

FINAL ENVIRONMENTAL
IMPACT REPORT

ADOPTION OF REGULATIONS
FOR
SUCTION DREDGE MINING

APRIL 1994

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

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I. SUMMARY

SUMMARY OF PROPOSED ACTIONS

The proposed project is the adoption of regulations by the Department of Fish and Game (Department) which would provide for the issuance of annual permits allowing individuals to suction dredge mine in specific streams, rivers and lakes during specified time periods. The regulations would specify terms and conditions for suction dredge operations and would designate which waters of the State would be opened to suction dredge mining. In adopting regulations for suction dredge mining, the Department would be acting in accordance with and pursuant to sections 5653 through 5653.9 of the Fish and Game Code which provide the authority for the regulation of suction dredge mining (Appendix A). The proposed project is specific to suction dredge mining of minerals and does not apply to dredging associated with maintaining navigable waters or sand and gravel mining.

The proposed project would be consistent with the wildlife conservation policy adopted by the Legislature and described in Section 1801 of the Fish and Game Code (Appendix A). The State's wildlife conservation policy includes the objectives of maintaining sufficient populations of all species of wildlife necessary to provide for the beneficial use and enjoyment of all species of wildlife by all citizens of the State and perpetuating all species of wildlife for their intrinsic and ecological values, as well as for their direct benefits to people.

The proposed project would also be consistent with the State's aquatic resources policy as set forth in Section 1700 of the Fish and Game Code which encourages, among other things, the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence (Appendix A).

Protection and management of fishery resources (fish are defined in Section 45 of the Fish and Game Code as fish, mollusks, or crustaceans, invertebrates, or amphibians, including any part, spawn, or ova thereof), protection and management of aquatic and riparian communities which support fish habitat, and protection of threatened or endangered plant and animal species, and species of special concern would be the basis for the Department's recommendations regarding the regulation of suction dredge mining.

The proposed project would minimize the impacts to fish and other resources from suction dredge mining. Its objective would be to maintain fish populations and other resources dependent upon the aquatic environment while providing public suction dredge mining opportunities in the State of California. Absent regulations, the impacts of suction dredging to the environment would be significant and deleterious.

PROPOSED PROJECT

The Department proposes adopting regulations that would provide for suction dredge mining in designated waters of the State while protecting fish and wildlife resources. The details of the proposed project are presented in Chapter III and Appendix G.

SUMMARY OF EFFECTS ON THE ENVIRONMENT

The proposed project would allow for regulated suction dredge mining in California. The potential significant effects on the environment from unregulated suction dredge mining activities can be categorized into effects on: (a) benthic (bottom dwelling) and/or invertebrate communities, (b) fish and fish eggs and fry, (c) other aquatic or riparian dependent plant and animal species, (d) channel morphology which includes the bed, bank, channel and flow of streams and rivers, (e) water quality and quantity, and (f) riparian habitat adjacent to streams and rivers (North, 1993, Badali, 1988, Griffith and Andrews, 1981, Harvey, 1986, Harvey et al, 1982, Hassler and Somer, 1982, Hassler, et al, 1986, Lewis, 1962, McCleneghan and Johnson, 1983, Thomas, 1985). There is little or no information available on the effects of suction dredging for minerals in lakes.

Extrapolating information on total dredging efforts in California from McCleneghan and Johnson, (1983), an average of 4,000 suction dredge permits per year represents approximately 800,000 hours of suction dredging annually in California. This compares with 851,200 hours of suction dredging annually, which was obtained from survey results in a survey conducted in December of 1993 and January of 1994, as part of the development of the new proposed regulations and this Environmental Impact Report (EIR). (The informal survey was not based on scientific methodology and was targeted to a specific audience, the suction dredge community. Information on types of suction dredge equipment used, amount of time spent suction dredging, location of suction dredging operations, and information regarding suction dredging expenses was obtained). Most of this use is concentrated on accessible streams and rivers in the mother lode country of the western Sierras and in northwest California. Finally, the use is concentrated by seasons as most suction dredging occurs in the summer.

An individual suction dredge operation affects a relatively small portion of a stream or river. A recreational suction dredger (representing 90 percent of all suction dredgers) may spend a total of four to eight hours in the water dredging an area from 1 to 10 square meters. The average number of hours based on the second DEIR survey results were 5.6 hours per day. The remaining time is spent working on equipment and processing dredged material. Professional or commercial operations may annually dredge larger areas 75 - 100 linear feet of stream, but such an operation follows a "streak" and rarely approaches one half the width of the stream (per comm. Lynn Gunn, 1993). The area or length of river or streambed worked by a single suction dredger as compared to total river length is relatively small compared to the total available area.

In general, a review of available literature indicates unregulated suction dredge mining with 6" or smaller dredges could significantly affect the above listed categories of resources. Effects to benthic and/or invertebrate communities, turbidity and water quality appear to be less than significant. They are usually localized and temporary in duration (Harvey, McCleneghan, 1982, pages 11-17; Harvey, 1986, pages 406-408; Badali, 1988). However, the degree of effect is related to the size of the dredge (engine and hose size), the size of the stream or river, the size of the stream compared to the size of the dredge, the density of dredges and the amount of fine material in the substrate dredged (Harvey, 1986, pages 407-408; Thomas, 1985, pages 485-487; Griffith and Andrews, 1981, page 28; Harvey et al., 1982; Hassler et al., 1986, page 117; Stern, 1988, page 67, North, 1993, page 18). Large dredges will have minimal to moderate impacts to large sized water ways (Badali, 1988).

Effects to channel morphology, riparian habitat, and streambanks from unregulated suction dredging can potentially be long term in nature and can potentially significantly affect fish and fish habitat (per comm. Stern, 1993). Small streams with low flows may be significantly affected by suction dredging, particularly when dredged by large dredges (larger than 6 inches) (Stern, 1988, page 72). Large dredges on small streams probably would cause unacceptably high levels of turbidity and habitat degradation (Badali, 1988). Channel morphology may be altered for long periods of time if winter flushing flows are not present. Riparian and aquatic vegetation can be more easily undermined or lost due to the closer proximity of the banks to suction dredge activities (per comm., Ken Anderson, 1993). The proposed regulations would result in a less than significant impact to channel morphology and streambanks by reducing the maximum nozzle size to 6 inches on most streams and adding riparian habitat protective measures.

Impacts to benthic invertebrate communities of suction dredging with 6 inch or smaller sized nozzles appear to be less than significant. The effects are transitory and localized (Harvey et al., 1982, pages 11-17, Hassler, 1986, pages 101-104). Suction dredge mining can temporarily decrease or eliminate aquatic insect life and other benthic organisms for periods of one to two months (Thomas, 1985, Harvey, 1986, Griffith and Andrews, 1981). The studies, which were performed with dredges with nozzle sizes of less than 6 inches, acknowledge the impacts could be different with larger dredges or on streams with high sediment quantities in the streambed.

The effects of turbidity and sediment produced by suction dredging are also usually localized and temporary and can be significant. The levels of turbidity and sediment generated by suction dredging are related to the type and amount of substrate material, the amount of flow water in the stream and the size of the suction dredge equipment (Harvey, 1986, page 406). Turbidity and sediment levels generally return to background levels within 20 to 80 meters below the dredging activities (Thomas, 1985, pages 486-487; Harvey, et al. 1982). Increased turbidity from any source can reduce the production of many types of algae and aquatic plants that form the base of the aquatic food chain in streams (Department General Report, 1980). Aquatic insect larvae and other aquatic invertebrates are a major food source for trout and young salmon in California streams. Suction dredge mining can cause

significant short term localized alterations of stream substrates as well as adverse effects on the habitat and abundance of aquatic organisms, especially insects (Harvey, 1982).

The bed, bank, or channel of a stream can be significantly affected by suction dredging (Stern, 1988, pages 6, 58-72; Thomas, 1985, pages 485-486). Dredging excavates streambed materials leaving holes of varying size from one to twenty meters in diameter. The extracted materials are often piled into mounds commonly called dredge piles. Use of a suction dredge can channelize a stream channel as the suction dredger works the dredge along bedrock, causing a deepening and narrowing of the natural channel (North, 1993, pages 13-15). Channelization can eliminate fish habitat by physically decreasing the area available to fish, by increasing water velocity, or by removing cover. In addition, channelization can adversely affect fish habitat by changing riffles and runs into pool type habitat thereby eliminating areas highly productive of invertebrates (North, 1993, page 13).

Stream banks can be significantly affected by undermining of the banks below the water line causing bank sloughing and failure (McCleneghan and Johnson, 1983, page 6; Stern, 1988, pages 40-61). This adversely affects stream bank structure and stability, riparian vegetation, and thus animal species dependent upon those habitat types. Bank collapsing also causes streams to widen, flow velocities to slow, and a reduction in bank coverage (per comm, Ken Anderson, 1993). The condition of the stream bank and riparian zone is closely linked to the stability of the channel and the quality of fish habitat. The woody and fibrous roots of riparian species provide a physical barrier to the erosive forces of flowing water and create banks with considerable surface roughness. Overhanging banks and associated root complexes often provide important cover for rearing and adult fish. Overwintering juvenile steelhead and coho salmon are particularly dependent on undercut streambanks for cover (Stern, 1988, page 61). A loss of stream banks can also result in increased water temperatures, a decrease in insect drop and a loss of hiding cover from predators. Stern (1988) and McCleneghan and Johnson (1983) cite observations of damage to stream beds, banks and channels as a result of suction dredging. These impacts can be long term and last several years.

The proposed regulations address these potential impacts by prohibiting suction dredging into the streambanks, prohibiting damage to woody riparian habitat from suction dredge operations and placing conditions on the use of winches to ensure damage does not occur to trees and other streamside vegetation.

The effects of suction dredge mining on fish eggs and yolk sac fry can be significantly adverse. Populations of fish in these early life stages can experience up to 100 percent mortality if sucked through a suction dredge of any size or covered with sediment produced by suction dredge mining activities (Griffith and Andrews, 1981, pages 26-27). The proposed regulations address this potential adverse impact by establishing suction dredge seasons of use which avoid critical spawning periods of fish.

The effects of suction dredging on spawning gravels may be beneficial or detrimental depending on many variables. There is a difference of opinion among experts regarding this issue. Hassler, et al (1986) cites a 1960 study by Gangmark and Bakkala, where loose, unconsolidated gravels left behind by suction dredging were judged as undesirable spawning substrate. Gangmark and Bakkala stated salmon redds (nests) constructed in loose, unconsolidated gravels are susceptible to scour and often result in a direct loss of eggs and larvae (Hassler et al., 1986, pages 102).

On rivers where dams have been constructed, thereby eliminating seasonal high flushing flows, suction dredges can actually improve spawning riffles by loosening and cleaning spawning gravels or increasing available spawning gravels. Lewis, in a 1962 study, found suction dredging can improve the gravel environment for fish eggs if areas were dredged uniformly in one direction and not in a pocket and pile method.

Negative impacts associated with suction dredging and spawning gravels are addressed in the proposed regulations by establishing suction dredge seasons of use which avoid critical spawning periods of fish. In almost all cases, gravel piles left by suction dredging, are erased by annual winter/spring flows.

Some of the available studies indicate adult fish are generally not significantly affected by suction dredge activities (Harvey, 1986; North, 1993; Summer and Hassler, 1992). One exception to this generality is the riffle sculpin, a bottom dwelling fish, which was found to decrease in numbers as a result of a loss of suitable habitat brought about by suction dredging (Harvey, 1986). In addition, many Department fisheries biologists have expressed concern that summer holding areas for trout, salmon and steelhead are negatively impacted by suction dredging. Suction dredging may disturb adults holding in deep pools. These pools provide cooler water areas critical to the adult fish during summer when increased water temperatures may stress the fish.

Many active suction dredgers (per. comm. Lynn Gunn, Dave McCracken, Ron Stockman) cite positive effects of suction dredge mining on the environment. These effects include improvements to spawning habitat in certain situations, feeding of fish from invertebrates stirred up by dredging, removal of garbage left by other river users such as fishermen and rafters and the removal of lead and mercury from river systems. These observations are based on thousands of hours of time spent on rivers by suction dredgers.

Improvements to spawning habitat from suction dredging have been cited by Lewis (1962) and Badali (1988). All observers would agree that fish do congregate near the effluent of suction dredges to prey on the invertebrates pulled from the substrate. Some suction dredgers carry out garbage left by other river users. However, others are known to leave garbage behind. Mercury, which adheres to gold, and lead (fishing weights) are recovered and removed from rivers and streams by suction dredgers.

The Department recognizes there is a long history of other impacts to California's rivers and streams associated with other recreational and commercial activities. These activities include the construction of dams, commercial mining, rafting, fishing, road building and logging. In comparison, the cumulative detrimental effects of these activities are more significant to the overall health of fish and fish habitat than the impacts caused by suction dredging. All negative impacts to the State's rivers are of concern to the Department due to the continuing decline of fisheries and riparian habitat throughout the State. An overview of the historic and current declining condition of the State's rivers and fisheries resources is provided in the 1993 California State Lands Commission's report "California's Rivers - A Public Trust Report".

As a Trustee agency for the fish and wildlife resources of the State, the Department participates with private and public entities in the planning, development and regulation of these other activities. This participation, through the California Environmental Quality Act (CEQA) process, Timber Harvest Assessment Program, coordination with other State and Federal agencies and development of Environmental Impact Reports and regulations for sport and commercial fisheries is well documented in the public record. Therefore, the detailed impacts of these activities on the State's rivers and streams are not discussed in this Final EIR (FEIR). An overview of the relative comparison of suction dredge mining compared to these other activities is provided in the environmental effects section of this FEIR. The scope of this document is specific to adoption of regulations for suction dredging. The environmental effects of the proposed project and suction dredging in general are described in detail in Chapter V of this document. The Department has determined that absent regulations the impacts of suction dredging on the environment would be significant and deleterious.

ALTERNATIVES TO THE PROPOSED PROJECT

The Department proposes a range of six alternatives to the proposed project. The alternatives, described in Chapter VI, are presented in order of those alternatives having the least to the most environmental impacts.

Alternative 1

Alternative 1 is the No Project Alternative. This alternative would prohibit suction dredge mining in California. The Department would not issue permits or designate any waters of the State open to suction dredge mining.

Alternative 2

Alternative 2 would adopt the proposed project with modifications based on specific stream course studies to be conducted.

Alternative 3

Alternative 3 would adopt the 1992 informal regulations for suction dredge mining.

Alternative 4

Alternative 4 would reduce the permit fees for nonresidents from \$111.25 to \$35 and require any suction dredge operators who propose activities beyond the scope of regulations established by the Administrative Procedure Act to comply with the Streambed Alteration Agreement Program (Section 1600 et seq., Fish and Game Code). This alternative would require the passage of new legislation.

Alternative 5

Alternative 5 would integrate the current permit process into the Department's Lake and Streambed Alteration Agreement Program. All applicants for suction dredge permits would be required to obtain a 1603 Agreement as described in sections 1600 -1607 of the Fish and Game Code in addition to a suction dredge permit. This alternative would require the passage of new legislation.

Alternative 6

Alternative 6 would provide for all waters of California to be opened to suction dredge mining at the beginning of each year. Currently, the regulatory process takes the opposite approach. All waters of California are closed until the Department determines deleterious effects would not result from the opening of waters. Under this alternative, all waters of the State would be open except those where the Department could show deleterious effects on fish would result from suction dredging. Procedures for closing waters would include time limits for the Department to submit written findings, mandatory site inspections, and implementation of an appeal process for denied permits to the Fish and Game Commission. This alternative would require the passage of new legislation.

PUBLIC INPUT AND AGENCY CONSULTATION

CEQA encourages public input. One of the primary purposes of the environmental document review process is to obtain public comment, as well as to inform the public and decision makers. It is the intent of the Department to encourage public participation in this environmental review process.

An NOP for the amended DEIR (ADEIR), was provided to the State Clearing House and Office of Planning and Research and posted January 21, 1994. The NOP requested any comments regarding input to the ADEIR be submitted to the Department within 30 days of receipt of the NOP.

FIRST DRAFT TO SECOND DRAFT (AMENDED DEIR)

The first DEIR was released for public comment on October 10, 1993. The 45 day public comment period ended on November 30, 1993. The State Clearinghouse Number for the first DEIR was 93102046. The Department received confirmation from the State Clearinghouse that it had complied with all review requirements for draft environmental documents, pursuant to CEQA.

The Department received 270 letters by the end of the business day on November 30, 1993. However, the Department elected to accept additional comments regarding the first DEIR while it accepted comments for the proposed regulations pursuant to the requirements of the Administrative Procedures Act (APA) and the Office of Administrative Law (OAL).

The comment period for the proposed regulations was open until January 6, 1994. The Department received an additional 119 letters during that time period regarding the proposed regulations and the DEIR. Those comments were included in the process for responding to all comments on the first DEIR since the proposed regulations were the proposed project in the first DEIR.

In addition to receiving written comments, the Department conducted three meetings at which it received oral and written testimony. The first meeting was held in Redding on November 4, 1993. This meeting was held to receive comments regarding the draft DEIR. It served as the Hearing meeting as required by the APA. The second meeting was held in Long Beach on December 2, 1993. This meeting served as the Discussion Hearing under APA requirements. Comments were received on the proposed regulations at this meeting. The third meeting was held in Sacramento, on January 6, 1994. This meeting constituted the Action Hearing under APA requirements. Comments from all three meetings were taped then transcribed for review by the Department. These comments were incorporated with the letters received by the Department. The Department also received public input from meetings with concerned citizens.

The Department responded to all comments, which it indexed into thirty five subject categories. The Department developed a written response to each subject category which summarized the number of comments received and analyzed the comment. The list of subject categories and Department responses were appended to the ADEIR as Appendix J.

Based on public and internal Department input, the Department developed the ADEIR. The ADEIR was recirculated for a thirty day period to receive public input. In addition, a public hearing was held on March 16, 1994, to receive public comment on the amended DEIR. The comments were transcribed and responded to along with 126 letters, which were received during the thirty day public comment period for the ADEIR. The thirty day public comment period began on February 22, 1994, and ended on March 24, 1994. The responses to comments have been incorporated into this Final EIR (FEIR) as Appendix K.

The new proposed project and this FEIR reflect the Department's consideration of the public's concerns:

Public comment received at the scoping sessions and during the public comment period following the scoping sessions raised the following concerns.

1. Suction dredge mining is good for fish and fish habitat.
2. The Department wants to close all waters of California to suction dredge mining and has already made up its mind to do so.
3. The regulations provide no reasons or criteria for keeping waters closed.
4. Training of wardens regarding suction dredging is lacking and consistency in enforcement is poor.
5. Denial of special permits lacks an appeal process and the rationale for issuance or denial of special permits is not explained.
6. Suction dredge miners are being unfairly targeted and are over regulated.
7. Fees for Out-of-State permits are too high and discourages tourism.
8. There are conflicts between other river user groups and suction dredge miners.
9. The Department should respond to executive order D-7889, which requires government agencies to make an assessment of their actions upon private property.
10. Many portions of rivers are not spawning areas but whole rivers are kept closed.
11. Mining of the river banks (high-banking) is acceptable.
12. Moving of large boulders using mechanized equipment is necessary for economic viability and can be reasonably mitigated.
13. The Department allows fishing but closes rivers to suction dredging because of potential impacts to fish. The take of fish from suction dredging is negligible compared to the take of fish from fishing.

ISSUES TO BE RESOLVED

At issue is whether or not to adopt regulations permitting suction dredge mining in California. If suction dredge mining regulations are adopted, decisions are needed to accept the proposed list of open waters, seasons of operation, equipment size limits, and other appropriate special conditions. This document includes a review and discussion of the proposed project as well as the six alternatives thereto.

CONCLUSION

The Department is the trustee for fish and wildlife resources of the State of California. The Department is charged with protecting and managing fish populations and other related aquatic dependent resources in a sound biological manner.

Suction dredge mining can potentially result in the loss of fish production, temporary loss of benthic/invertebrate communities, localized disturbance to streambeds, increased turbidity of water in streams and rivers, and mortality to aquatic plant and animal communities. However, based on best available data, it is anticipated the project to adopt regulations for suction dredging as proposed, will reduce these effects to the environment to less than significant levels and no deleterious effects to fish.

The proposed regulations would result in the maintenance of healthy lake, stream and river systems while allowing for suction dredge mining in California. To further ensure the maintenance of healthy lake, stream and river systems in California, the Department would periodically review and amend regulations based on additional evidence and data.

II. INTRODUCTION

Recreational and commercial suction dredge gold mining has fluctuated dramatically in California streams and rivers as a result of the changes in the price of gold and technological improvements of both dredges and gold recovery systems. The number of standard suction dredge permits issued annually by the Department increased dramatically from 3,981 in 1976 to 12,763 in 1980. However, the number declined to about 4,038 in 1992 (Table A). The number of special permits are also listed on Table A. Special permits are issued to applicants requesting to use equipment or to operate in a specified time period not permitted under the regulations. Many rivers in the State are open to suction dredge mining throughout the year; others are closed either seasonally or completely. The closures are reviewed and may be revised based on the recommendations of regional biologists and Fish and Game Wardens.

Because of the large amount of effort expended on suction dredge mining in the State, the potential for impacts to fish and fish habitat and aquatic and riparian systems can be potentially significant and deleterious if not regulated. Extrapolating information on total suction dredging effort in California from McCleneghan and Johnson (1983), an average of 4,000 suction dredge permits a year represents approximately 800,000 hours of suction dredging annually in California. This compares with 851,200 hours of suction dredging annually, which was obtained in the survey conducted in December of 1993 and January of 1994, as part of the development of the new proposed regulations and the ADEIR. The survey was not based on scientific protocol and was addressed mainly to the suction dredge community. Most of this use is concentrated on accessible streams and rivers in the mother lode country of the western Sierras and in northwest California. Finally, the use is concentrated by seasons as most suction dredging occurs in the summer.

TABLE A
Number of Dredge Permits Issued by the Department since 1976

YEAR	STANDARD DREDGE	SPECIAL DREDGE
1976	3981	3
1977	3,625	2
1978	3,818	2
1979	5,206	9
1980	12,763	34
1981	11,436	22
1982	9,380	49
1983	9,983	201
1984	9,408	189
1985	8,424	123
1986	8,876	98
1987	8,087	71
1988	7,544	107
1989	4,792	28
1990	4,174	36
1991	4,020	27
1992	4,038	17
Nonresident		
YEAR	STANDARD DREDGE	SPECIAL DREDGE
1989	374	0
1990	337	0
1991	283	0
1992	362	0

Gold dredges of various types have existed for a long time. The first power-driven dredges appeared in the California gold fields in the late 1880's. Steam-driven, and resembling antique river boats, they scooped up gold-bearing gravel in huge steel buckets, extracted the gold, and left great mounds of tailings to mark their passage. The gold dredging industry grew steadily over the years, reaching its peak during the Great Depression. Then because of low gold prices and increased operating expenses the business declined. By the 1950's very few large gold mining operations remained.

However, by the 1950's, a new type of dredge appeared -- the suction dredge. With the development of SCUBA and Hookah Air Systems, the new dredges, operated by divers, worked like underwater vacuum cleaners. Unlike their predecessors, the new suction dredges were portable, relatively inexpensive to build, and highly efficient. Many of the miners who first used these new machines in some of the northern rivers uncovered impressive amounts of gold with them. Word of these early successes spread rapidly. Soon a number of small businesses began to manufacture suction dredges of various sizes and prices. These commercially made dredges made it possible for anyone to dredge for gold. Thus the sport of recreational gold dredging had arrived. Today, suction dredging is common in areas of the state where gold is still found, primarily in the western Sierras and northwest California.

DESCRIPTION OF SUCTION DREDGE EQUIPMENT AND MINING PRACTICES

All suction dredges have certain common components. In addition, they all operate in a similar fashion. Suction dredges are driven by a power source which is usually a gasoline engine that drives a centrifugal pump. River water is drawn through a foot valve into the pump which forces the water through a pressure hose known as a jet. The jet consists of a long metal tube that is several times the diameter of the pressure hose and a much smaller tube which enters the metal tube at an angle less than 20 degrees. The high-pressure water from the pressure hose is jetted through a smaller tube into the large tube which is always positioned underwater. This creates the Venturi effect, a strong suction, through the jet. A large-diameter suction hose attaches to the discharge end of the jet, and the gold recovery system attaches to the opposite end. Sand and gravel is drawn into the suction hose through a metal intake nozzle that is equipped with a restrictor ring. The diameter of the restrictor ring is smaller than that of the intake nozzle. It minimizes the risk of plugging by restricting the size of rocks that can pass into the intake nozzle.

Sand and gravel from the river bottom are drawn through the intake nozzle, up the suction hose, through the jet, through the gold recovery system, and out the rear of the dredge as "tailings". The gold recovery system usually consists of an open sluice box or enclosed trays equipped with steel baffles known as riffles. Almost all dredges are supported in the water by floats made of plastic, foam or tire tubes. Some dredges are designed with twin pressure systems i.e. they have two engines, two pumps, and two pressure hoses which attach to a special jet. Advantages to this type of system is that it allows a dredge operator to move material faster by combining portability with capacity. This kind of dredge is becoming very popular.

Large dredges -- dredges with a nozzle size larger than 6 inches -- generally require at least two operators. In addition they are almost always equipped with Hookah air compressors which can supply air to one or more divers.

Types of dredges:

(1) The surface dredge -- This kind of dredge can be easily identified by its open sluice boxes which are mounted on floats above the water's surface. It's by far the most common type of suction dredges, offering the most efficient gold recovery system. However, it has some drawbacks. Since it must pump gravel from the stream bottom to the water's surface, it requires a relatively large engine. Even then, they are at their best in shallow water because the deeper the water, the less suction it produces. This kind of dredge ranges in size from small backpack models to huge models ten meters in length.

(2) The subsurface dredge -- This machine utilizes a gold recovery system that is suspended underwater, by chains and cables beneath the floats. Since the recovery system or sluice box can be raised or lowered, it can be maintained close to the stream bottom. Therefore, the sand and gravel need not be pumped all the way to the water's surface. This minimizes the amount of power required to operate the dredge. While a surface dredge with a hose requires a small car engine to produce adequate suction, a subsurface dredge can operate well on a pair of 8 horsepower Briggs & Stratton engines. The recovery system of the subsurface dredge utilizes a long enclosed chamber with removable riffle trays that are attached along the bottom. Since the riffle trays are relatively small and provide less surface area in which gold may be trapped, fine gold recovery is less efficient than that of the surface dredge.

(3) The underwater dredge -- Like the subsurface dredge, the recovery system of the underwater dredge is an enclosed chamber with riffle trays that are suspended under water. But, unlike the subsurface system, there are no chains attaching the underwater "box" to the floats. Instead, the sluice box rests on the bottom, supported in an upright position by the diver, its only link with the water surface being the pressure hose. It has no suction hose. Its intake nozzle and jet are built as one recovery system. Instead of manipulating a flexible suction hose, as with the subsurface dredge, the diver using an underwater dredge must wrestle the whole unit around the bottom, keeping it always in an upright position. If it falls over, any gold in the small riffle tray will shoot out the back and be lost. While very difficult to operate, and providing relatively poor gold recovery, underwater dredges offer the one advantage of being highly portable. The components of an underwater dredge, for instance, weigh roughly half what those of a subsurface dredge weigh, and they're more compact and easier to carry. But the disadvantages seem to outweigh the advantages, and the popularity of the underwater dredge seems to be dying out.

SCOPE OF THE DOCUMENT

This environmental document contains a description of the proposed project and its environmental setting, potential effects of the proposed project, and alternatives to the proposed project. This document is intended to address suction dredge mining, and not other mining activities such as panning, sluicing, placer mining, or high-banking. As stated before, the proposed project is specific to suction dredging of minerals and does not apply to dredging associated with navigable waters or sand and gravel mining. In addition, it considers relevant policies of the Legislature and the Department. This environmental document presents information to allow a comparison of the potential effects of the alternatives. They are presented to provide the Department and the public with additional information related to the options available.

INTENDED USE OF THE ENVIRONMENTAL DOCUMENT

This environmental document has been prepared to assess the potential impacts of the proposed project, suction dredge regulations, on the environment. Preparation of this report is in accordance with CEQA, including sections 15063, 15081, 15168, 21080.5 and the CEQA Guidelines (Section 15250, Title 14, California Code of Regulations, Sec. 15250). The document is an informational item to aid the Department in the decision-making process and to inform the public of the potential environmental effects of the proposed action of promulgating regulations regarding suction dredge mining. The Department did not conduct an initial study prior to developing this EIR. As provided in CEQA, section 15063, if the Lead Agency can determine that an EIR will clearly be required for the project, an initial study is not required but may still be desirable. The Department determined that establishing regulations to permit suction dredging statewide could have a significant effect on the environment and would likely require a mandatory finding of significance under CEQA Guidelines section 15065. The Department anticipated that there would likely be serious public controversy over the environmental effects of the project and disagreement between experts over the significance of possible effects. Therefore, the Department determined that pursuant to CEQA Guidelines, sections 15064(h) and 15065 that an EIR would be necessary, thereby obviating the need for an initial study.

Analysis of suction dredge regulation projects in the future may refer to and incorporate by reference information contained in this document. Amendments to these proposed suction dredge regulations may not require the preparation of environmental documents similar to this, but may include updates to this document. If substantial changes occur in the project itself or in the environmental conditions affected by the regulations, a supplemental or subsequent environmental document shall be prepared. Wildlife Alive, v. Chickering, (1976) 18 Cal.3d 190 [132 Cal. Rptr. 377, 553 p.2d 537].

LEGAL AUTHORITY

The Legislature formulates the laws and policies regulating the management of fish and wildlife in California. The State's policy with respect to aquatic resources is to encourage the conservation, maintenance and utilization of the living resources of the ocean and other waters under the jurisdiction and influence of the State for the benefit of all the citizens of the State (Section 1700, Fish and Game Code; see also Section 1801). It is also the State's policy to promote the development of local fisheries in harmony with the conservation of the living resources of the oceans and other waters under the jurisdiction and influence of the State (Section 1700(d), Fish and Game Code). This policy includes the following objectives:

- o The maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence;
- o The recognition of the importance of the aesthetic, educational, scientific, and non-extractive recreational uses of the living resources of California;
- o The maintenance of a sufficient resource to support a reasonable sport use;
- o The management, on a basis of adequate scientific information promptly promulgated for public scrutiny, of the fisheries under the State's jurisdiction, and the participation in the management of other fisheries in which California fishermen are engaged.

The Legislature provided further policy direction in the Fish and Game Code (Section 5653.9), which empowers the Department to regulate suction dredge mining. Section 5653 states in part: "if the Department determines that such operation will not be deleterious to fish it shall issue a permit to the applicant."

III. PROJECT DESCRIPTION

The Department is the public trust agency responsible for protecting and managing fish and wildlife populations including those affected by suction dredging activities. Employees of the Department are experts in professional wildlife management, fishery biology, water pollution, and enforcement matters concerning California's botanical and wildlife resources.

In an effort to incorporate concerns and recommendations of the public into this review and analysis of suction dredge mining options, the Department conducted extensive public scoping sessions and followed procedures required by CEQA. These processes are described in detail in Chapter I. It is important to recognize that the majority of comments and recommendations received were in general opposition to regulations for suction dredging, and in specific opposition to the Department's proposed 1993/94 regulations. As a result, specific alternatives to the proposed project and additional information were developed to address the issues raised during the scoping sessions.

PROPOSED PROJECT

The Department proposes adopting regulations that would provide for suction dredging in designated waters of the State. The proposed regulations would include the following provisions:

1. Designation of waters or areas of the State and seasons of operation where suction dredges may be used. The criteria for establishment of the "List of Open and/or Closed Areas - For Use With Standard Permit " would be:

a. Protection and management of fishery resources (fish as defined in Section 45 of the Fish and Game Code)

b. Protection and management of threatened or endangered plant and animal species and species of special concern as provided for in the California Endangered Species Act, Plant Protection Act and CEQA Section 15380 - Rare or Endangered Species. The list of plant and animal species listed as rare, threatened or endangered under the state and federal government are described in Sections 670.2 or 670.5, Title 14, California Administrative Code or Title 50, Code of Federal Regulations Sections 17.11 or 17.12 pursuant to the Federal Endangered Species Act. The Department uses several criteria to list species as Species of Special Concern. These criteria include:

1. Taxa that are biologically rare, very restricted in distribution, or declining throughout their range.

2. Population(s) in California that may be peripheral to the major portion of a taxon's range, but which are threatened with extirpation within California.
3. Taxa closely associated with a habitat that is declining in California.
4. Species where survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, disease, or other factors.
5. Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens.
6. The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act.
7. Any species currently listed as a candidate for listing by the state or federal government

In general, the protection of fish and fish habitat has been selected as criteria for determining when and where suction dredging can take place because of the direct and indirect adverse impacts suction dredging can have on fish and fish habitat and the language in Fish and Game Code Section 5653 which allows the Department to open waters to suction dredging when the Department determines there will not be a deleterious impact to fish. Waters of the State, during fish spawning periods, would be proposed for seasonal closure because of the mortality rates suffered by fish eggs and yolk sac fry by suction dredge activities.

Waters of the State would also be proposed for seasonal or permanent closure if special status species are present. Special status species include species listed as threatened, endangered or rare under the California Endangered Species Act or Native Plant Protection Act and species considered rare or endangered under CEQA, Section 15380. Species considered rare or endangered under CEQA Section 15380 may include those species listed as candidates for listing by the state or federal government or sensitive species

The proposed project would allow for the issuance of special permits. Special permits would allow suction dredgers to operate outside the proposed water closures, seasons of use and equipment restrictions on a site specific basis if the Department determines that the site specific operations would not result in deleterious effects to fish. The Department recognizes that the general proposed regulations are based on broad ecological concepts and protective measures that are not site specific. They are general guidelines proposed to provide protection to fish and fish habitat. There may be specific instances where a variance from

these proposed restrictions would be justified because certain site specific operations would not be deleterious to fish.

For instance, in the proposed regulations, entire stretches of rivers have been seasonally closed to protect spawning fish activities even though only certain areas within rivers are used for spawning by fish. A suction dredger may request to operate in one of the areas where no spawning takes place. The issuance of a special permit would be justified if a site inspection revealed that redds or spawning habitat would not be threatened by the proposed suction dredging operation. Also, entire areas have been closed to suction dredging where threatened or endangered species are known to exist. Upon the completion of a biological assessment by a qualified biologist it could be determined that a proposed suction dredge operation would not impact the listed species. Issuing a Special Permit in such cases could be warranted.

Criteria that would affect the Department's determination as to whether site specific proposed suction dredging operations would not be deleterious to fish or other wildlife include;

1. spawning seasons and location of redds
2. amount and flow of water
3. amount and composition of sediment in the stream, river or lake substrate
4. size of nozzle and other equipment parameters
5. presence of threatened, endangered, rare or Species of Special Concern
6. condition and location of stream banks
7. past suction dredge use in the stream, lake or river

If the Department cannot determine that a proposed special suction dredge operation will not be deleterious to fish, the Department will not issue a special suction dredge permit.

The Department proposes eight classes of seasons of use for suction dredging in the State's waters.

Class A - No dredging permitted at any time

Class B - Open to dredging from July 1 through August 31

Class C - Open to dredging from the fourth Saturday in May through October 15

Class D - Open to dredging from July 1 through September 15

Class E - Open to dredging from July 1 through September 30

Class F - Open to dredging from December 1 through June 30

Class G - Open to dredging from the fourth Saturday in May through September 30

Class H - Open to dredging throughout the year

Additional classes and conditions may be included in the list of Additional Waters and Regulations. The seasons of use for suction dredging are based on the avoidance of conflicts with the activities of fish and/or the potential impacts to special status species (threatened, endangered, rare, candidates for listing), in specified waters. Under 228.5(c) a list of rivers is described where an eight inch nozzle intake size would be permitted. These rivers have been suction dredged for many years with suction dredges using eight inch nozzles. The Department has not documented any deleterious impacts to fish on these rivers as a result of suction dredging with eight inch nozzles during specified seasons of use when fish are not spawning. A complete copy of the proposed regulations is also contained in Appendix G.

Following is the complete description of proposed regulations.

(1) Section 228 is added to Title 14, California Administrative Code to read:

228. Suction Dredging.

For purposes of these regulations, suction dredging (also called vacuum dredging) is defined as the use of a suction system to remove and return material at the bottom of a stream, river, or lake for the extraction of minerals. Suction dredges may only be used pursuant to the following provisions:

(a) **Permit requirement.** Every person who operates the intake nozzle of any suction dredge shall have a suction dredge permit in his/her immediate possession. Suction dredge permits shall be valid from the first of the year for one calendar year or if issued after the first of the year, for the remainder of that year. The department will charge a fee for each suction dredge permit pursuant to Section 5653(c), Fish and Game Code. Permits may be obtained at any Regional office or at the License and Revenue Branch office.

Any person with a qualifying disability under the Americans With Disabilities Act, who presents a Disabled Person DMV registration or other State, or Federal approved documentation of disability, and who requires assistance in operating a suction dredge may also apply for an assistant suction dredge permit. Any assistant suction dredge permit issued by the department to such disabled person shall be in the disabled applicant's name and shall be issued at no charge. The disabled permittee must be present at the dredge site while the assistant is operating the suction dredge. The assistant shall have the assistant suction dredge permit in his or her immediate possession while assisting the disabled permittee in suction dredging activities. Any assistant may be found liable for his/her own actions. The disabled permittee may be found liable for the actions of his/her assistant.

