DRAFT

ENVIRONMENTAL ASSESSMENT

STANISLAUS RIVER SALMONID SPAWNING GRAVEL ADDITION 2007

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
MID PACIFIC REGION
SACRAMENTO, CALIFORNIA

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INTRODUCTION

The Central Valley Project Improvement Act, section 3406 (b)(13) directs the Department of Interior to develop and implement a continuing program for the purpose of restoring and replenishing, as needed, salmonid spawning gravel lost due to the construction and operation of Central Valley Project dams, bank protection projects, and other actions that have reduced the availability of spawning gravel and rearing habitat in the Upper Sacramento River from Keswick Dam to Red Bluff Diversion Dam in the American and Stanislaus Rivers downstream from the Nimbus and Goodwin Dams, respectively. The program may include preventive measures, such as re-establishment of meander belts and limitations on future bank protection activities, in order to avoid further losses of instream and riparian habitat.

This project serves as the implementation of section 3406 (b)(13) in the Stanislaus River with the goal being to increase the availability of spawning gravel and rearing habitat for Stanislaus River Chinook salmon and steelhead trout. The Stanislaus River Fish Group rated the overall spawning habitat quantity and quality as unsuitable and rated spawning habitat restoration as a high impact activity to increase the salmon population.

The Bureau of Reclamation (Reclamation) and the California Department of Fish and Game (DFG) have replenished gravel in the Stanislaus River near Goodwin Dam in 1997, 1999, and 2000-2006.

PURPOSE AND NEED

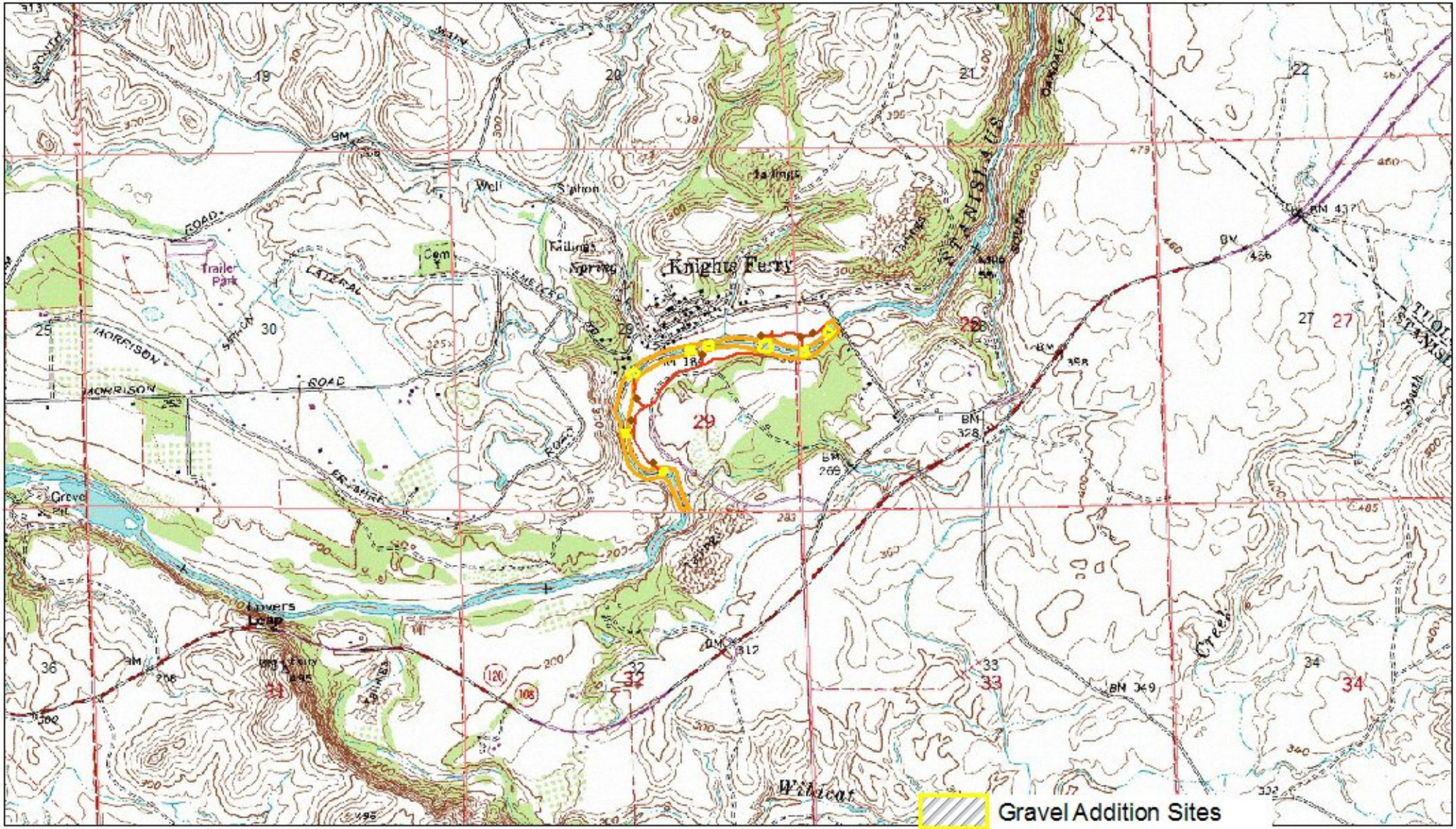
The purpose of the action is to replenish spawning gravel at existing and new restoration sites in the Lower Stanislaus River near Knights Ferry Bridge to increase and improve Chinook salmon, steelhead, and native rainbow trout spawning habitat. (See Figures 1 and 2). The need of the action derives from the declines of salmonid stocks due in part to loss of spawning habitat through curtailment of gravel recruitment due to blockage of the river channel by dams.

