

Compliance with Suction Dredge Mining Law on Federal Land in the Sierra Nevada



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Document Scope

The Sierra Fund (TSF) staff interviewed selected federal land managers¹ with responsibility for lands in the Sierra Nevada on which recreational suction dredge mining for gold occurs. TSF also examined public records and documents on the subject.²

This information was collected to inform the Environmental Impact Review on the impacts of suction dredging currently being prepared by the California Department of Fish and Game (DFG). As recreational suction dredge miners often operate on public lands, TSF was interested to learn more about:

1. Agencies' experience with suction dredging, including enforcement actions, to ensure compliance with pertinent laws;
2. Agency staff views about the overall compliance by miners with existing suction dredge license conditions on public lands in the time since the requirement that they obtain a license from DFG became effective;
3. The outcome of any enforcement actions; and
4. To obtain photographs depicting both compliance with and violation of existing best management practices and license conditions.

Background

About half of the land in the Sierra Nevada range is owned by the federal government. This land, and the rivers, lakes and tributaries in it, are mostly managed by the USDA Forest Service (USFS), the Bureau of Land Management (BLM), or the National Park Service (which does not permit the use of suction dredges within its boundaries).

¹ Meeting with Marc Springer and David Lawler of the Bureau of Land Management, May 4, 2009 at the federal building in Sacramento; and conducted telephone conference call with Rick Weaver, Greg Schimke and Jeanne Masquelier of the USFS on May 14, 2009.

² See Sources Cited, Appendix F

The Sierra Fund has developed an important working relationship with federal land managers, including the USFS and the BLM, as part of its multi-year Mining's Toxic Legacy Initiative to assess and address the long term impact of historic gold mining on California. TSF's report, *Mining's Toxic Legacy*, draws from research on current and historic mining developed by state and federal agency scientists and land managers.

Suction dredging for gold can cause a number of serious environmental impacts, including remobilization and "flouring" of mercury, as indicated by the *Mining's Toxic Legacy* report; as well as oil and gas contamination from dredge engines; and disturbance of fish habitat. (See Appendix A for details.)



Photo courtesy USFS: "high banker" dredge operation cutting into streambed, which is not allowed under suction dredge permit regulations

Overview of California Suction Dredge Mining Rules

In the suction dredging process, miners remove gravels from the riverbed with a suction hose powered by an engine, and then use pans or other methods to retrieve the gold. Permits for this activity are issued by the Department of Fish and Game. The regulations in Sections 228 and 228.5, Title 14, of the California Code of Regulations generally govern suction dredging in California. In general, these rules:

- Define the season during which suction dredging is allowed and any special restrictions that apply to named sections of rivers, streams, or lakes.
- Require permission from the landowner or the land managing agency before entering private and public lands for the purposes of suction dredge mining.

- Specify that suction dredge operations may not substantially alter the flow, or the bed, bank, or channel, of a river, stream, or lake unless they also have a Lake or Streambed Alteration Agreement, a permit that is also issued by DFG.
- Specify “Equipment Requirements” (Section 228(e)) and “Restrictions on Methods of Operation” (Section 228(f)). In general, hose size is restricted to a 6” diameter except in certain specified rivers (including portions of the Yuba, Feather and American Rivers) where hoses as large as 8” may be used. California is the only state with no limitation on the horsepower of the dredge motor.

Once a suction dredge permit is obtained, the recreational miner may operate a dredge in any river in the state where suction dredging is allowed. There is no limitation on the number of recreational dredgers in any given spot or stretch of river, nor the distance between dredges, and notification of the state about where they will be mining is not required.

Overseeing Suction Dredge Mining on Federal Land

Re-write this to distinguish between BLM and USFS (note difference between missions of the two agencies, and therefore the different regulatory processes that they use)

The federal land managers that TSF interviewed outlined their process for providing oversight of suction dredge mining on public land. They distinguished between various levels of review, and the permits necessary for each level (refer to Appendix C for detailed definitions):

This is only BLM land -- **Add new section on regulations on USFS land.**

- a. “Casual use”: occasional, recreational mining using a motor that is 10 horsepower or less (about 6” maximum diameter dredge hose); requiring only a suction dredge permit from the state DFG.
- b. “Notice of Intent” (NOI) permits: issued by the appropriate federal land management agency to suction dredge miners who intend to disturb more than 1 square acre or occupy the claim for more than 14 days, providing an opportunity for the miner to learn whether the site is worth further investment. This permit is good for one season.
- c. “Plan of Operations” approval: issued by the appropriate federal land management agency to miners on public land who have filed a plan for how and when they will develop and later remediate their mining activities.



