IN THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ADMINISTRATIVE LAW JUDGES

In the Matter of:)
)
DAVE ERLANSON, SR.   ) Docket No. CWA-10-2016-0109
)

Courtroom 4
Jefferson County Courthouse
210 Courthouse Way
Rigby, Idaho

Wednesday,
May 15, 2019
The parties met, pursuant to notice of the
Court, at 8:28 a.m.
BEFORE: HONORABLE CHRISTINE D. COUGHLIN
          Administrative Law Judge

APPEARANCES:
For the Agency:
WILLIAM McLAREN, Esquire
MATTHEW MOORE, Esquire
U.S. Environmental Protection Agency
1200 Sixth Avenue
Suite 900 ORC-113
Seattle, Washington 98101
(206) 553-1938
For the Respondent:
DAVE ERLANSON, SR., Pro se
P.O. Box 46
Swan Valley, Idaho 83449

CONTENTS
VOIR
WITNESSES: DIRECT CROSS REDIRECT RECROSS DIRE

For the Agency:

Dan Kenney
  (Continuing)   332   346   379   390   --
David Lee Arthaud 409   485   513   515   --

EXHIBITS

COMPLAINANT

EXHIBITS:	IDENTIFIED	RECEIVED
1A	450	450
1B	451	451
1C	452	452
16	414	415
17	415	416
19	438	439
20	440	441
33	410	411

RESPONDENT
EXHIBITS:

| 2 | 521 | Withdrawn, 537 |
| 4 through 9 | 521 | Withdrawn, 537 |

1   PROCEEDINGS
2   (8:28 a.m.)
3   JUDGE COUGHLIN: And we're reconvening
4   Wednesday, May 15th. We're actually getting started a
5   couple of minutes ahead of time. It's about 8:28 or
6   so, and the parties are present and ready to go, I
7   assume.
8   MR. MOORE: Yes.
9   MR. McLAREN: Yes, Your Honor.
10   JUDGE COUGHLIN: Yes? Okay. Great. So, I
11 think when we adjourned or recessed last evening, you
12 were -- Mr. Moore, you were in the midst of your
13 direct of Mr. Kenney, right?
14   MR. MOORE: Correct.
15   JUDGE COUGHLIN: So, Mr. Kenney, would you
16 like to approach, and I'll just remind you that you
17 remain under oath. You were sworn yesterday. So,
18 that remains and through the rest of the proceeding.
19   THE WITNESS: I understand.
20   JUDGE COUGHLIN: Okay. So I'll just let Mr.
21 Moore go ahead and pick up. I assume there's nothing
22 to discuss before we get started. From Complainant?
23   MR. MOORE: No.
24   JUDGE COUGHLIN: No. And from Mr. Erlanson?
25   MR. ERLANSON: Oh, no, Your Honor.

1   JUDGE COUGHLIN: Okay. All right. Great.
2 Please go ahead Mr. Moore.
3   Whereupon,
4   DAN KENNEY
5   having been previously been duly sworn, was
6 recalled as a witness herein and was examined and
7 testified as follows:
8   DIRECT EXAMINATION (RESUMES)
9   BY MR. MOORE:
10   Q   Good morning, Mr. Kenney.
11   A   Good morning.
12   Q   When we left off, we were discussing
13 Complainant's Exhibit 21. So I'll have you turn back
14 to Complainant's Exhibit 21, please.
15   (Pause.)
16   Q   Mr. Kenney, just to remind the Court, what
17 is Complainant's Exhibit 21?
18   A   This is the Biological Assessment that was
19 written by and submitted by the Forest Service and BLM
20 for the -- excuse me -- for the approval of up to 15
21 suction dredging operations annually on the South Fork
22 Clearwater River.
23   Q   Did the proposed plan of operation include
24 any mitigation measures intended to mitigate the types
25 of harm that you testified were caused by Mr.

1 Erlanson?
2   A   Yes, that is the intent.
3   Q   Can you turn to where those mitigation
4 measures are included in the BA? I think we'd be
5 looking at Page 1138 of this exhibit.
6   A   Yes, I've got it.
7   Q   And specifically can you look at Mitigation
8 Measure Number 1. What's required by Mitigation
9 Measure Number 1?
10   A   That requires that the -- each miner who
11 receives or -- excuse me -- who submits a plan of
12 operation would sign off on the -- the compliance with
13 the various terms and conditions of the plans of --
14 plan of operation prior to the Forest Service, the BLM
15 approving that plan of operation.
16   Q   And what was the harm that the Forest
17 Service was hoping to mitigate by including Mitigation
18 Measure Number 1?
19   A   We were trying to ensure that the miners
20 would read and understand, to ask questions if they
21 didn't understand those terms and conditions and be
22 aware of what they were agreeing to comply with.
23   Q   And, in your opinion, Dr. Mr. Erlanson mine
24 in a manner that was consistent with Measure Number 1?
25   A   No. He -- he was not consistent with that.

1   Q   What's required by Mitigation Measure Number
2 3?
3   A   Mitigation Number 3 requires that a Forest
4 Service or BLM biologist inspect and what we term
5 delineate a suction dredging reach for each mining
6 operation prior to the start of the mining. And
7 during that delineation the biologist would take a
8 look at the site that the miner wanted to dredge and
9 to assess whether there were particular areas within
10 that reach which had a greater potential to harm
11 ESA-listed and other sensitive fish and invertebrate
12 species, and then the biologist would exclude those
13 areas within the larger dredging reach from dredging
14 or provide other sorts of instructions to the miner to
15 mitigate the harm within that reach.
16   Q   It may be obvious in your last response, but
17 what is the harm that the Forest Service was intending
18 to mitigate by including that Measure Number 3?
19   A   Well, the disturbance associated with
20 suction dredging is inherent. The suction dredger
21 digs up the stream bottom which has various organisms
22 associated with it and discharges materials that moves
23 materials to a different place in the stream channel.
24 So, the -- the mining activities inherently disrupts
25 it to the habitat and sometimes to the actual bodies

1 of the -- of the organisms.
2   Q   And, to your knowledge, did Mr. Erlanson
3 mine in a manner consistent with Measure Number 3?
4   A   No. The delineation was not performed.
5   Q   Can you tell me what's required by
6 Mitigation Measures Numbers 7, 8 and 9?
7   A   Yes. They primarily deal with
8 rehabilitation and other mining activities on the
9 site. Also there is a section having to deal with the
10 location of the mining areas in relationship to
11 tributaries to the South Fork --
12   Q   I'm sorry. Go ahead.
13   A   Okay. In particular, it requires that the
14 dredge holes be filled not at the end of every day but
15 at the end of that particular -- the use of that
16 particular dredge hole and at the end of the season
17 filled with the material that has been moved out of
18 the dredge hole either by manually or through using
19 the suction dredge to pick up the finer material to
20 place it back in the hole. Also it requires that
21 certain treatment of the tailings, whether those are
22 fine tailings or -- or manipulated larger pieces of
23 material to reduce the potential for the -- adversely
24 affecting the ability of fish to move through the
25 stream and also to reduce the amount of stream bottom

1   that is covered by those tailings.

2   JUDGE COUGHLIN: Bless you.

3   BY MR. MOORE:

4   Q   And what's the harm that the Forest Service

5   hoped to mitigate by requiring the rehabilitation that

6   you discussed?

7   A   Well, again, the -- the mining itself,

8   there's a certain amount of disruption of the stream

9   bottom associated with it inherently. But if we can

10   have the miner restore the site to as close to the

11   original additional -- of the original condition as

12   possible, we believe that that would tend to reduce

13   the long-term impacts of the dredging.

14   JUDGE COUGHLIN: Could I interject with one

15   quick question? When you talked about reducing the

16   amount of the stream bed that's covered by the

17   tailings --

18   THE WITNESS: Uh-huh.

19   JUDGE COUGHLIN: -- how exactly would that

20   be mitigated? I mean, I understand the concept of

21   filling the hole. But with regard to the tailings,

22   how do you mitigate that in practice?

23   THE WITNESS: Well, one -- one was a

24   requirement to minimize to a certain depth riffle

25   areas, so basically saying there, don't cover up

1   riffles more than a certain amount in their operation.

2   And then the other main part of it is that whatever

3   was convenient timing for the miner and definitely at

4   the end of the mining season to take those tailings,

5   the finer tailings and -- and suction them up and put

6   them back in the hole. So, your -- the tailings pile

7   that's in the photos would then be -- it would be

8   possible for the miner to remove those back to the

9   hole.

10   JUDGE COUGHLIN: I see. Okay. Thank you.

11   THE WITNESS: Uh-huh.

12   JUDGE COUGHLIN: Please go ahead, Mr. Moore.

13   BY MR. MOORE:

14   Q   And, Mr. Kenney, in regard to the Judge's

15   question, when you observed impacts at Mr. Erlanson's

16   site, did the volume of the pile equal the volume

17   removed from the hole?

18   A   No. If I recall the figures, the -- the

19   amount that we measured in the pile was about a third,

20   I believe, of what we calculated was in the hole.

21   Q   So, where does the rest of that material go?

22   A   It's -- it's impossible for me to say

23   exactly how Mr. Erlanson dredged beyond what Mr.

24   Hughes saw on July 22nd, but often a miner will

25   progress a hole, usually in an upstream manner,

1   sometimes laterally, and fill in behind with those

2   tailings. So, some of the materials may have been

3   moved back into the -- well, I'm sorry. I'm -- I'm

4   saying this wrong.

5   Part of the answer is that some of the

6   material that was dredged could have been tossed off

7   to the side and not of the manipulatable size could

8   have been tossed off to an area that is not in the

9   tailings possibly we're not able to assess the volume

10   of, and some of it may have been in the form of -- of

11   the turbidity that was carried farther downstream and

12   away from the tailings pile. And part of it was

13   probably -- our methods that were as -- it's not a

14   matter of saying here's -- here's exactly what was

15   taken out versus here's exactly what we see left.

16   Q   What's required by Mitigation Measure Number

17   13? It would be on the following page.

18   A   It says, "Operators must visually monitor

19   the stream for 150 feet downstream in the dredging or

20   sluicing operation." This is intended to alert the

21   miner that he -- that the turbidity is to be minimized

22   and so to -- for the -- the miner to monitor that

23   turbidity plume as much as possible and then to stop

24   dredging at least -- at least momentarily in order to

25   reduce the volumes of that plume.

1   Q   Would a plume extending over 220 feet

2   violate this mitigation measure?

3   A   Yes. A visible plume of 220 feet is more

4   than 150 feet.

5   Q   What's required by Mitigation Measure Number

6   15?

7   A   "Operators must maintain a minimum of

8   spacing of at least 800 linear feet of stream channel

9   between active mining operations." That's intended to

10   reduce the cumulative effects of the mining in -- in

11   the operation of the -- of this -- this construct of

12   15 dredgers per season. It's intended to space things

13   out such that the effects are not concentrated.

14   Q   Did Mr. Erlanson mine in a manner that was

15   consistent with Measure Number 15?

16   A   No. Looking at Mr. Hughes' report, it's

17   evident that Mr. Rice is only a few dozen feet,

18   dredging only a few dozen feet upstream from Mr.

19   Erlanson.

20   Q   And by failing to comply with the mitigation

21   measures that we discussed, would a suction dredge

22   operation cause increased harm to ESA-listed species

23   in the South Fork?

24   A   I'm sorry. Did it increase harm?

25   Q   I'll repeat the question.

1   A   Please.
2   Q   By failing to comply with the mitigation
3   measures that we discussed, would a suction dredge
4   operation cause increased harm to ESA-listed species
5   in the South Fork?
6   A   That is the intent, yes, and I believe it
7   would -- it would -- it would lead to that effect,
8   yes.
9   Q   Thank you. So I'm going to turn you back to
10   your report, Complainant's Exhibit Number 37, and
11   specifically Page 1519.
12   A   I'm sorry. Could you repeat the page
13   number?
14   Q   1519.
15   A   Yes.
16   Q   Besides Hole Number 5 and Pile Number 7, did
17   you observe other evidence of dredging at Site Number
18   14?
19   A   Yes. My technicians named five holes in
20   total and seven tailing piles in total, and it's --
21   the naming, the delineation of any of those holes
22   could be -- it possibly could have one, two or more of
23   these features together that are otherwise impossible
24   to tell apart. So, yes, there were more sites.
25   Q   And in general numbers were the other holes

1   and tailings piles similar in size to the hole and
2   pile that Mr. Erlanson was photographed dredging?
3   A   Some were larger. Some were smaller. But
4   in general they were of a comparable size.
5   Q   And so would those features have impacts
6   similar to the impacts that were caused by the
7   creation of Hole 5 and Pile 7?
8   A   As a general matter, yes, I believe so.
9   Q   And were there indication that those holes
10   and piles were created during the 2015 dredge season?
11   A   They were created when? I'm sorry.
12   Q   During the 2015 dredge season.
13   A   Yes, I -- I believe that they were. As I've
14   talked about before, the -- the evidence of the
15   tailings piles is -- is at least in part the light
16   color of the material against the darker background of
17   the algae-covered rocks. And so, tailings piles,
18   fresh tailings piles are -- are fairly noticeable but
19   they do tend to fade over time, especially with the --
20   with subsequent high flows.
21   Q   Thank you. While we're talking about your
22   study, I think throughout your testimony you've
23   described some of the data that you collected as crude
24   or you've commented on the accuracy of it. Do you
25   think that the accuracy of your data was appropriate

1   for the purpose for which it was being used?
2   A   Yes, I do.
3   Q   How so?
4   A   Well, I -- this was not intended to be a
5   study, a research study that could be published in a
6   journal. It was to provide me some information on
7   which to base our -- our proposed dredging program and
8   also to -- to get a better idea of what might be
9   possible in a relatively large stream like this one as
10   opposed to the smaller streams that we have suction
11   dredging programs on that I was more familiar with.
12   Q   And, sir, in your opinion, did the accuracy
13   of your data render the information unreliable in any
14   way?
15   A   No. The -- the intent was to gain an idea
16   of the level of magnitude of the effects and also the
17   persistence of -- the data that I gathered I believe
18   was consistent with that goal.
19   Q   And, in your opinion, was the data helpful
20   in -- in analyzing the impacts of Mr. Erlanson's
21   dredging activity?
22   A   Were -- were the -- were the data helpful?
23   Is that what you said?
24   Q   Was it helpful in analyzing the impacts of
25   Mr. Erlanson's dredging activities?

1   A   Yes. It -- it gave me an idea of what was
2   possible at that site and the consistency of the
3   tailings piles that would -- that would be created at
4   that site. Also an idea of the magnitude of the area
5   that might be disturbed.
6   Q   And did you also use the same data in
7   drafting the Biological Assessment?
8   A   To a slight extent. The -- the other
9   suction dredging areas that we had previously had
10   consultations and NEPA treatment of, the consultations
11   included requirements to stay under a certain square
12   footage of bottom disturbed by -- by the permitted
13   suction dredging. And so, it gave me an idea of -- of
14   about how ten or so dredgers, how much bottom would be
15   disturbed in a similar number of dredgers on the South
16   Fork in our consultations.
17   Q   And you found that your data was
18   sufficiently reliable for that purpose?
19   A   Yes, absolutely.
20   Q   And earlier you characterized certain
21   impacts from Mr. Erlanson's dredging activity as
22   small. Can you describe the scope of your
23   characterization?
24   A   When I was talking about -- I was talking
25   about the specific Hole Number 5 and Tailings Pile

1   Number 7, that area. So, it -- when comparing that
2   particular area, I'm saying and thinking on the scale
3   of the proposed project area of 40-some miles on the
4   South Fork and on the -- on the area that's most --
5   most commonly dredged on the South Fork, the actual
6   area of disturbance is relatively small.
7   Q   And so, if you're focusing just on the site
8   level at Site 14, would you characterize the impacts
9   of Mr. Erlanson's dredging as small?
10   A   On that site level, no. The -- the hole and
11   the tailings pile are visually evident and completely
12   transformed from what was previous -- what it looked
13   like previously, although I haven't seen it but what
14   is generally what is on either side and above and
15   below that site. So, the -- the actual impacts of
16   those dredge features is profound.
17   Q   In fact, is it your opinion that Mr.
18   Erlanson's impacts extended even beyond Site Number
19   14?
20   A   Yes, I believe so, yes.
21   Q   How so?
22   A   Well, in particular the tailings pile did --
23   was not present in 2016 as a -- as a -- a pile, at
24   depth -- excuse me -- as a pile with thickness
25   compared to what it was in 2015. So, that finer

1   sediment, mostly sand, was carried downstream and
2   would incrementally add to the -- the fine sediment
3   burden of -- of the South Fork.
4   MR. MOORE: I have no further questions,
5   Your Honor.
6   JUDGE COUGHLIN: All right. Mr. Erlanson,
7   questions for Mr. Kenney?
8   MR. ERLANSON: Yes. There's a lot of
9   material here to go over. To save time for the Court,
10   I'm going to address just a couple of things.
11   THE WITNESS: I'm sorry. Mr. Erlanson, can
12   you speak up a little bit?
13   MR. ERLANSON: Yeah.
14   THE WITNESS: I'm sorry.
15   MR. ERLANSON: To save time -- can you --
16   can you hear me now? Is this thing, like, on?
17   JUDGE COUGHLIN: Thank you. And, Mr.
18   Erlanson, we have plenty of time. So, I don't want
19   you to curtail because the witness has testified to
20   quite a bit. So --
21   THE WITNESS: Yes.
22   JUDGE COUGHLIN: So, I mean, if you want to
23   curtail your questions, that's your choice, but don't
24   -- don't do that fearing that we don't have adequate
25   time because we do have plenty. Okay?

1   THE WITNESS: Okay.
2   JUDGE COUGHLIN: So, ask what you want.
3   THE WITNESS: Okay. Can -- can you hear me,
4   Mr. Kenney?
5   THE WITNESS: Yes.
6   MR. ERLANSON: Okay.
7   CROSS-EXAMINATION
8   BY MR. ERLANSON:
9   Q   Well, I'll start with the hole. Let's go
10   back to these -- do you still have a copy of these big
11   photographs?
12   A   Yes.
13   Q   Not that one. Where is -- this one here.
14   Let me get the right one here. Can you see the one
15   with the big plume from Mr. Rice's dredge upstream of
16   my -- does that -- that appear to be the same one?
17   JUDGE COUGHLIN: Okay. So, and once again,
18   I know the blow-ups are helpful for the testimony, but
19   I need to be able to refer to it with regard to what's
20   actually in the -- in the exhibits. So, you're --
21   you're talking about this one, Mr. Erlanson?
22   THE WITNESS: Yes, I am.
23   JUDGE COUGHLIN: Okay. And so, this
24   corresponds to what in terms of what's in evidence?
25   MR. McLAREN: Your Honor, we're willing to

1   provide that.
2   JUDGE COUGHLIN: Okay.
3   MR. McLAREN: That skips 01 and I believe
4   it's at Page 5 -- Page 6, 0005 of that exhibit.
5   JUDGE COUGHLIN: Okay. So, let me just --
6   MR. McLAREN: Oh, pardon me. That's Page 6
7   of that exhibit.
8   JUDGE COUGHLIN: Okay. Thank you. Let me
9   just --
10   MR. McLAREN: And it's the top left
11   photograph.
12   JUDGE COUGHLIN: All right. Great. Let me
13   just pull that up here quickly so I can follow along
14   in both ways. Okay. Page 6. I'm leaving out the
15   zeroes because I'm a little lazy this morning. Okay.
16   So, Page 6, top left, did you say, or top right?
17   MR. McLAREN: I believe Mr. Hughes'
18   testimony established that it was the top left
19   photograph.
20   JUDGE COUGHLIN: Okay. All right. Thank
21   you. Go right ahead. Are you -- oh, Mr. Kenney, are
22   you there?
23   THE WITNESS: I think so.
24   JUDGE COUGHLIN: All right. Great.
25   MR. ERLANSON: Okay.

1   BY MR. ERLANSON:
2   Q   Okay. Before we go into this picture, this
3   picture was taken by whom?
4   A   Clint Hughes.
5   Q   Okay. Was there any pictures taken on this
6   site previous to July 22nd, 2015?
7   A   I don't know.
8   Q   Was there -- did you take any measurements
9   of Hole Number 5's area, Tailings Number 7 area before
10   July 22nd, 2015?
11   A   I did not personally, no.
12   Q   Okay. As you look at this picture on the
13   side over on, where the trees are, the timbered side
14   -- let's call it the timbered side -- looking upstream
15   that would be on the right side.
16   A   Yes.
17   Q   Why are these rocks not rounded off?
18   A   The substrate in a stream channel is subject
19   to a greater or lesser amount of erosion in that
20   stream channel. It's no longer a particle that's
21   within the stream channel, and the more it's moved the
22   more little bits and pieces are broken off and the
23   more rounded a substrate particle becomes. The
24   material that's in a stream channel or along the edges
25   of the stream channel can be moved either by the

1   stream, or they can come off the -- off the area, the
2   land, in this case the slope adjacent to the stream
3   channel. And so, likely the less rounded rock has
4   spent less time in the stream channel and moved less
5   in the stream channel and hasn't had the opportunity
6   to be rounded yet.
7   Q   Well, what concerns me is you mentioned --
8   EPA counsel said, the tailings pile was only one-third
9   of what you estimated the depth at. That's what was
10   your testimony was. This --
11   JUDGE COUGHLIN: Hold on. One second. Do
12   you have an objection?
13   MR. MOORE: Your Honor, to the extent, Your
14   Honor's leniency has allowed some testimony during
15   cross-examination. I just want to ensure that the
16   Respondent is still under oath to that.
17   JUDGE COUGHLIN: Yes, the oath remains. You
18   were sworn -- Mr. Kenney was sworn.
19   MR. MOORE: Yes.
20   JUDGE COUGHLIN: The witnesses who testified
21   yesterday were sworn. So, that oath remains
22   throughout the proceeding which would extend through
23   today.
24   MR. MOORE: Sure.
25   JUDGE COUGHLIN: Okay. So, you were asking

1   about the depth I think, the reference to it. Go
2   ahead and just repeat your question.
3   BY MR. ERLANSON:
4   Q   Yeah. You referenced the hole, but you
5   never saw it before you went down to measure it. You
6   referenced that the tailings pile was one-third what
7   you estimated the contents of the hole to be. And the
8   counsel for the EPA asked you the question, "Well,
9   what happened to the rest of it?" In other words,
10   what happened to the other two-thirds of what you
11   estimated to be in that hole? I have a theory for
12   that which we --
13   JUDGE COUGHLIN: Okay. But question,
14   remember, question, not testimony yet.
15   MR. ERLANSON: I understand.
16   JUDGE COUGHLIN: Okay.
17   BY MR. ERLANSON:
18   Q   So, could it be that those sharp-edged rocks
19   are exposed bedrock pieces on the shoreline?
20   A   Okay. That's your question about the --
21   whether that's exposed bedrock?
22   Q   Yes.
23   JUDGE COUGHLIN: Could it be --
24   MR. ERLANSON: Could it be --
25   JUDGE COUGHLIN: -- exposed bedrock?

1   THE WITNESS: Some of it is -- clearly is
2   not. They're individual pieces, but there could be
3   portions that expose bedrock there, yes.
4   BY MR. ERLANSON:
5   Q   Yes. Did you -- when you and your team
6   looked at the hole, did you conclude that that hole
7   was on the side of the river or in the thalweg -- of
8   the river?
9   A   It was on the side of the river or what?
10   Q   In the thalweg, in the main center velocity
11   of the river?
12   A   It was more generally towards the center. I
13   -- the -- the -- the morphology of the stream channel,
14   this area is relatively even depth. So, it's a little
15   difficult to -- to discern the thalweg and would tend
16   to vary at stream flow level. But the hole appears
17   from the photograph to be towards the center of the
18   stream and closer to the thalweg.
19   Q   If you were to look at this photo here --
20   this is --
21   JUDGE COUGHLIN: Okay.
22   MR. ERLANSON: I'm sorry. You'll have to
23   look it up.
24   JUDGE COUGHLIN: It's okay. We need to take
25   a second to orient it to what's in evidence.

1   MR. ERLANSON: Yes.
2   JUDGE COUGHLIN: So, that's --
3   MR. McLAREN: Page 5 of Exhibit CX-01.
4   JUDGE COUGHLIN: Okay. Thank you.
5   MR. McLAREN: It is the right center of
6 that.
7   MR. MOORE: This photograph has the label
8 "Rice Green Dredge and Erlanson's Blue Dredges".
9   JUDGE COUGHLIN: Okay. Perfect. Thank you.
10 Go right ahead, Mr. Erlanson. Mr. Kenney, are you
11 there?
12   THE WITNESS: Yes, I believe I am.
13   JUDGE COUGHLIN: Okay. Great.
14   MR. ERLANSON: Are we ready?
15   JUDGE COUGHLIN: Yes.
16   BY MR. ERLANSON:
17   Q Mr. Kenney, if you look at what is referred
18 to as Rice's Green Dredge, if you'd take a look at
19 that. On the right side of this photo looking
20 downstream from where this photo was taken, do you
21 see -- would you conclude that that is the inside of
22 the river bank?
23   A Could you be more specific about where
24 you're talking about, please?
25   Q All the way down this, around this corner.

1 Would that be considered the inside of the river bank?
2 Because of the amount of gravel exposed on the
3 shoreline, the rounded gravel and, of course, you can
4 see gravel in the stream bed there below the water if
5 you look, too.
6   JUDGE COUGHLIN: And where you just gestured
7 with your hand, you're talking about the rightmost
8 side of the photograph?
9   MR. ERLANSON: Let's call it the grassy side
10 of this photo.
11   JUDGE COUGHLIN: But on the right side,
12 correct?
13   MR. ERLANSON: Yeah, on the right side.
14   JUDGE COUGHLIN: Okay. Go ahead, Mr.
15 Kenney.
16   THE WITNESS: I believe that the river tends
17 to curve to the right looking downstream, if that is
18 what you mean by the inside.
19   BY MR. ERLANSON:
20   Q Right. And where does most of the gravel,
21 sand and silt congregate in a stream after a
22 high-water event?
23   A During a high-water event, the areas that
24 are of the highest velocity tend to move the larger
25 material while the areas of lower velocity tend to

1 drop out the finer material which the gravel is
2 somewhere in the middle there. So, the thalweg during
3 the high-flow event would tend to have less gravel
4 after that flow event than the areas of lower
5 velocity --
6   Q That's correct.
7   A -- on the surface.
8   Q Uh-huh. Now, as we look at this picture,
9 the same one that we were talking about, if you look
10 at Rice's Green Dredge, do you see the amount of
11 gravel on -- let's call it the timber side -- do you
12 see the amount of gravel on the timber side as you do
13 on the right side?
14   A Are you referring to the gravel in the areas
15 that have been disturbed by the dredging?
16   Q No. If you -- if you look right above his
17 dredge, you will see a line which is holding that
18 dredge. Can you see that line, sir?
19   A Yes.
20   Q What do you see on the left side of that?
21 Do you see gravel there from there over to the river
22 bank, or do you see exposed bedrock on that river
23 bank?
24   A It's a little difficult to tell, but for the
25 most -- I -- I can discern larger pieces of substrate

1 of the size of small boulders but also finer substrate
2 among there.
3   Q You see finer substrate over there. By
4 "finer," what type -- what are you classifying as
5 finer?
6   A Well, the photo is not really of a close,
7 fine enough detail and close for me to say, but my
8 experience with the South Fork is that there's going
9 to be large -- there's going to be boulders that are
10 -- that are visible here, but that's going to be
11 intermixed with finer substrate in the forms of cobble
12 and gravels and sand and silt in some places.
13   Q Would you say -- okay. I'll ask you another
14 way. On the right is there more gravel exposed on the
15 grassy bank or on the wooded bank or more smaller
16 substrate? Is there more smaller substrate on the
17 inside bend of that river or on the outside?
18   A I see more large substrate on the wooded
19 side. I can't really judge at this distance how much
20 small material might be mixed within the larger.
21   Q Okay. So, would it not be a probable
22 conclusion that because the dredge, Erlanson's dredge,
23 the blue dredge, is working out in the thalweg at the
24 creek where the highest velocity is and the river
25 bottom is all bedrock for a hundred yards above that?

1   Would it -- would it not conclude that that hole was

2   there before any dredge operation started dredging?

3   A   I -- I don't agree that the -- the stream

4   bottom is all bedrock for a hundred feet or 150 feet

5   above that where you're --

6   Q   A hundred yards.

7   A   A hundred yards.

8   Q   On the right-hand side of that stream

9   looking upstream.

10   A   Perhaps we have different definitions of

11   bedrock, sir.

12   Q   What's your definition of it?

13   A   Bedrock is a -- the continuous --

14   contiguous, continuous integral portion of -- of -- of

15   a stream bottom that it -- while it may have cracks

16   and -- and holes in it, it is not in separate

17   particles.

18   Q   That's correct. I have the same -- I have

19   the same definition you do. But that's -- quite

20   frankly, that's why I bought that mining claim. I'm

21   an old man. So, I can't dig through that much gravel.

22   So, that's why if you look at this picture, it's

23   evident that the gravel stops right about where Rice's

24   dredge is and from there over it's solid bedrock. Now

25   --

1   JUDGE COUGHLIN: Okay. Stop right there --

2   MR. ERLANSON: Okay.

3   JUDGE COUGHLIN: -- because we need to

4   ascertain if there's agreement or not with what you

5   said.

6   MR. ERLANSON: Right.

7   JUDGE COUGHLIN: You're making a statement.

8   MR. ERLANSON: Right.

9   JUDGE COUGHLIN: So --

10   MR. ERLANSON: I was going to say, "Is that

11   correct?"

12   JUDGE COUGHLIN: Mr. Kenney, do you agree

13   with that statement or do you disagree?

14   THE WITNESS: It does not appear from this

15   photo that all of the area where Mr. Erlanson is

16   indicating above Mr. Rice's dredge is what I would

17   call bedrock. I think I'm seeing some large boulders,

18   and there definitely could be bedrock in there, but I

19   don't believe it's all.

20   JUDGE COUGHLIN: And the basis for your

21   disagreement from what you can gather from the

22   photograph, aside from the larger boulders, can you

23   explain any other basis for your disagreement with Mr.

24   Erlanson's position on that?

25   THE WITNESS: If Mr. Erlanson is saying that

1   it's all bedrock and I can see material that's not

2   bedrock, I -- I mean, that's -- I don't know how

3   farther I can go than that. I mean -- perhaps I

4   misunderstood your question.

5   JUDGE COUGHLIN: So -- so, the depiction of

6   material that isn't bedrock leads you to the

7   conclusion then that it's not entirely bedrock?

8   THE WITNESS: Yes.

9   JUDGE COUGHLIN: Okay. Go ahead.

10   MR. ERLANSON: I agree with his conclusion.

11   It's not entirely bedrock, and that's why I was in

12   that area.

13   JUDGE COUGHLIN: Okay. Well, just ask

14   questions.

15   MR. ERLANSON: Yeah.

16   BY MR. ERLANSON:

17   Q   Now, you stated that one-third of the

18   tailing pile you -- you attributed to being taken out

19   of that hole. And then you also mentioned that as a

20   suction dredge works, if the suction dredger's doing

21   his job properly, he tries to put the tailings into

22   his hole and backfill as he goes upstream. You stated

23   that, correct?

24   A   I -- well, first, I don't believe I said

25   that the tailings -- I -- I said that the measurements

1   that were taken by my technicians and the calculations

2   I made with those measures is about one-third of the

3   volume that we calculated with the measurements of the

4   hole.

5   Q   Right.

6   A   I didn't say that those were precise

7   measurements or that they were greatly inconsistent.

8   Q   Mr. Kenney, when you took -- when you or

9   your crew took those measurements, could you explain

10   how you took those measurements of that tailing pile

11   to the Court?

12   A   Yes, I explained yesterday the -- that my

13   crew took -- they measured. I didn't say they

14   measured with a measuring tape the approximate

15   greatest length and greatest width of the dredge hole,

16   and also they used a staff, marked staff to measure

17   the approximately maximum depth of that dredge hole,

18   although -- yeah.