PROPOSED ACTION AND ALTERNATIVES

PROPOSED ACTION

Work would be conducted within a reach of the river that is 5,700 feet long. The actual gravel placement work would occur in a much smaller total reach of the river. The specific placement would cover up to approximately eight sites (created riffles) for a total reach length of placed gravel to be about 900 feet of the river within the 5,700 foot long reach. The acres of streambed to be affected would be approximately 1.7 acres over the life of the project.

Stanislaus River Salmonid Spawning Gravel Addition



project area on Kights Ferry Quad, T1S, R12E, S29 & 28

Stanislaus River Salmonid Spawning Gravel Addition

Work would start in the summer of 2007 and continue yearly up to 5 years as funding allows through the permitted period. Figure 2 shows the area where gravel could be added, stockpile areas, and the access staging routes. The cross hatch areas are specific potential locations that may shift to anywhere within the orange area. The amount of gravel to be added could be up to 5,000 cubic yards per year and 25,000 cubic yards over a five year period.

The method of addition would most likely be by front end loader. If access to a specific spot is difficult, Reclamation may potentially use the habitat builder system (gravel transported with water through a pipe). Gravel would be placed at intervals of one to a few years apart as the need is determined by ongoing monitoring of gravel conditions and fish use of the gravel. New gravel would be needed to replenish spawning gravel that washes downstream and is not replaced by upstream sources. The interval of gravel replacement at a particular site would depend on the river flows that occur. Gravel placement in this reach would continue as needed following the first placement.

The general timing window for instream work in the Stanislaus River as currently recommended by the National Marine Fisheries Service (NMFS) is June 30 to September 1 to cover both steelhead and Chinook salmon. Work mobilizing gravel and equipment to the sites could occur outside of this window, but all work in the water needs to be confined to this window. Occasionally exceptions to this period are granted by NMFS on a case by case basis based on fish presence and the nature of the project.

The approximate size distribution of gravel is as follows.

1. The gravel shall consist of hard, dense, and durable particles of river run, well rounded materials. The materials shall be processed to achieve the gradation limits specified below and washed to be free from fines. Crushed or angular pieces are not acceptable.
2. Spawning Gravel Gradations:
    a. Reasonably well-graded mix made using a ¼" screen on the bottom to approximate the limits shown in Table 1 - Mix Gradation. The D_{50} (median diameter of sample) of the mix should be between 1 inch and 1-1/2 inch. Refer to ASTM D 6913-04 for the standard test method regarding the gradation of soils.

b.

Table 1 - Mix Gradation

Screen Size (inch)	Percent Passing by Dry Weight
5	100
2	65 - 85
1	40 - 60
0.75	15 - 30
0.25	2-5
0.125	0-2
0.0625	0

3. Gravel shall be washed and have a cleanness value of 85 or higher based on CalTrans Test #227 (http://www.dot.ca.gov/hq/esc/ctms/CT_227.pdf).

Gravel would be obtained from private sources by contract and delivered to the site. If we find acceptable gravel sources along the river then they would be permitted separately. The estimated number of trucks running per day would be up to seven. The route to the sites would use the shortest route that meets the load requirements of the delivery trucks.

Staging areas would be located on U.S. Army Corps of Engineers Property and would be coordinated with the staff at the Stanislaus River Parks office in Knights Ferry who administers the land. Existing unimproved trails would be used by transport trucks to deliver gravel to a stockpile area. Stockpile areas would be located as near as possible to the river. As gravel is delivered to stockpile areas it would be picked up by front end loader and transported to the river. Stockpile areas would be generally about one half acre or less and would be placed in existing openings where ground disturbance would be minimized by working on existing dredger tailings or similar type of material. Construction specifications would prohibit any equipment in or near the river which might affect water quality. Project construction would be regularly monitored by DFG personnel to help insure environmental compliance.

Gravel would be placed using either front-end loaders (which is preferable) or a gravel pump system:

Front Ender Loader Method Description
Gravel would be added in accessible locations using front end loaders. This system is the lowest cost and provides the greatest ability to add the gravel in a specific desired configuration. Loaders would pick up a scoop load of gravel from the stockpile location near the placement site in the river. The loader would drive from the stockpile into the river and carefully dump the

gravel in a manner as to distribute it across the river bottom. Placement would proceed starting with the river access site and working out into the river from there. This would allow the loaders to drive on the newly placed gravel, thereby avoiding driving in overly deep water. The loader would distribute the gravel along the river bottom to create the hydraulic conditions necessary for salmonid spawning.

Gravel Pump Description
The "Habitat Builder", as it is termed, is basically a gravel pump system. There are two six-inch water pumps which Y into an eight-inch line. Gravel is fed into a hopper with a grizzly and vibrating plate attached. The gravel is then fed into the eight-inch line via the hopper and is directed to wherever it is to be placed. Barrels are used to support the discharge pipe on the water's surface, and help with the placement of the material.

