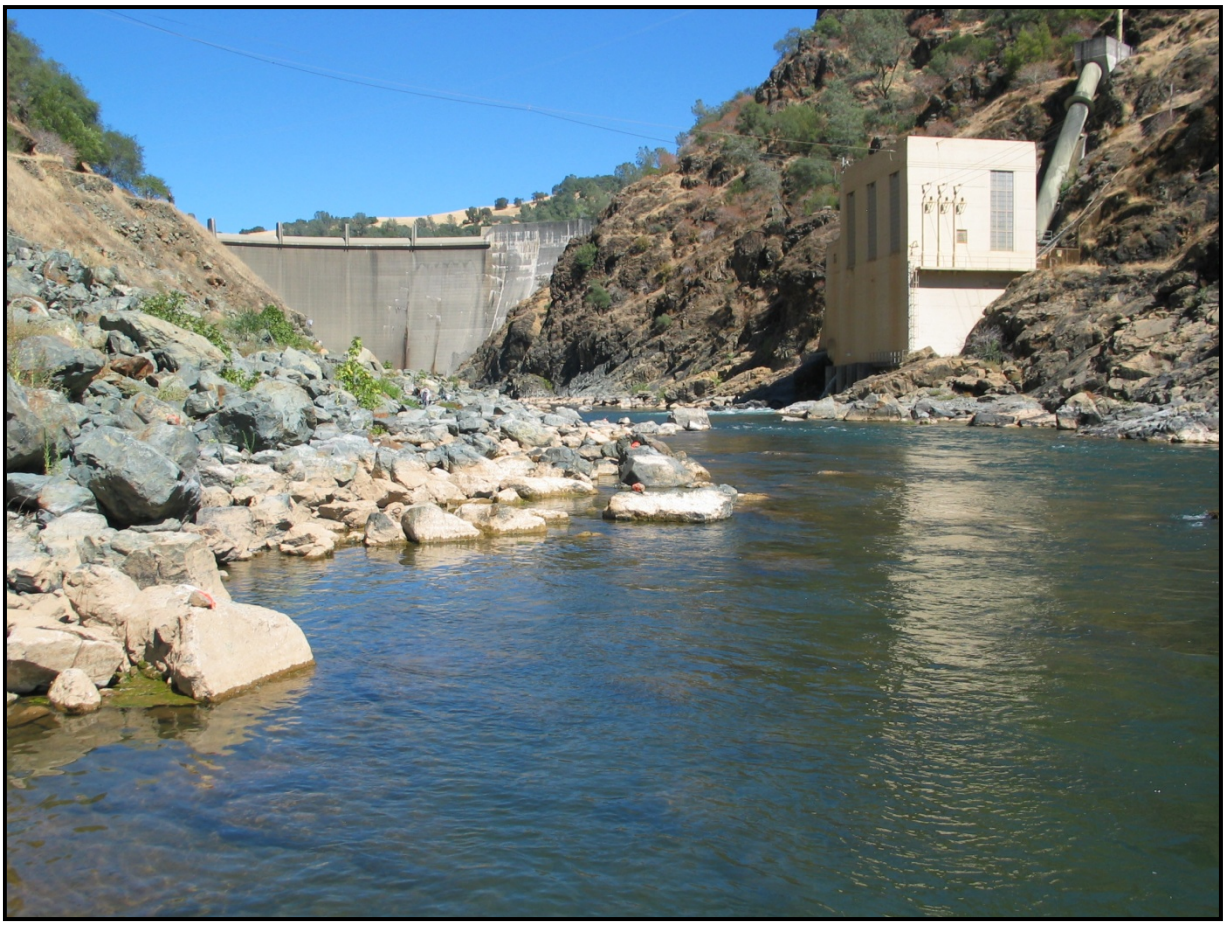
LOWER YUBA RIVER GRAVEL AUGMENTATION PROJECT

