The New 49'ers

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Mark Stopher
California Department of Fish & Game
601 Locust Street
Redding, CA 96001

SUBJECT: Calculating volume capacities correctly in the suction dredging EIR

Dear Mr. Stopher,

I have spent most of my adult life working within the suction dredge industry in California. I also was part of the industry working group which assisted in preparation of the EIR that was completed in 1994. I have extensive experience in suction dredging. I have personally developed many of the innovations within the industry. I have also developed the most productive, standardized teamwork procedures being used within the industry. I have been involved with commercial dredging projects all around the world, and am generally regarded as a leading expert in the field.

I have also owned and operated The New 49'ers Prospecting Association for the past 23+ summer mining seasons in California. As part of my duties, I have trained hundreds of people in underwater mining techniques. I have also devoted countless hours observing members of our association (dredging) in hopes of improving the amount of gold that they find. As we have more than 2,000 active members, and I have devoted much of the last 23+ summers either teaching or watching them, it would be safe to say that I have a lot of practical experience in this field. I have written the best-selling manuals and produced the best-selling video presentations (worldwide) on suction dredging. Both federal and California State courts have acknowledged me as an expert in the field of suction dredging.

Your Volume Calculations are Grossly Incorrect

In going through your Initial Study SEIR, I see that quite a lot of work was invested into projected volume capacities of the different sized dredges. I can see by the conclusions that the authors have relied largely upon the promotional materials being advertised by dredge manufacturers. This is unfortunate; because for the most part, they have completely overlooked the true nature of streambed construction. While it is not my purpose to be confrontational here, this is to inform you that the authors' lack of understanding of what actually happens underwater with the dredging process grossly undermines other important parts of your Initial Study SEIR

With few exceptions, the conclusions within the Initial Study SEIR assume that the places where dredgers operate consist of streambeds which are almost entirely made up of classified sediment or gravel, all or most which can easily be sucked into a dredge suction nozzle. Under this theory, the authors predict that larger hose size and more horsepower will proportionately increase volume capacity.

There is a mention about some rocks and cobbles being normally stacked off to one side of the dredge excavation. But the concept is treated as some small part of the process, rather than the controlling factor of the entire process.

These conclusions, along with your volume projections, do not meet reality in the field. They also tend to demonstrate that the authors have a gross misconception of what is actually involved in the dredging process.

Since the Initial Study SEIR is entirely concerned with impacts resulting from the dredging process, in good faith, I am going to invest my best effort here into providing you with a thorough explanation.

Rather than completely rewrite the material, I am going to copy some text out of my books on the key subjects here. I am also going to provide you with some links to important articles which I have written on the different matters involved; articles which provide images which will help with visual demonstration. These are the definitive work on these subjects which have been in existence for many years. It is not something I just put together for your EIR process. This is out of the text book material being used to teach suction dredging all over the world.

For starters, because everything that happens underwater comes back to this, let's please describe the streambed material which dredgers normally have to deal with:

HARD-PACKED STREAMBED
(Chapter 3, Gold Dredger's Handbook)

A hard-packed streambed consists of material which has been seated tightly together during a major flood storm as the water force and turbulence tapered off enough to allow a bed to form.

During a large flood storm, water forces can and will rip apart existing streambeds and wash the material downriver in a flow of slurry. It is this flow of heavy material across the bedrock which cuts the channel deeper over geologic time. Once streambed material is placed into a slurry-flow during a major flood storm, most gold that is present will quickly work its way down to the bottom of the material which is in fluid motion. That gold will then be directed down the waterway along its own path, washing directly across the stationary surface of the bedrock, or across the top of a stationary layer of hard-packed streambed that is not being moved by the storm.

Different rocks, having different sizes, weights, and shapes, have different resistances to the flow of water. By resistance, I mean holding power against the flow of water and slurry during the flood storm. Said another way, it would take more force of water to push a heavier rock than a lighter one, or a rounder one compared to a flat rock.

How a rock is positioned in the stream of water and slurry also determines its "holding power" or resistance, to the water's force. A rock positioned in one direction will have a given amount of surface area to absorb the thrust of the storm flow. The same rock, positioned in another way, will be more streamlined to the storm's thrust. So the same rock might have more or less holding power depending upon its position in the flow, as shown in Figure 3-2.