Photo courtesy USFS: a dredging operation creating muddy water downstream by re-suspending sediment

Compliance Issues and Enforcement Authority

Federal land management agencies have very limited resources for patrolling their millions of acres looking for suction dredge permit violations. Agency staff made it very clear that in their view most suction dredgers obey the rules and are not causing significant impacts. However, they did state that there have been some examples of mining operations that had caused significant environmental and public health impacts, as well as disturbing fish spawning gravels.

In cases where permit enforcement is needed, there are significant obstacles. In testimony by a former BLM land manager, the manifold problems associated with enforcement of suction dredging and associated health and safety regulations are described in some detail (full testimony, from a hearing before the California State Legislature in 1994, is in Appendix E). An excerpt:

“Most dredging takes place in rural areas and it requires a great deal of equipment, so when you move in a dredge and gasoline and all the support it takes, it normally establishes some sort of a camp with that... Most dredgers behave themselves. Some don’t. Those that don’t can create real problems, especially when they create an encampment... There is certainly a health hazard.... A bigger problem is fire. I’ve dealt with maybe 1,000 of these cases in the last ten years.”



Photo courtesy The Sierra Fund: mining encampment on N. Fork American River, which may violate local health and safety codes

Enforcement is complicated because counties have enforcement authority over certain health and safety issues. Federal land managers can regulate where miners park, garbage disposal, water diversions, or sanitation issues. In other cases, they may call in local government to enforce health and safety code violations.

Federal land managers also have authority to approve the suction dredging operation, in addition to the county's health and safety permitting process. Operations not exceeding the "casual use" threshold require approval from the agency controlling the public land prior to a permit issuance. Should the dredging operation exceed the "casual use" threshold in Federal law and be subject to an operation plan, the Federal agency with responsibility for the site would also need to approve the operation plan prior to the local agency issuing a permit for the construction of any sanitation or housing improvements.

Enforcement Actions

Federal land managers are allowed to ask to see a current suction dredge permit if they encounter a “casual use” miner. If there is no permit, or permit conditions are not being observed, USFS and BLM land managers have the authority to ask the miner to stop activities until they come into compliance.

Public land managers at BLM and USFS who have identified unpermitted suction dredge mining activity usually call the DFG game warden to come and issue a notice of violation. This notice may call out the circumstances of the violation and determine an appropriate remediation and fine.

DFG has sworn officers, with guns and badges, to carry out enforcement activities. In some cases they have worked with local law enforcement agencies such as the local County Sheriff. The US Forest Service also has sworn officers who can take enforcement actions, and has in some cases taken suction dredge miners operating on USFS land to court, however at this time DFG takes the lead on enforcing in-stream mining rules.

According to the land managers who were interviewed, in a number of cases where the game warden has issued notices of violation, miners have refused to accept the notice, pay the fine or come into compliance. In such cases, the game warden must seek enforcement action from the local county District Attorney’s office, which can then choose to dismiss the violation or prosecute the miner.

Prosecuting the miner for a suction dredging violation is a lengthy and expensive task, and has seldom been successful. Federal land managers interviewed for this report noted that the appetite for law enforcement actions might be stronger if the enforcement activities were more successful in convicting people who violate these laws.

In two recent instances where a District Attorney did pursue enforcement, one on Oregon Creek in Yuba County and the other near Foresthill, they lost in court. Federal and state staff people interviewed by TSF who were familiar with these cases stated that they were lost due in part to juror sympathy for the miners (due to the historic nature of mining in the region), and in part because the jurors felt that the regulations governing mining were not specific enough. This calls out a need to create stronger or new rules, especially around impacts on vegetation and stream banks, mercury recovery and disposal, kinds of equipment that can be used, and housing and sanitation in long-term mining camps.



Photo courtesy USFS: suction dredge mining encampment that was cited for health and safety violations

Conclusion

Casual-use suction dredge miners on federal land are regulated solely by the state of California suction dredge permit program operated by the DFG. While many miners are obeying the law, it is difficult for agencies to seek enforcement of the law when there are violations. In addition, suction dredge mining regulations are vague in some areas and can be interpreted in a variety of ways.

In addition, existing suction dredge rules fail to address potentially significant environmental impacts caused by suction dredge activities, including the hazards associated with the recovery, handling, transportation, storage and disposal of elemental mercury, a heavily regulated toxic material recovered as part of the dredging operation; stream bed spawning ground and vegetation destruction and alteration; and violation of health and safety codes regulating human habitation on the mining site.