This system is ideal in locations where leaving a minimal construction footprint is desired. The eight-inch "Yelomine" pipe is durable and fairly flexible and can be placed over the existing ground surface. Head-loss is a large concern with this system, so it needs to be placed in such a manner so that the pipe continuously maintains a downward slope. Clogging is an area of concern, although recent modifications have reduced this problem. The water pumps need to be within 30 vertical feet of a water source in order to have sufficient head to pump the water. We used this system in 2004 to place gravel in a section of Goodwin Canyon that loaders could not access. This system works well under the right conditions. The cost is higher than a front end loader but it provides access through steep terrain or riparian vegetation where driving to a site would cause undesirable ground disturbance or be unsafe.

Description of best management practices to avoid/minimize impacts to waters.

Gravel placement would occur in the late summer/early fall to avoid times when steelhead or Chinook eggs, the life stages most sensitive to such activities, could be incubating. Snorkel observations have revealed that during past gravel placement projects at this site and instream work at other sites, trout have been attracted by the activity and feed heavily just downstream of the site where food particles are often abundant. This area has a high concentration of trout year round, but the turbidity does not appear to be substantial enough to negatively affect the fish in the river at the time as they are attracted to the sites.

During gravel placement some turbidity would occur as the gravel is placed into the river. Turbidity would extend downstream to at least the first slow water area about two miles downstream and may extend down over six miles to Orange Blossom Bridge, depending on flows. During past gravel placement projects near Goodwin Dam, turbidity has sometimes been faintly visible four miles downstream at Knights Ferry. Past gravel placement projects have demonstrated that the turbidity at the site would end within less than one hour (generally within five minutes) following completion of instream activities. The timing window for instream work would avoid times when steelhead or Chinook eggs, the life stages most sensitive to such

activities, could be incubating. Snorkel observations have revealed that during past gravel placement projects in the Stanislaus River trout have been attracted by the activity and feed heavily just downstream of the site where food particles are often abundant. This area has a high concentration of trout year round, but the turbidity does not appear to be substantial enough to negatively affect the fish in the river at the time as they are attracted to the sites.

The spawning gravel would be either dry screened or washed with water prior to placing it in the river. This decreases the amount of turbidity created as the gravel as placed. If the route used by the loaders to access the river consists of material that introduces turbidity then the spawning gravel material would be spread over the loader route to minimize any sediment introduction.

NO ACTION ALTERNATIVE

Gravel would not be placed in the Stanislaus River near Knights Ferry Bridge, leaving the stream in poor condition as spawning habitat for salmonids. Further declines in habitat quality would be likely, leading to eventual loss of nearly all spawning activity in this reach.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Water Quality

Turbidity downstream from the project site would be kept to a minimum during construction. Gravels to be added would be washed and sorted gravels of fairly large dimensions. Only a temporary increase in turbidity is expected. River flows at the time of construction would be low enough (approximately 200 to 500 cfs.) to allow disturbed fine sediment to quickly settle out of the water column.

Aquatic Biota

Steelhead

Historically, steelhead distribution extended into the headwaters of the Stanislaus River (Yoshiyama et al. 1996). Dam construction and water diversion for mining and irrigation purposes began during and after the Gold Rush. Goodwin Dam, constructed in 1913, was probably the first permanent barrier to significantly affect Chinook salmon access to upstream habitat. Goodwin Dam had a fishway, but Chinook could seldom pass it. Steelhead may have been similarly affected. The original Melones Dam, completed in 1926, permanently prevented access to upstream areas for all salmonids. Currently, steelhead can ascend over 58 miles up the Stanislaus River to the base of Goodwin Dam. Although steelhead spawning locations are unknown in the Stanislaus, most is thought to occur upstream of the City of Oakdale where gradients are slightly higher and more riffle habitat is available.

The Fishery Foundation of California (Kennedy and Cannon 2002) has monitored habitat use by juvenile steelhead/rainbow since 2000 by snorkeling seven sites from Oakdale to Goodwin Dam every other week. Steelhead fry generally begin to show up in late March and April at upstream sites, with densities increasing into June and distribution becoming more even between upstream and downstream sites through July. Beginning in August and continuing through the winter months, densities appeared highest at upstream sites (Goodwin to Knights Ferry). Age 1-plus fish were observed throughout the year with densities generally higher at upstream sites (Goodwin to Knights Ferry). Low densities were observed from late December until April. It is unknown whether fish leave the system in December or if, with the cooler winter water temperatures, they were less active and more concealed during the day.

Since 1993, catches of juvenile steelhead/rainbow in RSTs indicate a small portion of the Stanislaus River steelhead/rainbow population displays downstream migratory characteristics at a time that is typical of steelhead migrants elsewhere. The capture of these fish in downstream migrant traps and the advanced smolting characteristics exhibited by many of the fish indicate that some steelhead/rainbow juveniles might migrate to the ocean in spring. However, it is not known whether the parents of these fish were anadromous or fluvial. Resident populations of steelhead/rainbow in large streams are typically fluvial (they migrate within freshwater), and migratory juveniles look much like smolts. Further work is needed to determine the parental life histories that are producing migratory juveniles. A weir has been operated for four years in the Stanislaus River near Riverbank, in part to determine migration characteristics of adult steelhead/rainbow and allow scale samples to be taken to determine the extent of anadromy.

Smolts have been captured each year since 1995 in rotary screw traps at Caswell State Park and at Oakdale (Demko et al. 2000). Captures occurred throughout the time the traps were run, generally January through June. Most fish were between 175 and 300 mm at the Caswell site, with only 6 fish in 7 years less than 100 mm. Larger numbers of fry were captured upstream at Oakdale. During 2001, 33 smolts were captured at Caswell and 55 were captured at Oakdale, the highest catch of all years. The higher catch in 2001 was likely due to more fish present and not better trap efficiencies (Doug Demko, personal communication, 2001). Trap efficiencies for Chinook in 2001 ranged from 5 to 19 percent at Caswell and from 1 to 30 percent at Oakdale and were generally correlated with flow. RSTs are generally not considered efficient at catching fish as large as steelhead smolts.

