NEYSA A. FLIGOR (SBN 215876)
STEIN & LUBIN LLP
600 Montgomery Street, 14th Floor
San Francisco, CA 94111
Telephone: (415) 981-0550
Facsimile: (415) 981-4343

Attorneys for Proposed Intervenors
THE NEW 49'ERS, INC., a California corporation, and
RAYMOND W. KOONS, an individual

SUPERIOR COURT OF CALIFORNIA

COUNTY OF ALAMEDA

UNLIMITED CIVIL JURISDICTION

KARUK TRIBE OF CALIFORNIA and LEAF HILLMAN,

Plaintiffs,

v.

CALIFORNIA DEPARTMENT OF FISH AND GAME and RYAN BRODDRICK, Director, California Department of Fish and Game,

Defendants.

Case No. RG05 211597

SECOND DECLARATION OF JOSEPH C. GREENE

Date: January 26, 2006
Time: 9:00 a.m.
Judge: Honorable Bonnie Sabraw
Place: Department 512

Filing Date: January 10, 2005
Trial Date:

Joseph C. Greene, being duly sworn, deposes and says:

1. I am a research biologist. I am informed that a previous declaration setting forth my qualifications and opinions concerning the general impacts of suction dredge mining has previously been filed with this Court as Exhibit 3 to the Declaration of Neysa Fligor, so I will not repeat that testimony here.

2. I have reviewed the Proposed Stipulated Judgment through which the Department of Fish and Game proposes to change suction dredge mining regulations concerning, among other areas, the Klamath River and its tributaries. During the month of August 2005 my colleague

Claudia J. Wise and I were working on the Klamath River and its tributaries, performing a preliminary investigation to determine if areas of the river were thermally stratified. In particular, we examined the question how rapidly cooler water from tributaries entering the Klamath River mixed with the warmer Klamath River water.

3. Water temperature is important for the survival of salmonids (salmon and steelhead), because salmonids generally cannot survive extended exposure to water temperatures above 20^{o}C, and will generally seek refuge in cooler areas when river temperatures rise to this level.

3. Among other things, the Proposed Stipulated Judgment identifies certain "thermal refugia" consisting of "the confluence of" certain tributaries of the Klamath River, and states that suction dredge mining shall be prohibited "five hundred feet up and downstream on the main stem from the confluence".

4. I have attached two tables showing the locations and the water temperatures that we measured. Each table is supported by a Chart which assists in visualizing the data. Figure 1 shows that during this study the mainstream Klamath River ranged in temperature from a low of 22.44 ^{o}C, immediately downstream from Iron Gate Dam, to a high of 26.69 ^{o}C upstream of Indian Creek.. All of the measurements taken in the mainstream Klamath River during this survey exceeded the 20^{o}C upper incipient lethal temperature for salmonids.

5. The confluent streams to the Klamath River, listed in Table 2, ranged in temperature from 15.34^{o}C in Mill Creek to 22.57^{o}C in Elk Creek (measured Aug. 9, 2005). Obviously, tributaries above 20^{o}C cannot serve as thermal refugia for salmonids.

6. Generally speaking, it appeared during this preliminary survey that refugia were small in size when not altogether absent. To illustrate this numbers 1 through 4 were placed on Figure 2. Sites 1 and 2 are up-and-downstream from Elk Creek (measured Aug. 6, 2005). Sites 3 and 4 are similar locations up-and-downstream of Elk Creek (measured Aug. 9, 2005). The temperatures shown here illustrate that there was little or no area within the Klamath River at the confluence of Elk Creek that could be defined as temperature refugia for salmonids or other species of fish. Furthermore, all measurements made in the mainstream Klamath River

demonstrated that the system was nowhere thermally stratified and the temperatures were statistically the same from top to bottom.

7. The streams upstream of Elk Creek, shown in Chart 2, were numbered and illustrated because these locations would not normally be determined to be refugia. The study shows that some very nice low-temperature streams were flowing into the mainstem Klamath River but, their volumes were so low as to not have any important impact on the Klamath River temperatures.