Fig. 3-2. The same rock, positioned differently along the bottom of the waterway, may have a different amount of holding power against the water's flow during a flood storm.

Therefore, as a rock is being pushed along the bottom of a waterway by the storm's flow, it has a greater chance of becoming seated if it gets into a more streamlined position, as shown in Figure 3-3.

Fig. 3-3. Most key rocks within a hard-packed streambed will be positioned in a streamlined direction against the flow.

During the peak flow period of a major flood storm, there is probably too much water force and violence for very many rocks to seat themselves permanently along the bottom of the waterway. But as the rains or snow runoff diminishes and the water forces let up, there will be a time when rocks can begin seating themselves and start building a bed. This is when hard-packed streambeds are formed.

Since we are talking about it, it is important to point out that since gold is so much heavier than streambed material, it will seat itself along the bottom of the waterway long before the streambed starts forming. First the gold deposits itself along the surface of whatever the storm flow is washing across. That could be bedrock, or it could be a stationary layer of streambed which has not been torn up by the storm. Then, when the storm flow begins to diminish, a new bed builds up over top of the gold. This is the main reason why you find most high-grade pay-streaks concentrated at the bottom of hard-packed streambed layers.

In the building of a natural streambed, rocks are usually seated as their own resistance to the thrust of the water becomes great enough that they become seated. In a rather constant stream of flow, this often occurs when the rock is positioned to the point of least resistance to the flow. Thus, streambeds are formed with most of the rocks positioned to the least resistance to the flow of water.

Actually, most of the key rocks within a streambed were seated in place because of some vacuum that was created as a result of the dynamic interplay between the rock, the underlying stationary surface and the flow of water. Rocks actually get sucked into the vacuum and automatically position themselves to the least resistance of the flow. If a rock cannot fit into a hole well enough to resist the flow, it will get washed away, leaving room for another rock that will perhaps fit better. As such, a natural streambed will actually construct itself to withstand the greatest possible storm flow that it can hold up against.

Fig. 3-4. Several rocks seating on bottom (top view).

Once several rocks have become seated side by side, as demonstrated in Figure 4, newer places are created between them where other rocks can then seat themselves; and the bed builds itself upward, as shown in Figure 3-5, with most of the rocks positioned to the least resistance of the water's force.

Fig. 3-5. Streambeds form with most of the key rocks pointing into, and slightly downward, to the storm flow.

As the streambed is formed, smaller pockets are created between the rocks because of their different shapes. As the beds build upward, smaller-sized rocks are sucked down into the vacuums created by these new pockets, and they then become seated there. Then gravel fills the pockets between the rocks, and sand and silt fills the spaces between the gravel-sized material. Every available space within the bed is filled tightly with material, and the entire structure gets packed tight as shown in Figure 3-6.

Fig. 3-6. The bed forms with smaller-sized material becoming seated and filling in all the spaces between the larger-sized rocks.

Entire beds construct themselves along the bottom of waterways during major flood storms. Then, at some later time, another flood, causing another huge increase of water force and turbulence, can wash the entire bed away, only to have another bed form again once the storm flows taper off. In this way, riverbeds are formed and swept away again and again by various floods over geologic time.

It is vital for gold dredgers to be very familiar with what hard-packed streambeds look like in their natural state. **Because most pay-streaks will be located along the bottom edge of hard-packed streambeds.** To help you understand what hard-packed streambeds look like, sometimes you can find exposed natural streambed along the edges of an active river or stream. Please see Figures 3-7 and 3-8.

Fig. 3-7. Side view of natural streambed.

Fig. 3-8. Natural streambed left high and dry up just below the trees.

If you drive along a river road, you often can see the older streambeds right alongside the road where construction cuts have exposed the hard-packed material.

Fig. 3-9. Natural streambed exposed by road construction.

Sometimes these old streambeds can be found where ancient streams and rivers used to, but where existing waterways are not present.

