LAW OFFICES OF DAVID YOUNG
David Young, SBN 55341
11845 W. Olympic Boulevard, Suite 1110
Los Angeles, CA 90064
Telephone: (310) 575-0308
Facsimile: (310) 575-0311
Email: dyounglaw@verizon.net

Attorney for Kimble and PLP Plaintiffs/Petitioners

JAMES L. BUCHAL (SBN 258128)
MURPHY & BUCHAL LLP
3425 SE Yamhill Street, Suite 100
Portland, OR 97214
Telephone: (503) 227-1011
Facsimile: (503) 573-1939

Attorney for Plaintiffs The New 49'ers Inc. et al.

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SAN BERNARDINO

Coordination Proceeding Special Title (Rule 1550(b) **SUCTION DREDGE MINING CASES**	Judicial Council Proceeding No. JCPDS 4720 **DECLARATION OF JOSEPH GREENE IN SUPPORT OF MINERS' JOINT MOTION FOR INJUNCTION AGAINST DEFENDANTS** Judge: Hon. Gilbert G. Ochoa Dept.: S36J Date: June 23, 2015 Time: 8:30 a.m.
Related Actions: *Karuk Tribe of California, et al. v. California Department of Fish and Game* *Hillman, et al. v. California Department of Fish and Game*	 RG 05211597 – Alameda County RG 09434444 – Alameda County

Karuk Tribe of California, et al. v. California Department of Fish and Game	RG 1263796 – Alameda County
Kimble, et al. v. Kamala Harris, Attorney General of California, et al.	CIVDS 1012922 – San Bernardino County
Public Lands for the People, et al. v. California Department of Fish & Game, et al.	CIVDS 1203849 – San Bernardino County
The New 49er's, et al. v. State of California; California Department of Fish and Game, et al.	SCCVCV 120048 – Siskiyou County
Foley, et al. v. State of California; California Department of Fish and Wildlife, et al.	SCSCCV 13-00804 – Siskiyou County
Walker v. Harris, et al.	34-2013-80001439 – Sacramento County

Joseph Greene states:

1. I am an independent environmental consultant and make this Declaration in support of the Miner's motion for an injunction in this action.

Qualifications and Experience

2. I am a retired scientist, formerly employed by the United States Environmental Protection Agency, and have over 30 years of national and international professional experience including consulting, research, and teaching for industry and government regulatory agencies. My experience includes project management, contract administration, experimental design, preparation of research reports and technical documents, laboratory supervision, statistical analysis of data, computer simulation, development and application of biological methods, and performance of algal growth potential and aquatic and terrestrial toxicity tests.

3. My consulting experience has included assessment of nutrient pollution in freshwater canals and rivers, assessment of heavy metals toxicity from mining activities and paint stripping, investigation of toxicity and bioaccumulation in soils at military facilities, evaluation of water soluble toxicants at Superfund sites, and assessment of algal toxicity from textile dyes.

4. My research activities have included establishment of an ecotoxicology laboratory, development of a biological-chemical-physical protocol for measuring potential toxicity of construction materials, development of internationally standardized test methods (aquatic algae, aquatic macroinvertebrate, terrestrial plant and terrestrial invertebrate), chairman of testing committees for ASTM and Standard Methods, platform chairman of several international symposiums, workshops, and congresses, and invited speaker to numerous national and international professional scientific meetings.

5. My teaching experience has included a number of short courses and workshops on performance of algal growth potential and interpretation of results across the nation, a workshop on environmental analysis techniques in Europe, a workshop on complex problems with point and non-point sources of water contamination for the US Department of the Interior, and an environmental engineering graduate seminar on toxicity testing for environmental engineering

applications. My Curriculum Vitae is attached to this Declaration as Exhibit 1.

6. In recent years, I have worked with Claudia Wise as a team to defend the rights of small scale suction dredging by providing scientific testimony concerning alleged adverse environmental impacts of suction dredge mining. I primarily investigated and testified concerning biological effects and Ms. Wise investigated and testified concerning water quality effects. Together we conducted a Preliminary Klamath River Water Quality Survey examining effects of suction dredging.

7. Both of us were invited members of the SEIR Public Advisory Committee (PAC) established by the California Department of Fish and Wildlife. During the PAC meetings, we presented two PowerPoint presentations to the committee "Selenium Antagonism to Mercury, Does Methylmercury Cause Significant Harm to Fish or Human Health?" and "Turbidity and Effect of Scale".

