 percent increase). This increase in total diversions through the South Yuba/Brophy diversion facility would increase the level of impacts to listed salmonids associated with exposure to this facility.

The potential increase in diversion rates at the South Yuba-Brophy diversion associated with the proposed Wheatland project is likely to cause a reduction in survival of juvenile steelhead and spring-run Chinook salmon due to entrainment and increased predation at the diversion headworks. This potential increase in entrainment would be eliminated if the YCWA installed a fish screen meeting DFG and NMFS screening criteria prior to the implementation of this program.

Results of model simulations for changes in flows in the lower Yuba River for the reach from Englebright Dam to Daguerre Point Dam show that during many summer months, flows would be higher with the Wheatland Project due to increased storage releases from Englebright Reservoir for the additional irrigation diversion deliveries downstream. Flows throughout the river during the winter would be somewhat lower with the Wheatland Project during some occasions. This reduction in flows would occur because of delay or reduction in spill amounts caused by lower storage levels, which, in turn, are the result of increased summer releases (YCWA 2002).

For the reach below Daguerre Point Dam, the Wheatland Project may result in a reduction in flows when flows would otherwise be above the minimum instream flow requirements, either because of power releases or uncontrolled flows. Changes in flow are not expected to occur if flows are already at or near the minimum instream flow requirement (YCWA 2002).

The changes in flow levels associated with implementation of the Wheatland project may be of sufficient magnitude, timing, or duration to adversely affect critical habitat and listed salmonids in the lower Yuba River. However, NMFS believes that it is likely that the benefits of increased flows in the primary spawning and rearing reaches above Daguerre Point Dam during certain periods could offset the adverse impacts to salmonids of reduced flows in the lower reaches by providing increased habitat values and reduced water temperatures in the upstream reaches during the summer and fall irrigation season. We therefore expect that the effects of potential changes in stream flows associated with the proposed Wheatland project would not cause a reduction in survival of adult steelhead or spring-run Chinook salmon, nor will it cause a net reduction in the quality of critical habitat within the Yuba River. However, the expected 40 percent increase in entrainment at the South Yuba-Brophy diversion is expected to cause a reduction in survival of juvenile steelhead and spring-run Chinook salmon in the Yuba River.

VII. INTEGRATION AND SYNTHESIS

The primary activities that make up the Corps' proposed action of operating Englebright and Daguerre Point Dam have not changed significantly since the issuance of the 2002 BO. Those changes that have occurred in the Corps' operations and in the interrelated and interdependent actions on the lower Yuba River have generally involved improvements to dam operations and habitat conditions, intended to improve conditions for listed salmonids and reduce the adverse effects associated with the Corps' operations. The baseline conditions and cumulative effects have also not undergone significant change since the 2002 analysis was conducted. Improved monitoring abilities at Daguerre Point Dam have provided adult spring-run Chinook salmon population estimates much larger than the preliminary estimates that were used in the 2002 analysis.

Given these improved conditions and improved monitoring capabilities, it is very unlikely that the continuation of the Corps' current operations for an additional year, while a full analysis of the Corps' long-term operations is being conducted, would cause an appreciable reduction in the likelihood of survival and recovery of Central Valley Spring-run Chinook salmon and Central Valley steelhead in the Lower Yuba River or throughout their respective ESU and DPS.

VIII. CONCLUSION

After reviewing the current status of the threatened Central Valley spring-run Chinook salmon and Central Valley steelhead, the environmental baseline for the action area, the effects of future operations of Englebright Dam and Daguerre Point Dam and all other cumulative effects, it is NMFS' biological opinion that operations of Englebright Dam and Daguerre Point Dam on the Yuba River over the next 1-year period, are not likely to jeopardize the continued existence of these species, and are not likely to destroy or adversely modify designated critical habitat for these species.

IX. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, 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 NMFS as an act which 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 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 ESA provided that such taking is in compliance with the terms and conditions of 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 permits issued or project descriptions, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activities covered by this incidental take statement. If the Corps 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 Corps must report the progress of the action and its impact on the species to NMFS as specified in this incidental take statement (50 CFR §402.14(I)(3)).

A. Amount or Extent of Take

NMFS cannot, using the best available information, specifically quantify the anticipated incidental take of individual Central Valley spring-run Chinook salmon and Central Valley steelhead because of the variability and uncertainty associated with the population size of each species, annual variations in the timing of migration, individual habitat use within the project area, and uncertainties regarding meteorological conditions, water storage conditions and the annual variability in water management practices by upstream entities. However, it is possible to designate ecological surrogates for the extent of take anticipated to be caused by the project, and to monitor those surrogates to determine the level of take that is occurring. The three most appropriate ecological surrogates for the extent of take caused by the project are the flow releases from Englebright Dam, the availability of spawning gravel below Englebright Dam and the maintenance of clear passage through the ladders on Daguerre Point Dam.

The analysis of the effects of the proposed project anticipates that the operation of the new full flow bypass on Englebright Dam will prevent large flow fluctuations in the lower Yuba River which exceed those authorized in the FERC license for the Yuba Project (FERC license # 2246). The analysis also anticipates that a pilot gravel injection below Englebright Dam will be implemented in 2007, injecting at least 500 tons of appropriately sized spawning gravel into the river. Finally, the analysis anticipates that the ladder exits on Daguerre Point Dam will be kept clear of sediment and that a clear channel will be maintained from the ladder exits to the main channel of the river. If these ecological surrogates are not met/maintained during the 1-year time

period covered by this incidental take statement, the proposed project will be considered to have exceeded anticipated take levels, triggering the need to reinitiate consultation on the project.

B. Effect of the Take

NMFS has determined that the level of take resulting from implementation of the proposed project over the next 1-year period is not likely to jeopardize the continued existence of Central Valley spring-run Chinook salmon or Central Valley steelhead, and is not likely to destroy or adversely modify designated critical habitat for these species.

C. Reasonable and Prudent Measures

Pursuant to section 7(b)(4) of the ESA, the following reasonable and prudent measures are necessary and appropriate to minimize take of Central Valley spring-run Chinook salmon and Central Valley steelhead:

1. The Corps, in cooperation with the University of California, Davis and the Anadromous Fish Restoration Program, shall implement the proposed pilot gravel injection project below Englebright Dam within 1 year of the issuance of this biological opinion.

X. REINITIATION OF CONSULTATION

This concludes formal consultation on the action(s) outlined in the March 24, 2007, request for consultation received from the Corps. 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 or critical habitat in a manner or to an extent not considered in this draft 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 draft 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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