19   Q   You said they took a staff to measure the

20   approximate depth of the --

21   A   The maximum --

22   Q   -- dredge hole? How did they --

23   A   -- of the dredge -- the maximum.

24   Q   How did they measure the tailings depth?

25   A   The tailings?

1   Q   Yeah. How did they measure the depths of
2 the tailings?
3   A   In about the same manner.
4   Q   How did they know they got to the bottom of
5 the tailings that weren't in the substrate of the
6 river?
7   A   Well, when we were doing the measurements
8 together at other sites on the previous day, I had
9 instructed them to observe the area which appeared to
10 be outside -- outside the edges of the -- of the
11 tailings pile and -- and individually observe the --
12 the depth of the stream at that point and then compare
13 it to the maximum height of the dredge pile. So, it
14 was based on the surrounding apparently not covered
15 with tailings areas.
16   Q   Okay. So, what -- what you just described
17 is an approximation. Is that correct?
18   A   There are definitely approximations in the
19 measurements, yes.
20   Q   Was there any measurements made other than
21 one depth measurement at the top of the hole?
22   A   They were instructed to measure as best they
23 could the maximum depth of the hole if that's what you
24 mean by the top.
25   Q   Well, I'm talking about the tailings pile.

1   A   Oh, I'm sorry.
2   Q   Considering that this section of -- of real
3 estate is primarily bedrock -- and I -- I agree with
4 your statement that -- your testimony that there is
5 some gravel. There's some big boulders on top of that
6 bedrock, and there is even some small substrate behind
7 those boulders which would be natural. I'm sure we
8 agree on that. But I'm concerned about the tailings
9 pile because best management practices in dredging say
10 you don't leave tailing piles in their natural state
11 as some of these pictures I've seen yesterday showed
12 Rice's dredging, how they had big humps. Anybody that
13 ever dredges in one of my holes or that I dredge --
14   JUDGE COUGHLIN: Mr. Erlanson, you've got to
15 get to the question.
16   MR. ERLANSON: Oh, yeah. I'm sorry.
17   BY MR. ERLANSON:
18   Q   Is -- are you aware of the common practice
19 of best management practice of dredging whereby the
20 dredger takes a break or a shovel and spreads out the
21 tailings?
22   A   I'm aware that some dredgers do that, yes.
23   Q   Okay. From your interpretation onsite, do
24 you feel that that was done in Hole -- Tailings Number
25 7?

1   A   If -- no, I can't -- I can't make that
2 conclusion. It is -- I'm not saying it didn't happen,
3 but I can't make that conclusion from the photos that
4 my technicians took in October.
5   Q   Okay.
6   A   Some -- some of the material is still above
7 the water surface. So, my understanding of the -- I
8 think of what you're saying about the raking is to try
9 to spread out the material so that it doesn't reach
10 the surface and doesn't impede fish passage and that
11 sort of thing.
12   Q   Correct. That's correct.
13   JUDGE COUGHLIN: Is -- let me just pop in
14 really quickly. Mr. Erlanson has characterized that
15 as a best management practice. Is that consistent
16 with your opinion, that method of using a rake to
17 spread it out? From your -- from your standpoint
18 would that be considered a best management practice?
19   THE WITNESS: I think it would be a part of
20 a mitigation measure that the dredgers may employ, and
21 that would be consistent with part of what we have in
22 the biological opinion, some of the mitigation
23 measures. Ideally the material would be more than
24 spread out because the spreading out reduces the
25 potential for fish passage to be impeded, and that's

1 more important in a smaller stream than in a larger
2 one like this. But also the mitigation measures in
3 the biological opinion -- that should be in the
4 Biological Assessment -- try to actually return the
5 finer materials to whence they came and not just
6 spread them out in a larger area where they were
7 deposited or near where they were deposited.
8   JUDGE COUGHLIN: Please go ahead, Mr.
9 Erlanson.
10   BY MR. ERLANSON:
11   Q   Okay. Finally as far as Hole Number 5 and
12 Tailings Number 7, do you have any conclusive proof,
13 can you add any testimony on anybody's behalf in this
14 courtroom today that said that Mr. Erlanson made that
15 hole?
16   A   The hole -- which hole are you referring to?
17   Q   Hole Number 5 and Tailings Number 7 which
18 has been the --
19   A   Are you referring to Hole Number 5 as we
20 observed in October?
21   Q   I'm talking about Hole Number 5 and Tailings
22 Number 7 that this whole discussion is about, that EPA
23 continually stated my name in their assertion that
24 Erlanson made Hole Number 5 and Tailings Number 7. Do
25 you have any conclusive proof of that fact?

1   A   I believe that the photos, the -- the GPS
2   coordinates that Mr. Hughes' report comparison that --
3   of the information that my technicians gathered in
4   October show that the dredge hole in the Hughes photos
5   that he identified as being -- as you -- you dredging
6   are a component, although not the full extent of what
7   my technicians measured as Hole Number 5 in October.
8   Q   So, you have no conclusive proof that you
9   can enter to this Court at this time that says that
10   Mr. Erlanson did entirely make Hole Number 5 or
11   Tailings Number 7?
12   A   No, I've never stated that Hole Number 5 was
13   created by Mr. Erlanson, the hole of -- Hole Number 5
14   as measured in October of 2015.
15   Q   Okay.
16   JUDGE COUGHLIN: And I think it's just --
17   because I agree that there's been a good deal of time
18   spent on those two particulars. And so, just so that
19   I'm clear, what you've relied on -- I think you just
20   said this, but I just want to make sure I'm capturing
21   it for my own understanding. What you've relied on
22   then to, if you will, link perhaps circumstantially
23   Hole Number 5, Tailings Number 7, to activity
24   attributed to Mr. Erlanson, you've identified Mr.
25   Hughes' report and photos, the GPS coordinates he's

1   provided and then your own evaluation in October?
2   THE WITNESS: Yes.
3   JUDGE COUGHLIN: Was there anything else
4   that you relied upon other than those things to lead
5   to that belief?
6   THE WITNESS: No.
7   JUDGE COUGHLIN: Okay. I just wanted to
8   make sure we had all that covered. Mr. Erlanson,
9   please go ahead with your next question.
10   BY MR. ERLANSON:
11   Q   Okay. We're going to go to -- back to the
12   beginning, Mr. Kenney, of your testimony. Did you
13   take any biological samples above and below the
14   dredged areas on Pay Day Two mining claim of -- well,
15   let's -- let's just say Hole Number 5 and Hole Number
16   7. Did you take any biological assessments below or
17   above that to count the number of invertebrates that
18   you stated later in your -- that you stated later in
19   your testimony that were -- were damaged by the act of
20   dredging?
21   A   The information that was gathered by my
22   technicians is provided in my report. For the most
23   part there are some that wasn't in the report. But,
24   no, none of that included any sort of biological
25   sampling. It was sampling, and it was measurements

1   and -- and photos.
2   Q   Okay. Did the U.S. Forest Service, U.S.
3   Fish & Wildlife at NOAA conclude that suction dredging
4   would not jeopardize the continued existence of either
5   the steelhead trout or the bull trout on the South
6   Fork Clearwater River?
7   A   That's a very general question, suction
8   dredging in general. So, no, the -- none of those
9   entities concluded that suction dredging in general
10   was --
11   Q   This is from a letter that you wrote --
12   JUDGE COUGHLIN: Okay. What --
13   MR. ERLANSON: -- on the FOIA --
14   JUDGE COUGHLIN: What are you referring to?
15   Is it in evidence?
16   MR. ERLANSON: No, no, it's not, Your Honor.
17   I -- I didn't add it into evidence. I'm just -- I
18   just got it because I -- he was on the stand and so,
19   when I came today, I thought I would bring this up and
20   see if he agreed with his statement.
21   JUDGE COUGHLIN: With a prior statement?
22   MR. ERLANSON: Yes, that he -- that he
23   wrote.
24   JUDGE COUGHLIN: Okay. What is that?
25   MR. ERLANSON: Can I come up?

1   JUDGE COUGHLIN: Well, show it to Mr. Moore
2   first.
3   MR. ERLANSON: Oh, here. It's in the
4   highlighted spot down there, the maroon color, pink
5   color, whatever it is.
6   (Pause.)
7   JUDGE COUGHLIN: Have you seen that before,
8   Mr. Moore?
9   MR. MOORE: I have not, ma'am.
10   JUDGE COUGHLIN: Okay. All right. So, just
11   so I'm clear on -- I think you're using it for
12   impeachment purposes. Are you offering it to suggest
13   that there was a prior inconsistent statement that Mr.
14   Kenney made?
15   MR. ERLANSON: No. But we -- he talked
16   about ESA species and how possibly suction dredging
17   could harm those species.
18   JUDGE COUGHLIN: Okay.
19   MR. ERLANSON: And my -- my contention is,
20   from what he wrote here, that seems to be -- I'm --
21   I'm not calling it impeachment or perjury or anything
22   of that nature. I'm just trying to clarify.
23   JUDGE COUGHLIN: But is it -- is it a
24   different statement that you're referring to and what
25   you have in your hand, something other than what he --

1   MR. ERLANSON: Well, I'm -- I'm relying on
2   his testimony, Your Honor.
3   JUDGE COUGHLIN: Yeah, I'm -- Okay. Mr.
4   Moore.
5   MR. MOORE: Your Honor, my quick review of
6   that email suggests that it is a -- they're talking
7   about a biological assessment that was conducted at
8   least ten years before the biological assessment that
9   Mr. Kenney conducted on the South Fork. It dealt with
10   different rivers, not the South Fork, and it could be
11   prejudicial to introduce now because this is the first
12   time that we're seeing it. So, I think it's limited
13   in materiality and relevance.
14   JUDGE COUGHLIN: Okay. I appreciate that.
15   I wasn't considering admitting it, but, you know, for
16   impeachment purposes, things, really anything can be
17   used, in my view. But if it's that dated and a
18   different river, then it's really not material to this
19   discussion or a different water body, I should say.
20   So, it -- why don't you just let me take a look at it.
21   MR. ERLANSON: Yeah. I -- I don't see where
22   he's --
23   JUDGE COUGHLIN: You can approach and just
24   let me take a look at it, and I'll just make a
25   decision. It's okay. You can approach, Mr. Erlanson.

1   Thank you.
2   MR. ERLANSON: I think I see where he got
3   the year there, but there's another year down there.
4   JUDGE COUGHLIN: Okay. Let me just have a
5   quick look here.
6   MR. ERLANSON: Yeah. Or, yes, Your Honor.
7   (Pause.)
8   JUDGE COUGHLIN: Okay. Yeah, I mean, I'm
9   just going to kind of read here just a couple of
10   sentences, a few sentences into the record. I think
11   you were focusing on the highlighted in pink, right?
12   MR. ERLANSON: Yes, Your Honor.
13   JUDGE COUGHLIN: Okay. So, that portion
14   reads in a 2008 Biological Assessment, "Forest
15   determined that suction dredging was likely to
16   adversely affect steelhead trout but was not likely to
17   adversely affect bull trout in LoLo Creek. The Forest
18   determined that suction dredging was likely to
19   adversely affect bull trout in Moose Creek. In their
20   respective 2009 and 2008 Biological Opinions, NOAA and
21   USFWS agreed with the Forest Service's determinations.
22   Both agencies concluded that suction dredging would
23   not jeopardize the continued existence of either
24   species."
25   And this is an email, it appears -- it

1   purports to be an email from Dan Kenney to Norma Staff
2   of Forest Service I think, cc to Clinton Hughes and
3   it's with regard to a NEPA for suction dredging POOs
4   and it was dated on -- back in February 11th of 2015.
5   So, I'm inclined to agree with Mr. Moore
6   that we're talking about an assessment affecting
7   another water body. So, I don't know how that's
8   relevant here.
9   MR. ERLANSON: Well, the South Fork
10   Clearwater Environmental Assessment was based on LoLo
11   and Moose Creeks years ago. I've got some FOIA stuff,
12   some more stuff that can prove that fact but --
13   JUDGE COUGHLIN: Well, yeah. We're -- I'm
14   not --
15   MR. ERLANSON: I --
16   JUDGE COUGHLIN: I'm not going to expand --
17   you're welcome to --
18   MR. ERLANSON: Right.
19   JUDGE COUGHLIN: -- question him about
20   anything that he's testified about on his direct.
21   MR. ERLANSON: Right. Yeah, we -- we don't
22   have to bring that material in.
23   JUDGE COUGHLIN: But I'm -- but I'm not
24   going to expand it outside of that. Okay? Here you
25   go.

1   MR. ERLANSON: But that -- but that is on
2   the record then, what you just quoted?
3   JUDGE COUGHLIN: I just read. Yeah, it's in
4   the transcript. It sure is. So, the objection is
5   sustained, I guess just for clarity on the record.
6   Please go ahead, Mr. Erlanson.
7   BY MR. ERLANSON:
8   Q   Is the -- there's been a lot of discussion
9   about holes, Mr. Kenney, regardless of whether it's
10   Number 5 or not. I want to talk about holes in
11   general for just one statement. Does the South Fork
12   at Clearwater River, one of the parameters of it being
13   a 303D-impaired waterway because of water temperature?
14   A   That's not my area of expertise, but I
15   believe I heard someone, one of the witnesses
16   yesterday, testify to that.
17   JUDGE COUGHLIN: Mr. Moore.
18   MR. MOORE: I object, just to the extent
19   it's outside the scope of his direct testimony.
20   JUDGE COUGHLIN: Okay. It's a sustainable
21   objection because it is. I'll provide some leniency,
22   but he's -- he's also answered that that's not his
23   area of expertise. So, you can follow up as you need,
24   but that might have been --
25   MR. ERLANSON: Your Honor, I disagree

1 because Mr. Kenney's made a lot of issue about dredge
2 holes.
3   JUDGE COUGHLIN: No, no. You can ask about
4 dredge holes. But with respect to temperature as
5 being one of the --
6   MR. ERLANSON: Well, that's -- the dredge
7 holes and the temperature are 100 percent relevant.
8   JUDGE COUGHLIN: Okay. Yeah, it's --
9   MR. ERLANSON: They -- they --
10   JUDGE COUGHLIN: -- not so much --
11   MR. ERLANSON: They correlate.
12   JUDGE COUGHLIN: -- a relevancy thing.
13   MR. ERLANSON: You know --
14   JUDGE COUGHLIN: Scope is really -- what
15 that's getting at is, your opportunity to ask
16 questions of this witness is limited to the testimony
17 he's provided on direct as --
18   MR. ERLANSON: That's --
19   JUDGE COUGHLIN: -- opposed to bringing up
20 something new that he hasn't testified about. That's
21 what he means by scope, and technically that is
22 correct. I'm trying to provide you with some latitude
23 because you are representing yourself, and so, I'm not
24 being maybe as strict as I would be if you were
25 represented by counsel. That said, he's already

1 responded that that's not -- that with regard to
2 temperature, that's not necessarily within his area of
3 expertise. So, I think continuing down that line is
4 not going to lead to much that's fruitful. But if you
5 want to ask a follow-up, you can, and you're certainly
6 welcome to ask more questions about what he has
7 testified about.
8   MR. ERLANSON: Well, he's testified --
9   JUDGE COUGHLIN: Just go ahead and ask.
10   MR. ERLANSON: Yeah.
11   JUDGE COUGHLIN: That's my ruling.
12   BY MR. ERLANSON:
13   Q   You've testified about the holes in the
14 stream. Considering the fact that we talked about the
15 water temperature and the 303D impairment, I
16 understand that that's not your area of expertise.
17 But I think anybody in this courtroom that's ever went
18 swimming, would it be correct to say, Mr. Kenney, that
19 the deeper you go into water, the cooler the water
20 becomes?
21   MR. MOORE: Just continue my objection.
22   JUDGE COUGHLIN: Okay. I'm just going to
23 ask a preliminary question. Are you -- do you feel
24 qualified to answer that question just based on your
25 experience?

1   THE WITNESS: It seems to me to be a very
2 general and variable -- a question -- a general
3 question with a lot of variable answers to that.
4   JUDGE COUGHLIN: Okay. So, is that a "no"?
5   THE WITNESS: No.
6   JUDGE COUGHLIN: Okay. All right. I'll
7 sustain the objection. Go ahead and ask another
8 question, though, Mr. Erlanson.
9   MR. ERLANSON: Okay.
10   BY MR. ERLANSON:
11   Q   Okay. You mentioned about the silt and fine
12 sediments impacting the fishery. Do you have any
13 proof or can you give any testimony to the fact that
14 -- of how many spawning beds of any ESA-listed species
15 were located since 2001 to the present time between
16 Crooked River and Newsome Spring, the confluence on
17 the South Fork of Clearwater River?
18   A   Spawning beds of ESA-listed species?
19   Q   Of -- of -- of bull trout, of the fall run
20 of Chinook salmon, the spring run of Chinook Salmon or
21 the steelhead.
22   A   I have seen some estimates on fall Chinook
23 salmon but not of the other.
24   Q   Okay. I have a -- I have a map here. Just
25 you guys can take a look and there's a whole --

1   (Away from microphone.)
2   Q   This was part of a --
3   JUDGE COUGHLIN: Okay. Hold on just a
4 second. Hold on. Mr. Erlanson, we're not -- we're
5 not introducing new exhibits. So --
6   MR. ERLANSON: Oh.
7   JUDGE COUGHLIN: -- I'm not sure what you're
8 pulling out a new document about.
9   MR. ERLANSON: Well, I just -- I just wanted
10 to prove --
11   JUDGE COUGHLIN: Just ask the question.
12   MR. ERLANSON: Okay.
13   JUDGE COUGHLIN: As I've said now a couple
14 of times, nothing new is coming into the record.
15   MR. ERLANSON: Okay.
16   JUDGE COUGHLIN: So, aside from some of the
17 earlier Respondent exhibits that were included in the
18 pre-hearing exchange, those are certainly available to
19 you, but nothing new.
20   MR. ERLANSON: Okay.
21   JUDGE COUGHLIN: So, just ask questions at
22 this point.
23   BY MR. ERLANSON:
24   Q   Do you know of any bull trout spawning in
25 the South Fork Clearwater River between Crooked River

1   confluence and Newsome Creek confluence?
2   A   No. Bull trout are not a main stem spawning
3   species. They spawn --
4   Q   Okay.
5   A   -- in the tributaries of the South Fork.
6   Q   Do you know of any spring Chinook spawning
7   and rearing in the South Fork Clearwater River?
8   A   I'm aware that that has been documented,
9   yes.
10   Q   Where?
11   A   My understanding it's mostly up on the --
12   the part of the river on BLM in the Elk City Township.
13   Q   So, it's not down from Crooked River down to
14   Newsome Creek?
15   A   I said, my understanding it's mostly. I
16   cannot say that there's not been any spawning of
17   spring Chinook in the area you mentioned.
18   Q   Okay. How about the West Slope Cutthroat?
19   Has there been any spawning in the main fork of the
20   South Fork Clearwater River between Newsome Creek and
21   up in Crooked River?
22   A   West Slope Cutthroat are also tributary
23   spawners.
24   Q   How about the steelhead trout?
25   A   I have not --

1   Q   Same, same area, Crooked, you know, the
2   Newsome Creek.
3   A   My understanding of steelhead trout spawning
4   in the South Fork Clearwater River is that it is
5   ubiquitous in the river in that -- but that I have not
6   seen any direct spawning counts or that sort of thing.
7   Q   That's correct. You mentioned the sediment
8   from the dredge through the tailings piles. Would it
9   be correct to say that sediment is essential to our
10   river systems, that organic matter is important for
11   the biological integrity of navigable waters in the
12   United States?
13   A   May I ask for your definition of "sediment"?
14   Q   It would be the erosion, natural erosion of
15   spring banks would be one of the big factors producing
16   sediment. It would be an on-source point of
17   pollution.
18   A   I guess in my field sediment would include
19   everything from boulders on down to silt and clay
20   particles. So, it's not a central part of the stream
21   system. It is just that is the way it is. That is
22   the way the physics work.
23   Q   So, you disagree with the -- you disagree
24   with that statement that I just mentioned, that
25   sediment is an essential part of our river systems?

1   MR. MOORE: Objection. I think that's asked
2   and answered.
3   JUDGE COUGHLIN: I think so but I'm not sure
4   because we kind of got off on a little bit of --
5   MR. ERLANSON: I'm not sure either.
6   JUDGE COUGHLIN: -- a definition of
7   sediment. So, I think you did answer the question.
8   But I guess just out of caution, I'll overrule the
9   objection. So, just ask it again and let the witness
10   respond.
11   BY MR. ERLANSON:
12   Q   Okay. Is it true that sediment is essential
13   to our river systems, that that organic matter is
14   important for biological integrity of navigable
15   rivers? That is what I'm asking you. Is that true?
16   Is that a true statement?
17   JUDGE COUGHLIN: And I'm going to ask you to
18   in responding to that, use your own definition that
19   you've just explained for the record of what sediment
20   is.
21   THE WITNESS: Okay.
22   JUDGE COUGHLIN: Okay. Because you started
23   out with perhaps difference of opinion. So, just
24   answer based on your definition of what sediment is.
25   THE WITNESS: Sediment by my definition of

1   pieces of mineral and organic material are an
2   inevitable part of the South Fork system, and they are
3   part of the environment that the organisms in the
4   South Fork have evolved and adapted to.
5   BY MR. ERLANSON:
6   Q   Okay. Thank you. Would you agree that
7   suction dredging is a best management practice which
8   includes many benefits to the environment that can be
9   achieved without restrictive and unnecessary
10   regulations? Could you agree with that statement?
11   A   No.
12   MR. ERLANSON: Okay. Your Honor, I conclude
13   with this witness.
14   JUDGE COUGHLIN: Okay. All right. Any
15   redirect, Mr. Moore?
16   MR. MOORE: Yes, a few questions, Your
17   Honor.
18   JUDGE COUGHLIN: Okay.
19   REDIRECT EXAMINATION
20   BY MR. MOORE:
21   Q   Mr. Kenney, can I have you turn to Exhibit
22   37, please, Complainant's Exhibit 37 and specifically
23   Page 1523?
24   A   All right.
25   Q   We spent a bit of time with this on your

1 direct testimony, but I think it's worth clarifying.
2 Can you describe what's depicted in the bottom two
3 photographs of this page?
4   A   Yes. The bottom left photo is one that I
5 took from the Hughes report taken on July 22nd of
6 2015, and according to the Hughes report it shows Mr.
7 Erlanson in his dredge in the South Fork. The photo
8 on the right is one that my technicians took on
9 October 8th of 2015 showing an area somewhat
10 downstream of the main focus of the -- of the
11 left-hand photo and at a slightly different angle.
12   Q   Can you remind us what the stars denote in
13 these photographs?
14   A   Yes. In my examination of the -- of Mr.
15 Hughes' photos and of the photos that my technicians
16 took, I was -- I believe able to identify the star --
17 excuse me -- the rock that is underneath that star in
18 those photos as being the same rock in the same
19 location.
20   Q   In the photograph on the left can you
21 observe Mr. Erlanson creating a dredge pile?
22   A   I see someone dredging. Mr. Hughes
23 identifies that person as Mr. Erlanson.
24   Q   And can you see them creating a dredge pile
25 in that photograph?

1   A   That dredge pile?
2   Q   Yes.
3   A   Yes, I can see a dredge pile that looks to
4 be -- the main part of it looks to be actually two --
5 towards the wooded shoreline of the discharge of the
6 dredge.
7   Q   And can you see that dredge pile in the
8 photograph on the right?
9   A   I can see a dredge pile that is in the same
10 general area based on the instream rocks which are
11 visible in both photos. They are not starred. They
12 are both -- and both of those there to the right of
13 the starred rock.
14   Q   How do you know that that dredge pile is the
15 same?
16   A   Well, just from the examination of my photos
17 and comparison of the features that are visible in
18 those photos with the features that are visible in the
19 photos that Mr. Hughes took.
20   Q   Did you label that dredge pile in your
21 reports?
22   A   The dredge pile?
23   Q   Yes.
24   A   I believe I -- I believe I did label it in
25 the -- on Page 1519 on the page for my citing the

1 14th.
2   Q   And what number did you assign it?
3   A   15 -- I'm sorry. The -- the page?
4   Q   What number did you assign that dredge pile?
5   A   Oh, I'm sorry. I assigned -- my crew
6 assigned that as Tailings Pile Number 7, and the hole
7 is Hole Number 5.
8   Q   Can you state with any degree of confidence
9 that Hole 5 is the same as the one that Mr. Erlanson
10 is photographed dredging in the Hughes report?
11   A   I believe based on my examination of the
12 photos that are in the record here and also photos
13 that were taken at the same time on October 8th and
14 other photos in Mr. Hughes' report that the position
15 of the tailings pile and the hole are essentially --
16 they're essentially constant or in -- in relation to
17 each other, and they -- on 1519 the Hole Number 5 is
18 shown as just upstream of Tailings Pile Number 7.
19   MR. MOORE: Thank you, Mr. Kenney.
20   JUDGE COUGHLIN: Hold on one second. I
21 think Mr. Erlanson might have an objection. I just
22 want him to finish his answer.
23   MR. ERLANSON: I don't have an objection.
24   JUDGE COUGHLIN: Okay.
25   MR. ERLANSON: I'd like to stipulate that

1 Mr. Moore's questions on Hole Number 5 and Hole Number
2 7, that that's me in that hole, and I did start that
3 hole, and I did start the tailing piles. I'll
4 stipulate that right now.
5   JUDGE COUGHLIN: Okay.
6   MR. ERLANSON: So, we don't have to go
7 further on that.
8   JUDGE COUGHLIN: Okay. Is that -- are you
9 agreeable?
10   MR. MOORE: EPA will stipulate as such.
11   JUDGE COUGHLIN: All right.
12   BY MR. MOORE:
13   Q   Mr. Kenney, Mr. Erlanson spent some time
14 asking you about whether you had photographed the site
15 of his dredging prior to Mr. Hughes' report and I
16 believe your answers were "no". How familiar are you
17 with that -- with the South Fork Clearwater River?
18   A   Moderately. This is not my normal area of
19 influence on the Forest. However, I did put together
20 the Biological Assessment. I have done delineations
21 of -- of permitted dredging on the South Fork in 2016
22 and 2017 and conducted inspections of many of the
23 dredge sites during those years.
24   Q   Do you feel like photographs prior to that
25 dredge season are necessary in order to draw your

Page 384

1 conclusions on the impacts caused by Mr. Erlanson?
2   A   No, not to form some conclusions anyway.
3   Q   And can you tell whether the features in
4 your reports were created in 2015?
5   A   The dredge piles -- could you repeat that,
6 please?
7   Q   Yes. Have you concluded that the features
8 that you analyzed in your 2015 report were created in
9 2015?
10   A   Yes. In addition to Mr. Hughes taking
11 photos and observations of dredge piles being created,
12 dredge holes and dredge piles being created in July,
13 the characteristics of a relatively fresh dredge hole
14 or dredge tailings pile are distinctive. And as I've
15 discussed in my second report, the changes that
16 occurred to those holes and piles are distinctive from
17 one -- between if there's a high flow event especially
18 intervening.
19   Q   Mr. Erlanson pointed out that he dredged in
20 the thalweg of the river. Can you define what
21 "thalweg" is?
22   A   Yes. A thalweg is a term used in hydrology
23 for the portion of the stream where the stream flow is
24 most concentrated in highest velocity, and it can vary
25 in a particular site depending on the -- the discharge

Page 385

1 level of the stream.
2   JUDGE COUGHLIN: Can you -- can you spell
3 that?
4   THE WITNESS: Thalweg. It's a German word,
5 T-H-A-L-W-E-G.
6   JUDGE COUGHLIN: Okay. Thank you. It helps
7 me. I don't know if it will help the court reporter,
8 but go right ahead, Mr. Moore.
9   BY MR. MOORE:
10   Q   And if a miner is dredging in the thalweg,
11 is it more likely that sediment that's dredged would
12 travel farther in a portion of the river that has
13 higher velocity?
14   A   Yes. If the dredge is operating within the
15 thalweg of the stream at that particular time, that is
16 the area with the highest velocity and any suspended
17 material would tend to travel farther than if the
18 dredge were operating in an area of lower velocity.
19   Q   Thank you. Mr. Erlanson spent some time
20 talking about best management practices associated
21 with suction dredge mining. Would you consider some
22 of the mitigation measures in your Biological
23 Assessment consistent with best management practices?
24   A   Yes, I would. There are -- in various
25 fields there are slightly different meanings for

Page 386

1 mitigation measures, best management practices, the
2 best management practices, that sort of thing. But
3 they're -- they're all intended to be activities that
4 would tend to reduce some effect or another of a
5 particular -- of a -- of a desired activity.
6   Q   And in your opinion, did Mr. Erlanson comply
7 with the mitigation measures in the BA?
8   A   He may have complied with some that he felt
9 were best management -- excuse me -- mitigation
10 measures, but I don't -- I cant' say -- I -- we -- we
11 discussed some of the mitigation measures that were a
12 part of the Biological Assessment and noted that he
13 did not comply with -- with many of those, and there
14 were many other measures that he perhaps did or did
15 not comply with.
16   Q   You again characterized some of your data as
17 approximations. Is that characterization primarily
18 based on the fact that you were using linear
19 measurements to measure things that aren't square?
20   A   Yes, that is part of it.
21   Q   Did you do anything to account for that?
22   A   Yes. I adjusted the measurements, in
23 particular the areas by reducing the measurement, the
24 square footage by 20 percent as an approximation of
25 what it would be rounded.

Page 387

1   Q   And remind the Court when you did your first
2 post-dredge study after the dredging season in 2015.
3   A   That was October 7th and 8th, 2015.
4   Q   And what was the date of Mr. Erlanson's
5 dredging?
6   A   The dredging that was documented by Mr.
7 Hughes was July 22nd, 2015.
8   Q   In your opinion, was Hole Number 5 smaller
9 during your visit than it was immediately after the
10 dredge season?
11   A   I am not -- when do you mean by directly
12 after the dredge season?
13   Q   Was -- was the hole in October smaller than
14 it would have been in August?
15   A   Was the hole in October smaller than it
16 would have been --
17   Q   In August.
18   A   In August? Oh, I see, directly after the
19 IDWR dredge season. Is that what you mean?
20   Q   Correct.
21   A   I see. It's impossible for me to know what
22 the size of the hole was at the end of the dredge
23 season in August.
24   Q   In your reports what were your general
25 findings about how the size of holes changed with time

1   after dredging?
2   A In my 20 -- in my report on the 2015
3   dredging that is based on the sampling in October of
4   2015 I -- that was the baseline for later measurements
5   in 2016 and in 2018. So, I -- I did not make any -- I
6   don't believe I made any statements other than general
7   ones that -- that the features would suffer some
8   attenuation of -- by high-flow events.
9   Q In 2016 were the holes somewhat smaller?
10   A Yes, yes, it was. The hole and the -- the
11   tailings pile were both smaller than they were in 2015
12   as measured in -- yeah.
13   Q When you conducted your Biological
14   Assessment and you were analyzing the impacts of
15   suction dredge mining, were you focused on permitted
16   or unpermitted suction dredge mining?
17   A Permitted and not just by Forest Service but
18   by the EPA and the state.
19   Q Is it likely that impacts from unpermitted
20   suction dredge mining would be greater than those of
21   permitted suction dredge mining?
22   A It is often going to be the case. Of
23   course, it depends on -- on what practices the
24   individual miner takes.
25   Q Mr. Erlanson spent some time having you

1   address the likelihood of spawning of certain species
2   in the South Fork. Is there spawning of fall Chinook
3   salmon in the area where Mr. Erlanson dredged?
4   A It is possible. Well, it depends on what
5   you mean by the area. There are fall Snook salmon
6   that spawn, especially in the last ten years or so, in
7   the South Fork Clearwater River, but it's primarily
8   downstream of where Mr. Erlanson dredged. There is
9   not -- there are -- there are annual aerial counts of
10   fall Snook salmon reds in the South Fork Clearwater.
11   But because the folks that do that don't believe that
12   the density of reds above a certain point is worth
13   flying for, it's impossible for me to say whether
14   there were -- have been any fall Snook salmon reds in
15   the area of Mr. Erlanson's dredging.
16   Q Can suction dredge mining cause adverse
17   impacts to ESA-listed species, even if the species
18   doesn't spawn in the specific area where the dredging
19   occurs?
20   A Yes.
21   Q And if a species doesn't spawn in a
22   particular reach of the river, does that mean -- does
23   that necessarily mean that the species doesn't use
24   that section of the river?
25   A No, no, no.