8. In general, allegations of adverse environmental impacts associated with suction dredge mining are not supported by scientific evidence, and are typically grossly exaggerated. Moreover, the California Department of Fish and Wildlife has consistently downplayed and minimized beneficial effects of suction dredge mining. I discuss the effects below in detail.

Beneficial Impacts of Suction Dredging: Trash and Toxics Removal.

9. Opponents of suction dredging often accuse suction dredgers of leaving unsightly messes of trash, gasoline barrels, and equipment in remote pristine forests. While there may be such miners, for the most part these charges are untrue and the trash found is not from the miners.

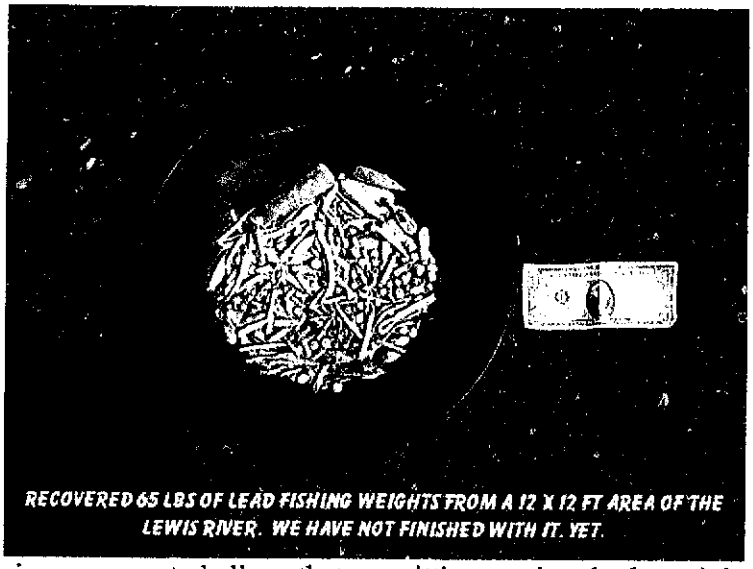
10. I have also found that opponents misinterpret what they are seeing. I have personal knowledge of a situation where hikers came across a mining operation and took photographs. They claimed that the site had been abandoned in that condition. Quite by accident I had a conversation with that miner. He said the mining operation was still underway. At the end of the season all of the materials that he brought in were removed by helicopter.

11. Miners are aware of these continuing accusations from environmentalists that they leave trash all about their camps and work areas. They are usually operating on federal mining

claims, a form of private property. The miners understand that they are under attack by the environmental community and are very careful to maintain clean work and living areas and their property.

12. Many miners in fact remove garbage, trash and toxic metals from the river, and display what they have collected, as in the following photographs:

Trash collected and removed from one mining claim in one year Along the American River in California. This is not mining trash.



13. There is no reason to believe that permitting suction dredge mining will produce

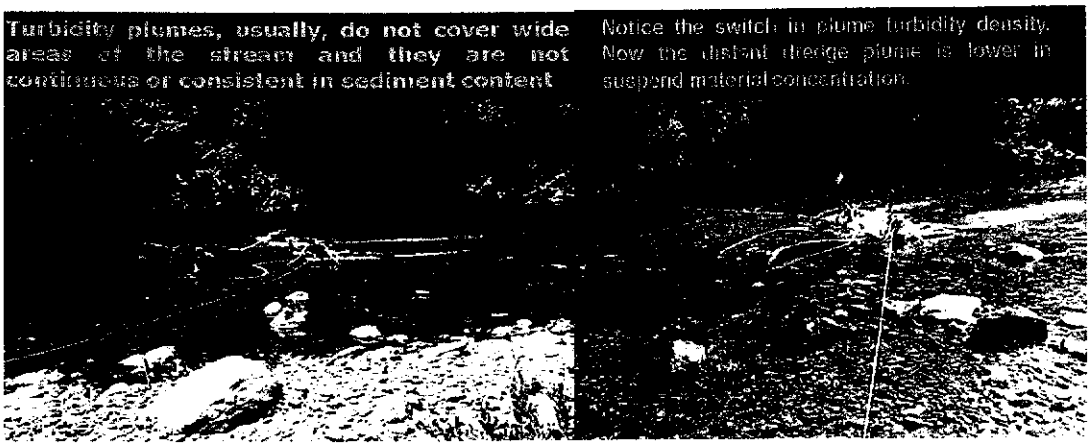
any net increase in trash and garbage in the forests. Only suction dredgers remove lead fishing weights that are captured in the dredges, and this is a benefit to the environment. The dredges also remove mercury that may be encountered.