YUBA AND NEVADA COUNTIES, CALIFORNIA

FINAL SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

July 2013



US Army Corps
of Engineers ®
Sacramento District

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DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
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REPLY TO
ATTENTION OF

Environmental Resources Branch

FINDING OF NO SIGNIFICANT IMPACT
Lower Yuba River Gravel Augmentation Project
Yuba and Nevada Counties, California

The U.S. Army Corps of Engineers, Sacramento District, has determined that implementing the proposed gravel augmentation project on the Lower Yuba River, immediately below Harry L. Englebright Dam and Reservoir for a third year, would have no significant effects on the quality of the human environment. The project area is located in the steep Lower Yuba River canyon off Highway 20, about 23 miles east of Marysville, California, in the Englebright Dam Reach. Project activities would include placing 5,000 short tons of a heterogeneous mix of gravel and cobble directly into the Lower Yuba River channel below Englebright Dam using a gravel sluicing method.

The proposed action is a conservation measure to help improve habitat above Daguerre Point Dam in the area known as the Englebright Dam Reach. Implementation of a gravel augmentation plan would improve the overall function of the habitat of the Lower Yuba River by providing spawning gravel to key areas that have been designated as critical habitat for the Central Valley spring-run Chinook salmon *(Oncorhynchus tshawytscha)* and the Central Valley steelhead (*O. mykiss)*.

A 2013 Supplemental Environmental Assessment (Supplemental EA) was prepared to evaluate the potential effects to natural and cultural resources in the proposed project area. The EA was circulated for a 15 day public review period from June 20 – July 5, 2013. Based on the evaluation of potential effects described in the Supplemental EA, I have determined that the proposed gravel injection project would have no significant adverse effects on existing resources including special status species, fish and wildlife, vegetation, air and water quality, and cultural resources. No additional environmental documentation is required, and the project activities may proceed as proposed.

11 JUL 13
Date

Braden G. LeMaster, P.E.
Lieutenant Colonel, U.S. Army
Acting District Commander

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1.0 Purpose and Need for Action

Englebright and Daguerre Point Dams play a crucial role in protecting the downstream region from being overwhelmed by sedimentary mining waste debris still being eroded off hillsides and stored in long sections of the channel network upstream. Most of the active Lower Yuba River also still has tens of millions of cubic yards of sedimentary mining waste debris in it that pre-date the dams and are still being re-worked as part of a highly dynamic, meandering gravel-bed river. However, the reach between Englebright Dam and the confluence with Deer Creek was almost devoid of river-rounded gravel and cobble necessary for salmon spawning, until the U.S. Army Corps of Engineers (Corps) implemented a gravel augmentation program in 2007 . In particular, spring-run Chinook salmon that historically went far upstream would substantially benefit from a gravel augmentation program below Englebright Dam. However, this critical reach is in a narrow canyon that is difficult to access and manage, let alone place thousands of tons of coarse sediment into (Pasternack 2010).

The purpose of the proposed gravel augmentation project is to place suitable-sized spawning gravel within Englebright Dam Reach (EDR) of the Lower Yuba River. The proposed action is a conservation measure that would also satisfy the Reasonable and Prudent Alternative 4 Gravel Augmentation Program, GAP1 included in the February 29, 2012 Biological Opinion (BO) prepared by National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.C. 1531 et seq.). Additionally, the Corps proposed gravel augmentation as a conservation measure in the January 2012 Biological Assessment.

1.1 Background

The Lower Yuba River, downstream of Harry L. Englebright Dam and Reservoir (Englebright), has experienced extensive sediment deposition as a result of the hydraulic gold mining that occurred in the watershed during the mid- to late 1800s. An estimated 685 million cubic yards of mining debris was washed out of the mountains and into the Yuba River (Hagwood 1981). As the sediment migrated downstream, the river bed rose, causing extensive flooding in the Marysville area. To control this sediment movement, the California Debris Commission constructed Daguerre Point Dam in 1906 and Englebright in 1941.