1   Q Is your definition of "sediment" the same as
2   Mr. Erlanson's definition?
3   A I'm -- I'm not sure what he meant.
4   Q Regardless, would you classify your
5   definition of "sediment" the same as it would be
6   defined in the Clean Water Act?
7   A As I said, I'm not -- that's not entirely my
8   area of expertise. But when it comes to impairment of
9   water bodies, it is the finer sediments that are
10   considered to be impairment. So, that is not exactly
11   consistent with what I said.
12   Q In your opinion, can sediment cause an
13   adverse impact to ESA-listed species?
14   A Fine sediment can. Larger sediment
15   typically is not.
16   MR. MOORE: No further questions. Thank
17   you, Mr. Kenney.
18   JUDGE COUGHLIN: All right. Thank you. Mr.
19   Erlanson, any questions?
20   MR. ERLANSON: Yeah, just a couple, Your
21   Honor.
22   JUDGE COUGHLIN: Okay.
23   RECROSS EXAMINATION
24   BY MR. ERLANSON:
25   Q We talked about Hole Number 5 and Tailings

1   Number 7 again, and I stipulated that I started those
2   holes. But you cannot again at this time enter in --
3   into any evidence or testimony that says that I
4   completed those holes. Is that correct?
5   A I can't say exactly what the testimony has
6   been. I don't have any personal evidence of --
7   Q Okay.
8   A -- when you dredged there.
9   Q That's fine. You mentioned in this last
10   exchange with EPA counsel about the high-water event,
11   and you -- we've also discussed about the suction
12   dredge with the silt. EPA counsel mentioned, does the
13   silt hurt ESA-listed species? How much of the South
14   Fork Clearwater River is impacted by suction dredge
15   activities on a yearly basis?
16   A Are you referring to recently or --
17   Q I'm saying an average since 2009 till today,
18   to the present time.
19   A I'm only really aware of the suction
20   dredging activity on the South Fork since Mr. Hughes'
21   report and not so much last year either.
22   Q Okay. I'll rephrase the question. Is it --
23   is it correct to state that less than .2 percent of
24   the South Fork of the Clearwater River is impacted by
25   suction activities on a yearly basis?

1   A   I -- I -- there has been permitted dredging
2   on the South Fork in the years that I talked about,
3   and there has been some unpermitted dredging. I don't
4   know the full area of it, and I don't recall the exact
5   number that it would be.
6   Q   That's correct. That's fair, Mr. Kenney.
7   Would you say in your expert opinion that a high-water
8   event like a spring runoff contributes much more
9   sediment, suspended solids, turbidity, rock, gravel
10 displacement within a river ecosystem than a suction
11 dredge working --
12   A   At what scale?
13   Q   I'm talking the whole river compared to 2
14 percent of the river. A high-water event is 100
15 percent of the water level. So, would you -- would
16 you consider -- we're talking about the ESA species
17 and how they can survive and how it seems to me like
18 testimony has been given throughout the whole court
19 process here where suction dredging is -- is -- is
20 harmful for these fish, that they cannot survive
21 because of -- or there's serious impacts about it --
22 about suction dredging with these ESA-listed species.
23   But if a suction dredge only pertains to 2
24 percent of the South Fork Clearwater River and a
25 high-water event contributes to 100 percent of that

1   Clearwater River, how do these species survive? I
2   mean, to me, from 2 percent to 100 percent is quite a
3   --
4   MR. MOORE: Your Honor, I just object to the
5   extent that this is testimony now about a specific
6   number as related to impact, and there's no way for us
7   to contextualize or authenticate those numbers, and I
8   think that Mr. Kenney has already testified that he's
9   not familiar with that data.
10   JUDGE COUGHLIN: Okay. I -- I think it's --
11 that's a sustainable objection, but I also think that
12 you're trying to get at really a critical question for
13 this hearing which is the extent of harm caused by
14 suction dredging.
15   MR. ERLANSON: Exactly.
16   JUDGE COUGHLIN: So -- and that -- you know,
17 it might be too general because we're -- we're getting
18 into a lot of details here. But I think -- I think
19 where Mr. Erlanson is going is with regard to -- if --
20 how to quantify that relative to other sources of
21 harm. Did you have a question or --
22   MR. MOORE: Just offering that I think our
23 next witness is definitely prepared to answer those
24 types of questions.
25   JUDGE COUGHLIN: Okay. Okay. Great. Thank

1   you. That's helpful. Do -- are you -- based on your
2   expertise, do you feel you can weigh in on that in
3   some way?
4   THE WITNESS: Yes.
5   JUDGE COUGHLIN: Not necessarily with a
6   number per se, but just with really the -- the
7   ultimate point which is the extent of harm that
8   suction dredging may or may not cause relative to
9   other factors regarding these threatened species.
10   THE WITNESS: Yes, I think I can and I think
11 I -- I did to some extent yesterday. I explained the
12 natural processes with high flows and sediment moving
13 or sediment -- substrate particles moving and that
14 occurring at a different time of year than when the
15 suction dredging would occur under different
16 conditions, that the organisms that live in the South
17 Fork are adapted to -- to surviving during high-flow
18 events.
19   For example, fish will move to the edges of
20 the stream to stay out of the high water. They might
21 -- if the water's high enough, they might move into
22 the trees or the bushes. So, they -- the organisms
23 that are present and have been present in the South
24 Fork for millennia are adapted a rhythm that occurs in
25 the -- in the stream conditions of the South Fork.

1   The typical conditions, the typical natural conditions
2   in the summer when the dredging would occur are
3   different than those and are not something they're --
4   they're specifically adapted to for the most part.
5   Now, that's not to say that there aren't
6   high-flow events in the summer sometimes if you have a
7   heavy thunderstorm or something like that. Stream
8   flows can come up, the turbidity can increase, that
9   sort of thing. But the organisms, as I said,
10 including the fish, the endangered species have a way
11 of maintaining themselves with natural, fluctuating
12 natural conditions that maybe if you look at a -- the
13 whole river at the peak flow, that may be -- that is
14 a -- a larger impact in any particular spot than
15 suction dredging on that spot, but it's in a different
16 context.
17   JUDGE COUGHLIN: Okay. Thank you. Mr.
18 Erlanson.
19   BY MR. ERLANSON:
20   Q   The only last question I have. It's been
21 mentioned about a 150-foot dredge plume was brought
22 out in testimony. It -- the monitoring team -- the
23 suction dredger is supposed to monitor -- monitor the
24 turbidity plume, the dredge plume, and it should not
25 exceed 150 feet. But that 150 feet, is that -- is

Page 396

1   that according to the water quality standard for the
2   South Fork Clearwater River? I was under the
3   impression it was 500 feet.
4   JUDGE COUGHLIN: Okay. Hold on one second.
5   Do you have an objection?
6   MR. MOORE: I do. I don't think that this
7   subject was covered in my redirect, so it's outside
8   the scope.
9   JUDGE COUGHLIN: With regard to the length
10   of feet?
11   MR. MOORE: I don't think that we talked
12   about turbidity specifically in my redirect, and we
13   certainly didn't talk about water quality standards.
14   JUDGE COUGHLIN: Okay. Was that covered in
15   your direct, though?
16   MR. MOORE: Yes.
17   JUDGE COUGHLIN: Okay.
18   MR. MOORE: Not water quality standards but
19   turbidity, certainly.
20   JUDGE COUGHLIN: Okay. Yeah, I thought --
21   that's what I thought, too. Okay. Technically you're
22   correct, but I'm going to overrule the objection just
23   to allow some questions that maybe weren't asked
24   before.
25   MR. MOORE: Understood. Thank you.

Page 397

1   JUDGE COUGHLIN: And if -- you know, I mean,
2   if you need to follow up at all -- I know we typically
3   end with recross, but because of the leniency I'm
4   allowing, should that require you to do any follow-up,
5   I'll extend that to you as well.
6   MR. MOORE: Thank you, Your Honor.
7   JUDGE COUGHLIN: Okay. Go ahead, Mr.
8   Erlanson.
9   BY MR. ERLANSON:
10   Q   I was just -- I was under the impression
11   that the -- the NPDES permit allows for a 500-foot
12   mixing zone and that the turbidity NTU units at that
13   level would be less than 50. So, I -- I was concerned
14   by the counsel's reference to 150 foot, and I was just
15   wondering how that 150 foot gets into this mix. I
16   don't understand where the 150 foot gets into the
17   regulatory scheme of things here. So, I'm -- I'm
18   hoping you can give me some insight here.
19   MR. MOORE: Your Honor, I think Mr.
20   Erlanson's question is related to EPA measures of the
21   general permit which Mr. Kenney I don't think
22   testified about in direct.
23   JUDGE COUGHLIN: Okay. Yeah, I don't -- I
24   don't recall. Did you testify about any of that on
25   your direct, about the -- the feet and the -- and

Page 398

1   EPA's general permit of 150 feet?
2   THE WITNESS: No. I -- I testified as to
3   what was in the BA and -- and the -- there were
4   mitigation measures, one that mentioned 150 feet and
5   one that mentioned the 800-foot spacing between
6   dredgers.
7   JUDGE COUGHLIN: Okay. Again, technically a
8   sustainable objection.
9   MR. ERLANSON: Yeah.
10   JUDGE COUGHLIN: So, I'll sustain it. But
11   let me just ask you if you know where that 150 is
12   derived, from what it's derived, if you know? And if
13   you don't, then that's fine too.
14   THE WITNESS: Yes, I could speak to that.
15   JUDGE COUGHLIN: Okay.
16   THE WITNESS: So, the -- as I previously
17   stated, there are other suction dredging areas on the
18   Forest, and we have conducted consultations previously
19   on these other suction dredging areas. And to tell
20   you the truth, I inherited a set of mitigation
21   measures that I basically kind of pasted into our BA
22   when I went from consultation to consultation just for
23   the ease of -- ease of adoption and -- and monitoring
24   and that sort of thing. And so, the original
25   Biological Assessments that I put together in 2013 for

Page 399

1   the Moose Creek Project area and the LoLo Creek
2   Project area -- the previous Biological Assessments
3   which have been done, I think the last one was in 2009
4   or 2010, something like that, had that 150-foot --
5   150-foot measure that related to visible turbidity and
6   the miner stopping when he observed -- when the miner
7   observed a -- a turbidity plume of more than 150 feet.
8   Now, the -- as far as I know -- and I could
9   be wrong about this -- this wasn't tied to the NPDES
10   permit. I think it does actually say in the BA that
11   it is, but I might -- anyway, I'm not sure about that.
12   JUDGE COUGHLIN: Okay.
13   THE WITNESS: But the -- the mitigation
14   measures that we put in the BA and that are in the EA
15   also are sometimes a compromise between the actual
16   potential impacts and the ability of in this case the
17   miners to comply with intended results and for the
18   Forest Service to -- to, you know, constantly observe
19   and inspect these sorts of things. So, we could have
20   put something else in there. But for whatever reason
21   that was originally in there, the 150 feet was chosen.
22   JUDGE COUGHLIN: Okay. And that -- and I
23   think you indicated right from the get-go that was
24   something you inherited.
25   THE WITNESS: I -- that -- that is my

1 recollection. It's been a while since I originally
2 put that put that in, but I believe we have 150 feet
3 in each of the one, two, three, four, five, six -- I'm
4 sorry -- five Biological Assessments.
5   JUDGE COUGHLIN: All right. Thank you. Go
6 ahead, Mr. Erlanson.
7   BY MR. ERLANSON:
8   Q   So, is that -- is that a rule of the Forest
9 Service, it's this 150 foot, is that an extra rule, or
10 is it just part of a Biological Assessment?
11   A   By a rule as far as I know -- by a rule it
12 is not in any sort of, you know, Code of Federal
13 Regulations or any Forest Service handbook or anything
14 like that. It is specific as far as I know to this
15 Forest and the processes that we've done as far as
16 consultation over the years.
17   MR. ERLANSON: Okay. Thank you, Mr. Kenney.
18 I'm -- I'm -- I'm fine with it. I'm done.
19   JUDGE COUGHLIN: Okay. No more questions?
20   MR. ERLANSON: No more questions, yeah.
21   JUDGE COUGHLIN: Did that raise anything you
22 needed to delve into, Mr. Moore?
23   MR. MOORE: I don't think so, Your Honor.
24 Thank you.
25   JUDGE COUGHLIN: All right. Okay. Mr.

1 Kenney, thank you very much for your testimony.
2   THE WITNESS: You're welcome.
3   (Witness excused.)
4   JUDGE COUGHLIN: So, you're up to your next
5 witness, right, your last one?
6   MR. MOORE: Yes.
7   JUDGE COUGHLIN: Okay. Would you all like a
8 brief break before we launch into that?
9   MR. ERLANSON: Yeah.
10   MR. MOORE: I think five minutes would be
11 appreciated.
12   MR. McLAREN: Yes. And can I ask one
13 clarifying question?
14   JUDGE COUGHLIN: Sure.
15   MR. McLAREN: For the purposes of
16 preparation I'd like to know if Mr. Erlanson has
17 changed whether he plans to take the stand after our
18 final witness.
19   JUDGE COUGHLIN: Okay. Mr. Erlanson?
20   MR. ERLANSON: No, I'm not.
21   JUDGE COUGHLIN: You're not going to
22 testify?
23   MR. ERLANSON: No, I'm not.
24   JUDGE COUGHLIN: And what about introducing
25 any of those exhibits?

1   MR. ERLANSON: Those exhibits were entered
2 by my attorney before. So --
3   JUDGE COUGHLIN: Right.
4   MR. ERLANSON: -- I don't see any reason why
5 they can't be part of the record or whatever.
6   JUDGE COUGHLIN: Okay. So, do you -- and
7 just to clarify whether you want to introduce them
8 into evidence at this hearing as exhibits as opposed
9 to keeping them as part of the case record being
10 mindful of the fact that my decision will only be
11 based on what has been produced by this evidentiary
12 hearing. So, the witnesses that testified --
13   MR. ERLANSON: Sure.
14   JUDGE COUGHLIN: -- the exhibits that are
15 admitted into evidence as opposed to what's contained
16 elsewhere in the larger case record.
17   MR. ERLANSON: I think they can be admitted
18 into evidence. I mean, I -- they were admitted
19 before. I mean, I was -- I'm just --
20   JUDGE COUGHLIN: Well, yeah, it's -- it's a
21 legal distinction. Your attorney provided them as --
22   MR. ERLANSON: Okay.
23   JUDGE COUGHLIN: -- part of the Respondent's
24 pre-hearing exchange.
25   MR. ERLANSON: Okay.

1   JUDGE COUGHLIN: And so, they're -- they've
2 already been exchanged. So, there's nothing new.
3   MR. ERLANSON: Okay.
4   JUDGE COUGHLIN: You know, Complainant has
5 been aware of them, has been able to prepare which is
6 kind of a point. That's why I'm not allowing anything
7 new to come in for both of you.
8   MR. ERLANSON: Right.
9   JUDGE COUGHLIN: So, I wanted to let you
10 know that if you want me to consider them at all, then
11 they ought to be offered into evidence at this
12 hearing, and again referring just to RX-2 and then
13 RX-4 through RX-9.
14   MR. ERLANSON: Yeah.
15   JUDGE COUGHLIN: That said, did Complainant
16 have any objections to those coming in?
17   MR. McLAREN: If this is a question of
18 whether he will be permitted to introduce them without
19 testimony or authentication --
20   JUDGE COUGHLIN: Presumably. I -- if -- I
21 assume no witnesses. So, you're not going to testify,
22 no witnesses to testify. So --
23   MR. ERLANSON: That's correct.
24   JUDGE COUGHLIN: So, it gets into kind of
25 what I was talking about earlier with regard to how

1   much weight. But you -- you can still offer them in.
2   MR. ERLANSON: Go ahead.
3   MR. McLAREN: If I may -- if Mr. Erlanson
4   would like to admit those, I -- I believe 2 and then 4
5   through 9, EPA is probably comfortable with that so
6   long as we can admit one other item from the record.
7   It had been previously exchanged. It's something with
8   which Respondent's familiar. So, I'm fine with that
9   sort of exchange.
10   JUDGE COUGHLIN: Okay.
11   MR. McLAREN: I'm a little bit less
12 comfortable if it's Mr. Erlanson just proposing all of
13 these exhibits to be introduced without any context
14 authentication, et cetera. So, if -- if we are
15 considering previously entered items in the record,
16 there's just one other item we'd like to add on top of
17 that.
18   JUDGE COUGHLIN: Okay.
19   MR. McLAREN: And that --
20   JUDGE COUGHLIN: I'm not -- yeah, I'm not
21 sure I'm -- I understand whether you object. I mean,
22 obviously there are going to be authentication --
23 there's going to be a -- the extent to which I can
24 afford weight.
25   MR. McLAREN: Certainly.

1   JUDGE COUGHLIN: But I'm also mindful of the
2   fact, I think, that in Complainant's rebuttal
3   pre-hearing exchange there were some references to
4   some of the Respondent's exhibits.
5   MR. McLAREN: Yeah.
6   JUDGE COUGHLIN: And so, it seems to me that
7   it -- it's at least fair to afford him the opportunity
8   to introduce them into evidence. Obviously if there
9   are questions about who authored them and whether
10 they're here to testify, that doesn't happen. But I
11 can -- I may be able to provide some weight, albeit in
12 a limited capacity or perhaps no weight. But that
13 comes after when I review and subject to argument post
14 hearing. So, really what I'm asking you is whether
15 you wish to object to those exhibits coming into
16 evidence.
17   MR. McLAREN: No, Your Honor, so long as
18 they're not RX-1 and RX-3 or any of the later
19 exchange, I -- I won't object to those coming into
20 evidence. Again, I'll say less cryptically
21 simultaneously something on which you relied in your
22 order on motion for accelerated decision, a
23 declaration submitted by Mr. Erlanson. I'll offer
24 that as well.
25   JUDGE COUGHLIN: Okay. That's -- sure, I

1   understand. That's fine.
2   MR. McLAREN: Perfect.
3   JUDGE COUGHLIN: Okay. Well, so why don't
4   we do this? Let's take a break.
5   MR. McLAREN: Certainly.
6   JUDGE COUGHLIN: Do you have a copy of -- of
7   those exhibits?
8   MR. McLAREN: We do. I have a copy right
9   here. So -- and we have several copies.
10   JUDGE COUGHLIN: So, you're good with -- we
11 don't -- I mean, you didn't bring copies. So, I'm
12 again trying to provide some leniency here. Are you
13 comfortable working off of the copies you have? We're
14 all going to be doing that, I think. So --
15   MR. McLAREN: That's right. I -- I believe
16 we're comfortable for the purposes of my own issues.
17 I'll go over all the exhibits one more time just to
18 make sure I'm not leaving anything out.
19   JUDGE COUGHLIN: Sure.
20   MR. McLAREN: And then towards the end of
21 this once we reach the end of our testimony, I'll say
22 finally, yes, we're comfortable this coming in.
23   JUDGE COUGHLIN: Totally fine.
24   MR. McLAREN: Thank you, Your Honor.
25   JUDGE COUGHLIN: Do you want a little more

1   time than a five-minute break, just so you're not -- I
2   don't want you to have to multitask while people are
3   testifying.
4   MR. McLAREN: We'll probably break for lunch
5   after Mr. Arthaud's testimony I'd imagine.
6   JUDGE COUGHLIN: Okay.
7   MR. McLAREN: So, I could do that over the
8   course of the -- does that work?
9   JUDGE COUGHLIN: Sure, that's fine. I mean,
10 If you're not going to be testifying, you know, you
11 may want to consider --
12   MR. McLAREN: End it here?
13   JUDGE COUGHLIN: Yeah. I mean, unless you
14 really want to come back after lunch, but it might
15 --
16   MR. McLAREN: Then I ask for maybe a
17 20-minute, a 15-minute break.
18   JUDGE COUGHLIN: Sure, yeah, yeah. Well,
19 let's do 20.
20   MR. McLAREN: Okay.
21   JUDGE COUGHLIN: Give you plenty of time.
22 And if you need another one, just let me know because
23 I -- you know, I -- I don't want to derail things
24 here.
25   MR. McLAREN: Certainly.

1   JUDGE COUGHLIN: But I'm just trying to be
2   as lenient as possible to everybody.
3   MR. McLAREN: Thank you, Your Honor.
4   JUDGE COUGHLIN: All right. I'll see y'all
5   back in about 20 minutes then.
6   MR. McLAREN: Thank you.
7   JUDGE COUGHLIN: All right. Thank you.
8   MR. ERLANSON: Thank you.
9   (Whereupon, a brief recess was taken.)
10   JUDGE COUGHLIN: Okay. We're back on the
11   record. It's a little bit more than 20 minutes but
12   close. And I -- I know we're going to pick up with
13   the last witness, but do you want to deal with the
14   exhibits now? Would you prefer to do it later?
15   MR. McLAREN: I'd prefer to do it at the end
16   of this case.
17   JUDGE COUGHLIN: Sure. Do you -- if you
18   need more time at any stage, just let me know.
19   MR. McLAREN: I will.
20   JUDGE COUGHLIN: Okay. All right. Very
21   good.
22   MR. McLAREN: Thank you, Your Honor.
23   JUDGE COUGHLIN: Sure. So, your next
24   witness.
25   MR. MOORE: EPA Calls David Arthaud.

1   JUDGE COUGHLIN: And can you -- the
2   pronunciation again on the last name.
3   MR. MOORE: Arthaud.
4   JUDGE COUGHLIN: Arthaud? Okay. Great.
5   Thank you.
6   Whereupon,
7   DAVID ARTHAUD
8   having been duly sworn, was called as a
9   witness and was examined and testified as follows:
10   DIRECT EXAMINATION
11   BY MR. MOORE:
12   Q   Good morning, Mr. Arthaud.
13   A   Good morning.
14   Q   Can you please state your full name and
15   spell your last name for the record.
16   A   David Lee Arthaud, A-R-T-H-A-U-D.
17   Q   And are you employed, Mr. Arthaud?
18   A   Yes.
19   Q   Where do you work?
20   A   National Marine Fishery Service in Moscow,
21   Idaho.
22   Q   And what's your title there?
23   A   Fishery biologist.
24   Q   Can you describe for the Court the topics on
25   which you've been asked to testify today.

1   A   I've been asked to testify of the adverse
2   impacts of the suction dredge on July 22nd, 2015 from
3   Mr. Erlanson.
4   Q   And have you reviewed any documents in
5   reaching your expert opinion?
6   A   Yes, many.
7   Q   Can you generally describe the kinds of
8   documents that you reviewed?
9   A   Well, the exhibits and then dozens of -- of
10   primary literature on scientific literature, on
11   sediment, sedimentation, turbidity, at those types of
12   things.
13   Q   Excellent. And can you briefly summarize
14   your conclusions on the topics that you've been asked
15   to testify?
16   A   That suction dredging causes adverse
17   effects, and that this incident is a typical suction
18   dredging type of activity that would cause those
19   effects, and they would affect the water column, the
20   substrate, and there would be direct effects, also.
21   (The document referred to was
22   marked for identification as
23   Complainant's Exhibit No.
24   33.)
25   //

1   BY MR. MOORE:
2   Q   Because EPA's offering you as an expert
3   witness, I'm going to discuss some of your
4   qualifications. In doing so, I'll turn you to
5   Complainant's Exhibit 33.
6   (Pause.)
7   Q   Do you recognize this document?
8   A   Yes. It is my resume.
9   Q   EPA moves to admit Complaint's Exhibit 33
10   into evidence.
11   JUDGE COUGHLIN: (Coughs.) If I can stop my
12   choking. Do you object, Mr. Erlanson?
13   MR. ERLANSON: No, ma'am, Your Honor.
14   JUDGE COUGHLIN: Okay. CX-33 is admitted.
15   So sorry. Dry -- dry cough.
16   (The document referred to,
17   previously identified as
18   Complainant's Exhibit No. 33,
19   was received in evidence.)
20   BY MR. MOORE:
21   Q   Mr. Arthaud, from what university did you
22   obtain your undergraduate degree?
23   A   University of Missouri.
24   Q   And what degree did you obtain there?
25   A   A Bachelor of Science in fish and wildlife

1   management.
2   Q   And can you describe the types of courses
3   that you took in obtaining that degree?
4   A   Ichthyology, geology, ornithology,
5   mammalogy, ecology.
6   Q   And in what year did you graduate?
7   A   1989.
8   Q   Did you go on to do any post-graduate
9   education?
10   A   Yes, I did. I went to the University of
11   Idaho.
12   Q   And what degree did you obtain there?
13   A   Master of Science and Fishery Resources.
14   Q   In what year?
15   A   1992.
16   Q   Can you describe the types of courses that
17   you took in obtaining that degree?
18   A   Ecology of aquatic invertebrates, ecology of
19   water pollution, advanced fisheries management, fish
20   physiology.
21   Q   You mentioned that you currently serve as a
22   Fisheries biologist for NMFS. How long have you been
23   in your current role?
24   A   Nineteen years.
25   Q   And what are your duties in that role?

1   A   Primarily to -- Section -- to consult with
2   action agencies, Section 7 of the Endangered Species
3   Act, if -- wherever those activities might harm fish,
4   cause adverse effects on fish listed species.
5   Q   And in that consultation process are there
6   documents that you draft?
7   A   Yes.
8   Q   What are those documents?
9   A   There's usually two letter of concurrence
10   and biological opinions.
11   Q   And in your current role how many biological
12   opinions have you authored?
13   A   Fifteen about.
14   Q   And of those how many involved your analysis
15   of impacts on salmonids?
16   A   All of them.
17   Q   In your current role with NMFS, has your
18   work ever related to the South Fork of the Clearwater
19   River?
20   A   Yes.
21   Q   In what way?
22   A   I worked on the suction dredging program
23   with Forest Service and BLM. I've worked on mining
24   restoration projects and technical assistance for
25   stream flow and other things.

1   (The document referred to was
2   marked for identification as
3   Complainant's Exhibit No.
4   16.)
5   BY MR. MOORE:
6   Q   I'll turn you to Complainant's Exhibit 16
7   now.
8   A   Okay.
9   Q   Do you recognize this document?
10   A   Yes. It's a letter of concurrence for EPA's
11   small suction dredging general permit for the State of
12   Idaho.
13   Q   And what was your role in creating this
14   document?
15   A   I led the consultation and drafted this
16   letter.
17   MR. MOORE: EPA moves to admit Complainant's
18   Exhibit 16 into evidence.
19   JUDGE COUGHLIN: Any objection, Mr.
20   Erlanson?
21   MR. ERLANSON: No. No, Your Honor.
22   JUDGE COUGHLIN: Okay. CX-16 is admitted.
23   //
24   //
25   //

1   (The document referred to,
2   previously identified as
3   Complainant's Exhibit No. 16,
4   was received in evidence.)
5   (The document referred to was
6   marked for identification as
7   Complainant's Exhibit No.
8   17.)
9   BY MR. MOORE:
10   Q   I'll have you turn now to Complainant's
11   Exhibit 17.
12   A   Okay.
13   Q   Do you recognize this document?
14   A   Yes, I do.
15   Q   What is it?
16   A   This is the Biological opinion and Magnuson
17   Stevens Fishery Conservation Management Act on
18   essential fish habitat response for the South Fork
19   Clearwater Small Suction Dredging Program.
20   Q   And did you have a role in creating this
21   document?
22   A   Yes. I led the consultation and wrote the
23   bi-op.
24   MR. MOORE: EPA moves to admit Complainant's
25   Exhibit 17 into evidence.

Page 416

1 JUDGE COUGHLIN: Any objection, Mr.
2 Erlanson?
3 MR. ERLANSON: No, Your Honor.
4 JUDGE COUGHLIN: Okay. CX-17 is admitted.
5 (The document referred to,
6 previously identified as
7 Complainant's Exhibit No. 17,
8 was received in evidence.)
9 BY MR. MOORE:
10 Q Mr. Arthaud, I'm sorry to jump around, but
11 I'll turn you back to your resume, Complainant's
12 Exhibit 34.
13 JUDGE COUGHLIN: Thirty-four or 33?
14 MR. MOORE: I'm sorry. Thirty-three.
15 You're correct.
16 JUDGE COUGHLIN: Okay.
17 THE WITNESS: Okay.
18 BY MR. MOORE:
19 Q Can you briefly describe the position that
20 you held immediately prior to your current position?
21 A Yes. It was Fisheries biologist also
22 working for NMFS but on the California Coastal Team in
23 1998 and '99.
24 Q And what were your general responsibilities
25 in that role?

Page 417

1 A Very similar. Section 7 consultations under
2 the SA and technical assistant through various
3 projects with state and other federal agencies.
4 Q And before your role with NMFS and Santa
5 Rosa, what was your job before that?
6 A I worked for the Shoshone Bannock tribe in
7 Fort Hall, Idaho. I was Anadromous Fisheries
8 biologist.
9 Q And can you describe your duties in that
10 role?
11 A I managed anadromous fisheries for the
12 tribes and habitat restoration throughout the Columbia
13 Basin. And also I was there from -- from -- let me
14 think -- from 1998 back to '96.
15 Q And before 1996 what was your job?
16 A I worked for the -- as a resident Fisheries
17 biologist for the Shoshone Bannock tribes in Fort
18 Hall, managing wild trout fisheries on the Fort Hall
19 bottoms and restoring habitat.
20 Q And have you ever received any awards that
21 commended your service in the various roles that you
22 mentioned?
23 A Yes, I did. I received the Bronze Medal
24 award from NOAA in 2003 for leading a team of
25 scientists on the Potlatch Mill biological opinion and

Page 418

1 consultation.
2 Q Have you ever published any scientific
3 papers on the topics that you're testifying on today?
4 A I have. Two.
5 Q And generally what were the -- what were the
6 topics of those papers?
7 A The first one was on aid to juvenile
8 survival primarily related to stream flow and early
9 rearing habitats in the Lemhi River, and then it also
10 related that survival to the whole life cycle of the
11 salmon. So, we were able to look at the returning
12 adults also.
13 MR. MOORE: At this point, Your Honor, I'll
14 tender this witness as an expert specifically in
15 ESA-listed species in the South Fork Clearwater River
16 and the impacts of suction dredging on those species.
17 JUDGE COUGHLIN: Okay. And Mr. Erlanson, do
18 you have any objection to that?
19 MR. ERLANSON: No, Your Honor.
20 JUDGE COUGHLIN: Okay. So deemed.
21 BY MR. MOORE:
22 Q Mr. Arthaud, can you turn to Complainant's
23 Exhibit 17?
24 A Okay.
25 Q And I believe you already testified that

Page 419

1 this document is the biological opinion that you
2 authored regarding small scale suction dredging on the
3 South Fork Clearwater River. Is that right?
4 A Yes.
5 Q What's the -- what's the purpose of drafting
6 this document?
7 A The purpose of this document is to summarize
8 the existing science and knowledge on an issue that
9 could have adverse effects to fish and to provide our
10 opinion on it and offer ways to mitigate the harms,
11 the potential harms and adversity and those usually
12 fall under terms and conditions in the monitoring
13 plant.
14 Q What year was the biological opinion
15 completed?
16 A 2016.
17 Q And to be clear, in 2015 was suction dredge
18 mining allowed in the South Fork Clearwater River?
19 A No.
20 Q Why not?
21 A Because the general permit that we already
22 looked at from EPA excluded it without a Land
23 Management Agency's ESA consultation for that area.
24 Throughout the rest of the Idaho was okay but not in
25 the Clearwater.