Genetic analysis of rainbow trout captured below Goodwin Dam shows that this population has closest genetic affinities to upper Sacramento River steelhead (NOAA Fisheries 1997b).

Large-scale loss of spawning and rearing habitat has been attributed as having the single greatest effect on steelhead distribution and abundance (McEwan and Jackson 1996). Historically, steelhead spawned and reared primarily in mid- to high-elevation streams where water temperatures remained suitable all year. Yoshiyama et al. (1996) estimated that 82 percent of the historical Chinook salmon spawning and rearing habitat has been lost. The percentage of habitat loss for steelhead is presumably greater, because steelhead were more extensively distributed than Chinook salmon. Steelhead could have used numerous smaller tributaries not used by Chinook salmon due to the steelhead's upstream migration during periods of higher flow, superior leaping ability, ability to use a wider variety of spawning gravels, and ability to pass through shallower water.

Chinook Salmon

The first fall-run Chinook salmon adult migrants entering the Stanislaus River are typically observed in late September. The majority of spawning occurs from October through December. Eggs are laid in nests called redds, and need cool water and good water flow (to supply oxygen) to survive. Once spawning is completed, adult Chinook salmon die.

Young salmon typically begin to emerge from the redds in mid-December and have an average fork length of approximately 35 mm. Fry (<45 mm) and parr (45 mm to 79 mm) may spend time rearing within riverine and/or estuarine habitats including natal tributaries, the San Joaquin River, non-natal tributaries to the San Joaquin River, and the Delta. In general, emigrating juveniles that are younger (i.e., smaller) reside longer in estuaries such as the Delta (Kjelson and others 1982; Levy and Northcote 1982; Healey 1991). The brackish water areas in estuaries moderate the physiological stress that occurs during parr-smolt transitions. In the Stanislaus River, the majority (>95%) of fall-run Chinook juveniles typically emigrate from the river and enter the San Joaquin River and Delta as fry, parr, or smolts from January through May. Although fry and parr can enter the Delta as early as January and as late as June, their length of residency within the Delta is unknown but probably lessens as the season progresses into the late spring months (CDFG 1998a).

After a brief, or sometimes relatively extended, residence time within estuarine areas, juvenile salmon continue their migration to sea where they spend anywhere from one to five years maturing (average 3-4 years) before returning to their natal streams to spawn (Healey 1991).

Chinook dig a redd (nest) and deposit their eggs within the stream sediment where incubation, hatching, and subsequent emergence take place. Spawning typically occurs in gravel beds that are often located at the tails of the holding pools (USFWS 1995, CDFG 1998b). Chinook salmon generally spawn in water from one to three feet deep, however, spawning can occur in depths from 0.5 to greater than 20 feet deep (CDFG 1998b). Other criteria include water velocities of 1 to 3.5 feet per second, a gradient of 0.2 to 1.0 percent, substrate from 0.5 to 10 inches dominated by 1- to 3-inch cobble, and escape cover (CDFG 1998b; Puckett and Hinton 1974). The upper preferred water temperature for spawning adult Chinook salmon has been identified as 55°F (Chambers 1956) to 57°F (Reiser and Bjornn 1979) which is similar to the upper preferred water temperature for migration (56°F)

The Chinook salmon escapement estimate in the Stanislaus River has averaged 3,318 fish since 1990 and ranged from 250 to 8,500. The area around Knights Ferry is a high density spawning area. Every high quality spawning riffle in the upper river (roughly Lover's Leap and above) gets used extensively for spawning.

Existing Stanislaus River Conditions and Effects on Fall-run Chinook Spawning (excerpt from Stanislaus Fisheries Summary)

Based on several spawning surveys and environmental studies, there appear to be several factors

that may influence fall-run Chinook spawning and spawning habitat in the Stanislaus River including limited spawning gravel supplies; substrate armoring and embeddedness; and increased turbidity levels. Spawning habitat has been altered as a result of reduced gravel recruitment due to gravel mining and blockage of coarse sediments and reduced sediment transport flows caused by dams, and changes in streamside land use.

Natural riverine habitats are created and maintained by geomorphic and hydrologic processes that result from the interactions between flowing water and sediment supply, and from the secondary influences of large woody debris (McBain and Trush 2003). It is the structure, complexity, and connectivity of these habitats combined with other factors, such as land use and species introduction, which regulate species abundance and distribution. These processes have been substantially altered in the Stanislaus River by anthropogenic activities such as gravel and gold mining; removal of large woody debris; agricultural and urban development; land, water, hydroelectric, and flood control project development. The Stanislaus River is considered to have the most degraded channel complexity of the San Joaquin tributaries (CALFED 1999).