The question is often asked, what is the difference between natural and virgin (I prefer to call it *original*) streambed***?*** ***Original streambed*** is a naturally-formed hard-packed layer that has never been disturbed by man. It is a place that has never been mined before. You will not find <u>any</u> man-made objects underneath or inside of original streambed, although you often find them lying on top. All of the gold that has been deposited underneath existing original streambed still remains there today. We find a lot of original streambed at the bottom of some of the deeper rivers in California where the early-timers were not able or willing to go.

Natural streambed is <u>any</u> hard-packed layer that has been formed by a major flood storm. While this includes original material, it also includes any layer of streambed that has been formed by flood storms during the time since portions of some rivers and streams were mined by earlier generations of gold miners.

It is important to understand that a major flood storm can redeposit new hard-packed streambed and entirely new placer deposits into an area which has already been gone through by earlier mining activities. Any area which formed rich pay-streaks during the past is likely to do so again if more gold is washed down into that area by a more recent flood storm (like the great flood of 1964 in most of the western states)..

As an example, the riffles within a sluice box will recover gold again and again after they are cleaned out. It is just a matter of washing new gold-bearing material over the riffles. A proven gold-bearing waterway will react in much the same way**.** Therefore, it usually makes little difference whether an area had been mined by the early-timers. A new major flood storm (since the earlier mining took place) reshuffles new and remaining gold within the waterway and can create new opportunities in the very same areas which were mined by earlier generations of miners.

Those areas which were once heavily mined by the early-timers were usually mined because they contained rich pay-streaks. Most often, those geologic conditions which formed the original pay-streaks have not changed. Those very same factors which caused gold to concentrate there once, may have caused gold to concentrate there again during any of the major storms which have occurred in the area since the earlier mining activity took place.

So it can be greatly to your advantage to know where earlier miners recovered a lot of gold. The very same areas are often paying gold dredgers just as well or better today. You do <u>not</u> have to find original streambed material to find a rich gold deposit. **Most often, though, you <u>do</u> need to find hard-packed streambed. The storm flow dynamics that created the hard-pack will also have created pay-streaks underneath the hard-pack.**

This is important: *If you are finding hard-pack, then no miner has been there before you since the major flood storm occurred that created the hard-pack and any gold deposits which may lie underneath.*

You should <u>not</u> expect to find very much gold in lose streambed material or sand. For the most part, this type of material is moved around and deposited in the river during smaller storms which are not large enough to transport important amounts of gold within the waterway.

Remember: *Almost all of the high-grade gold deposits within the waterway were put in place by major flood storms.* Such storms almost always left a layer of hard-packed streambed covering the gold deposits. Those deposits will remain covered up and protected there until exposed again by later major flood storm, or discovered by a suction dredger who dredges a sample hole down to find the bottom of the hard-packed layer.

So your sampling target is almost always to reach the bottom of hard-packed layers.

This is important: While the authors of your Initial Study SEIR might go out into the field and find some places where sizable deposits of loose sediment or gravel could be sucked through a dredge, it is a near certainty that they will not recover any gold from that type of stream-bottom material. This is because light gravel, sand and silt within most California waterways will generally be found to have an average specific gravity of around 3.5. Deposits of these types of material generally form during lower water periods or light storm events.

Natural gold has a specific gravity of around 19. It is, with a rare exception, around five times heavier than the average streambed material found in most California waterways. It requires a major flood event to move gold down a waterway. The force must be enough to tear up hard-packed streambeds (your biologists use the term "armored"), and then lay them down again as the storm subsides. These streambeds are made up mostly of rocks that are too large to be sucked up into the (any size) suction nozzle of a dredge. So, contrary to the conclusions set forth in your Initial Study SEIR, if 80% of a streambed consists of rocks that are too large to fit into a suction nozzle, greater horsepower will not increase volume production. In fact, too much suction power makes it more difficult to control the nozzle around so many obstacles!