Recommendations for Reform of State Suction Dredging Rules

To improve enforcement of suction dredge mining rules on federal lands, The Sierra Fund is advocating for reform of suction dredge mining regulations on all lands, including private and publically owned lands in the state. These reforms need to address both the fish and wildlife habitat concerns as well as the mercury hazards. This will require a cooperative effort between

Department of Fish and Game (DFG) and the State Water Resources Control Board (SWRCB) to create a program that protects the public health and also creates clear guidelines for future gold miners.



Photo Courtesy USFS: Gasoline for Dredge engines stored at mining camp

Specifically, TSF recommends that the regulations guiding the issuance of permits for this activity be reformed to include:

1. Identification and Requirement of Best Practices

- Identification of best practices for suction dredging, which may require development and testing of new techniques, and new permit requirements that miners adopt these “best management practices,” especially in regards to sedimentation and mercury recovery;
- New standards for where suction dredgers mine, including limitations on number of dredgers per river mile and required notification of the private or public land manager of any intended suction dredging activities on their land;
- Adoption of understandable and more easily enforced rules governing suction dredge mining that respond to environmental and health concerns; and
- Requirements for monitoring of the water body both pre- and post-suction dredge activity.

2. Special Rules for Mercury

- Closure of rivers and streams where mercury is present until there is a safe way to extract elemental mercury;
- Development of safe practices for handling, storage, transportation and disposal of mercury recovered from suction dredging; and
- New licensing requirements for all suction dredge miners, including training in the safe handling of the equipment and mercury.

3. Improvement and Funding for Enforcement and Education

- Improvement in successful enforcement of the rules regarding suction dredging, including new funding for additional staff in the forests to oversee suction dredge mining activities and to prosecute offenders;
- Improved coordination around enforcement activities between public land managers and local land use officials, particularly around health and safety and sanitation issues, including ensuring that appropriate permits are obtained by miners who plan to camp on their land for more than 14 days in a season;
- Increased support, training and funding for enforcement of suction dredge mining laws, including improved coordination with local law enforcement where appropriate; and
- Increased suction dredge permit fees to reflect new costs associated with regulation, enforcement and public education about this activity, including training and education of suction dredge miners about the rules governing recreational mining activities along rivers and streams.



Photo courtesy USFS: suction dredge engine floating on river

Appendices

- A. Mercury and Suction Dredging Fact Sheet
- B. Selected USFS Rules Governing Suction Dredge Mining
- C. Selected BLM Rules Governing Suction Dredge Mining
- D. Summary of California State Rules Governing Suction Dredge Mining
- E. Testimony from Dean Swickert, former BLM official, 1994
- F. Acknowledgements and Sources Cited



Photo courtesy USFS: use of heavy equipment to clear brush and move dirt, which is not allowed under suction dredge permit regulations

Appendix A

Gold Mining, Mercury and Suction Dredging

*Excerpts from Mining's Toxic Legacy by
The Sierra Fund 2008*

An estimated 26 million pounds of mercury were used to extract gold from ore in California, most of it in the Sierra Nevada Gold Country.³ Of this, an estimated 10 million pounds were lost to the environment in placer mining operations and another 3 million pounds were lost from hard rock mining.⁴

Elemental mercury or “quick-silver” is still commonly encountered in Sierra watersheds. Recent studies by the Delta Tributary Mercury Council indicate that runoff and erosion from gold mines in the Sierra are a significant source of mercury to the Sacramento Delta.⁵

In the suction dredging process, miners remove gravels from the riverbed with a suction hose powered by an engine, and then use pans or other methods to retrieve the gold. Suction dredgers often encounter mercury and gold-mercury amalgam, which tend to fall into the cracks of the riverbed like gold. Suction dredges re-suspend and “flour” mercury, increasing its surface area and making it more readily available for bacteria to methylate.⁶

Dredgers collect the mercury and amalgam, and retort it or treat it with nitric acid to release any gold that may have amalgamated with the mercury. They then recover the mercury and usually store it, though some miners dispose of it in an unauthorized manner, such as pouring it back into the river, onto the ground, or into municipal sewer systems.