Since its construction, Englebright has continued to fulfill its primary purpose of debris control with containment of 17,750 acre-feet of sediment (Chiles 2003). The elimination of the upstream supply of sediment, however, has lead to progressive degradation of the downstream channel below Englebright, at least as far downstream as Parks Bar, where the Highway 20 (Plates 1 – 2) bridge footings have been exposed (Musseter Engineering, Inc. 2000). Lack of sediment input and gravel loss within this reach of the Lower Yuba River have reduced the availability of quality spawning gravel for the Central Valley steelhead (*Oncorhynchus mykiss*) and spring-run Chinook salmon (*Oncorhynchus tshawytscha*).

Below Parks Bar, sediment sources from tributary input; gravel entrained from bars, piles of dredger tailings, and hill slopes; and gravel existing in the channel bed continue to provide large areas of suitable spawning habitat (Moir 2006). However, without additional gravel delivery, the existing gravel supply in the bed and usable gravel stored in bars will decrease as it is gradually transported downstream, leading to a net deficit of spawning-caliber sediment.

In 2007, 500 short tons of gravel was injected into the river as a pilot study to determine how frequently the gravel is mobilized in the reach. The results of the study contributed to the development of the current gravel augmentation injection plan (GAIP) for the project. In 2011, the Corps placed an additional 5,000 short tons of gravel into the river, however the augmentation was not sufficient to achieve the specific conditions required for the spawning riffle determined by the GAIP. Eventually the gravel moved downstream and created high quality spawning habitat outside of the project area. Monitoring results from 2011-2012 recommended an additional injection of 5,000 short tons of gravel. This second injection of 5,000 short tons was completed during the summer of 2012. To date, a total of 10,500 short tons of gravel have been placed into the river reach with associated monitoring. The monitoring results have again shown that placement of additional gravel is still needed to achieve the target conditions of the GAIP.

1.2 Proposed Action

The Corps is proposing to place additional gravels in accordance with the existing GAIP in the summer of 2013, by placing 5,000 short tons of a heterogeneous mix of gravel and cobble (0.25 to 5.0 inches in diameter) directly into the EDR below Englebright Dam. The material would be monitored after the placement, adding to the understanding of the Lower Yuba River geomorphic processes. The information gathered from the monitoring of the placed gravel will allow the Corps to determine the quantity of additional gravel to be placed within the EDR below Englebright Dam in future years. The action described herein is identical to that described in the environmental assessment (EA) prepared in 2010 and a Supplemental EA prepared in 2012 with the exception of the dates of implementation, and the gravel mix specifications, which were changed slightly in the 2012 Supplemental EA. The Corps intends to develop a multi-year gravel placement plan for enhancing spawning riffle habitat for implementation beginning in 2014, and will prepare a separate EA later this year.

1.3 Location

The project area is located on the Lower Yuba River, starting at Englebright Dam (Yuba River mile 23.9) downstream to Daguerre Point Dam (Yuba River mile 11.4), in Yuba and Nevada Counties, California (Plate 1). The proposed gravel placement site is located 115 feet downstream of the Narrows II Powerhouse. This site is less than one-acre and would be confined to the river channel within the EDR, a 0.89-mile long bedrock reach starting at Englebright Dam and ending at the junction with Deer Creek, located in the steep Narrows Canyon off Highway 20, approximately 23 miles east of Marysville, California (Plates 2, 3, and 4).

1.4 Purpose and Scope of the Supplemental Environmental Assessment

The purpose of this Supplemental EA is to determine whether the proposed action would result in adverse effects on the environment that were not identified and disclosed in the 2010 or the 2012 Supplemental EA (2010, 2012 EA). The project as described in this EA is identical to that described in the 2010 and 2012 EA with the exception of the dates of implementation and the gravel mix specifications, which changed slightly in the 2012 EA.

1.5 Decision Needed

The District Engineer, the Commander of the Sacramento District of the Corps, must decide whether the proposed action described in this Supplemental EA qualifies for a Finding of No Significant Effect or whether an Environmental Impact Statement must be prepared to comply with the National Environmental Policy Act.