1   Q Please turn to Page 995 of the same exhibit.
2 Are you there?
3   A No.
4   Q Sorry.
5   A Okay.
6   Q At the bottom of the page, Section 2.2 is
7 titled "Range Wide Status of the Species and Critical
8 Habitat." In general, what topics are discussed in
9 this section of the bi-op.
10   A In this section first it looks at the status
11 of the species. It relates current numbers and trends
12 to historic populations, and it also looks at the
13 status of critical habitat related to past conditions.
14   Q Can you please explain which endangered
15 species inhabit the South Fork?
16   A The fall Chinook salmon inhabit at least the
17 lower portions for spawning, and they may invade well
18 up into the system. Snake River Basin, steelhead, and
19 also Fish and Wildlife Service has bull trout listed.
20   Q Briefly describe how do each of those
21 species use the South Fork?
22   A The Snake River fall Chinook salmon move up
23 from downstream areas and spawn in the lower main stem
24 of the South Fork, and then their juveniles spread out
25 and rear throughout the main stem and then migrate out

1 within a year or two towards the ocean and then
2 return. Snake River Basin steelhead spawn and rear
3 throughout the South Fork and its tributaries, main
4 stream and tributaries, and then they migrate out and
5 return as adults. And then bull trout, they're mostly
6 in tributaries, but they also use the main stem South
7 Fork during the winter and at other times.
8   Q And can you describe what the current status
9 of these species, of these ESA-listed species, is in
10 the South Fork?
11   A All three of these are threatened.
12   Q And help us understand their general
13 population trends.
14   A Well, I should say they're threatened with
15 risk of extinction, and the general population trends
16 for Snake River Basin steelhead are -- well, both,
17 also fall Chinook, their range has been constricted
18 and their abundance has declined greatly from
19 previous.
20   Q Thank you. I'll have you turn to Page 1004
21 of the same exhibit.
22   A Okay.
23   Q The bottom section on that page is titled
24 "Status of Designated Critical Habitat." Has any
25 portion of the South Fork Clearwater River been

1 designated endangered species critical habitat?
2   A Yes. The entire main stem and most of the
3 links of most tributaries have been designated for
4 Snake River Basin steelhead. Most tributaries have
5 been designated for Snake River Basin steelhead as
6 critical habitat.
7   Q And why is that?
8   A Because they need those areas to maintain
9 the population numbers that they're at, and those
10 areas are also needed for their recovery.
11   Q And, generally, can you explain the current
12 status of critical habitat in the South Fork?
13   A It is degraded. It varies. Most people --
14 I would call it fair overall and that's it.
15   Q Thank you. I'll turn you to Page 1007 now.
16   A Okay.
17   Q There's a table on this page that lists
18 factors that limit critical habitat in the South Fork.
19 Can you go through each of these factors explaining
20 why they're limiting?
21   A Yes. The riparian and flood plume
22 conditions are poor, and they are mostly the result of
23 additional sediment that has come into the channel
24 which also affects the riparian vegetation, and
25 there's a constriction by the Highway 14 that runs the

1 length of the South Fork main stem. So, the flood
2 plain has been narrowed.
3   Q And so, I think you described why the
4 riparian and flood plain condition is a limiting
5 factor. Can you explain why temperature is a limiting
6 factor?
7   A Yes. Temperature is another limiting
8 factor. It is for -- from a reduction of -- of
9 vegetative shade is one aspect. But the main reason
10 for temperature being a problem in the South Fork is
11 that it has high volumes of sand in its channel bed,
12 and so, the habitat's simplified and there's not as
13 much shade from complex habitat.
14   Q And the next limiting factor listed is
15 migration barrier. Why is that a limiting factor?
16   A Because of heavy eroding in the basin.
17 There are many culverts and small bridges and
18 difficult passage areas, and so, that's part of it.
19 And another part of it is when a channel has high bed
20 loads of sand in it, it -- it causes all those
21 conditions to be exacerbated. It's harder to keep
22 passage open.
23   Q And sediment. Why is sediment a limiting
24 factor?
25   A For the reasons I just said, but it is -- it

1   is -- it reduces survival greatly for rearing and
2   spawning. Like incubating eggs can be reduced 16
3   percent survival by a 1 percent increase in fine
4   sediment and the same way with early juvenile rearing.
5   They need to have interstitial spaces under the
6   cobbles that we've been discussing, and sediment fills
7   those -- fine sediments fills those cobbles and
8   simplifies the area and removes their habitat.
9   Q   Does the table suggest that there's a high
10 amount of sediment existing in the South Fork
11 Clearwater River?
12   A   It does. It's excess sediments throughout
13 most of these limiting factors that contribute to
14 them. And the very last one, habitat complexity, when
15 you get a lot of sand and fine sediment in a channel,
16 it fills the pools up and embeds the cobbles. There's
17 sand around all the rocks or under them, and it makes
18 the -- the channel simplified. It simplifies it.
19 It's wherever you look, you have high embedded habitat
20 with sand.
21   Q   And briefly I'll turn you back to sediment.
22 Why -- why does the South Fork have a high amount of
23 sediment?
24   A   It -- it has a high amount of sediment from
25 legacy mining, placer mining that has occurred in the

1   past and that has taken 50 to 100 years to begin to
2   recover. And there's also large timber harvest in
3   uplands and additional roads, high densities of roads,
4   and all those devolvements and activities tend to
5   produce sediment, fine sediment.
6   Q   Can you turn to Page 1036 of the same
7   document.
8   A   Okay.
9   Q   So, the section on this page is entitled
10 "The Magnuson Stevens Fisheries Conservation and
11 Management Act Essential Fish Habitat Consultation."
12 Can you explain the obligation of federal agencies
13 under the MSA?
14   A   Under this act the MSA federal agencies are
15 required to consult with NMFS if their activities are
16 likely to adversely affect essential fish habitat.
17   Q   What's essential fish habitat?
18   A   EFH is the -- the sum of habitat and all its
19 components that are needed to produce strong
20 populations of these salmonids which are commercial --
21 highly valued commercial fisheries, and those
22 components of habitat are the riverbed, the substrate,
23 the channel shape and form, the riparian vegetation,
24 passage, the sum of the -- mostly the limiting factors
25 that we just read.

1   Q   Is any portion of the South Fork considered
2   essential fish habitat?
3   A   Yes, it is. The entire South Fork watershed
4   is EFH for Coho salmon and spring-summer Chinook
5   salmon and fall -- Snake River fall Chinook salmon.
6   Q   Why is it classified as such?
7   A   Because it is essential for their
8   productivity and survival.
9   Q   Thank you. Sir, I want to turn now to talk
10 about the impacts of suction dredging generally. In
11 your opinion, does suction dredge mining cause adverse
12 environmental impacts in the South Fork Clearwater
13 River?
14   A   Yes.
15   Q   To break that down I want to talk about the
16 kinds of adverse impacts it might cause. Does suction
17 dredging cause direct disturbances to the river's
18 substrate?
19   A   It does.
20   Q   How does it do that?
21   A   First it's a -- it's an activity that recurs
22 repeatedly, and it often involves heavy weights like
23 the dredge maybe dragged across substrates and gravels
24 than in contained -- aquatic invertebrates and even
25 small fish or eggs, and the dredge miner will roll

1   large boulders out of the area. Any rock larger than
2   five inches and smaller too probably but will need to
3   removed from that area so it won't clog the suction
4   dredge as he's -- as he's digging.
5   And then there's the direct effect of the
6   hole. That was functioning habitat with an armor
7   layer placed by high flows during the spring
8   naturally, and they dig through that and then take
9   that slurry of mixed cobbles and stones and sand and
10 then drop onto -- they raise it up above the water and
11 then drop it onto other habitats that are functioning,
12 and that causes crushing of invertebrates and small
13 fish. It's a burial and suffocation from the clogging
14 of interstitial spaces when that happens.
15   Q   So you talked about this a little bit in
16 your response to my last question. But so, in
17 addition to changes to the river substrate, does
18 suction dredging cause direct disturbances to the
19 organisms that are in the area?
20   A   Yes, I did cover that a little bit. It --
21 it -- it can -- can cover them, bury them, crush them,
22 disturb and remove their habitat to displace them.
23 Where they lived is no longer, that type of thing
24 directly.
25   Q   Are you aware of any scientific studies that

1   have looked at the direct disturbances that suction
2   dredging might cause?
3   A   Yes.
4   Q   And generally what are the results?
5   A   Generally the results are that it's highly
6   lethal to eggs and the very young embryos, larval
7   fish, higher rates of mortality for them. And then
8   it's -- it's also lethal to younger stages of aquatic
9   invertebrates like first instars and the very young
10   larvae.
11   Q   Thank you. Does suction dredging also cause
12   the suspension of sediments?
13   A   Yes, it does.
14   Q   And how does it do that?
15   A   It -- as the hole is being excavated where
16   the miner's trying to access bedrock in places under
17   the stream where he might think there's gold, those
18   mixed cobbles and sands and fines are lifted up and
19   then dropped down out of -- run through the sluice and
20   dropped off the end of the dredge. And some of the
21   tailings stay right there because they're larger,
22   heavier, dense, and the finer particles are caught by
23   the current and -- and do not fall out of suspension
24   immediately and form a plume or cloudy turbidity plume
25   below the dredge.

1   Q   So, does this suspension of sediments cause
2   behavioral changes in organisms nearby?
3   A   It does. Some aquatic invertebrates, often
4   the preferred food of salmonids and salmonids
5   themselves are highly sensitive to suspended solids
6   and suspended grains of sand. Also, algae can be
7   affected by it also.
8   Q   Focusing just on behavioral changes for the
9   moment, at what level of turbidity do you start to see
10   behavioral changes?
11   A   They can -- they can occur at very low
12   levels of turbidity depending on the fish and the
13   situation, but I usually consider maybe 20 NTUs as a
14   threshold for more serious displacement and behavioral
15   changes by fish.
16   Q   For those of us that don't know what's --
17   what are NTUs?
18   A   Nephelometric Turbidity Units are -- it's a
19   machine that measures the light refraction through
20   water and particles that are in it. It's -- it's just
21   a -- it's a measure of turbidity.
22   Q   Can the suspension of sediments also cause
23   physiological impacts?
24   A   It can. As you -- as turbidity gets above
25   20 NTUs and approaches 50, there's increasing intense

1   behavioral impacts of, more fish will leave the plume
2   and fish that do stay in it may -- are more likely to
3   exhibit coughing and, you know, mucous of the gills
4   just like we would if we were breathing in sand.
5   Q   Would you classify most of those as
6   sublethal impacts?
7   A   Yes, at that level, yes.
8   Q   Can turbidity cause lethal impacts?
9   A   It can. Usually, that's around 100 NTUs.
10   Q   Does suction dredge mining also cause
11   sedimentation?
12   A   Yes, it does.
13   Q   And what's the difference between
14   sedimentation and the suspension of sediments?
15   A   Suspended sediments are just that. They're
16   suspended in the water column or in water beneath the
17   water column in the substrates, flowing through the
18   substrates, but they're still suspended in water.
19   Sedimentation is when they fall out of suspension and
20   lay on cobbles or fill up interstitial spaces and
21   stop.
22   Q   So does sedimentation impact mollusks or
23   invertebrates in the area?
24   A   Yes. Some of the species of mollusks and
25   snails are highly sensitive to it, and the literature

1   shows that even a depth of one inch will cause
2   mortality, and some of the mussels cannot even get out
3   of that.
4   Q   Does sedimentation also impact plant life in
5   the river?
6   A   Yes, it does. First off, the cloudiness
7   shades algae. In a flowing stream like this, there's
8   not vascular plants growing up out from roots. The
9   plants that are here are called diatoms, which are
10   algae, and they cling to rocks very tightly along the
11   cobbles. And so the turbidity shades their
12   photosynthesis, reduces their primary production and
13   growth.
14   Q   And so how does this impact to mollusks and
15   invertebrates in plant life, how does that impact
16   other species in the area?
17   A   Well, I should also mention that for algae
18   that it also covers it and buries that and causes, you
19   know, increased or reduced -- more reductions in
20   production. Could you repeat the question?
21   Q   Yeah. No, thank you. You clarified a
22   previous answer. But how do these impacts to
23   invertebrates and plant life, how do those impact
24   other species, like ESA-listed species in the area?
25   A   Yeah. So, to think in a ecosystem or a food

1   web, if you affect the primary producers and slow
2   growth of that photosynthesis, then the vertebrates
3   that graze on the algae will have reduced abundance in
4   growth, and the invertebrates that feed on those
5   invertebrates will also be reduced, and it works its
6   way up the food chain to fish.
7   Q   Does sedimentation impact the habitat of
8   ESA-listed species?
9   A   Yes.
10   Q   What types of habitat might it impact?
11   A   The most intensive effects that it has, the
12   primary effects is to incubating eggs. They're
13   underneath the gravel in substrates, placed in a nest
14   by adults, and they're dependent upon the hyporheic
15   flow or the subsurface flow that's actually flowing
16   horizontally underneath the flow of the stream
17   underground, and that's all the eggs have for
18   aeriation, for oxygen and fine sediment. It reduces a
19   diffusion across the membranes for the eggs to even
20   breathe oxygen. So it tends to reduce growth and
21   reduce survival of eggs.
22   Q   And so is that impact specific to spawning
23   habitat?
24   A   It is, but it also, what I just described
25   is, but there's also the early rearing juveniles.

1   Q   And what does that mean? What are rearing
2   juveniles?
3   A   So, when the eggs hatch and the larval fry
4   emerge from the cobbles, they have to swim out through
5   the cobbles. So, if it's clogged above them, they
6   have more difficulty with that. It also reduces the
7   growth of the eggs, so the young fry are smaller if
8   they had less oxygen as eggs, and sometimes the eggs
9   emerge -- the juveniles emerge early from the eggs.
10   And so, those, all those effects.
11   Q   Are the impacts caused by sedimentation
12   long-lasting?
13   A   Yes, they are, particularly with sand.
14   Q   How long do they last?
15   A   Well, in the South Fork with the heavy loads
16   of sand, those were caused 50 and 100 and 30 years
17   ago, and they're still there.
18   Q   And why is it that those impacts last so
19   long?
20   A   Because sand does not readily move with
21   natural peak flows. Rocks and gravel are typically
22   lifted up and moved readily. Sand just tends to roll
23   down one riffle.
24   Q   Were you present yesterday for Ms. Martich's
25   testimony regarding the toxicity of sediment?

1   A   Yes.
2   Q   Do you agree with her assessment that
3   sediment is not toxic always?
4   A   I agree that, typically, it's inert sands
5   and silica and various other minerals, but it also
6   includes heavy metals, which she did say that it was,
7   sediment was a surrogate. The amount of sediment was
8   a surrogate for how many of the sometimes highly toxic
9   heavy metals are included within it. And then also it
10   should be noted that almost anything taken to large
11   degree or large doses can be toxic.
12   Q   What are fluvial geomorphic impacts?
13   A   Well, "fluvial" means running water and
14   "geomorphic" is related to the types and the state and
15   the shape and all the properties of the channel and
16   the substrate and even the bedrock under the stream,
17   and the valley that it flows through even is part of
18   it.
19   Q   And does suction dredging cause fluvial
20   geomorphic impacts?
21   A   Yes, it does. It digs right into the
22   geomorphology of the stream. It digs holes, excavates
23   down to bedrock. It exposes bedrock that wasn't
24   exposed before. It piles. The holes can entrain
25   current laterally and against the bank and cause

1   erosion. The tailings piles can be piled up, and they
2   form dams and can drop increased sedimentation above
3   them, where they slow the velocity of the water, and
4   they can also steer laterally the current.
5   Q   Do you consider these types of impacts an
6   adverse environmental impact?
7   A   Yes.
8   Q   Why are they adverse?
9   A   Because they are unnaturally caused
10   oftentimes during low-flow base flow seasons. And if
11   they would have been caused by -- you know, if they
12   would have been caused by natural flows, they would
13   have been sorted and graded by the flood.
14   Q   Does suction dredge mining have the
15   potential to introduce mercury into the river?
16   A   Yes.
17   Q   And how does it do that?
18   A   By digging into inactive sediments below the
19   stream bed, mercury that has been buried there over
20   dozens and even centuries is brought up to the surface
21   and exposed to oxygen. It's usually bound to sulphur
22   and organic matter of some type.
23   Q   And what happens to that mercury that's
24   excavated?
25   A   Then it is reactivated. It is brought up

1   into the active channel and mobilized through the
2   stream flow for miles potentially.
3   Q And is the reactivation of mercury an
4   environmental concern?
5   A Yes. It could be highly toxic
6   methylmercury, and the way that it's bound, it becomes
7   unbound to organic matter and to sulphur when it's
8   exposed to oxygen. So it's also a neurotoxin and has
9   chronic effects on fish. It also biomagnifies. It
10 bioaccumulates through -- so, if an animal eats it,
11 then another animal eats that animal, it gets all the
12 mercury that was stored in the fat of the prey, and
13 then it works all the way up to the highest level
14 predators and magnifies in the food web.
15   Q Describe the likelihood that a miner
16 actually excavates mercury while he's mining.
17   A It's likely, especially for other heavy
18 metals also, like copper, lead, zinc, but it depends
19 on the natural background of does this area naturally
20 have mercury in it. And it also depends on legacy
21 mining, how much it was used in the accessing of ore,
22 the separation of ore in history.
23   Q In your opinion, can suction dredge mining
24 benefit the environment by removing these legacy
25 metals and mercury?

1   A It can reduce the overall load of mercury to
2   some extent, but it mobilizes and misses more and
3   activates more so that, overall, it is not a positive
4   effect. It is strongly adverse.
5   Q In your opinion, are there any impacts
6   related to suction dredging that we haven't discussed
7   yet?
8   A Yes. There's like the miscellaneous. The
9   activity itself requires long-term camping off and on
10 Forest Service lands where -- that might be -- the
11 campgrounds might be overused. There's more foot
12 traffic and carrying of heavy loads and weights up and
13 down stream banks. So it can affect the riparian
14 vegetation and thin it out or reduce it. Also,
15 sometimes the miners move large woody debris which is
16 very important for young fish for cover. And they are
17 running two engines right against the water surface
18 for hours at a time, so the exhaust and the risk of
19 fuel spill can also reduce water and air quality right
20 near the river.
21   Q Specific to impacts to ESA-listed species,
22 are many of the impacts that you just discussed, would
23 you characterize them as sublethal?
24   A Yes. Beyond the crushing and the burial,
25 yes.

1   Q What does "sublethal" mean?
2   A "Sublethal" means less than lethal. But
3   what we oftentimes forget is that displacement as a
4   sublethal effect increases the risk of lethal
5   predation.
6   Q And have you performed any research related
7   to this subject in particular?
8   A Yes. Both of my articles dealt with it.
9   (The document referred to was
10   marked for identification as
11   Complainant's Exhibit No.
12   19.)
13   BY MR. MOORE:
14   Q Can you turn to Complainant's Exhibit 19?
15   A Okay.
16   Q Are you familiar with this document, Mr.
17 Arthaud?
18   A Yes. I'm the lead author.
19   Q And what's the document?
20   A It is "Contrasting Life Cycle Impacts of
21 Stream Flow on Two Chinook Salmon Populations," a
22 primary research paper in the Journal of
23 Hydrobiologia.
24   MR. MOORE: EPA moves to admit Complainant's
25 Exhibit 19 into evidence.

1   JUDGE COUGHLIN: Mr. Erlanson, any objection
2   to that coming in?
3   MR. ERLANSON: No. No, Your Honor.
4   JUDGE COUGHLIN: Okay. CX-19 is admitted.
5   (The document referred to,
6   previously identified as
7   Complainant's Exhibit No. 19,
8   was received in evidence.)
9   BY MR. MOORE:
10   Q Mr. Arthaud, can you describe what you
11 intended to learn in conducting this study?
12   A I hoped to analyze and describe the impacts
13 of egg to juvenile, like smolt, like a one- or
14 two-year-old juvenile. So, from egg emergence to
15 that, I hoped to describe the early rearing impacts
16 that habitat in a nursery stream or natal tributary
17 where the fish were -- the eggs were laid that produce
18 the juveniles, how those affected the life cycle of
19 salmon.
20   Q And what were the results that you found?
21   A The results were that the condition of
22 nursery habitat essentially sets year class strength.
23 If it's poor, you're going to have a poor year class.
24 If it's excellent, you're going to have an excellent
25 year class. And that will carry through the remainder

Page 440

1   of the lifecycle of salmon and allow some prediction
2   of adult return just by knowing the conditions that
3   the juveniles were reared in.
4   (The document referred to was
5   marked for identification as
6   Complainant's Exhibit No.
7   20.)
8   BY MR. MOORE:
9   Q   I'll turn you now to Complainant's Exhibit
10 20.
11   A   Okay.
12   Q   Are you familiar with this document?
13   A   Yes.
14   Q   What is it?
15   A   It is an article in Human and Ecological
16 Risk Assessment, an international journal, that I
17 co-authored.
18   Q   And what was the topic of the --
19   A   The title is "Extrapolating Growth
20 Reductions in Fish to Changes in Population,
21 Extinction Risks, Copper and Chinook Salmon."
22   MR. MOORE: EPA moves to admit Complainant's
23 Exhibit 20 into evidence.
24   JUDGE COUGHLIN: Any objection, Mr.
25 Erlanson?

Page 441

1   MR. ERLANSON: None.
2   JUDGE COUGHLIN: Okay. CX-20 is admitted.
3   (The document referred to,
4   previously identified as
5   Complainant's Exhibit No. 20,
6   was received in evidence.)
7   BY MR. MOORE:
8   Q   Mr. Arthaud, can you describe what you
9   intended to learn in conducting this study?
10   A   We wanted to research if small reductions in
11 growth, sublethal effects, the very small sublethal
12 effects, what that ultimate impact would be on
13 lifecycle or life, full life survival for salmon.
14   Q   And what were the results?
15   A   The results were very small reductions in
16 growth from copper caused reduction in migration
17 survival for the juveniles and then related all the
18 way back to adult return survival for that year class.
19   Q   So how does the information that you learned
20 from these studies influence your opinions on the
21 impacts of suction dredging in the South Fork
22 Clearwater River?
23   A   I learned that any degradation or
24 improvement of early rearing, spawning, early rearing
25 and the first year of over-wintering habitat are very

Page 442

1   important for survival of salmon.
2   Q   And how does that relate to suction dredging
3   in the South Fork?
4   A   Well, suction dredging in the South Fork
5   simplifies early rearing and spawning habitat. It
6   clogs it within the interstitial spaces. They --
7   also, we didn't mention it, but the first year of --
8   the first year or two of overwintering, the juveniles
9   have to go under the ground all day long every day of
10 the winter, and then they come out at night and feed.
11 And so, if the sediments have -- or sand have bridged
12 over those, they don't even need to clog the whole
13 interstitial space, but they just simply bridge over
14 it and prevent their access to it, the year class,
15 there will be very low survival. They will either
16 have to move and find habitat that's clean enough to
17 get under the cobbles for a whole winter or they will
18 die.
19   Q   And, Mr. Arthaud, I think a few times you've
20 testified that suction dredge mining simplifies
21 habitat.
22   A   Yes.
23   Q   What does that mean?
24   A   It just means instead of having naturally
25 deep pools and naturally shallow riffles of various

Page 443

1   sizes and diversity of rocks and other types of cover,
2   that the whole thing just becomes a medium glide of
3   sand like a sandbox. It's very simple when you look
4   at it. It's simple underneath of it. It's simple on
5   it. It's simple.
6   Q   Thank you. Can you turn now to
7   Complainant's Exhibit 18?
8   MR. MOORE: And, Your Honor, for the record,
9   this document was introduced by Ms. Martich on the
10 first day of her testimony, and I think it's our plan
11 now to authenticate this document through Mr. Arthaud.
12   JUDGE COUGHLIN: Okay. Thank you.
13   BY MR. MOORE:
14   Q   Are you familiar with this document, sir?
15   A   I am.
16   Q   Can you describe what it is?
17   A   It is a summary of suction dredging impacts
18 that I wrote in 2014.
19   MR. MOORE: And it's evident -- this is
20 already admitted into evidence, correct, Your Honor?
21   JUDGE COUGHLIN: It is.
22   MR. MOORE: Okay.
23   BY MR. MOORE:
24   Q   Is your analysis of impacts in this report
25 similar to the impacts that you've listed today?

1   A   Yes.
2   Q   And so, trying to take a step back and
3 looking at the goal of the ESA, when a species is
4 listed pursuant to the EPA -- or to the ESA, what's
5 the goal with respect to that species?
6   A   To slow the harms that are occurring to it
7 that are making it trend towards zero and to maintain
8 those numbers so that recovery is not prevented or
9 delayed.
10   Q   And can you describe how all these potential
11 impacts influence that slowing or that delay of the
12 restoration of the endangered species in the South
13 Fork?
14   A   Right. So, altogether they reduce survival
15 of rearing salmonids for all the different habitat,
16 the simplification of the habitat and the sand and the
17 clogging of the interstitial spaces, and they delay
18 the potential for recovery, and it was also in a state
19 of -- the habitat was finally being restored naturally
20 over many years, and it very quickly reverses that
21 back to the sandbox.
22   Q   Thank you. So now I want to turn to the
23 impacts related to Mr. Erlanson's activity in
24 particular. Have you ever been to the location that
25 Mr. Erlanson dredged in July 2015?

1   A   Yes. I was there in early August 2014 and
2 then pretty much every year since.
3   Q   Then you've also viewed the location in
4 photographs?
5   A   And I've viewed the location in photographs
6 also.
7   Q   Have you reviewed the report drafted by
8 Clint Hughes regarding Mr. Erlanson's dredging
9 activity?
10   A   Yes.
11   Q   And were you present to hear Mr. Hughes'
12 testimony regarding?
13   A   Yes.
14   Q   I'll turn you now to Complainant's Exhibit
15 No. 1 and specifically Pages 5 and 6. And just to
16 note for my next few questions, if you want to use the
17 enlarged photographs that I believe are still on the
18 witness stand, you're certainly welcome to do so. Are
19 there indications that the -- in these photographs,
20 are there indications that the location of Mr.
21 Erlanson's dredging could serve as habitat for
22 endangered species?
23   A   Yes, there are.
24   Q   And using the photographs, can you describe
25 what you see that would lead you to that conclusion?

1   A   I can see --
2   Q   And before you -- just identify which photo
3 you're looking at before you start.
4   A   Thank you.
5   JUDGE COUGHLIN: You know, let me take a
6 second. Since these -- since both of you, both
7 parties have referred and the witnesses have referred
8 to these blown-up pictures of what's already contained
9 in the exchanged exhibits, so it's nothing new, but it
10 is an enlargement, if both parties would like these to
11 be included as exhibits, I will do that. I mean, I
12 know I've said nothing new. I'm only open to it
13 because these aren't new photos. They're blowups of
14 what's already in here. So, if both of you think it
15 would be useful to have these included as exhibits, I
16 can do that. If you both don't agree, I won't, and we
17 can just rely on the smaller images contained in CX-1.
18   MR. MOORE: Your Honor, Complainant believes
19 they would be useful.
20   JUDGE COUGHLIN: Okay.
21   MR. ERLANSON: I agree.
22   JUDGE COUGHLIN: Okay. So why don't I go
23 ahead and let's mark these and then -- and I think it
24 might -- I'll just identify for the record which they
25 relate to.

1   MR. MOORE: Sure.
2   JUDGE COUGHLIN: And that way, for future
3 reference -- I know we're almost at the end at this
4 point, but, you know -- so can we -- and I'm sorry to
5 interrupt you.
6   THE WITNESS: It's okay. I'm following
7 along with you.
8   JUDGE COUGHLIN: Okay. So let's start with
9 the one you have in your hand.
10   THE WITNESS: That would be on Page 5,
11 previous years disturbance.
12   JUDGE COUGHLIN: Right. So this is CX-1.
13 So the challenge becomes how best to mark this.
14   MR. McLAREN: Should we mark it as the one
15 immediately following the latest CX that EPA has
16 introduced? That would be CX-44.
17   MR. ERLANSON: Which one are we talking
18 about?
19   MR. McLAREN: This is the one with the
20 highlighting, I believe.
21   JUDGE COUGHLIN: Right. Yeah, we could do
22 that. Sure, if you want it, if you want it. In fact,
23 we could do that. I mean, I don't know if you want to
24 tie it to the actual exhibit that it is contained in.
25   THE WITNESS: It might be better to say --

1   excuse me -- to just say the CX-5 --
2   JUDGE COUGHLIN: A?
3   THE WITNESS: Yeah, above or upper UL, upper
4   left.
5   JUDGE COUGHLIN: Yeah.
6   THE WITNESS: Or something like that.
7   JUDGE COUGHLIN: So I hate to interrupt your
8   Bates stamp that's already in there. Of course, I
9   guess it's going to anyway, isn't it?
10   MR. McLAREN: Yeah, but I think as long as
11   it's clear and the discussion's --
12   JUDGE COUGHLIN: On the record.
13   MR. McLAREN: -- on the record, I think that
14   it'll be clear enough.
15   JUDGE COUGHLIN: Then we'll be okay. I
16   mean, I went through this in a prior EPA case, so I
17   know it may be much ado about nothing, but -- so
18   should we call this CX-1A?
19   MR. McLAREN: Sure. I think we would agree
20   to that.
21   JUDGE COUGHLIN: Is that okay? Easy enough
22   to reference?
23   MR. McLAREN: Easy enough, yeah.
24   JUDGE COUGHLIN: Okay. So I guess I'll mark
25   just my copies, but if you can mark a set to give to

1   apologize for the interruption in your testimony. So
2   the previous years disturbance photo is CX-1A, okay?
3   I'm using a capital A for what it's worth.
4   MR. McLAREN: As will we.
5   JUDGE COUGHLIN: Okay. And you're following
6   this too so that after the hearing there's an
7   opportunity to submit post-hearing briefs. So, if you
8   want to be able to submit something in writing with
9   your arguments about what's been presented and you
10   want to refer to this, you want to make sure you refer
11   to the right thing. So you can even just mark your
12   own copy if you want. So that previous years
13   disturbance that's depicted in CX-1 on Page -- I'm
14   leaving out all the zeroes of the Bates stamp -- 5,
15   it's the upper left photograph that is now marked
16   CX-1A. Okay. Great.
17   (The document referred to was
18   marked for identification as
19   Complainant's Exhibit 1A and
20   was received in evidence.)
21   JUDGE COUGHLIN: And then the next one,
22   which one do you have, Mr. Arthaud?
23   THE WITNESS: I think this is the next one.
24   JUDGE COUGHLIN: Okay. With both dredges
25   depicted?

1   the court reporter.
2   MR. McLAREN: Certainly.
3   JUDGE COUGHLIN: I can just use this as our
4   working copy, but the court reporter has the official
5   set of exhibits, right?
6   MR. McLAREN: And then we can submit an
7   electronic copy to Mr. Wright after the fact as well?
8   Would that be helpful?
9   (Pause.)
10   JUDGE COUGHLIN: Yeah, I don't know how
11   quickly you can burn a new CD, if it's -- we can
12   either handle it that way, marking it and burning a
13   new CD, or you can -- we can just give the paper
14   copies to the court reporter.
15   MR. McLAREN: Unfortunately, we don't have
16   CD-ROMs in our laptops.
17   JUDGE COUGHLIN: Okay.
18   MR. McLAREN: So that would be difficult.
19   We can do the paper copies for the court reporter,
20   follow up with an electronic copy after the fact, and
21   then just mark them all physically right now.
22   JUDGE COUGHLIN: That's fine. I think
23   that's fine.
24   MR. McLAREN: Okay. Great.
25   JUDGE COUGHLIN: Okay. So, again, I

1   THE WITNESS: Yeah.
2   JUDGE COUGHLIN: And --
3   THE WITNESS: And the sluice on the bank,
4   yes.
5   JUDGE COUGHLIN: And is that -- would that
6   correspond to the photo immediately to the right where
7   it says "Rice Green Dredge and Erlanson's Blue
8   Dredge," Dredges?
9   MR. McLAREN: Yes, Your Honor.
10   JUDGE COUGHLIN: Okay. So, same CX-1,
11   again, Bates stamp Page 5, and this we can call CX-1B.
12   Okay. B as in Bravo.
13   (The document referred to was
14   marked for identification as
15   Complainant's Exhibit 1B and
16   was received in evidence.)
17   JUDGE COUGHLIN: And then lastly, yeah, so
18   I'm not sure which one because there are several here
19   that look close. So which one was this a blow-up of?
20   MR. McLAREN: The last one is on Page
21   CX-0006 and it's, we believe, in the top left, and Mr.
22   Hughes testified to that as well.
23   JUDGE COUGHLIN: Okay. All right.
24   THE WITNESS: It matches.
25   JUDGE COUGHLIN: Okay. So you've already

1 identified which photo it is, so we'll call this one
2 CX-1C for Charlie.
3   (The document referred to was
4   marked for identification as
5   Complainant's Exhibit 1C and
6   was received in evidence.)
7   MR. McLAREN: Yes, Your Honor. Thank you.
8   JUDGE COUGHLIN: Okay. All right. Perfect.
9   MR. McLAREN: And pardon me for introducing
10 that confusion, by the way. I meant it for the ease
11 of the witness.
12   JUDGE COUGHLIN: No, no worries.
13   THE WITNESS: Yeah.
14   JUDGE COUGHLIN: I mean, they seem to have
15 been very useful to both of you and to the witnesses,
16 so it just makes sense to include them if you both
17 agree to do so, which you have. So it's fine.
18   (Pause.)
19   MR. MOORE: And, Your Honor, just a note on
20 timing.
21   JUDGE COUGHLIN: Sure.
22   MR. MOORE: This would be sort of a natural
23 stopping point. I imagine that I still have under an
24 hour but close to an hour of testimony with Mr.
25 Arthaud.