The Turbidity Issue.

14. Turbidity is a measure of how clear the water is. Suspended particles such as soil, algae, plankton and microbes contribute to turbidity. Turbidity is not a pollutant. It is a measurement of the transmission of light through a standard length receptacle. This measurement of light transmission is a surrogate measurement of particle (usually sediment) concentrations in suspensions.

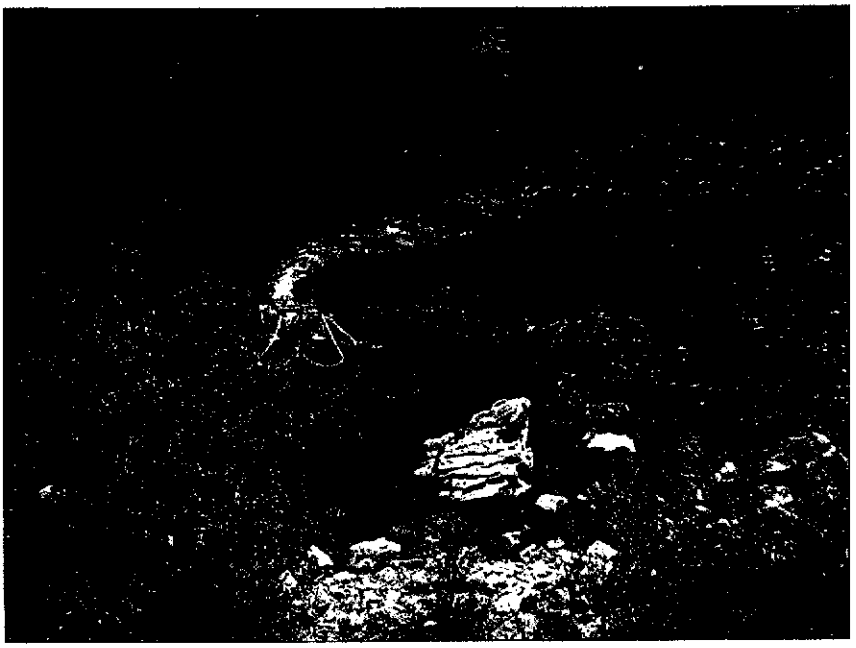
15. It is frequently claimed that dredging causes turbid plumes of fine sediment that may persist for several hundred feet below the dredge, and that the resulting fine sediment, as it settles back to the stream bed, can have adverse effects on habitat for aquatic insects and juvenile fish. In general, fish and invertebrates were not highly sensitive to dredging. For the sake of brevity, I have listed some of the conclusions from the recently published California Final Environmental Impact Report on Small-scale gold suction dredging.

- Impact BIO-FISH-2: Direct Entrainment, Displacement or Burial of Eggs, Larvae and Mollusks (Less than Significant);
- Impact BIO-FISH-3: Effects on Early Life Stage Development (Less than Significant);
- Impact BIO-FISH-4: Direct Entrainment of Juvenile or Adult Fish in a Suction Dredge (Less than Significant);
- Impact BIO-FISH-5: Behavioral Effects on Juvenile or Adults (Less than Significant);
- Impact BIO-FISH-7: Effects on the Benthic Community/Prey Base (Less than Significant).



16. The photographs above illustrate that the turbidity plumes downstream of suction dredges are intermittent and seldom reach from shore to shore of the river. The left photo shows the dredge in the distance is putting out a turbidity plume. The right photo illustrates that now the closest dredge is putting out a plume.

17. Below is a photograph taken by Craig Tucker, an advocate working for the Karuk Tribe of California. It is a very clear illustration of how quickly the turbidity cloud dissipates from the water column.



The photo above shows an operating dredge without a turbidity plume. It is all about the natural environment. The dredges are not adding anything that is not already present in the river.

18. To put the turbidity issue into perspective, one should compare a photograph of a river in flood stage when salmon redds are present. The following picture of the Klamath River shows that the waters are very turbid. They are much more turbid than any waters shown in the photographs above which illustrate turbidity plumes downstream from small-scale gold suction dredges.