1.6 Project Authority

Harry L. Englebright Dam and Lake were authorized by the River and Harbor Act of 1935 (49 Stat. 1028) as a unit of the Sacramento River Debris Control Project. Construction of recreation facilities at Englebright Lake and provision of services to the public by concessionaire is in accordance with Section 4 of the Flood Control Act of 1944 (58 Stat. 887) and subsequent amendments. Daguerre Point Dam was authorized by the Rivers and Harbors Act of June 13, 1902 (H.D. No. 431, 56th Congress, 1st Session) as a part of the Yuba River Debris Control Project.

2.0 Alternatives

A GAIP for the EDR of the Lower Yuba River, CA was developed to thoroughly assess the results of the 2007 pilot gravel injection project (Corps 2007), analyze the monitoring data collected post-pilot project, and to assess methods and measures that could be utilized in the proposed gravel augmentation project. A GAIP has been drafted, which thoroughly documents a plan for implementing a gravel/cobble augmentation program below Englebright Dam. This plan addresses the biogeomorphic impact of the proposed project on the Lower Yuba River. With the exception of the date of implementation, and the gravel mix specifications, which changed slightly in the 2012 EA, the preferred alternative in this Supplemental EA is the same alternative from the 2010 and 2012 EAs.

2.1 No Action

The No-Action alternative serves as the environmental baseline against which the proposed action is compared. Under this alternative, the Corps would not implement the gravel augmentation project on the Lower Yuba River immediately downstream of Englebright. If no action is taken, the existing gravel supply in the stream bed and usable gravel stored in current bars would gradually decrease as it is transported downstream, leading to a net deficit of spawning caliber sediment.

There are currently several projects and programs, either in the planning stages or underway on the Lower Yuba River, that involve various efforts to improve conditions for anadromous fisheries. However, the existing geomorphic processes related to recruitment and transport of suitable spawning gravels below Englebright would essentially remain the same.

2.2 Gravel Sluicing (Preferred Alternative)

The preferred alternative consists of placing 5,000 short tons (18,518.52 cubic yards) of gravel and cobble directly into the Lower Yuba River channel near the Narrows I Powerhouse via gravel sluicing, which involves drawing water up from a source and into a flexible pipe, where gravel and cobble is added from the top to produce a water/ sediment slurry that is then piped down to a site for directed placement by one to two operators. Details of staging, gravel sizes, placement, and monitoring for the alternative are provided below. Project features are provided in Plate 4.

The gravel/cobble mixture would be monitored after placement within the EDR. The information gathered from the monitoring of the placed material will allow the Corps to determine if it will be necessary to place additional quantities of gravel within the Lower Yuba River channel below Englebright (Pasternack 2010).

2.2.1 Gravel Placement Process

The sluicing process involves drawing water up from a source (the reservoir) and into an 8-inch diameter "Yelomine" flexible pipe, where gravel and cobble is added from the top to produce a water, sediment slurry that is then piped down to a site for directed placement by one to two operators. The amount of water used to do the sluicing depends on the pipe and pump configurations, and is typically 1,000 to 1,500 gallons per minute, which is 2.23 to 2.34 cubic feet per second (cfs) (Pasternack 2010). The water pump would be located at the reservoir water's edge, to push the water uphill in a 6 to 8 inch pipe. The pump inlet would be screened to prevent aquatic fauna from being taken up into the pumping system.

This process is normally a five-person operation: one person would operate the water pump at the source, one, in a loader, would bring gravel to the feeder, one person would operate the feeder in order to prevent clogs and coordinate communications, and two at the end nozzle, directing gravel placement and to add pipe as needed to periodically move downstream. This approach

would have a minimal construction footprint; Plates 4 and 5 illustrate the project design and layout.

The rate of gravel placement via sluicing is approximately 100 to 300 short tons per day, all dependent upon how frequently the system clogs. This is slow relative to gravel placement by truck-mounted conveyor belt (approximately 500 short tons per day) or truck/front loaders (approximately 1,000 short tons per day) (Pasternack 2010). At an average rate of 150 short tons per day, it would take 33 days to place 5,000 short tons of gravel.