1   JUDGE COUGHLIN: Okay.
2   MR. MOORE: And I leave it to your
3 discretion whether you want to push through for a late
4 lunch or if you'd take advantage of the natural
5 stopping point.
6   JUDGE COUGHLIN: Okay. Thank you for
7 bringing that to my attention. How do you all feel?
8 I mean, I don't want you to go through -- you know,
9 you might have some extensive cross and redirect and
10 all that, so I don't want you to power through for,
11 you know, what could be two hours or more. If you'd
12 like a break to eat, I'm happy to take one. How do
13 you feel? Mr. Erlanson, what's your thought?
14   MR. ERLANSON: I guess I'd go along with the
15 consensus, but I'd just as soon sit here and get it
16 done, other than maybe a five-minute bathroom break
17 for me.
18   JUDGE COUGHLIN: Okay. Complainant, how do
19 you feel?
20   MR. MOORE: I could certainly use a bathroom
21 break.
22   JUDGE COUGHLIN: Okay.
23   MR. MOORE: And I leave it to your
24 discretion on whether we break for lunch now.
25   JUDGE COUGHLIN: Okay. Do you want a break

1 for lunch, period?
2   MR. MOORE: Eventually, yes.
3   JUDGE COUGHLIN: Okay, because that's really
4 the question. I think Mr. Erlanson's okay to power
5 through. Well, all right. So why don't we take a
6 brief break now for lunch and whatever, and then we
7 can reconvene. I think last time we took 45 minutes.
8 Is that enough? Do you need more time?
9   MR. McLAREN: That's more than enough for
10 us. You gave us the extended break earlier this
11 morning. So we could do 45.
12   JUDGE COUGHLIN: Forty-five is good? Okay.
13 So why don't we do that. We'll break for 45. So I
14 guess let's just call it 12:30 that we'll come back
15 and finish off then.
16   MR. MOORE: Thank you, Your Honor.
17   MR. ERLANSON: Thank you.
18   JUDGE COUGHLIN: All right. Great. Thank
19 you all very much.
20   (Whereupon, at 11:40 a.m., the hearing in
21 the above-entitled matter recessed, to reconvene at
22 12:30 p.m. this same day, Wednesday, May 15, 2019.)
23 //
24 //
25 //

1   A F T E R N O O N   S E S S I O N
2   (12:30 p.m.)
3   JUDGE COUGHLIN: We are back on the record,
4 right on time, and I think we're all ready to go with
5 your continued examination of Mr. Arthaud.
6   MR. MOORE: Yes, Your Honor.
7   JUDGE COUGHLIN: All right. Please go
8 ahead.
9   Whereupon,
10   DAVID ARTHAUD
11   having been previously duly sworn, was
12 recalled as a witness herein and was examined and
13 testified further as follows:
14   DIRECT EXAMINATION (RESUMES)
15   BY MR. MOORE:
16   Q   Mr. Arthaud, before lunch, we began to
17 discuss the impacts of Mr. Erlanson's activity and I
18 was referring you to the photos that we're now calling
19 Exhibits CX-1A, 1B, and 1C.
20   A   Uh-huh.
21   Q   In those photos, are there indications that
22 the location of Mr. Erlanson's dredging could serve as
23 habitat for endangered species?
24   A   Yes.
25   Q   Starting with Exhibit CX-1B, can you use the

Page 456

1 photograph to describe what those indications are?
2   A First, you can see some primary production
3 is going on there, and you can also see it in CX-1C
4 with the algae on the rocks, so that's a food base and
5 a refugia habitat for invertebrates. So they're going
6 to follow along. And then there's a good mix of large
7 cobbles throughout the area, so they provide some
8 stability and physical structure in a sand run stream.
9 And so that makes it more likely that there will be
10 mussels and fish in this habitat.
11   JUDGE COUGHLIN: And can you just -- where
12 you were just pointing -- I know it's difficult with
13 photographs. Can you just try and describe that for
14 the written transcript, those kind of -- I think those
15 larger --
16   THE WITNESS: Should I relate it to this?
17   JUDGE COUGHLIN: Yeah. We're talking about
18 CX-1B, but when you had just gestured to the larger,
19 like, boulders, if you will --
20   THE WITNESS: Oh, okay.
21   JUDGE COUGHLIN: -- just kind of relative to
22 where it appears on the page would suffice.
23   THE WITNESS: Okay. So, in the foreground,
24 you can see a mix of larger boulders and cobbles mixed
25 in with the sand and the gravels. And then, in the

Page 457

1 background, on the left bank looking downstream in
2 this same picture, you can see larger rocks along the
3 bank, and those provide structure.
4   JUDGE COUGHLIN: Okay. Thank you.
5   BY MR. MOORE:
6   Q I'll turn you specifically now to
7 Complainant's Exhibit 1C.
8   A Okay.
9   Q In this photograph, do you see the turbid
10 plume that's in front of Mr. Erlanson's dredge?
11   A Yes.
12   Q Do you know who created the plume in that
13 photo?
14   A Yes. Mr. Rice.
15   Q And from your perspective, can you describe
16 for the Court the characteristics of that plume?
17   A It's quite turbid. You can still see
18 through it, but even in shallow water you can't see
19 all the way through it in many places. It's only
20 where there's shallow boulders sticking up in the
21 foreground, and it likely has a fair amount of clay
22 and silt in it, and that's what gives it this really
23 cloudy, almost like billowy clouds, or the very fine
24 grain sediment in there.
25   JUDGE COUGHLIN: Okay.

Page 458

1   BY MR. MOORE:
2   Q Are you able to approximately estimate the
3 level of turbidity in that plume?
4   A Yes. I would call it something medium high
5 that might be 30 or 40 NTUs, something like that.
6   Q And on what do you base that estimate?
7   A Just because I can't see through it in very
8 shallow water.
9   Q Do you have experience in estimating
10 turbidity?
11   A Yes. I've looked at many turbidity plumes
12 throughout the years, and oftentimes there's a
13 turbidity meter around and just compares -- by
14 comparison. And there's also Fultz 2008, the Forest
15 Service literature where they did the same thing when
16 they were removing culverts. They took a picture of
17 the plume and then measured it with a turbidity meter.
18 So --
19   Q Did that study inform your opinion on the
20 approximate --
21   A Yes, it did. It was a good recalibration
22 that, you know, you're in the range kind of thing for
23 me.
24   Q Based on your knowledge of the South Fork
25 Clearwater, are there any indications that dredging in

Page 459

1 this area specifically would cause turbidity?
2   A Yes, because it has one of those primary
3 limiting factors of sand, heavy loads of sediment and
4 sand. My experience here is that even if it looks
5 like a really rocky area, it's not clean from sand.
6 It's mixed in. So all the boulders are partially
7 embedded into sand. So wherever you might dig you're
8 going to cause turbidity.
9   Q Thank you. So I'll turn you now to the
10 enlarged photographs, CX-1A and CX-1B. Can you
11 observe Mr. Erlanson's plume in these photos?
12   A Yes.
13   Q And in your experience, can you describe the
14 characteristics of Mr. Erlanson's plume?
15   A It's a further distance away, but his plume
16 is not as billowy cloudy as Mr. Rice's, and he is
17 dredging more in the thalweg. So Mr. Erlanson's plume
18 is more of a mix of larger sand and fine sand but not
19 as much clay and silt maybe.
20   Q And would you be able to estimate the
21 turbidity of Mr. Erlanson's plume based on the photos?
22   A The less fines there are the more difficult
23 it is to get it exactly right because our eyes don't
24 see silica as well as they do cloudy clay, but the
25 turbidity is still the same by measure. It's less

1   than Rice's, maybe 25 or 30 NTUs.
2   Q   And on what do you base that estimate?
3   A   For the same general reasons as I described
4   already, but the more specific reasons here is that
5   he's in faster current slightly, releasing the plume
6   even in the thalweg rather than putting it up on a bar
7   and so -- and I can see through it more even though
8   it's at a distance. So that I believe it has coarser
9   material in it, you know.
10   JUDGE COUGHLIN: Sorry. I just want to
11   interject because I may have misheard you. When you
12   estimated Mr. Erlanson's turbidity to be less than
13   that of Mr. Rice's, and you estimated it around 25 or
14   30 percent --
15   THE WITNESS: Twenty-five to 30 NTUs.
16   JUDGE COUGHLIN: Okay. Maybe I misheard
17   you. What do you estimate Mr. Rice's to be?
18   THE WITNESS: At 30 or 40, I think,
19   something like that.
20   JUDGE COUGHLIN: Okay. All right. Okay.
21   Thank you.
22   (Pause.)
23   JUDGE COUGHLIN: Okay. Please go ahead, Mr.
24   Moore. Thank you, Mr. Arthaud.
25   //

1   BY MR. MOORE:
2   Q   Does the proximity of Mr. Erlanson's dredge
3   to Mr. Rice's dredge inform your opinion of the
4   approximate turbidity of Mr. Erlanson's plume?
5   A   Yes. You can see them side by side, so that
6   helps us, and then they're very close together, and
7   the plumes are mixing together downstream. This plume
8   is going right into that plume. And so, when that
9   occurs, there's basically an added-to effect. So NTU
10   plus NTU for the full, but they all are attenuating as
11   they go farther downstream. The NTUs are slowly
12   dropping the farther away from the dredge they get.
13   Q   And I believe you testified that the
14   consistency of Mr. Erlanson's plume was different than
15   the consistency of Mr. Rice's in your opinion?
16   A   Uh-huh.
17   Q   Can you explain the difference again?
18   A   That Mr. Erlanson's had more of a mix of
19   coarser and fine sands. There's also clay and silt in
20   it too almost certainly, but it had less clay and silt
21   relatively than Mr. Rice's.
22   Q   Is the discharge of fine silt or clay more
23   visible than that of coarser material?
24   A   Yes.
25   Q   Why is that?

1   A   Because it builds up almost to the surface
2   in the water column, and so it's very suspended, very
3   well suspended, whereas sand and coarser particles
4   tend to shoot or roll just above the cobbles. They
5   don't get as high in the water column.
6   Q   Do the impacts of discharges of sand differ
7   from the impacts of discharges of finer material?
8   A   Yes. As an overall group, they both have
9   the same general facts. But silt and clay fines can
10   be more lethal to eggs and younger fish, and they fill
11   interstitial spaces by entering under the substrate
12   and then sinking to the very bottom of the
13   interstitial space. It might be three feet below the
14   stream and then filling that space from the bottom up,
15   whereas coarse, a mix of coarse and fine sand, the
16   fine particles are filling from the bottom up, but the
17   coarse particles bridge over the very top of the
18   interstitial space right at the substrate surface or
19   just below, so that a mix of coarse and fine sand can
20   fill more interstitial spaces or block fish from those
21   spaces in a very rapid manner.
22   Q   And which impact is worse?
23   A   The mix. The mixed sand is worse because it
24   takes a lot of fines to fill all the interstitial
25   spaces from three feet below the water, let's say, or

1   below the substrate surface to the surface, whereas
2   the bridging of the larger particles of sand can fill
3   or can block the interstitial space right at the
4   surface very quickly.
5   Q   Thank you. Have you reviewed the
6   post-dredge reports drafted by Dan Kenney?
7   A   Yes.
8   Q   And were you present for Mr. Kenney's
9   testimony regarding the studies that he conducted on
10   the site that Mr. Erlanson dredged?
11   A   Yes.
12   Q   And did you use those documents in forming
13   your expert opinion in this case?
14   A   I did.
15   Q   Can you please turn to Complainant's Exhibit
16   38 and specifically Page 1527.
17   A   Okay.
18   Q   According to Mr. Kenney's testimony, the
19   bottom left photograph is an October 2015 photograph
20   of the hole that Mr. Erlanson dredged. Does this
21   photograph help to form your opinion about whether Mr.
22   Erlanson's activities caused turbidity?
23   A   Yes, because the cobbles and the substrate
24   that was there where the hole is is no longer there,
25   so it had to be transported somewhere, and probably

1   some of it was released as turbidity directly from the
2   disturbance of his dredge. The rest of it was
3   entrained through the dredge, put through the sluice,
4   and then dropped onto other substrates which make up
5   the tailing pile here.
6   JUDGE COUGHLIN: And the "here" is which?
7   Is it --
8   THE WITNESS: Oh, figure the lower left just
9   downstream from Hole Number 5 on the 2015 picture.
10   JUDGE COUGHLIN: Okay.
11   THE WITNESS: And then I should say that
12   because that activity occurred, not all the sediment
13   are piled in this tailings pile. Roughly a half or
14   two-thirds were suspended and sent downstream likely.
15   BY MR. MOORE:
16   Q   And you approximated that the plume coming
17   from Mr. Erlanson's dredge was about 25 to 30 NTUs.
18   Can you describe what types of impacts would be caused
19   by a turbidity of that level?
20   A   Displacement, behavioral displacement. Some
21   fish and sensitive invertebrates would leave that area
22   of that plume. It's high enough NTUs where there may
23   be coughing and other irritating effects on fish and
24   invertebrates, and then many invertebrates have
25   respiratory apparatus like siphons and tubes and ways

1   to breathe that are very small. And so it doesn't
2   take too much turbidity to clog those and cause
3   greater sublethal effects or even level effects
4   depending on how well they got clogged. There's also
5   some invertebrates that they spin nets to catch food,
6   and the sediment clogs those nets.
7   Q   And you testified that turbidity may cause
8   some behavioral changes in fish, and I think you used
9   the word "displacement."
10   A   Uh-huh.
11   Q   Do invertebrates have that same opportunity
12   to leave an area where turbid discharge exists?
13   A   Yes. Good question. The smaller fish, the
14   background level is very clear if the water is clear
15   under summer base flows and all this period of the
16   dredging. So a very small fish or an invertebrate
17   that loses its habitat, where it lives, its home was
18   destroyed, it has to find somewhere else to hide as
19   quickly as it can, or it will be immediately predated
20   upon by larger fish or birds or anything, and that
21   would be the result. I can't remember exactly what
22   the question was.
23   Q   One second. My question was that you
24   testified earlier that when a turbid plume exists, it
25   might cause behavioral changes in fish, and one of the

1   behavioral changes that you noted was displacement.
2   And my question was whether invertebrates or smaller
3   fish have the same opportunity to leave a turbid area?
4   A   No. It's more difficult for them to get out
5   of the cobbles itself to move, and then, once they do
6   decide that they have to move because of habitat loss,
7   then they're very vulnerable to predation.
8   Q   Thank you. So I want to turn and talk about
9   some of the other impacts that Mr. Erlanson caused.
10   Mr. Kenney testified that the volume of the hole
11   that -- Hole Number 5 that he measured in October 2015
12   was approximately 15.4 meters cubed. On that Page
13   1527 of Exhibit 38 --
14   A   Uh-huh.
15   Q   -- can you describe the likely impacts using
16   the photo resulting from the creation of a hole that
17   size?
18   A   And the volume was 15?
19   Q   15.4 cubic meters.
20   A   Okay. So, in this hole, 15 cubic meters
21   were removed. They were excavated and they're no
22   longer there. Some of that was released as turbidity
23   from that activity. The rest of it was entrained and
24   went through the dredge and the sluice. We see a
25   portion of that volume here in the tailings, and then

1   the remainder of that volume of that hole was released
2   and suspended and went downstream with the current. I
3   should also say that when you dig a -- excavate a hole
4   out of packed armored substrates, there's a swell
5   factor of roughly 20 percent on average. So there's
6   no way -- even if you were perfect at digging a hole
7   of a certain size and putting all the sediment back
8   into that hole perfectly, you would be left over with
9   20 percent more volume than you started with that will
10   not fit back in the hole.
11   Q   And just for clarity's sake, can you explain
12   what a swell factor means.
13   A   "Swell factor" just means that when you lift
14   the weight off of overlying sediments on top of other
15   sediments, when you release that weight so that
16   they're free to move in any direction, that's when the
17   swell occurs.
18   Q   And what's the likelihood that there were
19   species present in the area that were impacted by Mr.
20   Erlanson's activity?
21   A   Highly likely.
22   Q   And how do you know that?
23   A   Because the reasons that it was good
24   habitat. There was a diversity and mix of cobbles,
25   that we had a shallow gravel bar in the foreground in

Page 468

1 these pictures. We have a deeper thalweg with faster
2 current on the center left bank on these pictures. We
3 have some boulders. We have some bedrock. Those are
4 places that not only hold invertebrates because
5 they're pretty much ubiquitous throughout the stream,
6 but mussels and snails really go to those bedrock
7 areas because they're very stable, and fish really key
8 in to the bedrock areas because the water's cooler
9 there and the hyporheic flow, they have more spaces
10 under the stream bottom to access.
11   Q   You just used the word "hyporheic flow."
12   A   Hyporheic.
13   Q   Can you define that for us?
14   A   So, when we look at a stream, we see the
15 surface -- we see the bottom of the stream. That's
16 the substrate surface. And a few inches below that
17 surface that we can see, maybe down five or six
18 inches, is called the benthos or the benthic layer,
19 and that's mostly what we've been talking about. But
20 up to a meter below the substrate is the hyporheic or
21 the hyporheos, and that includes its own -- it's a
22 shallow underground flow of a stream. So, when we see
23 a stream flowing above a substrate, there's also a
24 stream below a substrate flowing through the substrate
25 and that's called the hyporheic zone.

Page 469

1   JUDGE COUGHLIN: Mr. Jones, do you need the
2 spelling on some of that?
3   MR. JONES: I already got that one.
4   JUDGE COUGHLIN: Okay. Great. Thank you.
5   BY MR. MOORE:
6   Q   Mr. Kenney also concluded that the tailings
7 pile that Mr. Erlanson created was approximately five
8 meters cubed. That was his adjusted volume. Using
9 that same photograph on the bottom left of Page 1527,
10 can you describe the likely impact resulting from a
11 tailings pile that is that size?
12   A   Well, first off, the area around all of that
13 is the area that was covered of functioning habitat
14 before. It was functioning habitat that did not have
15 those sediments or tailings on it before he put them
16 there from his dredge. And then secondly, the pile
17 itself extends above the surface of the water. So we
18 know that it's causing a damming or a barrier for a
19 portion of the stream right there.
20   Q   And can you identify in the photograph where
21 you see that?
22   A   Yeah. It's on -- you see in the middle of
23 the tailings pile there's some larger rocks in a line.
24 Just in the foreground in front of the uppermost large
25 rock, you can see riffles where the tailings are

Page 470

1 sticking up above the stream surface.
2   JUDGE COUGHLIN: Okay. Let me see where
3 you're pointing to in order to try and describe it.
4 Yeah, I don't think there's a blow-up of that one.
5   THE WITNESS: If you look, you can see that
6 it's so shallow that the gravel tailings are causing a
7 riffle right there.
8   JUDGE COUGHLIN: Okay. So what Mr. Arthaud
9 is pointing -- has pointed to as I looked closer is --
10 I'll try to describe this and maybe with your aid so I
11 don't botch anything here.
12   THE WITNESS: Okay.
13   JUDGE COUGHLIN: But, as I look at that
14 photograph 2015, CX-38 and it's Page 1527, the bottom
15 left from 2015, not quite but almost dead center is
16 kind of what looks like this boulder sticking out of
17 the water, and you're referencing the riffles that you
18 identified just below that and slightly to the left of
19 that. Is there -- if there's a better way to describe
20 it, please go ahead.
21   THE WITNESS: Yeah, it's almost in the
22 direct center, absolute center of the photograph just
23 in front of the line of rocks, larger cobble, and you
24 can see a riffle point like where the top of the pile
25 is sticking up above or right to the surface.

Page 471

1   BY MR. MOORE:
2   Q   Thank you. And so I interrupted you, Mr.
3 Arthaud, but you were explaining the likely impacts
4 from a dredge pile that's the size of Dredge Pile
5 Number 7, and I think you talked about covered
6 habitat, and you were describing the importance of
7 those rocks that are piled above the surface. So
8 please continue.
9   A   Okay. Thank you. Yeah. So we know that it
10 extends up from the substrate a certain amount, enough
11 to reach the surface of the water. So that's going to
12 be causing an impediment to the flow through that area
13 because the mound is large enough to -- so the hole is
14 going to direct it to the left in the far bank, and
15 the sediment pile is going to direct it to the left in
16 the far bank, and what's below or at this gravel bar
17 around this pile will receive less current because of
18 those tailings. And then I should also say that the
19 tailings, wherever they're more than an inch deep,
20 piled more than an inch deep on top of the substrates,
21 that brings into play higher mortality of mussels.
22   Q   Thank you. Can you turn to Complainant's
23 Exhibit 37 and specifically Page 1519. I want to draw
24 your attention to the photographs at the bottom of
25 that page. Do the photos at the bottom of that page,

1   other than Hole Number 5 and Tailings Pile Number 7,
2   do those photos indicate that there were additional
3   impacts caused by suction dredge mining in this area?
4   A   Yes. Hole Number 5 and 7 are not isolated.
5   There are several, what, four holes above them, very
6   close to them, and they each have -- most of them seem
7   to at least have tailing piles that go with them.
8   There are six tailing piles above the Tailing Number
9   7. The Hole 5 and 7 take up roughly half the width of
10   the stream, and the other holes are taking -- they're
11   crossing the entire stream in some occasions, like
12   Hole 3 and Tailing 5, and then just upstream from
13   there, there's multiple holes and tailings that are
14   affecting the entire width of the channel. And then
15   you can see from the drawing here that they're all
16   here in this same area. And just looking at the
17   drawing, I would say that disturbance between holes
18   and tailings minus the turbidity and the sedimentation
19   that would come from that, we're looking at over half
20   of the stream that's been disturbed in this reach.
21   Q   And so you're focused on the percentage of
22   stream area that's been disturbed in these
23   photographs. Why is that an important metric?
24   A   It goes to fluvial geomorphology that you
25   didn't disturb just one little place out in the middle

1   of a large stream. You disturbed it from bank to bank
2   or at least from large proportions of bank to bank,
3   like a third of it. So the water has to get around
4   those tailings piles and just the overall area of
5   habitat that's been lost either because the hole has
6   removed it or because the tailings are covering other
7   habitat, it becomes 50 percent of the stream if this
8   drawing is to scale.
9   Q   And can you describe how that additive
10   impact might affect ESA-listed species in the area?
11   A   Yes. A key factor is the environmental
12   baseline: is this habitat fully functioning, properly
13   functioning, or has it already been degraded to some
14   level and each new activity is a successive
15   degradation of a degraded habitat when making the
16   overall vehicle of a functioning habitat go further
17   downward. And so it's very important. We said -- I
18   said before that it's, you know, a fair habitat that's
19   recovering, and to add this much more fresh damage
20   onto it is going to have significant effects.
21   JUDGE COUGHLIN: And you were just gesturing
22   to the handwritten document.
23   THE WITNESS: Yes, my hand gesture is
24   following the curvature of the bend of the stream.
25   JUDGE COUGHLIN: Okay. Thank you.

1   BY MR. MOORE:
2   Q   Were you present for Mr. Kenney's testimony
3   that approximately 55 percent of Hole Number 5 and
4   63 percent of the area of Piling 7 remained in 2016?
5   A   Yes.
6   Q   Were you also present for Mr. Kenney's
7   testimony regarding his visit to the site in 2018?
8   A   Yes.
9   Q   In preparation for this hearing, did you
10   review any photographs that Mr. Kenney took during his
11   2018 visit?
12   A   I did.
13   Q   And in those photographs, are there
14   indications that adverse impacts from Mr. Erlanson's
15   dredging continued in 2018?
16   A   Yes. They were partially restored, but I
17   see a higher proportion of fines and sand mixed in
18   with those gravels than I believe would otherwise be
19   there if it was just open channel and the dredging had
20   occurred in the immediate vicinity.
21   Q   And what are the impacts associated with the
22   continued presence of those features?
23   A   The fine sediment, remember 1 percent
24   increase can reduce egg survival by 16 percent. So
25   all successive broods that come in to spawn for a

1   number of years will be affected and have lower egg
2   survival and lower early rearing survival than if this
3   had not occurred.
4   Q   Thank you. I want to turn you back to
5   Complainant's Exhibit 17, please, and specifically
6   Page 1032.
7   A   1032?
8   Q   Correct.
9   A   Okay.
10   Q   What was NMFS's overall conclusion regarding
11   the proposed action, specifically, allowing suction
12   dredging in the South Fork?
13   A   Specifically regarding the Forest Service
14   and BLM program and all their protective measures and
15   the amount of effort and activity that occurs inside
16   that program, the conclusion is it's NMFS's biological
17   opinion that the proposed action is not likely to
18   jeopardize the continued existence of Snake River
19   Basin steelhead and Snake River fall Chinook salmon
20   and is not likely to destroy or adversely modify
21   designated critical habit for Snake River Basin
22   steelhead.
23   Q   And is that determination hinged on certain
24   limitations in the approval?
25   A   Yes. That all the protective measures are

1 followed with terms and conditions that require that
2 and that a monitoring plan is implemented that
3 requires the measuring of these piles and holes and
4 various other activities, that it be done every year.
5   Q Can you turn to Page 987 of this document?
6   A Okay.
7   Q This section is entitled "Mitigation and
8 Monitoring." Why does the biological opinion include
9 a discussion regarding mitigation and monitoring?
10   A Because it is very important to make sure
11 that the proposed -- the conservation measures, the
12 protective measures are followed and the monitor --
13 well, you asked for mitigation and monitoring, right?
14   Q Correct.
15   A Okay. So the mitigation is very important
16 because the mitigation is loaded with protective
17 measures that will reduce the likelihood of -- will
18 reduce harm and incidental take of the listed species,
19 and it will reduce harm or alteration of the critical
20 habitat from the activity. And then as I started off
21 to say that the monitoring is very important because
22 there's validity monitoring to make sure that the
23 action agencies implemented the program as they said
24 they would, and then there's effectiveness monitoring
25 to see if our protective measures actually protected

1 habitat and fish like we thought they would.
2   Q Does NMFS have some role in deciding what
3 mitigation measures end up in the biological opinion?
4   A Yes, we do. From the literature and from
5 the various adverse effects of certain activities, we
6 work with action agencies to minimize those potential
7 harms.
8   Q And were you present for Dan Kenney's
9 testimony regarding the proposed mitigation measures
10 that were intended to limit the type of impacts that
11 Mr. Erlanson caused?
12   A Yes.
13   Q And do you agree with Mr. Kenney's
14 characterization of the intent of those measures?
15   A Yes.
16   Q In your opinion, did Mr. Erlanson fail to
17 mine in a manner that was consistent with those
18 mitigation measures?
19   A Yes.
20   Q Is a miner's failure to comply with
21 mitigation measures, would that cause increased harm
22 to ESA-listed species in the South Fork?
23   A Yes.
24   Q Why?
25   A Because the mechanisms for adversity that

1 are known are not mitigated. They're just -- they're
2 left, and do you -- you don't want me to go through
3 specific ones?
4   Q No. Just generally.
5   A Yeah.
6   Q Thank you. Turning away from that subject,
7 are you aware of claims from miners regarding the
8 beneficial impacts of suction dredge mining?
9   A Yes.
10   Q I want to discuss some of those claims. Do
11 you agree that suction dredging has a beneficial
12 impact because it creates pools that might serve as
13 fish habitat?
14   A No.
15   Q Why not?
16   A A suction dredge hole is not a pool. It
17 does not have the functions of a pool. It's not being
18 fed by current where natural high flows and the
19 geomorphology of the channel created it to maintain
20 it. It's just a hole, like an empty well. So was it
21 just that? Was it a specific question for that one
22 thing?
23   Q I think you answered it, yes.
24   A Okay. Okay.
25   Q Do you agree that suction dredge mining is

1 beneficial because it might dislodge invertebrates
2 that could be prey for a species in the area?
3   A No. Invertebrates would never show
4 themselves in the daylight unless their homes were
5 being destroyed. And so that is an escape response to
6 go into the drift to try and avoid predation when you
7 can no longer hide.
8   Q So do you agree that some individual fish
9 might benefit from an easy meal when dredging is
10 occurring?
11   A Right, yes.
12   Q And so why isn't that a cumulative benefit?
13   A The problem --
14   Q Or is it a cumulative benefit?
15   A The problem like that, it's like leaving a
16 picnic out for bears or something. They get one
17 feeding of it and maybe a bad habit, but in this case,
18 the insects are reduced in abundance, and they would
19 continue to spawn repeatedly for the remainder of the
20 growing season and produce thousands of more insects,
21 and that all just got stopped. Not all of it, but
22 much of that was stopped. So, if they died from the
23 action, then they won't have a chance to reproduce
24 again.
25   Q Do you agree that tailings piles can create

1 additional substrate for spawning?

2   A No, because they do produce some clean

3 gravels, but they're -- they stick up from the

4 substrate of the stream, so it's a mound on the

5 substrate, and they're readily dislodged by higher

6 flows. So, if a fish comes in and finds some cleaner

7 gravels in a tailings pile and decides to spawn there,

8 the lowest high flows would -- the red would not be

9 stable. The nest would not be stable, whereas, in

10 natural conditions, fish come in, find the proper kind

11 of substrate and gravel, and they use their tails and

12 they dig out a hole, a depression in it, and spawn

13 inside that depression, and then the high flows go

14 over that depression and the nest remains safe.

15   Q Because I don't think we've done so as of

16 yet, can you define what "red" means.

17   A "Red" is a nest, a salmon nest, and they're

18 in the ground in the substrate.

19   Q And you talked about some instability where

20 that nest may be. What's the result of that

21 instability?

22   A If the red is -- if the gravel within the

23 red is vibrated or moved, eggs can be crushed. And if

24 the gravel that the nest is in is moved or displaced

25 or eroded, then the entire nest can be lost, and they

1 have usually, salmon, somewhere between 3500 and 4500

2 eggs per nest.

3   Q Do you agree that suction dredge mining may

4 be beneficial because it introduces cold water into

5 the river system?

6   A No. The cold water, as I explained earlier,

7 is already in the hyporheos flowing under the stream.

8 And the fact that a suction dredger excavates a hole

9 from the surface water column to the hyporheic or

10 below the hyporheic zone even, the fish and

11 invertebrates could already access that habitat before

12 if it wasn't clogged. So they're not really changing

13 anything for the good anyway.

14   Q And do you agree that suction dredge mining

15 might have a beneficial impact because it breaks up

16 stream bottom armor or embedded stream bottom?

17   A Yeah. So concrete aggregate where rocks get

18 embedded into hard clay and form a hard surface layer,

19 that is a lower production type of habitat compared to

20 open and clean, free-flowing separated gravels.

21 However, when a miner breaks up the aggregate, it

22 turns to sand and the whole thing is unstable and

23 there's no -- at least the concrete aggregate provided

24 a physical structure for invertebrates to anchor to or

25 hold. It's some form of habitat, whereas loose sand

1 is a much lower form of habitat.

2   Q And I just want to clarify for the record,

3 when you started your response, you said, yeah, and

4 then continued in your response. My question was, do

5 you agree that suction dredging may be beneficial

6 because it breaks up embedded stream bottom?

7   A I'm sorry. No.

8   Q And that's consistent with the remainder of

9 your response?

10   A Yes.

11   Q Do you agree that suction dredge mining

12 might have a beneficial effect because it can create

13 interstitial habitat that young fish or invertebrates

14 could use?

15   A No. I don't know how it would even do that.

16   Q Is it possible that suction dredge mining

17 would remove sediments in the system to create

18 interstitial spaces?

19   A Oh. No. It's not designed to go through

20 and carefully suck out interstitial -- or fines from

21 interstitial spaces. It's designed to excavate

22 relatively large areas and complete holes, and in that

23 process, there's always more fine sediment released

24 than there was before because of swell even.

25   Q Do you agree that turbidity created during

1 natural high-flow periods is greater than turbidity

2 caused by suction dredge mining?

3   A Yes.

4   Q And if that's true, why is it your opinion

5 that the turbidity caused by suction dredge mining is

6 an adverse environmental impact?

7   A Well, first off, the high flows are

8 occurring in a natural time with snow melt and spring

9 and winter rains when the water temperatures are very

10 cold. Remember that was a limiting factor is warm

11 temperatures. So it's easier on the fish to deal

12 with. The background of turbidity is not much

13 different between the peak flows and slightly lower

14 peak flows, and the fish are either spawned in the

15 fall and are old enough to move to the periphery of

16 the stream, and this water is high, so they can move

17 into riparian vegetation and forest along the

18 periphery of the stream and the banks, whereas suction

19 dredging is usually during base flows. The water is

20 very clear. So any small fish that tries to move is

21 at risk of predation. The base flows are so low that

22 the stream banks are not even wetted. They couldn't

23 even access the bank to get away from that turbidity.

24 And also, because the flows are low, all the other

25 interstitial spaces are being competed for by other

1 fish, and it's just hard to relocate in those
2 conditions.
3   Q Can you describe the type of flow that would
4 be experienced in the river in July 2015?
5   A It was a very low flow year. Two hundred
6 CFS or less, right in there.
7   Q And what's CFS?
8   A Cubic feet per second.
9   Q Do you agree that scientists have differing
10 opinions regarding whether suction dredge mining
11 causes an adverse or a beneficial impact?
12   A Say the first part of that again especially.
13   Q Does -- does the -- do the -- sorry. Does
14 the -- do scientists agree whether there's adverse
15 impacts from suction dredge mining or beneficial
16 impacts from suction dredge mining?
17   A There's large agreement of the adverse
18 effects.
19   MR. MOORE: I have no further questions at
20 this time, Your Honor.
21   JUDGE COUGHLIN: All right. Mr. Erlanson,
22 are you ready to offer your questions, or would you
23 like a break before doing so?
24   MR. ERLANSON: No. I'm ready, Your Honor.
25   JUDGE COUGHLIN: Okay. Go right ahead.