///

///

///

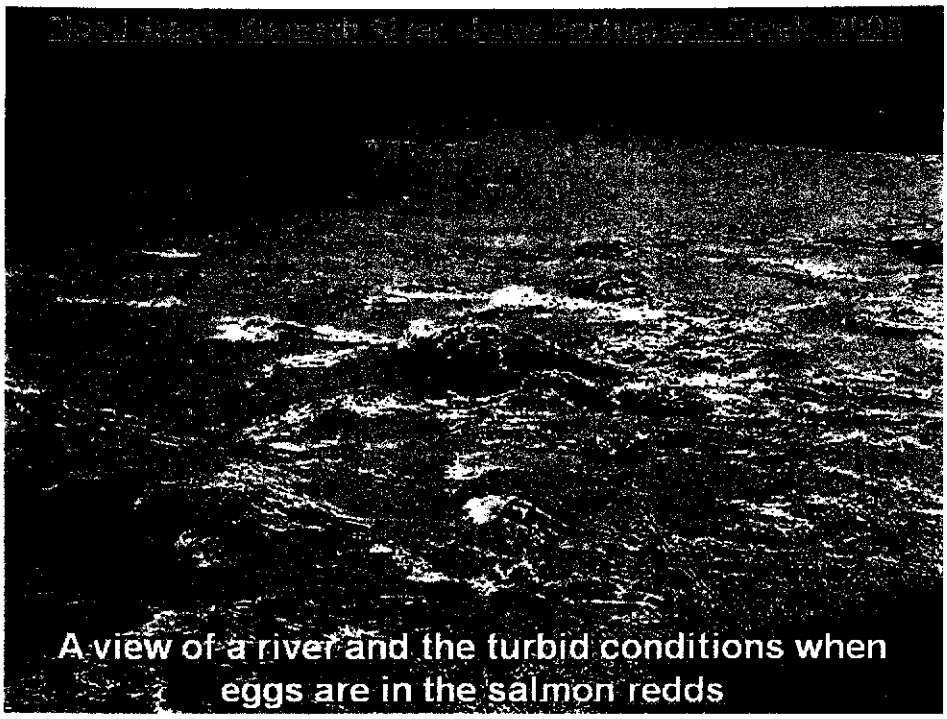
///

///

///

///

///



19. There is in substance no risk of appreciable adverse impacts to habitat from suction dredging plumes because there is not enough sediment transported by the water to smother habitat. Indeed, even during high water periods, river waters carry a surprisingly little amount of suspended sediments relative to the water volume which carries it.

20. The following photograph shows a sample that was collected from the Klamath River when the photograph above was taken. The suspended sediment in the vials was allowed to settle overnight. Prior to taking this photo the vial on the right was shaken to re-suspend the particulate materials. The small volume of sediment in the left vial was quite surprising.

///

///

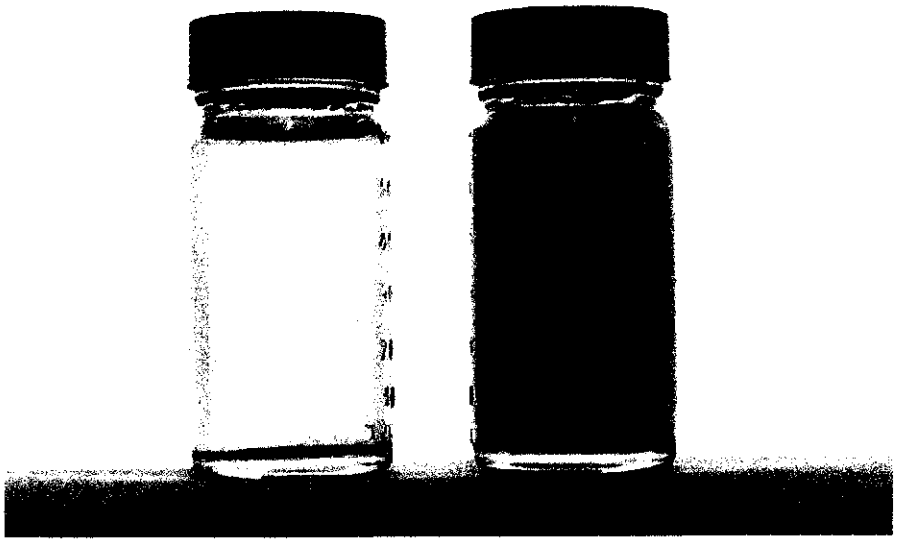
///

///

///

///

Klamath River water: The left vial was allowed to settled for 24 hours, the right vial was shaken to re-suspend the particulates. The sample was measured at 656 NTU.