The full text of Mining's Toxic Legacy can be downloaded from The Sierra Fund's website: www.sierrafund.org/campaigns/mining

³ Alpers, C., P. R. Hunerlach, J. T. May, and R. Hothem. (2005a). Mercury Contamination from Historical Gold Mining in California. U.S. Geological Survey Fact Sheet 2005-3014

⁴ Churchill, R. K. (2000). Contributions of Mercury to California's Environment from Mercury and Gold Mining Activities—Insights from the Historical Record. Extended abstracts for the U.S. EPA-sponsored meeting, Assessing and Managing Mercury from Historic and Current Mining

⁵ Delta Tributary Mercury Council. (2002). Strategic Plan for the Reduction of Mercury-Related Risk in the Sacramento River Watershed. Delta Tributary Mercury Council
<http://www.sacriver.org/subcommittees/dtmc/documents/DTMCMercuryStrategyPlan.pdf>.

⁶ Humphreys, R. (2005). Mercury Losses and Recovery during a Suction Dredge Test in the South Fork of the American River. California State Water Board Staff Report. Sacramento, CA.

Appendix B

Selected US Forest Service Regulations

Forest Service, USDA § 228 Subpart A—Locatable Minerals

§ 228.1 Purpose.

It is the purpose of these regulations to set forth rules and procedures through which use of the surface of National Forest System lands in connection with operations authorized by the United States mining laws (30 U.S.C. 21–54), which confer a statutory right to enter upon the public lands to search for minerals, shall be conducted so as to minimize adverse environmental impacts on National Forest System surface resources. It is not the purpose of these regulations to provide for the management of mineral resources; the responsibility for managing such resources is in the Secretary of the Interior.

§ 228.2 Scope.

These regulations apply to operations hereafter conducted under the United States mining laws of May 10, 1872, as amended (30 U.S.C. 22 *et seq.*), as they affect surface resources on all National Forest System lands under the jurisdiction of the Secretary of Agriculture to which such laws are applicable: *Provided, however,* That any area of National Forest lands covered by a special Act of Congress (16 U.S.C. 482a– n482q) is subject to the provisions of this part and the provisions of the special act, and in the case of conflict the provisions of the special act shall apply.

§ 228.4 Plan of operations—notice of intent—requirements.

(a) Except as provided in paragraph (a)(2) of this section, a notice of intention to operate is required from any person proposing to conduct operations which might cause disturbance of surface Resources... If the District Ranger determines that such operations will likely cause significant disturbance of surface resources, the operator shall submit a proposed plan of operations to the District Ranger.

(1) The requirements to submit a plan of operations shall not apply:

- (i) To operations which will be limited to the use of vehicles on existing public roads or roads used and maintained for National Forest purposes,
- (ii) To individuals desiring to search for and occasionally remove small mineral samples or specimens,
- (iii) To prospecting and sampling which will not cause significant surface resource disturbance and will not involve removal of more than a reasonable amount of mineral deposit for analysis and study,

(2) A notice of intent need not be filed:

- (i) Where a plan of operations is submitted for approval in lieu thereof,
 - (ii) For operations excepted in paragraph (a)(1) of this section from the requirement to file a plan of operations,
 - (iii) For operations which will not involve the use of mechanized earthmoving equipment such as bulldozers or backhoes and will not involve the cutting of trees.
- Each notice of intent to operate shall provide information sufficient to identify the

area involved, the nature of the proposed operations, the route of access to the area of operations and the method of transport...

(b) Any person conducting operations on the effective date of these regulations, who would have been required to submit a plan of operations under § 228.4(a), may continue operations but shall within 120 days thereafter submit a plan of operations to the District Ranger having jurisdiction over the area within which operations are being conducted... Operations may continue according to the submitted plan during its review, unless the authorized officer determines that the operations are unnecessarily or unreasonably causing irreparable damage to surface resources and advises the operator of those measures needed to avoid such damage. Upon approval of a plan of operations, operations shall be conducted in accordance with the approved plan. The requirement to submit a plan of operations shall not apply: (1) To operations excepted in § 228.4(a) or (2) to operations concluded prior to the effective date of the regulations in this part.

(e) At any time during operations under an approved plan of operations, the authorized officer may ask the operator to furnish a proposed modification of the plan detailing the means of minimizing unforeseen significant disturbance of surface resources...

(f) Upon completion of an environmental analysis in connection with each proposed operating plan, the authorized officer will determine whether an environmental statement is required. Not every plan of operations, supplemental plan or modification will involve the preparation of an environmental statement. Environmental impacts will vary substantially depending on whether the nature of operations is prospecting, exploration, development, or processing, and on the scope of operations (such as size of operations, construction required, length of operations and equipment required), resulting in varying degrees of disturbance to vegetative resources, soil, water, air, or wildlife. The Forest Service will prepare any environmental statements that may be required.