For you to gain a better understanding of this, I ask that you please read the following two articles:

Major Flood Storms & Pay-streaks:
http://www.goldgold.com/stories/stormspaystreaks.htm

Prospecting for Gold in Hard-packed Streambeds
http://www.goldgold.com/stories/hardpackstream.htm

Contrary to the (volume) assumptions made by the authors of your Initial Study SEIR, rather than going down to the bottom of a stream or river and just sucking up gravel or sediment, the suction dredging process mostly is about freeing (sometimes the beds are very tightly locked or glued together), moving and correctly placing cobbles and boulders that are too large to go up the suction nozzle.

Since it is vitally important that you understand what really happens during the dredging process, I ask you to please read the following two articles:

Production Gold Dredging
http://www.goldgold.com/stories/productiondredging.htm

Teamwork in Production Gold Dredging
http://www.goldgold.com/stories/teamproduction.htm

Please understand that there is a purpose to the viewpoint which I express in the two articles listed just above. The idea is that increased volume allows:

1) Sample holes to be completed more quickly so that high-grade deposits can be found more often, if at all, and;

2) Once a high-grade deposit is located, more volume of production will allow the dredgers to recover more gold.

If you read my (extensive) writings on the subject of volume capacity in suction dredging, you will never find any explanation (about volume capacity) consistent with the conclusions within your Initial Study SEIR. All of my explanations about volume are concerned with the breaking free, movement and proper placement of the rocks which are too large to be excavated through the dredge nozzle. On average, using an 8 or 10-inch dredge (nozzle opening would be 8-inches) this comprises at least 75% (maybe 85%) of the material which makes up a normal hard-packed streambed. This means that at least 75% of the material or more must be moved out of the way by hand (or a mechanical winch in the case of boulders).

If you are in good athletic condition, ask yourself how many cubic yards of rocks you can move some distance underwater while fighting the current; maybe one?

When I say *"moved out of the way,"* I am discussing a very substantial subject. This is because there are many variables. Deeper excavations require the oversized material to be moved further to the rear of the excavation. That requires more time and effort on every rock. Otherwise, as the hole is excavated deeper, there will not be room for the additional oversized material which must be removed. Sometimes, the dredger must turn around and move the rocks out of the way to make more room (or they begin sliding back into the excavation). Sometimes the rocks need to be moved out of the way several times. A slanted taper must be maintained at the back of the excavation so that some rocks which are too heavy to lift can be rolled up and out of the excavation. This all takes time and work.

It is vitally important that you understand that all of this work is straight physical labor. It consists of using pry bars to free rocks, and then lifting, packing, tossing, rolling or winching them out of the excavation. **This is the dredging process.** Only the smaller-sized material (which can fit into the suction nozzle) is sucked up into the dredge. The suction-part comprises only a small fraction of the overall dredging process. You are only sucking the material contained between the overwhelming volume of oversized material.

Nearly every California waterway is cool enough even during the warmest months of the year that a wet-suit is required if the dredger wants to spend more than just a short time dredging. Wearing a wet-suit requires the addition of a substantial amount of lead weight so the dredger can remain heavy and stable upon the bottom of the waterway. Otherwise, you don't have footing and leverage to move things around in a current of water. While each person is different, the average amount of weight required is 60 pounds. I personally wear 75 to 100 pounds, depending upon how fast the Klamath River is flowing where I choose to dredge.

So, in addition to the effort required to move oversized material, every dredger is also laboring against the floatation of the wetsuit (which is spread out across the whole body), and the downward pressure of the heavy weight belt (which is concentrated around the waist; mostly on the person's back), and the force of the moving water (which wants to wash the person downstream); and he or she is trying to maintain balance and control while working against all of these things together along a very uneven bottom. Any experienced suction dredger will tell you that the process is 100% labor. Any beginner will tell you it is brutally difficult.

As I outlined in the articles above, success and forward-progress all depends upon how effectively a dredger is able to move the oversized streambed material out of his or her excavation. The amount of effort required to be good at suction dredging is comparable to the most competitive of physical sports. A combination of competitive wrestling and heavy weightlifting would be similar in the type of physical activity. By this, I mean getting out on the mat with someone else and trying to win.