Instream gravel and gold mining peaked during the early 1940s (Frymire, personal communication, 2000) and ceased sometime prior to 1980 (exact dates are unknown because gravel miners are not required to maintain records). During this time, approximately 40% of the spawning habitat was excavated from the 11.4-mile reach between Goodwin Dam (RM 58.3) and the Orange Blossom Bridge (RM 46.9; Appendix 2) which is where most Chinook salmon currently spawn in the lower Stanislaus River (Figure 1). There are only a few sections of the river between Knights Ferry (RM 54) and the Orange Blossom Bridge that were not mined. The riffles in the unmined areas were usually well used by spawning salmon in fall 1994 and 1995 compared to the riffles that remain in the mined reaches. One possible explanation is that although riparian encroachment since the construction of New Melones Reservoir in 1979 and pre-1970 dike construction have accelerated the scour of gravel from spawning riffles, gravel that is scoured from the riffles in the unmined reaches provides recruitment for the downstream riffles. Over time, the upstream most riffles in the unmined reaches typically became degraded whereas the downstream riffles usually contain abundant gravel and still function as high quality spawning and rearing habitat. Furthermore, there is a small amount of remaining floodplain habitat in these reaches that probably helps remove fines from the active channel and minimize the rate of scour. Conversely, the riffles in the mined reaches are typically isolated between ditches or ponds, and so the gravel is scoured away during high flows due to the absence of gravel recruitment.

Flow regulation, combined with direct habitat degradation by dredging and instream mining activities, have disrupted the geomorphic and hydrologic processes responsible for creating and maintaining natural riverine habitats downstream. Upstream dams have blocked nearly the entire coarse sediment supply to the lower river (Kondolf and others 2001). The limited amount of coarse sediments entering the river from areas below Goodwin Dam are often captured in the dredged channels and instream mine pits that exists in the lower river which further limits gravel recruitment to areas downstream from these dredged areas. As a result of decreased coarse sediment supplies due to the dams and to the capture of sediments by dredged areas, the lower

river channel has become narrower and deeper in some areas while wider and shallower in others (Kondolf and others 2001) and many of the gravel beds have become armored (i.e., consist of large gravel, cobbles, and boulders that are too heavy for the current to move) and smaller as the gravel has gradually eroded away.

Additionally, the management of the upstream reservoirs has reduced the frequency of high flows downstream from Goodwin Dam. In natural riverine ecosystems, flooding increases the rate that gravel is scoured from riffles while fines are deposited on the floodplain and relatively clean gravel is deposited on the riffles during the descending limb of the hydrograph (Kondolf and others 2001; McBain and Trush 2003). If this process is impaired and fines fill the interstitial spaces in the gravel beds, the bed becomes more resistant to mobilization during high flows and the habitat can become unsuitable for both invertebrates and incubating salmonid eggs (McBain and Trush 2003).

Conditions for steelhead spawning in the Stanislaus River are about the same as for Chinook salmon.

Gravel Placement Effects on Steelhead and Chinook Salmon

The placement of gravel would increase the amount of and improve existing salmon and trout spawning habitat. The area around Knights Ferry has had gravel placed in the past at the Knights Ferry road bridge. The area still gets high spawning use but some gravel has washed downstream. Additional gravel at this site would further improve spawning. Gravel at the other locations displayed in the site map will also increase the limited amount of spawning habitat. During gravel placement some turbidity would occur as the gravel is placed into the river. Turbidity would extend downstream to at least the first slow water area about two miles downstream and may extend down over six miles to Orange Blossom Bridge, depending on flows. During past gravel placement projects near Goodwin Dam, turbidity has sometimes been faintly visible four miles downstream at Knights Ferry. Past gravel placement projects have demonstrated that the turbidity at the site would end within less than one hour (generally within five minutes) following completion of instream activities. The timing window for instream work would avoid times when steelhead or Chinook eggs, the life stages most sensitive to such activities, could be incubating. Snorkel observations have revealed that during past gravel placement projects in the Stanislaus River trout have been attracted by the activity and feed heavily just downstream of the site where food particles are often abundant. This area has a high concentration of trout year round, but the turbidity does not appear to be substantial enough to negatively affect the fish in the river at the time as they are attracted to the sites.

The placement of gravel would occur from June 30 to September 1, before the spawning season and after the incubation period for steelhead trout and salmon.

Delta Smelt

Delta smelt, a Federally threatened species, occur in the Sacramento/San Joaquin Delta, downstream of the mouth of the Stanislaus River, generally below Mossdale. Water flowing through the project area eventually flows into habitat where delta smelt live. The spawning

gravel placement site is more than 40 miles upstream from the mouth of the San Joaquin River. By the time water reaches the mouth any change in water quality or quantity due to the gravel addition would be undetectable. The water quality entering the San Joaquin from the Stanislaus is better than that present in the San Joaquin and in the rest of the delta where delta smelt live. No effect on delta smelt due to this project would occur.

Terrestrial Biota

The project occupies an area of the Stanislaus River that consists of a thin strip of riparian vegetation along each bank, with the dry, upland vegetation consisting of non-native grasslands and blue oak woodland or savannah. Riparian vegetation species primarily consist of valley oaks (*Quercus lobata*), Fremont cottonwoods (*Populus fremontii*), white alders (*Alnus rhombifolia*), and several willow species. At the southwest end of the project, a small seasonal channel becomes dry in summer months, creating a seasonal wetland.

Some of the access roads shown on Figure 2 have narrow sections of willows that would be cut out of the way right next to the river. A total of 0.08 acres of willows would be removed. The second site from the top has an oak tree, approximately 3-inches diameter, that would need to be removed.

Stockpiling gravel would not affect any habitat as these areas have been previously disturbed with compacted soil.

There is a wetland to the east of the access road to the downstream sites but the project would not have any impacts to it because the road is already there and being used by vehicles.

Threatened and Endangered Species

FWS sent Reclamation a list of threatened and endangered species which may occur in the vicinity of the proposed action. (Appendix 1). Table 2 shows the results of a search of the California Natural Diversity Data Base for occurrences of State-listed, candidate, and sensitive species, as well as Federal-listed species.