§ 228.5 Plan of operations—approval.

(a) Operations shall be conducted in accordance with an approved plan of operations, except as provided in paragraph (b) of this section and in § 228.4 (a), (b), and (e). A proposed plan of operation shall be submitted to the District Ranger, who shall promptly acknowledge receipt thereof to the operator.

Appendix C

Basic Terms, Definitions & Codes from the Bureau of Land Management (BLM) Regarding Suction Dredging

An Operation Plan is a requirement under federal law. There is no "Operation Plan" required for suction dredging if it falls under the Federal definition of "casual use." The operation plan requirement stems from Federal Law, General Mining Law of 1872. It was amended in 2001 to require an "Operation Plan" for all mining beyond casual use. From the BLM web page:

http://www.blm.gov/ca/st/en/prog/minerals/mine_prog.print.html

"The revised 43 CFR 3809 regulations became effective on January 20, 2001. Some of the major changes are: the elimination of the five acres threshold for plans of operations, all mining beyond "casual use" will require a plan, and financial bonding is required for any disturbance greater than "casual use." Notices are required for exploration proposals on less than five acres. For the first time, BLM can reject a mining proposal if the proposal will cause "substantial irreparable harm to significant scientific, cultural, or environmental resource values of the public lands that cannot be effectively mitigated."⁷

The term "casual use" is defined in **CFR 43 3809.5**: Casual use means activities ordinarily resulting in no or negligible disturbance of the public lands or resources. For example:

1. Casual use generally includes the collection of geochemical, rock, soil, or mineral specimens using hand tools; hand panning; or non-motorized sluicing. It may include use of small portable suction dredges. It also generally includes use of metal detectors, gold spears and other battery-operated devices for sensing the presence of minerals, and hand and battery-operated drywashers. Operators may use motorized vehicles for casual use activities provided the use is consistent with the regulations governing such use (part 8340 of this title), off-road vehicle use designations contained in BLM land use plans, and the terms of temporary closures ordered by BLM.
2. Casual use does not include use of mechanized earth-moving equipment, truck-mounted drilling equipment, motorized vehicles in areas when designated as closed to "off-road vehicles" as defined in § 8340.0–5 of this title, chemicals, or explosives. It also does not include "occupancy" as defined in § 3715.0–5 of this title or operations in areas where the cumulative effects of the activities result in more than negligible.

Note that there is no reference to an area threshold in the defining of the term of "casual use."

⁷ From the BLM web page:

http://www.blm.gov/ca/st/en/prog/minerals/mine_prog.print.html

Appendix D

California State Laws that Govern Suction Dredge Mining

Suction dredging is subject to state law requiring compliance to Department of Fish and Game Regulations, Suction Dredging Title 14, California Code of Regulations, Sections 228 and 228.5; and Surface Mining and Reclamation Act (SMARA), Public Resources Code, Division 2, Chapter 2710 et seq.

Department of Fish and Game: Suction dredging is subject to a permit under Department of Fish and Game Regulations, Suction Dredging Title 14 § 228 a.

Surface Mining and Reclamation Act

Should a suction dredge operation disturb over 1,000 cubic yards or involve more that 1 acre of land it would also be subject to compliance with the Surface Mining and Reclamation Act (SMARA).

Surface Mining and Reclamation Act (SMARA), Public Resources Code, Division 2, Chapter 2710 et seq. makes no mention of a “Operation Plan” and its provisions are enforced by the lead agency as defined in § 2728. “Lead agency” means the city, county, San Francisco Bay Conservation and Development Commission, or the board which has the principal responsibility for approving a reclamation plan pursuant to this chapter

The three primary areas of review within SMARA for the lead agency review are:

1. Permit
2. Reclamation Plan
3. Financial assurances

Appendix E:

Testimony, 1/11/94 WPW hearing

Dean Swickert, Area Manager, BLM

"My name's Dean Swickert. I'm the area manager with the Bureau of Land Mgmt, which is the United S. Dept of the Interior.

..The area that I'm administrator of basically covers from Yuba County to Fresno County, so most of the Mother Lode, and I get to see a great deal of mining. In fact I administer 10,000 mining claims, so I have, I think, quite an in depth understanding of dredging.

"We see a significant number of problems with trespass associated with dredging for a couple of reasons. One is that most dredging takes place in rural areas and it requires a great deal of equipment, so when you move in a dredge and gasoline and all the support it takes, it normally establishes some sort of a camp with that. And because it's in a rural area and because it's the Mother Lode there tends to be a lot of boundaries between private and public land. So we see this trespass occurring because of the nature of the activity and because the boundaries are not clear.