1   CROSS-EXAMINATION
2   BY MR. ERLANSON:
3   Q Okay. We'll go back to the beginning. You
4 mentioned in the biological assessment, Mr. Arthaud,
5 about a 2016 -- you mentioned current transverses
6 restored goal levels of fish and habitats. And in
7 there, you mentioned the threatened species as fall
8 Chinook and Snake River steelhead and bull trout. You
9 stated that bull trout were pretty much a tributary
10 fish. You stated that the Snake River steelhead used
11 the main stem in the South Fork River, and you said
12 that the fall Chinook were pretty much a lower main
13 stem of the South Fork River system. I might as well
14 ask you, how many nests have you personally observed
15 or have knowledge of in the area where I was dredging?
16   A In the area -- well, first I should clarify
17 that's not the biological assessment. It's the
18 biological opinion that I was talking about.
19   Q Oh, okay. Opinion.
20   A And I did say that bull trout use the main
21 stem, not necessarily for spawning and early rearing
22 as much as the others.
23   Q Right.
24   A And so, with that, I have -- I receive
25 reports from the tribes and the co-managers and the

1 state, and there are many reports of spring-summer
2 Chinook spawning throughout the reach where you mined
3 and above it and below it. None for fall Chinook.
4 And steelhead, it should be noted, and it didn't go
5 there with Mr. Kenney's testimony, but they're spring
6 spawners and they spawn during high turbid flows. So
7 there's almost no reports of steelhead spawning
8 anywhere.
9   The Chinook reds, they're fall spawners when
10 the flows are very clear and low, so we could see them
11 and count them, so they're readily available through a
12 simple spawning survey. But the steelhead spawning
13 surveys are rare to nonexistent.
14   Q Can I ask you how the steelhead could spawn
15 in a high water event? We're talking about smothering
16 the eggs with sand silt sediment. Explain that.
17   A That's a good question. They actually spawn
18 after the high water event. So, on the downward --
19 you know, if the flows are low and there are not very
20 many peak flows, they'll go ahead and spawn out
21 throughout the entire spring, roughly from end of
22 March through the end of June or middle of June
23 especially. But if the flows are -- if it's a much
24 higher peak flow year, they will tend to wait because
25 the water temperature is also colder during those

1 conditions, and they tend to spawn in May and June
2 later. So it would be on the descending limb of the
3 peak flows.
4   Q The South Fork Clearwater River is listed
5 for water temperature, am I correct, for 303-impaired?
6 That's one of the parameters?
7   A Yes.
8   Q And because of that fact, it's been my
9 understanding, which could be wrong, so I want you to
10 correct me because you're the expert. I'm certainly
11 not. I'm just asking the question. That salmonids
12 tend to not spawn in the area of Newsome Creek to
13 about below Crooked River, and then, from there up,
14 they -- I guess they spawn quite a bit. Is that your
15 understanding of it or --
16   A No. It's salmonids, but there is a sweet
17 spot right where your mining was occurring, but
18 downstream from there, it's more of a canyon reach
19 through 10 mile, 20 mile and Johns and all the way
20 down. That's a steeper canyon with deeper pools,
21 larger boulders, fewer gravel bars, more sandbars.
22   Q A lot of sand.
23   A So there's not as much spawning generally in
24 that area. And then above your area, above Newsome,
25 which is very near to the mouth of Crooked River and

1   Red River, and those have really large legacy mining
2   damages to them that have really changed the flows and
3   added lots of sand. So those tributaries are coughing
4   out large volumes of sand into the main stem, and so
5   there's a canyon below where you mined, and then
6   there's sand at high volumes above where you mined,
7   and there's like a eight- or nine-mile sweet spot
8   right where you're at that's readily wadeable, which
9   means it's consistently shallow for early rearing
10   fish, and it's available for spawning, and that's the
11   type of habitat they actually pick.
12   Q   Okay. But you don't, like you said, you
13   don't have any knowledge of any fish spawning there?
14   A   For spring-summer Chinook, I do. They fall
15   under essential fish habitat in the MSA but not under
16   the ESA because they're not listed. And then, for
17   steelhead, we have various reports from Fish and Game
18   and the Nez Perce Tribe of seeing steelhead in the
19   area, potential steelhead reds, but --
20   Q   Potential.
21   A   Right. But, when I actually analyzed the
22   photographs, it's hard to tell that it's 100 percent
23   certain a red because it's so muddy. You could see a
24   clean spot there, but it's so muddy you just don't get
25   the records of those reds. And we've actually had

1   them go out to do that, and they've just been turned
2   back because they couldn't see into the water. So
3   they quit the survey. They didn't try.
4   Q   If it's so muddy, as you just stated, the
5   question is, wouldn't the -- consider a suction dredge
6   takes about -- all the suction dredge activities take
7   about 2 percent of the South Fork and Clearwater River
8   in a high water flow like the spring runoff just this
9   year up there. It was quite significant and it covers
10   the whole stream. Now would you agree it moves fine
11   silt, sands, gravels downstream at that time?
12   A   Okay. There was a couple of different
13   questions in there. I don't know about the 2 percent
14   part at the very beginning.
15   Q   Yeah, .2 percent.
16   A   That's what it says in the bi-op, and that's
17   the size of the program given the entire 50-mile South
18   Fork Clearwater. Unauthorized dredging, I have no
19   idea how much that takes up. And then the second part
20   of the question was that the turbidity's very high.
21   How can they survive it? Well, the way they survive
22   it is they move to peripheries of the stream into side
23   channels behind islands up into the timber. On the
24   South Fork snake, I've actually caught them well up
25   into the timber alongside the stream when it was

1   flooded. And because it's cold in the spring and
2   there's lots of water available above the banks and
3   because that habitat's available, the fish will move
4   to the periphery. They will go into tributaries or
5   whatever they do. They will actually try to escape
6   that flow.
7   Q   Okay. How about the insects and micro-
8   invertebrates that you say get smothered from suction
9   dredging? Wouldn't these high water flows do the same
10   thing but on a much greater scale?
11   A   Yeah. The high flows -- the high water with
12   them and the high turbidity with them, they don't
13   readily -- they aren't readily able to move. So a lot
14   of them go underground in the stablest of areas that
15   they can find, and they lock down to something solid
16   and they weather the thing. They don't grow, they
17   don't feed. But usually the floods are over, you
18   know, after two or three days and the worst of the
19   peak is over, and then they manage to survive through
20   that, and then they also then spawn. Most of them
21   spawn really quickly right after that or during the
22   cold spring.
23   Q   Well, considering that a high-water event
24   constitutes 100 percent of the waterway and a suction
25   dredge a wide plume, have you ever seen a suction

1   dredge on the South Fork operating that made the
2   entire river turbid?
3   A   On LoLo Creek and other small streams, yes,
4   but you asked on the South Fork Clearwater main stem.
5   Not the entire channel, but I've seen plumes that went
6   a mile downstream visibly, and I've seen plumes that
7   took up a third of the channel.
8   Q   Okay. Thank you for that. In regards to
9   the plumes and juvenile fish, is it your belief, sir,
10   that juvenile fish have the ability to move out of a
11   turbid plume if it is detrimental to their well-being?
12   A   The older ones, yes. So, yearlings and
13   two-plus age fish, they rove all around and do what
14   they will because they're the biggest thing in a
15   nursery stream. But, if you're a sub-yearling and you
16   were only hatched from the red in late June and by
17   July 2 you're not going to be very big, and in clear
18   water and low flows, movement is very detrimental to
19   that fish's survival.
20   Q   Well, I agree with you 100 percent. I'm a
21   lifelong fisherman. All those answers are -- well,
22   I've got one last question there on this. The average
23   size of spring Chinook salmon by June 1, what do you
24   think the average size of the Chinook salmon?
25   A   June 1, the Chinook -- so Chinook salmon are

1 fall spawners. So the reason they spawn in the fall,
2 it gives them adaptive advantage over spring spawners
3 because they've been alive and growing as eggs that
4 much longer. So they typically emerge from the red in
5 very early spring at, you know, maybe 40 millimeters
6 fork-length, and with -- that would be two to three
7 months of rearing, something like that before the
8 early part of the summer. I would say many are
9 approaching 80 millimeters fork-length, something like
10 that. If it's a very dense year class, they won't
11 grow as fast, and there might be plenty of like 60
12 millimeter length fish in there. If it's a sparse
13 year class with good conditions --
14   Q Would it be safe then for me to write down
15 60 to 80 millimeter on an average?
16   A Sure, sure.
17   JUDGE COUGHLIN: And I think you used a term
18 "fork-length," which is I believe just from some
19 exposure to NOAA already --
20   THE WITNESS: Yes.
21   JUDGE COUGHLIN: -- and other work that we
22 do, a form of measurement of a fish, correct?
23   THE WITNESS: It's a form of measurement.
24 Thank you. It's a form of measurement of the length
25 of a fish, and instead of measuring the total length

1 to the tips of its tailfin, they measure the total
2 length to the center of the fork. They have a fork
3 and tail, and they measure from the head to that fork.
4   MR. ERLANSON: Yeah.
5   BY MR. ERLANSON:
6   Q The suction dredging with the IDWR, who set
7 the dates of July 15 to August 15 yearly -- it's been
8 that way ever since I've been up there, I think
9 2003 -- and they've had a few changes there. One time
10 they altered it to six weeks. Another time they
11 brought it down to three weeks. But considering that
12 was -- that's the basic time frame, even today it's
13 still, that's the basic timeframe, July 15, August 15.
14 Does suction dredging on the South Fork then have an
15 impact on any spawning, ESA-listed species?
16   A Those seasons were set based on thermal
17 units of how fast the eggs would grow given the last
18 date of spawning estimated and when the eggs would
19 hatch and the very last eggs would hatch, and that's
20 why you get the July 15 start, because we believe that
21 like over 90 percent of the reds are already hatched
22 and the fish emerged from them. There still are a few
23 that hang on in there, but the risk of it is so low.
24 And we have monitors in the program go with the
25 suction dredgers to make sure they're not into one of

1 those. And at the end on August 15, it's set there so
2 that -- because the Chinook spawning usually doesn't
3 start 'til early September. And so, you're right,
4 that is the open window where the least amount of very
5 young fish would be harmed.
6   Q When you fishery people -- and I'm speaking
7 in generalizations all over the northwest -- when you
8 figure out a season, do you do it on a bell-shaped
9 type deal where the most spawning is at the top of the
10 bell and then there's spawning before the bell and
11 there's spawning after the bell, and that's how you
12 decide the season dates?
13   A That's a reasonable approach, yes, because
14 the top of that bell is the best statistical number we
15 can come up with, the median or the mean, central
16 tendency.
17   Q Yeah, exactly.
18   A But then we also look at those percentiles
19 on the descending limb of that run and we try not to
20 lop off that last 5 or 10 percent if we can help it,
21 because that's 5 or 10 percent of the run. And then
22 you should know that given the year, if it's a very
23 cold year, the whole bell might shift later into the
24 summer, into the spring. And if it's a very warm
25 drought year, the whole bell might shift earlier. So

1 those things are all at play.
2   Q Yeah, that's interesting there. I didn't
3 realize that. It could shift then. Could you repeat
4 just what you said? It could shift.
5   A If it's a cold, wet spring, the whole
6 spawning distribution bell, a normal distribution
7 could shift later into the season.
8   Q I got you.
9   A Yeah. And the other one would be earlier.
10   Q Thank you. Thank you very much. Let's see
11 here. Do fish typically spawn in algae-covered
12 gravel?
13   A Algae-covered gravel?
14   Q Yeah.
15   A What's that?
16   Q Gravel with algae on it, you know?
17   A Oh, algae-covered gravel.
18   Q Well, I mispronounced it. I'm sorry.
19   A I just misheard it. Yes, because they can
20 clean it a little bit with their tails and the eggs
21 are being placed below it. So they would like an area
22 that is clean. But, if it's clean with some algae on
23 the surface, that's good for them too, because they're
24 going to put those eggs down four to six inches,
25 wherever --

1   Q That's correct.
2   A -- they think they won't scour from high
3 flows.
4   Q Uh-huh, right. Have you, sir -- it sounds
5 to me like you've spent a lot of time up in the South
6 Fork, so I have a question here. Have you ever done a
7 water quality study on the South Fork from Newsome
8 Creek up to Crooked River? I mean a water quality
9 study for the plumes that are in the stream.
10   A Oh, like for heavy metals and things?
11   Q Yes.
12   A I have not done one myself, but I've read
13 several, including the best one, most recent probably
14 is the IEDQ flights where they flew over sampled --
15 I'm not sure how they made every sample. But,
16 basically, they sampled all the Clearwater streams,
17 the water itself, and then they used very fine
18 testing, like nanograms --
19   Q Oh, really?
20   A -- of amounts in the water, which tell them
21 how much is in the sediment below the water.
22   Q When was that? Could you tell me? Do you
23 remember?
24   A Fairly recent. 2012? I'm just totally
25 guessing. It's in the bi-op. What CX was that?

1   MR. MOORE: I believe it's 17. I also could
2 be wrong. Yeah, it's 17.
3   MR. ERLANSON: So that's under CX-17?
4   MR. MOORE: Correct.
5   BY MR. ERLANSON:
6   Q Wow, that's a good one.
7   A Okay. I believe it is -- I -- man, I'm not
8 sure which one of these reports it's in. But there
9 are several IDEQ, Idaho Department of Environmental
10 Quality, reports cited or referenced in the back of
11 the biological opinion. In one of those flights or in
12 one of those studies, I would guess it's maybe the
13 2010 or the 2003. And then also EPA has joined up
14 with IDEQ, and they've done a South Fork Clearwater
15 River sub-basin assessment and total maximum daily
16 load study. So --
17   Q Right. Uh-huh. Okay. Thank you. It's
18 good information. Are you aware that IDWR regulations
19 don't allow dredgers to remove woody debris from the
20 stream?
21   A I would say you can't hold me too firm to
22 every IDWR specific.
23   Q Okay. That's fine.
24   A But I would believe that's some type of
25 protective measure they would follow.

1   Q Okay. That's fine. Mr. Arthaud, did you
2 ever state in your career that the average amount of
3 hours a suction dredger operated was four to five
4 hours?
5   A I believe the biological opinion has
6 something. Is that where you got that statement from?
7   Q I got it from a FOIA request, but, yes.
8   A Yeah. If you wanted to look, CX-17 on Page
9 4 of the biological opinion, inside the proposed
10 action we grappled with this issue. From our
11 monitoring on LoLo Creek and Moose Creek and the
12 others, we saw a wide range. Some went out there to
13 hang out and hardly dredged at all. Others worked two
14 crews --
15   Q Yeah.
16   A -- sunup to sundown and moved a lot of --
17   Q Material.
18   A -- sediment --
19   Q Yeah.
20   A -- and cobble. And so, typically, when we
21 see things like that, we'll apply monitoring to the
22 problem to make sure what it is, and then we will
23 provide an expectation. So we expect it's somewhere
24 in the middle between those two extremes, and that's
25 probably what it came down to, a half a day, four

1 hours of dredging.
2   Q Right, uh-huh.
3   A Yeah.
4   Q Right. The total maximum daily load was
5 based not on your recommendation, but it was based on
6 eight hours a day, was it not?
7   MR. MOORE: Objection.
8   THE WITNESS: I don't remember the basis.
9   JUDGE COUGHLIN: Hold on. Hold on one
10 second. There's an objection.
11   THE WITNESS: Okay.
12   JUDGE COUGHLIN: Go ahead.
13   MR. MOORE: It's my understanding that Mr.
14 Arthaud is an employee of NMFS, had no involvement in
15 the setting of the TMDL.
16   JUDGE COUGHLIN: Okay. So a preliminary
17 question is, do you even know the answer?
18   THE WITNESS: I don't know that specific
19 answer. It could have been. It made sense.
20   JUDGE COUGHLIN: Okay. Because there's no
21 need to speculate.
22   THE WITNESS: Okay. Sorry.
23   JUDGE COUGHLIN: So I'll sustain the
24 objection. And if you have another, please go ahead.
25   MR. ERLANSON: Okay.

1   BY MR. ERLANSON:
2   Q Okay. We covered that. Are there any ESA
3 species that inhabit the South Fork that are allowed
4 to be taken or caught by sports fishermen, either for
5 threatened or endangered species?
6   A Yes.
7   Q Okay. Could you mention those?
8   A They would be part of -- typically part of a
9 mixed stock fishery where there might be some unlisted
10 and listed fish altogether moving up a stream down in
11 a lower river or in the ocean. So there's commercial
12 fisheries in the ocean that could take some. But you
13 asked for sport fishing. There's sport fishing,
14 carefully managed fisheries in the lower Columbia and
15 Snake River. I don't think -- well, they probably go
16 for steelhead up into the South Fork too.
17   JUDGE COUGHLIN: Is there a particular
18 terminology associated with that type of taking?
19   THE WITNESS: It is --
20   JUDGE COUGHLIN: Is it a particular type of
21 take?
22   THE WITNESS: It's an incidental take --
23   JUDGE COUGHLIN: Okay.
24   THE WITNESS: -- because they cannot keep
25 the wild fish in most -- in almost all those

1 fisheries. And if they have an adipose fin, they're
2 required to immediately release them without removing
3 them from the water.
4   MR. ERLANSON: Right.
5   THE WITNESS: But there's hatchery fish that
6 are mixed in that sometimes are listed and other times
7 aren't listed, and those are often allowed to be kept.
8   BY MR. ERLANSON:
9   Q Okay. Is it your experience as a fishery
10 expert that when you catch a large fish and fight --
11 you know, sport fishing you're fighting with a rod and
12 reel -- that many times that fish, after it's
13 released, no matter how careful you are with it, that
14 it expires?
15   A I wouldn't say many times, but there are
16 common sublethal effects that occur from a long fight
17 or a hard-fought fight. So that is a form of
18 sublethal effects on those. Typically, with salmon
19 and steelhead, you either land them very quickly or
20 you don't get them at all. So long fights that
21 successfully end in a catch are sometimes rare.
22   Q Okay. We covered that already. Moving
23 right through here. It won't take long.
24   JUDGE COUGHLIN: Take your time.
25   //

1   BY MR. ERLANSON:
2   Q I think we covered a little bit of this
3 earlier. I don't think there's any sense in going
4 over the steelhead thing here, Mr. Arthaud. Do you
5 have any information on the other species, like
6 Chinook salmon, either the fall or the spring run, how
7 may reds have been observed since 2001 in that section
8 of the river? I mean, I'm basically not talking my
9 section or where this occurred.
10   A Just the whole river main stem?
11   Q I'm talking from Newsome Creek up to Crooked
12 River.
13   A Oh, Newsome Creek up? The fall Chinook reds
14 from Newsome Creek up, I can't remember how far they
15 went. They went up into the canyon a ways. The
16 spring-summer Chinook, yes, in that reach and
17 downstream. They tend to be heaviest at the mouths of
18 tributaries, and where there's thermal refugia or good
19 quality water coming out of a tributary, they will
20 distribute down the main stem below that area. But
21 there's also scattered spawning throughout.
22   JUDGE COUGHLIN: And just for my own
23 reference, those areas that you're referring to, where
24 are they in relation to the area in which Mr. Erlanson
25 was dredging?

1   THE WITNESS: They're above, below it, and
2 through it for the --
3   JUDGE COUGHLIN: For the areas you were just
4 responding to?
5   THE WITNESS: Yes.
6   JUDGE COUGHLIN: A couple scenarios?
7   THE WITNESS: Yeah, for spring-summer
8 Chinook, they are spawning above and in and below the
9 area that he's in.
10   JUDGE COUGHLIN: Okay.
11   THE WITNESS: I believe Snake River basin
12 steelhead are spawning throughout that area also, but
13 we can't see them as readily.
14   JUDGE COUGHLIN: Okay. Okay.
15   THE WITNESS: But the fall Chinook are
16 below.
17   JUDGE COUGHLIN: Okay. Thank you.
18   BY MR. ERLANSON:
19   Q You mentioned that -- you were asked about
20 Mr. Rice's plume, turbidity plume.
21   A Uh-huh.
22   Q And you, from visual observation, you
23 estimated that it was between 30 and 40 NTUs directly
24 below the dredge there and going down the stream for I
25 don't know how far, 150 feet or something. But that

1   still falls within the 500-foot mixing zone and would
2   be legal according to the regulations that are on the
3   books, correct?
4   A   That's not correct.
5   Q   Okay.
6   A   Because EPA, under the general permit and
7   the Forest Service BLM program, the consultation that
8   allows that says it can be no longer than 150 feet
9   visible plume.
10   Q   Right.
11   A   So, if IDWR or somebody else says something
12   different, it's still is not correct.
13   Q   Right. But, at the end of 150 feet, what is
14   the NTUs allowable?
15   A   They don't -- the 150-foot is a surrogate,
16   is an observational surrogate for plumes that will
17   include harmful effects somewhere along their
18   distance. So, if the miner has a plume that's visible
19   more than 150 feet, he's required to stop or slow down
20   until that plume lessens in distance. And then we
21   expect all the way from nearly below his sluice
22   throughout the whole visible length of the plume that
23   it will be less than the harmful levels.
24   Q   What is the harmful level?
25   A   Well, as I said before, they start becoming

1   behaviorally harmful, an annoyance or irritation,
2   around 20 NTUs, and then they increase from there
3   until, by the time you're 40 or 50 NTUs, you know,
4   there's actually injurious effects of clogging in the
5   gills and coughing and --
6   Q   I understand. When you say -- when you
7   mentioned harmful and you mentioned 20 NTUs, what is
8   the timeframe for those 20 NTUs? Is it -- what's the
9   extended timeframe? Is it one hour? Is it 11 hours
10   at 20 NTUs?
11   A   Yeah. That's the thing. If we were doing
12   straightforward injuries, the duration would be very
13   important. But, when you are doing behavioral effects
14   like displacement, the first grain of sand that hits
15   them might cause some fish reasonably to move. You
16   know, the first wave of turbidity that hits them
17   may -- they're highly sensitive to it, they may leave.
18   So it's hard to say that, you know, this single point,
19   nothing will happen, and a few points higher than
20   that, all of it will happen. It's a continuum.
21   Q   Okay. Thank you. Are you familiar with a
22   1988 G.R. Stern study on dredge plumes?
23   A   Stern?
24   Q   Yes.
25   A   No, I don't believe so.

1   Q   Well, he states that although visible,
2   dredge plumes have little direct consequences to fish
3   and invertebrates. That's a conclusion of his study
4   done in 1988.
5   A   Was that --
6   Q   You have a tendency to disagree with that.
7   JUDGE COUGHLIN: Hold on one second. Got an
8   objection.
9   MR. ERLANSON: Oh, I'm sorry.
10   JUDGE COUGHLIN: Go ahead.
11   MR. MOORE: I object to the extent that
12   that's testimony. If there is a study that Mr.
13   Erlanson has and wants to give the witness a chance to
14   review it, I might be okay with some questions. But,
15   without having him review it, I'm hesitant to allow
16   him to answer.
17   JUDGE COUGHLIN: Okay. I think that's a
18   sustainable objection. Do you have the report?
19   MR. ERLANSON: No, I don't have all these
20   reports. It would take 500 pages. I don't have them,
21   no.
22   JUDGE COUGHLIN: Okay.
23   MR. ERLANSON: I just have the conclusions
24   of the reports.
25   JUDGE COUGHLIN: Okay. Yeah, then I would

1   just move on to your next question then.
2   MR. ERLANSON: Okay, Your Honor.
3   BY MR. ERLANSON:
4   Q   You mentioned -- oh, okay. You stated that
5   you were down in the area of these tailing piles, in
6   Number 5's and Number 7's, in 2014.
7   A   Uh-huh.
8   Q   At that time, did you notice any activity in
9   that area?
10   A   In 2014, there were -- I just drove by and
11   pulled out and looked. I didn't get down in and wade,
12   but there were maybe a dredge or two below Newsome and
13   the slide area there, but most of them were at Newsome
14   and above.
15   Q   Okay. This, of course, is above Newsome
16   Creek where we're talking here. Okay. Did you in
17   2015 visit the area before this dredging occurred?
18   A   I did not.
19   Q   So there was no -- apparently then, you
20   couldn't have done any biological testing on that area
21   before the dredging occurred?
22   A   No, none was done.
23   Q   Okay. You estimated the impacts of habitat
24   removal for the EPA, counsel for the EPA. But,
25   without measuring the hole previous to the dredging

1   activity, how could you accurately come up with a
2   conclusion like that?
3   A   I am basing it on the monitoring reports
4   that were presented here and the pictures and the
5   volumes that were measured therein.
6   Q   Yeah, you -- sir, you mentioned that five
7   meters, cube meters were taken out of the hole
8   according to those reports that you cited in the
9   testimony, and you mentioned that 20 percent of that
10   would be -- it would be actually 20 percent less than
11   that because of compaction factor, like when you're
12   building a road and you're filling a culvert, it
13   always sinks. You can fill it in with the same
14   material and you'll have a hump on it and --
15   A   Uh-huh.
16   Q   -- it takes time to compact it.
17   A   Right.
18   JUDGE COUGHLIN: Wait. Hold on one second.
19   I want to make sure I'm following. Is this the
20   reference to the testimony about swell?
21   MR. ERLANSON: Yes.
22   JUDGE COUGHLIN: Is that what you're asking
23   about?
24   MR. ERLANSON: Yes, yeah. Compacted --
25   JUDGE COUGHLIN: Okay. I'm not sure if it

1   was characterized in quite that way, but -- Mr. Moore?
2   MR. MOORE: I think it wasn't characterized
3   exactly correct, and I could offer a correction if
4   Your Honor would allow.
5   JUDGE COUGHLIN: Okay. You mean in the
6   midst of his -- okay. Real quickly maybe that will
7   help clear things up.
8   MR. MOORE: I believe the testimony was that
9   the volume of material removed from the hole was 15.4
10   cubic meters, and there was a 20 percent swell of that
11   volume.
12   JUDGE COUGHLIN: Okay.
13   THE WITNESS: That is correct.
14   JUDGE COUGHLIN: Okay.
15   MR. ERLANSON: Okay.
16   JUDGE COUGHLIN: Thank you. Go ahead with
17   your question, Mr. Erlanson.
18   MR. ERLANSON: Okay. Where did I get five
19   meters cubed at? Was that the tailing pile?
20   MR. MOORE: The tailings pile was measured.
21   MR. ERLANSON: Okay, because I wrote it down
22   and I thought, boy, I'm a little off there, but 15
23   units.
24   BY MR. ERLANSON:
25   Q   You mentioned three rocks out there in 1527

1   bottom left. That's -- I know it's 1527.
2   JUDGE COUGHLIN: Yeah. I think that might
3   be CX-38 maybe. I'm just looking at my notes, which
4   may or may not be -- take a look at that exhibit, Mr.
5   Erlanson, and see on Page 1527 if that's what your
6   question's related to.
7   MR. ERLANSON: Yeah. There we go.
8   JUDGE COUGHLIN: Okay.
9   MR. ERLANSON: Yeah, I've got it.
10   BY MR. ERLANSON:
11   Q   You mentioned the rocks being an impediment
12   to fish travel there. And considering all the fish
13   would be free swimmers, do you -- can -- do you
14   believe that the fish can't swim to either side of
15   those rocks as they would an in-stream boulder or I --
16   A   No, I do not believe that they can't do
17   that. I think they can swim around something like
18   this. Most of the fish at that age --
19   Q   Right.
20   A   -- and size, but it does provide a very
21   shallow highly exposed substrate for them to have to
22   swim across at risk of predation, or they have to go
23   around to the thalweg over on the far side.
24   Q   I agree. I agree. I just wanted to clarify
25   that. So, when you look at -- oh, I guess we could

1   look at any one of these. Let's look at CX-1B. And
2   we want to take a look -- what I want to look at is --
3   we can still look down here at where it says "2015,"
4   the same one on 1527. What I want to try and do is
5   make a little comparison here. And what I'm trying to
6   get at here, I'm going to ask you, do you see more
7   gravel exposed on, let's call it the tree side of the
8   picture? Do you see more gravel exposed in the
9   picture on -- oh, I wish I had my glasses.
10   JUDGE COUGHLIN: 1527?
11   MR. ERLANSON: Thank you.
12   JUDGE COUGHLIN: Okay. So let me just kind
13   of jump in just to make sure the record's clear. So
14   you're comparing CX-38 at Page 1527, and you're
15   referring to that 2015 photograph in the lower left,
16   right? Or I should say correct. And you're comparing
17   that to CX-1B?
18   MR. ERLANSON: Yes, Your Honor.
19   JUDGE COUGHLIN: Okay. And now, with that
20   in mind, just restate your question if you would.
21   BY MR. ERLANSON:
22   Q   Okay. Can you see more gravel, sir, on the
23   side of the river looking upstream on the right side
24   than in the picture taken by Hughes in July, the day
25   of the incident? Can you -- in other words, I'm

1   asking you, by looking at these pictures, can you

2   determine that the water has went down measurably?

3   A   Yes, I believe I can in that the -- in the

4   CX-1B, you could see more of Rice's tailings piles,

5   and you can start to look at rocks along the shoreline

6   until the water's slightly deeper than it is in the

7   1527 lower left photograph.

8   Q   Right, correct.

9   JUDGE COUGHLIN: Now I just want to hop in,

10   though, because you made reference to this being a

11   Hughes photograph.

12   MR. ERLANSON: I think Mr. Hughes took these

13   photographs.

14   JUDGE COUGHLIN: Okay. Okay.

15   THE WITNESS: Yeah, yeah.

16   JUDGE COUGHLIN: Hughes, CX-1B being the

17   Hughes photograph. Okay.

18   MR. ERLANSON: Oh.

19   JUDGE COUGHLIN: I thought you were

20   referring to the one in CX-38.

21   MR. ERLANSON: Oh.

22   JUDGE COUGHLIN: So that's fine. Okay. You

23   were referring to the CX-1.

24   MR. ERLANSON: Yeah.

25   JUDGE COUGHLIN: Okay. Thank you.

1   BY MR. ERLANSON:

2   Q   Okay. So then you mentioned that half of

3   the stream had been disturbed in this area. But, if

4   the water went down, let's say, 15 inches, the stream

5   would be -- wouldn't it be much wider, sir?

6   A   If the water went down, the stream width

7   would likely decrease. I don't think it went down 15

8   inches. I could still see boulders on the far bank

9   that match up, and it looks more like maybe six or

10   seven inches.

11   MR. ERLANSON: Okay. It's opened up. So

12   that -- I just -- that was a point, you know, I wanted

13   to make. Okay. We took care of that. I'm done.

14   JUDGE COUGHLIN: Okay. Do you have some

15   redirect?

16   MR. MOORE: Just a few, Your Honor.

17   JUDGE COUGHLIN: Sure.

18   REDIRECT EXAMINATION

19   BY MR. MOORE:

20   Q   Mr. Arthaud, when you drafted the biological

21   opinion and created the terms and conditions in that

22   document, including things like the suction dredge

23   time period --

24   A   Uh-huh.

25   Q   -- were you assuming that the impacts of

1   suction dredge mining were those from permitted

2   activities?

3   A   Yes.

4   Q   And that those activities were in compliance

5   with the terms and conditions of the bi-op?

6   A   Fully, yes.

7   Q   If I understood it correctly, you just

8   testified that in Exhibit CX-01B, the water level is

9   higher than the water level in the photograph in the

10   bottom left of Page 1527 of Exhibit 38. Is that

11   right?

12   A   That's what I just said. If you can point

13   me to a rock or a boulder that changes that --

14   Q   Even if that is true, does that in any way

15   affect your opinion regarding the impacts of Mr.

16   Erlanson's dredging activity?

17   A   No, it doesn't. It just means that there's

18   still -- what I said before is still the same, that

19   there's a hump there, and when the water level

20   dropped, it was the first thing to go above the water

21   level. The tailings are still extending above the

22   water level --

23   Q   Does it in any --

24   A   -- surface.

25   Q   I'm sorry.

1   A   Above the surface.

2   Q   Does it in any way call into doubt your

3   conclusions regarding the presence of a pile in the

4   bottom left photograph on Page 1527?

5   A   No. I'm trying to say that it asserts that

6   there is a pile there. I'm using that as evidence.

7   MR. MOORE: Thank you. No further

8   questions.

9   JUDGE COUGHLIN: Okay. Did that raise

10   anything else you needed to ask?