(b) **Special Suction Dredge Permits.**

(1) **Submission of Written Plan** - Any person may apply for a special suction dredge permit to operate a suction dredge with a nozzle larger than prescribed in subsection

228(e)(1), 228.5(c) or 228.5(d) or during the closed season or in a closed water for suction dredging by submitting a written plan detailing the proposed operation. If the department determines that no deleterious effect to fish may occur, the special permit shall be issued with conditions prescribed by the department to protect fish resources. A special permit will be issued or denied within 30 days upon receipt of a complete written plan detailing the proposed operation unless the time is extended by mutual agreement. If the special permit is denied, the justification for denial, will be provided.

(2) Appeal of Denial - The denial of a special suction dredge permit may be appealed to the director or his/her designee (hereinafter referred to as director). If the director determines that no deleterious impacts to fish may occur, the director may authorize the issuance of the permit. The director will respond to an appeal within 45 days from receipt of notice of request to appeal.

(c) Permit Revocation or Suspension. Any suction dredge permit, assistant suction dredge permit, or special suction dredge permit may be revoked or suspended by the regional manager or his/her designee (hereinafter referred to as regional manager) for any violation of the laws or regulations pertaining to suction dredging. The regional manager, may in his/her discretion temporarily or permanently suspend the renewal of a permit based on past citations or convictions of such laws or regulations. A regional manager's decision to revoke or suspend a permit or permit renewal may be appealed to the director. Any revocation or suspension of a permit or permit renewal shall be in accordance with the following provisions:

(1) Hearing When Permittee Convicted of Violation - In the case where the permittee has already been convicted of a violation of Section 5653 or 5653.3 of the Fish and Game Code or any regulation pertaining thereto permitted by said code, the regional manager shall schedule a hearing to consider the revocation or suspension of his/her permit or permit renewal:

(A) Notification. The regional manager shall notify the permittee, by certified letter, of the intent to consider the revocation or suspension of his/her permit or permit renewal at the hearing. The certified letter shall include the following information:

(1.) Name of permittee and last known address.

(2.) Date, time and place of scheduled hearing.

(3.) Reason for impending action, including a statement as to date and fact of conviction(s).

(4.) A copy of Section 228, Title 14, California Code of Regulations.

(5.) A statement that the permittee has the right to appear and to be represented by legal counsel.

(B) Recording. The proceedings of the hearing shall be recorded by an electronic tape recording system.

(C) Reading of Documents. At the hearing, the regional manager shall read the conviction documents. The department shall provide the regional manager with the

background information regarding the violation(s) and conviction(s) and shall submit into the record a copy of the document(s) which include(s) the facts of the conviction(s) of a violation of the regulation(s) or statute.

(D) Statement by Permittee. The permittee shall make his/her statement regarding the violation(s) and conviction(s), and may argue that extenuating circumstances were such as to not warrant the loss of his/her permit or permit renewal.

(E) Questioning. The permittee or the department personnel may be questioned by the regional manager.

(F) Findings. At the conclusion of the hearing, the regional manager shall make a decision which contains findings or reasons for the proposed action.

(G) Notification by Certified Mail. After the hearing, the regional manager shall provide the permittee, by certified mail, a copy of the final decision.

(H) Appeal. The permittee may request an appeal to the director within 30 days of the date of receipt of the regional manager's decision. The director will respond to an appeal in writing within 45 days from receipt of notice of request to appeal.

(I) Judicial Review. The permittee may request judicial review by filing a petition for writ of mandate in accordance with provisions of the Code of Civil Procedure within 30 days from the date of the decision. The record of the proceedings shall be prepared by the department and delivered to the petitioner within 30 days after receipt of petitioner's request and upon payment of the fee specified in Section 69950 of the Government Code.

(2) Hearing When Permittee Cited but Not Convicted. In the case where the permittee has not been convicted of a violation of Section 5653 of the Fish and Game Code or any regulation pertaining to suction dredging permitted by said code, but has been cited by the department, the regional manager shall schedule a hearing to consider the revocation or suspension of his/her permit or permit renewal:

(A) Notification. The regional manager shall notify the permittee, by certified letter, of the regional manager intent to consider the revocation or suspension of his/her permit or permit renewal at the hearing. The certified letter shall include the following information:

(1.) Name of permittee and last known address.

(2.) Date, time and place of scheduled hearing.

(3.) Reason for impending regional manager action, including a concise statement of the acts or nonactions of permittee which constitutes a violation of Section 5653 or 5653.3, of the Fish and Game Code or regulations made pursuant thereto.

(4.) A copy of Section 228, Title 14, California Code of Regulations.

(5.) A statement that the permittee has the right to appear and to be represented by legal counsel.

(B) Recording. The proceedings of the hearing shall be recorded by an electronic tape recording system.

(C) Presentation of Evidence. The permittee and the department have the right to present evidence at the scheduled hearing as follows:

(1.) Oral evidence shall be taken on oath or affirmation.

(2.) Each party may call and examine witnesses, cross-examine opposing witnesses on any relevant matter, may rebut evidence against him/her, and may orally argue the matter.

(3.) The hearing need not be conducted according to the technical rules relating to evidence and witnesses. Any relevant evidence shall be admitted if it is the sort of evidence on which responsible persons would rely in the conduct of serious affairs.

(4.) The permittee or the department may be questioned by the regional manager.

(D) Findings. At the conclusion of the hearing, the regional manager shall make a decision based on the evidence presented at the hearing and shall issue written findings containing reasons for the decision and the evidence relied upon.

(E) Notification by Certified Mail. After the hearing the regional manager shall provide the permittee, by certified mail, a copy of the final decision.

(F) Appeal. The permittee may request an appeal to the director within 30 days of the date of receipt of the regional manager's decision. The director will respond to an appeal in writing within 45 days from receipt of notice of request to appeal.

(G) Judicial Review. The permittee may request judicial review by filing a petition of writ of mandate in accordance with provisions of the Code of Civil Procedure within 30 days from the date of the director's decision. The record of the administrative proceedings shall be prepared by the department and delivered to the petitioner within 30 days after receipt of petitioner's request and upon payment of the fee specified in Section 69950 of the Government Code.

(d) Special Approval for Use of Suction Dredges in Lakes and Reservoirs. No suction dredging is permitted in any lake or reservoir without written approval from the lake operating agency, the Regional Water Quality Control Board and an onsite inspection and approval by the Department.

(e) Equipment Requirements.

(1) Nozzle Restriction. No suction dredge having an intake nozzle with an inside diameter larger than six inches may be used unless:

(A) Otherwise provided under special regulations of Section 228.5, Title 14, California Code of Regulations, or

(B) A constricting ring with an inside diameter not larger than six inches has been attached to the intake nozzle. This constricting ring must be of solid, one-piece construction with no openings other than the intake and openings not greater than one inch between the constricting ring and nozzle. It must be welded or otherwise permanently attached over the end of the intake nozzle. No quick-release devices are permitted.

(2) Hose Restriction. The inside diameter of the intake hose may not be more than four inches larger than the permitted intake nozzle size.

(f) Restrictions on Methods of Operation.

(1) Winching is permitted under the following provisions:

- (A) Boulders and other material may only be moved within the existing water line. No boulders or other material shall be moved outside the water line.
- (B) Winching of any material embedded in banks of streams or rivers is prohibited.
- (C) Winching of any material into a location which deflects water into the bank is prohibited.
- (D) No power-winch activated shovels, buckets or rakes may be used to excavate materials in the stream course. Nets and other devices may be used to collect cobbles and boulders by hand for removal from dredge holes providing the materials are not removed from within the water line.
- (E) No woody streamside vegetation shall be removed or damaged. Trees may be used as winch and pulley anchor points provided that precautions are taken to ensure that trunk surfaces are protected from cutting or abrasions.
- (2) No person may suction dredge into the bank of any stream, lake or river.
- (3) No person shall remove or damage woody riparian vegetation during suction dredge operations.
- (4) No person shall move any anchored, exposed woody debris such as root wads, stumps or logs.
- (5) No person shall divert a stream or river into the bank.
- (6) No person shall dam or otherwise obstruct a stream, river or lake in such a manner that fish passage is impeded.
- (7) No person shall import any earthen material into a stream, river or lake.

Operating outside these Restrictions On Methods Of Operation may require compliance with Fish and Game Code sections 1600 - 1607, which govern lake and streambed alterations.

(g) Compliance with Other Laws. Nothing in any permit issued pursuant to these regulations authorizes the permittee to trespass on any land or property, or relieves the permittee of the responsibility of complying with applicable federal, State, or local laws or ordinances.

(h) Emergency Closure. The Department may initiate emergency regulatory action pursuant to Government Code Section 11346.1 to close any water to suction dredging.

Authority cited: Sections 5653 and 5653.9, Fish and Game Code.

Reference: Section 5653 - 5653.9, Fish and Game Code.

(2) Section 228.5 is added to Title 14, California Code of Regulations, to read:

228.5 Suction Dredge Use Classifications and Special Regulations.

(a) Suction Dredge Use Classifications. For purposes of these regulations, the following classes of suction dredge use restrictions apply in California's lakes, reservoirs, streams and rivers as specified:

- (1) Class A: No dredging permitted at anytime.
- (2) Class B: Open to dredging from July 1 through August 31.
- (3) Class C: Open to dredging from the fourth Saturday in May through October 15.
- (4) Class D: Open to dredging from July 1 through September 15.
- (5) Class E: Open to dredging from July 1 through September 30.
- (6) Class F: Open to dredging from December 1 through June 30.
- (7) Class G: Open to dredging from the fourth Saturday in May through September 30.
- (8) Class H: Open to dredging throughout the year.

(b) Special Closures by County. Except as specified in subsections (c) and (d) below, the suction dredge class restrictions for each county are as follows:

- | | |
|-------------------|---|
| (1) Alameda | Class H. |
| (2) Alpine | Class C. |
| (3) Amador | East of Highway 49 is Class C, the remainder is Class H. |
| (4) Butte | Class C. |
| (5) Calaveras | East of Highway 49 is Class C, the remainder is Class H. |
| (6) Colusa | Class H. |
| (7) Contra Costa | Class H. |
| (8) Del Norte | Class E. |
| (9) El Dorado | East of Highway 49 is Class C, the remainder is Class H. |
| (10) Fresno | Within the external boundaries of the National Forests is Class C, the remainder is Class H. (Kings River Special Management Area has been closed to suction dredging by the U.S. Forest Service. Contact Sequoia National Forest for details). |
| (11) Glenn | Class H. |
| (12) Humboldt | Class E. |
| (13) Imperial | Class H. |
| (14) Inyo | Class A. |
| (15) Kern | Class H. |
| (16) Kings | Class H. |
| (17) Lake | Class H. |
| (18) Lassen | Class C. |
| (19) Los Angeles | Class H. (Portions of the San Gabriel Mountains may be closed to suction dredging by the U.S. Forest Service. Contact the Angeles National Forest for details). |
| (20) Madera | Within the external boundaries of the National Forests is Class C, the remainder is Class H. |

(21) Marin	Class A.
(22) Mariposa	Within the external boundaries of the National Forests is Class C, the remainder is Class H.
(23) Mendocino	Class A.
(24) Merced	Class H.
(25) Modoc	Class C.
(26) Mono	Class A.
(27) Monterey	Class A.
(28) Napa	Class A.
(29) Nevada	East of Highway 49 is Class C, the remainder is Class H.
(30) Orange	Class H.
(31) Placer	East of Highway 49 is Class C, the remainder is Class H.
(32) Plumas	Class C.
(33) Riverside	Class H.
(34) Sacramento	Class H.
(35) San Benito	Class A.
(36) San Bernardino	Class H. (Portions of the San Gabriel Mountains may be closed to suction dredging by the U.S. Forest Service. Contact the Angeles National Forest for details).
(37) San Diego	Class H.
(38) San Francisco	Class H.
(39) San Joaquin	Class H.
(40) San Luis Obispo	Class A.
(41) San Mateo	Class A.
(42) Santa Barbara	Class H.
(43) Santa Clara	Class H.
(44) Santa Cruz	Class A.
(45) Shasta	Class C.
(46) Sierra	Class C.
(47) Siskiyou	Class E.
(48) Solano	Class H.
(49) Sonoma	Class A.
(50) Stanislaus	Class H.
(51) Sutter	Class H.
(52) Tehama	Class D.
(53) Trinity	Class E.
(54) Tulare	Within the external boundaries of the National Forests is Class C, the remainder is Class H.
(55) Tuolumne	East of Highway 49 is Class C, the remainder is Class H.
(56) Ventura	Class H.
(57) Yolo	Class H.
(58) Yuba	Class H.

(c) Eight Inch Nozzle Size. Eight inch diameter intake nozzle size is permitted on the following rivers unless otherwise specified in Section 228.5(d).

- (1) American (Placer, Nevada, and El Dorado counties)
- (2) Cosumnes (Sacramento, Amador and El Dorado counties)
- (3) Feather (Butte, Plumas, and Yuba counties)
- (4) Klamath - (Del Norte, Humboldt and Siskiyou counties)
- (5) Merced (Mariposa and Merced counties)
- (6) Mokelumne (Amador, Calaveras and San Joaquin counties)
- (7) New (Trinity County)
- (8) Scott (Siskiyou County)
- (9) Trinity (Trinity and Humboldt counties)
- (10) Yuba (Sierra and Yuba counties)

(d) Special Regulations by Water. In addition to the classifications listed in Section 228.5(b) and (c), the special regulations below apply to the following waters:

(1) American River (Sacramento County). The main stem American River from the Sacramento River upstream to Nimbus Dam is Class A.

(2) American River, Middle Fork (El Dorado and Placer counties). The main stem American River Middle Fork from its junction with the North Fork of the American River upstream to the confluence with the Rubicon River is Class C. (Note: Recreational dredging is allowed in the Auburn State Recreation Area on an interim management basis. Contact the Auburn State Recreation Area for instructions.)

(3) American River, North Fork (Placer County). The main stem North Fork American River from Folsom Reservoir to the Colfax-Iowa Hill Road Bridge is Class C. From the Colfax-Iowa Hill Road Bridge upstream to Heath Springs (T16N R14E S26) is Class A. (Note: Recreational dredging is allowed in the Auburn State Recreation Area on an interim management basis. Contact the Auburn State Recreation Area for instructions)

(4) American River, South Fork (El Dorado County). The main stem South Fork American River from Folsom Reservoir upstream to the Highway 49 bridge at Coloma is Class C.

(5) American River, South Fork Tributaries (El Dorado County). All tributaries to the South Fork American River from Folsom Reservoir upstream are Class C.

(6) Antelope Creek and Tributaries (Placer County). Antelope Creek and its tributaries are Class B.

(7) Auburn Ravine and Tributaries (Placer County). Auburn Ravine and its tributaries are Class B.

- (8) **Bear River (Placer County)** The main stem Bear River from Forty Mile Road to the South Sutter Irrigation Districts diversion dam is Class D.
- (9) **Big Chico Creek (Butte County).** The main stem Big Chico Creek from Manzanita Avenue in Chico to the head of Higgins Hole (T24N R3E S31) is Class A.
- (10) **Big Creek and Tributaries (Fresno County).** Big Creek, tributary to the Kings River, and its tributaries are Class A.
- (11) **Big Creek (Trinity County).** The main stem Big Creek is Class A.
- (12) **Blue Creek and Tributaries (Del Norte and Humboldt counties).** Blue Creek and its tributaries are Class A.
- (13) **Butte Creek (Butte County).** The main stem Butte Creek from the Sutter County line upstream to the Durham-Oroville Highway Bridge is Class H; and from the Durham-Oroville Highway Bridge upstream to the intake of Centerville Ditch (T23N R3E S10) is Class A.
- (14) **Calaveras River and Tributaries (Calaveras and San Joaquin counties).** The Calaveras River and its tributaries below New Hogan Reservoir are Class B.
- (15) **Canyon Creek (Yuba County).** The main stem Canyon Creek from its mouth upstream to the Sierra-Yuba County line (T20N R8E S25) is Class C.
- (16) **Cherry Creek (Tuolumne County).** The main stem of Cherry Creek is Class B.
- (17) **Chowchilla River (Madera and Mariposa counties).** The main stem Chowchilla River from Eastman Lake upstream to the West and East forks of the Chowchilla River is Class A.
- (18) **Chowchilla River West Fork (Madera and Mariposa counties).** The main stem West Fork Chowchilla River from its mouth upstream to the Highway 49 bridge is Class A.
- (19) **Clavey River (Tuolumne County).** The main stem Clavey River is Class A.
- (20) **Clear Creek and Tributaries (Siskiyou County).** Clear Creek and its tributaries are Class A.
- (21) **Colorado River and Tributaries (Imperial, Riverside and San Bernardino counties).** The main channel and all side sloughs and tributaries of the Colorado River are Class A.
- (22) **Cosumnes River (Sacramento, Amador and El Dorado counties).** The main stem Cosumnes River from the Western Pacific Railroad Bridge about 1/4 mile above mouth upstream to the Latrobe Highway bridge is Class D; and from the Latrobe Highway Bridge

upstream to the confluence with the North and Middle fork of the Cosumnes River is Class H.

(23) **Cosumnes River, North Fork (El Dorado County).** The main stem North Fork Cosumnes River from the Middle Fork of the Cosumnes River upstream to the Somerset-Pleasant Valley Road Bridge is Class H.

(24) **Cosumnes River, Middle Fork (El Dorado County).** The main stem Middle Fork Cosumnes River from the North Fork Cosumnes River upstream to Bakers Ford on the Aukum-Somerset Road is Class H.

(25) **Cosumnes River, South Fork (Amador and El Dorado counties).** The main stem south fork Cosumnes River from Middle Fork Cosumnes River upstream to the County Road Bridge at River Pines is Class H.

(26) Cow Creek and Tributaries (Fresno County). Cow Creek and its tributaries are Class A.

(27) Curtis Creek (Tuolumne County). The main stem Curtis Creek is Class C.

(28) **Deep Creek (San Bernardino County).** The main stem Deep Creek is Class A.

(29) **Deer Creek (Nevada County).** The main stem Deer Creek from Ponderosa Way below Rough and Ready Falls (T16N R7E S13) upstream to Highway 49 is Class C.

(30) **Dillion Creek and Tributaries (Siskiyou County).** Dillion Creek and its tributaries are Class A.

(31) Dinkey Creek and Tributaries (Fresno County). Dinkey Creek and its tributaries are Class A.

(32) Eagle Creek (Tuolumne County). The main stem Eagle Creek is Class C.

(33) Eastman Lake (Madera and Mariposa counties). Eastman Lake is Class A.

(34) Eel River, All Forks and Tributaries (Mendocino County). The Eel River, all forks and its tributaries upstream of Humboldt/Mendocino and Trinity/Mendocino County lines are Class A.

(35) **Eel River, Middle Fork and Tributaries (Mendocino and Trinity counties).** The Middle Fork Eel River and its tributaries are Class A.

(36) **Feather River (Butte County).** The main stem Feather River from Honcut Creek (T17N R3E S27) upstream to the Highway 70 Bridge is Class B; and from the Highway 70 Bridge upstream to Oroville Dam is Class A.

(37) **Feather River, South Fork (Butte and Plumas counties).** The main stem South Fork Feather River from Oroville Reservoir upstream to Little Grass Valley Dam (T22N R9E S31) is Class C.

(38) **Flat Creek and Tributaries (Shasta County).** Flat Creek and its tributaries are Class H.

(39) **French Creek (Trinity County).** The main stem French Creek is Class A.

(40) **Grapevine Creek (Tuolumne County).** The main stem Grapevine Creek is Class B.

(41) **Horton Creek (Tuolumne County).** The main stem Horton Creek is Class A.

(42) **Hunter Creek (Tuolumne County).** The main stem Hunter Creek is Class B.

(43) **Independence Creek and Tributaries (Nevada and Sierra counties).** Independence Creek and its tributaries from Independence Lake upstream are Class A.

(44) **Jawbone Creek (Tuolumne County).** The main stem Jawbone Creek is Class B.

(45) **Kaweah River (Tulare County).** The main stem Kaweah River upstream of Kaweah Reservoir is Class A.

(46) **Kern River and Tributaries (Kern and Tulare counties).** The Kern River and its tributaries from Isabella Dam upstream are Class A.

(47) **Kern River South Fork and Tributaries (Kern and Tulare counties).** The South Fork Kern River and its tributaries are Class A.

(48) **Kings River and Tributaries (Fresno and Kings counties).** The Kings River and its tributaries from Tulare Lake upstream to Pine Flat Dam are Class A.

(49) **Klamath River, Main Stem (Del Norte, Humboldt and Siskiyou counties).** The main stem Klamath River from the mouth upstream to the Salmon River is Class G; from the Salmon River upstream to 500 feet downstream of the Scott River is Class H; from 500 feet downstream of the Scott River upstream to Iron Gate Dam is Class G; and from Iron Gate Dam to the Oregon border is Class A.

(50) **Knights Creek (Tuolumne).** The main stem Knights Creek is Class C.

(51) **Lavezzola Creek (Sierra County).** The main stem Lavezzola Creek is Class C.

- (52) **Little Rock Creek and Tributaries (Los Angeles County).** The main stem Little Rock Creek and its tributaries from the Sycamore Camp Ground in Angeles National Forest upstream are Class A.
- (53) **Little Swede Creek (Trinity County).** The main stem Little Swede Creek is Class A.
- (54) **Macklin Creek (Nevada County).** The main stem Macklin Creek from its confluence with the Middle Fork Yuba River (T19N R12E S16) upstream is Class A.
- (55) **Malibu Creek and Tributaries (Los Angeles County).** Malibu Creek and its tributaries are Class A.
- (56) **McCloud River (Shasta County).** The main stem McCloud River from the southern boundary of Section 16, T38N, R3W, upstream to Lake McCloud Dam is Class A.
- (57) **Merced River (Merced County).** The main stem Merced River from the San Joaquin River upstream to the Crocker-Huffman Dam (upstream from Snelling) is Class A.
- 7 (58) **Merced River (Mariposa County).** The main stem Merced River is Class C.
- ? (59) **Merced River, North Fork (Mariposa County).** The main stem North Fork Merced River is Class C.
- (60) **Miner's Ravine and Tributaries (Placer County).** Miner's Ravine and its tributaries are Class B.
- Class C (61) **Minnow Creek (Tuolumne County).** The main stem Minnow Creek is Class A.
- (62) **Mokelumne River (Amador, Calaveras and San Joaquin counties).** The main stem Mokelumne River from Burella Road upstream to Camanche Dam is Class A; from Camanche Dam upstream to Pardee Dam is Class H; and from Pardee Dam upstream is Class C.
- (63) **Mud Creek (Butte County).** The main stem Mud Creek from Big Chico Creek upstream is Class C.
- (64) **Nelson Creek (Plumas County).** The main stem Nelson Creek is Class C.
- (65) **New River and Tributaries (Trinity County).** New River and its tributaries upstream from the East Fork New River, are Class A.
- (66) **New River East Fork and Tributaries (Trinity County).** The East Fork New River and its tributaries from the New River upstream are Class A.

(67) **Piru Creek and Tributaries (Ventura and Los Angeles counties).** Piru Creek and its tributaries are Class A.

(68) **Pit River and Tributaries (Lassen and Modoc counties)** The Pit River and its tributaries are Class A.

(69) **Poor Man Creek and Tributaries (Tuolumne).** Poor Man Creek and its tributaries are Class A.

(70) **Portuguese Creek and Tributaries (Madera County).** Portuguese Creek and its tributaries are Class A.

(71) **Rock Creek (Butte County).** The main stem Rock Creek from Big Chico Creek upstream to the Butte-Tehama County Line is Class C.

(72) **Rock Creek and Tributaries (Shasta County).** Rock Creek and its tributaries are Class H.

(73) **Rose Creek (Tuolumne County).** The main stem Rose Creek is Class C.

(74) **Rubicon River and Tributaries (El Dorado and Placer counties).** The Rubicon River and its tributaries are Class C. No dredge with intake larger than 4 inches may be used.

(75) **Sacramento River and Tributaries (several counties).** The main stem Sacramento River from the San Francisco Bay upstream to the Shasta Dam is Class A. The Sacramento River and its tributaries upstream from Shasta Lake upstream to Box Canyon Dam are Class A.

(76) **Salmon River (Siskiyou County).** The main stem Salmon River is Class D.

(77) **Salmon River, North Fork (Siskiyou County).** The main stem North Fork Salmon River from the South Fork Salmon River upstream to the Marble Mountain Wilderness boundary is Class D.

(78) **Salmon River, South Fork (Siskiyou County).** The main stem South Fork Salmon River from the North Fork Salmon River upstream to the Trinity Alps Wilderness boundary is Class D.

(79) **Salt Creek and its Tributaries (Riverside County).** Salt Creek and its tributaries are Class A.

(80) **San Felipe Creek and Tributaries (Imperial and San Diego Counties).** San Felipe Creek and its tributaries are Class A.

- (81) **San Gabriel River, East Fork and Tributaries (Los Angeles County).** The East Fork San Gabriel River and its tributaries from Cattle Canyon upstream are Class A.
- (82) **San Gabriel River, West Fork and Tributaries (Los Angeles County).** The West Fork San Gabriel River and its tributaries from Rincon Guard Station upstream are Class A.
- (83) **San Joaquin River (several counties).** San Joaquin River from the Delta upstream to Friant Dam (Millerton Lake) is Class A.
- (84) **San Juan Creek and Tributaries (Orange and Riverside counties).** San Juan Creek and its tributaries from its mouth upstream are Class A.
- (85) **San Mateo Creek and Tributaries (San Diego, Orange and Riverside counties).** San Mateo Creek and its tributaries from its mouth upstream are Class A.
- (86) **Santa Ana River and its Tributaries (San Bernardino County).** The Santa Ana River and its tributaries from the mouth of Bear Creek upstream are Class A.
- (87) **Santa Clara River and Tributaries (Los Angeles and Ventura counties).** The Santa Clara River and its tributaries from the Los Angeles-Ventura County line upstream are Class A, except that Texas Canyon Creek is Class H.
- (88) **Santiago Creek and Tributaries (Orange County).** Santiago Creek and its tributaries within the Cleveland National Forest are Class A.
- (89) **Saxon Creek (Mariposa County).** The main stem Saxon Creek is Class A.
- (90) **Scott River and Tributaries (Siskiyou County).** The Scott River and its tributaries are Class G.
- (91) **Secret Ravine and Tributaries (Placer County).** Secret Ravine and its tributaries are Class B.
- (92) **Sespe Creek (Ventura County).** The main stem Sespe Creek from the Los Padres National Forest boundary upstream to its confluence with Tule Creek is Class A.
- (93) **Shay Creek and Tributaries (San Bernardino County).** Shay Creek and its tributaries are Class A.
- (94) **Shasta River and Tributaries (Siskiyou County).** The Shasta River and its tributaries are Class A.
- (95) **Sherlock Creek (Mariposa County)** The main stem Sherlock Creek is Class A.

(96) **Silver King Creek and Tributaries (Alpine County).** Silver King Creek and its tributaries are Class A.

(97) **Six-Bit Creek and Tributaries (Tuolumne County).** Six-Bit Creek and its tributaries are Class A.

(98) **Smith River Middle Fork (Del Norte County).** The main stem Middle Fork Smith River is Class D.

(99) **Stanislaus River (Calaveras, San Joaquin, Stanislaus and Tuolumne counties).** The main stem Stanislaus River from the San Joaquin River upstream to Goodwin Dam is Class A, and from New Melones Dam upstream, excluding New Melones Reservoir, is Class C.

(100) **Sullivan Creek (Tuolumne County).** The main stem Sullivan Creek is Class C.

(101) **Sutter Creek (Amador County).** The main stem Sutter Creek from Highway 49 upstream to Pine Gulch Road is Class H.

(102) **Sycamore Creek and Tributaries (Fresno County).** Sycamore Creek, tributary to the Kings River, and its tributaries are Class A.

(103) **Texas Canyon Creek (Los Angeles County).** The main stem Texas Canyon Creek is Class H.

(104) **Trinity River, Main Stem below Lewiston Dam (Humboldt and Trinity counties).** The main stem Trinity River from the Klamath River upstream to the South Fork Trinity River is Class A; from the South Fork Trinity River upstream to the North Fork Trinity River is Class H; from the North Fork Trinity River upstream to Grass Valley Creek is Class D; and from Grass Valley Creek upstream to Lewiston Dam is Class A.

(105) **Trinity River, Main Stem and Tributaries above Lewiston Dam (Trinity County).** The Trinity River and its tributaries above Lewiston Dam are open to dredging from July 1 through October 15.

(106) **Trinity River, North Fork and Tributaries (Trinity County)** The North Fork Trinity River and its tributaries upstream from Hobo Gulch Campground are Class A.

(107) **Tuolumne River (Stanislaus County).** The main stem Tuolumne River from the Waterford Bridge upstream to La Grange Dam is Class A.

(108) **Tuolumne River, North Fork, and Tributaries (Tuolumne County).** The North Fork Tuolumne River and its tributaries are Class B.

(109) **Turnback Creek and Tributaries (Tuolumne County).** Turnback Creek and its tributaries are Class A.

(110) **Wolf Creek (Nevada County).** The main stem Wolf Creek from the Tarr Ditch Diversion (T15N R8E S10) upstream is Class C.

(111) **Woods Creek and Tributaries (Tuolumne County).** Woods Creek and its tributaries from Harvard Mine Road (Jamestown) downstream are Class C; from Harvard Mine Road upstream are Class A.

(112) **Wooley Creek and Tributaries (Siskiyou County).** Wooley Creek and its tributaries are Class A.

(113) **Yuba River (Yuba County).** The main stem Yuba River from its mouth at Marysville upstream to Highway 20 is Class B; and from Highway 20 upstream to Englebright Dam is Class A.

(114) **Yuba River, North Fork (Sierra and Yuba counties).** The main stem North Fork Yuba River from the Middle Fork of the Yuba River upstream to Fiddle Creek is Class H.

PROJECT LOCATION

The proposed project would provide for suction dredge mining in designated waters of the State during specified seasons. Because of the large number of streams, rivers and lakes in California it is not feasible to address all waters of the State individually. Thus, the proposed project would establish eight classes of seasons specifying when suction dredging may or may not be permitted. The classes would be applied first at the county level. Thereafter, more specific class designations for certain individual watersheds and river systems would be established. The majority of waters in California would be open to suction dredge mining.

PROJECT OBJECTIVES

The objectives of the proposed project are to maintain the State's fish and other aquatic dependent wildlife populations in a healthy and viable condition for the enjoyment and use of all Californians while providing suction dredging opportunities to commercial and recreational enthusiasts. This would be accomplished through the formal adoption of regulations. The extent of knowledge of the status of fish, wildlife, and plant populations affected by suction dredge mining varies with the location and species in question and the level of assessment and monitoring efforts that have taken place in the past. Knowledge of fish life cycles, spawning areas, spawning times and migratory periods is based on past

inventory and monitoring studies that were conducted by the Department and others. Knowledge of the status of threatened and endangered species is also based on concentrated efforts of studies conducted by many researchers. The status of many reptiles and amphibians is presently being reviewed. In addition, the Department incorporates the knowledge gained by its biologists and wardens, who have observed the activity of suction dredging for over thirty years on California's rivers and streams.

CONSULTATION AND CONSISTENCY OF PROJECT WITH OTHER PLANS

The Department has taken several actions to coordinate with other agencies involved in land and resource management in California. An NOP regarding the development of the ADEIR was prepared and advertised through the established procedures of the State Clearinghouse and Office of Planning and Research for distribution to involved land management agencies in California.

IV. ENVIRONMENTAL SETTING

PHYSICAL ENVIRONMENT

Suction dredge mining may occur in streams and rivers distributed over most of California. Therefore, it is appropriate to describe the general physical characteristics of the State and then focus on the specific attributes of the State's aquatic and riparian systems. Lakes are not described in detail since little or no suction dredge mining occurs in California's lakes.

California has perhaps the most diverse physical and biological attributes in the United States. Elevations range from 14,495 feet above sea level at Mt. Whitney to 282 feet below sea level in Death Valley.

Precipitation ranges from dry areas of the southern desert where rain may be absent for a year or more, to areas in the North Coast, where rainfall can exceed 100 inches annually. Most precipitation comes in late fall, winter, and early spring. Snow accumulates at the higher elevations, but precipitation over a large part of State is in the form of rainfall.

Several mountain ranges occur in California. The Transverse Range crosses a portion of southern California and eventually links with the Southern Sierra Mountains. The Coast Range extends from Santa Barbara County northward to Oregon. The Sierra Nevada Mountains extend from south central California northward to Mount Lassen where they intersect with the Cascade Range. The Great Central Valley extends through the middle of California from Kern County to Tehama County.

Vegetation types range from lush redwood forests of the North Coast, coniferous forests of the Sierra Nevada Mountains, annual grasslands of the coast and foothill communities, perennial grasslands of the mountain meadows, agricultural crops of the Central, Imperial and Coachella Valleys, chaparral areas of southern California and the foothills, desert plant communities in the southeastern deserts and Great Basin habitats in the northeast portion of the State.

The majority of the suction dredging in California takes place in search of gold. The gold found in the State's rivers comes from the weathering and breakdown of parent rock containing gold veins. Over time, this material moves into stream channels through the processes of erosion.

Suction dredging is concentrated in the gold bearing regions. These regions in California occur in the Klamath, Sacramento-San Joaquin, Tulare Lake Drainage, Walker, Carson, and Owens River systems (Clark, 1972). According to Clark (1972) the most favorable areas for the occurrence of gold are the streams that flow through the gold-bearing regions. Although gold has been recovered in many areas in California, the most productive region by far has been the west slope of the northern and central Sierra Nevada. The mother

lode area has yielded millions of dollars of gold with the richest streams being the Feather, Yuba, and American Rivers and their tributaries. The other good gold bearing areas occur along the Klamath, Trinity, Bear, Consumnes, Mokelumne, Stanislaus, Tuolumne, and Merced rivers and parts of the upper Kern River. In southern California the most productive placer mines are in the San Gabriel Mountains and the dry desert placers of Kern, San Bernardino, and Imperial Counties. Gold has even been recovered from some streams in the Coast Ranges and Peninsular Ranges. A few gold-bearing deposits in re-worked glacial till may also be found along the eastern front of the Sierra Nevada in the region just north of Mono Lake.

BIOLOGICAL RESOURCES

The geologic landscape and climatic conditions in California have created a wide variety of river, lake and stream habitats, riparian systems, and fish provinces. Most of the streams and rivers of the State must be considered when describing the environment where suction dredge mining may occur. A discussion of the environment of the State's rivers and streams, particularly as it relates to fish, invertebrate species, amphibians, aquatic habitat and riparian habitat, is important since these biotic groups represent the largest communities potentially affected by suction dredging.

VERTEBRATES

Excluding subspecies, except those with special designation status (threatened, endangered, rare or Species of Special Concern etc.) there are 113 fish species, 47 amphibians, 77 reptiles, 542 birds, and 214 mammals listed as part of California's rich biological community.

FISH

Presently the waters of California support 113 different species of fish (Moyle, 1989, page 1). The streams and rivers of the State were further classified into ichthyological or fish provinces by Peter Moyle in 1976. Six fish provinces were established based on major drainage systems and fish species. The major systems are the Klamath-North Coast, Sacramento-San Joaquin, Lahontan, Death Valley, south coast drainage, and Colorado. Most suction dredge activity is likely to occur in the Klamath-North Coast and Sacramento-San Joaquin systems because they are the most productive of the historic gold-bearing areas of California.

The Klamath-North Coast Fish Province is located in the northwestern corner of California. It is primarily mountainous, and is characterized by major river systems. These include the Smith, Klamath, Mad and Mattole river systems, the lower Eel and tributaries, Redwood Creek, and many other smaller drainages.

Fifty-one species of fish occur in the Klamath-North Coast Fish Province. All of the major rivers contain anadromous fish species including a variety of seasonal runs of salmon and steelhead. There are also resident trout in a number of the streams.

Most of the area is rugged and mountainous with elevations ranging from 6,000 to 8,000 feet. Much of the area is covered by coniferous forests and woodland habitat. It is characterized by distinct temperature zones. Along the coast, the climate is moderate and foggy. Inland however, seasonal temperatures may exceed 100 degrees Fahrenheit (F). Precipitation along the North Coast is greater than in any other part of California.

Much of the Klamath-North Coast Province is under the U.S. Forest Service (USFS) and Bureau of Land Management administration. State and National Parks occur near the coast. Timber companies and private land holders occupy the remaining areas.

The Sacramento-San Joaquin Fish Province includes the Great Central Valley and the west side of the Sierra Nevada Mountains. The mountainous and foothill areas are characterized by rugged peaks, mountain meadows, coniferous forests, oak woodlands and chaparral communities. The valley areas have been developed primarily for agriculture. Little if any suction dredging occurs in the Central Valley due to a lack of available gold and the existence of large amounts of overburden.

Precipitation varies tremendously in this province from an annual average range of 90 inches in the mountains to 15 inches in the Central Valley. Much of the precipitation in the higher elevations is in the form of snow in winter. Snowpack may sometimes exceed ten feet. This contributes to extended stream flows over the summer, which lead to the development of prime trout fisheries.

Ninety-two species of fish occur in the Sacramento-San Joaquin Fish Province. The most important fisheries of this fish province, in terms of sport fishing, are the trout fisheries in the mountains and anadromous fisheries in the valley rivers. There are also many warm water resident species found in the valley rivers and reservoirs.

In the foothills and mountains naturally-reproducing trout populations exist in most of the waters, except for barren lakes at higher elevations that have not been stocked, or where stocking has been discontinued and natural reproduction is impossible. Rainbow, brook, and golden trout are the main species that can be found. However, some populations of brown, cutthroat, lake, and redband trout, and kokanee and chinook salmon and mountain whitefish are also present.