The approach that would be used with gravel sluicing is to start at the water's edge, build across the river, and then work downstream. At the outlet of the system, gravel would go into a rigid pipe supported by floating, air-filled barrels. The outlet would be manually directed to the placement point with the aid of ropes as needed. Using this approach, it is possible to place gravel according to a sophisticated design with few constraints.

The water intake pump system, which includes fish screening, would be positioned right on the water's edge, along the gravel road on the north side of the reservoir that runs close to the dam. From there, the water would be pumped in one or two 6 to 8-inch diameter pipes approximately 1,070-feet up the side of the road to the crest (Plate 4).

The pipes would go over the crest of the hill, and down the side of the paved road, approximately 300-feet towards the Narrows II powerhouse, until a point at which there is a noticeable slope break favorable to beginning the gravel addition to the pipe. At that location, a screened hopper on the north side of the road would receive sediment from a front loader, transferring the material the short distance from the stockpile. The loader operator would gently bounce the bucket to trickle the sediment into the hopper as the primary control on the flow rate; a hopper operator would be stationed there to ensure no blockages, clean out finger rocks as needed, and communicate conditions with other operation participants by radio.

Under the hopper, the gravel and water would join in a metal pipe that would then connect to the beginning of the 8-inch diameter, semi-flexible "Yelomine" pipe. This pipe would then run approximately 1,270-feet down the ditch on the north side of the road to the switchback. From that point, the pipe would go 264-feet straight down the grassy hillside to a terrace level, where an old roadbed and foot-trail are located. From that point, the pipe would make a straight line, 130 feet down to the water's edge near the upstream end of the gravel placement area (Plate 4).

2.2.2 Gravel and Cobble

The Anadromous Fish Restoration Program, a U.S. Fish and Wildlife Service (USFWS) program that is tasked by the Central Valley Project Improvement Act to make "all reasonable efforts to at least double natural production of anadromous fish in California's Central Valley streams on a long-term, sustainable basis" (USFWS 2010) has recommended gravel specifications to ensure that the placed gravel provide some usable spawning habitat and optimal egg survival rates for the salmonids within the Lower Yuba River. These specifications are showing in Table 1 (Pasternack 2012). This gravel would be obtained from a commercial

aggregate source located near the project site, within the Lower Yuba River watershed, and would arrive screened and pre-washed to the placement site.

The composition of the gravel mix was changed slightly in 2012 based on the results of the 2011 monitoring program (discussed in Section 2.2.6). Results from the 2012 monitoring program indicated the gravel mix for this year should remain the same as the mix from 2012. The mix will be monitored during the sluicing process to ensure that it meets the specifications described below.

TABLE 1. Gravel and Cobble Specifications for Salmonid Spawning and Egg Incubation.

Gravel Size (inches)	Percent Retained	Target % of Total Mix
3.5 to 5	30	30
1.25 to 3.5	80	50
3/4 to 1.25	88	8
1/2 to 3/4	96	8
1/4 to 1/2	100	4

2.2.3 Gravel and Cobble Placement Location

The selection of the specific location for focusing gravel and cobble location has been guided by constraints in powerhouse operations, potential benefits to the river, and feasible delivery methods. Powerhouse operations presently preclude gravel augmentation between Englebright Dam and the Narrows powerhouses. To get the most benefit and longevity from adding gravel to the river, the further upstream it is introduced, the better. To avoid having to fill the scour pool adjacent to the Narrows I facility, and yield riffle habitat for immediate spawning use with the least amount of initial gravel placement during a gravel sluicing operation, the placement should begin approximately 115-feet downstream of the end of the Narrows I powerhouse, where the maximum depth of the pool is under five-feet at 855 cfs of flow (Pasternack 2010).