21. It should be noted that under many circumstances, turbidity improves fish survival. This is because although the feeding efficiency of fish may be reduced from reduced ability to see their prey, there is a larger effect that comes from concealing the fish from predators, particularly birds.

22. It is true that long-term continuous exposure to very high levels of turbidity can harm aquatic organisms, but even the very highest levels of turbidity reported in the scientific literature to result from suction dredges would require many months of continuous exposure to cause any harm. The turbidity produced by suction dredges is intermittent and immediately diluted as shown in the photographs above. In fact, fish are attracted to the outfall from dredges and often feed there; the notion that fish require a refuge from dredge operations is not grounded in reality.

//

//

//

//

//

23. Absent special circumstances, turbidity downstream of small-scale gold suction dredges is not a genuine issue of environmental harm. It is an issue of aesthetics and attitude. Many people want outdoor settings to be left in a natural condition thus suction dredging is perceived as a conflict with these activities. This brings us back to the point of effects of scale. There are hundreds and hundreds of miles of rivers and streams in California where suction dredgers are not operating and outdoor enthusiasts can find the quiet enjoyment they are looking for.

Improving Streambed Habitat and the "Spawning on Tailings" Issue

24. Many of the streams in the Western United States have become embedded (armored). This means that the extent of loose spawning material has declined in some areas where the spawning salmon cannot open the overburden to deposit their eggs. There is anecdotal evidence that salmon spawning has increased in some areas where suction dredges moved in and began breaking through this armoring, but no quantitative studies of which I am aware.

25. Where spawning habitat is limited, salmon may be unable to spawn effectively, or spawn over previously deposited redds and destroy the nests of salmon that had arrived before them. One objection against suction dredge mining is that the salmon may also spawn on tailings piles left by suction dredgers, and that these tailing piles are more likely to be moved by winter flows, "scouring out" the salmon redd.

26. A number of studies have measured the prevalence of salmon spawning on tailing piles, and confirm that it is a small probability event. More importantly, no study has attempted to assess the increased risk to redds on tailings piles against the benefits of reducing armoring and producing looser stream gravels in which salmon can spawn. The extent to which dredge tailings are used for spawning, is generally recognized as being affected by the availability of suitable unaltered substrates and the relative quality of dredge tailings as spawning sites.

27. Information as to the extent of the phenomenon includes:

- In the lower 11 km of the Scott River in 1995, only 12 of 372 redds were located on tailings because (1) much more natural substrate than dredge tailings provided spawning habitat, and (2) the fish exhibited no strong preference for either substrate."
- "Approximately 60 salmonid redds were observed in a study on Canyon Creek, CA. None of the redds were found within dredge tailing piles."
- "In 1996 1,372 reds were observed on the mainstem Klamath River but only 2 redds were observed on recent dredge tailings."
- "In the last 3 years (1996-98), 72 of 1800 redds were counted on or near the tailings from suction dredge mining".

28. I note that if one redd survived on a tailing pile, it would increase the number of salmon eggs by approximately 2000 to even 17,000, depending on the size of the female chinook. This is a benefit that would not have been available without dredge tailings being provided in areas of limited natural substrate. There is no reason to believe that the impact of suction dredgers in creating looser stream gravels is on balance negative, and it is more likely to be positive.

29. Quite apart from loosening stream gravels, the holes left by suction dredges also can constitute valuable habitat for fish. In particular, dredge holes 3 feet or deeper are recognized as providing refugia for fish. In general, excavating pools can substantially increase

their depth and increase cool groundwater inflow, and reduce pool temperature. Where pools are excavated deeper than three feet, salmonid pool habitat can be further improved.

30. There is every reason to believe that holes left by suction dredge miners, which can often be many feet deep as the miners work toward bedrock, provide important cold-water habitats for salmonids living in streams with elevated temperatures. At least one California Department of Fish and Wildlife biologist, now retired, has testified that in some cases, holes left by suction dredgers formed the only locally-available habitat for adult coho to avoid dangerous high temperatures.