The status of anadromous fish species and trout species population densities vary considerably from water to water. Generally, populations are greater in more productive waters. However, many factors influence fish population densities, including available spawning habitat, stocking practices, habitat impacts, water level fluctuations, commercial harvest levels, past habitat damage, rainfall conditions, diseases, competition with other

species, and angler harvest. These factors have led to a decline in anadromous fish populations, particularly salmon species that historically migrate up the Sacramento and San Joaquin rivers (California State Lands Commission, 1993). The winter-run chinook salmon has been listed as Endangered by the State and Threatened by the Federal Government due to these population declines.

California's fish populations are highly endemic. There are 65 species and subspecies of fish found exclusively in California (Moyle 1989). The native species of fish adapted to a wide variety of natural conditions, but they have not coped well with human-caused environmental changes. These changes include, damming and diversion of streams and rivers, introduction of non-native fishes, changes in water quality, hydrology and hydrologic processes, and habitat loss and destruction (per comm., Ken Anderson).

Statewide, the Department's list of State and Federal Threatened and Endangered Species (revised January 1993) includes 20 species of fish. Of the 113 native taxa, 6 percent are extinct, 12 percent are officially listed as threatened or endangered, 6 percent deserve immediate listing, 17 percent may need listing soon, 22 percent show declining populations but are not yet in serious trouble, and 36 percent appear to be secure (Moyle and Williams, 1990, page 275). For a list of all fishes found in California, refer to Appendix D.

AMPHIBIANS

The 47 species of amphibians in California can be broken down into three basic groups that utilize riparian areas. The first group includes those species that occur in the riparian zone throughout their lives. Brode and Bury (1984) includes 17 species of amphibians in this group. For a list of these amphibians, refer to Appendix B (Symbol r). The second group includes 12 species that use riparian systems primarily for breeding. These species may leave the area as adults. For a list of those species, refer to Appendix B (Symbol c). The last group includes species that use the riparian and other habitats throughout their range. For a list of those 11 species, refer to Appendix B (Symbol i). This comprises 40 of the 47 species, or 85 percent of the amphibians, known to occur in California. The other seven species do not utilize riparian areas, but they may use moist areas or temporary bodies of water. For a list of these species, refer to Appendix B (Symbol nr).

In a recent survey of Sierra Nevada anuran (frogs and toads) populations, Martin et al (1993) found that the distribution is extremely patchy and sporadic. Six native anuran species occur in the central Sierra Nevada. These are the California toad, California red-legged frog, foothill and mountain yellow legged frogs, Yosemite toad and Pacific tree frog. According to Martin et al (1993) all six native anurans are in a state of decline. Four of these six anurans have declined to the point where they have been listed by the U.S. Fish and Wildlife Service (USFWS) as a category two species, candidates for listings as threatened or endangered species status, and by the Department, as a species of special concern. In addition one species, the red-legged frog, has disappeared from over 99 percent of its former range.

Another species, the Yosemite toad, appears to be absent from 50 percent of its historical range.

There are eight species of amphibians listed as endangered on both the State and federal lists. Six of these are found in riparian areas. Other listings have been proposed or are pending.

Of the 77 reptiles listed as occurring in California, 29 utilize riparian areas at some time in their life cycle (Brode and Bury, 1984). Thus, 38 percent are riparian habitat users. Five reptiles occur in the riparian zone throughout their lives. For a list of these reptiles refer to Appendix C, (Symbol r). Seven species depend on riparian systems in the arid parts of their range. These species are listed in Appendix C, (Symbol i).

Seventeen reptiles utilize riparian as well as other systems throughout their range. The remaining 48 species are not regular visitors to riparian areas and are not likely to be found in areas where suction dredging and associated activities would occur.

BIRDS

Riparian habitat is essential to many species of birds. According to Comrack and Overholser (1993, page 2) riparian woodland habitat supports a greater density and diversity of breeding bird species than any other type of habitat in California. These stream-side ecosystems provide a seasonal abundance of food (insects), water, nesting substrate and cover for both migratory and resident species. The alteration and loss of such habitat has devastated California's bird life. Forty-six percent of land bird species listed as endangered, threatened or of special concern in California require riparian habitat for migration stop-offs or for breeding purposes (Comrack and Overholser, 1993, page 2).

Many bird species are dependent upon riparian vegetation for purposes including, but not limited to, food, cover, nesting sites, singing and observation perches, and migration corridors and other requirements. Over 135 species of California birds depend completely upon riparian systems or use them preferentially at some stage of their life histories (Reynolds, 1993, page IV-20).

Thirteen species of birds that utilize riparian areas are listed as endangered or threatened by the State or Federal Government. Another 26 riparian-dependent or riparian-preferring birds are presently in sufficient decline that they have been placed on the Department Bird Species of Special Concern List (Reynolds, 1993). For a list of riparian-dependent or riparian-preferring birds and a list of threatened and endangered bird species refer to Appendix E.

MAMMALS

Many mammals also reside in riparian areas. The water sources and food or shade from the riparian canopy is often essential to their survival. Of the 133 taxa of mammals native to California that are limited to or largely dependent upon riparian wetlands, 21 species and subspecies are particularly vulnerable to the loss of habitat. They face potential threats of extinction, principally through destruction of habitat (Reynolds, 1993, page IV-22). Even though these species may not live in the water they are highly dependent on riparian systems.

INVERTEBRATES

There are about 11,000 described species of fresh-water invertebrates in the United States excluding protozoa and parasitic species. The number of species is expected to expand as more information is gathered in the western area of the United States. Extensive surveys of California are lacking so the aquatic invertebrate fauna of California's streams is not well known. Despite this lack of information, there are seventeen species of Trichoptera (Caddisflies) alone listed for California in the Federal Register as candidate species on the 1989 Federal Endangered and Threatened Species List (Erman, 1992). Since many of California's unique invertebrate species are restricted to single stream basins or small aquatic habitats, they are highly vulnerable to extinction (Erman, 1992).

The diversity of aquatic invertebrates is an indicator of the general health of stream systems. In addition, aquatic invertebrates or terrestrial invertebrates with an aquatic phase contribute significantly to the aquatic, semi-aquatic and terrestrial food webs. It is not only the quantity and overall biomass of available food, but the quality (species) of available food that is important to many predators. Requirements of all stages of a life cycle must be met for the survival of such species. Altering stream flows or stream conditions for even short periods at a critical life stage, could result in a severe reduction or loss of that species from the stream system Erman (1992, page 73).

THREATENED AND ENDANGERED SPECIES

Because of the extensive nature of the proposed project, many State or Federal special status species (threatened, endangered, rare, candidates for listing, Department Species of Special Concern) could be affected. As required by the California Endangered Species Act, a Biological Opinion was prepared for this project and is herein incorporated as Appendix I. The regulations, as proposed, would not result in the take of any threatened or endangered species. Therefore, suction dredging as permitted would not jeopardize the continued existence of any of these species.

RIPARIAN HABITAT

Most streams and rivers have riparian habitat adjacent to their shores. Riparian habitat is the complex association of plants and animals dependent on water for at least a portion of their life cycles. Riparian habitats are the result of geologic, land form, soils and hydrologic factors acted upon over time. These processes are also changed by interactions with biological components. The great diversity in precipitation patterns, hydrologic conditions, land forms, climate and complex geology of California are some of the principle reasons for the diversity of habitats and riparian systems in California. Riparian systems are either accretion (depositional or accumulating material) or erosive (eroding or losing material). ~~In California, most of the systems are losing material over time (Randy Kelly, per comm., 1993).~~

The richness and biological diversity of riparian areas in California is attributable in part to the availability of water and the large edge effect which is produced by the occurrence of different habitat types contiguous with or in close proximity to one another. Riparian vegetation provides bank stability, shade, vegetative material, sediment trapping capabilities and large woody debris to the stream. In addition, it provides habitat for many terrestrial or semi-aquatic species that contribute to the food web of the stream ecosystem (Randy Kelly, per comm., 1993).

The riparian and aquatic habitats are among the richest in biological diversity in the State. Riparian areas depend on the stream courses and flow regimes to maintain healthy ecosystems. Riparian areas support aquatic life. In addition they provide shade and water to many nonaquatic species. Thus riparian areas are essential habitat for many terrestrial invertebrates, amphibians, reptiles and other vertebrate species as well as their aquatic counterparts. In the Central Valley, the State has lost 95 percent of historic salmon habitat because of dams, migration blockages, or severe degradation which makes the areas uninhabitable (Reynolds, 1993, page 1-3).

Riparian and aquatic areas are major attractions to humans. Use in these areas consists of both consumptive and nonconsumptive activities, which include fishing, hunting, rafting, swimming, wading, wildlife watching, water consumption, boating, timber harvest, and mining.

SOCIOECONOMIC ENVIRONMENT

PERSONAL INCOME

People derive varying amounts of income from suction dredging in California. In 1992, over 4,000 suction dredge permits were issued to recreational and professional/commercial suction dredgers. Many recreational suction dredgers probably spend more money on the activity than their returns in recovered gold. They derive pleasure from the activity itself. For some, profit is not the motivating factor.

Professional or commercial suction dredgers derive all or most of their income from suction dredging. They spend approximately twice as much time as recreational suction dredgers in the rivers searching for and recovering gold. They commonly make thousands of dollars a year from the gold they recover (Public Scoping Meetings, 1993).

In the development of the ADEIR and proposed regulations the Department conducted two surveys to collect information on economic aspects of suction dredging. One survey, sent to over four thousand individuals, asked questions regarding types of suction dredge equipment used, time spent suction dredging, location of suction dredging, money invested in suction dredge equipment and other related questions. Approximately 2,000 surveys were returned. Another survey was sent to city Chambers of Commerce, county Boards of Supervisors, and some city managers. Both surveys were not conducted or developed using scientific or established survey methodology. The surveys were sent to a targeted audience (suction dredge community) to collect specific types of information.

From these surveys the Department was able to more accurately describe many aspects of suction dredging, including the economic implications of the new proposed regulations in the ADEIR. Regarding the percentage of suction dredgers that considered themselves recreational versus commercial, 90 percent of those who responded to the surveys considered themselves recreational suction dredgers.

There are few if any statistics on the actual amount of income derived from suction dredging. Publications such as "Gold Districts of California Bulletin 193, California Division of Mines and Geology, 1970", provide detailed information regarding gold producing areas of California. However, most of the information is related to large scale production operations and total tonnage of gold recovered from gold-bearing areas. It does not cover the productivity of small suction dredging operations. In addition, many transactions involving recovered gold go unreported. Buying and selling of gold often takes place in informal locations which makes accountability difficult.

LOCAL ECONOMY

California suction dredge activities contribute to local economies, particularly in small towns located in popular suction dredging areas. Suction dredge operators frequent local establishments grocery stores, hardware stores, auto parts stores, gas stations, restaurants and motels. There are no known statistics kept on the actual dollar amount suction dredging contributes to local economies, but the survey results indicate more than 20 million dollars may be spent by suction dredgers on living expenses related to suction dredge operations. This would represent a substantial amount of money to local economies, particularly in small towns located in areas of high suction dredge activity. From the surveys sent out in the development of the new proposed regulations and second DEIR, the Department has determined that during suction dredging 7 percent of suction dredgers stay in motels

sometimes, 40 percent live at home sometimes, 38 percent live in RVs sometimes, and 61 percent camp out.

MINING EQUIPMENT INDUSTRY

There is a small industry in California from the manufacturing and sale of suction dredge equipment, panning supplies, refinement equipment and diving gear. There are several manufacturers of mining equipment. One of the largest and well known companies has been in business for 45 years. It employs approximately 45 people (Public Scoping Meeting, 1993).

From the surveys sent to individuals the Department was able to determine the average amount of money spent on suction dredge equipment is approximately 6,000 dollars per person. Assuming approximately 4,000 suction dredges (one per applicant) this represents a total expenditure of 24 million dollars.

REQUIREMENTS OF LAND OWNERS

Suction dredgers must be acquainted with the various regulations that govern mineral prospecting and mining operations. Many of the mineral deposits are on Public Domain lands in the United States. Much of the approximately 45.9 million acres of California that is held by the United States is open for mineral exploration. This includes land in the national forests (20.4 million acres in 21 national forests that are subject to USFS regulations and BLM (17.1 million acres) administered properties. Land not normally open for mineral exploration includes privately owned land (51 million acres), national parks (4.7 million acres), military bases (2.8 million acres), Indian reservations, most land held by the State of California including counties and cities (4.2 million acres), reservoirs, permanent lake beds, certain wilderness areas, national monuments, most power sites and land situated below mean high tide (Forest and Rangeland Resources Assessment Program, 1988).

No maps, guides, or reference materials exist that show the locations of all land open to mineral exploration. Thus prospectors must determine ownership by looking for signs, monuments and location markers, and by searching county property records. Deed and patent records are maintained in the offices of the County Assessor. Unpatented mining claims are in the office of the County Recorder. Records of patented land and unpatented mining claims are in the Land Office of BLM.

Land privately owned may be accessed for prospecting by negotiating a lease or obtaining a permit from the land owner. The beds of navigable streams are State lands and are administered by the California State Lands Commission. They are open to dredging under permit.

Most applicable State and federal laws regarding water quality, threatened and endangered species, species of special concern and streambed alteration issues are independent of land ownership. Many claim and patent stipulations come under the jurisdiction of the General Mining Law of 1872 (30 USC 21-54 and 43 CFR 3860-3870) which provides the opportunity to explore for, discover, and purchase certain valuable mineral deposits on federally administered land in the United States that are not closed to mineral entry. The USFS regulations regarding disposal of mineral materials is found within 36 CFR 228. Some requirements in public domain areas focus on conditions for occupancy and can vary from location to location.

Suction dredging may require compliance with the Clean Water Act (CWA), Section 404, which regulates the discharge of dredged and fill materials into waters of the United States. These regulations are administered by the U.S. Army Corps of Engineers. The Department has produced a list of other laws related to suction dredging for informational purposes. This list may be available at locations where suction dredge applications are issued.

V. ENVIRONMENTAL EFFECTS OF THE PROPOSED PROJECT

The proposed regulations would permit regulated suction dredging in California's waters. Unregulated suction dredging can potentially result in deleterious and sometimes significant adverse environmental effects to: (a) benthic (bottom dwelling) and/or invertebrate communities, (b) fish and fish eggs and fry, (c) other aquatic or riparian dependent plant and animal species, (d) channel morphology which includes the bed, bank, channel and flow of streams and rivers, (e) water quality and quantity, and (f) riparian habitat adjacent to streams and rivers (North, 1993, Badali, 1988, Griffith and Andrews, 1981, Harvey, 1986, Harvey and McCleneghan, 1982, Hassler and Somer, 1982, Hassler, Somer and Stern, 1986, Lewis, 1962, McCleneghan and Johnson, 1983, Thomas, 1985).

But based on the best available data specific safeguards included in the proposed project would assure that the impacts to these resources would not be deleterious to fish and would be minimized to less than significant. The safeguards to protect the affected resources include; 1) the designation of waters or areas of the State closed to suction dredging; 2) seasons of operation where suction dredges may be used; and 3) a variety of conditions and restrictions on methods of operation described in Chapter I and III of this document, and in Appendix G, Proposed Regulations.

The proposed regulations take into consideration the degrading condition of the State's rivers and riparian areas and declining status of species including threatened and endangered species as documented in many current documents including California's Rivers, A Public Trust Report, State Lands Commission, 1993, Upper Sacramento River Fisheries and Riparian Habitat Management Plan, 1989, Sliding Toward Extinction: The State of California's Natural Heritage, 1987, Annual Report on the Status of California State Listed Threatened and Endangered Animals and Plants, 1991, Fish Species of Special Concern of California, Department, 1989, Draft Central Valley Anadromous Fisheries and Riparian Wetlands Habitat Protection and Restoration Action, Department, 1993, The Central Valley Fish and Wildlife Management Study, BOR, 1986, and Biodiversity Loss in the Temperate Zone: Decline of Native Fish Fauna in California, Moyle and Williams, 1989. Given the depressed state of river resources in California, as the trustee for fish and wildlife resources for the State of California, the Department has a duty to reduce the adverse impacts on fish and wildlife resources whenever possible. These resources include fish habitat and riparian resources. Thus the Department must take a conservative approach to permitting activities that may adversely affect those resources.

OVERVIEW OF THE EFFECTS OF SUCTION DREDGING ON THE ENVIRONMENT

Effects of unregulated suction dredging on the aquatic environment and fish are documented in scientific literature. Most of the studies have focused on cold water stream environments that support salmon, steelhead or trout.

Most of the published information on suction dredging impacts (Lewis 1962, Griffith and Andrews 1981, Thomas 1985, Harvey 1986, Hassler and Somer 1982, Hassler et al. 1986, Stern 1988, Somer and Hassler 1992) is limited to studies on dredges with intake nozzle sizes of six inches or less in diameter. A report by McCleneghan and Johnson (1983) includes some limited information on the use of dredges larger than six inches. These larger dredges accounted for nearly eight percent of the 270 dredges included in their survey of the Sierra Nevada Mother Lode region. Hassler et al. (1986) observed an eight inch dredge in Canyon Creek in 1982, but no information was collected on the impacts that dredge may have had on the stream environment. Consequently, there is very little information in the available studies with which to measure the impacts of the large dredges (larger than 6 inches) as compared to those of the smaller dredges. However, the Department has accumulated over thirty years of field observations of eight inch dredges working on some rivers in California. In many cases the degree of impact is related to the time of year, dredge size, amount of material dredged, density of dredges on a stream, type of sediment encountered and stream flow (Harvey 1986, pages 407-408; Hassler et al., 1986, page 117; Thomas, 1985, pages 485-487; Griffith and Andrews, 1981, page 28; Harvey et al., 1982; Stern, 1988, page 67; North, 1993, page 18).

In all of the studies performed on suction dredging, adverse impacts to river resources were reported. Effects of increased turbidity levels and sedimentation, decreases in invertebrate populations and reconfiguration of the streambed were temporary and localized (Stern, 1988, Harvey et al., 1982, pages 11-17; Thomas, 1985, North, 1993). However, long-term effects of suction dredging were observed regarding impacts to the bank and channel of streams and impacts to riparian habitat (Stern, 1988, page 6, Thomas, 1985, pages 485-486; North, 1992, pages 13-15; McCleneghan and Johnson, 1983, page 6). According to Stern (1988), suction dredging can negatively affect fisheries by entraining fish eggs and fry, degrading water quality, increasing substrate embeddedness, reducing instream cover, depressing aquatic invertebrate populations, destabilizing stream channels and banks, damaging riparian vegetation, and generally decreasing instream habitat diversity and complexity. In addition, suction dredging can temporarily increase turbidity levels (Harvey, 1986, page 406; Thomas, 1985, pages 483-487).

One study, performed by Lewis (1962, page 2) reported positive effects from suction dredging to spawning gravels if dredging occurs in a uniform manner instead of the common pocket and pile method. Thomas (1985, page 486) reported that suction dredging increases gravel permeability by an insignificant percentage which can improve spawning gravels under specific conditions. The same study however states that harm could be caused if either the dredge were larger, the stream smaller, or the substrate more silty. In a stream where intergravel flow and dissolved oxygen is marginal to begin with, a small decrease in permeability could cause a decrease in salmonid growth rate or result in increased mortality of eggs and/or alevin. In addition, Hassler et al., (1986, pages 102) found that dredger tailings do not create good spawning habitat for salmonids until dispersed.

Positive effects of suction dredging reported by suction dredgers include improvement of spawning gravels, removal of lead and mercury from the rivers, removal of submerged garbage and the feeding of fish.

IMPACTS ON FISH

Most of the following discussion on impacts is based on research on resident trout, steelhead trout and salmon. It is assumed that many of the impacts discussed below may also occur to warm water species.

IMPACTS FROM ENTRAINMENT

Adults

Suction dredging appears to have little direct immediate physical effect on adult fishes in terms of harm from actual entrainment by dredges (North, 1993, page 19,). Many fish are capable of avoiding being entrained into suction dredges. Adult salmon and steelhead are too large to pass through the smaller dredges and have too great a burst swimming speed to be entrained into the larger dredges. Some smaller species, such as the sculpin, may not have the burst speed needed to avoid being entrained, except by the smallest dredges. The adult fish of these smaller species, which are entrained, are not likely to suffer any significant adverse effects. Harvey (1986, pages 17-18) noted no immediate ill effects on adult sculpin after passing through a dredge.

Juveniles

Entrainment through a suction dredge does not appear to have a significant adverse effect on juvenile fishes either. Harvey (1986, pages 17-18) observed no immediate ill effects on juvenile rainbow trout and sculpin after passing through a dredge. Griffith and Andrews (1981, pages 23-25) passed 20, 1.7 to 2.3-inch (4.2 to 5.9-cm) and 6, 5.3 to 5.9-inch (13.5 to 15.1-cm) brook trout (*Salvelinus fontinalis*) through a 2.5-inch (6.4-cm) dredge and observed no mortality during the following 48 hours or thereafter.

Yolk Sac Fry

Entrainment can have a significant adverse effect on the more delicate life stages of fish such as the yolk sac fry. Salmonid yolk sac fry remain in spawning bed gravels until the yolk is absorbed. During this stage, the yolk sac can be easily ruptured or torn from the fish. In experiments conducted by Griffith and Andrews (1981, pages 22-25), hatchery rainbow trout sac fry experienced an 83 percent mortality rate, over a 20-day period, after passing through a 2.5-inch (6.4 cm) dredge. The major cause of death in the test fish was detachment

of the yolk sac. This occurred in 42 percent of the fry that were entrained. It is likely that yolk sac fry of other fish species would experience similar mortality rates if entrained.

Eggs

Developing eggs of salmonids are significantly adversely affected by entrainment through suction dredges. The degree of harm caused by entrainment may vary depending on the species of fish. Griffith and Andrews (1981, pages 22-25) subjected un-eyed cutthroat trout (*Oncorhynchus clarki*) eggs to entrainment through a 2.5-inch (6.4-cm) dredge. All eggs died within 1 hour. The mortalities resulted from rupture of the viteline membrane in the eggs. Griffith and Andrews (1981, pages 22-25) found that chinook salmon eggs are generally considered to be more resistant to shock and might be less affected by entrainment into dredges than the species they used in their experiments.

The aforementioned experiments on the effects of entrainment on yolk sac fry and eggs underestimate the degree of adverse impact eggs and sac fry would actually experience in nature. Whereas fish are commonly observed feeding in the discharge of suction dredges (Lewis 1962, L. Gunn pers. comm.), nearly all eggs and sac fry that survive entrainment would be eaten by fish and other predators. They would become available prey as a consequence of their being taken out of their protective in-gravel environment by suction dredging. As they are highly desirable food items, it is doubtful that many of them would survive to the swim-up stage. Those that could escape immediate predation might find temporary refuge in substrate interstices. However, it is likely that most would ultimately fall prey to predatory aquatic insects, fish, amphibians and birds as a consequence of being displaced by suction dredging (E. Gerstung, per comm., 1993).

The effects of entrainment on yolk sac fry and eggs would be similar with large or small suction dredges. In general, large suction dredges can effect a larger area of streambed than a smaller dredge over the same period of time. Absent regulations closing areas during fish spawning periods large dredges would have a greater potential to suck up more yolk sac fry and eggs but suction dredging with both large and small dredges would have significant adverse environmental effects. By closing areas to suction dredging during fish spawning periods, the proposed regulations would reduce these significant impacts to less than significant. Suction dredging under this proposed regulation would not be deleterious to yolk sac fry and eggs because the seasonal closures would protect these life stages from any adverse impacts from suction dredging.

OTHER IMPACTS ON FISH

Other effects caused by suction dredging operations, such as increased turbidity and sedimentation, disturbance to spawning gravels, and damage to the bed, bank and channels of streams can adversely affect fish and stream resources. (Stern, 1988, pages 58 - 72; McCleneghan and Johnson, 1983, pages 6-11, Thomas, 1985; North, 1993; Harvey, 1986).

Most of the effects related to turbidity and sedimentation, and disturbance to spawning gravels reported were temporary and localized, and therefore, represented impacts considered less than significant under regulated conditions. Impacts to the banks and channels of streams and rivers from suction dredging were sometimes considered more long-term in nature, and therefore, could create significant adverse impacts if unregulated. Natural fluctuations in turbidity and sedimentation are addressed in the Responses to Comments, Subject Category 12, Appendix K.

Reproduction

Salmon, steelhead and trout are usually very selective in choosing spawning sites. These sites must have certain attributes which attract adult spawners and subsequently produce viable young. Gravel size composition and permeability, and water velocity and depth are factors which determine the quality of the spawning site. Loose, uncompacted gravels with high permeability and unclogged interstices are needed by developing salmonid eggs and fry for carrying away metabolic wastes, the delivery of oxygen and permitting fry emergence (Hausle and Coble, 1976). The act of redd construction by spawning adults often enhances the initial condition of the spawning sites by eliminating fines and increasing gravel permeability.

Even the finer sediment found in tailings can detrimentally affect the permeability of spawning gravels, the delivery of oxygen to incubating eggs, embryonic development and fry emergence. Stern, 1988, reports of a study Campbell conducted in 1962 on the Powder River in Oregon. He observed the detrimental effects of siltation on rainbow trout eyed eggs and fingerlings below a large scale mining operation. Eyed eggs maintained in hatching baskets suffered a rate of 100 percent mortality in the test area. Fingerlings had a 57 percent mortality rate (Stern, 1988, page 5).

Silver et al. (1963) studied the effects of reductions in oxygen concentrations and water velocities over incubating chinook salmon and steelhead eggs under laboratory conditions from the period of fertilization to hatching. The reductions resulted in a longer development period to hatching, in the reduction in size of the embryos at various development stages, in higher pre-hatching and post-hatching mortality rates and in increased occurrences of structurally abnormal embryos. They also found that abnormal or very small sac fry of steelhead and chinook salmon that resulted from the embryonic development at very low oxygen concentrations could not be expected to survive under natural conditions.

In most instances, dredger tailing piles are left in place at the end of the dredging season during low summer flows. They are composed of unsorted, unconsolidated streambed materials. They exist as an anomaly in the morphology of the stream channel. Consequently, these features are unstable and are usually dispersed by flushing flows during the following winter. In general, tailing piles were judged as undesirable spawning areas (Hassler et al., 1986, pages 102) Since tailing materials sit on top of the streambed, they may be mobilized by slight increases in stream volume and velocity (Stern, 1988, pages 63-64).

Fish spawning on dredger tailing piles that are left in place after the dredging season could result in egg and fry mortalities when the piles are dispersed by higher flows. However, the use of these features as spawning sites appears to be minimal (Hassler et al., 1986, pages 102-103). Of the approximately 60 salmonid redds observed in a study area on Canyon Creek none were found within dredger tailing piles (Stern, 1988). Once tailing piles are dispersed by high stream flows they do make up a component of the suitable spawning substrate (Hassler et al., 1986, page 102).

The proposed regulations address these impacts to fish reproduction and reduce the effects to less than significant and based on the best available data to not deleterious. Suction dredge seasons have been closed during fish spawning periods. In addition, the proposed regulations restrict the nozzle size to 6 inches unless specifically exempted, which would decrease turbidity and sedimentation produced by individual suction dredges since less streambed substrate would be disturbed. A maximum 6 inch nozzle size would also decrease the amount of spawning gravels disturbed by suction dredging as compared to larger dredge nozzle sizes. Sedimentation caused by suction dredging that can negatively impact spawning substrates would also be reduced by proposed regulations prohibiting importation of earthen material, suction dredging into the bank of a stream or river, and diverting water into a bank. These activities could, if not prohibited, add substantial amounts of sediment to streams and rivers covering potential spawning areas.

Physiology

Increased turbidity and suspended sediment can affect the physiology of salmonids. Steelhead and Coho salmon grow at slower rates in turbid water (NTUs 11 - 32) (Nephelometric turbidity units) compared to clear water (Sigler, 1984). Somer and Hassler (1992, page 251), reported maximum NTUs of 15 on Big East Fork. They assert that salmon were not affected by the elevated turbidity and cited studies that found salmonoid growth was reduced at 25 NTU but not below. Hassler et al., (1986, page 43) reported NTUs of 20.5 below a suction dredge on Canyon Creek. Harvey et al., (1982, page 9) reported NTUs of 50 and 35 on Butte Creek and Yuba River respectively. Turbidity caused by suction dredging is highly variable. Suction dredging bedrock pockets containing only sand and gravel causes virtually no change in turbidity whereas suction dredging clay deposits and stream banks causes very noticeable turbidity increases (Harvey et al., 1982, page 9). Hausle and Coble (1976) found that as sand was added to spawning gravels it inhibited the emergence of fry.

Effects of the levels of turbidity and suspended sediment normally associated with suction dredging as regulated in the past in California appear less than significant with regard to the health or physiology of adult and juvenile salmonids, particularly when one considers that turbidity levels return to normal levels on an average from 20 to 80 meters below a suction dredge. Also, natural levels of turbidity may be higher than levels of turbidity caused by suction dredging during certain times of the year.

Feeding

Fish have been observed feeding in turbid plumes created by suction dredging. Stern (1988, page 67) observed young steelhead actively feeding on dislodged invertebrates in turbid dredge plumes, even though clear flowing water was available nearby. Cutthroat and rainbow trout (Thomas, 1985, page 487) have been observed feeding on dislodged invertebrates during suction dredging. During diving surveys on Canyon Creek, Hassler et al. (1986, page 115) observed rainbow trout and/or juvenile steelhead congregating and selectively feeding on benthic invertebrates that were displaced by suction dredging. Harvey (1986, page 406) observed rainbow trout feeding in Butte Creek in turbidities of 25 to 30 NTU. Lynn Gunn (pers. comm.) and other suction dredgers have reported fish feeding at the face of the hole and in the discharge of their suction dredges. This foraging behavior may not occur in adult salmon and steelhead, however, because they do not feed in freshwater and they are typically repelled by human activity (E. Gerstung, pers. comm). Increased turbidity caused by suction dredging, reduces the ability of fish to see food. However, suction dredging, through the action of stirring up the stream bottom, exposes invertebrates, making them readily available as forage for fish. One difference between fish naturally feeding on invertebrates and fish feeding on invertebrates exposed by suction dredging is that the invertebrate community is exposed to predation all at once and its habitat destroyed. In most cases it will take several weeks before invertebrate populations will recolonize an area of river subjected to suction dredging (Harvey, 1986).

The effects of suction dredging on the feeding of fish appear to be less than significant. Although invertebrate populations are negatively affected by suction dredging, the impacts are localized and short-term. Although turbidity and sedimentation may make it more difficult for fish to locate food, these effects may be offset by suction dredging exposing invertebrates which are readily consumed by fish. The proposed regulations that restrict nozzle size to 6 inches, prohibit importation of earthen material and prohibit suction dredging into a bank of a stream would minimize any adverse effects of suction dredging on the feeding by fish since less sediment would be produced which may hinder the ability of fish to see food sources. Based on best available data, suction dredging under the proposed regulations would not be deleterious to feeding fish.

Behavior and Distribution

Studies on Canyon Creek (Stern, 1988,) Butte Creek and the North Fork American River (Harvey, 1986) did not indicate a difference in fish distribution or density below or above suction dredging sites. Stern (1988, page 66) reported that suction dredging did not appear to influence the behavior of adult spring-run salmonids in their summer holding areas. One spring-run chinook salmon was observed 150 feet (50 M) below an operating dredge, and a spring-run steelhead was seen at the upper end of a 30-meter (90-foot) long pool while a dredge was operating at the lower end. However, Somer and Hassler (1992, page 252) observed that during low flow years, increased suction dredge activity could disturb spring chinook salmon and summer steelhead that hold in Canyon Creek, possibly causing mortality. Some Department Fisheries Biologists have reported there are disturbance factors related to suction dredging and summer adult fish holding areas (T. Healy, pers. comm). During the

summer adult fish are susceptible to stress as a result of warmer water temperatures. Suction dredging may move fish out of preferred deep holding pools where cooler water resides. Lynn Gunn (pers. comm.) reported observing, as have other suction dredge operators, adult salmon holding under her dredge float while dredging.

The proposed regulations would close certain stream courses to suction dredging during summer months to reduce any potential disturbance impacts on important adult fish summer holding areas. These closures would minimize any adverse effect of suction dredging on the behavior and distribution of fish. Therefore, based on best available data, suction dredging under the proposed regulations would not be deleterious to fish.

Suction dredging can affect the behavior and distribution of fish by adversely affecting their habitat. During the normal course of suction dredging operations, operators often relocate the larger rocks and boulders by hand or by power equipment. In some instances, operators move them to the margin of the stream channel. Relocating the boulders can destroy favorable habitat and can create new habitat by new boulder placement that may not be as favorable to fish.(E. Gerstung, pers comm.)

By blocking the force of the flow, large rocks and boulders provide feeding stations and resting places for fish. Juvenile salmon, steelhead and resident trout will establish and defend territories behind such structures. Their ability to successfully defend these territories, however, often depends on the size and aggressiveness of the fish. When boulders and rocks are moved out of the main stream, where the bulk of the insect drift occurs, to the margins of the stream channel, the boulders invariably provide poorer feeding stations (E. Gerstung, pers comm.). However, discussions the Department has had with many suction dredgers indicated that most dredgers only move boulders a short distance to dredge underneath them or to prevent them from falling on the dredger working in a deep hole.

The proposed regulations address movement of boulders and other material by prohibiting movement of material outside the water line or moving materials that would cause damming or diversion of water. Impeding of fish passage is also prohibited by the proposed regulations. These prohibitions would reduce potential significant impacts to fish habitat from suction dredging to less than significant, and based on best available data, to not deleterious.

Changes in available habitat can cause local decreases in the density of some fish species such as riffle sculpin. Many of the larger rocks, under which sculpin seek cover, become imbedded in dredged areas. The microhabitats of other bottom-oriented stream fishes such as speckled dace and young-of-the-year rainbow trout may be more readily affected than other less benthic species (Harvey,1986, page 407).

Hassler et al. (1986, page 103) found that high densities of deposited sediment 33 to 52 feet (10 to 16 m) below dredging activities in Canyon Creek markedly reduced the amount of instream cover for juvenile salmonids because fine sediment filled gravels interstices and stream bottom roughness below the dredge areas.

The proposed regulations address these concerns regarding habitat decreases by limiting nozzle size to 6 inches or smaller which would reduce the volume of material suction dredged and more closely match equipment to the size of the stream, prohibiting the importation of earthen materials into the stream, and prohibiting suction dredging into the banks of streams. All of these regulations would decrease sedimentation effects on stream substrate to less than significant, and based on best available information, to not deleterious .

However, in some circumstances suction dredging may be beneficial to fish habitat. In streams carrying heavy sediment loads, the substrate often becomes embedded in fines and compacted. The result is a highly embedded and nearly "cement-hard" substrate which provides poor fish spawning and rearing conditions. Suction dredging in such areas may break up compacted substrates and mobilize the fines, particularly on dammed streams which do not receive high flushing flows. (Lewis, 1962, Public Scoping Meeting, 1993).

Abandoned dredger holes can also provide holding and resting areas for fish. Stern (1988, page 66) observed young steelhead in active and abandoned dredge holes on Canyon Creek. Suction dredge operators report adult salmon and steelhead moving into dredger holes overnight.

IMPACTS ON AMPHIBIANS

Amphibians often dependent on aquatic, riparian or wetland areas during some if not all life stages. The riparian areas in California provide habitat for 83 percent of amphibians (Brode and Bury, 1984, page 30).

Unregulated suction dredging can directly and significantly affect amphibian habitat. Breeding, rearing, foraging and hiding cover may be disturbed or removed by suction dredging activities when streambed substrates are suction dredged, boulders are moved, or vegetation is removed. Suction dredging displaces sand and gravel components on streambeds and bars. Some amphibians require specific compositions of sand and willows to survive. Others require cobble with sand. Some juveniles require clean clear water to survive. These species have adapted their life cycles to correspond to those types of natural situations. Suction dredging can add sediments to waters that would not normally contain sediment. This may directly adversely impact the organisms as well as their habitat. Thus, the conditions to which amphibians have adapted can be altered by suction dredging activities. Suction dredging activities can result in the direct loss of riparian or aquatic vegetation. Riparian vegetation is required by many amphibians and reptiles for temperature control. Many amphibian eggs are extremely temperature sensitive. Thus, they may die at elevated temperatures. Some adult amphibians and reptiles require the moist areas associated with multi-story riparian canopies for habitat. A number of larval amphibians require aquatic algae and diatoms for food. Suction dredging displaces gravel which cause the food algae and diatoms that are attached to the rocks to be unavailable to the larvae and some adults. This may be a temporary effect. However, it may occur at a critical developmental stage, and therefore, have significant

negative impacts on the organisms. Some amphibians require willows, sedges or shoreline aquatic vegetation which produce the nekton (food) and slow moving or static water essential to support larval life stages. Larvae and some juveniles live in submergent vegetation or organic debris. Suction dredging activities displace this material or cause it to be lost when the stream gravels are disturbed. This results in unsuitable habitat for these species. Alteration of habitat may also lead to the introduction of predatory exotic species such as the bull frog and some warm water fish species which feed on native amphibians (pers comm., R. Kelly).

According to Sweet (1991, memo to Department) suction dredging may harm Arroyo toad eggs and larvae occurring in the pools of streams. Damage can be caused by changes in breeding pools by suction dredging, by changes in water level, sedimentation, trampling, increased currents, and perhaps oil and exhaust wastes from two-cycle engines. Eggs and larvae may suffer direct mortality as a result of passing through a suction dredge.