11   MR. ERLANSON: One question.

12   JUDGE COUGHLIN: Okay.

13   RECROSS EXAMINATION

14   BY MR. ERLANSON:

15   Q   On 1527 on that left-hand bottom photo,

16   you're saying the dredge pile, the dredge tailings are

17   out of the water. I do see one, two, maybe three,

18   four rocks out of a surface area there of probably --

19   I don't know -- you could estimate it. You're

20   probably better at estimating than me, but I'd say

21   there's 100 square feet there or something. But do

22   you see the little yellow circle that I think denotes

23   Hole Number 5. Do you see that, sir?

24   A   Yes.

25   Q   And then down below there's a tailing pile.

Page 516

1   A   Right.

2   Q   There's one big rock right at the edge of

3 that hole that I'm sure that whoever was dredging

4 there at the time couldn't move, but that's beside the

5 point. But the rest of it's all tailings, and I only

6 see -- I mean, I see water going over them tailings

7 except for them, like I said, there's like three or

8 four rocks there, and they look like they're in a

9 pretty much straight downstream line. Is that --

10   A   Yes. And now look a half inch in the

11 photograph below those lined up rocks just above the

12 upper rock and the line, and you'll see some riffling

13 areas.

14   Q   Right.

15   A   That's where the tailings pile is extending

16 above the surface or so close to the surface that it's

17 causing it to riffle. And so it's --

18   Q   Right. But there's still water running over

19 it right there?

20   A   Yes.

21   MR. ERLANSON: Okay. That's all I wanted.

22   JUDGE COUGHLIN: Okay. Anything else?

23   MR. MOORE: Nothing, Your Honor.

24   JUDGE COUGHLIN: All right. Thank you very

25 much, Mr. Arthaud.

Page 517

1   THE WITNESS: Thank you.

2   (Witness excused.)

3   JUDGE COUGHLIN: We have some -- I assume no

4 further evidence from Complainant.

5   MR. MOORE: No, Your Honor.

6   JUDGE COUGHLIN: Okay. And, Mr. Erlanson,

7 you're not planning to testify you said before.

8   MR. ERLANSON: No, Your Honor.

9   JUDGE COUGHLIN: So you're holding to that.

10 Okay. So we've just got some housekeeping things to

11 discuss. But, before we do that, would anyone like a

12 quick break, a bathroom break or anything, five

13 minutes?

14   MR. ERLANSON: How long does the

15 housekeeping session last?

16   JUDGE COUGHLIN: Maybe 15 minutes.

17   MR. ERLANSON: Oh, I'm good then.

18   JUDGE COUGHLIN: Okay. All right. Is

19 everyone else all right to continue?

20   MR. McLAREN: I'm fine as well.

21   JUDGE COUGHLIN: You'd like a break?

22   MR. McLAREN: No. I can continue as well,

23 Your Honor.

24   JUDGE COUGHLIN: Okay. All right. Thank

25 you.

Page 518

1   MR. McLAREN: And, Your Honor, to clarify,

2 Complainant has no further testimonial evidence to

3 present.

4   JUDGE COUGHLIN: Okay. All right. So were

5 you -- do you wish to make any kind of closing remark

6 or do you waive?

7   MR. McLAREN: We will waive and submit in

8 the form of a post-hearing brief if that's acceptable

9 to Your Honor.

10   JUDGE COUGHLIN: Okay. That's fine.

11   MR. McLAREN: Okay.

12   JUDGE COUGHLIN: And, Mr. Erlanson, how

13 about you? I mean, you haven't actually presented a

14 case, but did you wish to make any closing comments

15 before we deal with housekeeping matters?

16   MR. ERLANSON: Well, I wrote down a couple

17 things.

18   JUDGE COUGHLIN: Okay.

19   MR. ERLANSON: During my opening remark, I

20 mentioned that there was no NPDES permit available to

21 me on July 22, 2015. I think through the

22 cross-examination of EPA witnesses here I've proven

23 that. I think that the EPA failed to prove that the

24 Defendant, in fact, by himself made Hole 5 and

25 Tailings Number 7. I believe that EPA Witness Martich

Page 519

1 stated that Erlanson's case was, she quoted "a usual

2 circumstance," which is an occasional disregard for

3 not having a NPDES permit. And so I'd like the Court

4 to consider those three things in her decision and in

5 the penalty phase of this proceeding. Thank you.

6   JUDGE COUGHLIN: All right. Thank you.

7   Okay. I just want to review the exhibits,

8 which I normally do anyway before we fully conclude.

9 But, with that in mind, Mr. Erlanson, did you wish to

10 introduce into evidence RX-2 and RX-4 through RX-9?

11 And by that, I've kind of gone over it a couple of

12 times, but --

13   MR. ERLANSON: Yeah.

14   JUDGE COUGHLIN: -- basically, then that way

15 I would consider it to the extent that I can in the

16 absence of any authentication or foundation in

17 reviewing everything. If you don't want to introduce

18 them, you don't have to. I'm just giving you that

19 opportunity.

20   MR. ERLANSON: Well, Your Honor, this might

21 sound funny, but after paying my attorney as much as I

22 paid him and he put them in there, I've got to get

23 something out of that guy. So I'll put them in.

24   JUDGE COUGHLIN: Okay. And Complainant's

25 position on that?

1   MR. McLAREN: Your Honor contextualized that
2 very well. I will still lodge an objection for the
3 record on RX-2, RX-4 through 9. So, understanding the
4 choice to allow them in on the basis of leniency,
5 despite the fact that there's no testimony,
6 Complainant objects based on their relevance to the
7 questions at issue in this case, the fact that they've
8 not been authenticated by any witness, the fact that
9 Complainant has not had an opportunity to direct
10 examine or cross-examine a witness as to the veracity
11 or the contents thereof or the general reliability of
12 the exhibits themselves, and just quite generally
13 based on the prejudice to Complainant on the admission
14 of seven documents of evidence without any of the
15 typical introduction requirements. So, beyond that,
16 though, Complainant has no other objection.
17   JUDGE COUGHLIN: Okay. And I get it.
18   MR. McLAREN: Right, right.
19   JUDGE COUGHLIN: I do and so I appreciate
20 it. I'm glad you put those on the record. They're
21 noted. I'm going to accept them into evidence.
22 //
23 //
24 //
25 //

1   (The documents referred to
2   were marked for
3   identification as
4   Respondent's Exhibit Nos. 2
5   and 4 through 9 and were
6   received in evidenced.)
7   JUDGE COUGHLIN: And, obviously, when you're
8 preparing your post-hearing briefing, apart from what
9 you've already stated, if you wish to make any
10 additional arguments as to what, if any, weight I
11 could attribute them, you can certainly do that.
12   MR. McLAREN: I understand, Your Honor.
13   JUDGE COUGHLIN: And, actually, Mr.
14 Erlanson, the same holds true for you with regard to
15 what's been accepted into evidence already by
16 Complainant. Parties are always able to argue how
17 much weight they submit the Judge should assign to any
18 particular piece of evidence.
19   MR. ERLANSON: When do you do this?
20   JUDGE COUGHLIN: In the post-hearing
21 briefing, which is what I'm going to get to in just a
22 second.
23   MR. ERLANSON: Oh, okay.
24   JUDGE COUGHLIN: Yeah. So, with that in
25 mind, we're working off of our existing copies of RX-2

1 and RX-4 through 9.
2   MR. McLAREN: And I believe we've submitted
3 a copy, what EPA had, to Your Honor and to Mr.
4 Erlanson. Is that correct? Do you have --
5   JUDGE COUGHLIN: I don't have a copy from
6 you, but I don't need one.
7   MR. McLAREN: Certainly.
8   JUDGE COUGHLIN: I actually -- we -- I have
9 it available already as part of the pre-hearing
10 exchange.
11   MR. McLAREN: Yes.
12   JUDGE COUGHLIN: My only concern was that
13 the court reporter had a copy. But I think you had an
14 extra that you had offered or no?
15   MR. McLAREN: We must. We have so many.
16   JUDGE COUGHLIN: Oh, okay. I don't mean to
17 impose that on you. It's not your responsibility,
18 but --
19   MR. McLAREN: It's the nature of the
20 circumstances.
21   JUDGE COUGHLIN: Okay.
22   MR. McLAREN: Mr. Jones, did we give you a
23 copy of what looks like this? It would look like
24 this.
25   THE COURT REPORTER: No, I didn't get a

1 binder.
2   MR. McLAREN: Okay. We ought to have an
3 extra of these, and those are the exhibits -- if I
4 may?
5   JUDGE COUGHLIN: Yes, sure.
6   MR. McLAREN: Those are the exhibits that
7 Mr. Erlanson brought early yesterday.
8   THE COURT REPORTER: Right. They were not.
9   MR. McLAREN: Those were not admitted in. I
10 don't know if the court reporter nonetheless needs
11 them.
12   JUDGE COUGHLIN: Yes. I think they should
13 be included in what you have because my ruling on
14 excluding them was done at this evidentiary hearing,
15 and it's part of the transcript. Thank you. So yes
16 to that, and let's just --
17   MR. McLAREN: We're looking around for one
18 of our other copies of Respondent's exhibits.
19   MR. ERLANSON: I've got it here. Remember
20 you gave it to me.
21   MR. McLAREN: That might be yours, Mr.
22 Erlanson.
23   MR. ERLANSON: Well, you gave it to me. You
24 guys gave it to me.
25   JUDGE COUGHLIN: Okay. So can you sacrifice

Page 524

1   that then for the court reporter?
2   MR. ERLANSON: Sure.
3   JUDGE COUGHLIN: Okay. Let's go ahead and
4   hand that to him right now.
5   MR. McLAREN: Great.
6   JUDGE COUGHLIN: Yeah. I knew there was
7   some exchanging going on yesterday.
8   MR. MOORE: And for the record, Your Honor,
9   that binder does include the exhibits that you
10   excluded in response to our motions in limine.
11   JUDGE COUGHLIN: Okay. So we're still on
12   the record here. So the binder, if you could just
13   hand that to Mr. Jones. Great. So that is the binder
14   of Respondent's exhibits that had been proposed as
15   part of the pre-hearing exchange. They're RX-1
16   through RX-9. All I'm permitting to be admitted into
17   evidence is RX-2 and RX-4 through RX-9. RX-1 and RX-3
18   were previously excluded in my order in response to
19   Complainant's first motion in limine. So, if it's
20   helpful, we can pull those out. We can pull out RX-1
21   and RX-3. You can do that? Okay. All right. Thank
22   you, Mr. Jones. But, otherwise, I think it's very
23   clear from the record. I've said it I don't even know
24   how many times at this point, and the case record
25   certainly reflects my order on the other two.

Page 525

1   Okay. So something else before I confirm
2   the exhibits?
3   MR. McLAREN: Complainant has one -- two
4   other items.
5   JUDGE COUGHLIN: Okay.
6   MR. McLAREN: Due to the sort of novel
7   circumstances and Mr. Erlanson's swearing in at the
8   very beginning of the hearing and the various
9   assertions he's made throughout, Complainant has been
10   unable to cross-examine him as to any of those
11   assertions --
12   JUDGE COUGHLIN: Uh-huh.
13   MR. McLAREN: -- or be able to offer any
14   evidence to impeach any of those assertions.
15   JUDGE COUGHLIN: Uh-huh.
16   MR. McLAREN: At this time, based on
17   something that Your Honor said earlier this morning, I
18   asked whether Your Honor would be willing to consider
19   other items in the docket, specifically Docket No. 34,
20   Attachment A, which is a declaration made by Mr.
21   Erlanson dated August 1, 2017, and --
22   JUDGE COUGHLIN: Let me pull that up.
23   MR. McLAREN: Certainly.
24   JUDGE COUGHLIN: Those are in your proposed
25   exhibits, right?

Page 526

1   MR. McLAREN: It's not a proposed exhibit.
2   It's an aspect of the publicly available docket. So
3   it's not a proposed exhibit in this case.
4   JUDGE COUGHLIN: Okay. So is that -- oh,
5   dear. My computer's freezing up. It's not on the
6   disk?
7   MR. McLAREN: It's not on the disk.
8   JUDGE COUGHLIN: Okay.
9   MR. WRIGHT: It was filed.
10   JUDGE COUGHLIN: It was filed, though?
11   MR. McLAREN: It was filed.
12   JUDGE COUGHLIN: Okay. But I just want to
13   -- oh, darn. My computer's freezing up.
14   MR. McLAREN: I have copies.
15   JUDGE COUGHLIN: If you have copies, great.
16   MR. McLAREN: Yes.
17   JUDGE COUGHLIN: One for you, one for Mr.
18   Erlanson, and any extras.
19   JUDGE COUGHLIN: Just for the court
20   reporter.
21   MR. McLAREN: The court reporter? There you
22   go, Mr. Erlanson.
23   MR. ERLANSON: Yeah.
24   MR. McLAREN: If I may approach?
25   JUDGE COUGHLIN: Yes.

Page 527

1   THE COURT REPORTER: Thank you.
2   MR. McLAREN: Your Honor.
3   JUDGE COUGHLIN: Thank you.
4   MR. McLAREN: And I bring this up at this
5   time because Your Honor said earlier that you wouldn't
6   consider other items in the administrative record for
7   the purposes of your opinion following this hearing.
8   JUDGE COUGHLIN: That's correct. It's going
9   to be based on what's admitted into evidence in this
10   evidentiary hearing, so the testimony that's been
11   offered and the documents that have been admitted into
12   evidence. So --
13   MR. McLAREN: And I seek now to determine
14   whether this can be admitted based on, again, the
15   novel circumstances of the case, various assertions
16   that Mr. Erlanson made or insinuated throughout the
17   course of the hearing, and the lack of opportunity to
18   challenge any of those assertions, the reliability
19   here it was submitted by Respondent and Respondent's
20   attorney himself, it's signed by Mr. Erlanson. It's
21   dated August 1, 2017. I think none of the defects are
22   present, and I'd just seek to determine whether this
23   could be included as part of the record as well.
24   JUDGE COUGHLIN: Yes, I'm happy to entertain
25   that.

1   MR. McLAREN: Okay.

2   JUDGE COUGHLIN: Mr. Erlanson, do you

3 recognize this?

4   MR. ERLANSON: Not really.

5   JUDGE COUGHLIN: I think it might have been

6 referenced.

7   MR. ERLANSON: Not really. I don't, Your

8 Honor, but I'm trying to read it over here.

9   JUDGE COUGHLIN: Okay.

10   MR. McLAREN: And, again, the context here,

11 this was submitted along with Respondent's opposition

12 to Complainant's motion for accelerated decision. You

13 relied upon it in your order on that accelerated

14 decision, and a mistake made at the beginning of

15 hearing is I believe this was fair game for the

16 purposes of the entirety of the record.

17   JUDGE COUGHLIN: Okay. Yeah, Mr. Erlanson,

18 take a look at it because I'm inclined -- I'd like you

19 to just confirm that this is the declaration that had

20 been submitted by your attorney. And so take a look

21 over it, and I think actually maybe it might be

22 helpful to just take a 5-, 10-minute break.

23   MR. McLAREN: Certainly, Your Honor.

24   JUDGE COUGHLIN: Give you some time to

25 review it. You understand where this comes from?

1 This was when Complainant moved for accelerated

2 decision, which was the vehicle by which I granted it

3 and established liability for the charged violation.

4 Okay? That's kind of the buzz word there. In

5 response to their motion for accelerated decision, you

6 at the time had been represented.

7   MR. ERLANSON: Right.

8   JUDGE COUGHLIN: And there was a response to

9 that motion by your attorney on your behalf, and this

10 declaration by you was included.

11   MR. ERLANSON: Right.

12   JUDGE COUGHLIN: And, in fact, referred to

13 in my order on accelerated decision.

14   MR. ERLANSON: Okay.

15   JUDGE COUGHLIN: So this is what Complainant

16 is seeking to introduce into evidence since I've taken

17 in your exhibits and since you've been sworn and made

18 some statements here and there, to be able to respond

19 and defend against any of that. So take a look

20 through it. Let me know if you have any cause for

21 concern or anything like that.

22   MR. ERLANSON: Uh-huh.

23   JUDGE COUGHLIN: I've relied on it in the

24 past.

25   MR. ERLANSON: Okay.

1   JUDGE COUGHLIN: And they're basically

2 asking me to rely on it again in making a decision.

3   MR. ERLANSON: Yeah, I'll read it over.

4   JUDGE COUGHLIN: Okay. So why don't we

5 take -- I don't want you to be rushed. Why don't we

6 take 15 minutes?

7   MR. ERLANSON: Five minutes is enough. If I

8 just have five minutes here, I could read this.

9   JUDGE COUGHLIN: Okay. All right. We'll do

10 five minutes, come back then, and then we'll just

11 finish up.

12   MR. ERLANSON: Sure.

13   JUDGE COUGHLIN: Okay. Thank you.

14   (Whereupon, a brief recess was taken.)

15   JUDGE COUGHLIN: Okay. We're back on record

16 after a brief break. So, Mr. Erlanson, any reason I

17 shouldn't accept your declaration as an exhibit?

18   MR. ERLANSON: Your Honor, I didn't sign

19 this, number one. Number two, I understand my

20 attorney apparently signed this in my behalf, but I'm

21 not familiar with half the stuff that's written in

22 here. I'm sorry. I mean, there's some stuff in here

23 that I think is fine, but I think there's other stuff

24 here that I don't know anything about it. I was --

25   JUDGE COUGHLIN: Did you read the last

1 sentence? "I hereby declare that the foregoing is

2 true and correct to the best of my knowledge and

3 recollection under penalty of perjury of the laws of

4 the United States"?

5   MR. ERLANSON: I understand that. I

6 understand that.

7   JUDGE COUGHLIN: Well, it was submitted. I

8 considered it in my accelerated decision.

9   MR. ERLANSON: Yes, I --

10   JUDGE COUGHLIN: Issued order.

11   MR. ERLANSON: -- read that, Your Honor, but

12 I didn't sign it. I don't have a typewriter to sign

13 it even. So I don't -- my attorney might have put

14 this in in my behalf. I -- it seems like he did. I'm

15 trying to realize when -- what threw me off here is

16 No. 14 if you want to look at it. It said "A

17 joint" --

18   JUDGE COUGHLIN: Well, we don't -- I don't

19 -- I'm not looking --

20   MR. ERLANSON: Oh.

21   JUDGE COUGHLIN: -- to discuss it.

22   MR. ERLANSON: Oh, okay.

23   JUDGE COUGHLIN: You're not -- you've chosen

24 not to testify. So there's no need to engage in a

25 dialogue about it.

1   MR. ERLANSON: Well, if it's been --
2   JUDGE COUGHLIN: But it's concerning to me
3 that something that's represented --
4   MR. ERLANSON: Yeah, I --
5   JUDGE COUGHLIN: -- to be true and correct
6 with that declaration, if you're saying, in fact, it
7 isn't.
8   MR. ERLANSON: Your Honor, I'm not familiar
9 with some of the things in this that's written in
10 here. If Mark Pollot did it on my behalf and he did,
11 then he did. But, like I said, I'm not familiar with
12 some of this stuff in here, and I'm just, I'm trying
13 to use my brain to recollect, but I just -- I do now
14 understand I was denied a joint permit. We put a
15 permit in.
16   JUDGE COUGHLIN: Yeah, again, I don't want
17 to hear any -- I mean --
18   MR. ERLANSON: Yeah. So --
19   JUDGE COUGHLIN: -- I'm not interested in
20 any dialogue.
21   MR. ERLANSON: That's what --
22   JUDGE COUGHLIN: So --
23   MR. ERLANSON: That's what threw me off. So
24 I don't --
25   JUDGE COUGHLIN: Well, let me put it this

1 way.
2   MR. ERLANSON: I need to -- I need -- it's
3 been a while and I need to think.
4   JUDGE COUGHLIN: I'll give you some options
5 here. If you want me to consider again to the extent
6 that I even can in the absence of the presentation of
7 any case on your behalf here --
8   MR. ERLANSON: Okay.
9   JUDGE COUGHLIN: -- at this hearing, if you
10 want me to consider the exhibits that your attorney
11 proposed at some point during the pre-hearing exchange
12 process, and I've talked about them, RX-2 and RX-4
13 through 9 --
14   MR. ERLANSON: Right.
15   JUDGE COUGHLIN: -- then it's only fair for
16 me to receive into evidence the things that
17 Complainant is seeking to introduce in response to
18 that. If you really don't -- if it's not important to
19 you that I consider those Respondent exhibits, then I
20 won't and I'll dispense with this. Or did you wish --
21   MR. McLAREN: Your Honor --
22   JUDGE COUGHLIN: -- to offer it in response
23 to some of what came out at hearing anyway?
24   MR. McLAREN: Your Honor, I may have
25 misspoken when I said earlier sort of we would offer

1 this if he offers that. I believe, again, due to the
2 novel nature of his testimony and questions throughout
3 the course of the hearing, that items in the record
4 that would otherwise undermine those items or the
5 statements that he's made, not to mention something
6 that's a signed and sworn affidavit, should be
7 acceptable regardless of RX-2 and then 4 through 9.
8 So I would still posit to attempt to enter it for your
9 consideration in the absence of those items.
10   JUDGE COUGHLIN: Okay. And, I mean, I
11 understand that.
12   MR. McLAREN: Certainly.
13   JUDGE COUGHLIN: But, to the extent there
14 were any statements made by Mr. Erlanson that you
15 might construe as testimony, I do not. So I would not
16 be relying on those statements. I mean, where there
17 were questions posed and answers given, that is
18 reasonably within the confine of cross-examination.
19 To the extent there were comments interspersed, I'm
20 not going to construe that as testimony because Mr.
21 Erlanson has elected not to testify.
22   MR. McLAREN: Certainly.
23   JUDGE COUGHLIN: Okay? I mean, if he had,
24 then we'd be talking about something else. But he has
25 elected not to, and that's his choice. I respect

1 that. It's not for me to decide. So rest assured
2 that I won't be considering those ancillary comments,
3 if you will, as testimony.
4   MR. McLAREN: Certainly, Your Honor.
5   JUDGE COUGHLIN: Okay. So, for that reason,
6 I don't know that I necessarily need this in the -- I
7 was under the impression you wanted me to consider
8 this in response to those exhibits.
9   MR. McLAREN: No. Just considered as part
10 of the record.
11   JUDGE COUGHLIN: Okay.
12   MR. McLAREN: Based on the fact it was
13 submitted on August 1, 2017, and it's the closest
14 thing we have to testimony in this hearing in the
15 entirety of this case.
16   JUDGE COUGHLIN: Okay. So, given I guess
17 some of what you've stated, Mr. Erlanson, about this
18 declaration that, frankly, is concerning, do you even
19 wish that I consider the Respondent exhibits? I mean,
20 I kind of opened that door, honestly, because I am
21 trying to be as lenient as I could possibly be, but I
22 certainly don't want to force you to. So, if you
23 don't want me to even consider them, assuming I can
24 give them any weight, which is a stretch in the
25 absence of any foundational evidence about them -- if

1   I'm not going to consider them, then I just won't
2   consider any of this declaration or those. So what do
3   you want to do?
4   MR. ERLANSON: This case has went on so
5   long, Your Honor, that life goes on and this case has
6   been going on for four years. I read this in five
7   minutes, and my mind wasn't on this. I think --
8   JUDGE COUGHLIN: Yeah. I'm not asking --
9   MR. ERLANSON: I think --
10   JUDGE COUGHLIN: -- you about the
11   declaration right now.
12   MR. ERLANSON: I think what we'll do -- I
13   think in the best interest of getting this resolved,
14   we'll just take out those Respondent's 2 and 4 through
15   7. Is that --
16   JUDGE COUGHLIN: 4 through 9.
17   MR. ERLANSON: Or 4 through 9.
18   JUDGE COUGHLIN: Okay.
19   MR. ERLANSON: And we'll discontinue this
20   because I haven't read this.
21   JUDGE COUGHLIN: Okay. So let me -- this is
22   a really kind of mixed up stage here. But I'm going
23   to ask the court reporter to just give that binder
24   back. So I won't consider any exhibits from
25   Respondent.

1   (The documents referred to,
2   previously identified as
3   Respondent's Exhibit Nos. 2
4   and 4 through 9, were
5   withdrawn.)
6   JUDGE COUGHLIN: The declaration, I
7   understand your points, but I don't think it's
8   necessary because, as I've said, I'm not construing
9   any of his comments to be testimony, and I won't be
10   relying on them. To the extent there were questions
11   posed and answers given as part of proper
12   cross-examination, that's part of that witness's
13   testimony. But I'm not construing anything as
14   testimony on behalf of Mr. Erlanson because he has, in
15   fact, elected not to testify in this hearing. Does
16   that allay any concerns you had?
17   MR. McLAREN: To the extent this is a signed
18   and sworn declaration and despite Mr. Erlanson's
19   disavowal at the end of the hearing, this has been in
20   the record since August 1, 2017. I just offer that
21   information, in addition to the fact that we submitted
22   this to Respondent or to Mr. Erlanson early last month
23   to review along with many other items, and I have that
24   copy of the cover letter for everything that was sent
25   for his review. I simply posit that for the record,

1   but I, of course, accept whatever Your Honor decides
2   here.
3   JUDGE COUGHLIN: I mean, when you say you
4   sent it to him for his review, those were some kind of
5   just internal exchanges or -- I -- because I don't
6   necessarily recollect being part of that.
7   MR. McLAREN: When we proposed stipulations
8   in compliance with Your Honor's order by I believe
9   it's April 12, 2019 --
10   JUDGE COUGHLIN: Okay.
11   MR. McLAREN: -- we did not share the
12   proposed stipulations because those weren't agreed
13   upon at that point. What we did do, though, to show
14   that the good-faith efforts were continuing was we
15   provided the cover letter that we sent dated and sent
16   to Respondent, as well as the many filings that we
17   provided to Respondent for his benefit to prepare for
18   this hearing.
19   JUDGE COUGHLIN: Uh-huh.
20   MR. McLAREN: Among those were this
21   declaration and several other items, and that was I
22   believe April 1 of this year. So I only offer it to
23   say that there are several statements about this being
24   presented to him as a surprise and this is his first
25   time seeing it and a disavowal. I would understand if

1   Your Honor doesn't want to enter anything else into
2   the record. It remains the case, though, that the
3   validity of this signed and sworn declaration
4   submitted by Respondent in this record and the fact
5   that we have not been able to cross-examine him would
6   push me to ask for you to consider this declaration.
7   JUDGE COUGHLIN: Yeah. You know, the
8   unfortunate part of it, though, is that with these
9   declarations is they're often -- you know, they're
10   submitted as part of a accelerated decision or what
11   would be a canon civil procedure to be a summary
12   judgment motion.
13   MR. McLAREN: Yes, Your Honor.
14   JUDGE COUGHLIN: There's actually no notary,
15   no -- I mean, it's not an affidavit, if you will. And
16   so, in the absence of someone under oath attesting to
17   the truthfulness and accuracy --
18   MR. McLAREN: Certainly.
19   JUDGE COUGHLIN: -- of it, I don't know if
20   it's really going to serve the purpose that you're
21   aiming for. I agree, however, that it's concerning
22   that something that was submitted during a formal
23   federal administrative process and something that I
24   relied upon to some extent in the order on accelerated
25   decision is now being questioned. I share those

1   concerns. But it's not going to substitute for

2   testimony in the --

3   MR. McLAREN: I --

4   JUDGE COUGHLIN: -- in the absence of Mr.

5   Erlanson now being under oath attesting to the truth

6   and accuracy of it.

7   MR. McLAREN: I won't push the envelope,

8   Your Honor.

9   JUDGE COUGHLIN: I mean, I understand your

10 point and, you know, I'm glad you've made the comments

11 on the record.

12   MR. McLAREN: Certainly.

13   JUDGE COUGHLIN: I understand that, but I

14 don't think I can, in the absence of it being adopted

15 for this evidentiary hearing for which testimony must

16 be sworn, rely upon it in lieu of that.

17   MR. McLAREN: Certainly, Your Honor.

18   JUDGE COUGHLIN: If that makes sense. So

19 what I'll do is hand this back to you.

20   MR. McLAREN: I'll come get it.

21   JUDGE COUGHLIN: And, obviously, it's within

22 the case record, so there's certainly -- it's

23 certainly preserved there if you feel I've erred in

24 this ruling. You know, just as I've said to Mr.

25 Erlanson, you're welcome to argue about that on

1   review. But I don't feel like it's going to serve the

2   purpose of -- to replace testimony in this hearing.

3   MR. McLAREN: I understand, Your Honor.

4   Thank you.

5   JUDGE COUGHLIN: Okay. So, all that said,

6   we're sort of back to square one. And what I will do

7   is I do want to just confirm quickly with Complainant

8   because --

9   MR. McLAREN: Yes.

10   JUDGE COUGHLIN: -- they're only

11 Complainant's exhibits that I have in here. I just

12 want to run down everything with you to make sure

13 that --

14   MR. McLAREN: I'll sit for this.

15   JUDGE COUGHLIN: Yeah, please do. That what

16 I have received into evidence is what you expect me to

17 have in evidence, okay? So I'll start with CX-1 and

18 then with the three enlarged photographs, CX-1A, CX-1B

19 and CX-1C. I have CX-2, CX-3 and CX-4. These are all

20 admitted into evidence. CX-6, CX-7, CX-8, CX-9, and

21 CX-10 all admitted into evidence. CX-12 admitted.

22 CX-16, 17, 18, 19, 20, 21, and 22 all admitted.

23 CX-27, 28, and 29 all admitted. CX-31 admitted.

24 CX-33, 34, 35 admitted and CX-37, 38, and 39 admitted.

25   MR. McLAREN: I think that's consistent with

1   our understanding, Your Honor.

2   JUDGE COUGHLIN: Okay. Great. All right.

3   No Respondent's exhibits have been admitted. The

4   witnesses, that's all going to be clear from the

5   transcript. Any other housekeeping matter? I need to

6   just give a rundown on the post-hearing process, but

7   apart from that?

8   MR. MOORE: Yeah, I have one additional

9   evidentiary clarification, I think.

10   JUDGE COUGHLIN: Sure.

11   MR. MOORE: In Respondent's motion that was

12 dated April 5, 2019, the motion to file out of time

13 for additional witnesses, an affidavit of Ron Miller

14 was included. Pursuant to Rule 22.22(c) of the

15 consolidated rules, witnesses may admit written

16 testimony in lieu of oral testimony only if that

17 witness is subject to cross-examination. Obviously,

18 Mr. Miller was not presented here. And so we ask that

19 that affidavit not be included into the record.

20   JUDGE COUGHLIN: So it's -- it is -- because

21 we need to just be clear when we say "the record."

22   MR. MOORE: Thank you.

23   JUDGE COUGHLIN: It's not a criticism. It

24 happens a lot, but it is not part of this evidentiary

25 proceeding. There were -- there was no presentation

1   of a case on behalf of Respondent, no witnesses, no

2   exhibits. So I won't be considering that affidavit.

3   I believe in my order I excluded -- well, Mr. Miller

4   was previously identified, though, correct, which is

5   why you're going down that road? Okay.

6   MR. MOORE: He was.

7   JUDGE COUGHLIN: Yeah. I'm not going to

8   consider an affidavit at this point, and there's

9   really no reason for me to. He wasn't even offered.

10 There was no offer for me to consider that on behalf

11 of Respondent.

12   MR. MOORE: Thank you for the clarification.

13   JUDGE COUGHLIN: Okay. All right. All that

14 said, what will happen now is once we finally conclude

15 and I leave the bench, this evidentiary hearing will

16 be closed, and what means is that no further evidence

17 may be offered. So I will be, as I've said now

18 probably too many times, I will be basing my decision

19 with regard to the penalty issue on what has been

20 presented here today. What will follow is I'll be

21 issuing a post-hearing scheduling order or something

22 along those lines, and it's going to afford the

23 parties an opportunity to file any motion to conform

24 the transcript to the actual testimony.