Suction Dredge Mining Is A Small-Scale Activity

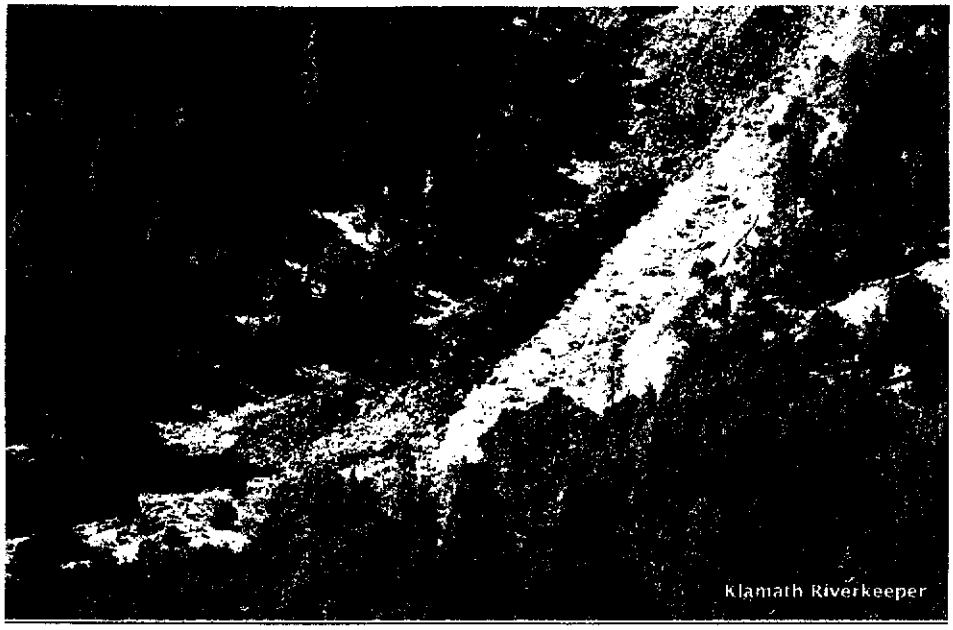
31. There is a concept of "Effect of Scale" that must be understood when evaluating the effects of operating small-scale gold suction dredges in the environment. It is important to understand that the streambed sediment moved by suction dredge miners, even large number of miners, remains a tiny fraction of the natural movement of streambed materials.

32. A study in the Siskiyou National Forest compared the effect of the Forest's significant population of suction dredgers with the natural movement of such materials by surface erosion and mass movement. The calculations, which conservatively overestimated the effect of the dredges, resulted in a movement rate by suction dredge mining of less than 0.7% of natural rates.

33. A study in the Salmon River of dredge holes and tailings measurement survey determined that 53 dredge holes had disturbed 1,066 linear feet of river bottom. The entire river length, including all forks, was 417,120 linear feet. The small-scale gold suction dredging resulted in disturbance of <0.26% of the linear waterway. Again this figure is very conservative, because the action disturbance was less because suction dredgers do not affect the entire width of the river.

34. An example of effect of scale can also be seen in the following photograph. There is only one small-scale gold suction dredge visible in this entire stretch of river. It is located to the right of the red arrow.

///



35. This second photograph shows two dredges, working side by side, in this long stretch of water.

36. These two illustrations are typical of the distribution of dredges. They cannot work too close together because the downstream dredger may be blinded by the occasional cloud of turbidity. This would result in dangerous working conditions. For safety this forces the downstream dredger to put distance between himself and the upstream dredge.

37. The Siskiyou National Forest engaged Dr. Peter Bayley, Dept. Fisheries & Wildlife, Oregon State University, to conduct a "Cumulative Effects Analysis" on the effects of suction dredging forest-wide. Dr. Bayley concluded that, "the statistical analyses did not indicate that suction dredge mining has no effect on the three responses measured, but rather any effect that may exist could not be detected at the commonly used Type I error rate of 0.05." (In other words, if there are effects, they are so small they can't measure them.)

38. He went on to say, "The reader is reminded of the effect of scale. Localized, short-term effects of suction dredge mining have been documented in a qualitative sense. However, on the scales occupied by fish populations such local disturbances would need a strong cumulative intensity of many operations to have a measurable effect." A true copy of the Bayley study is included as Exhibit 2 to this Declaration.

39. I conclude that area or length of river or streambed worked by suction dredgers as compared to total river length is relatively small compared to the total available area. This is an important factor making the impacts of suction dredgers less than significant.

General Conclusions Concerning Less that Significant Impacts.