Table 3 shows the Federal and State-listed threatened and endangered species, effects determination, and impact discussions. There would be no adverse impacts to any listed, proposed, or candidate Federal species, as the table indicates, and as discussed above in the Aquatic Biota section.

Threatened and endangered fish are discussed in detail in the Aquatic Biota section.

No threatened or endangered terrestrial species were observed. No sensitive plants were found within the project area. There is the potential for elderberries, a host plant for Valley Elderberry Longhorn Beetle (VELB) within the project area. However, none were found at the access roads or stockpile areas. One plant was next to the Army Corps parking lot at the gravel site near

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Common Name - Portrait
Species Occurrences for Oakdale and Knight's Ferry Quads

Table 2. California Natural Diversity Data Base Search Results

	Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS/R-E-D
1	*Calicina breva*	ILARAU8020			G1	S1	
2	Button's Sierra sideband (snail) *Monadenia mormonum buttoni*	IMGASC7071			G1G2T1	S1	
3	California tiger salamander *Ambystoma californiense*	AAAAA01180	Threatened		G2G3	S2S3	SC
4	Colusa grass *Neostapfia colusana*	PMPOA4C010	Threatened	Endangered	G3	S3.1	1B/2-3-3
5	Hartweg's golden sunburst *Pseudobahia bahiifolia*	PDAST7P010	Endangered	Endangered	G2	S2.1	1B/2-3-3
6	Northern Hardpan Vernal Pool	CTT44110CA			G3	S3.1	
7	Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010			G4T3T4	S2S3	SC
8	beaked clarkia *Clarkia rostrata*	PDONA050Y0			G2	S2.1	1B/2-1-3
9	burrowing owl *Athene cunicularia*	ABNSB10010			G4	S2	SC
10	dwarf downingia *Downingia pusilla*	PDCAM060C0			G3	S3.1	2/1-2-1
11	tricolored blackbird *Agelaius tricolor*	ABPBXB0020			G2G3	S2	SC
12	vernal pool tadpole shrimp *Lepidurus packardi*	ICBRA10010	Endangered		G3	S2S3	
13	western mastiff bat *Eumops perotis californicus*	AMACD02011			G5T4	S3?	SC
14	western pond turtle *Emys (=Clemmys) marmorata*	ARAAD02030			G3G4	S3	SC
15	western spadefoot *Spea (=Scaphiopus) hammondii*	AAABF01030			G3	S3	SC
16	yellow-breasted chat *Icteria virens*	ABPBX24010			G5	S3	SC

Table 3. Federal and State Listed and Federal Candidate Species for the Stanislaus River Salmonid Spawning Gravel Addition					
Common and Scientific Names	**Legal Status[1]**		**Determination and Summary of Analysis**		
	Federal	**State**	**Species Effects Determination**	**Critical Habitat Effects Determination**	**Summary of Reasons for Effects Determination**
Listed Species					
Branchinecta conservation Conservancy fairy shrimp	E		No effect	No critical habitat	Occurs only in vernal pools. There are no vernal pools near the project site.
Branchinecta lynchi Vernal pool fairy shrimp	T		No effect	No critical habitat	Occurs only in vernal pools. There are no vernal pools near the project site.
Desmocerus californicus Dimorphus valley elderberry longhorn beetle	T		No effect	No critical habitat	No elderberry shrubs, the host plant for the valley elderberry longhorn beetle, were found near access roads or staging areas.
Lepidurus packardi vernal pool tadpole shrimp	E		No effect	No critical habitat	Occurs only in vernal pools. There are no vernal pools near the project site.
Hypomesus transpacificus delta smelt	T		No effect	No critical habitat	Occurs in Sacramento/San Joaquin Delta, more than 40 miles downstream from the project site. No water quality impacts to the Delta.
Oncorhynchus mykiss Central Valley steelhead) Critical habitat, Central Valley steelhead	T X		Not likely to effect	No destruction or adverse modification	Timing window for instream work would be before the spawning season and after egg incubation. Gravel placement would increase the amount of and improve existing steelhead habitat. Temporary increased turbidity would not affect steelhead (See EA text).
Oncorhynchus tshawytscha Central Valley spring-run Chinook salmon	T		No effect	No critical habitat	Does not occur in the project area. Nearest location is the Delta. No water quality impacts to the Delta.

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Common and Scientific Names	**Legal Status[1]**		**Determination and Summary of Analysis**		
	Federal	**State**	**Species Effects Determination**	**Critical Habitat Effects Determination**	**Summary of Reasons for Effects Determination**
Oncorhynchus tshawytscha winter-run chinook salmon, Sacramento River	T		No effect	No critical habitat	Does not occur in the project area. Nearest location is the Delta. No water quality impacts to the Delta.
Ambystoma californiense California tiger salamander, central population Critical habitat	T X		No effect	No destruction or adverse modification	Found in annual grasslands, grass understory of valley footlhill woodland, and uncommonly along streams. Breed and lay eggs in vernal pools and other temporary ponds. There are no vernal pools at the project site. The project river area is unsuitable habitat due to the fast running water and abundant predators being present. Only potential habitat is a seasonal wetland at the southwest end of the project area. The wetland would be flagged and avoided during construction.
Rana aurora draytonii California red-legged fro*g*	T		No effect	No critical habitat	Red-legged frogs require aquatic habitat for breeding but also use a variety of other habitat types including riparian and upland areas. Adults often utilize dense, shrubby or emergent vegetation closely associated with deep-water pools with fringes of cattails and dense stands of overhanging vegetation such as willows. No habitat exists at the project site.
Thamnophis gigas Giant garter snake	T		No effect	No critical habitat	Requires emergent herbaceous wetland vegetation, grassy banks and openings, and higher elevation uplands. Riparian woodlands not suitable due to excessive shade, lack of basking sites, and absence of prey. Therefore, habitat not suitable at the project area.
Haliaeetus leucocephalus bald eagl*e*	T		No effect	No critical habitat	Does not occur in the project area.
Vulpes macrotis mutica San Joaquin kit fox	E		No effect	No critical habitat	Occurs in semi-arid grassland and shrubland. No habitat in project area.
Neostapfia colusana Colusa grass *Critical habitat*	T X		No effect	No destruction or adverse modification	Occurs only in vernal pools. There are no vernal pools near the project site.