2.2.4 Staging and Stockpiling

There would be one staging area for the project, located at the gravel turnouts along the paved access road to Narrows II. This area would be used primarily for vehicle parking and temporary storage of truck trailers loaded with gravel. The same turnouts would be used to stockpile the gravel; prior to the start of sluicing operations, the gravel would be stockpiled in the three parking/turnout areas at the overlook on the north side of the dam. This location is behind a locked gate and inaccessible to the public.

The likely truck haul route that would be used to deliver gravel from the commercial source to the project site would begin at the intersection of State Route 20 and Peoria Road, and

end on the Narrows II access road, at a bench downstream of, and level with, the top of Narrows II (Plate 2).

2.2.5 Work Schedule

The proposed work would be conducted from July 2013 through the end of August 2013. Work hours would be limited to normal workdays, from 8:00 a.m. to 5:00 p.m. Any work conducted past August 2013 will also conform to the same time frames, or as approved by the resource agencies.

2.2.6 Monitoring Program

Outflow release from the Narrows II powerhouse and spill flows over the top of Englebright would aid in transporting the gravel placed downstream within the upper Narrows reach of the Lower Yuba River. Gravel placed within the river would be monitored through the fall of 2013 and winter of 2014 by the Lower Yuba River Accord River Management Team for salmonid use, via protocol-level redds surveys.

Data from the monitoring program would be compared with hypothetical quantitative predictions based on the ecologic, geomorphic, and hydrodynamic conditions present at the placement site. Confirmation of predictions would relate to how much the channel would be affected and how long the effect would persist, coupled with the potential beneficial qualities of the changes induced, would allow optimization of a the long-term gravel augmentation program design with a more accurate cost/benefit analysis.

3.0 Affected Environment and Environmental Consequences.

3.1 Environmental Resources Not Considered in Detail

Initial evaluation of the potential effects of the alternatives indicated that there would not be any adverse direct, indirect, or cumulative effects on several resources due to the scale, scope, and schedule of the proposed action. Resources not discussed in detail include climate, geology and seismicity, land use, agriculture and prime and unique farm land, socioeconomics and environmental justice, esthetics, and vegetation and wildlife.

3.2 Soils, Topography, and Geomorphology

3.2.1 Existing Conditions, Effects, and Mitigation

The existing conditions would be the same as described in the 2010 and 2012 EA. The change in the project implementation date proposed in this Supplemental EA would not result in any new adverse effects. No additional mitigation would be required.

3.3 Hydrology and Water Quality

3.3.1 Existing Conditions, Effects, and Mitigation

The existing conditions would be the same as described in the 2010 and 2012 EA. The change in the project implementation date proposed in this Supplemental EA would not result in any new adverse effects. No additional mitigation would be required.

An updated 401 water quality certification application was posted on May 24, 2013 for a 21 day public review by the Regional Water Quality Control Board (CRWQCB).

3.4 Traffic

3.4.1 Existing Conditions, Effects, and Mitigation

The existing conditions would be the same as described in the 2010 and 2012 EA. The change in the project implementation date proposed in this Supplemental EA would not result in any new adverse effects. No additional mitigation would be required

3.5 Hazardous, Toxic, and Radiological Waste

3.5.1 Existing Conditions, Effects, and Mitigation

The existing conditions would be the same as described in the 2010 and 2012 EA. The change in the project implementation date proposed in this Supplemental EA would not result in any new adverse effects. No additional mitigation would be required

3.6 Aquatic Fauna

3.6.1 Existing Conditions, Effects, and Mitigation

The existing conditions would be the same as described in the 2010 and 2012 EA. The change in the project implementation date proposed in this Supplemental EA would not result in any new adverse effects. No additional mitigation would be required.

3.7 Special Status Species

3.7.1 Existing Conditions, Effects, and Mitigation

The existing conditions would be the same as described in the 2010 and 2012 EA. The change in the project implementation date proposed in this Supplemental EA would not result in any new adverse effects. No additional mitigation would be required.