40. It is my understanding that the relief sought in this action would permit California suction dredgers to operate under regulations in effect in 2009, when SB 670 halted permit issuance. Those regulations were adopted in connection with a 1994 EIR by the Department.

41. The 1994 EIR concluded that small-scale gold suction dredge mining conducted in accordance with such regulations had a less than significant effect on the environment. The Department stated that, "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."

42. While the 1994 EIR reported a variety of potential adverse effects, including "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," the Report concluded that "based on best available data, it is anticipated that 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.

43. Numerous other studies have found a similar lack of any appreciable adverse effects. Some of the more important studies and environmental impact reports include:

- Results from the 1992 Chugach National Forest, Alaska Report of Water Quality Cumulative Effects of Placer Mining ("impact is less than significant");
- Results from the 1994 Department of Fish & Game, California Final Environmental Impact Report ("impact is less than significant");
- In 2000 the U.S. Environmental Protection Agency reported the results of a study evaluating the performance of 10- 8- and 4-inch gold dredges and concluded environmental impacts from these operations were less than significant.
- Results from the 2001 Siskiyou National Forest, Oregon Draft Environmental Impact Report, Suction Dredging Activities ("impact is less than significant");
- Bayley, 2003, (for Siskiyou National Forest, Oregon) Response of fish to cumulative effects of suction dredge and hydraulic mining in the Illinois subbasin;
- Results from the 2004 Clearwater National Forest, Idaho Environmental Impact Supplemental Statement ("impact is less than significant");
- Results from the 2012 Wallowa-Whitman National Forest, Oregon FINAL Supplemental Environmental Impact Statement ("impact is less than significant"); and
- U.S. Environmental Protection Agencies Biological Evaluation Small Suction Dredge Placer Mining in Idaho ("impact is less than significant").

44. In sum, even before the latest SEIR from the Department of Fish and Wildlife, it was abundantly obvious that small-scale gold suction dredging conducted with reasonable

restrictions has a less-than-significant effect on the environment.

The Noise Issue

45. One of the allegedly significant and unavoidable effects of suction dredging reported in the SEIR is noise from suction dredging. At the outset, it is important to note that the SEIR found less than significant "Effects on the Quality of Recreational Resources or Experience (Impact REC-1).

46. It is true that gasoline-powered engines are a primary component of suction dredge equipment. The operation of such noise-generating equipment in the existing environments of the surrounding recreational areas could result in a perceptible increase in noise. Although noise generated from these engines does not differ from those used in motorized boats or other motorized recreational equipment, the manner in which it is operated may distinguish suction dredging from other activities. Suction dredge activities are generally stationary and equipment is often operated for extended periods throughout the day.

47. The level of noise emissions is related to the size, type, and number of equipment being used, though the potential for exceeding noise standards depends on the local ordinances. That said, numerous other activities may occur in similar settings which also use powered-equipment *i.e.* use of a motor boat, ATVs, etc.) and have potential to violate these standards. Even equipment regularly used in residential areas, (*e.g.* ringing telephones and lawn mowers) violates these standards.

48. It is an unfortunate fact that motors make noise. Small-scale gold suction dredge motors have mufflers and spark arrestors just as the lawn mowers we use at home. Miners would prefer quieter motors, but they employ the available level of technology, and there is no practical means of further reducing noise.

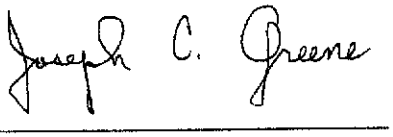
I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

//

//

//

Executed on May 18, 2015.



Joseph Greene

References

HARVEY and LISLE, 1999, Scour of Chinook Salmon Redds on Suction Dredge Tailings, *North American Journal of Fisheries Management* 19:613-617.

KILGORE, U.S. Forest Service, unpublished data

STERN, G. R. 1988. Effects of Suction Dredge Mining on Anadromous Salmonid Habitat in Canyon Creek, Trinity County, California. Masters Degree Thesis, Humboldt State University, 80p.

U.S. Fish and Wildlife Service. 1997. Mainstem Klamath River Fall Chinook Spawning Redd Survey: Fiscal Year 1995 and 1996. USFWS, Coastal California Fish and Wildlife Office, Arcata, CA, 27pp.