Table 3. Federal and State Listed and Federal Candidate Species for the Stanislaus River Salmonid Spawning Gravel Addition

Common and Scientific Names	Legal Status[1]		Determination and Summary of Analysis		
	Federal	State	Species Effects Determination	Critical Habitat Effects Determination	Summary of Reasons for Effects Determination
Pseudobahia bahifolia Hartweg's golden sunburst	E	E	No effect		Occurs in open grasslands and grasslands near blue oak woodland; in Stanislaus County, found only in La Grange region. No habitat in project area.
Tuctoria greenei Greene's tuctoria (=Orcutt grass) Critical habitat,	X	E	No effect	No destruction or adverse modification	Occurs only in vernal pools. There are no vernal pools near the project site.
Candidate Species					
Oncorhynchus tshawytscha Central Valley fall/late fall-run Chinook salmon	C		Not likely to effect	No critical habitat	Timing window for instream work would be before the spawning season and after egg incubation. Gravel placement would increase the amount of and improve existing fall-run habitat. Tempory increased turbidity would not adversely affect salmon (See EA text).

Notes:

Legal Status:

E Endangered (lListed as being in danger of extinction)
T Threatened (Listed as likely to become endangered within the foreseeable future)
C Candidate for listing
X Critical habitat designated for this species.

Knight's Ferry Bridge but it would not be affected by project activities. Access roads, staging areas, and, if the gravel pump is used, pipeline routes would again be surveyed before construction for elderberries; any found would be avoided.

There are some California Tiger Salamander (CTS) occurrences fairly close but identified in areas that have the typical CTS open grassland cattle pond/vernal pool habitats, outside of the river and floodplain riparian habitats. The project river area is unsuitable habitat due to the fast running water and abundant predators being present. while a seasonal wetland at the southwest end of the project area may be potential habitat, it would be flagged or fenced and avoided during construction.

There is no potential habitat for any of the State candidate and sensitive species in Table 2, except for the western pond turtle and Western spadefoot toad. The western pond turtle is found in generally quiet water in wetlands, including ponds, marshes, lakes, streams, irrigation ditches, and vernal pools. the pond turtle prefers habitats with large areas for cover (logs, algae, vegetation) and basking (logs, boulders). The seasonal wetland at the southwest end of the project area may be potential habitat. However, it would be flagged or fenced and avoided during construction.

The Western spadefoot toad has potential for occurrence although breeding habitats are associated with grasslands and vernal pools/cattle ponds with no predator competition. The seasonal wetland at the southwest end of the project area may be potential habitat. However, it would be flagged or fenced and avoided during construction.

Recreation

The downstream portion is a popular area for river rafting. Signs would be posted to alert rafters about the project work. Impacts to rafters would be minimized because work would not be done on weekends, when most rafting occurs.

Traffic, Noise and Air Quality

The closest residences to the construction site are about 500 feet from the two most westward gravel placement sites. They would be exposed to higher noise levels for one one-to-two week period. The main noise source would be from trucks backing up.

Trucks delivering gravel would temporarily increase noise levels and air emissions, but levels would be within the levels of existing activities, as this is the route that gravel trucks have been taking for existing gravel delivery operations.

Cultural Resources

Reclamation archeologists will complete a field survey in late spring or early summer 2007; results will appear in the final EA. Reclamation will then consult with the State Historic

Preservation Office. Any historic properties eligible for the National Register would be protected throughout the duration of the project.

In the event of an unanticipated discovery of unknown cultural resources during the project activities, work would be suspended in the area until the find can be assessed by a qualified archaeologist and implement avoidance, preservation, or recovery measures as appropriate prior to any work resuming at that specific location.

Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in property or rights held in trust by the United States for Indian tribes or individuals. Trust status originates from rights imparted by treaties, statutes, or executive orders. The proposed action would not affect any ITAs.

Environmental Justice

A Presidential Executive Order and subsequent Departmental Policy require that Federal agencies ensure that their actions do not disproportionately impact minority and disadvantaged populations or communities. This proposed action was determined to have no effect on these issues of concern.

AGENCY CONSULTATION AND COORDINATION

National Marine Fisheries Service

Section 7 of the Endangered Species Act requires federal agencies to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of designated critical habitat for these species. Reclamation is seeking concurrence from the National Marine Fisheries Service that the proposed action is not likely to adversely affect the Central Valley steelhead or its critical habitat.

U.S. Army Corps of Engineers

Reclamation is applying for a Section 404 permit from the Army Corps of Engineers (Corps). Discharge of fill material into "waters of the U.S.," including "wetlands," is regulated by the Corps under Section 404 of the federal Clean Water Act.