Sweet (1991, memo to Department) also notes that impacts can occur downstream from a suction dredge site. On Piru Creek he found that four suction dredges deposited heavy silt in pools as far as 3/4 of a mile downstream. The silt was sufficient to bury and asphyxiate both eggs and larvae within a week after hatching. In addition, the silt covered the thin layer of organic material on which larger larvae feed in substantial portions of these pools. Sweet (1991) found that the silt rendered one pool 0.45 of a mile below the dredging site to be 75-80 percent unusable by the larvae.

Suction dredging can significantly affect other species that are presently being considered for listing under both State and federal threatened and endangered species acts including red-legged frogs, arroyo southwestern toad, southwestern pond turtles, and two-striped garter snakes. Craig Faanes, Field Supervisor, of the USFWS Ventura Office (1993, page 2) supported a request by the Department to an emergency closure of Piru Creek above Pyramid Lake. The USFWS requested that the closure be extended to other streams in the area because the USFWS believed that suction dredging on some drainages may contribute to significant declines in several populations of Category 2 candidates for federal listing under the Endangered Species Act of 1973, including the Arroyo toad, Southwestern pond turtle and California red-legged frog.

The proposed regulations address these concerns regarding effects to amphibians by limiting nozzle size to 6 inch or smaller, which will reduce the volume of material suction dredged and more closely match equipment size to size of the stream, and thus minimize the overall impact of suction dredging on the stream substrate. The proposed regulations prohibiting the importation of earthen materials into the stream and prohibiting suction dredging into the banks of streams would reduce the amount of sediment entering the stream which could otherwise cover amphibian eggs and preferred habitat. The proposed regulations would also prohibit damage to riparian habitat, which is used extensively by amphibians. In addition, the regulations would incorporate the closures as outlined in the Biological Opinion,

which provides protection for listed species. All of these regulations would reduce the effects of suction dredging on amphibians to less than significant.

IMPACTS ON BENTHIC INVERTEBRATES

Suction dredging can have significant, but short-term and localized adverse impacts on local benthic invertebrate abundance and community composition. However, over the long-term, the impacts appear to be less than significant. Colonies of invertebrates generally recolonize areas disturbed by suction dredges within a relatively short period of time ranging from one to two months.

One adverse impact stems from the physical removal of the benthos at suction dredging sites. Until a site is adequately recolonized by new individuals, usually by drift, the productivity of the site will be adversely affected. Full recolonization and productivity of a site can take several weeks to two months or more after cessation of dredging (Harvey, 1986).

Griffith and Andrews (1981, pages 23-26) found that it took 38 days for benthic invertebrates to substantially recolonize dredge sites. After recolonization, there was no significant difference in numbers of individuals of the five key taxa that together accounted for 80 percent of the invertebrates in the area.

Thomas (1985, pages 482-487) observed that in most cases, at one month after dredging, the numbers of aquatic insects in dredged sections remained below that of the control site and downstream sections. Thus, dredging activities appear to have a less than significant impact on the numbers of benthic insects in the immediate area dredged, and have no impact on downstream areas.

Other impacts to invertebrates occur when dredger tailings cover substrate containing benthic invertebrates. In these areas, those invertebrates which are unable to escape the deposit of new material, are likely to die. The productivity of these areas is adversely affected until recolonization is completed (Harvey, 1986). On Butte Creek, Harvey (1986, page 10) studied recolonization of aquatic insects in dredger tailings. He concluded that approximately 45 days were required to recolonize the tailings after dredging had stopped. The number of insects in the tailings was not significantly different from the number in the control areas. In addition, almost all taxa found in the undisturbed cobble areas took part in the recolonization. However, the recolonization occurred during a period of high aquatic insect production (spring/summer) which probably accelerated recolonization.

Dredger tailings probably do not support insect biomasses as well as cobble substrates because they provide less available living space and a relative lack of organic matter for food (Harvey, 1986, page 15).

Another impact on benthic invertebrates occurs as the result of mortality caused as a direct result of physical damage they suffer when passing through suction dredges. Lewis (1962) found that 7.4 percent of the benthos [presumably aquatic insects] that were passed through a 5-inch dredge on Clear Creek suffered mortality. However, some of the mortality may have been caused by his method of collection. His collection sack was "placed around the sluice outflow to intercept all gravel and water" discharged, and the impact of the gravel on the insects probably contributed to the mortality observed. His observations were made immediately after dredging. Griffith and Andrews (1981) observed mortalities of less than one percent on benthic invertebrates after they were passed through a 2.5-inch dredge. Ninety-six percent of the benthos examined were aquatic insects. Most of the mortality was suffered by mayflies which were emerging at the time. Neither of the studies evaluated mortalities over a period greater than 24 hours.

Another impact of suction dredging is the dislodging and removal of aquatic invertebrates from their in-gravel sanctuaries and their subsequent discharge into the flowing water environment during dredging operations. This exposes them to increased predation.

Although Lewis (1962) found that all aquatic insects settled out within 40 feet of his dredge, as many as twelve squawfish were observed feeding on the insects in the discharge plume. Thus although the majority of benthos passes unharmed through the dredge, this does not necessarily mean survival is assured. In addition to being taken by fish, benthos settle on gravels that are already at maximum carrying capacity in an undisturbed environment (Lewis, 1962).

Harvey (1986, page 406) also found that dredging significantly affected some aquatic insect species when the substrate was altered. He concluded that the specific effect of dredging on a given insect taxon depends on their substrate requirements and the recolonization abilities of the animals.

Due to the short term and localized effects of suction dredging on invertebrate communities the effects can be considered less than significant. The proposed regulations would minimize any impacts to these invertebrate communities. A restricted nozzle size of 6 inches would reduce the amount of suction dredge disturbance to the streambed where invertebrate communities live since less material could be moved per unit of time. Also, less sediment from the streambed would be disturbed which would otherwise cover invertebrate communities. Prohibitions on importing earthen material and regulations protecting the stream banks would also prevent additional sediment from entering the stream system which could smother invertebrate communities and fill in their habitat areas. Thus, based on best available data, suction dredging under the proposed regulations would not be deleterious to fish.

IMPACTS ON THREATENED AND ENDANGERED SPECIES

A list of California's plant and animal species designated by the State or federal government as rare, threatened or endangered that may be dependent upon aquatic or riparian habitats is provided in Appendix F. The list also includes Department Species of Special Concern which are dependent on riparian and aquatic ecosystems. These species can be significantly adversely affected by unregulated suction dredge mining activities. The aquatic species including the fish and amphibians can be adversely affected through entrainment of eggs and young stages of development, or through the disturbance or reduction of critical aquatic and riparian habitat. These effects can result in fish or wildlife populations dropping below self-sustaining levels. Listed terrestrial species, including birds, are less likely to be significantly impacted by suction dredging but may be disturbed by the activities to the point where they abandon preferred habitat.

The proposed regulations would reduce the potentially significant effects of suction dredging on threatened and endangered species, and Department Species of Special Concern, to less than significant by incorporating the recommendations of the Biological Opinion, which is appended to this FEIR as Appendix I. Areas would be closed to suction dredging where threatened and endangered species exist. Suction dredging may be permitted in these areas under a special permit if the Department determines that proposed site specific suction dredging operations would not result in a take of the listed species. The Department may require a suction dredge permit applicant to have a biological assessment conducted by a qualified biologist prior to the Department issuance of a special permit.

IMPACTS ON STREAM AND RIPARIAN HABITAT

Impacts to the banks and channels of streams, rivers and the riparian habitat from suction dredging can be significantly adverse. Damage to these resources take natural processes a long time to repair. Impacts to the streambed and substrate are generally short term but can last a long time under certain circumstances. In most cases impacts to the streambed and substrate from suction dredging are not evident after one year.

Substrate Impacts

Suction dredging can have significant, short-term and long-term adverse effects on stream and river substrates. The duration of these impacts depends upon the frequency and magnitude of flushing flows. Where flushing flows from storm events are absent or flows are artificially prevented, in dammed systems, the effects may be long term.

On Canyon Creek and Big East Fork Creek, Somer and Hassler (1992, pages 249-250) reported that generally dredge tailings were displaced by high flows, and dredger holes and tailings were not visible by the following summer. By the next season, salmon and steelhead were observed spawning in those areas.

Likewise, Stern (1988, pages 58-63) observed 91 percent of the stream disturbance caused by suction dredging was obliterated on Canyon Creek by winter stream flows of up to 23.7 cms (837 cfs); a flow with an average reoccurrence interval of 1.9 years. Most streams with mobile beds with good flushing flows can fill in holes and disperse tailings created by a small suction dredge (6" or smaller). However, holes or tailings on rivers or streams with controlled flows may not be filled in or removed except in years of high flow.

Hassler et al. (1986, pages 101-102) found that winter and spring flows usually filled in dredger holes and dispersed tailing piles on Canyon Creek, California, but the three largest operations on the creek had substantial visible remains the following summer.

Although dredger holes and tailings usually disappear by the following season, the larger rocks and boulders that are moved to the sides of the stream channel, during suction dredging operations, often remain where they were left. Thomas (1985, pages 485-486) observed piles of cobbles moved out of the dredging area on Gold Creek, Montana, were still present along the margin of the stream one year later, but the dredger holes and tailings had vanished.

Although the impact is usually short-term, dredger tailings can negatively impact the stream substrate. Hassler et al. (1986, pages 102-103) observed that the accumulation of tailings immediately below the dredges reduced the channel's cross-sectional area and living space for fish.

Stern (1988, pages 67-68), described the formation of dredger tailings. Factors influencing the deposition of sediments below a suction dredge include the size and availability of fine sediments, the size and capacity of the suction dredge and stream "power". The deposition of tailings results in a sorting-out of streambed materials, with the larger gravel being deposited closest to the dredge discharge.

Dredging on small streams, particularly with large equipment (8 inches or larger), can also significantly change the morphology of a stream channel. Harvey (1986, pages 407-408) reported that a 50-foot reach of a tributary to Butte Creek was completely channelized and riffles were transformed into exposed gravel bars by a 10-day operation by one dredge. Six percent of the dredging operations in the Mother Lode area of the Sierras resulted in major changes in the streambed morphology by channelizing the stream (McClenaghan and Johnson, 1983, page 6).

Dredger tailings also impact the substrate by increasing the embeddedness of the larger rocks. Harvey (1986, page 406) reported increased embeddedness of cobbles and boulders below dredges. Gravel tailings and fines deposited below dredges on Canyon Creek significantly decreased substrate particle size for 16 to 33 feet (5 to 10 meters) below the dredges, and increased streambed embeddedness for 50 meters (164 feet) below the dredges (Stern, 1988, pages 68-69).

Suction dredge operations which substantially impact the bed, bank or channel of a stream or river are subject to Fish and Game Code Section 1600 et seq. which requires a streambed alteration agreement.

The proposed regulations address impacts to river substrates, development of dredger holes and piles, channelization of streams, and increasing the embeddedness of substrates by restricting the size of the nozzle to 6 inches or less on small streams, prohibiting the importation of earthen material, and prohibiting the winching of boulders outside the water line, and prohibiting of movement of anchored woody material. The reduced nozzle size would result in movement of less material, and thus, creation of smaller dredge holes and piles. Prohibiting the importation of earthen material would assist in preventing substrate embeddedness by reducing the amount of sediment that could enter the water. Prohibiting movement of boulders outside the water line and prohibiting the movement of anchored woody material would help prevent channelization of the stream. The adoption of these regulations would reduce these effects to stream substrate to less than significant, and based on best available data, to not deleterious.

Stream Bank Impacts

In some instances, suction dredgers working close to river stream banks can cause significant adverse effects by undercutting and destroying the integrity of the bank, destabilizing the bank and removing its protective vegetation and other important habitat features including rocks, protruding logs and root wads. About eight percent of the 270 dredging operations observed by McCleneghan and Johnson (1983, page 6) in the Sierra Nevada foothill streams caused damage to stream banks by undercutting (7 percent) and sluicing (1 percent). Stern (1988, pages 59-60), reported that undercutting of stream banks was the most common adverse impact on Canyon Creek. Thirty-four percent of the suction dredgers were observed undercutting stream banks.

The prohibitions of suction dredging into the bank of a stream, winching of material from the banks of a stream, diverting water into a streambank and importing earthen material would provide for the protection of the stream banks. Prohibiting suction dredging into a stream bank would help prevent undermining of banks. Prohibiting winching of material from the bank would help prevent destabilizing of the bank which could lead to bank failure. Prohibiting diversion of water into the bank would help prevent bank destabilization and undermining. Prohibiting the importation of earthen material would help prevent excavation of the stream banks. All of these proposed regulations would reduce these effects of suction dredging on stream banks to less than significant, and based on best available data, to not deleterious.

Riparian Habitat Impacts

Suction dredging can both directly and indirectly significantly adversely affect highly important riparian vegetation along stream courses. Four percent of suction dredging

operations found in the Mother Lode area of the Sierra Nevada mountains were damaging the riparian areas along the streams by the use of trees for anchoring dredges or by activities associated with camping within the riparian areas (McCleneghan and Johnson (1983, page 6).

Stern (1988, pages 59-62) reported that clearing of riparian vegetation by suction dredgers on Canyon Creek was not uncommon. This activity included the blazing of trails through the riparian zone for access to the dredge site, the pruning of shrubs, limbs and small trees for stringing cables, and clearing areas for campsites. Twenty percent of the dredge sites caused some form of riparian damage.

The condition of the stream bank and riparian zone is closely linked to the stability of the channel and the quality of fish habitat (Stern, 1988, pages 61-62). The woody and fibrous roots of riparian species provide a physical barrier to the erosive forces of flowing water and create banks with considerable surface roughness. Overhanging banks and associated root complexes often provide important cover for rearing and adult fishes (Stern, 1988, page 61). Overhanging vegetation also maintains cooler stream water temperatures and also provides for insect drop as a food source for fish. Undercutting of stream banks and damage to riparian vegetation may take several years to repair under natural conditions (K. Anderson, per comm).

The proposed regulations would reduce these effects to stream banks to less than significant. The proposed regulations prohibit damaging woody riparian vegetation. Suction dredging into the banks of streams would be prohibited. Diverting stream and river flows into the banks would be prohibited. Winching of material from the banks would be prohibited. Finally, importation of earthen materials would be prohibited. Therefore, based on best available information, suction dredging under these proposed regulations would not be deleterious to fish.

IMPACTS ON WATER QUALITY

Suction dredging causes less than significant effects to water quality. These impacts include increased turbidity levels caused by re-suspending streambed sediments and pollution caused by spilling of gas and oil used to operate suction dredges.

The impact of turbidities on water quality caused by suction dredging can vary considerably depending on many factors. Factors which appear to influence the degree and impact of turbidity include the amount and type of fines (fine sediment) in the substrate, the size and number of suction dredges relative to stream flow and reach of stream, and background turbidities.

Because of low ambient levels of turbidity on Butte Creek and the North Fork American River, Harvey (1986, page 406) easily observed increases of 4 to 5 NTU from suction dredging. Turbidity plumes created by suction dredging in Big East Fork Creek were visible in Canyon Creek 403 feet (123 meters) downstream from the dredges (Sommer and Hassler, 1992, page 251).

In contrast, Thomas (1985), using a dredge with a 2.5-inch diameter nozzle on Gold Creek, Montana, found that suspended sediment levels returned to ambient levels 100 feet below the dredge. Gold Creek is a relatively undisturbed third order stream with flows of 14 cubic feet per second. A turbidity tail from a 5-inch (12.7-cm) dredge on Clear Creek, California was observable for only 200 feet downstream. Water velocity at the site was about 1 foot per second (Lewis, 1962).

Turbidity below a 2.5-inch suction dredge in two Idaho streams was nearly undetectable, even though fine sediment, less than 0.5 mm in diameter, made up 13 and 18 percent, by weight, of the substrate in the two streams (Griffith and Andrews, 1981, page 26).

Effects from elevated levels of turbidity and suspended sediment normally associated with suction dredging as regulated in the past in California appear to be less than significant with regard to impacts to fish and other river resources because of the level of turbidity created and the short distance downstream of a suction dredge where turbidity levels return to normal.

Suction dredges, powered by internal combustion engines of various sizes, operate while floating on the surface of streams and rivers. As such, oil and gas may leak or spill onto the water's surface. There have not been any reported cases of harm to plant or wildlife as a result of oil or gas spills associated with suction dredging.

The proposed regulations do not address water quality specifically, except to the extent they relate to fish, but suction dredgers are required to comply with Fish and Game Code Section 5650 which prohibits the deposition of petroleum and other materials deleterious to fish and wildlife into State waters.

HEAVY METALS

In the process of removing precious minerals and metals from California's rivers and streams, suction dredgers sometimes remove lead and mercury from rivers. However, the act of suction dredging can mobilize heavy metals in the substrate, which may be toxic to aquatic organisms.

Mercury

The Toxic Substances Monitoring Program of the Water Resources Control Board's Ten Year Summary Report (1978-1987) (TSM Report) shows that mercury contamination of aquatic organisms occurs in many streams in California. The source of the mercury is thought to be 19th Century mining operations. To be taken up by aquatic organisms, the elemental mercury must be methylated. This occurs by anaerobic bacterial processes in streams. Some suction dredgers remove mercury because it may contain gold. To the extent suction dredgers remove mercury from rivers and streams, the effect would be beneficial to

the environment. However, the potential exists for mercury to be thrown back into rivers and streams by inexperienced dredgers. Fish and Game Code Section 5650 addresses pollution of this nature. Overall, the Department believes suction dredging with regard to the presence of mercury in California's streams has a less than significant effect on the environment.

Sections on the use of mercury and gold recovery have been omitted from the second DEIR due to public comments noting the outdated nature of the information.

Lead

The TSM Report also discussed lead contamination of aquatic organisms. The lead levels in California streams is decreasing, primarily due to elimination of lead in gasoline. The other sources of lead are primarily urban and industrial runoff. Lead shot in wetlands associated with hunting areas has been identified as a health hazard to ducks who ingest shot when feeding. Suction dredge miners reported removing lead shot, fishing sinkers, bullets and other fragments from streams and rivers. It is unlikely that lead in these forms located in streams and rivers pose any threat to fish and wildlife unless they are ingested by ducks or other animals. Nevertheless, removal of it by suction dredgers is considered a benefit to the environment.

IMPACTS ON RECREATIONAL OPPORTUNITIES

Conflicts between suction dredgers and other river users were raised by public comments. Although the resolution of some of these conflicts are outside the jurisdiction of the Department, they are described below for information purposes.

McCleneghan and Johnson (1983) stated in their report on mining in the Sierra Mother Lode, that some suction dredgers with non-patented mining claims on public lands post areas with "No Trespassing" signs though posting such signs is prohibited by federal regulation. This deters many people from using those lands for other permitted activities such as fishing, swimming, picnicking and hiking.

Rafting

White water rafting enthusiasts generally do not support suction dredge activities. Their expectations when rafting down a river are to enjoy unimpeded paddling while traveling through relatively pristine wildlands. These expectations are not met when they encounter noise, engine exhausts and physical presence of suction dredge equipment anchored by ropes strung across a river. Some suction dredge enthusiasts expressed dislike for rafters at the public scoping sessions and in the public comments. They state that rafters leave behind trash and sewage along the river and intentionally disrupt their dredging operations. Some suction dredge operators also view rafters as the strongest opposition to their right to suction dredge on rivers.

Fishing

Fishing activities reportedly occasionally conflict with suction dredge operations. Noise, air pollution and the physical presence of suction dredge activities can spoil the experience of fishing for many individuals. In addition, fishing enthusiasts are reportedly denied access along rivers due the presence of suction dredge mining camps. Even where no signs are posted indicating "Keep Out" the camps sometimes have guard dogs or armed individuals which effectively intimidate fishing enthusiasts from using adjacent sections of the river.

Suction dredging may have significant localized conflicts with angling, particularly fishing on trout streams. Turbidity from dredging may impair angling success particularly when lures or flies are used since trout are primarily sight feeders. Dredge holes left in streambeds may pose a safety hazard to wading anglers, particularly anglers with standard hip boots or chest waders. Holes pose the greatest hazard in large, fast-flowing streams where stepping into a deep hole could result in anglers being swept off their feet.

Another potential conflict between anglers and suction dredge operators is parking. Parking spots are often limited along rivers. If road shoulders and other parking spaces are occupied by suction dredge operators parking may be no longer available to anglers and other recreationists. In some areas, such as along the North Fork Yuba River in the vicinity of Downieville, the U.S. Forest Service has implemented management actions to control congestion.

The operations of a suction dredge may also prevent anglers from utilizing the spot where the dredge is operating. This may not be a problem on streams with an abundance of pools or other trout producing habitat. However, it may be a conflict on streams where good fishing holes are less abundant.

The combination of dredge equipment in the water including rafts, hoses, cables and people working in the water may impair both angling success and the angling experience. Noise created by dredge engines and the presence of equipment within the water and on shore can spoil an anglers' aesthetic experience.

Boat anglers may be particularly affected by suction dredges. The ropes and cables needed to hold dredges in place in strong river currents may interfere with up and downstream movements of boats. Fishing tackle may also become snagged on cables or ropes.

In the early 1970's the Fish and Game Commission adopted a policy to designate certain State waters to be managed exclusively for wild trout where angling would be a quality experience and where anglers would be provided an opportunity to fish in aesthetically pleasing and environmentally productive waters. Commission policy stipulates that all necessary actions, consistent with State law, shall be taken to prevent adverse impact by land

or water development projects on designated wild trout waters. Dredging may be incompatible with the Commission's goal of providing an aesthetically pleasing quality angling experience.

It should be noted that suction dredging is considered a legitimate activity on California's rivers and suction dredge operators have as much right as any other river user to enjoy and utilize rivers as long as their activities are within the laws and regulations of the State of California.

OTHER IMPACTS

Aesthetics

The outdoors is a setting utilized by many people to achieve distance from stressful, noisy work or urban environments. Clear waters and quiet, restful streams are enjoyed for many reasons. Fishing, rafting, bird watching, swimming, hiking are some of the many activities that take place on streams and rivers. Many people want outdoor settings to be left in a natural condition for quiet enjoyment. Thus suction dredging is perceived as a conflict with these activities. The noise of the suction dredge engines and exhaust fumes and the presence of the suction dredge activities may be the very things many people go outdoors to escape. However, recreational suction dredgers also enjoy the outdoors.

Large suction dredge campsites near streams with many motor vehicles, several camp trailers and campers may have an adverse effect on the visual quality of the natural setting. Some national forests have limited the numbers of camps and vehicles along popular suction dredging rivers in order to reduce the impacts to natural resources and reduce conflicts between users and competition for camping spots.

Squatters

The U.S. Forest Service and Bureau of Land Management have requested the Department to address the issue of squatters in this FEIR. Squatters can be defined as unauthorized occupants living along the states streams and rivers who stay in camps and makeshift homes for periods of time unauthorized by state or federal laws which constitute trespass. Some have described squatters as the homeless of the forests. Squatters are not necessarily all miners or suction dredge miners. Mr. Swickert cited 1000 trespass cases of which 500 dealt with dredging on public lands. Many of them are simply people living off the land. The camps squatters reside in areas located mostly on public property, but sometimes are also found illegally trespassing on private land.

BLM Area Manager Dean Swickert and BLM Geologist Scott Murrelwright report many problems have been reported regarding squatters. They have reported that miners use their suction dredge permit as justification to reside on the land year round in areas open to

suction dredging year round. This is in violation of federal laws. Problems associated with this unauthorized occupation of lands adjacent to the state's streams and rivers include sanitation and health problems associated with insufficient waste disposal, poaching, illegal firewood gathering, damage to riparian habitat, endangerment of the public accessing these rivers, and fire hazards. The appropriate land management agencies currently address the issue of squatters and associated impacts.

Air Pollution

The proposed project would permit the use of gasoline engine powered suction dredges. This would result in the release of engine emissions into the air. Extrapolating information on total dredging effort in California from McCleneghan and Johnson, 1983, an average of 4,000 suction dredge permits a year represents approximately 800,000 hours of suction dredging annually in California. This compares with 851,200 hours of suction dredging annually, which was obtained in the survey conducted in December of 1993 and January of 1994, as part of the development of the new proposed regulations and the ADEIR. The gasoline motors utilized by the dredges are mostly small engines, 5 to 10 horsepower. In a confined canyon with little air movement the exhaust fumes from suction dredges may cause short-term air pollution. However, when compared to the whole State these impacts would be considered less than significant.

Garbage and Sanitation

The proposed project would permit activities in streams throughout California. McCleneghan (1983), found that 13 percent of the suction dredge miners camped in the riparian areas adjacent to the suction dredge mining operations. Assuming that there are presently approximately 4,480 suction dredgers, about 582 suction dredgers and an unknown number of family members and work partners camp in riparian areas. McCleneghan and many Department wardens have often observed camps strewn with household garbage, industrial waste, 55 gallon cans, old dilapidated vehicles and human waste. The Department can cite for violations related to garbage disposal within 150 feet of any water of the State under Section 5652 of the Fish and Game Code. Many suction dredge operators have reported that they often remove garbage left by other river users, particularly submerged garbage. The proposed regulations do not address the issues of garbage disposal. However, suction dredgers are subject to Fish and Game Code Section 5652, the law prohibiting littering.

Prolonged usage of a suction dredge site inevitably results in the need for sanitation facilities. Many operators stay in the same location for several weeks at a time. Some national forests require suction dredge operations to include self-contained toilet systems with holding tanks capable of use for several weeks. The sanitation problem is within the jurisdiction of the Local and State Health Departments, State Regional Water Quality Control Boards and federal land managing agency.

SOCIOECONOMIC IMPACTS

The proposed project would result in a physical change to the environment. Where a project will result in a physical change, CEQA allows a Lead Agency to examine economic effects of the project in order to determine whether or not the environmental effect of the project is significant (CEQA, Guideline Section 15131). In addition, State law requires state agencies proposing to adopt administrative regulations to assess the effects on jobs and businesses within California (Section 11346.54, Government Code). Thus the following discussion is provided.

Prior to development of the ADEIR the Department developed two survey questionnaires to obtain information related to the economics of suction dredging in the State. The first questionnaire was sent to over 4,000 individuals. Nearly 2,000 of these were returned completed. These surveys provided information on many aspects of suction dredging including time and money annually spent on the activity, the location where people suction dredge, whether they were recreational or professional suction dredgers, the amount of money invested in suction dredging, what size nozzle(s) they used on their suction dredges and other pertinent information. The other survey was sent to county Boards of Supervisors, city Chambers of Commerce and mining businesses to determine the relative importance of suction dredging on local and manufacturing economies. Some of the information included in the following discussion was taken from those surveys. The surveys are referred to as the DEIR surveys. A sample of 1257 of the individual surveys were used to complete the statistical analysis.

Individual Income

An unknown percentage of suction dredgers may derive all their income from suction dredging for gold. McCleneghan and Johnson, (1983) found that approximately one half of the miners considered themselves professional as opposed to recreational. In the DEIR surveys 9.6 percent of those surveyed considered themselves commercial and 90.4 percent considered themselves recreational suction dredgers. The professional designation could mean that all or a portion of their incomes derived from mining activities or that the activities are designated as a business for tax purposes. Most recreational suction dredgers do not pursue the activity of suction dredging to supply a portion of their annual income. Such income comes from other sources. They simply enjoy the activity itself.

Suction dredging is an activity that requires a substantial investment. The DEIR surveys determined the average investment in suction dredge equipment by those surveyed was approximately 6,000 dollars. Suction dredgers spent an average of 35 days a year suction dredging. During that time they spent about 6,250 dollars each on expenses which included groceries, restaurants, motels, camp fees and other living expenses. In addition, they reported spending about 3,000 dollars each on gas, oil, equipment maintenance and repairs to suction dredge equipment.

Information obtained from public comments indicated the proposed suction dredge regulations in the first DEIR would have caused a significant impact to individuals, local communities and manufacturing and retail. The proposed regulations restricting nozzle size to 4 inches, prohibiting power winching, closing Wild Trout Waters, closing areas due to lack of enforcement capabilities, and phasing out special permits were all cited as the regulations which would cause undue economic impact. The Department responded to this issue by reevaluating the proposed regulations and proposing new regulations which would reduce the economic impact of the proposed regulations while still protecting fish and wildlife resources. The new proposed regulations restrict the maximum nozzle size nozzle size to 6 inches except on some large rivers where 8 inch nozzles would be permitted. From the DEIR surveys, the Department determined that less than 15 percent of suction dredgers surveyed use a nozzle size of larger than 6 inches. Most of these operators suction dredge on the large rivers on which an 8 inch nozzle would be permitted. Thus, there would not be a significant economic impact caused by the nozzle size restriction. In addition, the Department developed conditions which would allow power winching while still protecting fish and wildlife resources. The Department would only open Wild Trout Waters if suction dredging would not be deleterious to fish. The Department would issue special permits under circumstances where site specific suction dredging operations would not be deleterious to fish. Site inspections and site specific conditions for environmental protection associated with Special permits allow a higher level of environmental review than standard suction dredge permits. Finally, waters would not be closed to suction dredging based on a lack of enforcement capabilities. Thus, the new proposed regulations would not have a significant impact on the socioeconomic environment.

Local Communities

Suction dredging affects local communities by providing additional income to businesses located near popular dredging areas because miners from outside the local area would visit the local town to purchase goods and services from local merchants. Some suction dredgers live year round in these local communities while suction dredging, and therefore provide income to businesses in these communities throughout the year. This additional spending generates retail sales, income and employment in motels, restaurants, and retail stores. Given the figures cited above regarding the amount the surveyed suction dredgers annually spend, suction dredging can have a significant impact to small communities located in areas of high suction dredging activity.

Some individuals, usually from local communities, have businesses where they rent out their claim sites. The DEIR surveys indicated that 27 percent of those suction dredgers questioned are registered claim holders. These claim sites could represent the only open waters available to professional and recreational suction dredge miners. One individual may have claim to dozens of sites. These same businesses also rent equipment, conduct spot testing for gold, and hire out workers to work other claims for absentee investors.

Restrictions on suction dredging would affect the economy of local communities if all rivers located near these communities where suction dredging has historically occurred were closed. There may be a shift in use of rivers by suction dredgers and the businesses that support their operations.

Manufacturing and Retail

The manufacture and sales of equipment to conduct gold dredging operations produces an unknown amount of income to the persons and corporations involved in this industry. These activities occur away from the dredge site and their environmental effects are not discussed in this document. The proposed project would not substantially change the numbers or kind of equipment produced. Therefore, the adverse economic impact on this industry would be less than significant.

Growth Inducing Impacts

By its nature, and because of the mobility of suction dredge miners this activity does not usually result in the development of permanent facilities or significant changes in human populations. Although economic benefits do accrue and jobs are generated through suction dredge mining there are no directly identified growth inducing effects from suction dredge mining. The implementation of the proposed project would not result in additional needs for public services or facilities.

IRREVERSIBLE ENVIRONMENTAL CHANGES

The proposed project would not result in any irreversible or unavoidable significant environmental effects.

CUMULATIVE EFFECTS

Lower water flows provide less volume of water to dilute and disperse dredge effluent. This results in an increase in turbidity levels. Where many suction dredges are operating on one stream the cumulative effect would be elevated turbidity levels for long stretches of stream.

On Canyon Creek, California, Hassler et al. (1986) observed that dredges operating within 0.5 km [0.31 miles] of another infrequently resulted in cumulative impacts upon water quality. In addition, they found that 2 or 3 inch dredges in the same reach of stream did not compound geomorphic impacts upon the stream bottom. Flushing flows, which redistribute tailing piles and fill in dredger holes, can greatly reduce the long-term impact of dredging (Harvey 1986). Harvey et al. (1982) reported no additive effects on streams with numerous dredges. North (1993, page 19) states that based on current investigations restrictions to

mining only in the active stream channel (wetted perimeter at the time of mining) and limits on the density of dredges on a given stream could prevent a cumulative or long term loss of habitat. Proposed Department regulations do not currently limit dredger densities but the activity itself is somewhat self-regulating. Suction dredge operators must space themselves apart from each other to avoid working in the turbidity plume of the next operator working upstream. Suction dredging requires relatively clear water to successfully harvest gold. Thomas (1985, page 487) states that small modifications occurring over time and in a number of places within a watershed can often reach levels resulting in major biological and ecological change.

Based on this limited information the cumulative effects of suction dredging would appear to be less than significant and not deleterious to fish. The Department recognizes the need to conduct further studies regarding the cumulative effects of suction dredging on aquatic resources.

The suction dredging community expressed concern many times through public comments on the first DEIR that the Department did not consider the impacts of other activities on river resources. The activities mentioned most frequently were fishing and rafting. The purpose of this document is to identify and analyze the impacts of the proposed regulations for suction dredging. The impacts of fishing on the environment are discussed in detail in the Department's environmental documents for adoption of fishing regulations, both sport and commercial. River rafting is outside the specific legislative authority of the Department.

NEED FOR ADDITIONAL FURTHER STUDY

1. Effects of suction dredging on fishes other than salmonids and sculpin
2. Effects of suction dredging on other wildlife species and aquatic plants
3. Cumulative effects of suction dredging
4. Effects of suction dredging on small streams
5. Effects of suction dredging on adult steelhead and salmon
6. Effects of resuspension of toxic sediments in certain river systems

Acronyms, Definitions and Measurement Conversions

cm - centimeter (0.3937 inch)

- km - kilometer (0.6214 mile)
- m - meters (3.2808 feet)
- mg/l - milligrams per liter (0.13351 ounces per gallon)
- NTU - Nephelometric turbidity units
- redd - the spawning nest constructed within the substrate of streams by salmonids.
- salmonids - the fish comprising the Family Salmonidae including, but not limited to, the salmon, steelhead trout, trout, char, grayling and whitefish.

VI. ANALYSIS OF THE ALTERNATIVES

The following are alternatives to the proposed project (preferred alternative) described in Chapters I and III. The alternatives are numbered and presented in order of least environmental impacts to most environmental impacts. Under Alternative 1 no adverse impacts would occur to the environment since suction dredging would be prohibited. Under Alternative 2 some adverse impacts would be expected to occur to the environment. However, these impacts would be less than significant. Under Alternatives 3, 4, 5 and 6, significant adverse impacts would occur to the environment.

The fee schedules described in the alternatives below, are the amounts that would be charged in 1994. These amounts would be increased annually in accordance with Fish and Game Code 713 using an inflationary index developed by the California Department of Finance.

Alternative 1

Alternative 1 is a no suction dredging alternative. Under this alternative, suction dredging would not be permitted in California. This would be an environmentally sound alternative. No adverse environmental impacts would occur to fish, redds, invertebrates, amphibians, reptiles, other wildlife or their habitats, plants, or riparian vegetation from this project. Mortality, of fish eggs and yolk sac fry, as a result of suction dredging, would not occur. Spawning gravels would not be disturbed or improved. Stream banks would not be undercut by suction dredging. Riparian habitat would not be damaged. The siltation impacts associated with suction dredging would not occur. This alternative would protect fish and fish habitat. This alternative would result in no adverse impact to California's physical environment.

However, this alternative would have economic impacts. A ban on suction dredging would result in a loss of about \$156,000 in potential revenue to the Department from application fees. There would be a significant adverse effect on some local economies and the suction dredge manufacturing and sales industry as a consequence of this alternative. The outright prohibition of suction dredging in California presumably would have an impact, both environmentally and economically, on the adjacent western states since some suction dredging would shift to those states. There would also be a loss to the State economically in amounts the State would have to compensate for taking of private property to those who have valid existing prior rights under the federal mining laws.

Alternative 2

Alternative 2 would adopt the proposed project with modifications based on specific stream course studies to be conducted. Permitted equipment size, methods of operation, seasons of use, and open and closed waters would be based on site specific scientific studies conducted on all streams in California where suction dredging takes place. The regulations would be based on a number of studies designed to measure the environmental effects of suction dredging on each specific streams and river where suction dredging occurs including: 1) instream flow studies to establish stream order classification system based on flow regimes (cubic feet per second, CFS), 2) Nephelometric turbidity units (NTUs) studies to establish background turbidity levels on each stream and the impacts of turbidity on biological resources, 3) biological surveys to determine fish species present, reproduction levels and location of spawning areas, 4) presence of special status species, 5) presence of amphibian species, 6) avian use of riparian areas, 7) riparian habitat evaluations, 8) studies to determine the positive and negative effects of suction dredging on spawning gravels, 9) studies determining the impacts of sedimentation caused by dredging, and, 10) cumulative impacts studies.

These studies would be conducted prior to opening of waters for suction dredging and would take approximately 10 years to complete. The Department would seek funding from the Legislature for such studies.

This alternative would result in less than significant adverse environmental impacts to fish, redds, invertebrates, amphibians, reptiles, other wildlife and their habitat, plants, and riparian vegetation since studies specific to each river and stream would enable the Department to establish regulations specific to each river and stream. This alternative could result in fewer environmental impacts from suction dredging than the proposed project. This alternative would protect fish and fish habitat from potential deleterious effects and permit suction dredging.

Adoption of this alternative could result in the Department's not designating any waters open for suction dredging during the study period. In a worst case scenario, a ten year study period where no suction dredging was permitted would result in a loss of about \$156,000 in potential revenue to the Department from application fees annually. There would be adverse effects on some local economies and the suction dredge manufacturing and sales industry as a consequence of this action. There would be a negative impact on the suction dredge manufacturing industry until the studies were completed. The alternative would presumably have an impact, both environmentally and economically, on the adjacent western states since some suction dredging would shift to those states. The results of the studies would determine if more or less suction dredging would be permitted. This alternative would require legislation to generate funding for the studies.