QUIHILLALT, R. R. 1999. MAINSTEM TRINITY RIVER FALL CHINOOK SPAWNING REDD SURVEY, 1996 THROUGH 1998. U.S. Fish and Wildlife Service, Arcata, CA

NAWA, R.K., C.A. Frissell, and W.J. Liss. 1990. Life history and persistence of anadromous salmonid stocks in relation to stream habitats and watershed classification. Oak Creek Labs, Oregon State University, Corvallis, OR Performed under contract for Oregon Department of Fish and Wildlife).

HARVEY, 1986, Effects of Suction Gold Dredging on Fish and Invertebrates in Two California Streams, North American Journal of Fisheries Management 6:401-409.

California Department of Fish and Wildlife, 2012, Suction Dredge Permitting Program Final Subsequent Environmental Impact Report, Sacramento, CA.

http://legiscan.com/CA/bill/AB120/2011

COOLEY, 1995, Siskiyou National Forest Service Yardage Estimate, Letter to the Record.

CYR, Fish Biologist, 2005, Interoffice Memorandum to Jerry Boberg, Fish and Watershed Program Manager, Six Rivers National Forest.

BAYLEY, 2003, Response of Fish to Cumulative Effects of Suction Dredge and Hydraulic Mining in the Illinois Subbasin, OR. Oregon Department of Fisheries and Wildlife, Oregon State University, Final Report.

Healey, M.C., and W.R. Heard.1984. Inter- and intra- population variation in the fecundity of Chinook salmon (*Oncorhynchus tshawytscha*) and its relevance to life history theory. Can.J.Fish.Aquat.Sci.41:476-483.

PROOF OF SERVICE

I, Carole Caldwell, hereby declare under penalty of perjury under the laws of the State of California that the following facts are true and correct:

I am a citizen of the United States, over the age of 18 years, and not a party to or interested in the within entitled cause. I am an employee of Murphy & Buchal, LLP and my business address is 3425 SE Yamhill Street, Suite 100, Portland, Oregon 97214.

On May 18, 2015, I caused the following document to be served:

DECLARATION OF JOSEPH GREENE IN SUPPORT OF MINERS' JOINT MOTION FOR INJUNCTION AGAINST DEFENDANTS

by transmitting a true copy in the following manner on the parties listed below:

Honorable Gilbert Ochoa
Superior Court of California
County of San Bernardino
San Bernardino Justice Center
247 West 3rd Street
San Bernardino, CA 92415-0210
Via U.S. Mail

Chair, Judicial Council of California
Administrative Office of the Courts
Attn: Court Programs and Services Division
(Civil Case Coordination)
455 Golden Gate Avenue
San Francisco, CA 94102
Via U.S. Mail

Bradley Solomon
Deputy Attorney General
455 Golden Gate Avenue, Suite 11000
San Francisco, CA 94102-7004
E-mail: Bradley.Solomon@doj.ca.gov
Via E-mail

Marc Melnick
Office of the Attorney General
1515 Clay Street, Suite 2000
Oakland, CA 94612
E-mail: Marc.Melnick@doj.ca.gov
Via E-mail

John Mattox
Department of Fish & Game
1416 Ninth Street, 12th Floor
Sacramento, CA 95814
E-mail: jmattox@dfg.ca.gov
Via E-mail

James R. Wheaton
Environmental Law Foundation
1736 Franklin Street, 9th Floor
Oakland, CA 94612
E-mail: wheaton@envirolaw.org
E-mail: elfservice@envirolaw.org
Via E-mail

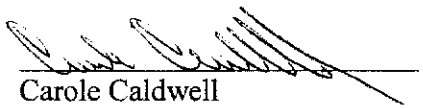
Glen Spain
Pacific Coast Federation of Fisherman's Association
Southwest Regional Office
P.O Box 11170
Eugene, OR 97440
E-mail: fishlifr@aol.com
Via E-mail

Jonathan Evans
351 California St., Suite 600
San Francisco, CA 94104
E-mail: jevans@biologicaldiversity.org
Via E-mail

E. Robert Wright
Friends of the River
1418 20th St., Suite 100
Sacramento, CA 95811
E-mail: bwright@friendsoftheriver.org
Via E-mail

Lynne R. Saxton
Saxton & Associates
912 Cole Street, #140
San Francisco, CA 94117
E-mail: lynne@saxtonlegal.com
Via E-mail

Keith Robert Walker
9646 Mormon Creek Road
Sonora, CA 95370
Via U.S. Mail



Carole Caldwell
Declarant