There are <u>many</u> variables which will affect dredge volumes. For example, in locations where a large percentage of the streambed is made up of boulders and/or larger-sized rocks, a dredger can actually produce more volume using a smaller-sized dredge hose. This is because a smaller hose is easier to manipulate around in tight places. Smaller-size dredges can also often get more accomplished when used in fast-water areas (because it is too difficult to hold a larger-sized suction hose against a fast current). On these subjects, I ask that you please read the following two articles:

> **Boulders & Winching Techniques**
> http://www.goldgold.com/stories/boulderwinching.htm

> **Fast Water Dredging**
> http://www.goldgold.com/stories/fastwaterdredge.htm

Before the moratorium was imposed this past season, I was personally dredging in a section of fast water (Klamath River) where I devoted nearly all of my time and effort just trying to maintain a position out in the fast water (and then regaining the position when it was lost) so every once in a while, I could suck up a small amount of pay-dirt from around single cobble-sized rocks which were glued to the bedrock. Each rock needed to be broken free with a bar while I held the suction hose between my knees to keep it from being washed away. Most of my effort was just holding a position out in the river. While my gold production made the effort worthwhile, I estimate that my total volume production was less than 3-cubic feet per day. Streambeds tend to be very shallow or non-existent in fast water areas. Sometimes the gold is in exposed cracks or pockets in the bedrock with no streambed on top.

So, experience and effort does <u>not</u> always relate to the volume of streambed material that is sucked into a dredge.

I have also been in <u>many</u> situations where progress depended upon a winch, rather then the size of a dredge. Most often, when big rocks are involved, success is not related to volume production through a larger-sized dredge. I have been known to spend an entire day just trying to winch a single rock out of my way – and failed to do it!

On the subject of volume, one thing that was completely overlooked in your Initial Study SEIR is the experience of the dredge operator. As discussed above, I personally have a great deal of experience in either teaching and/or observing (thousands) of suction dredgers. Placing all the points I made above in perspective, I can tell you with certainty that volume capacity has a lot less to do with the size of the dredge, than it does with the following two factors:

1) Experience: With a rare exception, beginners spend most of their time either flailing around in the water trying to keep their balance, moving the oversized material just far enough to suck the gravel out of one small place and becoming overwhelmed with rocks so they cannot make further progress, or working on freeing plug-ups from their suction hose or venturi. Plug-ups are a <u>very</u> important subject here. So I ask that you please read the following article:

> **Knocking Out Plug-ups**
> http://www.goldgold.com/plugups.htm

I have spent <u>countless</u> hours watching beginners using up nearly all of their time and (limited) physical effort trying to free plug-ups (with 60-to-75 pounds of lead strapped on their bodies). This is because a beginner has not learned which rocks, or combination of rocks, to not suck up the nozzle. There is quite a substantial learning curve in this process! An average beginner, using a 5-inch dredge, cannot expect to process more than just a few cubic feet of material through his or her dredge in a full day of work. That's the reality. Talking about a "full day of work" brings us to the second factor:

2) **Capacity to do physical labor:** We performed an industry-wide survey of active gold miners during 2008 to our email action list of approximately 12,000 subscribers. We performed a similar survey about 10 years ago. Both surveys came out with the same average age of prospectors today -- which is 57 years old (this is also the average age of our New 49'er members).

   The survey also showed that 62 % of our average New 49'er members purchased suction dredge permits during 2008. The New 49'ers have more than 2,000 active members. This means approximately 1,240 of our New 49'er members purchased California suction dredge permits during 2008. According to the graph published in your Initial Study SEIR, this is more than half of the suction dredge permits you issued during that year.

   Since all or most of our New 49'er members spend time dredging or otherwise prospecting along mining properties which I personally manage along the Klamath River and its tributaries in Siskiyou County, I have a <u>very</u> good perception of how much dredging is taking place and what the impacts are. In fact, I am <u>certain</u> that I have a better perception than anyone else, since I personally am the person that goes around to see what the members are doing and how well they are recovering gold. This has been true for the last 23+ years of my life. The main reason for this is because I am the person who promotes and manages the activity. Therefore, I am also the person who many of our members hold accountable when the volume of gold they are finding does not meet their personal expectations. Disappointed members make me uncomfortable. So I do my best to go out and help when I can.