Alternative 3

Alternative 3 would adopt the 1991/92 informal regulations for suction dredge mining. Under this alternative, suction dredging would be regulated by the same informal regulations. The maximum nozzle size permitted with a standard permit would be 8 inches. Power winching would be allowed. Suction dredging into the bank of any stream would be prohibited. Open and closed waters and seasons of use would be the same as in 1991/92. Special permits would be issued allowing suction dredgers to operate outside the established regulations.

This alternative could cause significant environmental impacts to fish, redds, invertebrates, amphibians, reptiles, other wildlife, plants, and riparian vegetation. Mortality of fish eggs and yolk sac fry, as a result of suction dredging, would occur since seasons of use would not be adjusted to reflect new information regarding fish spawning periods. Spawning gravels would be disturbed or improved to a larger degree than the proposed project, alternative one or alternative two since a larger nozzle size would be permitted. Stream bank undercutting by suction dredging would not occur. Some significant damage to woody riparian habitat and stream banks would occur since there would be no provisions for their protection and no conditions applied to winching. The siltation impacts associated with suction dredging would be greater than those caused by the proposed project, alternative one or alternative two since a larger nozzle size would be permitted. Streambed and bank impacts would be greater since a larger nozzle size would be permitted under a standard permit without specific stream studies. This alternative could cause significant environmental effects because it could result in the reduction of numbers of rare, threatened, endangered species and Department Species of Special Concern. This alternative would result in more adverse environmental impacts from suction dredging than the proposed project or alternatives 1 and 2 but fewer adverse impacts than alternatives 4, 5, and 6.

Resident permit applicants would apply for a \$28 standard permit. Nonresident standard permit applications would cost \$111.25. If the Department determined that an onsite inspection was necessary the cost of a standard permit would be \$144.50. The Department would issue approximately 4,000 permits per year. This alternative could result in deleterious effects to fish. Therefore, although choosing this alternative would establish regulations based on the 1991-1992 informal regulations, the Department would not be authorized to issue permits based on those regulations in every circumstance.

Alternative 4

Under this alternative, suction dredge operators would apply for a permit (\$28 for residents, \$35 for nonresidents). The permit would allow for suction dredging in accordance with Department regulations, adopted pursuant to the Administrative Procedures Act, to meet the objectives of the proposed project. The regulations would not include provisions for special permits. Instead, operators proposing activities outside the established regulations

would be able to obtain a 1600 Streambed Alteration Agreement to allow suction dredging not otherwise permitted by a suction dredge permit. Thus an operator could obtain a 1603 Streambed Alteration Agreement to operate outside closure periods or size restrictions and in closed waters.

This alternative could result in significant adverse environmental impacts to fish, redds, invertebrates, amphibians, reptiles, other wildlife and their habitat because; 1) if the Department did not respond within the thirty day period established under Fish and Game Code Section 1600 et seq., the operator could proceed unregulated, 2) it is likely the number of Streambed Alteration Agreements would increase dramatically and the Department would not be able to respond, and 3) the arbitration provision takes away Department authority and discretion to regulate suction dredging to protect fish resources. This alternative would require legislation to implement because the Department can not legally combine the two Fish and Game Code sections, 1600-1607 (Streambed Alteration Agreements) and Section 5653 (Suction Dredge Regulations). The two code sections were passed by the Legislature in the same year, 1961. It was clearly the intent of the Legislature to authorize discretionary permit authority for suction dredging activities while placing activities which result in a substantial impact to the bed, bank, channel or flow of streams under the Streambed Alteration Agreement Program (SAAP). The SAAP can not be used to circumvent permit authority under Fish and Game Code Section 5653 - Suction Dredging.

Alternative 5

Alternative 5 would require, along with a suction dredge permit, the applicant to acquire a Streambed Alteration Agreement (Section 1600 et seq., Fish and Game Code). Under this alternative the Department would consider all suction dredging to have a substantial impact on the bed, bank and channels of rivers and streams. Suction dredge activities would be considered in the same light as any other substantial streambed alterations (roads, bridges, diversions, gravel mining, vegetation removal etc.). Under this alternative, suction dredgers would be required to notify the Department of their intent to suction dredge in all circumstances. The Department would have thirty days to respond to the applicant within thirty days with proposed conditions for the protection of wildlife resources or the suction dredging could proceed with no regulations, requirements or conditions to protect resources. The actual language of Fish and Game Code Section 1603 is provided below.

1603. Bid notice to include conditions or modifications.

It is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake designated by the Department, or use any material from the streambeds, without first notifying the Department of such activity, except when the Department has been notified pursuant to Section 1601. The Department within 30 days of receipt of such notice, or within the time determined by

mutual written agreement, shall, when an existing fish or wildlife resource may be substantially adversely affected by such activity, notify the person of such fish and wildlife resource together with a description thereof, and shall submit to the person its proposals as to measures necessary to protect fish and wildlife. Upon a determination by the Department of the necessity for onsite investigation or upon the request for an onsite investigation by the affected parties, the Department shall notify the affected parties that it shall make onsite investigation of the activity and shall make such investigation before it shall propose any measure necessary to protect the fish and wildlife.

Within 14 days of receipt of the Department's proposals, the affected person shall notify the Department in writing as to the acceptability of the proposals, except that this time may be extended by mutual agreement. If such proposals are not acceptable to the affected person, then that person shall so notify the Department. Upon request the Department shall meet with the affected person within seven days of receipt of such notification or such time as may be mutually agreed upon for the purpose of developing proposals which are acceptable to the Department and the affected person. If mutual agreement is not reached at such meeting a panel of arbitrators shall be established; provided, however, that the appointment of such panel may be deferred by mutual consent of the parties. The panel shall be established within seven days of such meeting and shall be composed of one representative of the Department, one representative of the affected person, and a third person mutually agreed upon, or if no agreement can be reached, the third person shall be appointed in the manner provided by Section 1281.6 of the Code of Civil Procedure. The third person shall act as panel chairman. The panel shall have power to settle disagreements and make binding decisions regarding fish and wildlife modifications. Such arbitration shall be completed within 14 days from the day that the composition of the panel is established, unless the time is extended by mutual agreement. Expenses of the Department representative are to be borne by the Department; expenses of the representative of the person who diverts or obstructs the natural flow or changes the bed of any river, stream, or lake, or uses any material from the streambeds shall be borne by such person; expenses of the chairman are to be paid one-half by each party.

It is unlawful for any person to commence any activity affected by this section until the Department has found it will not substantially adversely affect an existing fish or wildlife resource or until the Department's proposals, or the decisions of a panel of arbitrators, have been incorporated into such projects. If the Department fails to act within 30 days of the receipt of notice, the person may commence such activity.

It is unlawful for any person to engage in a project or activity affected by this section, unless such project or activity is conducted in accordance with the Department's proposals or the decisions of the panel of arbitrators.

With regard to any project which involves routine maintenance and operation of water supply, drainage, flood control, or waste treatment and disposal facilities, notice to and agreement with the Department shall not be required subsequent to the initial notification and agreement unless the work as described in the agreement is substantially changed, or

conditions affecting fish and wildlife resources substantially change, and such resources are adversely affected by the activity conducted under the agreement. This provision shall be applicable in any instance where notice to and agreement with the Department has been attained prior to the effective date of this act.

The provisions of this section shall not be applicable to emergency work necessary to protect life or property; however, notification by the person performing such emergency work shall be made to the Department within 14 days of commencement of such emergency work.

Currently, the Department enters into about 4,000 Streambed Alteration Agreements a year. If this alternative were implemented, it would double the current workload of the Streambed Alteration Agreement Program. The Department, with current staffing levels and work load would be unable to respond to the majority of notifications within the thirty day time period. This would result in most suction dredging proceeding with no environmental safeguards or regulations to protect resources.

This alternative would result in substantial adverse environmental impacts to fish, redds, invertebrates, amphibians, reptiles, other wildlife, plants, and riparian vegetation. Mortality of fish eggs and yolk sac fry, as a result of suction dredging, would occur since seasons of use would not be established to permit suction dredging outside of the spawning seasons of fish. Spawning gravels would be substantially disturbed or improved to a larger degree than the proposed project and alternatives one through four since any nozzle size could be used absent an agreement. Stream bank undercutting by suction dredging would occur. Damage to woody riparian habitat and stream banks would occur since there would be no provisions for their protection and no conditions applied to power winching. The siltation impacts associated with suction dredging would be greater than the proposed project or alternatives one through four since any size equipment could be used absent an agreement. Streambed and bank impacts would be much greater.

This alternative would result in substantially more adverse environmental impacts from suction dredging than the proposed project or alternatives 1 through 4 since the Department would not be able to respond to most of the notifications for agreements due to lack of staff.

Implementation of this alternative would require legislative action. The Department would seek additional funding to double the current staff size working on the Streambed Alteration Agreement Program. The language of Fish and Game Code Section 5653 would need to be repealed. This alternative would require the Department to issue permits where deleterious effects to fish could occur. If funding was available and staffing could be adequately increased to handle the doubling of the work load associated with the Streambed Alteration Agreement Program, this alternative would result in substantial environmental protection from suction dredging. It would result in less adverse impacts than the proposed project or alternatives two through four. Given the current status of the State Budget it is unlikely funding can be increased in the near future.

Funding to the Department would actually increase under this alternative. The current regulations require payment of \$132.00 for a project valued at less than \$25,000 dollars. Payment is made when notification is provided. Therefore income derived would increase substantially totalling \$528,000 (4,000 agreements x \$132.00). The Department currently receives approximately \$120,000 from suction dredge permit fees. However, increases in revenue would not be adequate to fund the positions necessary to respond to the additional workload.

Alternative 6

This alternative would result in all waters of California being open to suction dredging at the beginning of each year. Individual waters would only be closed if the Department could prove suction dredging would be deleterious to fish. Currently, all waters of California are closed until the Department determines deleterious effects to fish would not result from the opening of waters to suction dredging. Under this alternative, procedures and time limits would be established for the Department to submit written findings or to make a site inspection. The applicant could commence suction dredging without a permit if the Department failed to make an onsite inspection or failed to provide its findings. The Department would be required to issue the permit unless it could prove the operation would be deleterious to fish. Under this alternative the authority and responsibilities for adoption of regulations, administration of appeals and designation of open waters would be transferred from the Department to the Fish and Game Commission. Under this alternative, fees for nonresident applicants would be \$28 when an onsite investigation is not deemed necessary.

If this alternative were implemented it would dramatically increase the current workload of the Department while decreasing fees needed to pay for additional staff.

This alternative would result in significant adverse environmental impacts to fish, redds, invertebrates, amphibians, reptiles, other wildlife, plants, and riparian vegetation. Mortality of fish eggs and yolk sac fry, as a result of suction dredging, would occur since seasons of use would not be established to permit suction dredging outside of the spawning seasons of fish. Streambeds and spawning gravels would be substantially disturbed to a larger degree than the proposed project and alternatives one through four since any nozzle size could be used absent a permit. Stream bank undercutting by suction dredging would occur. Damage to woody riparian habitat and stream banks would occur since there would be no provisions for their protection and no conditions applied to power winching. The siltation impacts associated with suction dredging would be greater than the proposed project or alternatives one through four since any size equipment could be used absent a permit. Streambed and bank impacts would be much greater. This alternative could result in significant adverse environmental impacts from suction dredging. The impacts would be similar to those that would result under Alternative 5. This alternative would transfer most regulatory and administrative duties related to suction dredge mining from the Department to the Fish and Game Commission resulting in increased workload for the Commission and

would require an appropriation. The ability of the Department to annually amend the list of waters opened to suction dredge mining based on environmental conditions would be restricted by these actions. This alternative would require legislative action. In addition, the language of Fish and Game Code Section 5653 would need to be repealed.

Based on the available data and observations made by Department employees over the last thirty three years since the legislation was first passed establishing Fish and Game Code Section 5653, the Department expects significant adverse impacts to occur to river resources from suction dredge operations operating outside of established regulations.

VII. APPENDICES

Appendix A
Appendix B

APPENDIX A
AQUATIC RESOURCES
FISH AND GAME CODE

Fish and Game Code

AQUATIC RESOURCES

§1700. State policy.

It is hereby declared to be the policy of the state to encourage the conservation, maintenance, and utilization of the living resources of the ocean and other waters under the jurisdiction and influence of the state for the benefit of all the citizens of the state and to promote the development of local fisheries and distant-water fisheries based in California in harmony with international law respecting fishing and the conservation of the living resources of the oceans and other waters under the jurisdiction and influence of the state. This policy shall include all of the following objectives:

- (a) The maintenance of sufficient populations of all species of aquatic organisms to insure their continued existence.
- (b) The recognition of the importance of the aesthetic, educational, scientific, and nonextractive recreational uses of the living resources of the California Current.
- (c) The maintenance of a sufficient resource to support a reasonable sport use, where a species is the object of sport fishing, taking into consideration the necessity of regulating individual sport fishery bag limits to the quantity that is sufficient to provide a satisfying sport.
- (d) The growth of local commercial fisheries, consistent with aesthetic, educational, scientific, and recreational uses of such living resources, the utilization of unused resources, taking into consideration the necessity of regulating the catch within the limits of maximum sustainable yields, and the development of distant-water and overseas fishery enterprises.
- (e) The management, on a basis of adequate scientific information promptly promulgated for public scrutiny, of the fisheries under the state's jurisdiction, and the participation in the management of other fisheries in which California fishermen are engaged, with the objective of maximizing the sustained harvest.
- (f) The development of commercial aquaculture.

CONSERVATION OF WILDLIFE RESOURCES

Article 2. Policy

§1801. Declaration.

It is hereby declared to be the policy of the state to encourage the preservation, conservation, and maintenance of wildlife resources under the jurisdiction and influence of the state. This policy shall include the following objectives:

- (a) To maintain sufficient populations of all species of wildlife and the habitat necessary to achieve the objectives stated in subdivisions (b), (c), and (d).
- (b) To provide for the beneficial use and enjoyment of wildlife by all citizens of the state.

(c) To perpetuate all species of wildlife for their intrinsic and ecological values, as well as for their direct benefits to all persons.

(d) To provide for aesthetic, educational, and nonappropriative uses of the various wildlife species.

(e) To maintain diversified recreational uses of wildlife, including the sport of hunting, as proper uses of certain designated species of wildlife, subject to regulations consistent with the maintenance of healthy, viable wildlife resources, the public safety, and a quality outdoor experience.

(f) To provide for economic contributions to the citizens of the state, through the recognition that wildlife is a renewable resource of the land by which economic return can accrue to the citizens of the state, individually and collectively, through regulated management. Such management shall be consistent with the maintenance of healthy and thriving wildlife resources and the public ownership status of the wildlife resources.

(g) To alleviate economic losses or public health or safety problems caused by wildlife to the people of the state either individually or collectively. Such resolution shall be in a manner designed to bring the problem within tolerable limits consistent with economic and public health considerations and the objectives stated in subdivisions (a), (b) and (c).

(h) It is not intended that this policy shall provide any power to regulate natural resources or commercial or other activities connected therewith, except as specifically provided by the Legislature. (Amended by Stats 1992 Ch. 279 §1, eff. 1/1/93.)

§1802. Departmental Jurisdiction.

The Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. The Department, as trustee for fish and wildlife resources, shall consult with lead and responsible agencies and shall provide, as available, the requisite biological expertise to review and comment upon environmental documents and impacts arising from project activities, as those terms are used in the California Environmental Protection Act (Division 13 (commencing with Section 21000) of the Public Resources Code). (Added by Stats 1990 ch 1706 §10, eff. 1/1/91.)

§5653. Use of suction dredge equipment.

(a) Before any person uses any vacuum or suction dredge equipment in any river, stream or lake of this state, the person shall submit an application for a permit for a dredge to the Department, specifying the type and size of equipment to be used and other information as the Department may require.

(b) The Department may designate waters or areas wherein vacuum or suction dredges may be used pursuant to a permit, waters or areas closed to those dredges, the maximum size of those dredges which may be used, and the time of year when those dredges may be used. If the Department determines that the operation will not be deleterious to fish, it shall issue a permit to the applicant. If any person operates any equipment other than that authorized by the permit or conducts the operation in any waters or area or at any time which is not

authorized by the permit, or if any person conducts the operation without securing the permit, the person is guilty of a misdemeanor.

(c) The Department shall issue a permit upon the payment, in the case of a resident, of a base fee of twenty-five dollars (\$25), as adjusted under Section 713, when an onsite investigation of the project size is not deemed necessary by the Department, and a base fee of one hundred thirty dollars (\$130), as adjusted under Section 713, when the Department deems an onsite investigation is necessary. In the case of a nonresident, the base fee shall be one hundred dollars (\$100), as adjusted under Section 713, when an onsite investigation is not deemed necessary, and a base fee of two hundred twenty dollars (\$220), as adjusted under Section 713, when an onsite investigation is deemed necessary.

(d) It is unlawful to possess a vacuum or suction dredge in areas, or in or within 100 yards of waters, which are closed to the use of vacuum or suction dredges. (Amended by Stats 1988 ch 1037, eff. 8/20/88.)

§5653.3. Inspection of dredging equipment.

Any person required to possess a permit pursuant to Section 5653 shall present his or her dredging equipment for inspection upon request of a state or county fish and game warden. (Added by Stats 1988 ch 1037, eff. 8/20/88.)

§5653.5. River, stream, lake; defined.

For purposes of Section 5653, "river, stream, or lake" means the body of water at the current water level at the time of the dredging. (Added by Stats 1988 ch 1037, eff. 8/20/88.)

§5653.7. Unanticipated water level change; closing of areas for dredging.

In the event of an unanticipated water level change, when necessary to protect fish and wildlife resources, the Department may close areas that were otherwise opened for dredging and for which permits were issued pursuant to Section 5653. (Added by Stats 1988 ch 1037, eff. 8/20/88.)

§5653.9. Regulation adoption.

The Department may adopt regulations to carry out Sections 5653, 5653.3, 5653.5, and 5653.7. (Added by Stats 1988 ch 1037, eff. 8/20/88.)

§5655. Petroleum spill clean-up-costs.

(a) In addition to the responsibilities imposed pursuant to Section 5651, the Department may clean up or abate, or cause to be cleaned up or abated, the effects of any petroleum or petroleum product deposited or discharged in the waters of this state or deposited or discharged in any location onshore or offshore where the petroleum or petroleum product is likely to enter the waters of this state, order any person responsible for the deposit

or discharge to clean up the petroleum or petroleum product or abate the effects of the deposit or discharge, and recover any costs incurred as a result of the cleanup or abatement from the responsible party.

APPENDIX B
AMPHIBIANS OF CALIFORNIA

APPENDIX B
Amphibians of California (Riparian Use Noted)¹

Northwestern salamander^f
Pacific giant salamander^f
Olympic salamander^f
Dunn's Salamander^f
Desert slender salamander^f FE SE
Spotted frog^f
Tailed frog^f
Red-spotted toad^f
Black toad^f ST
California treefrog^f
Red-legged frog^f
Cascades frog^f
Foothill yellow-legged frog^f
Mountain yellow-legged frog^f
Leopard frog^f
Inyo Mountains salamander^f
Bullfrog^f - exotic
Long-toed salamander^f (Santa Cruz long-toed salamander - SE FE)
California newt^f
Colorado River toad^f
Yosemite toad^f
Arroyo Southwestern toad^f
Pacific treefrog^{c, tr}
Rough-skinned newt^f
Red-bellied newt^f
Western toad^{c, tr}
Woodhouse's toad^{c, tr}
Great Plains toad^{c, tr}
Tiger Salamander^f
Del Norte salamanderⁱ
Ensatinaⁱ
California slender salamanderⁱ
Clouded salamanderⁱ
Limestone salamanderⁱ ST
Mount Lyell salamanderⁱ
Siskiyou Mountain salamanderⁱ ST

¹ From Reynolds, 1993 & CDFG Threatened and Endangered Lists.

Pacific slender salamanderⁱ
Black salamanderⁱ
Arboreal salamanderⁱ
Shasta salamander^{i ST}
Black-bellied slender salamander^{nr}
Kern Canyon slender salamander^{nr ST}
Tehachapi slender salamander^{i nr ST} May be found in riparian areas.
Couch's spadefoot^{nr}
Western spadefoot^{nr}
Great Basin spadefoot^{nr} May be found in riparian areas.
African Clawed Frog^{nr} - (Not Included in Zeiner et. al. 1988².)

^{SE} = Endangered State

^{FT} = Federal Threatened List

ST = Threatened - State List

^{FE} = Federal Endangered List

^r = Riparian Dependent

^c = Common in Riparian Areas

ⁱ = Intermittent in Riparian Areas or Uses Riparian as one of several habitat types.

² Zeiner, David C., William F. Laudenslayer, Jr., Kenneth E. Mayer, and Marxhall White, Editors. 1988. California's Wildlife, Volume I, Amphibians and Reptiles. 272 pp.

APPENDIX C

REPTILES FOUND IN RIPARIAN AREAS

APPENDIX C
Reptiles found in Riparian Areas³

Western pond turtle^f
Sonoran mud turtle^f
Wandering garter snake^f
Common garter snake^f
Western aquatic garter snake^f
Snapping turtle (Not in Reynolds, 1993) (Status Uncertain)
Slider turtle^f
Spiny softshell turtle^f
Giant garter snake^{f ST}
San Francisco garter snake^{f SE FE}
Northwestern garter snake^f
Checkered garter snake^f
Western skink^c
Gilberts skink^c
Panamint alligator lizard^c
Northern alligator lizard^c
Ringneck snake^c
Sharp-tailed snake^c
Western terrestrial garter snake^c
Southern rubber boa^{i ST}
Western fence lizardⁱ
Sagebrush lizardⁱ
Long-tailed brush lizardⁱ
Western whiptail lizardⁱ
Southern alligator lizardⁱ
California legless lizardⁱ
Western blind snakeⁱ
Rubber boaⁱ
Racerⁱ
Striped racerⁱ
Gopher snakeⁱ
Common kingsnakeⁱ
California mountain kingsnakeⁱ
Northwestern garter snakeⁱ
Western black-headed snakeⁱ
Night snakeⁱ
Western rattlesnakeⁱ

³Reynolds, 1993. & Zeiner et.al. 1988.

Alameda whipsnake ⁱ ST
Tree lizard - Moist areas.
Gila monster - Moist areas & may require water
Ringneck snake - Moist areas near intermittent streams.
Sharp-tailed snake - Moist areas near intermittent streams.

SE = Endangered State
FT = Federal Threatened List
ST = Threatened - State List
FE = Federal Endangered List
r = Riparian Dependent
c = Common in Riparian Areas
i = Intermittent in Riparian Areas or Uses Riparian as one of several habitat types.
w = Temporarily use bodies of water

APPENDIX D

INLAND FISHES OF CALIFORNIA

APPENDIX D
Inland Fishes of California

Family (Common Name)

Common name, *Scientific name*

Petromyzontidae (Lampreys)

Pacific lamprey, *Lampetra tridentata*

Pit-Klamath brook Lamprey, *Lampetra lethophaga*

River lamprey, *Lampetra ayresi*

Pacific brook lamprey, *Lampetra pacifica*

Kern brook lamprey, *Lampetra hubsi*

Acipenseridae (Sturgeons)

White sturgeon, *Acipenser transmontanus*

Green sturgeon, *Acipenser medirostris*

Elopidae (Tarpons)

Machete, *Elops affinis*

Clupeidae (Herrings)

Threadfin shad, *Dorosoma petenense*

American shad, *Alosa sapidissima*

Pacific herring, *Clupea harengus pallasii*

Osmeridae (Smelts)

Surf smelt, *Hypomesus pretiosus*

Delta smelt, *Hypomesus transpacificus*^{FT, ST}

Eulachon, *Thaleichthys pacificus*

Longfin smelt, *Spirinchus thaleichthys*

Pleuronectidae (Flounders)

Starry Flounder, *Platichthys stellatus*

Salmonidae (Trout, Salmon, Whitefish)

Mountain whitefish, *Prosopium williamsoni*

Arctic grayling, *Thymallus arcticus*

Pink salmon, *Oncorhynchus gorbuscha*

Brook trout, *Salvelinus fontinalis*

Brown trout, *Salmo trutta*

Golden trout, *Oncorhynchus aguabonita* (Little Kern^{FT})

Redband trout, *Oncorhynchus mykiss* ssp.

Cutthroat trout, *Oncorhynchus clarki* (Lahontan^{FT}, Piute^{FT})

Rainbow trout, *Oncorhynchus mykiss*

Lake trout, *Salvelinus namaycush*

Dolly Varden, *Salvelinus* spp.

Coast Dolly Varden, *Salvelinus malma*

Chum salmon, *Oncorhynchus keta*

Sockeye & Kokanee salmon, *Oncorhynchus nerka*

Chinook salmon, *Oncorhynchus tshawytscha* (Winter-run^{SE FT})

- Coho salmon, *Oncorhynchus kisutch*
 Bull Trout, *Salvelinus confluentus* ^{SE}, possibly extirpated)
- Ictaluridae (Catfishes)
 Blue catfish, *Ictalurus furcatus*
 Channel catfish, *Ictalurus punctatus*
 White catfish, *Ictalurus catus*
 Yellow bullhead, *Ictalurus natalis*
 Flathead catfish, *Pylodictis olivaris*
 Black bullhead, *Ictalurus melas*
 Brown bullhead, *Ictalurus nebulosus*
- Syngnathidae (Pipefishes)
 Kelp pipefish, *Syngnathus californiensis*
 Bay pipefish, *Syngnathus leptorhynchus*
- Cobitidae (Loaches)
 Chinese weather fish, *Misgurnus anguillicaudatus*
- Pholidae (Gunnels)
 Saddleback gunnel, *Pholis ornata*
 Penpoint gunnel, *Apodichthys flavidus*
- Anguillidae (Eels), [One of each has been reported - Unlikely to establish in California.
 European Eel, *Anguilla*
 American Eel, *Anguilla rostrata*
- Gobiidae (Gobies)
 Chameleon goby, *Tridentiger trigoncephalus*
 Yellowfin goby, *Acanthogobius flavimanus*
 Tidewater goby, *Eucyclogobius newberryi*
 Longjaw mudsucker, *Gillichthys mirabilis*
 Arrow goby, *Clevelandia ios*
- Gasterosteidae (Sticklebacks)
 Unarmored Threespine Stickleback, *Gasterosteus aculeatus williamsoni* ^{SE FE}
- Cottidae (Sculpins)
 Pacific staghorn sculpin, *Leptocottus armatus*
 Sharpnose sculpin, *Clinocottus acuticeps*
 Rough sculpin, *Cottus asperrimus* ST
 Slender sculpin, *Cottus tenuis*
 Prickly sculpin, *Cottus asper*
 Coastrange sculpin, *Cottus aleuticus*
 Pit sculpin, *Cottus pitensis*
 Marbled sculpin, *Cottus klamathensis*
 Piute sculpin, *Cottus beldingi*
 Riffle sculpin, *Cottus gulosus*
 Reticulate sculpin, *Cottus perplexus*

Poeciliidae (Livebearers)

- Mosquitofish, *Gambusia affinis*
- Sailfin molly, *Poecilia latipinna*
- Variable platyfish, *Xiphophorus variatus*
- Shortfin molly, *Poecilia mexicana*
- Guppy, *Poecilia reticulatus*

Cyprinodontidae (Killifishes, Pupfishes)

- Argentine pearlfish, *Cynolebias bellotti*
- Trinidad rivulus, *Rivulus harti*
- California killifish, *Fundulus parvipinnis*
- Desert pupfish, *Cyprinodon macularius* SE FE
- Owens pupfish, *Cyprinodon radiosus* SE FE
- Amargosa pupfish, *Cyprinodon nevadensis*
- Salt Creek pupfish, *Cyprinodon salinus*
- Cottonball marsh pupfish, *Cyprinodon milleri* ST

Catostomidae (Suckers)

- Bigmouth buffalo, *Ictiobus cyprinellus*
- Shortnose sucker, *Chasmistes brevirostris* SE FE
- Santa Ana sucker, *Catostomus santaanae*
- Mountain sucker, *Catostomus platyrhynchus*
- Humpback (Razorback) sucker, *Xyrauchen texanus* SE FE
- Lost River sucker, *Catostomus luxatus* SE FE
- Klamath smallscale sucker, *Catostomus rimiculus*
- Modoc sucker, *Catostomus microps* SE FE
- Tahoe sucker, *Catostomus tahoensis*
- Owens sucker, *Catostomus fumeiventris*
- Klamath largescale sucker, *Catostomus snyderi*
- Sacramento sucker, *Catostomus occidentalis*

Cyprinidae (Minnows)

- Carp, *Cyprinus carpio*
- Goldfish, *Carassius auratus*
- Golden shiner, *Notemigonus crysoleucas*
- Tench, *Tinca tinca*
- Splittail, *Pogonichthys macrolepidotus*
- Speckled dace, *Rhinichthys osculus*
- Hardhead, *Mylopharodon conocephalus*
- Colorado squawfish, *Ptychocheilus lucius* SE FE
- Sacramento squawfish, *Ptychocheilus grandis*
- Bonytail, *Gila elegans* SE FE
- Sacramento blackfish, *Orthodon microlepidotus*
- Fathead minnow, *Pimephales promelas*
- Red shiner, *Notropis lutrensis*
- Hitch, *Lavinia exilicauda*
- Lahontan redbreast, *Richardsonius egregius*

- Arroyo chub, *Gila orcutti*
 California roach, *Hesperoleucis symmetricus*
 Thicktail chub, *Gila crassicauda*
 Clear Lake splittail, *Pogonichthys ciscoides*
 Blue chub, *Gila coerulea*
 Tui chub, *Gila bicolor* (Mojave & Owens both) ^{SE FE}
- Embiotocidae (Surfperches)
 Shiner perch, *Cymatogaster aggregata*
 Tule perch, *Hysteroecarpus traskii*
- Percidae (Freshwater Perches)
 Bigscale logperch, *Percina macrolepida*
 Yellow perch, *Perca flavescens*
 Walleye, *Stizostedion vitreum*
- Eleotridae (Sleepers)
 Spotted Sleeper, *Eleotris picta* [1 taken from canal in Imperial County.]
- Atherinidae (Silversides)
 Mississippi silverside, *Menidia audens*
 Topsmelt, *Atherinops affinis*
- Mugilidae (Mulletts)
 Striped Mullet, *Mugil cephalus*
- Percichthyidae (Temperate Basses)
 Striped bass, *Morone saxatilis*
 White bass, *Morone chrysops*
- Cichlidae (Mouthbrooders)
 Zill's cichlid, *Tilapia zillii*
 Mozambique mouthbrooder, *Tilapia mossambica*
- Centrarchidae (Sunfish, Bass)
 Sacramento perch, *Archoplites interruptus*
 Black crappie, *Pomoxis nigromaculatus*
 White crappie, *Pomoxis annularis*
 Warmouth, *Lepomis gulosus*
 Green sunfish, *Lepomis cyanellus*
 Bluegill, *Lepomis macrochirus*
 Pumpkinseed, *Lepomis gibbosus*
 Redear sunfish, *Lepomis microlophus*
 Largemouth bass, *Micropterus salmoides*
 Spotted bass, *Micropterus punctulatus*
 Smallmouth bass, *Micropterus dolomieu*
 Redeye bass, *Micropterus coosae*

APPENDIX E

BIRDS OF CONCERN THAT INHABIT RIPARIAN AREAS

APPENDIX E
 Birds of Concern That Inhabit Riparian Areas⁴
 Threatened and Endangered Species

Bald Eagle^{SE FE}
 Peregrine Falcon^{SE FE}
 California Clapper Rail^{SE FE}
 Light-footed Clapper Rail^{SE FE}
 Yuma Clapper Rail^{ST FE}
 Black RailST
 Greater Sandhill CraneST
 California Least Tern^{SE FE}
 Swainson's HawkST
 California Yellow-billed Cuckoo^{SE}

Elf Owl^{SE}
 Least Bell's Vireo^{SE FE}
 Inyo Brown Towhee^{SE FT}
 Willow Flycatcher^{SE}
 Bank SwallowST
 SE = Endangered State
 ST = Threatened - State List
 FT = Federal Threatened List
 FE = Federal Endangered List

Riparian Utilizing California Bird Species of Concern

Highest Priority	Second Priority	Third Priority
White-faced Ibis	Double-crested Cormorant	Least Bittern
Fulvous Whistling-Duck	Marshawk	Harlequin Duck
Yellow Rail	Osprey	Goshawk
Gilded Northern Flicker	Snowy Plover	Sharp-shinned Hawk
Vermilion Flycatcher	Gila Woodpecker	Brown-crested Flycatcher
Arizona Bell's Vireo	Yellow-breasted Chat	Crissal Thrasher
	Summer Tanager	Hepatic Thrasher
		Northern Cardinal

⁴Reynolds, 1993 & CDFG Threatened and Endangered Species Lists

APPENDIX F

**LISTED SPECIES DEPENDENT ON AQUATIC OR RIPARIAN ECOSYSTEMS
(List includes Department Species of Special Concern)**

APPENDIX F

State or Federal Listed Species Dependent on Aquatic or Riparian Ecosystems
List includes Department California Species of Special Concern

Arroyo Southwestern toad - California Species of Special Concern
Bald eagle - State and Federal Endangered
Little Kern golden trout - Federal Threatened
Lahontan cutthroat trout - Federal Threatened
Paiute trout - Federal Threatened
Western yellow-billed cuckoo - State Endangered
Willow flycatcher - State Endangered
Bank swallow - State Endangered
Arizona Bell's vireo - State Endangered
Southwestern pond turtle - California Species of Special Concern
Foothill yellow-legged frog - California Species of Special Concern
Winter-run chinook salmon - State Endangered, Federal Threatened
Mountain yellow-legged frog - California Species of Special Concern
California red-legged frog - California Species of Special Concern
Olympic salamander - California Species of Special Concern
Tailed frog - California Species of Special Concern
Two striped Garter Snake
Inyo Mountains salamander - California Species of Special Concern
Bull trout - State Endangered
Mohave tui chub - State and Federal Endangered
Owens tui chub - State and Federal Endangered
Bonytail - State and Federal Endangered
Colorado squawfish - State and Federal Endangered
Modoc sucker - State and Federal Endangered
Lost River sucker - State and Federal Endangered
Razorback sucker - State and Federal Endangered
Shortnose sucker - State and Federal Endangered
Desert pupfish - State and Federal Endangered
Owens pupfish - State and Federal Endangered
Cottonball Marsh pupfish - State Threatened
Unarmored threespine stickleback - State and Federal Endangered
Rough sculpin - State Threatened
Trinity bristle snail - State Threatened
California freshwater shrimp - State and Federal Threatened
Shasta crayfish - State and Federal Endangered
Summer Steelhead - California Species of Special Concern
Volcano Creek Golden Trout - California Species of Special Concern
Delta Smelt - State and Federal Threatened

Arroyo Chub - California Species of Special Concern
Santa Ana Speckled Dace - California Species of Special Concern
Shoshone pupfish - California Species of Special Concern
Santa Ana threespine stickleback - California Species of Special Concern
Sacramento Perch - California Species of Special Concern
Mason's lilaeopsis - State Rare
Delta button celery - State Endangered
Willowy monardella - State Endangered
Santa Lucia mint - State Endangered
Navin's Barberry - State Endangered
Geysers Dichanthelium - State Endangered
Mohave Tar Plant - State Endangered
Father Crowley's Lupine - State Rare

APPENDIX G

PROPOSED REGULATIONS

228. Suction Dredging.

For purposes of these regulations, suction dredging (also called vacuum dredging) is defined as the use of a suction system to remove and return material at the bottom of a stream, river, or lake for the extraction of minerals. Suction dredges may only be used pursuant to the following provisions:

(a) Permit requirement. Every person who operates the intake nozzle of any suction dredge shall have a suction dredge permit in his/her immediate possession. Suction dredge permits shall be valid from the first of the year for one calendar year or if issued after the first of the year, for the remainder of that year. The department will charge a fee for each suction dredge permit pursuant to Section 5653(c), Fish and Game Code. Permits may be obtained at any Regional office or at the License and Revenue Branch office.

Any person with a qualifying disability under the Americans With Disabilities Act, who presents a Disabled Person DMV registration or other State, or Federal approved documentation of disability, and who requires assistance in operating a suction dredge may also apply for an assistant suction dredge permit. Any assistant suction dredge permit issued by the department to such disabled person shall be in the disabled applicant's name and shall be issued at no charge. The disabled permittee must be present at the dredge site while the assistant is operating the suction dredge. The assistant shall have the assistant suction dredge permit in his or her immediate possession while assisting the disabled permittee in suction dredging activities. Any assistant may be found liable for his/her own actions. The disabled permittee may be found liable for the actions of his/her assistant.

(b) Special Suction Dredge Permits.

(1) **Submission of Written Plan** - Any person may apply for a special suction dredge permit to operate a suction dredge with a nozzle larger than prescribed in subsection 228(e)(1), 228.5(c) or 228.5(d) or during the closed season or in a closed water for suction dredging by submitting a written plan detailing the proposed operation. If the department determines that no deleterious effect to fish may occur, the special permit shall be issued with conditions prescribed by the department to protect fish resources. A special permit will be issued or denied within 30 days upon receipt of a complete written plan detailing the proposed operation unless the time is extended by mutual agreement. If the special permit is denied, the justification for denial, will be provided.

(2) **Appeal of Denial** - The denial of a special suction dredge permit may be appealed to the director or his/her designee (hereinafter referred to as director). If the director determines that no deleterious impacts to fish may occur, the director may authorize the issuance of the permit. The director will respond to an appeal within 45 days from receipt of notice of request to appeal.