8. While sampling at Tom Martin Creek we were approached by staff of the Karuk tribe that were also measuring water quality of the river system. They were using a YSI multiparameter meter for instantaneous water quality measurements. It so happened that we were also using a YSI multiparameter meter, although ours was a more-advanced model (model 556) that had just come into production. The young man operating the meter, after inquiring about what we were doing, told us we should contact Mr Toz Soto, his boss, because the Tribe had a lot of Klamath River water quality data. Mr. Brinker also told us the Karuk Tribe has considered using suction dredges to improve (deepen) refugia. At that point Mr. Brinker's associate signaled for him to keep quiet and called him away. I did not contact Mr. Soto. I believe that the Karuk Tribe does have extensive water quality analysis records. For example, I have in my possession reports on water quality prepared by the Karuk Tribe dated as early as May 1995 and February 1997.

9. It is my understanding that the suction dredge miners seeking to intervene in this action seek, among other things, to have any changes to the suction dredge mining regulations developed through the normal, public process during which interested parties are given an opportunity to present data such as that presented above. While the data my colleague and I collected were preliminary, the information was taken by the highest-quality methods available today. Such data, together with the information summarized in my previous declaration, suggest that the regulations set forth in the Proposed Stipulated Judgment would not be supported by a full examination of the available information. Our data raises the reasonable question as to why modified regulations would prevent suction dredging activity within 500 feet of many areas where

no refugias are likely to exist; and, for example, the question of why dredging season should be eliminated altogether in Elk Creek. If an ordinary rulemaking process were utilized to modify suction dredge regulations, all of the available information could be gathered from all interested parties and used to create reasonable regulations that afford fish the required protection, rather than basing regulations on the position of one of many interested parties, thereby avoiding regulatory burdens on the general public that serve no useful purpose.

10. A common misconception concerning suction dredging is that the material pumped from the bottom of the riverbed passes though a pump, and that biological organisms may be impacted by pump impeller blades. In fact, suction dredge pumps operate with an impeller pumping water from a source other than the river bottom, and passing such water through a narrowing area which, through the "venturi effect" creates a vacuum that sucks water from the river bottom without passing it through the impeller. This design is necessary to avoid damage to the pump impeller from sand and gravel that would otherwise strike the impeller, and has the additional benefit of preventing damage to biological organisms.

11. In recent years, the design of suction dredges has also changed from the older, "crash box" design which caused the material and materials sucked from the river bottom to strike the sides of a box, to a new design in which the suction tube simply widens out, lowering velocities and causing the heavier material to drop out. The newer design, now in widespread use, will also create less impact upon any biological organism passing through the suction tube.

12. A public process pursuant to CEQA to consider changes to the suction dredge mining regulations would take newer information into account concerning the design and operation of suction dredges and fashion regulations more closely tailored to the actual impacts and river conditions.

I swear under penalty of perjury that these statements are true and correct to the best of my knowledge.