   Prior to being an underwater miner, I was a navy SEAL. I passed through BUDs training class 76 right at the downturn of the Viet Nam war. Training was so difficult at that time, only 7 of the 57 pre-qualified trainees that started my class made it through the training. I was one of those 7 guys. So I have a <u>very</u> realistic perspective about what it takes to complete a difficult mission; especially when the task requires intense physical output.

   I can tell you with absolute certainty that the reason most suction dredgers do not recover as much gold as they hope for, is that they usually are <u>not</u> physically fit enough to complete very much of the work that is required. I face this difficulty on a continuous basis as I try and assist our members. The physical activity is so demanding that it is on the order of placing a person (who has done no pre-fitness training) in the ring with someone else to have a wrestling contest until both persons collapse from physical exhaustion. Ask <u>any</u> person who has gone out dredging (with a serious intention of getting any amount of meaningful work accomplished), and that person will certainly tell you it was the hardest work he or she ever did. Now, place our average member (57 years old), who, as an American, has, for the most part, not had to perform hard physical labor for the past 30 years or so, out in the river or stream where he or she can strap on 60 pounds of lead and try to do some serious dredging – or to even get him or herself underwater to dabble at it just a bit.

   The work is brutal!

Several years ago, when The New 49'ers opened up around 6 miles of the Main Stem Salmon River to our members, quite a few of our members rushed over there and placed their dredges in the water. Mr. Stopher; you will remember this, because it was your office that fielded all or most of the complaints by local residents who believed (they said) that we were harming the environment by having too many dredges on the Salmon River.

At the same time, from my side, I was receiving a lot of complaints from members that there was no gold present on the Main Stem of the Salmon River. After a while, all of the noise (from both sides) prompted me and my right-hand man (Craig Colt) to swim the entire 6-mile stretch of Salmon river with mask & snorkel to see what had actually been done by our members. From the local perspective (the people complaining to you), we expected to find the bottom of the river all torn up. The mystery we were trying to resolve is why our members were not finding any gold.

And it did not take long to figure out the mystery. The Salmon River has very clear water. You can see the entire river bottom across from one side to the other. If you are looking, it is impossible to miss any excavation made by a dredge. Through our survey of 6 miles, Craig and I only found 13 excavations in all. Only one excavation was significant. The person had been following a shelf of bedrock with shallow streambed using a 6-inch dredge; he was working hard; and he was recovering gold. In all, he had processed maybe 10 cubic yards of material in a month or 6 weeks of work**. None of the other 12 dredge excavations we found were larger than a wash tub!**

Here is the answer to the mystery and a hard reality within our field: Just because a dredge is floating on the water does not mean it is being started. Just because the dredge is started does not mean that any meaningful amount of excavation is being done.

All dredge operators are not equal. While it does not seem like it to someone without direct experience, I can tell you with authority that there is a very substantial learning curve to master before a beginner is able to make good, steady progress through a hard-packed streambed. There are many variables. Physical fitness is the starting point. Most Americans are not physically fit enough to enter a competitive wrestling match. Those few that are, still must to learn which rocks not to suck up or they will spend 50% or more of their physical effort just trying to free plug-ups from their suction hose. And that is just the beginning of the learning curve.

Those (very) few of us who actually know how to do it have kind of a running joke along the Klamath River that more dredges sit idle than run; and most that run only run a few hours per week, at most. I suggest you talk to your wardens to confirm this. Most suction dredges sit idle, providing additional shade and shelter for fish. That's it!

There is a reason I have taken so much time to explain all this to you. This is because you are attempting to perform an Environmental Impact Report on a very specialized activity that you know very little about. By the amount of work invested, I'm sure you are doing your best. But you are grossly misinterpreting the dredging process in the way your Initial Study SEIR has attempted to project volume capacities (and, therefore potential environmental impacts) by taking the maximum volume capacities which are advertised by dredge manufacturers (which are projections based upon sucking sand at water level, at sea level) and multiplying those numbers by an average number of hours and days which were derived in a DFG survey of dredgers during 1994. This compilation suggests that there is no person involved with your EIR team that has any real experience operating a suction dredge in pursuit of gold. That's too bad. But it does not need to be fatal.