(c) Permit Revocation or Suspension. Any suction dredge permit, assistant suction dredge permit, or special suction dredge permit may be revoked or suspended by the regional manager or his/her designee (hereinafter referred to as regional manager) for any violation of the laws or regulations pertaining to suction dredging. The regional manager, may in his/her discretion temporarily or permanently suspend the renewal of a permit based on past citations or convictions of such laws or regulations. A regional manager's decision to revoke or suspend a permit or permit renewal may be appealed to the director. Any revocation or suspension of a permit or permit renewal shall be in accordance with the following provisions:

(1) Hearing When Permittee Convicted of Violation - In the case where the permittee has already been convicted of a violation of Section 5653 or 5653.3 of the Fish and Game Code or any regulation pertaining thereto permitted by said code, the regional manager shall schedule a hearing to consider the revocation or suspension of his/her permit or permit renewal:

(A) Notification. The regional manager shall notify the permittee, by certified letter, of the intent to consider the revocation or suspension of his/her permit or permit renewal at the hearing. The certified letter shall include the following information:

- (1.) Name of permittee and last known address.**
- (2.) Date, time and place of scheduled hearing.**
- (3.) Reason for impending action, including a statement as to date and fact of conviction(s).**

(4.) A copy of Section 228, Title 14, California Code of Regulations.

(5.) A statement that the permittee has the right to appear and to be represented by legal counsel.

(B) Recording. The proceedings of the hearing shall be recorded by an electronic tape recording system.

(C) Reading of Documents. At the hearing, the regional manager shall read the conviction documents. The department shall provide the regional manager with the background information regarding the violation(s) and conviction(s) and shall submit into the record a copy of the document(s) which include(s) the facts of the conviction(s) of a violation of the regulation(s) or statute.

(D) Statement by Permittee. The permittee shall make his/her statement regarding the violation(s) and conviction(s), and may argue that extenuating circumstances were such as to not warrant the loss of his/her permit or permit renewal.

(E) Questioning. The permittee or the department personnel may be questioned by the regional manager.

(F) Findings. At the conclusion of the hearing, the regional manager shall make a decision which contains findings or reasons for the proposed action.

(G) Notification by Certified Mail. After the hearing, the regional manager shall provide the permittee, by certified mail, a copy of the final decision.

(H) Appeal. The permittee may request an appeal to the director within 30 days of the date of receipt of the regional manager's decision. The director will respond to an appeal in writing within 45 days from receipt of notice of request to appeal.

(I) **Judicial Review.** The permittee may request judicial review by filing a petition for writ of mandate in accordance with provisions of the Code of Civil Procedure within 30 days from the date of the decision. The record of the proceedings shall be prepared by the department and delivered to the petitioner within 30 days after receipt of petitioner's request and upon payment of the fee specified in Section 69950 of the Government Code.

(2) **Hearing When Permittee Cited but Not Convicted.** In the case where the permittee has not been convicted of a violation of Section 5653 of the Fish and Game Code or any regulation pertaining to suction dredging permitted by said code, but has been cited by the department, the regional manager shall schedule a hearing to consider the revocation or suspension of his/her permit or permit renewal:

(A) **Notification.** The regional manager shall notify the permittee, by certified letter, of the regional manager intent to consider the revocation or suspension of his/her permit or permit renewal at the hearing. The certified letter shall include the following information:

(1.) Name of permittee and last known address.

(2.) Date, time and place of scheduled hearing.

(3.) Reason for impending regional manager action, including a concise statement of the acts or nonactions of permittee which constitutes a violation of Section 5653 or 5653.3, of the Fish and Game Code or regulations made pursuant thereto.

(4.) A copy of Section 228, Title 14, California Code of Regulations.

(5.) A statement that the permittee has the right to appear and to be represented by legal counsel.

(B) **Recording.** The proceedings of the hearing shall be recorded by an electronic tape recording system.

(C) **Presentation of Evidence.** The permittee and the department have the right to present evidence at the scheduled hearing as follows:

(1.) Oral evidence shall be taken on oath or affirmation.

(2.) Each party may call and examine witnesses, cross-examine opposing witnesses on any relevant matter, may rebut evidence against him/her, and may orally argue the matter.

(3.) The hearing need not be conducted according to the technical rules relating to evidence and witnesses. Any relevant evidence shall be admitted if it is the sort of evidence on which responsible persons would rely in the conduct of serious affairs.

(4.) The permittee or the department may be questioned by the regional manager.

(D) **Findings.** At the conclusion of the hearing, the regional manager shall make a decision based on the evidence presented at the hearing and shall issue written findings containing reasons for the decision and the evidence relied upon.

(E) **Notification by Certified Mail.** After the hearing the regional manager shall provide the permittee, by certified mail, a copy of the final decision.

(F) **Appeal.** The permittee may request an appeal to the director within 30 days of the date of receipt of the regional manager's decision. The director will respond to an appeal in writing within 45 days from receipt of notice of request to appeal.

(G) **Judicial Review.** The permittee may request judicial review by filing a petition of writ of mandate in accordance with provisions of the Code of Civil Procedure within 30 days from the date of the director's decision. The record of the administrative proceedings shall be prepared by the department and delivered to the petitioner within 30 days after receipt of petitioner's request and upon payment of the fee specified in Section 69950 of the Government Code.

(d) Special Approval for Use of Suction Dredges in Lakes and Reservoirs. No suction dredging is permitted in any lake or reservoir without written approval from the lake operating agency, the Regional Water Quality Control Board and an onsite inspection and approval by the Department.

(e) Equipment Requirements.

(1) **Nozzle Restriction.** No suction dredge having an intake nozzle with an inside diameter larger than six inches may be used unless:

(A) Otherwise provided under special regulations of Section 228.5, Title 14, California Code of Regulations, or

(B) A constricting ring with an inside diameter not larger than six inches has been attached to the intake nozzle. This constricting ring must be of solid, one-piece construction with no openings other than the intake and openings not greater than one inch between the constricting ring and nozzle. It must be welded or otherwise permanently attached over the end of the intake nozzle. No quick-release devices are permitted.

(2) **Hose Restriction.** The inside diameter of the intake hose may not be more than four inches larger than the permitted intake nozzle size.

(f) Restrictions on Methods of Operation.

(1) Winching is permitted under the following provisions:

(A) Boulders and other material may only be moved within the existing water line. No boulders or other material shall be moved outside the water line.

(B) Winching of any material embedded in banks of streams or rivers is prohibited.

(C) Winching of any material into a location which deflects water into the bank is prohibited.

(D) No power-winch activated shovels, buckets or rakes may be used to excavate materials in the stream course. Nets and other devices may be used to collect cobbles and boulders by hand for removal from dredge holes providing the materials are not removed from within the water line.

(E) No woody streamside vegetation shall be removed or damaged. Trees may be used as winch and pulley anchor points provided that precautions are taken to ensure that trunk surfaces are protected from cutting or abrasions.

(2) No person may suction dredge into the bank of any stream, lake or river.

(3) No person shall remove or damage woody riparian vegetation during suction dredge operations.

- (3) Amador East of Highway 49 is Class C, the remainder is Class H.
- (4) Butte Class C.
- (5) Calaveras East of Highway 49 is Class C, the remainder is Class H.
- (6) Colusa Class H.
- (7) Contra Costa Class H.
- (8) Del Norte Class E.
- (9) El Dorado East of Highway 49 is Class C, the remainder is Class H.
- (10) Fresno Within the external boundaries of the National Forests is Class C, the remainder is Class H. (Kings River Special Management Area has been closed to suction dredging by the U.S. Forest Service. Contact Sequoia National Forest for details).
- (11) Glenn Class H.
- (12) Humboldt Class E.
- (13) Imperial Class H.
- (14) Inyo Class A.
- (15) Kern Class H.
- (16) Kings Class H.
- (17) Lake Class H.
- (18) Lassen Class C.
- (19) Los Angeles Class H. (Portions of the San Gabriel Mountains may be closed to suction dredging by the U.S. Forest Service. Contact the Angeles National Forest for details).
- (20) Madera Within the external boundaries of the National Forests is Class C, the remainder is Class H.
- (21) Marin Class A.
- (22) Mariposa Within the external boundaries of the National Forests is Class C, the remainder is Class H.
- (23) Mendocino Class A.
- (24) Merced Class H.
- (25) Modoc Class C.
- (26) Mono Class A.
- (27) Monterey Class A.
- (28) Napa Class A.
- (29) Nevada East of Highway 49 is Class C, the remainder is Class H.
- (30) Orange Class H.
- (31) Placer East of Highway 49 is Class C, the remainder is Class H.
- (32) Plumas Class C.
- (33) Riverside Class H.
- (34) Sacramento Class H.

(35) San Benito	Class A.
(36) San Bernardino	Class H. (Portions of the San Gabriel Mountains may be closed to suction dredging by the U.S. Forest Service. Contact the Angeles National Forest for details).
(37) San Diego	Class H.
(38) San Francisco	Class H.
(39) San Joaquin	Class H.
(40) San Luis Obispo	Class A.
(41) San Mateo	Class A.
(42) Santa Barbara	Class H.
(43) Santa Clara	Class H.
(44) Santa Cruz	Class A.
(45) Shasta	Class C.
(46) Sierra	Class C.
(47) Siskiyou	Class E.
(48) Solano	Class H.
(49) Sonoma	Class A.
(50) Stanislaus	Class H.
(51) Sutter	Class H.
(52) Tehama	Class D.
(53) Trinity	Class E.
(54) Tulare	Within the external boundaries of the National Forests is Class C, the remainder is Class H.
(55) Tuolumne	East of Highway 49 is Class C, the remainder is Class H.
(56) Ventura	Class H.
(57) Yolo	Class H.
(58) Yuba	Class H.

(c) Eight Inch Nozzle Size. Eight inch diameter intake nozzle size is permitted on the following rivers unless otherwise specified in Section 228.5(d).

- (1) American (Placer, Nevada, and El Dorado counties)
- (2) Cosumnes (Sacramento, Amador and El Dorado counties)
- (3) Feather (Butte, Plumas, and Yuba counties)
- (4) Klamath - (Del Norte, Humboldt and Siskiyou counties)
- (5) Merced (Mariposa and Merced counties)
- (6) Mokelumne (Amador, Calaveras and San Joaquin counties)
- (7) New (Trinity County)
- (8) Scott (Siskiyou County)
- (9) Trinity (Trinity and Humboldt counties)
- (10) Yuba (Sierra and Yuba counties)

(d) Special Regulations by Water. In addition to the classifications listed in Section 228.5(b) and (c), the special regulations below apply to the following waters:

(1) American River (Sacramento County). The main stem American River from the Sacramento River upstream to Nimbus Dam is Class A.

(2) American River, Middle Fork (El Dorado and Placer counties). The main stem American River Middle Fork from its junction with the North Fork of the American River upstream to the confluence with the Rubicon River is Class C. (Note: Recreational dredging is allowed in the Auburn State Recreation Area on an interim management basis. Contact the Auburn State Recreation Area for instructions.)

(3) American River, North Fork (Placer County). The main stem North Fork American River from Folsom Reservoir to the Colfax-Iowa Hill Road Bridge is Class C. From the Colfax-Iowa Hill Road Bridge upstream to Heath Springs (T16N R14E S26) is Class A. (Note: Recreational dredging is allowed in the Auburn State Recreation Area on an interim management basis. Contact the Auburn State Recreation Area for instructions)

(4) American River, South Fork (El Dorado County). The main stem South Fork American River from Folsom Reservoir upstream to the Highway 49 bridge at Coloma is Class C.

(5) American River, South Fork Tributaries (El Dorado County). All tributaries to the South Fork American River from Folsom Reservoir upstream are Class C.

(6) Antelope Creek and Tributaries (Placer County). Antelope Creek and its tributaries are Class B.

(7) Auburn Ravine and Tributaries (Placer County). Auburn Ravine and its tributaries are Class B.

(8) Bear River (Placer County) The main stem Bear River from Forty Mile Road to the South Sutter Irrigation Districts diversion dam is Class D.

(9) Big Chico Creek (Butte County). The main stem Big Chico Creek from Manzanita Avenue in Chico to the head of Higgins Hole (T24N R3E S31) is Class A.

(10) Big Creek and Tributaries (Fresno County). Big Creek, tributary to the Kings River, and its tributaries are Class A.

(11) Big Creek (Trinity County). The main stem Big Creek is Class A.

(12) Blue Creek and Tributaries (Del Norte and Humboldt counties). Blue Creek and its tributaries are Class A.

- (13) **Butte Creek (Butte County).** The main stem Butte Creek from the Sutter County line upstream to the Durham-Oroville Highway Bridge is Class H; and from the Durham-Oroville Highway Bridge upstream to the intake of Centerville Ditch (T23N R3E S10) is Class A.
- (14) **Calaveras River and Tributaries (Calaveras and San Joaquin counties).** The Calaveras River and its tributaries below New Hogan Reservoir are Class B.
- (15) **Canyon Creek (Yuba County).** The main stem Canyon Creek from its mouth upstream to the Sierra-Yuba County line (T20N R8E S25) is Class C.
- (16) **Cherry Creek (Tuolumne County).** The main stem of Cherry Creek is Class B.
- (17) **Chowchilla River (Madera and Mariposa counties).** The main stem Chowchilla River from Eastman Lake upstream to the West and East forks of the Chowchilla River is Class A.
- (18) **Chowchilla River West Fork (Madera and Mariposa counties).** The main stem West Fork Chowchilla River from its mouth upstream to the Highway 49 bridge is Class A.
- (19) **Clavey River (Tuolumne County).** The main stem Clavey River is Class A.
- (20) **Clear Creek and Tributaries (Siskiyou County).** Clear Creek and its tributaries are Class A.
- (21) **Colorado River and Tributaries (Imperial, Riverside and San Bernardino counties).** The main channel and all side sloughs and tributaries of the Colorado River are Class A.
- (22) **Cosumnes River (Sacramento, Amador and El Dorado counties).** The main stem Cosumnes River from the Western Pacific Railroad Bridge about 1/4 mile above mouth upstream to the Latrobe Highway bridge is Class D; and from the Latrobe Highway Bridge upstream to the confluence with the North and Middle fork of the Cosumnes River is Class H.
- (23) **Cosumnes River, North Fork (El Dorado County).** The main stem North Fork Cosumnes River from the Middle Fork of the Cosumnes River upstream to the Somerset-Pleasant Valley Road Bridge is Class H.
- (24) **Cosumnes River, Middle Fork (El Dorado County).** The main stem Middle Fork Cosumnes River from the North Fork Cosumnes River upstream to Bakers Ford on the Aukum-Somerset Road is Class H.
- (25) **Cosumnes River, South Fork (Amador and El Dorado counties).** The main stem south fork Cosumnes River from Middle Fork Cosumnes River upstream to the County Road Bridge at River Pines is Class H.

- (26) **Cow Creek and Tributaries (Fresno County).** Cow Creek and its tributaries are Class A.
- (27) **Curtis Creek (Tuolumne County).** The main stem Curtis Creek is Class C.
- (28) **Deep Creek (San Bernardino County).** The main stem Deep Creek is Class A.
- (29) **Deer Creek (Nevada County).** The main stem Deer Creek from Ponderosa Way below Rough and Ready Falls (T16N R7E S13) upstream to Highway 49 is Class C.
- (30) **Dillion Creek and Tributaries (Siskiyou County).** Dillion Creek and its tributaries are Class A.
- (31) **Dinkey Creek and Tributaries (Fresno County).** Dinkey Creek and are tributaries are Class A.
- (32) **Eagle Creek (Tuolumne County).** The main stem Eagle Creek is Class C.
- (33) **Eastman Lake (Madera and Mariposa counties).** Eastman Lake is Class A.
- (34) **Eel River, All Forks and Tributaries (Mendocino County).** The Eel River, all forks and its tributaries upstream of Humboldt/Mendocino and Trinity/Mendocino County lines are Class A.
- (35) **Eel River, Middle Fork and Tributaries (Mendocino and Trinity counties).** The Middle Fork Eel River and its tributaries are Class A.
- (36) **Feather River (Butte County).** The main stem Feather River from Honcut Creek (T17N R3E S27) upstream to the Highway 70 Bridge is Class B; and from the Highway 70 Bridge upstream to Oroville Dam is Class A.
- (37) **Feather River, South Fork (Butte and Plumas counties).** The main stem South Fork Feather River from Oroville Reservoir upstream to Little Grass Valley Dam (T22N R9E S31) is Class C.
- (38) **Flat Creek and Tributaries (Shasta County).** Flat Creek and its tributaries are Class H.
- (39) **French Creek (Trinity County).** The main stem French Creek is Class A.
- (40) **Grapevine Creek (Tuolumne County).** The main stem Grapevine Creek is Class B.
- (41) **Horton Creek (Tuolumne County).** The main stem Horton Creek is Class A.

- (42) **Hunter Creek (Tuolumne County).** The main stem Hunter Creek is Class B.
- (43) **Independence Creek and Tributaries (Nevada and Sierra counties).** Independence Creek and its tributaries from Independence Lake upstream are Class A.
- (44) **Jawbone Creek (Tuolumne County).** The main stem Jawbone Creek is Class B.
- (45) **Kaweah River (Tulare County).** The main stem Kaweah River upstream of Kaweah Reservoir is Class A.
- (46) **Kern River and Tributaries (Kern and Tulare counties).** The Kern River and its tributaries from Isabella Dam upstream are Class A.
- (47) **Kern River South Fork and Tributaries (Kern and Tulare counties).** The South Fork Kern River and its tributaries are Class A.
- (48) **Kings River and Tributaries (Fresno and Kings counties).** The Kings River and its tributaries from Tulare Lake upstream to Pine Flat Dam are Class A.
- (49) **Klamath River, Main Stem (Del Norte, Humboldt and Siskiyou counties).** The main stem Klamath River from the mouth upstream to the Salmon River is Class G; from the Salmon River upstream to 500 feet downstream of the Scott River is Class H; from 500 feet downstream of the Scott River upstream to Iron Gate Dam is Class G; and from Iron Gate Dam to the Oregon border is Class A.
- (50) **Knights Creek (Tuolumne).** The main stem Knights Creek is Class C.
- (51) **Lavezzola Creek (Sierra County).** The main stem Lavezzola Creek is Class C.
- (52) **Little Rock Creek and Tributaries (Los Angeles County).** The main stem Little Rock Creek and its tributaries from the Sycamore Camp Ground in Angeles National Forest upstream are Class A.
- (53) **Little Swede Creek (Trinity County).** The main stem Little Swede Creek is Class A.
- (54) **Macklin Creek (Nevada County).** The main stem Macklin Creek from its confluence with the Middle Fork Yuba River (T19N R12E S16) upstream is Class A.
- (55) **Malibu Creek and Tributaries (Los Angeles County).** Malibu Creek and its tributaries are Class A.
- (56) **McCloud River (Shasta County).** The main stem McCloud River from the southern boundary of Section 16, T38N, R3W, upstream to Lake McCloud Dam is Class A.

- (57) **Merced River (Merced County).** The main stem Merced River from the San Joaquin River upstream to the Crocker-Huffman Dam (upstream from Snelling) is Class A.
- (58) **Merced River (Mariposa County).** The main stem Merced River is Class C.
- (59) **Merced River, North Fork (Mariposa County).** The main stem North Fork Merced River is Class C.
- (60) **Miner's Ravine and Tributaries (Placer County).** Miner's Ravine and its tributaries are Class B.
- (61) **Minnow Creek (Tuolumne County).** The main stem Minnow Creek is Class A.
- (62) **Mokelumne River (Amador, Calaveras and San Joaquin counties).** The main stem Mokelumne River from Burella Road upstream to Camanche Dam is Class A; from Camanche Dam upstream to Pardee Dam is Class H; and from Pardee Dam upstream is Class C.
- (63) **Mud Creek (Butte County).** The main stem Mud Creek from Big Chico Creek upstream is Class C.
- (64) **Nelson Creek (Plumas County).** The main stem Nelson Creek is Class C.
- (65) **New River and Tributaries (Trinity County).** New River and its tributaries upstream from the East Fork New River, are Class A.
- (66) **New River East Fork and Tributaries (Trinity County).** The East Fork New River and its tributaries from the New River upstream are Class A.
- (67) **Piru Creek and Tributaries (Ventura and Los Angeles counties).** Piru Creek and its tributaries are Class A.
- (68) **Pit River and Tributaries (Lassen and Modoc counties)** The Pit River and its tributaries are Class A.
- (69) **Poor Man Creek and Tributaries (Tuolumne).** Poor Man Creek and its tributaries are Class A.
- (70) **Portuguese Creek and Tributaries (Madera County).** Portuguese Creek and its tributaries are Class A.
- (71) **Rock Creek (Butte County).** The main stem Rock Creek from Big Chico Creek upstream to the Butte-Tehama County Line is Class C.

- (72) **Rock Creek and Tributaries (Shasta County).** Rock Creek and its tributaries are Class H.
- (73) **Rose Creek (Tuolumne County).** The main stem Rose Creek is Class C.
- (74) **Rubicon River and Tributaries (El Dorado and Placer counties).** The Rubicon River and its tributaries are Class C. No dredge with intake larger than 4 inches may be used.
- (75) **Sacramento River and Tributaries (several counties).** The main stem Sacramento River from the San Francisco Bay upstream to the Shasta Dam is Class A. The Sacramento River and its tributaries from Shasta Lake upstream to Box Canyon Dam are Class A.
- (76) **Salmon River (Siskiyou County).** The main stem Salmon River is Class D.
- (77) **Salmon River, North Fork (Siskiyou County).** The main stem North Fork Salmon River from the South Fork Salmon River upstream to the Marble Mountain Wilderness boundary is Class D.
- (78) **Salmon River, South Fork (Siskiyou County).** The main stem South Fork Salmon River from the North Fork Salmon River upstream to the Trinity Alps Wilderness boundary is Class D.
- (79) **Salt Creek and its Tributaries (Riverside County).** Salt Creek and its tributaries are Class A.
- (80) **San Felipe Creek and Tributaries (Imperial and San Diego Counties).** San Felipe Creek and its tributaries are Class A.
- (81) **San Gabriel River, East Fork and Tributaries (Los Angeles County).** The East Fork San Gabriel River and its tributaries from Cattle Canyon upstream are Class A.
- (82) **San Gabriel River, West Fork and Tributaries (Los Angeles County).** The West Fork San Gabriel River and its tributaries from Rincon Guard Station upstream are Class A.
- (83) **San Joaquin River (several counties).** San Joaquin River from the Delta upstream to Friant Dam (Millerton Lake) is Class A.
- (84) **San Juan Creek and Tributaries (Orange and Riverside counties).** San Juan Creek and its tributaries from its mouth upstream are Class A.
- (85) **San Mateo Creek and Tributaries (San Diego, Orange and Riverside counties).** San Mateo Creek and its tributaries from its mouth upstream are Class A.

- (86) **Santa Ana River and its Tributaries (San Bernardino County).** The Santa Ana River and its tributaries from the mouth of Bear Creek upstream are Class A.
- (87) **Santa Clara River and Tributaries (Los Angeles and Ventura counties).** The Santa Clara River and its tributaries from the Los Angeles-Ventura County line upstream are Class A, except that Texas Canyon Creek is Class H.
- (88) **Santiago Creek and Tributaries (Orange County).** Santiago Creek and its tributaries within the Cleveland National Forest are Class A.
- (89) **Saxon Creek (Mariposa County).** The main stem Saxon Creek is Class A.
- (90) **Scott River and Tributaries (Siskiyou County).** The Scott River and its tributaries are Class G.
- (91) **Secret Ravine and Tributaries (Placer County).** Secret Ravine and its tributaries are Class B.
- (92) **Sespe Creek (Ventura County).** The main stem Sespe Creek from the Los Padres National Forest boundary upstream to its confluence with Tule Creek is Class A.
- (93) **Shay Creek and Tributaries (San Bernardino County).** Shay Creek and its tributaries are Class A.
- (94) **Shasta River and Tributaries (Siskiyou County).** The Shasta River and its tributaries are Class A.
- (95) **Sherlock Creek (Mariposa County)** The main stem Sherlock Creek is Class A.
- (96) **Silver King Creek and Tributaries (Alpine County).** Silver King Creek and its tributaries are Class A.
- (97) **Six-Bit Creek and Tributaries (Tuolumne County).** Six-Bit Creek and its tributaries are Class A.
- (98) **Smith River Middle Fork (Del Norte County).** The main stem Middle Fork Smith River is Class D.
- (99) **Stanislaus River (Calaveras, San Joaquin, Stanislaus and Tuolumne counties).** The main stem Stanislaus River from the San Joaquin River upstream to Goodwin Dam is Class A, and from New Melones Dam upstream, excluding New Melones Reservoir, is Class C.
- (100) **Sullivan Creek (Tuolumne County).** The main stem Sullivan Creek is Class C.

- (101) **Sutter Creek (Amador County).** The main stem Sutter Creek from Highway 49 upstream to Pine Gulch Road is Class H.
- (102) **Sycamore Creek and Tributaries (Fresno County).** Sycamore Creek, tributary to the Kings River, and its tributaries are Class A.
- (103) **Texas Canyon Creek (Los Angeles County).** The main stem Texas Canyon Creek is Class H.
- (104) **Trinity River, Main Stem below Lewiston Dam (Humboldt and Trinity counties).** The main stem Trinity River from the Klamath River upstream to the South Fork Trinity River is Class A; from the South Fork Trinity River upstream to the North Fork Trinity River is Class H; from the North Fork Trinity River upstream to Grass Valley Creek is Class D; and from Grass Valley Creek upstream to Lewiston Dam is Class A.
- (105) **Trinity River, Main Stem and Tributaries above Lewiston Dam (Trinity County).** The Trinity River and its tributaries above Lewiston Dam are open to dredging from July 1 through October 15.
- (106) **Trinity River, North Fork and Tributaries (Trinity County)** The North Fork Trinity River and its tributaries upstream from Hobo Gulch Campground are Class A.
- (107) **Tuolumne River (Stanislaus County).** The main stem Tuolumne River from the Waterford Bridge upstream to La Grange Dam is Class A.
- (108) **Tuolumne River, North Fork, and Tributaries (Tuolumne County).** The North Fork Tuolumne River and its tributaries are Class B.
- (109) **Turnback Creek and Tributaries (Tuolumne County).** Turnback Creek and its tributaries are Class A.
- (110) **Wolf Creek (Nevada County).** The main stem Wolf Creek from the Tarr Ditch Diversion (T15N R8E S10) upstream is Class C.
- (111) **Woods Creek and Tributaries (Tuolumne County).** Woods Creek and its tributaries from Harvard Mine Road (Jamestown) downstream are Class C; from Harvard Mine Road upstream are Class A.
- (112) **Wooley Creek and Tributaries (Siskiyou County).** Wooley Creek and its tributaries are Class A.
- (113) **Yuba River (Yuba County).** The main stem Yuba River from its mouth at Marysville upstream to Highway 20 is Class B; and from Highway 20 upstream to Englebright Dam is Class A.

(114) Yuba River, North Fork (Sierra and Yuba counties). The main stem North Fork Yuba River from the Middle Fork of the Yuba River upstream to Fiddle Creek is Class H.

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APPENDIX H
BIBLIOGRAPHY

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APPENDIX I

STATE BIOLOGICAL OPINION

**CALIFORNIA ENDANGERED SPECIES ACT (CESA)
STATE BIOLOGICAL OPINION
REGARDING ADOPTION OF REGULATIONS
FOR THE USE OF SUCTION DREDGE EQUIPMENT**

Summary

The proposed project would allow the use of suction dredge equipment for mineral recovery and extraction in California's lakes, streams and rivers. The proposed project and associated Biological Opinion does not cover large scale suction dredging associated with coastal bay and river dredging for the purposes of maintaining navigable passage or for sand and gravel mining. The Department of Fish and Game (Department) recommends that the Director adopt the proposed regulations regarding for the use of suction dredge equipment in designated waters throughout the State (Appendix G).

Because the proposed regulations could potentially impact several species listed as threatened or endangered by the Fish and Game Commission and by the U. S. Fish and Wildlife Service (USFWS), the Department is required to conduct an internal consultation pursuant to the California Endangered Species Act (CESA) and to coordinate with the appropriate federal agencies. This draft biological opinion was sent to the USFWS for comment and coordination. Comments received from the USFWS have been incorporated into this final Biological Opinion.

The proposed regulations and Draft Programmatic Environmental Impact Report (DEIR) for Adoption of Suction Dredge Regulations were internally sent to all divisions and regions in the Department including the Inland Fisheries Division (IFD), Natural Heritage Division (NHD), Wildlife Protection Division (WPD), Wildlife Management Division (WMD) and all five regions. Department recommendations providing for the protection of threatened or endangered species were incorporated into the DEIR and proposed regulations. The primary recommendation to avoid jeopardy and to minimize incidental take to threatened or endangered species by suction dredge activities was avoidance. In lakes, streams and rivers where threatened or endangered species are known to exist, waters are closed to suction dredge equipment use during those times when the species occur.

Even with the area and seasonal closures for avoidance, because of the statewide nature of the proposed project, the potential for the incidental take of listed plant or animal species exists. Issuance of a suction dredge permit does not authorize the take, or incidental take of any State or Federal rare, threatened, or endangered plant or animal species.

Suction dredgers may apply to suction dredge in specific closed areas through the special permit process. If the potential for take or incidental take exists, the Department may require that a biological assessment be conducted by a competent biologist, and that the

Department be provided a written copy of the biological assessment prior to the commencement of the project. Liability for any take or incidental take of such plants or animals remains the responsibility of the suction dredge permittee for the duration of the project. Any take of such plants or animals may result in prosecution.

Since the use of suction dredge equipment takes place in water, particular attention was focused on aquatic species. Therefore, spawning and migratory periods of aquatic animal species and location of riparian dependent plant species were taken into account in designating suction dredge equipment use areas and seasons of use. Waters have been closed to suction dredge equipment use for the entire year or for specified periods of use to avoid impacts to the twenty fish species, eight amphibian species and three invertebrate species listed as threatened or endangered by the state or federal government.

Project Description

The project is the adoption of regulations pursuant to Fish and Game Code Sections 5653 through 5653.9 regulating the use of suction dredge equipment in the waters of California. The regulations are statewide and have the potential to affect all waters of California. The Department has regulated the use of suction dredge equipment for many years through informal regulations. The Department is now in the process of formally adopting regulations. The regulations will be incorporated into the California Code of Regulations, Title 14 - Natural Resources.

The vast majority of suction dredging for mineral extraction in California is performed for the mining of placer gold. Recreational and commercial suction dredge gold mining began in the early 1950s when suction dredge equipment was first developed. Since that time the amount activity has fluctuated dramatically in California streams and rivers as a result of the changes in the price of gold and technological improvements of dredges and gold recovery systems. The number of permits issued annually under past informal regulations by the Department for the use of suction dredge equipment has ranged from approximately 3,900 to 12,700. Currently, about 4,000 permits are issued annually.

Listed Species

Most impacts associated with suction dredging occur in the fresh water environment. Some terrestrial impacts may occur when suction dredge operators access streams and rivers. Terrestrial impacts to riparian habitat are addressed in the proposed regulations. Damage to woody riparian habitat is prohibited. Upland terrestrial impacts, such as minor road construction, will be minimal and are not considered as a threat to the existence of any listed species. Terrestrial impacts will be regulated by those agencies of land ownership adjacent to the streams, rivers and lakes.

There are twenty fresh water fish species, eight amphibian species, and three invertebrate species that are listed by the state or federal government that may be directly impacted by suction dredging. Those species are:

Fish

Winter-run Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	SE, FT
Little Kern Golden Trout	<i>Oncorhynchus aguabonita whitei</i>	FT
Lahontan Cutthroat Trout	<i>Oncorhynchus clarki henshawi</i>	FT
Paiute Cutthroat Trout	<i>Oncorhynchus clarki seleniris</i>	FT
Bull Trout	<i>Salvelinus confluentus</i>	SE
Delta Smelt	<i>Hypomesus transpacificus</i>	FPT
Mohave Tui Chub	<i>Gila bicolor mohavensis</i>	SE, FE
Owens Tui Chub	<i>Gila bicolor snyderi</i>	SE, FE
Bonytail Chub	<i>Gila elegans</i>	SE, FE
Colorado Squawfish	<i>Ptychocheilus lucius</i>	SE, FE
Lost River Sucker	<i>Deltistes luxatus</i>	SE, FE
Modoc Sucker	<i>Catostomus microps</i>	SE, FE
Shortnose Sucker	<i>Chasmistes brevirostris</i>	SE, FE
Razorback Sucker	<i>Xyrauchen texanus</i>	SE, FE
Desert Pupfish	<i>Cyprinoden macularius</i>	SE, FE
Cottonball Marsh Pupfish	<i>Cyprinoden salinus milleri</i>	ST
Owen's Pupfish	<i>Cyprinoden radiosus</i>	SE, FE
Unarmored Threespine Stickleback	<i>Gasterosteus aculeatus williamsoni</i>	SE, FE
Tidewater Goby	<i>Eucyclogobius newberryi</i>	FPE
Rough Sculpin	<i>Cottus asperimus</i>	ST

Amphibians

Santa Cruz Long-toed Salamander	<i>Ambystoma macrodactylum croceum</i>	SE, FE
Siskiyou Mountains Salamander	<i>Plethodon stormi</i>	ST
Tehachapi Slender Salamander	<i>Batrachoseps stebbinsi</i>	ST
Kern Canyon Slender Salamander	<i>Batrachoseps simatus</i>	ST
Desert Slender Salamander	<i>Batrachoseps aridus</i>	SE, FE
Shasta Salamander	<i>Hydromantes shastae</i>	ST
Limestone Salamander	<i>Hydromantes brunus</i>	ST
Black Toad	<i>Bufo exsul</i>	ST

Invertebrates

California Freshwater Shrimp	<i>Syncaris pacifica</i>	SE, FE
Shasta Crayfish	<i>Pacifastacus fortis</i>	SE, FE
Trinity Bristle Snail	<i>Monardenia setosa</i>	ST

In addition, several amphibians listed as California Species of Special Concern were considered in the development of the regulations. These species, because of various threats, could be listed in the future or become candidates for listing. These species may be considered rare or endangered under the California Environmental Quality Act section 15380. These included:

California Red-legged Frog	<i>Rana aurora draytonii</i>	CSC
Foothill Yellow-legged Frog	<i>Rana boylei</i>	CSC
Mountain Yellow-legged Frog	<i>Rana muscosa</i>	CSC
Arroyo Southwestern Toad	<i>Bufo microsaphus californicus</i>	CSC

There are two hundred and ten native plants designated as endangered, threatened or rare by the Fish and Game Commission many of which may be dependent on fresh water aquatic or riparian areas. A list of those species most likely to be adjacent to areas where suction dredge equipment use may occur is provided below.

Plants

Navin's Barberry	<i>Berberis nevadensis</i>	SE
Geyser's Dichanthelium	<i>Dichanthelium lanuginosum</i>	SE
Delta Button Celery	<i>Eryngium racemosum</i>	CE
Mohave Tar Plant	<i>Hemizonia mohavensis</i>	CE
Mason's lilaepsis	<i>Lilaepsis masonii</i>	SR
Father Crowley's Lupine	<i>Lupinus padre-crowleyi</i>	SR
Willowly monardella	<i>Monardella linoides ssp. viminea</i>	CE
Santa Lucia Mint	<i>Pogogyne clareana</i>	CE

SE - State Endangered
ST - State Threatened
C - State Candidate
SR - State Rare
CSC - California Species of Special Concern
FE - Federal Endangered
FT - Federal Threatened
FPE - Federal Proposed Endangered
FPT - Federal Proposed Threatened

In developing of the proposed regulations and programmatic DEIR the Department conducted an extensive search of all known data regarding the possible impacts on the environment from unregulated suction dredging. These potential major impacts have been summarized below.

- o increased turbidity levels (increasing amounts of sand, silt, and clay) deposited downstream as a result of suction dredge mining
- o fish spawning bed and rearing habitat destruction; dredge and dredger presence as an annoyance to fish
- o mortality of various life stages of fish, amphibians, and benthic invertebrates (insects, crustaceans, and mollusks living in the streambed) through entrainment (entrainment or entraining is the act of forcing an aquatic organism through a dredge via a suction hose)
- o alteration of stream, lake or river morphology (bed, bank or channel)
- o alteration of aquatic and riparian communities
- o cumulative impact of many dredges on a single stream, river or lake
- o deterioration of downstream water quality

These potential impacts were taken into consideration in the development of the proposed project regulations.

Listed Fish Species

Listed fish species potentially impacted by suction dredging can be categorized based on location, range, proximity to suction dredging activities and protective measures. Many of the species are located in areas that were closed to suction dredging under the informal regulations. Other species are located in areas where suction dredging does not occur due to a lack of gold (east side Sierras, desert regions) or gold that is covered by too much overburden (lower Sacramento River, lower San Joaquin River and Bay Delta). To insure avoidance, these areas, where listed species occur, will be closed to suction dredging.

Winter-run Chinook Salmon is listed as a State Endangered and Federal Threatened species. The winter-run is a distinct race of chinook salmon distinguished from other races by timing of adult upstream migration, spawning, egg incubation, juvenile downstream migration, younger age at spawning, lower fecundity, rapid upstream movement of adults and extended holding-staging periods of adults.

The winter-run chinook salmon population in California has declined greatly in recent years. Compared with the 60,000 to 120,000 spawners typical of the 1960's, the annual run size dropped to a five year average in the mid 1980's of 2,000 fish. By 1991 only 191 spawning fish were counted.