Dated: January 9, 2006

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Joseph C. Greene

Figure 1. Klamath River Temperature Measurements

KLAMATH RIVER Site Description	Date	Temp. °C
Downstream from bridge below Iron Gate Dam	08/17/05	22.44
At Trees of Heaven Campground	08/13/05	24.15
Upstream from Beaver Creek	08/13/05	23.20
From the Cherry Flats bridge	08/11/05	24.50
From the bridge upstream from Horse Creek.	08/11/05	24.66
Upstream of the Kinsman Creek confluence	08/07/05	25.58
Downstream of the Kinsman Creek confluence	08/07/05	25.70
Upstream of the Tom Martin Creek confluence	08/11/05	23.88
In the large quiet water eddy directly off of Tom Martin Creek	08/11/05	23.09
2.3 meters from shore at the Mill Creek confluence	08/11/05	23.29
6.0 meters from shore at the Mill Creek confluence	08/11/05	23.20
Downstream of confluence the Mill Creek confluence	08/11/05	23.32
Schutt's Gulch #1 upstream surface water	08/08/05	25.03
Schutt's Gulch #1 upstream on streambed	08/08/05	25.02
Schutt's Gulch #1 on bottom of Dredge Hole	08/08/05	25.07
Schutt's Gulch #2 upstream surface water	08/08/05	25.17
Schutt's Gulch #2 upstream on streambed	08/08/05	25.13
Schutt's Gulch #2 on bottom of dredge	08/08/05	25.19
Schutt's Gulch #3 upstream surface water	08/08/05	25.21
Schutt's Gulch #3 upstream on streambed	08/08/05	25.22
Schutt's Gulch #3 on bottom of dredge hole	08/08/05	25.22
Near Seattle Creek upstream from dredge hole	08/07/05	25.37
Near Seattle Creek upstream from dredge hole	08/07/05	25.38
Near Seattle Creek halfway down shoreside sidewall of dredge hole	08/07/05	25.42
Near Seattle Creek on the bottom of dredge hole	08/07/05	25.44
Upstream from Indian Creek	08/09/05	26.69
Downstream from the confluence with Indian Creek	08/06/05	23.67
Downstream from the confluence with Indian Creek	08/09/05	23.08
At K-19 just upstream from the dredge hole.	08/13/05	23.13
At K-19, 10 m from upstream edge of dredge hole	08/13/05	23.21
Upstream from Elk Creek	08/06/05	24.68
Surface water collected directly off of confluence with Elk Creek	08/06/05	24.90
Directly off of the Elk Creek confluence. About 1m below surface.	08/06/05	24.61
Surface water downstream from Elk Creek confluence.	08/06/05	24.27
Surface water upstream from Elk Creek	08/09/05	26.15
Klamath River surface water (Measured 17 meters into the river and 6.5 meters downstream from the confluence).	08/09/05	26.02
Klamath River bottom water (Measured 17 meters into the river and 6.5 meters downstream from the confluence, and about 0.3 meters off above the bottom).	08/09/05	25.72
In the Klamath River/Elk Creek mixing zone	08/09/05	25.85
Upstream from Clear Creek.	08/12/05	23.97

Table 2. Klamath River and Tributaries Temperature Measurements

KLAMATH RIVER Site Description	Date	Temp. °C
Klamath River upstream of the Tom Martin Creek confluence	08/11/05	23.88
Tom Martin Creek (measured along Hwy 96)	08/11/05	16.04
In the large quiet water eddy directly off of Tom Martin Creek	08/11/05	23.09
Mill Creek (from the culvert on Hwy 96)	08/11/05	16.51
Mill Creek (at its confluence with Klamath River)	08/11/05	15.34
2.3 meters from shore at the Mill Creek confluence	08/11/05	23.29
6.0 meters from shore at the Mill Creek confluence	08/11/05	23.20
Downstream of confluence the Mill Creek confluence	08/11/05	23.32
Klamath River upstream from Indian Creek	08/09/05	26.69
Indian Creek	08/09/05	20.68
Klamath River downstream from the confluence with Indian Creek	08/09/05	23.08
Klamath River downstream from the confluence with Indian Creek	08/06/05	23.67
Klamath River upstream from Elk Creek	08/06/05	24.68
Elk Creek (sample taken in Elk Creek, 180 feet upstream from Klamath River)	08/06/05	19.30
Elk Creek (In Elk Creek at the confluence with the Klamath River)	08/06/05	19.43
Klamath River surface water collected directly off of confluence with Elk Creek	08/06/05	24.90
Klamath River directly off of the Elk Creek confluence. About 1m below surface.	08/06/05	24.61
Klamath River surface water downstream, about 3 meters, from Elk Creek confluence and about 2 meters offshore.	08/06/05	24.27
Klamath River surface water upstream from Elk Creek	08/09/05	26.15
Elk Creek (sample taken in Elk Creek, 180 feet upstream from Klamath River)	08/09/05	22.57
Klamath River surface water (Measured 17 meters into the river and 6.5 meters downstream from the confluence).	08/09/05	26.02
Klamath River bottom water (Measured 17 meters into the river and 6.5 meters downstream from the confluence, and about 0.3 meters off above the bottom).	08/09/05	25.72
In the Klamath River/Elk Creek mixing zone about 3 meters directly off of Elk Creek	08/09/05	25.85