"And so a private landowner, and I see this with ranchers - - I see it with timber operators in particular, they'll have holdings of land and there'll be trespass established and before they can do much about it it's of fairly large size.

"Most dredgers behave themselves. Some don't. Those that don't can create real problems, especially when they create an

encampment. And I brought a few photos, I'm not sure if they're similar to photos that were shown earlier, but once these encampments become started the people become territorial. And once they become territorial they will either by force or by intimidation try and keep people off either the public land or even off of their own private lands, so it's a significant problem.

"Also there's hazards. There's certainly a health hazard. They usually defecate in five gallon cans or into the stream and that sort of thing. A bigger problem is fire. These camps are generally fire hazards because they simply don't adhere to what most people would consider responsible behavior.

"I've dealt with maybe 1,000 of these cases in the last ten years and I think they contribute a substantial problem out there. One, because of this intimidation of public land and private land users. One is because of pollution. Another is because they're a subsistence economy, cutting down trees for firewood, taking wildlife as they need it just to subsist. So its a significant problem both on public and on private land.

"We don't take a position on this bill one way or the other, but I hope we can give you at least some idea of the magnitude of the problem."

[Discussion by various committee members followed, with questions to Assemblyman Hauser. Mr. Swickert's next discourse followed a

question from Assemblyman Knowles.]

Knowles: "... my second question is that it would seem to me that

if we are taking a legislative approach to enhance the fine, enhance the jail sentence, et cetera, and to really mitigate this, it would be very appropriate to document the need involved ... and your photos are very illustrative, but do you have any numerical quantification about how big a problem this really is before we jump into a legislative solution to whack these guys that are the abusers?"

Hauser responded that anecdotal information was available, because it is difficult to establish trespass.

Swickert: "We have numbers, and I'll tell you what we have on public land and I can also tell you, from my private observations, what we have on private land as well.

"In the last ten years we've done 1,000 cases of trespass, of which 500 have dealt with dredging on public land."

Knowles: "What time period was this...?"

Swickert: "This was over ten years -- this is the number of cases we've completed. We normally run about 200 cases behind. We normally do 100 a year and we get 100 new ones a year, so we're basically treading water. Not all of those..."

Knowles: "So you're getting about 50 cases a year then on the

average, over the last decade, that are suction dredging related trespass."

Swickert: "Right... and we'll get about that many more. Now understand that we administer 19 counties and we have three enforcement personnel, so that doesn't mean we're finding them all."

Knowles: "I understand. Another question is -- help me make a connection here. How is it that you, as representing BLM, are entertaining private property trespass complaints?"

Swickert: "What happens is, public and private lands are intermixed in the Mother Lode, and usually when there's a problem that comes up with trespass, and remember that dredging is related to streams and the Bureau usually has some involvement in that, so the sheriff's office or the wardens in the BLM generally work together.

"And in fact, what you'll find is some of these trespassers will deliberately find the soft spots between private and public land, and that's where they'll set up and they'll tell both enforcement agencies, for example, if the sheriff's out there, they'll say they have permission from BLM, where if we're out there, they'll say they have private landowner permission, and so it's very difficult to deal with that.

"But in terms of numbers, I would say we're dealing with 50 to 100 cases a year, of which we resolve 50."

Knowles: "Yeah... Well, you know, you seem to say that since there's interagency cooperation between the local sheriff's departments and so forth, apparently out of the complaints that are made, it probably is a pretty reliable number to go with 500 in ten years -- 50 per year."

Swickert: "It's not. What we respond to are normally those that are complained about by citizens. We get at those first. First we go after those where we think there's a threat to life, which is actually fairly common, and second..."

Knowles: "How so? With all the defensiveness and aggression...?"

Swickert: "Yes, you see, we've had complaints about weapons being used, and when they escalate, we go in and try to take care of it. And then the second is when there's a real threat to property, and that's when we get complaints about fire and that sort of thing in the summers."

Appendix F

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We want to thank the many government agency people that helped us to understand the complexities of the enforcement issue. However, the conclusions and recommendations for action drawn in this report are those solely of The Sierra Fund Mining Team:



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*Cover page photo courtesy: Steve Evans, Friends of the River
Suction dredge miner who has altered the stream bed to river though his dredge operation
in the East Fork of the San Gabriel River (not in the Sierra Nevada)*

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