3.8 Air Quality

3.8.1 Existing Conditions, Effects, and Mitigation

The existing conditions would be the same as described in the 2010 and 2012 EA. The change in the project implementation date proposed in this Supplemental EA would not result in any new adverse effects. No additional mitigation would be required.

3.9 Recreation

3.9.1 Existing Conditions, Effects, and Mitigation

The existing conditions would be the same as described in the 2010 and 2012 EA. The change in the project implementation date proposed in this Supplemental EA would not result in any new adverse effects. No additional mitigation would be required.

3.10 Noise

3.10.1 Existing Conditions, Effects, and Mitigation

The existing conditions would be the same as described in the 2010 and 2012 EA. The change in the project implementation date proposed in this Supplemental EA would not result in any new adverse effects. No additional mitigation would be required.

3.11 Cultural Resources

3.11.1 Existing Conditions, Effects, and Mitigation

The existing conditions would be the same as described in the 2010 and 2012 EA. The change in the project implementation date proposed in this Supplemental EA would not result in any new adverse effects. No additional mitigation would be required.

4.0 Growth-Inducing Effects

The change in the project implementation date proposed in this Supplemental EA would have no effect on population growth or densities.

5.0 Cumulative Effects

As discussed in the two previous EA's, the proposed gravel augmentation, in combination with past, present, and potential future actions, would likely contribute to the overall health and vigor of the watershed.

6.0 Compliance with Environmental Laws and Regulations

As disclosed in the 2010 EA, the proposed gravel augmentation would be compliant with the following environmental laws and regulations.

Bald Eagle Protection Act of 1940, as amended, 16 U.S.C. 668-668d, 54 Stat. 250.

Clean Air Act of 1972, as amended, 42 U.S.C. 7401, et seq.

Clean Water Act of 1972, as amended, 33 U.S.C. 1251, et seq.

Endangered Species Act of 1973, as amended, 16 U.S.C. 1531, et seq.

Executive Order 12989, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Executive Order 13112, Invasive Species.

Farmland Protection Policy Act, 7 U.S.C. 4201 et seq.

Fish and Wildlife Coordination Act of 1958, as amended, 16 U.S.C. 661, et seq.

Magnuson-Stevens Fishery Conservation and Management Act.

Migratory Bird Treaty Act of 1936, as amended, 16 U.S.C. 703 et seq

National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321, et seq.

National Historic Preservation Act of 1966, as amended.

Wild and Scenic Rivers Act, 16 U.S.C. 1271 et seq.

7.0 Agencies Consulted

The EA was prepared in consultation with the following USFWS and NMFS contacts.

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8.0 Public Notice

The 2013 draft Supplemental EA was circulated for 15 days to concerned agencies, organizations, and the public, as identified in Appendix E of the 2010 EA (40 CFR 1501.4(e)(1); 33 CFR 230.11). No comments were received.

9.0 Conclusions

The change in the project implementation date proposed in this Supplemental EA would not result in any new adverse effects or requirements for new mitigation from those disclosed in the 2010 and 2012 EA. Based on the findings presented in the two prior EA's and reconsidered in this Supplemental EA, the proposed gravel placement project would have no significant adverse effects on the quality of the human environment. The Corps has reviewed and evaluated the information in this Supplemental EA and determined that an EIS in not necessary. A FONSI has been signed and accompanies this 2013 final Supplemental EA.

10.0 List of Preparers

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Personal Communications

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Lee, Elizabeth 2013. California Environmental Protection Agency, Regional Water Quality Control Board, 401 Water Quality Certification Program. Phone and email correspondence with Brian Luke, Environmental Manager, U.S. Corps of Engineers, May 23, 2013. Subject: Amendment to the Approved November 2010, *Clean Water Act §401 Technically Conditioned Water Quality Certification for Discharge of Dredged and/or Fill Materials for the Englebright Dam Reach Gravel Injection Project (WDID#5A58CR00081).*

APPENDIX A

SECTION 401 - WATER QUALITY CERTIFICATION