The threat to the continued existence of this population are blockage of fish passage by dams, numerous unscreened diversions in the Sacramento River, excessive water temperatures, delta water diversions, and loss of shaded riverine aquatic habitat.

In order to prevent potential additional negative impacts to adults, juveniles, fry or yolk sac fry, the entire range of the species in the Sacramento River, the Delta and the lower San Joaquin River are closed to suction dredging. This closure will also avoid impacts to water quality and shaded riverine aquatic habitat which would be directly impacted by suction dredging. Because of the high level of sediment in the bed of the river suction dredge activities would cause excessive levels of turbidity and sedimentation. Shaded riverine aquatic habitat, identified as Critical Habitat by the USFWS and National Marine Fisheries Service would be threatened by undermining of the banks from suction dredge activities.

This closure will also protect the Delta Smelt, a Federal Threatened species located in the San Francisco Bay, Bay Delta and Sacramento River. This species has declined due to habitat destruction, water diversion, introduction of predatory fish and water pollution. Due to the relatively small size of Delta Smelt, suction dredging could potentially directly negatively impact them by entrainment and by habitat disturbance.

The closure of the Sacramento River, San Joaquin River, and the Bay Delta will have little impact on suction dredging since these areas are not currently suction dredged for mineral recovery.

Bull Trout is a State Endangered species described as a large non-anadromous species of char found in the Sacramento and McCloud Rivers. The species has been severely depleted throughout most of its range due to watershed deterioration due to logging, competition from exotic species and water diversion. In order to prevent additional negative impacts to this species the range of this species is closed to suction dredging.

The Little Kern Golden Trout, Lahontan Cutthroat Trout and Paiute Cutthroat Trout are listed as Federal Threatened Species. All three species are found in mountainous streams where suction dredging does not take place. If suction dredging is found to exist within the range of these species the areas will be closed to suction dredging.

The Mohave Tui Chub, Owen's Tui Chub, Bonytail Chub, Colorado Squawfish, Razorback Sucker, Desert Pupfish, Owen's Pupfish and the Cottonball Marsh Pupfish are all fish species located on the east side of the Sierras, in the southern California deserts and in the Colorado River drainage systems. These areas are closed to suction dredging.

The Modoc Sucker is a small (< 200 mm) fine scaled sucker listed as Endangered by the State and Federal government. The species is only found in a small portion of the upper Pit River drainage in Modoc and Lassen counties. Major threats to the continued existence of the species include introduction of exotic predatory species, grazing and possible hybridization. In order to prevent additional negative impacts to this species the range of the species will be closed to suction dredging.

The Shortnose and Lost River Suckers are listed as Endangered by the State and Federal governments. Both species exist in Clear Lake and in the Klamath Basin drainages. Suction dredging in the Klamath Basin occurs only in the lower, coastal section, which is outside the range of the two species. Therefore, suction dredging is not considered a threat to the continued existence of the species. Suction dredging is prohibited above Irongate Reservoir to ensure protection.

The Unarmored Threespine Stickleback is listed by the State and Federal Government as Endangered. The species is located in the upper Santa Clara River drainage in Los Angeles County and in San Felipe Creek in San Diego County. Suction dredge mining does not occur in these areas. However, the stream stretches will be closed to ensure protection.

The Rough Sculpin is listed by the State as Threatened. It is the smallest member of the family Cottidae in California. The species occurs only in Shasta County in the Pit River immediately above and below the falls at Burney, as well as in Hat Creek and the Fall River and its tributaries. Areas are closed to suction dredging where this species occurs.

Amphibians

Listed amphibian species that may potentially be impacted by suction dredging can be categorized based on location, range, and proximity to suction dredging activities. Some species are located in areas where suction dredging does not occur due to a lack of gold (east side Sierras, desert regions) or gold that is covered by too much overburden (lower Sacramento River, Bay Delta). Where suction dredging and listed species do occur, if suction dredging is identified as a threat to the species, areas will be closed.

The Santa Cruz Long-toed Salamander (meadows and seeps, Santa Cruz and Monterey counties), Desert Slender Salamander (desert riparian areas), Black Toad (seeps and springs, Inyo County), Tehachapi Slender Salamander (rock talus in foothill woodland), Siskiyou Mountain Salamander (moist, rocky habitat, Klamath Basin) Limestone Salamander (limestone outcroppings, Mariposa County) Kern Canyon Slender Salamander (north facing talus slopes, Kern County) and Shasta Salamander (rocks and fissures, Shasta County) occur in areas where suction dredging does not occur or in areas that are not dependent on stream or river habitats for any life stages. Therefore, these species are not threatened by suction dredging.

The California Red-legged Frog, Foothill Yellow-legged Frog, Mountain Yellow-legged Frog and Arroyo Southwestern Toad are State listed Species of Special Concern and occur in areas where suction dredging may occur. All four species have life stages which are dependent on stream environments. The U.S. Forest Service has closed some areas in southern California to suction dredging for the protection of the Arroyo Southwestern Toad, which is federally designated as a Sensitive species. Areas where this species occur will be closed to suction dredging. The USFWS has also recommended closing areas to suction dredging where the Arroyo Southwestern Toad exists.

Invertebrates

There are three listed invertebrate species which may potentially be impacted by suction dredging. The California Freshwater Shrimp is a small (less than 50 mm in length) shrimp found in small stretches of low gradient streams found in Marin, Sonoma, and Napa counties. The Shasta Crayfish is a relatively long-lived small to medium sized crayfish that is slow to mature and with low fecundity. Populations are small and restricted to the Pit River Drainage, including tributaries of the Hat Creek and Fall River subdrainages. At this time little if any suction dredging takes place in these areas. However, these areas are closed to suction dredge activities. The Trinity Bristle Snail is a medium-sized, dull surfaced, brown to chestnut-colored snail. It occurs exclusively in Trinity County in riparian habitat along Swede, Big, French and Little Swede creeks. Suction dredging occurs in these areas. These areas are closed to suction dredge activities.

Listed Plants

Whereas listed animals Listed plant species are protected under the California Endangered Species Act and the Native Plant Protection Act. All of the listed plant species are riparian dependent species, not aquatic species. Therefore, suction dredging will not directly affect these species. Such activities are not likely to threaten the continued existence of the species.

The Delta Button Celery, listed as State Endangered, is a slender herbaceous perennial species and occurs generally on clay soils in lowland areas of riparian and floodplain habitat. Its historic distribution includes Calaveras, Merced, Stanislaus, and San Joaquin counties.

Geyser's dichanthelium, listed as State Endangered, is a velvet-haired perennial grass associated with hydrothermally altered soil and is located in Sonoma County in the Big Sulphur Creek drainage.

Nevin's barberry, listed as State Endangered, is a blue-green evergreen shrub in the barberry family. This species occurs in coastal sage scrub and chaparral communities in the margins of dry washes in the foothills of the Transverse and Peninsular ranges.

Mohave Tarplant, listed as State Endangered, is an extremely rare desert shrub last identified in San Bernardino County along the Mohave River.

Mason's lilaeopsis, listed as State Rare, is a minute, turf-forming perennial plant. It is located in saturated clay soils that are regularly inundated by waves and tidal action. Its known distribution extends from the margins of the Napa River in Napa County, east to the channels and sloughs of the Sacramento-San Joaquin Delta in Contra Costa, Solano, Sacramento, Yolo, and San Joaquin counties.

Father Crowley's Lupine, listed as State Rare, is a bushy perennial herb. It occurs in the understory of red fir forest and on sagebrush flats on the eastern slope of the Sierra Nevada in Inyo County.

Willowly monardella, listed as State Endangered, is a perennial mint with erect stems. It occurs in rocky or sandy areas within canyons, mostly in washes or floodplains. Its U.S. distribution is restricted to San Diego County, mostly north of San Diego near Poway.

Santa Lucia Mint, listed as State Endangered, is a strong-smelling, herbaceous annual of the mint family. This species is known only from the tributaries of the Nacimiento River on the Hunter-Liggett Military Reservation.

Conditions to Avoid Jeopardy

The Department has concluded that the proposed project will not likely jeopardize any threatened or endangered species provided the conditions identified in the biological opinion are fully implemented. Those conditions are:

1. Designation of waters or areas of the State and seasons of operation where suction dredges may be used. The criteria for establishment of the "List of Open and/or Closed Areas - For Use With Standard Permit" will be:
 - a. Protection and management of fishery resources (fish as defined in Section 45 of the Fish and Game Code).
 - b. Protection and management of threatened or endangered plant and animal species and species of special concern as provided for in the California Endangered Species Act.
2. The establishment of a maximum dredge hose nozzle size.

3. Every operator of a suction dredge hose is required to have a permit issued in their name.
4. Any rivers, lakes and streams with Department Species of Special Concern dependent on aquatic and riparian ecosystems may be closed to suction dredging. These areas may be opened to suction dredging under special permits on a case by case basis. A biological assessment conducted by a qualified biologist may be required prior to issuance of a special permit.
5. Removal of woody riparian vegetation is prohibited.
6. No damming or diversions which impedes fish passage is permitted.
7. Emergency closures are to be implemented at the discretion of the Department.
8. No person will be permitted to suction dredge into the bank of any stream, river or lake.
9. No earthen material will be permitted to be imported into a river, lake or stream.
10. The holder of a permit will be required to be in compliance with all other local, State and federal laws.
11. The regulations, particularly the list of open and closed waters and seasons of use, will be reviewed periodically to ensure the operation of suction dredge equipment will not jeopardize any threatened or endangered species.

Conclusion

The potential exists for the incidental take of listed plant and aquatic animal species. If the conditions to avoid jeopardy identified in this biological opinion are made part of the proposed suction dredge equipment use regulations, the proposed project is unlikely to jeopardize any state or federally listed species. Further, the implementation of these conditions would minimize the impact of any incidental take of any such species.

References Cited

Draft Environmental Impact Report - Adoption of Regulations for Suction Dredge Mining. California Department of Fish and Game, 1994, Sacramento, CA.

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APPENDIX J

REASONS FOR STREAM, LAKE AND RIVER CLOSURES

APPENDIX J

REASONS FOR STREAM, LAKE AND RIVER CLOSURES

228.5 Suction Dredge Use Classifications and Special Regulations.

(a) Suction Dredge Use Classifications. For purposes of these regulations, the following classes of suction dredge use restrictions apply at California's streams, rivers and lakes as specified in subsections (b), (c) and (d):

- (1) Class A: No dredging permitted at anytime.
- (2) Class B: Open to dredging from July 1 through August 31.
- (3) Class C: Open to dredging from the fourth Saturday in May through October 15.
- (4) Class D: Open to dredging from July 1 through September 15.
- (5) Class E: Open to dredging from July 1 through September 30.
- (6) Class F: Open to dredging from December 1 through June 30.
- (7) Class G: Open to dredging from fourth Saturday in May through September 30.
- (8) Class H: Open to dredging throughout the year.

The seasons of use for classes A through H described above have been generally established for the protection of spawning fish and fish holding in summer holding areas.

(b) Special Closures by County. Except as specified in subsections (c) and (d) below, the suction dredge class restrictions for each county are as follows:

- (1) **Alameda** - Class H. No seasonal fish resource concerns
- (2) **Alpine** - Class C. Spawning and rearing protection for all salmonid during fall, winter, and spring
- (3) **Amador** - Class C east of Highway 49, the remainder is Class H. Waters east of the highway are higher in elevation cold water environments containing rainbow and brown trout. The closed season is to protect spawning brown trout in fall and spawning rainbow trout in the spring.
- (4) **Butte** - Class C. Spawning and rearing protection for all salmonids during fall, winter, and spring
- (5) **Calaveras** - Class C east of Highway 49, the remainder is Class H. Waters east of the highway are higher in elevation cold water environments containing rainbow and brown trout. The closed season is to protect spawning brown trout in fall and spawning rainbow trout in the spring.

- (6) **Colusa** - Class H. No seasonal fish resource concerns
- (7) **Contra Costa** - Class H. No seasonal resource concerns
- (8) **Del Norte** - Class E. Protection of salmonid eggs and sac fry
- (9) **El Dorado** - Class C east of Highway 49 is Class C, the remainder is Class H. Waters east of the highway are higher in elevation cold water environments containing rainbow and brown trout. The closed season is to protect spawning brown trout in fall and spawning rainbow trout in the spring.
- (10) **Fresno** - Class C within the external boundaries of the National Forests, the remainder is Class H. Class C designation is for protection of rainbow trout eggs and fry. Class H designation is in areas of no seasonal fish resource concerns. Kings River Special Management Area has been closed to suction dredging by the U.S. Forest Service. Contact Sequoia National Forest for details.
- (11) **Glenn** - Class H. No seasonal fish resource concerns
- (12) **Humboldt** - Class E. Protection of salmonid eggs and sac fry.
- (13) **Imperial** - Class H. No seasonal fish resource concerns
- (14) **Inyo** - Class A. Protection of spawning trout including rainbow, brown, brook, golden and federal listed threatened Lahontan cutthroat and Paiute cutthroat trout.
- (15) **Kern** - Class H. No seasonal fish resource concerns
- (16) **Kings** - Class H. No seasonal fish resource concerns
- (17) **Lake** - Class H. No seasonal fish resource concerns
- (18) **Lassen** - Class C. Protection of salmonid eggs and fry
- (19) **Los Angeles** - Class H. No seasonal fish resource concerns. Portions of the San Gabriel Mountains have been closed to suction dredging by the U.S. Forest Service. Contact the Angeles National Forest for details.
- (20) **Madera** - Class C within the external boundaries of the National Forests, the remainder is Class H. Class C designation is for protection of rainbow trout eggs and fry. Class H designation is in areas of no seasonal fish resource concerns.
- (21) **Marin** - Class A. Protection of California Freshwater Shrimp, a state and federal listed endangered species.

(22) **Mariposa** - Class C within the external boundaries of the National Forests, the remainder is Class H. Class C designation is for protection of rainbow trout eggs and fry. Class H designation is in areas of no seasonal fish resource concerns.

(23) **Mendocino** - Class A. The Class A designation is for the protection of spawning and rearing habitat of the chinook salmon, coho salmon and steelhead, including the summer run steelhead . Also for the protection of northwestern pond turtle, foothill yellow-legged frogs and red-legged frogs, all designated as State Species of Special Concern by the Department due to notable population declines throughout their ranges.

(24) **Merced** - Class H. No seasonal fish resource concerns

(25) **Modoc** - Class C. Protection of salmonid eggs and fry

(26) **Mono** - Class A. Protection of spawning trout including rainbow, brown, brook, golden and federal listed threatened Lahontan cutthroat and Paiute cutthroat trout.

(27) **Monterey** - Class A. Protection of anadromous fish spawning and holding areas

(28) **Napa** - Class A. Protection of California Freshwater Shrimp, a state and federal endangered species.

(29) **Nevada** - Class C east of Highway 49, the remainder is Class H. Waters east of the highway are higher in elevation cold water environments containing rainbow and brown trout. The closed season is to protect spawning brown trout in fall and spawning rainbow trout in the spring.

(30) **Orange** - Class H. No seasonal fish resource concerns

(31) **Placer** - Class C east of Highway 49, the remainder is Class H. Waters east of the highway are higher in elevation cold water environments containing rainbow and brown trout. The closed season is to protect spawning brown trout in fall and spawning rainbow trout in the spring.

(32) **Plumas** - Class C. Protection of salmonid eggs and fry

(33) **Riverside** - Class H. No seasonal fish resource concerns

(34) **Sacramento** - Class H. No seasonal fish resource concerns

(35) **San Benito** - Class H. No seasonal fish resource concerns

- (36) **San Bernardino** - Class H. No seasonal resource concerns. Portions of the San Gabriel Mountains have been closed to suction dredging by the U.S. Forest Service. Contact the Angeles National Forest for details.
- (37) **San Diego** - Class H. No seasonal fish resource concerns
- (38) **San Francisco** - Class H. No seasonal fish resource concerns
- (39) **San Joaquin** - Class H. No seasonal fish resource concerns
- (40) **San Luis Obispo** - Class A. Protection of anadromous fish spawning and rearing areas.
- (41) **San Mateo** - Class A. Protection of anadromous fish spawning and rearing areas.
- (42) **Santa Barbara** - Class H. No seasonal fish resource concerns
- (43) **Santa Clara** - Class H. No seasonal fish resource concerns
- (44) **Santa Cruz** - Class A. Protection of anadromous fish spawning and rearing areas.
- (45) **Shasta** - Class C. Protection of salmonid eggs and sac fry
- (46) **Sierra** - Class C. Provides spawning and rearing protection of all salmonid fish species during the fall, winter and spring
- (47) **Siskiyou** - Class E. Protection of salmonid eggs and sac fry
- (48) **Solano** - Class H. No seasonal fish resource concerns
- (49) **Sonoma** - Class A. Protection of California Freshwater Shrimp, a state and federal endangered species.
- (50) **Stanislaus** - Class H. No seasonal fish resource concerns
- (51) **Sutter** - Class H. No seasonal fish resource concerns
- (52) **Tehama** - Class D. Protection of spawning spring run chinook salmon
- (53) **Trinity** - Class E. Protection of salmonid eggs and sac fry
- (54) **Tulare** - Class C within the external boundaries of the National Forests, the remainder is Class H. Class C designation is for protection of rainbow trout eggs and fry. Class H designation is in areas of no seasonal fish resource concerns.

(55) **Tuolumne** - Class C east of Highway 49, the remainder is Class H. Waters east of the highway are higher in elevation cold water environments containing rainbow and brown trout. The closed season is to protect spawning brown trout in fall and spawning rainbow trout in the spring.

(56) **Ventura** - Class H. No seasonal fish resource concerns

(57) **Yolo** - Class H. No seasonal fish resource concerns

(58) **Yuba** - Class H. No seasonal fish resource concerns

(c) **Eight Inch Nozzle Size.** Eight inch diameter intake nozzle size is permitted on the following rivers unless otherwise specified in Section 228.5(d).

American (Placer, Nevada, and El Dorado counties)
Cosumnes (Sacramento, Amador and El Dorado counties)
Feather (Butte, Plumas, and Yuba counties)
Klamath - (Del Norte, Humboldt and Siskiyou counties)
Merced (Mariposa and Merced counties)
Mokelumne (Amador, Calaveras and San Joaquin counties)
New (Trinity County)
Scott (Siskiyou County)
Trinity (Trinity and Humboldt counties)
Yuba (Sierra and Yuba counties)

These rivers have been suction dredged for more than two decades with suction dredges using eight inch nozzles. The Department has not documented any deleterious impacts to fish on these rivers as a result of suction dredging with eight inch nozzles during specified seasons of use when fish are not spawning.

(d) **Special Regulations by Water.** In addition to the classifications listed in Section 228.5(b), the special regulations below apply at the following waters:

(1) **American River (Sacramento County).** The main stem American River from the Sacramento River upstream to Nimbus Dam is Class A. Protection of habitat and populations of resident fish, anadromous spawning fish including chinook salmon, steelhead, striped bass, American shad and lamprey.

(2) **American River, Middle Fork (El Dorado and Placer Counties).** From its junction with the North Fork of the American River upstream to the confluence with the Rubicon River is Class C. (Note: Recreational dredging is allowed in the Auburn State Recreation Area on an interim management basis. Contact the Auburn State Recreation Area for details.) Class C designation is for protection of spawning brown and rainbow trout.

(3) **American River, North Fork (Placer County).** The main stem North Fork American River from Folsom Reservoir to the Colfax-Iowa Hill Road Bridge is Class C. From the Colfax-Iowa Bridge upstream to Heath Springs (T16N R14E S26) is Class A. (Note: Recreational dredging is allowed in the Auburn State Recreation Area on an interim management basis. Contact the Auburn State Recreation Area for instructions. From Colfax-Iowa Hill Road Bridge upstream to Heath Springs may be closed to suction dredging due to Federal Wild and Scenic River status. Check with the Bureau of Land Management for details). Class C designation is for the protection of fall spawning brown and rainbow trout.

(4) **American River, South Fork (El Dorado County).** The main stem South Fork American River from Folsom Reservoir upstream to the Highway 49 bridge at Coloma is Class C. Protection of spawning rainbow and brown trout.

(5) **American River, South Fork Tributaries (El Dorado County).** All tributaries to the South Fork American River from Folsom Reservoir upstream to its headwaters are Class C. Protection of spawning rainbow and brown trout.

(6) **Antelope Creek and Tributaries (Placer County).** Antelope Creek and its tributaries are Class B. Protection of dwindling populations of spring and fall-run salmon and steelhead.

(7) **Auburn Ravine and Tributaries (Placer County).** Auburn Ravine and its tributaries are Class B. Protection of dwindling populations of spring and fall-run salmon and steelhead.

(8) **Bear River (Placer County)** The Bear River from Forty Mile Road to South Sutter Irrigation District's diversion dam is Class D. Protection of spawning fall run chinook salmon.

(9) **Big Chico Creek (Butte County).** The main stem Big Chico Creek from Manzanita Avenue in Chico to the head of Higgins Hole (T24N R3E S31) is Class A. Protection of fall and spring run chinook salmon, spawning and rearing habitat.

(10) **Big Creek and Tributaries (Fresno County).** Big Creek, tributary to the Kings River, and its tributaries are Class A. Protection of yellow-legged frogs, a Department Species of Special Concern.

(11) **Big Creek (Trinity County).** Big Creek is Class A. Protection of Trinity Bristle Snail, a state listed Threatened Species.

(12) **Blue Creek and Tributaries (Del Norte and Humboldt Counties).** Blue Creek and its tributaries are Class A. Protection of spawning, rearing and holding areas for a unique late run of chinook salmon.

(13) **Butte Creek (Butte County).** The main stem Butte Creek from the Sutter County line upstream to the Durham-Oroville Highway Bridge is Class H; and from the Durham-Oroville

Highway Bridge upstream to the intake of Centerville Ditch (T23N R3E S10) is Class A. Protection of spring, fall, and late fall chinook salmon present year round.

(14) **Calaveras River and Tributaries (Calaveras and San Joaquin Counties).** The Calaveras River and its tributaries below New Hogan Reservoir is Class B. Protection of spawning and rearing habitat of fall and winter run salmon.

(15) **Canyon Creek (Yuba County).** The main stem Canyon Creek from its mouth upstream to the Sierra-Yuba County line (T20N R8E S25) is Class C. Protection of salmonid spawning and rearing habitat.

(16) **Cherry Creek (Tuolumne County).** The main stem of Cherry Creek is Class B. Protection is needed to allow for recovery of instream aquatic resources from sedimentation and riparian habitat impacts from wild fires.

(17) **Chowchilla River (Madera and Mariposa Counties).** The main stem Chowchilla River from Eastman Lake upstream to the West and East forks of the Chowchilla River are Class A. Department biologists are concerned with the potential spread of the noxious weed Hydrilla. Suction dredging activities can contribute to the spread of Hydrilla by facilitating the distribution of cuttings and seed from the noxious plant. The plant chokes off stream courses and is not utilized by native fauna.

(18) **Chowchilla River West Fork (Madera and Mariposa Counties).** The main stem West Fork Chowchilla River from its mouth upstream to the Highway 49 bridge is Class A. Department biologists are concerned with the potential spread of the noxious weed Hydrilla. Suction dredging activities can contribute to the spread of Hydrilla by facilitating the distribution of cuttings and seed from the noxious plant. The plant chokes off stream courses and is not utilized by native fauna.

(19) **Clavey River (Tuolumne County).** The main stem Clavey River is Class A. The river was severely impacted by the Stanislaus Fire Complex is still undergoing rehabilitation.

(20) **Clear Creek and Tributaries (Siskiyou County).** Clear Creek and its tributaries are Class A. Protection of summer steelhead holding areas.

(21) **Colorado River and Tributaries (Imperial, Riverside and San Bernardino Counties).** The main channel and all side sloughs and tributaries of the Colorado River are Class A. Protection of federal and state listed endangered species including the Colorado Squawfish and Bonytail Chub.

(22) **Cosumnes River (Sacramento, Amador and El Dorado Counties).** The main stem Cosumnes River from the Western Pacific Railroad bridge about 1/4 mile above mouth upstream to the Latrobe Highway bridge is Class D; and from the Latrobe Highway bridge

upstream to the confluence with the North and Middle Fork of the Cosumnes River is Class H. Class D designation is for the protection of spawning fall-run chinook salmon.

(23) **Cosumnes River, North Fork (El Dorado County).** The main stem North Fork Cosumnes River from the Middle Fork of the Cosumnes River upstream to the Somerset-Pleasant Valley Road bridge is Class H.

(24) **Cosumnes River, Middle Fork (El Dorado County).** The main stem Middle Fork Cosumnes River from the North Fork Cosumnes River upstream to Bakers Ford on the Aukum-Somerset Road is Class H.

(25) **Cosumnes River, South Fork (Amador and El Dorado Counties).** The main stem Cosumnes River from Middle Fork Cosumnes River upstream to the County Road Bridge at River Pines is Class H.

(26) **Cow Creek and Tributaries (Fresno County).** Cow Creek and its tributaries are Class A. Protection of federal listed Lahontan cutthroat trout.

(27) **Curtis Creek (Tuolumne County).** The main stem Curtis Creek is Class C. Protection of fish eggs and sac fry

(28) **Deep Creek (San Bernardino County).** The main stem Deep Creek is Class A. Protection of spawning habitat for brown and rainbow trout and protection of the Mohave Tui Chub, a state and federal listed endangered species.

(29) **Deer Creek (Nevada County).** The main stem Deer Creek from Ponderosa Way below Rough and Ready Falls (T16N R7E S13) upstream to Highway 49 is Class C. Protection of salmonid spawning and rearing areas.

(30) **Dillion Creek and Tributaries (Siskiyou County).** Dillion Creek and its tributaries are Class A. Protection of summer steelhead holding areas.

(31) **Dinkey Creek and its Tributaries (Fresno County).** Dinkey Creek and are tributaries are Class A. Protection of red and yellow-legged frogs listed as Species of Special Concern by the Department.

(32) **Eagle Creek (Tuolumne County).** The main stem Eagle Creek is Class C. Protection of trout eggs and fry.

(33) **Eastman Lake (Madera and Mariposa Counties).** Eastman Lake is Class A. Protected to prevent the spread of Hydrilla, a noxious non-native weed species. Department biologists are concerned with the potential spread of the noxious weed Hydrilla. Suction dredging activities can contribute to the spread of Hydrilla by facilitating the distribution of

cuttings and seed from the noxious plant. The plant chokes off stream courses and is not utilized by native fauna.

(34) **Eel River, All Forks and Tributaries (Mendocino County).** The Eel River, all forks and its tributaries upstream of Humboldt/Mendocino and Trinity/Mendocino County lines are Class A. Protection of spawning and rearing habitat for chinook salmon, and steelhead including summer-run steelhead.

(35) **Eel River, Middle Fork (Mendocino and Trinity Counties).** The Middle Fork Eel River and its tributaries are Class A. Protection of spring-run steelhead spawning and summer holding areas.

(36) **Feather River (Butte County).** The main stem Feather River from Honcut Creek (T17N R3E S27) upstream to the Highway 70 bridge is Class B; and from the Highway 70 bridge upstream to Oroville Dam is Class A. Class B designation is for protection of salmon eggs and fry. Class A designation is to protect adult spring-run salmon holding areas.

(37) **Feather River, South Fork (Butte and Plumas Counties).** The main stem Feather River from Oroville Reservoir upstream to Little Grass Valley Dam (T22N R9E S31) is Class C. Protection of spawning rainbow, brook and brown trout.

(38) **Flat Creek and Tributaries (Shasta County).** Flat Creek and its tributaries are Class H. No seasonal resource concerns.

(39) **French Creek (Trinity County).** French Creek is Class A. Protection of the Trinity Bristle Snail, a state listed threatened species.

(40) **Grapevine Creek (Tuolumne County).** The main stem Grapevine Creek is Class B. The creek is still recovering from fire damage.

damaged critical
(41) **Horton Creek (Tuolumne County).** The main stem Horton Creek is Class A. Protection of the Red Hills Roach, a Department Species of Special Concern.

(42) **Hunter Creek (Tuolumne County).** The main stem Hunter Creek is Class B. The creek is recovering from the impacts of the Stanislaus Fire Complex.

(43) **Independence Creek and Tributaries (Nevada and Sierra Counties).** Independence Creek and its tributaries from Independence Lake upstream to its headwaters are Class A. Protection of spawning and rearing areas for rainbow, brown, brook and Lahontan cutthroat trout (a federally listed threatened species).

(44) **Jawbone Creek (Tuolumne County).** The main stem Jawbone Creek is Class B. This creek was heavily impacted by fires and is still in the recovery process.

- (45) **Kaweah River (Tulare County).** The main stem Kaweah River upstream of Kaweah Reservoir is Class A. Protection of the California Roach and Kern Brook Lamprey, Department Species of Special Concern.
- (46) **Kern River and Tributaries (Kern and Tulare Counties).** The Kern River and its tributaries from Isabella Dam its headwaters are Class A. Protection of the Kern River Rainbow Trout.
- (47) **Kern River South Fork and Tributaries (Kern and Tulare Counties).** The South Fork Kern River and its tributaries are Class A. Protection of the Kern River Rainbow Trout.
- (48) **Kings River and Tributaries (Fresno and Kings Counties).** The Kings River and its tributaries from Pine Flat Dam downstream to Tulare Lake is Class A. Protection of the Kern Brook Lamprey and Big-eyed Lamprey, a Department Species of Special Concern.
- (49) **Klamath River, Main Stem (Del Norte, Humboldt and Siskiyou Counties).** The main stem Klamath River from the mouth upstream to the Salmon River is Class G; from the Salmon River upstream to 500 feet downstream of the Scott River is Class H; from 500 feet downstream of the Scott River upstream to Iron Gate Dam is Class G; and from Iron Gate Dam to the Oregon border is Class A. Class G designation conforms with Fish and Game Code Section 5800. Class A designation is for the protection of the Short Nose and Lost River Sucker, federal and state listed endangered species.
- (50) **Knights Creek (Tuolumne).** The main stem Knights Creek is Class C. Protection of trout eggs and fry
- (51) **Lavezzola Creek (Sierra County).** The main stem Lavezzola Creek is Class C. Protection of trout eggs and fry
- (52) **Little Rock Creek and Tributaries (Los Angeles County).** The main stem Little Rock Creek and its tributaries from the Sycamore Camp Ground in Angeles National Forest upstream to its headwaters are Class A. Protection of arroyo chub, a Department Species of Special Concern.
- (53) **Little Swede Creek (Trinity County).** Little Swede Creek is Class A. Protection of the Trinity Bristle Snail, a state listed threatened species.
- (54) **Macklin Creek (Nevada County).** The main stem Macklin Creek from its confluence with the Middle Fork Yuba River (T19N R12E S16) upstream is Class A. Protection of the Lahontan cutthroat trout, a federally listed threatened species.
- (55) **Malibu Creek and Tributaries (Los Angeles County).** Malibu Creek and its tributaries are Class A. Protection of unique southern California steelhead, and several

Department Species of Special Concern including the south western pond turtle, arroyo chub, and arroyo southwestern toad.

(56) **McCloud River (Shasta County)**. The main stem McCloud River from the southern boundary of Section 16, T38N, R3W, upstream to Lake McCloud Dam is Class A. Protection of the bull trout, a state endangered species.

(57) **Merced River (Merced County)**. The main stem Merced River from the San Joaquin River upstream to the Crocker-Huffman Dam (upstream from Snelling) is Class A. Protection of declining populations of salmon and steelhead populations.

(58) **Merced River (Mariposa County)**. The main stem Merced River is Class C. Protection of spawning rainbow and brown trout.

(59) **Merced River, North Fork (Mariposa County)**. The main stem North Fork Merced River is Class C. Protection of fish eggs and fry.

(60) **Miner's Ravine (Placer County)**. Miner's Ravine and its tributaries are Class B. Protection of dwindling populations of fall and spring-run salmon and steelhead

(61) **Minnow Creek (Tuolumne County)**. The main stem Minnow Creek is Class A. Protection of the Red Hills Roach, a Department Species of Special Concern.

(62) **Mokelumne River (Amador, Calaveras and San Joaquin Counties)**. The main stem Mokelumne River from Burella Road upstream to Camanche Dam is Class A; from Camanche Dam upstream to Pardee Dam is Class H; and from Pardee Dam upstream is Class C. Class A designation reasons provided in Lower Mokelumne River Fisheries Management Plan. Class C designation is for protection of spawning Kokanee salmon.

(63) **Mud Creek (Butte County)**. The main stem Mud Creek from Big Chico Creek upstream is Class C. Protection of spawning and rearing habitat for spawning spring and fall run chinook salmon.

(64) **Nelson Creek (Plumas County)**. Nelson Creek is Class C. Protection of spawning rainbow and brown trout.

(65) **New River and Tributaries (Trinity County)**. New River and its tributaries upstream from the East Fork New River and its tributaries, are Class A. Protection of spawning and rearing areas of spring run steelhead.

(66) **New River East Fork and Tributaries (Trinity County)**. The East Fork New River and its tributaries from the New River upstream are Class A. Protection of spawning and rearing areas of spring run steelhead.

(67) **Piru Creek and Tributaries (Ventura and Los Angeles Counties).** Piru Creek and tributaries are Class A. Protection of several Department Species of Special Concern including the arroyo southwestern toad, arroyo chub and Santa Ana Sucker.

(68) **Pit River and Tributaries (Lassen and Modoc Counties)** The Pit River and its tributaries are Class A. Protection of state listed threatened rough sculpin and federal and state listed endangered Modoc sucker.

(69) **Poor Man Creek and Tributaries (Tuolumne).** Poor Man Creek and its tributaries are Class A. Protection of the Red Hills Roach, a Department Species of Special Concern.

(70) **Portuguese Creek and Tributaries (Madera County).** Portuguese Creek and its tributaries are Class A. Protection of federal listed threatened species Lahontan Cutthroat trout.

(71) **Rock Creek (Butte County).** The main stem Rock Creek from Big Chico Creek upstream to the Butte-Tehama County Line is Class C. Protection of spring-run, fall run, late fall-run chinook salmon and steelhead nursery areas.

(72) **Rock Creek and Tributaries (Shasta County).** Rock Creek and its tributaries are Class H. No seasonal resource concerns.

(73) **Rose Creek (Tuolumne County).** The main stem Rose Creek is Class C. Protection of salmonid eggs and sac fry.

(74) **Rubicon River and Tributaries (El Dorado and Placer counties).** The Rubicon River and its tributaries are Class C. Maximum dredge intake size is 4 inches. Protection of spawning brown trout and rainbow trout.

(75) **Sacramento River (several counties).** The Sacramento River from Shasta Dam downstream to the San Francisco Bay is Class A. The Sacramento River and its tributaries from Shasta Dam upstream to Box Canyon Dam are Class A. Protection of state listed threatened winter-run chinook, protection of spawning areas of fall-run, late fall-run, and spring -run chinook salmon and reestablishment of wild trout populations. Also, in the upper Sacramento River and tributaries, from Shasta Dam upstream, mollusk populations, extirpated from the river by the Cantara spill, have not recovered and the Department is conducting extensive restoration work. Disturbance to the river bottom should be minimized until all invertebrate populations have become re-established and restoration work completed.

(76) **Salmon River (Siskiyou County).** The main stem Salmon River is Class D. Protection of spawning spring-run chinook and late spawning steelhead.

- (77) **Salmon River, North Fork (Siskiyou County).** The main stem North Fork Salmon River from the South Fork Salmon River upstream to the Marble Mountain Wilderness boundary is Class D. Protection of spawning spring-run chinook and late spawning steelhead.
- (78) **Salmon River, South Fork (Siskiyou County).** The main stem South Fork Salmon River from the North Fork Salmon River upstream to the Trinity Alps Wilderness boundary is Class D. Protection of spawning spring-run chinook and late spawning steelhead.
- (79) **Salt Creek and Tributaries (Riverside County).** Salt Creek and its tributaries are Class A. Protection of State and Federal listed Desert Pupfish.
- (80) **San Felipe Creek and Tributaries (Imperial and San Diego Counties).** San Felipe Creek and tributaries are Class A. Protection of federal and state listed endangered Unarmored Threespine Stickleback.
- (81) **San Gabriel River, East Fork and Tributaries (Los Angeles County).** The East Fork San Gabriel River and its tributaries from Cattle Canyon upstream are Class A. Protection of several Department Species of Special Concern including the Santa Ana Sucker, Arroyo Chub, and Speckled Dace.
- (82) **San Gabriel River, West Fork and Tributaries (Los Angeles County).** The West Fork San Gabriel River and its tributaries from Rincon Guard Station upstream are Class A. Protection of several Department Species of Special Concern including the Santa Ana Sucker, Arroyo Chub, and Speckled Dace.
- (83) **San Joaquin River (several counties).** San Joaquin River upstream to Friant Dam (Millerton Lake) is Class A. Protection of state listed threatened winter-run chinook salmon.
- (84) **San Juan Creek and Tributaries (Orange and Riverside Counties).** San Juan Creek and its tributaries from its mouth upstream are Class A. Protection of a historic run of southern steelhead and protection of a Department Species of Special Concern, the Arroyo Chub.
- (85) **San Mateo Creek and Tributaries (San Diego, Orange and Riverside Counties).** San Mateo Creek and its tributaries from its mouth upstream to its headwaters are Class A. Protection of historic southern steelhead population.
- (86) **Santa Ana River and its Tributaries (San Bernardino County).** The Santa Ana River and its tributaries from the mouth of Bear Creek upstream are Class A. Protection of Department Species of Special Concern including the Arroyo Chub, Santa Ana Sucker and Speckled Dace.
- (87) **Santa Clara River and Tributaries (Los Angeles and Ventura Counties).** The Santa Clara River and its tributaries from the Los Angeles-Ventura County line upstream are Class

A, except that Texas Canyon Creek is Class H. Protection of southern steelhead runs, Department Species of Special Concern including the Arroyo Chub, Santa Ana Sucker, southwestern pond turtle and arroyo toad and protection of the unarmored three spined stickleback, a state and federal listed endangered species.