To obtain a better idea of volumes, I suggest you please have your team view my DVD presentation, **"Successful Gold Dredging Made Easy"** (http://www.promackmining.com/mining_supplies/cart.php?m=product_detail&p=12). I would like to submit this DVD at no cost as input to your process. This way, even if you have not done the activity on your own, you can watch me perform the activity at optimum speed in clear water using a 5-inch dredge excavating a dredge hole in hard-packed streambed. Please just reply back and tell me how many DVD's I should send, and to where?

When watching the underwater dredging process, please watch what I must do to make any progress (nearly all the effort requires the movement of oversized rocks). If you watch, you can directly estimate how much of the streambed material is excavated by the dredge (maximum 15%?), and how much must be moved out of the excavation by hand in a mild current which I have to fight. While the video makes the process look easier than it is, believe me when I say that the video demonstrates the process as fast as it will go using a 5-inch dredge (if anyone can do it faster than my demonstration, I have yet to meet him). Regardless of what the voice says on the video, if you look, you can gauge the amount of volume being moved. You can also gauge the percentage of volume which is being processed through the dredge (this is the part that most of the environmental concerns are about).

If you do this, you are going to come to my personal conclusion, based upon observing half of your permitted dredgers in California: **It's a drop in the bucket!**

My best estimate is that under the best of conditions using my 8-inch dredge by myself, I personally can process one-to-two cubic yards of material in a full day of dredging. Only about 15% of that material passes through the dredge. The other 80-to-85% is simply rocks being moved out of the way by hand. Once the initial excavation is established, those rocks are used to fill in the hole behind me as I move forward.

Our average dredging-member of The New 49'ers (more than half the permits the Department is issuing) uses a 3-inch, 4-inch or 5-inch dredge. Most use 4-inchers. Very few use larger dredges. While there is an occasional exception, our average member using a 5-inch dredge produces only 20% of what I can do using the very same dredge. I am an animal with 30 years experience in pursuit of high-grade gold deposits at the bottom of fast-moving rivers. Under normal circumstances, I can process a cubic yard using a 5-inch dredge. Only about 15% of that goes up the nozzle. Cut that number in half using a 4-inch dredge.

Since the average age of prospectors outside of The New 49'ers is also 57, I suggest average production capacities in other areas will be about the same. The work is the same wherever you go!

This means that the average dredger (most who hold permits don't operate their dredges most of the time) processes less than 1/5th of a cubic yard through his or her dredge on the days that he or she operates. Yes; there are exceptions in the case of younger, more experienced, aggressive suction dredgers (like me). But these are a very small minority. You cannot use the few aggressive dredgers to characterize the figure of 2,500 dredge permits (2008). This would be grossly inaccurate. And even if you did, you would still need to downsize your projections by many times. You guys are way off the mark on this!

The last Department representative I am aware of who took a real practical interest in the actual impacts from suction dredging along the Klamath River and its tributaries (where half the State's permitees are operating) was Dennis Maria out of your office in Yreka (he's now retired). But, in response to all the complaints by locals to your office concerning New 49'er dredging along the Salmon River several years ago, Mr. Maria conducted an extensive investigation and concluded that he could establish no significant negative impact from the accumulated activity. I will attach Mr. Maria's formal report along with these comments to the same email.

In conclusion, your Initial Study SEIR needs modification to describe the suction dredging process as it actually is, along with the difficulties and many variables which are involved. It should acknowledge how physically demanding the activity is and how little the average dredger actually gets accomplished underwater. It should acknowledge that only approximately 15% of the material is small enough to be sucked up into a dredge. Nearly all of the work involves moving clean rocks around on the bottom of the waterway.

Having trained, supervised or observed thousands of suction dredgers, it is fair for me to say that the average dredge permit holder can get more accomplished and recover more gold with a pick, pan and shovel, than he or she can do with a suction dredge. I know it seems like it ought to be different. But if you have any doubts about what I have stated here after watching my DVD, I would be pleased to set an appointment with you this next season in Oregon and let you see for yourself.

That's just the way it is. I hope you are listening.

Sincerely,

Dave McCracken