California Department of Fish and Game

Reclamation is applying for a Streambed Alteration Permit.

California Regional Water Quality Control Board

The Regional Water Board requires that a project proponent obtain a Section 401 (CWA) water quality certification for Section 404 permits granted by the Corps. Reclamation will prepare and

submit to the Regional Water Board a request for water quality certification.

National Historic Preservation Act

Section 106 of the NHPA requires federal agencies to evaluate the effects of federal undertakings on historical, archaeological, and cultural resources. Reclamation will identify historical or archeological properties, including properties on or eligible for listing on the National Historic Register of Historic Places. Reclamation will then consult with the State Historic Preservation Office. Any historic properties eligible for the National Register would be protected throughout the duration of the project.

LIST OF PREPARERS AND CONTRIBUTORS

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John Hannon, Project Manager and Fishery Biologist, Bureau of Reclamation

Rhianna Lee, Environmental Scientist, California Department of Fish and Game

ENVIRONMENTAL COMMITMENTS

1. Equipment access, maintenance, refueling, parking and staging areas would be identified in consultation with U. S. Corps of Engineers (COE) personnel prior to project construction. Construction specifications would prohibit any equipment in or near the river which might affect water quality. Project construction would be regularly monitored by DFG personnel to help insure environmental compliance.

2. Turbidity downstream from the project site would be kept to a minimum during construction. Only a temporary increase in turbidity is expected. River flows at the time of construction would be low enough (approximately 200 to 500 cfs.) to allow disturbed fine sediment to quickly settle out of the water column.

3. Prior using heavy equipment on access routes to the river or laying pipe from the staging area to the river, Reclamation would conduct a site survey to identify and flag any elderberry bushes. The routes would avoid damage to any elderberry bushes. If circumstances change and the project may affect the valley elderberry longhorn beetle, Reclamation would consult with the Fish and Wildlife Service.

4. The placement of gravel would occur from June 30 to September 1, before the spawning season and after the incubation period for steelhead trout and salmon.

5. Signs would be placed to alert the public, including river rafters, about the gravel placement.

6. Existing access roads will be used and staging of material will occur in site previously disturbed with compacted soil Steelhead (work window)

7. The seasonal wetland would be flagged and avoided during gravel placement.

8. Riparian vegetation would be avoided or minimally trimmed.

9. Reclamation archeologists will complete a field survey in late spring or early summer 2007. Reclamation would consult with the State Historic Preservation Office. Any historic properties eligible for the National Register would be protected throughout the duration of the project.

In the event of an unanticipated discovery of unknown cultural resources during the project activities, work would be suspended in the area until the find can be assessed by a qualified archaeologist and implement avoidance, preservation, or recovery measures as appropriate prior to any work resuming at that specific location.

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Appendix 1

Endangered Species List from Fish and Wildlife Service (Includes Listed Fish Species under National Marine Fisheries Service Jurisdiction)

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

March 26, 2007

Document Number: 070326120931

Douglas Kleinsmith
Bureau of Reclamation, Division of Environmental Affairs
2800 Cottage Way
Sacramento, CA 95825

Subject: Species List for Stanislaus River Salmonid Spawning Gravel Addition

Dear: Mr. Kleinsmith

We are sending this official species list in response to your March 26, 2007 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7Â½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be June 24, 2007.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A

list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 070326120931

Database Last Updated: March 5, 2007

Quad Lists

Listed Species

Invertebrates

- Branchinecta conservatio
    - Conservancy fairy shrimp (E)
- Branchinecta lynchi
    - vernal pool fairy shrimp (T)
- Desmocerus californicus dimorphus
    - valley elderberry longhorn beetle (T)
- Lepidurus packardi
    - vernal pool tadpole shrimp (E)

Fish

- Hypomesus transpacificus
    - delta smelt (T)
- Oncorhynchus mykiss
    - Central Valley steelhead (T) (NMFS)
    - Critical habitat, Central Valley steelhead (X) (NMFS)
- Oncorhynchus tshawytscha
    - Central Valley spring-run chinook salmon (T) (NMFS)
    - winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

- Ambystoma californiense
    - California tiger salamander, central population (T)
    - Critical habitat, CA tiger salamander, central population (X)
- Rana aurora draytonii
    - California red-legged frog (T)

Reptiles

- Thamnophis gigas
    - giant garter snake (T)

Birds

- Haliaeetus leucocephalus
    - bald eagle (T)

Mammals

- Vulpes macrotis mutica
    - San Joaquin kit fox (E)

Plants

- Neostapfia colusana
    - Colusa grass (T)
    - Critical habitat, Colusa grass (X)
- Tuctoria greenei
    - Critical habitat, Greene's tuctoria (=Orcutt grass) (X)

Candidate Species

Fish

- Oncorhynchus tshawytscha
    - Central Valley fall/late fall-run chinook salmon (C) (NMFS)

Quads Containing Listed, Proposed or Candidate Species:

KNIGHTS FERRY (459C)

OAKDALE (460D)

Key:

- (E) Endangered - Listed as being in danger of extinction.
- (T) Threatened - Listed as likely to become endangered within the foreseeable future.
- (P) Proposed - Officially proposed in the Federal Register for listing as endangered or threatened.
- (NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.
- Critical Habitat - Area essential to the conservation of a species.
- (PX) Proposed Critical Habitat - The species is already listed. Critical habitat is being proposed for it.
- (C) Candidate - Candidate to become a proposed species.
- (V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
- (X) Critical Habitat designated for this species