(88) **Santiago Creek and Tributaries (Orange County)**. Santiago Creek and its tributaries within the Cleveland National Forest are Class A. Protection of transplanted western pond turtles and arroyo toads, listed by the Department as Species of Special Concern.

(89) **Saxon Creek (Mariposa County)** Saxon Creek is Class A. Protection of California Roach, a Department Species of Special Concern.

(90) **Scott River and Tributaries (Siskiyou County)**. The Scott River and its tributaries are Class G. Protection of spawning spring-run chinook salmon.

(91) **Secret Ravine and Tributaries (Placer County)**. Secret Ravine and its tributaries are Class B. Protection of dwindling populations of spring and fall-run salmon and steelhead.

(92) **Sespe Creek (Ventura County)**. The main stem Sespe Creek from the confluence with Tule Creek is Class A. Protection of a unique southern summer steelhead run.

(93) **Shay Creek and Tributaries (San Bernardino County)**. Shay Creek and its tributaries are Class A. Protection of the unarmored three spine stickleback, a state and federal listed endangered species.

(94) **Shasta River and Tributaries (Siskiyou County)**. The Shasta River and its tributaries are Class A. Protection of spawning and rearing salmonid habitat.

(95) **Sherlock Creek (Mariposa County)** Sherlock Creek is Class A. Protection of the California Roach, listed as a Species of Special Concern by the Department.

(96) **Silver King Creek and Tributaries (Alpine County)**. Silver King Creek and its tributaries are Class A. Protection of federal listed threatened species Paiute cutthroat trout.

(97) **Six-Bit Creek and Tributaries (Tuolumne)**. Six-Bit Creek and its tributaries are Class A. Protection of the California Roach, listed as a Species of Special Concern by the Department.

(98) **Smith River Middle Fork (Del Norte County)**. The main stem Middle Fork Smith River is Class D. Protection of spawning spring-run chinook salmon and late spawning steelhead.

(99) **Stanislaus River (Calaveras, San Joaquin, Stanislaus and Tuolumne Counties)**. The main stem Stanislaus River from the San Joaquin River upstream to Goodwin Dam is Class

A, and from New Melones Dam upstream, excluding New Melones Reservoir, to the headwaters is Class C. The Class A designation is for the protection of spawning salmon and steelhead. The Class C designation is for the protection of spawning rainbow trout.

(100) **Sullivan Creek (Tuolumne County).** The main stem Sullivan Creek is Class C. Protection of trout eggs and sac fry.

(101) **Sutter Creek (Amador County).** The main stem Sutter Creek from Highway 49 upstream to Pine Gulch Road is Class H. No seasonal resource concerns.

(102) **Sycamore Creek and Tributaries (Fresno County).** Sycamore Creek, tributary to the Kings River, and its tributaries are Class A. Protection of the yellow-legged frog, listed as a Species of Special Concern by the Department.

(103) **Texas Canyon Creek (Los Angeles County).** The main stem Texas Canyon Creek is Class H. No seasonal resource concerns.

(104) **Trinity River, Main Stem below Lewiston Dam (Humboldt and Trinity Counties).** The main stem Trinity River from the Klamath River upstream to the South Fork Trinity River is Class A; from the South Fork Trinity River upstream to the North Fork Trinity River is Class H; from the North Fork Trinity River upstream to Grass Valley Creek is Class D; and from Grass Valley Creek upstream to Lewiston Dam is Class A. The main stem Trinity River from its junction with the Klamath River upstream to its junction with South Fork is Class A for protection of spawning salmon from December 1 through May 31, and Fish and Game Code 5800 closes that area most of the remainder of the year. Class H designations have no seasonal resource concerns. Class D designations protect salmon and steelhead spawning areas. Lewiston Dam Class A designation is for protection of important holding and spawning areas for the spring-run chinook salmon and steelhead.

(105) **Trinity River, Main Stem and Tributaries above Lewiston Dam (Trinity County).** The main stem Trinity River and its tributaries above Lewiston Dam are open to dredging from July 1 through October 15. Protection of spawning rainbow and brown trout.

(106) **Trinity River, North Fork and Tributaries (Trinity County)** The North Fork Trinity River and tributaries upstream from Hobo Gulch Campground may be closed to suction dredging due to the federal wilderness designation boundary beginning at Hobo Gulch. Check with the U.S. Forest Service for details.

(107) **Tuolumne River (Stanislaus County).** The main stem Tuolumne River from the Waterford Bridge upstream to La Grange Dam is Class A. Protection of spawning salmon and steelhead.

(108) **Tuolumne River, North Fork, and tributaries (Tuolumne County).** The North Fork Tuolumne River and its tributaries are Class B. Protection of spawning trout.

(109) **Turnback Creek and Tributaries (Tuolumne County).** Turnback Creek and its tributaries are Class A. Protection for recovery from heavy development and protection of yellow-legged frogs, a species listed as a Species of Special Concern by the Department.

(110) **Wolf Creek (Nevada County).** The main stem Wolf Creek from the Tarr Ditch Diversion (T15N R8E S10) upstream to the headwaters is Class C. Protection of spawning rainbow and brown trout.

(111) **Woods Creek and Tributaries (Tuolumne County).** Woods Creek and its tributaries from Harvard Mine Road (Jamestown) downstream are Class C; from Harvard Mine Road upstream are Class A. Recovery of degraded stream system and protection of the California Roach, a species listed as a Species of Special Concern by the Department.

(112) **Wooley Creek and Tributaries (Siskiyou County).** Wooley Creek and its tributaries are Class A. Protection of spring salmon and steelhead.

(113) **Yuba River (Yuba County).** The main stem Yuba River from its mouth at Marysville upstream to Highway 20 is Class B; and from Highway 20 upstream to Englebright Dam is Class A. Class A designation is for protection of year round use area for several runs of chinook salmon, steelhead and American shad. Class B designation is for protection of spawning fall-run and spring-run chinook salmon.

(114) **Yuba River, North Fork (Sierra and Yuba Counties).** The main stem North Fork Yuba River from the Middle Fork of Yuba River upstream to Fiddle Creek is Class H. No seasonal resource concerns.

APPENDIX K

RESPONSE TO COMMENTS ON AMENDED DEIR

RESPONSES TO COMMENTS REGARDING THE AMENDED DRAFT OF THE ENVIRONMENTAL IMPACT REPORT FOR THE ADOPTION OF SUCTION DREDGE REGULATIONS

In accordance with CEQA, public input and agency consultation were solicited during the development of the ADEIR for adoption of suction dredge regulations.

The Department received 126 letters which contained comments regarding the ADEIR. In addition the Department received comments at the public meeting held March 16, 1994, in Sacramento, which was held during the public comment period for the ADEIR under CEQA and for the regulations under the APA. The comments from transcripts from the meeting were collated with the letter comments. Approximately 60 of the letters were in support of the proposed project and regulations (as opposed to no regulations) if certain text in the ADEIR was stricken or changed or particular proposed regulations were stricken or amended. About 40 of the letters received from suction dredgers were opposed to the ADEIR and/or proposed regulations. About 10 letters received from fishing and/or environmental interests opposed outright the ADEIR and/or proposed regulations. About 4 letters expressed support of the project in total. The remaining letters were neutral in content. The Department collated the letters and transcripts into 25 general subject categories. The collation method employed enabled the Department to track the comments from each letter to the subject category. Each of these subject categories are described below along with a Department response.

SUBJECT CATEGORIES AND DEPARTMENT RESPONSES

Subject Category 1

The ADEIR and proposed regulations are flawed, biased, inaccurate, contradictory and deceitful and/or too restrictive. The Department should throw the document out and start over. There has been no link established between the available studies and the proposed regulations.

Comment Source

Comments from 60 individuals

Department Response

The Department has reviewed the ADEIR in general and reviewed specific examples of perceived bias or inaccurate statements. Most of the comments highlighted specific examples, such as "the mercury section is flawed because.." The Department took these specific examples and made them separate subject categories in order to provide a detailed response. Where comments provided specific factual information, the information was included in the FEIR or inaccurate statements were amended. Conclusionary statements are supported by citations to the scientific literature. Unsupported statements have been removed. The ADEIR clearly links the available studies with the proposed regulations. The proposed regulations are based on the studies cited and over thirty years of field observations by the Department's wardens and fish biologists. All the studies cited indicate the potential for significant adverse impacts from suction dredging that is unregulated. Many studies document damage to fish and fish habitat under existing regulation (Stern, 1988, McCleneghan and Johnson, 1983, Harvey, 1982, Thompson, 1993, Sweet, 1991, North, 1993). These studies describe short term impacts to invertebrates, and impacts to streambed substrate, riparian habitat and streambanks. Many Department wardens and biologists have observed adverse impacts including the undermining of stream banks, the destruction of riparian habitat, the disposal of garbage, human waste, old cars, empty fifty five gallon drums, oil, dredge parts etc left at suction dredge camps, increased sedimentation and turbidity and major alteration of the bed, bank and channels of the streams and rivers. Because these impacts adversely affect fish and fish habitat, the Department believes there is a clear need for regulation.

There is overwhelming evidence California's rivers and associated resources such as fish and fish habitat are degraded. Through implementation of the proposed regulations the Department can reduce the impacts of suction dredging on the state's rivers which are and continue to be negatively affected by many activities.

Subject Category 2

Regulations, particularly river closures, restricted seasons of use, and equipment restrictions are based on flawed reasons and/or over-extending regulatory authority. In addition, the Department should list all of the reasons for restricted seasons of use.

Comment Source

Comments from 12 individuals

Department Response

All river closures and restricted seasons of use have been specifically supported in the FEIR. Unsupported statements regarding closures and seasons of use have either been substantiated by Department specialists and available scientific studies or have been removed from the FEIR and proposed regulations. The Department has not based river closures or restricted seasons of use on entrainment of fingerlings or entrainment of adult fish unless substantial information indicates the potential for negative impacts from suction dredging to these stages of fish and reproductive activities. In general the scientific literature indicates fish eggs and yolk sac fry are negatively impacted by suction dredging entrainment. Fingerlings and adult fish are either strong enough to avoid entrainment or are relatively unaffected when passed through a dredge. Disturbance to important summer holding areas for fish has been cited by the Department in the reasons for closures. The Department has provided specific reasons for closures for threatened and endangered species in the Biological Opinion (Appendix I).

In addition, the Department believes restrictions on methods of operation and equipment restrictions are within the regulatory authority of Fish and Game Code sections 5653 through 5653.9. Absent these restrictions the Department has determined there would be deleterious impacts to fish, State and Federal threatened and endangered species and California Species of Special Concern as a result of suction dredging. The Department could not issue suction dredge permits unless the Department could determine that the operation would not be deleterious to fish.

The Department has evaluated the reasons and rationale for river closures and seasons of use and provided specific information regarding the closures and seasons of use in Appendix J.

Subject Category 3

The Department should not propose regulations which will change the maximum intake nozzle size for suction dredging from 8 inches to less than 8 inches. We will not be able to recover gold from our claims or on the river we usually suction dredge. We will not

be able to make a living. The proposed reduction in nozzle size is not based on science. We recommend keeping the 8 inch nozzle size.

Comment Source

Comments from 12 individuals

Department Response

Based on the available scientific literature, the Department's observations and experience, and the public comments, the Department proposes to permit a maximum nozzle size of 6 inches in diameter on streams and rivers, except on specified rivers where suction dredging with an 8 inch nozzle size would be permitted.

This proposed regulation is based on a review of the current studies on suction dredging cited in the ADEIR. Most all of the published information from these studies (Lewis, 1962, Griffith and Andrews, 1981, Harvey, 1986, Stern, 1988, Thomas, 1985, Somer and Hassler, 1992) is limited to dredges with intakes of six inches or less in diameter. A report by McCleneghan and Johnson (1983) includes some limited information on the use of suction dredges larger than six inches. These larger dredges accounted for nearly eight percent of the 270 dredges included in their survey of the Sierra Nevada Mother Lode region. Hassler et al. (1986) observed an eight inch dredge on Canyon Creek in 1982, but no information was collected on the impacts that these dredges may have on the stream environment. Consequently, there is very little information on the impacts of large dredges (larger than six inches) as compared to smaller dredges.

In most cases the degree of impact is related to the time of year, dredge size, amount of material dredged, density of dredges, type and amount of sediment encountered, species present and stream flow. In all of the studies performed on suction dredging adverse negative impacts to river and stream resources were reported. Thus, unregulated suction dredging, with intake nozzle sizes of 6 inches and less is known to cause adverse environmental impacts.

The Department, as the Trustee agency for the fish and wildlife of the state, also took into account the declining condition of the state's river resources as documented in many published reports. Reducing impacts to these declining river resources is viewed by the Department as one of the most appropriate and direct ways of turning the current trend around regarding these declining resources and beginning the process of improving the state's rivers and resources. The Department, must whenever possible, reduce negative impacts to fish and wildlife resources, particularly when the activities impacting the resources of the state's rivers are regulated by the Department as is the case with suction dredging. The proposed regulation reducing the maximum nozzle size to 6 inches from 8 inches in diameter took these considerations into account.

The Department believes restricting the maximum nozzle size will protect fish and wildlife resources of the state's rivers and streams without creating an unfair economic burden on suction dredgers. The available studies discuss impacts to fish and wildlife from six inch dredges so there is scientific information available on the impacts of 6 inch dredges. The proposed regulations will minimize these impacts to less than significant and based on best available data, to not deleterious to fish. Field biologists and wardens reported having observed 8 inch dredges on some rivers having no deleterious impacts. In addition, only approximately 15 percent of the suction dredgers surveyed use nozzle sizes larger than 6 inches and the vast majority of those dredges are used on the rivers where 8 inch dredges are proposed to be allowed. Thus a 6 inch maximum nozzle size restriction on streams, with an 8 inch nozzle size allowed on some rivers, would not cause an undue economic burden on suction dredging in California and it would allow the Department to protect fish and wildlife resources and turn the trend of these declining resources around.

Subject Category 4

The Department should not issue special permits which allow suction dredging outside of established regulations. If they are issued they should be subject to CEQA requirements and/or require a Public Notice process similar to Timber Harvest Plans.

Comment Source

Letter comments from 45 individuals

Department Response

In consideration of the comments received relating specific examples where special permits may be needed, the Department proposes providing special permits as part of the permitting process.

Due to the current mining laws, the Department believes there may be cases where variance from standard suction dredge regulations may be needed to avoid take of private property issues related to restrictions on working established claims in otherwise closed areas. Disabled people may require variances to equipment restrictions in order to work their established claims. In addition, the Department recognizes the regulations are based on a broad level of scientific information and review about suction dredging. Local conditions along streams and rivers may warrant a variance from standard suction dredge regulations because there may be site specific circumstances where suction dredging could take place without deleterious effects to fish. The special permit process allows for these variances where the Department determines on a site specific basis that deleterious effects to fish would not occur.

The Department has determined, given the scope and magnitude of the impacts associated with suction dredging, that further public notice or CEQA compliance, beyond the discussion provided in the ADEIR, is unnecessary for the issuance of special permits. Under the proposed system for issuance of special permits, there is environmental review and site specific conditions incorporated into the special permit. In issuing special permits the Department would be guided by the analysis and discussion provided.

Subject Category 5

The economic section is flawed. There were two specific areas where the public felt the economic section was flawed. The suction dredge community did not believe the economic section considered the impacts of the proposed project on their livelihood, industry or recreational pursuits. Their comments included statements such as; 1) It does not consider the cost of equipment conversion created by the proposed regulations, 2) It lacks considerations for the impact of the proposed regulations on local communities, 3) It lacks impact analysis to industry from the proposed regulations, and 4) It should be conducted by a qualified expert. The fishing community felt the economic section should take into account the amount of revenue generated from fishing and subsequently lost due to suction dredging displacing fishermen and/or negatively impacting fish and fish habitat.

Comment Source

Comments from 45 individuals

Department Response

The Department acquired data regarding the impacts of the proposed regulations on individuals, communities and industry by developing and mailing out approximately four thousand economic surveys regarding suction dredging. The information was incorporated into the ADEIR.

The Department received many comments regarding the economic section of the DEIR. Many comments said the section lacked data. However, very few individuals provided data which the Department could analyze and use in the DEIR. Therefore, the Department developed two separate economic surveys to obtain data that could be analyzed and used in the economic analysis in the ADEIR. The first survey was sent to over 4,000 individuals who have obtained a suction dredge permit in the past or who commented on the DEIR. It concentrated on individual information regarding suction dredge expenditures, type of equipment used, time spent suction dredging and location where suction dredging takes place. The second survey was sent to cities and counties. It concentrated on the relative importance of suction dredging to the local economy and the job sector from the proposed regulations. The Department also obtained information from Keene Engineering, which conducted economic surveys of mining equipment shops. The Keene Engineering surveys are

of limited value to the Department because they are based on inaccurate hypothetical information that asks equipment shops to estimate economic impacts they would sustain if the Department prohibited all suction dredging. However, the surveys provide worst case scenario data which the Department used in the ADEIR.

Information of economic factors regarding commercial and recreational fishing is contained in Department CEQA documents on record developed for the establishment and adoption of regulations for sport and commercial fishing. The Department believes the adoption of the proposed suction dredge regulations and ADEIR will have an insignificant economic impact on fishing statewide. Approximately 4,000 suction permits are issued annually. Over 1 million fishing licenses are issued. Given the number of suction permits issued statewide, it is unlikely suction dredge use could significantly affect or influence over a million fishermen in relation to where and when people fish and consequently where they spend their money. The proposed regulations have been developed to insure less than significant impacts occur to fishery resources. Therefore, the Department does not anticipate a decline in fishery resources as a result of adoption of the proposed regulations.

Subject Category 6

The Department should recognize that suction dredging is good for fish, fish habitat and the environment. Suction dredging feeds fish with the invertebrates that are dislodged from the streambed and cleans gravels for spawning. Suction dredgers pick up trash left by other river users such as fishermen and rafters, particularly submerged trash. Suction dredgers remove lead sinkers and mercury from the rivers.

Comment Source

Comments from 20 individuals

Department Response

The Department acknowledges the positive impacts of suction dredging in the ADEIR. Many comments were received regarding the need to acknowledge the positive effects of suction dredging on the environment. In the ADEIR, the Department has included discussion on the documented positive effects of suction dredging and has cited Badali and Lewis, who discuss positive effects on suction dredging on spawning gravels. The Department recognizes that some experienced suction dredgers know that mercury may contain gold or is of value by itself and therefore they do not put it back into the water. It is possible that some dredgers do not recognize this and put the once undisturbed mercury back into the water. Removal of submerged garbage in rivers by some suction dredgers is appreciated. However, garbage left adjacent to the rivers by all river users, including suction dredgers, continues to be a problem and concern of the Department.

Subject Category 7

The Department should recognize the ADEIR and proposed regulations constitute violations of civil rights and take of private property. The Department should respond to Executive Order D-78-89 which requires government agencies to make an assessment of their actions upon private property.

Comment Source

Comments from 25 individuals.

Department Response

In accordance with the principles set forth in Executive Order D-78-89, the Department has developed the proposed regulations in order to dispense with any potential takings problems. The current proposed regulations allow winching under certain conditions and allow for special permits for suction dredging in certain circumstances, including those where a person has a prior, valid, existing claim under the federal mining laws in a closed water.

The Department acknowledges that the proposed regulations could have resulted in the taking of private property for which the Department would have been required to provide private property owners with just compensation. Specifically, the closure of certain waters in conjunction with the phasing-out of special permits, and the prohibition on winching posed potential takings problems. The Department recognizes that persons with valid, prior, existing rights who hold claims under the federal mining laws in waters closed by the proposed regulations could have successfully asserted a takings claim against the Department, if special permits were not available to enable such persons to operate in those waters. In addition, the Department recognizes that in some circumstances the prohibition on winching could have made recovering gold, to which a person has a valid, existing right, practically impossible. Thus the Department redeveloped the proposed regulations in order to dispense with any of these potential takings problems. The current proposed regulations allow winching under certain conditions and allow for special permits for suction dredging in certain circumstances, including those where a person has a prior, valid, existing claim under the federal mining laws in an otherwise closed water.

Subject Category 8

The Department did not notify me of the proposed regulations or ADEIR. The process was incomplete. The Department did not follow CEQA and/or APA processes.

Comment Source

Comments from 20 individuals

Department Response

The Department's process for informing the public of the proposed regulations and ADEIR is explained in detail in Chapter 1 of the ADEIR and is in compliance with procedures described in the Administrative Procedures Act, CEQA and the Office of Administrative Law.

Subject Category 9

The Department should establish or return to a regulated maximum nozzle intake size of 4 inches.

Comment Source

Comments from 50 individuals

Department Response

See Department response to Subject Category 3. Many letters commented that the Department should return to a maximum intake nozzle size of 4 inches. The Department has never had an established maximum intake nozzle size of 4 inches.

In the first DEIR for the proposed project and regulations the Department proposed to decrease the maximum nozzle intake size to 4 inches. The Department increased the proposed maximum nozzle intake size to 6 inches in the ADEIR for the reasons cited in the response in Subject Category 3.

Based on the available scientific literature, the Department's observations and experience and the public comments, the Department proposes to permit a maximum nozzle size of 6 inches in diameter on streams and rivers, except larger streams where on suction dredging with an 8 inch nozzle size would be permitted.

The Department initially proposed a reduction in the maximum nozzle size from 8 inches in diameter down to 4 inches in diameter. This proposed regulation was based on a review of the current studies on suction dredging cited in the first DEIR. Most all of the published information from these studies (Lewis, 1962, Griffith and Andrews, 1981, Harvey, 1986, Stern, 1988, Thomas, 1985, Somer and Hassler, 1992) is limited to dredges with intakes of six inches or less in diameter. A report by McCleneghan and Johnson (1983) includes some limited information on the use of suction dredges larger than six inches. These larger dredges accounted for nearly eight percent of the 270 dredges included in their survey of the Sierra Nevada Mother Lode region. Hassler et al. (1986) observed an eight inch dredge on

Canyon Creek in 1982, but no information was collected on the impacts that these dredges may have on the stream environment. Consequently, there is very little information on the impacts of large dredges (larger than six inches) as compared to smaller dredges.

In most cases the degree of impact is related to the time of year, dredge size, amount of material dredged, density of dredges, type and amount of sediment encountered and stream flow. In all of the studies performed on suction dredging adverse negative impacts to river and stream resources were reported. Thus, unregulated suction dredging with intake nozzle sizes of 6 inches and less is known to cause significant adverse environmental impacts.

Since the studies available looked at nozzle sizes between 2.5 inches and 6 inches the Department took a conservative approach to proposing new regulations restricting nozzle size to 4 inches since it is unclear what the quantified effects to the environment are from suction dredging with dredges larger than six inches. The Department, as the Trustee agency for the fish and wildlife of the state, also took into account the declining condition of the state's river resources as documented in many published reports. Reducing impacts to these declining river resources is viewed by the Department as one of the most appropriate and direct ways of turning the current trend around regarding these declining resources and beginning the process of improving the state's rivers and resources. The Department, must whenever possible, reduce negative impacts to fish and wildlife resources, particularly when the activities impacting the resources of the state's rivers are regulated by the Department as is the case with suction dredging. The proposed regulation reducing the maximum nozzle size to 4 inches from 8 inches in diameter took these considerations into account.

When the proposed regulations and associated DEIR were released for public comment the Department encountered strong opposition to the proposed regulation for a reduction in nozzle size from 8 to 4 inches in diameter. Specific comments stated that suction dredgers would not be able to work their claims with a 4 inch nozzle thus constituting a take of property, that it was impractical to reduce the nozzle size to 4 inches on larger rivers, that a four inch nozzle does not work in deep pools on larger rivers, that a 4 inch nozzle size would create an economic burden as currently owned equipment would need to be converted, and that a large number of dredgers used nozzle sizes of five and six inches.

In the development of the new proposed regulations and second DEIR the Department took these comments into consideration. In addition, the Department conducted several surveys to obtain more information regarding suction dredging in California. From these surveys it was determined that approximately 67 percent of suction dredgers use nozzle sizes of 5 and 6 inches at some time. This represents a substantial number of dredgers. The surveys also indicated suction dredgers do spend a substantial amount of money on their equipment. Of the surveyed suction dredgers, the average spent was approximately \$6,000 dollars. If 67 percent of the 4,000 permitted suction dredgers (average number of suction dredgers a year) were to find their equipment obsolete it would have an estimated total cumulative economic impact of at least 16,080,000 dollars. This would represent a substantial economic impact.

Based on the review of the literature, consultation with Department biologists, wardens and legal staff, consideration of the comments received and an analysis of the economic impacts of restricting nozzle size to 4 inches, the Department has revised its proposed regulation regarding nozzle size to allow a maximum of 6 inch in diameter nozzles on most streams and rivers, with 8 inch nozzle sizes allowed on some large rivers as specified in the new proposed regulations. The details for this proposed regulation are discussed in the ADEIR. Basically, the Department believes restricting the maximum nozzle size would protect fish and wildlife resources of the state's rivers and streams without creating an unfair economic burden on suction dredgers. The available studies discuss impacts to fish and wildlife from six inch dredges so there is scientific information available on the impacts of 6 inch dredges. The proposed regulations will minimize these impacts to less than significant. Field biologists and wardens reported having observed 8 inch dredges on larger rivers having less than significant impacts. In addition, only approximately 15 percent of the suction dredgers surveyed use nozzle sizes larger than 6 inches and the vast majority of those dredges are used on the large rivers where 8 inch dredges are proposed to be allowed. Thus a 6 inch maximum nozzle size restriction on streams, with an 8 inch nozzle size allowed on the larger rivers, would not substantially impact suction dredging in California and it would allow the Department to protect fish and wildlife resources and turn the trend of these declining resources around.

Subject Category 10

We recommend you keep the regulations the way they are or as existed in 1991 and 1992.

Comment Source

Comments from 10 individuals

Department Response

The Department proposes adopting regulations that differ from the 1991 and 1992 informal regulations. The Department has never formally adopted regulations. The Department has developed the proposed regulations and the ADEIR to formally adopt regulations.

The past informal regulations were not based on a review of the scientific literature or current state and knowledge of the resources. Based on over thirty years of field observation by the Department's wardens and biologists, a review of the available scientific literature, the current state of the resources, and input received from the public, the Department proposes regulations that will protect fish and fish habitat. The 1991-1992 informal regulations could result in deleterious effects to fish. The Department is authorized to issue permits pursuant to Fish and Game Code Section 5653 only if the Department determines that suction dredging

will not be deleterious to fish. The 1991-1992 informal regulations do not meet this standard.

Subject Category 11

The Department should take into consideration that other activities besides suction dredging impact fish and fish habitat such as timber harvest, fishing, rafting, swimming, hunting, boating and dam construction.

Comment Source

Letter comments from 15 individuals

Department Response

The Department acknowledges the impacts of other activities on California's rivers and aquatic resources in the ADEIR. The Department recognizes there is a long history of other impacts to California's rivers, streams and lakes that are associated with other recreational and commercial activities. These activities include swimming, hunting, boating, the construction of dams, commercial mining, fishing, rafting, road building and logging. In comparison, the detrimental impacts of these activities may be more significant to the overall health of fish and fish habitat than the impacts caused by regulated suction dredging. All negative impacts to the State's waters and aquatic resources are a concern to the Department because of their continuing decline throughout the State. An excellent overview of the historic and current declining condition of the State's rivers and fisheries resources is provided in the 1993 California State Lands Commission's report "California's Rivers - A Public Trust Report".

As a Trustee agency for the wildlife resources of the State, the Department participates with private and public entities in the planning, development and regulation of these other activities. This participation, through the CEQA process, Timber Harvest Assessment Program, coordination with other State and Federal agencies and development of Environmental Impact Reports and regulations for sport and commercial fisheries is well documented in the public record. Therefore, the detailed impacts of these activities on the State's rivers and streams are not discussed in the ADEIR. An overview of the relative comparison of suction dredge mining compared to these other activities is provided in the environmental effects section of the ADEIR. The scope of this document is specific to the adoption of regulations for suction dredging. The environmental effects of the proposed project and suction dredging in general are described in detail in Chapter V of the ADEIR.

Many comments received were specific to fishing. People felt the impacts of fishing and fishermen on fish and fish habitat are much greater than the impacts of suction dredging on these same resources. The impacts of fishing and fishermen on the environment are discussed in detail in the environmental impact reports for sport and commercial fishing that

were developed by the Department over the last three years. These documents are the basis for the current fishing regulations.

Subject Category 12

The ADEIR should take into account the natural conditions of rivers such as floods, seasonally high sediment and turbidity levels etc that fish are subjected to when considering the impacts of suction dredging.

Comment Source

Letter comments 2 individuals

Department Response

The comments received regarding this subject category assert that natural events such as high winter flows which cause bank erosion and elevated turbidity levels are much more destructive to rivers than suction dredging. The high turbidity levels that occur in the winter are higher than the levels created by suction dredging.

These comments are correct. All wildlife and habitats have evolved for thousands of years while being subjected to these natural variations in environmental conditions. This is the basis of natural selection and adaption of species to their environments. However, the addition of human influence on the environment is the specific concern of the Department with regard to the proposed regulations and ADEIR. The Department is responsible for the overall welfare of the state's fish and wildlife populations and their habitats. The effect of human activities on these resources in California over the last one hundred years has resulted in substantial degradation the ecosystems on which plants and animals depend to the point that suitable habitats have become limiting and several hundreds of the state's species have been listed as threatened, endangered or species of special concern.

The Department is empowered and authorized to address the effects of these human impacts on the state's natural environment through CEQA and other legislation. With respect to suction dredging, Fish and Game Code Section 5653 authorizes the Department to regulate suction dredging so it is not deleterious to fish. In analyzing the impacts of suction dredging on fish and fish habitat the Department has taken into consideration the natural conditions facing fish and fish habitat.

Subject Category 13

I am opposed to the proposed regulation allowing the use of power winches. Power winches destroy riparian habitat.

Comment Source

Comments from 52 individuals

Department Response

The Department evaluated alternatives to an outright prohibition on the use of power winches and recommends allowing the use of power winches under specific conditions designed to insure protecting riparian and stream habitat while power winches are being used.

The Department originally proposed an outright prohibition on the use of power winches because of the potential for damage to the bed, bank and channel of streams and the potential for damage to riparian habitat used for anchoring winching equipment. Because the outright prohibition raised potential takings issues, posed general safety hazards, and difficulties for disabled dredgers, the Department considered alternatives to the outright prohibition. Instead of banning the use of power winches Department biologists and wardens recommended conditions be added to the proposed regulations which protect the stream and riparian habitat while allowing for the continued use of power winches (see proposed regulations, 228(f)(1)(A)(B)(C)(D)).

Subject Category 14

The Department wants to restrict or entirely shut down suction dredging in California on its own or due to the influence of environmental groups.

Comment Source

Comments from 4 individuals

Department Response

Some members of the suction dredge community generally assert that the Department is biased towards suction dredging. Some letters indicate that some suction dredgers believe environmental groups have influenced the Department in formulating the proposed regulations.

The Department is not influenced by environmental groups. The overall concern of the Department is to protect and manage the fish, wildlife and habitats on which they depend. There is no intent by the Department to shut suction dredging down in California. Fish and Game Code section 5653 requires the Department to regulate suction dredging and authorizes the Department to issue permits if it determines that suction dredging will not be deleterious to fish.

Subject Category 15

The Department should not close Wild Trout Waters to suction dredging.

Comment Source

Comments from 4 individuals

Department Response

Wild Trout Waters are open to suction dredging where the Department has determined suction dredging will not be deleterious to fish as required in section 5653 of the Fish and Game Code. However, federal laws may prohibit suction dredging in such waters. Where there is a direct conflict between state and federal law the federal law prevails. The proposed regulations do not authorize the violation of any other state or federal laws or regulations.

Subject Category 16

Designated Wild Trout Waters and Wild and Scenic Rivers should be closed to suction dredging. These areas have been set aside for the establishment of wild trout populations and to provide quality fishing experiences.

Comment Source

Comments from 70 individuals

Department Response

A blanket closure of Wild Trout Waters and Wild and Scenic Rivers to suction dredging is not recommended in the ADEIR. Based on Fish and Game Code section 5653(b) if the Department has determined that suction dredging will not be deleterious to fish, it must issue a permit. Thus the Department is not authorized to make closures based merely on Wild Trout Water and Wild and Scenic River designations.

However, federal laws may prohibit suction dredging in such waters. Where there is a direct conflict between state and federal law the federal law prevails. The proposed regulations do not authorize the violation of any other state or federal laws or regulations.

Subject Category 17

The proposed regulation banning importation of earthen materials would eliminate gold panning and sluicing.

Comment Source

Comments from 4 individuals

Department Response

Suction dredge regulations do not apply to gold panning or sluicing. Depending on the magnitude of these activities they may be subject to Fish and Game Code Section 1600 et seq. - Lake and Streambed Alteration Agreements.

Subject Category 18

We support the proposed ADEIR and regulations with certain amendments.

Comment Source

Comments from 60 individuals

Department Response

The Department recognizes the support it received regarding the ADEIR and proposed regulations.

Subject Category 19

We object to the closing of specific creeks including Piru and San Gabriel Creeks.

Comment Source

Letter comments from 4 individuals

Department Response

The Department considered the objections to specific closures during the drafting of the new proposed regulations and associated ADEIR. Some streams in the San Gabriel Mountains are not closed under the Department's proposed regulations but may be closed by the U. S. Forest Service. This is mentioned under the list of counties in the proposed regulations. Piru Creek is proposed for closure based on the existence of the Arroyo Southwestern Toad, listed as a California Species of Special Concern, and treated as a rare or endangered species under CEQA section 15380.

Subject Category 20

Suction Dredge Permit fees should be lowered. This would be more fair and increase business in California.

Comment Source

Comments from 2 individuals

Department Response

Lowering or raising fees requires legislative action and is, therefore, outside the scope of this proposed project and the Department's jurisdiction.

Subject Category 21

Suction dredge permit fees should be raised to pay for studies analyzing the impacts of suction dredging on the environment, to repair the damage caused to the environment by suction dredging or to increase enforcement.

Comment Source

Comments from 23 individuals

Department Response

Raising fees requires legislative action and is, therefore, outside the scope of this proposed project and the Department's jurisdiction.

Subject Category 22

The Department should ban suction dredging altogether or have more strict regulations, limit the number of suction dredges per river, require them to fill in the holes left by dredging, ban dredger camps and ban the use of lines to secure the dredges. Perhaps the suction dredge permitting process should be put under the 1600 Program - Streambed Alteration Agreement Program.

Comment Source

Comments from 41 individuals

Department Response

The Department considered all impacts to the environment and the compatibility of suction dredging with other uses in the development of the new proposed regulations and associated ADEIR. It is the intent of the Department to adopt regulations which will not result in deleterious impacts to fish while permitting suction dredging in the State.

The Department does not have adequate scientific information at this time to establish threshold levels and to determine the carrying capacity of suction dredges on each stream or river. Banning dredger camps and dredge anchor lines is outside the jurisdiction of Fish and Game Code Section 5653. The Department is working with the suction dredge community on ways to post warnings regarding dredge holes in areas where this has been a problem.

The Department will not incorporate the lake and streambed alteration agreement program into the suction dredge regulations. The Department can not legally combine the two Fish and Game Code sections 1600-1607 (Streambed Alteration Agreements) and Section 5653 (Suction Dredge Regulations). The two code sections were passed by the Legislature in the same year, 1961. It was clearly the intent of the Legislature to authorize discretionary permit authority for suction dredging activities while placing activities which result in a substantial impact to the bed, bank, channel or flow of streams under the Streambed Alteration Agreement Program (SAAP). In addition, under Fish and Game Code Section 5653, the Department shall issue permits only if the Department determines operations will not be deleterious to fish. Under Streambed Alteration Agreements, operations can potentially go forward even if they would have a deleterious effect on fish. The SAAP can not be used to circumvent permit authority under Fish and Game Code Section 5653 - Suction Dredging.

In addition, due to a lack of personnel and funding, the Department could not absorb the impact of transferring the suction dredge permitting process into the SAAP. It would double the number of notifications the Department receives under the SAAP. In addition, the majority of notifications would be submitted during one season, the spring season. The Department would only be able to respond to a small fraction of the notifications. This would result in most suction dredging proceeding with no conditions or environmental safeguards. The number of arbitration cases would be substantially increased over current levels requiring several additional staff be added to the Department's Legal Affairs Division. To implement this recommendation would require legislative action accompanied by substantial additional funds to the Department.

Subject Category 23

The Department should discuss in the ADEIR the issue of squatters.

Comment Source

The Department received requests from the BLM and USFS to discuss impacts from unauthorized occupants (squatters) on natural resources.

Department Response

The Department has included language in the ADEIR regarding the impacts of squatters on public and private lands.

Subject Category 24

Comments received that were not relevant to the proposed project or DEIR, derogatory, or for which the Department had no substantive response.

Comment Source

Comments from 35 individuals

Subject Category 25

The Department should open all waters to suction dredging.

Comment Source

Comments from 5 individuals

Department Response

The Department can only permit suction dredging when it is determined suction dredging will not have a deleterious impact on fish as specified in Fish and Game Code Section 5653.