25   Before that deadline will be imposed, you'll

1 get a copy of the transcript. Once we get it from the
2 court reporting service, we then send it to the
3 parties. Is there a preference as to -- you may have
4 covered this pre-hearing, but since I'm not involved
5 in those pre-hearing conferences, let me just confirm.
6 Is there a preference as to whether you receive that
7 transcript electronically or on paper? From
8 Complainant?
9   MR. McLAREN: We would like to receive it
10 electronically, please.
11   JUDGE COUGHLIN: Okay. And Mr. Erlanson?
12   MR. ERLANSON: To be honest with you, Your
13 Honor, what's cheaper?
14   JUDGE COUGHLIN: It really doesn't matter.
15 We send it to you, so it's just how --
16   MR. ERLANSON: Oh. There's no cost
17 involved?
18   JUDGE COUGHLIN: No. It's how you'd like to
19 receive it.
20   MR. ERLANSON: Oh, paper.
21   JUDGE COUGHLIN: Okay. Mike, you got that?
22   MR. WRIGHT: Yes.
23   JUDGE COUGHLIN: Okay. All right. So we'll
24 be sending you that. There will be, as I said, an
25 opportunity to file any motion to conform the

1 transcript, and that's really more for just
2 typographical errors and, you know, just like an
3 errata type situation, not for any substantive changes
4 generally. Do you have a question about that?
5   MR. ERLANSON: No, Your Honor, but -- so
6 it's just typographical stuff that we're going to try
7 and -- you can't change the transcript, right?
8   JUDGE COUGHLIN: I mean, there should not be
9 significant substantive changes. Sometimes it's a
10 question of -- often, with the use of acronyms and
11 things like that, there can be slight misspellings or
12 things like that.
13   MR. ERLANSON: Oh, okay.
14   JUDGE COUGHLIN: So it's really more for
15 those types of corrections. I mean, if there's
16 something really significant, then you could certainly
17 alert me to it, but that's not often what transpires.
18 It's usually just more of a typo.
19   MR. ERLANSON: What's that like when you say
20 "significant"? What do you mean by that?
21   JUDGE COUGHLIN: Well, you be the judge. I
22 mean, you read it --
23   MR. ERLANSON: Oh.
24   JUDGE COUGHLIN: -- through and if you feel
25 like there are significant changes that need to be

1 made, you can file a motion to that effect and then
2 I'll rule accordingly.
3   MR. ERLANSON: Am I allowed to call Mike and
4 ask him a question about it, you know, whether this is
5 significant or not or what do you --
6   JUDGE COUGHLIN: Yeah, it's really not for
7 him to decide.
8   MR. ERLANSON: Oh, it's --
9   JUDGE COUGHLIN: Just read through the
10 transcript and --
11   MR. ERLANSON: Okay.
12   JUDGE COUGHLIN: -- if you see any glaring
13 errors, then you can write us and let us know. Okay?
14   MR. ERLANSON: Okay. Thank you. Yeah.
15   JUDGE COUGHLIN: All I'm trying to say is
16 usually the types of errors that we tend to encounter
17 are minor.
18   MR. ERLANSON: Okay.
19   JUDGE COUGHLIN: But it doesn't mean that
20 something non-minor can't exist, I suppose. But you
21 just read it and decide for yourself. Okay?
22   MR. ERLANSON: Okay.
23   JUDGE COUGHLIN: And then we'll also include
24 some deadlines for the post-hearing briefing.
25 Typically, you know, I start with Complaint. I give

1 the Complainant the first initial briefing deadline,
2 and that's simply because they tend to bear the
3 initial burden in these cases, and so I have them go
4 first. Then it'll be followed by a deadline for
5 Respondent to submit his initial post-hearing brief.
6 And then there will be the opportunity for reply
7 briefs, again staggered with Complainant replying
8 first and then Respondent replying thereafter.
9   You don't have to submit a brief if you
10 don't want to, but it is available to you, and it is a
11 point only to make argument because I won't be
12 receiving any new evidence. Once this hearing closes,
13 that closes the record of evidence that I'll receive
14 and upon which I'll base a decision. So the
15 post-hearing briefing is purely for argument about
16 what has been presented.
17   MR. ERLANSON: Okay. Got you.
18   JUDGE COUGHLIN: After that, I then
19 undertake the task of going through everything and
20 issuing an initial decision, which I, you know, will
21 do as quickly as I can, but I'm pretty thorough and
22 I'd like to think pretty detailed. So it takes time.
23 So I'll work as diligently and efficiently as I can,
24 and then that'll be sent out to you once it's issued.
25 Any questions before we depart?

1   MR. McLAREN: None from EPA.
2   JUDGE COUGHLIN: Okay.
3   MR. ERLANSON: I have one, Your Honor.
4   JUDGE COUGHLIN: Sure.
5   MR. ERLANSON: Depending on the outcome of
6   the case, when you rule on the case --
7   JUDGE COUGHLIN: Uh-huh.
8   MR. ERLANSON: -- you send the parties the
9   information, your ruling.
10   JUDGE COUGHLIN: It'll be an initial
11   decision.
12   MR. ERLANSON: Okay.
13   JUDGE COUGHLIN: That's what it's called.
14   It's my decision and it's written.
15   MR. ERLANSON: Okay. And then do you
16   personally have information of how long I have to
17   write up an appeal?
18   JUDGE COUGHLIN: Yeah, we actually provide
19   that with the initial decision.
20   MR. ERLANSON: Oh, okay.
21   JUDGE COUGHLIN: There's a timeframe within
22   which you do have to appeal, and I think we tend to
23   also include a copy of the rules. Do we, with our
24   initial decisions?
25   MR. WRIGHT: I don't think we do.

1   JUDGE COUGHLIN: We don't? Okay. We do in
2   some other cases, other agency cases that we handle,
3   so sometimes I get confused about that. But there
4   will be language that talks about the appeal rights.
5   And, basically, the rules that discuss that have
6   already been referenced throughout this process.
7   There are consolidated rules of practice that have
8   been cited. So, you know, I mean, if you want a cite
9   right now, I could give it to you if you want to write
10   it down, but it's riddled throughout.
11   MR. ERLANSON: Sure.
12   JUDGE COUGHLIN: Our rules of practice are
13   at 40 CFR. CFR is, as you know, the regs.
14   MR. ERLANSON: Correct.
15   JUDGE COUGHLIN: Okay. And it's Part 22 and
16   it's actually -- it's a very long title, but they're
17   the consolidated rules of practice governing the
18   administrative assessment of civil penalties and the
19   revocation/termination or suspension of permits.
20   Basically, it governs what we do and how we do it, and
21   I've cited to it in --
22   MR. ERLANSON: Yeah, I've seen it.
23   JUDGE COUGHLIN: -- I mean, I think just
24   about every order I've probably cited to it.
25   MR. ERLANSON: I've seen it quite a bit.

1   JUDGE COUGHLIN: Okay. Yeah.
2   MR. ERLANSON: Yeah.
3   JUDGE COUGHLIN: So that's where the appeal
4   language is, and I think, you know, we refer to it in
5   the initial decision, but you can -- it's publicly
6   available. You can just pull it up on the internet.
7   MR. ERLANSON: Yeah.
8   JUDGE COUGHLIN: Okay?
9   MR. ERLANSON: Thank you, Your Honor.
10   JUDGE COUGHLIN: Okay. And, yeah, there are
11   timeframes, but that'll be specified too.
12   MR. ERLANSON: Okay. Appreciate it.
13   JUDGE COUGHLIN: Sure. And then what you'll
14   do is you'll appeal to the Environmental Appeals
15   Bureau, and I've actually kind of referenced that
16   already in one of my prior orders to you --
17   MR. ERLANSON: Yeah, I've --
18   JUDGE COUGHLIN: -- in response to one of
19   your motions about possible interlocutory appeal. I
20   know I have made reference to them already.
21   MR. ERLANSON: Right. Okay.
22   JUDGE COUGHLIN: So they review my decision
23   and determine if it was correct.
24   MR. ERLANSON: Okay.
25   JUDGE COUGHLIN: And they'll either affirm

1   it, reverse it, or remand it if they need me to do
2   something to fix a mistake. But they'll let you know
3   what that is when they review.
4   MR. ERLANSON: Does "remand" mean it comes
5   back to you?
6   JUDGE COUGHLIN: Yes.
7   MR. ERLANSON: Okay. I --
8   JUDGE COUGHLIN: It's one possibility.
9   Whether that happens, I don't know. That'll be --
10   that's in their discretion based on their review of
11   the record and of my decision and of what you or
12   Complainant might argue about. But those are the
13   three realms that, you know, the three options --
14   MR. ERLANSON: Okay.
15   JUDGE COUGHLIN: -- typically that they can
16   exercise.
17   MR. ERLANSON: Yeah. Thank you.
18   JUDGE COUGHLIN: Okay. Anything else before
19   we finish?
20   MR. McLAREN: Nothing from Complainant.
21   JUDGE COUGHLIN: Okay. Mr. Erlanson, you
22   all set?
23   MR. ERLANSON: I'm good.
24   JUDGE COUGHLIN: Okay.
25   MR. ERLANSON: All set.

Page 552

1   JUDGE COUGHLIN: All right. Great. Thank
2 you all very much. Appreciate your time. Safe travels
3 home. I'll just be a few moments to pack up. Please
4 don't discuss anything further with me about the case.
5 And the hearing's concluded. Thank you.
6   MR. McLAREN: Thank you, Your Honor.
7   MR. ERLANSON: Thank you.
8   (Whereupon, at 2:50 p.m., the hearing in the
9 above-entitled matter adjourned.)
10 //
11 //
12 //
13 //
14 //
15 //
16 //
17 //
18 //
19 //
20 //
21 //
22 //
23 //
24 //
25 //

Page 553

REPORTER'S CERTIFICATE

DOCKET NO.:   CWA-10-2016-0109
CASE TITLE: Dave Erlanson, Sr.
HEARING DATE: May 15, 2019
LOCATION: Rigby, Idaho

    I hereby certify that the proceedings and
evidence are contained fully and accurately on the
tapes and notes reported by me at the hearing in the
above case before the United States Environmental
Protection Agency, Office of Administrative Law
Judges.

        Date: May 15, 2019

        David Jones
        Official Reporter
        Heritage Reporting Corporation
        Suite 206
        1220 L Street, N.W.
        Washington, D.C. 20005-4018

A

A-R-T-H-A-U...
409:16
a.m 328:11
331:2 454:20
ability 335:24
399:16 491:10
able 338:9
346:19 380:16
403:5 405:11
418:11 450:8
458:2 459:20
490:13 521:16
525:13 529:18
539:5
above-entitled
454:21 552:9
absence 519:16
533:6 534:9
535:25 539:16
540:4,14
absolute 470:22
absolutely
343:19
abundance
421:18 432:3
479:18
accelerated
405:22 528:12
528:13 529:1,5
529:13 531:8
539:10,24
accept 520:21
530:17 538:1
acceptable
518:8 534:7
accepted 521:15
access 428:16
442:14 468:10
481:11 483:23
accessing
436:21
account 386:21
accuracy 341:24
341:25 342:12
539:17 540:6
accurately
508:1 553:9
achieved 379:9
acronyms

545:10
act 365:19 390:6
413:3 415:17
425:11,14
action 413:2
475:11,17
476:23 477:6
479:23 498:10
activates 437:3
active 339:9
436:1
activities 334:24
335:8 342:25
386:3 391:15
391:25 413:3
425:4,15
463:22 476:4
477:5 489:6
514:2,4
activity 342:21
343:21 364:23
386:5 391:20
410:18 426:21
437:9 444:23
445:9 455:17
464:12 466:23
467:20 473:14
475:15 476:20
507:8 508:1
514:16
actual 334:25
344:5,15
399:15 447:24
543:24
adapted 379:4
394:17,24
395:4
adaptive 492:2
add 345:2
363:13 366:17
404:16 473:19
added 488:3
added-to 461:9
addition 384:10
427:17 537:21
additional
336:11 422:23
425:3 472:2
480:1 521:10
542:8,13

additive 473:9
address 345:10
389:1
adequate 345:24
adipose 501:1
adjacent 349:2
adjourned
331:11 552:9
adjusted 386:22
469:8
administrative
328:1,12 527:6
539:23 549:18
553:12
admission
520:13
admit 404:4,6
411:9 414:17
415:24 438:24
440:22 542:15
admitted 402:15
402:17,18
411:14 414:22
416:4 439:4
441:2 443:20
523:9 524:16
527:9,11,14
541:20,21,21
541:22,23,23
541:24,24
542:3
admitting
368:15
ado 448:17
adopted 540:14
adoption 398:23
adult 440:2
441:18
adults 418:12
421:5 432:14
advanced
412:19
advantage 453:4
492:2
adverse 389:16
390:13 410:1
410:16 413:4
419:9 426:11
426:16 435:6,8
437:4 474:14

477:5 483:6
484:11,14,17
adversely
335:23 369:16
369:17,19
425:16 475:20
adversity
419:11 477:25
aerial 389:9
aeriation 432:18
affect 369:16,17
369:19 410:19
425:16 432:1
437:13 473:10
514:15
affidavit 534:6
539:15 542:13
542:19 543:2,8
affirm 550:25
afford 404:24
405:7 543:22
age 491:13
510:18
agencies 369:22
413:2 417:3
425:12,14
476:23 477:6
agency 328:1,15
328:17 329:3
549:2 553:12
Agency's 419:23
aggregate
481:17,21,23
ago 370:11
433:17
agree 356:3
357:12 358:10
361:3,8 364:17
370:5 379:6,10
434:2,4 446:16
446:21 448:19
452:17 477:13
478:11,25
479:8,25 481:3
481:14 482:5
482:11,25
484:9,14
489:10 491:20
510:24,24
539:21

agreeable 383:9
agreed 366:20
369:21 538:12
agreeing 333:22
agreement
357:4 484:17
ahead 331:5,21
332:2 335:12
337:12 347:21
350:2 352:10
353:14 358:9
363:8 365:9
371:6 373:9
374:7 385:8
397:7 400:6
404:2 446:23
455:8 460:23
470:20 484:25
486:20 499:12
499:24 506:10
509:16 524:3
aid 418:7 470:10
aiming 539:21
air 437:19
albeit 405:11
alert 338:20
545:17
algae 429:6
431:7,10,17
432:3 456:4
495:16,22
algae-covered
341:17 495:11
495:13,17
alive 492:3
allay 537:16
allow 396:23
440:1 497:19
506:15 509:4
520:4
allowable
504:14
allowed 349:14
419:18 500:3
501:7 546:3
allowing 397:4
403:6 475:11
allows 397:11
504:8
alongside

489:25
alteration
476:19
altered 493:10
altogether
444:14 500:10
amount 335:25
336:8,16 337:1
337:19 348:19
353:2 354:10
354:12 424:10
424:22,24
434:7 457:21
471:10 475:15
494:4 498:2
amounts 496:20
anadromous
417:7,11
analysis 413:14
443:24
analyze 439:12
analyzed 384:8
488:21
analyzing
342:20,24
388:14
anchor 481:24
ancillary 535:2
angle 380:11
animal 436:10
436:11,11
annoyance
505:1
annual 389:9
annually 332:21
answer 338:5
373:24 378:7
378:24 382:22
393:23 431:22
499:17,19
506:16
answered
371:22 378:2
478:23
answers 374:3
383:16 491:21
534:17 537:11
anybody 361:12
373:17
anybody's

363:13
anyway 384:2
399:11 448:9
481:13 519:8
533:23
apart 340:24
521:8 542:7
apologize 450:1
apparatus
464:25
apparently
360:14 507:19
530:20
appeal 548:17
548:22 549:4
550:3,14,19
Appeals 550:14
appear 346:16
357:14
APPEARAN...
328:14
appeared 360:9
appears 351:16
369:25 456:22
apply 498:21
appreciate
368:14 520:19
550:12 552:2
appreciated
401:11
approach
331:16 368:23
368:25 494:13
526:24
approaches
429:25
approaching
492:9
appropriate
341:25
approval 332:20
475:24
approving
333:15
approximate
359:14,20
458:20 461:4
approximated
464:16
approximately

359:17 458:2
466:12 469:7
474:3
approximation
360:17 386:24
approximations
360:18 386:17
April 538:9,22
542:12
aquatic 412:18
426:24 428:8
429:3
area 338:8 343:4
344:1,2,3,4,6
348:9,9 349:1
351:14 357:15
358:12 360:9
363:6 371:14
371:23 373:2
373:16 376:17
377:1 380:9
381:10 383:18
385:16,18
389:3,5,15,18
390:8 392:4
399:1,2 419:23
424:8 427:1,3
427:19 430:23
431:16,24
436:19 456:7
459:1,5 464:21
465:12 466:3
467:19 469:12
469:13 471:12
472:3,16,22
473:4,10 474:4
479:2 485:15
485:16 487:12
487:24,24
488:19 495:21
502:20,24
503:9,12 507:5
507:9,13,17,20
513:3 515:18
areas 334:9,13
335:10 336:25
343:9 353:23
353:25 354:4
354:14 360:15
365:14 386:23

398:17,19
420:23 422:8
422:10 423:18
468:7,8 482:22
490:14 502:23
503:3 516:13
argue 521:16
540:25 551:12
argument
405:13 547:11
547:15
arguments
450:9 521:10
armor 427:6
481:16
armored 467:4
Arthaud 329:6
408:25 409:3,4
409:7,12,16,17
411:21 416:10
418:22 438:17
439:10 441:8
442:19 443:11
450:22 452:25
455:5,10,16
460:24 470:8
471:3 485:4
498:1 499:14
502:4 513:20
516:25
Arthaud's 407:5
article 440:15
articles 438:8
ascertain 357:4
aside 357:22
375:16
asked 350:8
378:1 396:23
409:25 410:1
410:14 476:13
491:4 500:13
503:19 525:18
asking 349:25
378:15 383:14
405:14 487:11
508:22 512:1
530:2 536:8
aspect 423:9
526:2
assertion 363:23

assertions 525:9
525:11,14
527:15,18
asserts 515:5
assess 334:9
338:9
assessment
332:18 343:7
363:4 368:7,8
369:14 370:6
370:10 383:20
385:23 386:12
388:14 400:10
434:2 440:16
485:4,17
497:15 549:18
assessments
365:16 398:25
399:2 400:4
assign 382:2,4
521:17
assigned 382:5,6
assistance
413:24
assistant 417:2
associated
334:19,22
336:9 385:20
474:21 500:18
assume 331:7,21
403:21 517:3
assuming
513:25 535:23
assured 535:1
Attachment
525:20
attempt 534:8
attention 453:7
471:24
attenuating
461:10
attenuation
388:8
attesting 539:16
540:5
attorney 402:2
402:21 519:21
527:20 528:20
529:9 530:20
531:13 533:10

attributed
   358:18 364:24
August 387:14
   387:17,18,23
   445:1 493:7,13
   494:1 525:21
   527:21 535:13
   537:20
authenticate
   393:7 443:11
authenticated
   520:8
authentication
   403:19 404:14
   404:22 519:16
author 438:18
authored 405:9
   413:12 419:2
available 375:18
   486:11 488:10
   490:2,3 518:20
   522:9 526:2
   547:10 550:6
Avenue 328:17
average 391:17
   467:5 491:22
   491:24 492:15
   498:2
avoid 479:6
award 417:24
awards 417:20
aware 333:22
   361:18,22
   376:8 391:19
   403:5 427:25
   478:7 497:18

B

B 330:1 451:12
BA 333:4 386:7
   398:3,21
   399:10,14
Bachelor 411:25
back 332:13
   335:20 337:6,8
   338:3 340:9
   346:10 365:11
   370:4 407:14
   408:5,10
   416:11 417:14

424:21 441:18
   444:2,21
   454:14 455:3
   467:7,10 475:4
   485:3 489:2
   497:10 530:10
   530:15 536:24
   540:19 541:6
   551:5
backfill 358:22
background
   341:16 436:19
   457:1 465:14
   483:12
bad 479:17
bank 352:22
   353:1 354:22
   354:23 355:15
   355:15 434:25
   451:3 457:1,3
   468:2 471:14
   471:16 473:1,1
   473:2,2 483:23
   513:8
banks 377:15
   437:13 483:18
   483:22 490:2
Bannock 417:6
   417:17
bar 460:6
   467:25 471:16
barrier 423:15
   469:18
bars 487:21
base 342:7
   435:10 456:4
   458:6 460:2
   465:15 483:19
   483:21 547:14
based 360:14
   370:10 373:24
   378:24 381:10
   382:11 386:18
   388:3 394:1
   402:11 458:24
   459:21 493:16
   499:5,5 520:6
   520:13 525:16
   527:9,14
   535:12 551:10

baseline 388:4
   473:12
basic 493:12,13
basically 336:25
   398:21 461:9
   496:16 502:8
   519:14 530:1
   549:5,20
basin 417:13
   420:18 421:2
   421:16 422:4,5
   423:16 475:19
   475:21 503:11
basing 508:3
   543:18
basis 357:20,23
   391:15,25
   499:8 520:4
Bates 448:8
   450:14 451:11
bathroom
   453:16,20
   517:12
bear 547:2
bears 479:16
becoming
   504:25
bed 336:16
   353:4 423:11
   423:19 435:19
bedrock 350:19
   350:21,25
   351:3 354:22
   355:25 356:4
   356:11,13,24
   357:17,18
   358:1,2,6,7,11
   361:3,6 428:16
   434:16,23,23
   468:3,6,8
beds 374:14,18
began 455:16
beginning
   365:12 485:3
   489:14 525:8
   528:14
behalf 363:13
   529:9 530:20
   531:14 532:10
   533:7 537:14

543:1,10
behavioral
   429:2,8,10,14
   430:1 464:20
   465:8,25 466:1
   505:13
behaviorally
   505:1
belief 365:5
   491:9
believe 336:12
   337:20 340:6
   341:8,13
   342:17 344:20
   347:3,17
   352:12 353:16
   357:19 358:24
   364:1 371:15
   380:16 381:24
   381:24 382:11
   383:16 388:6
   389:11 400:2
   404:4 406:15
   418:25 445:17
   447:20 451:21
   460:8 461:13
   474:18 492:18
   493:20 497:1,7
   497:24 498:5
   503:11 505:25
   509:8 510:14
   510:16 512:3
   518:25 522:2
   528:15 534:1
   538:8,22 543:3
believes 446:18
bell 494:10,10
   494:11,14,23
   494:25 495:6
bell-shaped
   494:8
bench 543:15
bend 355:17
   473:24
beneath 430:16
beneficial 478:8
   478:11 479:1
   481:4,15 482:5
   482:12 484:11
   484:15

benefit 436:24
   479:9,12,14
   538:17
benefits 379:8
benthic 468:18
benthos 468:18
best 360:22
   361:9,19
   362:15,18
   379:7 385:20
   385:23 386:1,2
   386:9 447:13
   494:14 496:13
   531:2 536:13
better 342:8
   447:25 470:19
   515:20
beyond 337:23
   344:18 437:24
   520:15
bi-op 415:23
   420:9 489:16
   496:25 514:5
big 346:10,15
   361:5,12
   377:15 491:17
   516:2
biggest 491:14
billowy 457:23
   459:16
binder 523:1
   524:9,12,13
   536:23
bioaccumulates
   436:10
biological
   332:18 343:7
   362:22 363:3,4
   365:13,16,24
   368:7,8 369:14
   369:20 377:11
   378:14 383:20
   385:22 386:12
   388:13 398:25
   399:2 400:4,10
   413:10,11
   415:16 417:25
   419:1,14
   475:16 476:8
   477:3 485:4,17

485:18 497:11 498:5,9 507:20 513:20
biologist 334:4,7 334:12 409:23 412:22 416:21 417:8,17
biomagnifies 436:9
birds 465:20
bit 345:12,20 378:4 379:25 404:11 408:11 427:15,20 487:14 495:20 502:2 549:25
bits 348:22
Bless 336:2
BLM 332:19 333:14 334:4 376:12 413:23 475:14 504:7
block 462:20 463:3
blow-up 451:19 470:4
blow-ups 346:18
blown-up 446:8
blowups 446:13
blue 352:8 355:23 451:7
bodies 334:25 390:9
body 368:19 370:7
books 504:3
botch 470:11
bottom 334:21 335:25 336:9 343:12,14 355:25 356:4 356:15 360:4 380:2,4 420:6 421:23 462:12 462:14,16 463:19 468:10 468:15 469:9 470:14 471:24 471:25 481:16 481:16 482:6

510:1 514:10 515:4,15
bottoms 417:19
bought 356:20
boulder 470:16 510:15 514:13
boulders 355:1 355:9 357:17 357:22 361:5,7 377:19 427:1 456:19,24 457:20 459:6 468:3 487:21 513:8
bound 435:21 436:6
Box 328:21
boy 509:22
brain 532:13
Bravo 451:12
break 361:20 401:8 406:4 407:1,4,17 426:15 453:12 453:16,21,24 453:25 454:6 454:10,13 484:23 517:12 517:12,21 528:22 530:16
breaks 481:15 481:21 482:6
breathe 432:20 465:1
breathing 430:4
bridge 442:13 462:17
bridged 442:11
bridges 423:17
bridging 463:2
brief 401:8 408:9 454:6 518:8 530:14 530:16 547:5,9
briefing 521:8 521:21 546:24 547:1,15
briefly 410:13 416:19 420:20 424:21

briefs 450:7 547:7
bring 366:19 370:22 406:11 527:4
bringing 372:19 453:7
brings 471:21
broken 348:22
Bronze 417:23
broods 474:25
brought 395:21 435:20,25 493:11 523:7
building 508:12
builds 462:1
bull 366:5 369:17,19 374:19 375:24 376:2 420:19 421:5 485:8,9 485:20
burden 345:3 547:3
Bureau 550:15
burial 427:13 437:24
buried 435:19
buries 431:18
burn 449:11
burning 449:12
bury 427:21
bushes 394:22
buzz 529:4

C

C 329:1 331:1
calculated 337:20 359:3
calculations 359:1
California 416:22
call 348:14 353:9 354:11 357:17 422:14 448:18 451:11 452:1 454:14 458:4 511:7 515:2 546:3

called 409:8 431:9 468:18 468:25 548:13
calling 367:21 455:18
Calls 408:25
campgrounds 437:11
camping 437:9
canon 539:11
cant' 386:10
canyon 487:18 487:20 488:5 502:15
capacity 405:12
capital 450:3
capturing 364:20
care 513:13
career 498:2
careful 501:13
carefully 482:20 500:14
carried 338:11 345:1
carry 439:25
carrying 437:12
case 349:2 388:22 399:16 402:9,16 408:16 448:16 463:13 479:17 518:14 519:1 520:7 524:24 526:3 527:15 533:7 535:15 536:4,5 539:2 540:22 543:1 548:6,6 552:4 553:4,11
cases 547:3 549:2,2
catch 465:5 501:10,21
caught 428:22 489:24 500:4
cause 339:22 340:4 389:16 390:12 394:8 410:18 413:4

426:11,16,17 427:18 428:2 428:11 429:1 429:22 430:8 430:10 431:1 434:19,25 459:1,8 465:2 465:7,25 477:21 505:15 529:20
caused 332:25 341:6 384:1 393:13 433:11 433:16 435:9 435:11,12 441:16 463:22 464:18 466:9 472:3 477:11 483:2,5
causes 410:16 423:20 427:12 431:18 484:11
causing 469:18 470:6 471:12 516:17
caution 378:8
cc 370:2
CD 449:11,13
CD-ROMs 449:16
center 351:10,12 351:17 352:5 468:2 470:15 470:22,22 493:2
central 377:20 494:15
centuries 435:20
certain 335:21 336:8,24 337:1 343:11,20 389:1,12 467:7 471:10 475:23 477:5 488:23
certainly 373:5 375:18 396:13 396:19 404:25 406:5 407:25 445:18 449:2 453:20 461:20

compact 508:16
Compacted
  508:24
compaction
  508:11
comparable
  341:4
compare 360:12
compared
  344:25 392:13
  481:19
compares
  458:13
comparing
  344:1 511:14
  511:16
comparison
  364:2 381:17
  458:14 511:5
competed
  483:25
Complainant
  330:2 331:22
  403:4,15
  446:18 453:18
  517:4 518:2
  520:6,9,13,16
  521:16 525:3,9
  529:1,15
  533:17 541:7
  544:8 547:1,7
  551:12,20
Complainant's
  332:13,14,17
  340:10 379:22
  405:2 410:23
  411:5,18 414:3
  414:6,17 415:3
  415:7,10,24
  416:7,11
  418:22 438:11
  438:14,24
  439:7 440:6,9
  440:22 441:5
  443:7 445:14
  450:19 451:15
  452:5 457:7
  463:15 471:22
  475:5 519:24
  524:19 528:12

541:11
Complaint
  546:25
Complaint's
  411:9
complete 482:22
completed 391:4
  419:15
completely
  344:11
complex 423:13
complexity
  424:14
compliance
  333:12 514:4
  538:8
complied 386:8
comply 333:22
  339:20 340:2
  386:6,13,15
  399:17 477:20
component
  364:6
components
  425:19,22
compromise
  399:15
computer's
  526:5,13
concentrated
  339:13 384:24
concept 336:20
concern 436:4
  522:12 529:21
concerned 361:8
  397:13
concerning
  532:2 535:18
  539:21
concerns 349:7
  537:16 540:1
conclude 351:6
  352:21 356:1
  366:3 379:12
  519:8 543:14
concluded 366:9
  369:22 384:7
  469:6 552:5
conclusion
  355:22 358:7

358:10 362:2,3
  445:25 475:10
  475:16 506:3
  508:2
conclusions
  384:1,2 410:14
  506:23 515:3
conclusive
  363:12,25
  364:8
concrete 481:17
  481:23
concurrence
  413:9 414:10
condition
  336:11 423:4
  439:21
conditions
  333:13,21
  394:16,25
  395:1,1,12
  419:12 420:13
  422:22 423:21
  440:2 476:1
  480:10 484:2
  487:1 492:13
  513:21 514:5
conducted 368:7
  368:9 383:22
  388:13 398:18
  463:9
conducting
  439:11 441:9
conferences
  544:5
confidence
  382:8
confine 534:18
confirm 525:1
  528:19 541:7
  544:5
confluence
  374:16 376:1,1
conform 543:23
  544:25
confused 549:3
confusion
  452:10
congregate
  353:21

consensus
  453:15
consequences
  506:2
conservation
  415:17 425:10
  476:11
consider 385:21
  392:16 403:10
  407:11 429:13
  435:5 489:5
  519:4,15
  525:18 527:6
  533:5,10,19
  535:7,19,23
  536:1,2,24
  539:6 543:8,10
consideration
  534:9
considered
  353:1 362:18
  390:10 426:1
  531:8 535:9
considering
  361:2 368:15
  373:14 404:15
  490:23 493:11
  510:12 535:2
  543:2
consistency
  343:2 461:14
  461:15
consistent
  333:24,25
  335:3 339:15
  342:18 362:15
  362:21 385:23
  390:11 477:17
  482:8 541:25
consistently
  488:9
consolidated
  542:15 549:7
  549:17
constant 382:16
constantly
  399:18
constitutes
  490:24
constricted

421:17
constriction
  422:25
construct
  339:11
construe 534:15
  534:20
construing
  537:8,13
consult 413:1
  425:15
consultation
  398:22,22
  400:16 413:5
  414:15 415:22
  418:1 419:23
  425:11 504:7
consultations
  343:10,10,16
  398:18 417:1
contained
  402:15 426:24
  446:8,17
  447:24 553:9
contention
  367:19
contents 350:7
  520:11
context 395:16
  404:13 528:10
contextualize
  393:7
contextualized
  520:1
contiguous
  356:14
continually
  363:23
continue 373:21
  471:8 479:19
  517:19,22
continued 366:4
  369:23 455:5
  474:15,22
  475:18 482:4
continuing
  329:5 373:3
  538:14
continuous
  356:13,14

continuum
505:20
Contrasting
438:20
contribute
424:13
contributes
392:8,25
convenient
337:3
cooler 373:19
468:8
coordinates
364:2,25
copies 406:9,11
406:13 448:25
449:14,19
521:25 523:18
526:14,15
copper 436:18
440:21 441:16
copy 346:10
406:6,8 449:4
449:7,20
450:12 522:3,5
522:13,23
537:24 544:1
548:23
corner 352:25
Corporation
553:19
correct 331:14
353:12 354:6
356:18 357:11
358:23 360:17
362:12,12
372:22 373:18
377:7,9 387:20
391:4,23 392:6
396:22 403:23
416:15 443:20
475:8 476:14
487:5,10
492:22 496:1
497:4 504:3,4
504:12 509:3
509:13 511:16
512:8 522:4
527:8 531:2
532:5 543:4

549:14 550:23
correction 509:3
corrections
545:15
correctly 514:7
correlate 372:11
correspond
451:6
corresponds
346:24
cost 544:16
cough 411:15
coughing 430:3
464:23 488:3
505:5
COUGHLIN
328:12 331:3
331:10,15,20
331:24 332:1
336:2,14,19
337:10,12
345:6,17,22
346:2,17,23
347:2,5,8,12
347:20,24
349:11,17,20
349:25 350:13
350:16,23,25
351:21,24
352:2,4,9,13
352:15 353:6
353:11,14
357:1,3,7,9,12
357:20 358:5,9
358:13 361:14
362:13 363:8
364:16 365:3,7
366:12,14,21
366:24 367:1,7
367:10,18,23
368:3,14,23
369:4,8,13
370:13,16,19
370:23 371:3
371:17,20
372:3,8,10,12
372:14,19
373:9,11,22
374:4,6 375:3
375:7,11,13,16

375:21 378:3,6
378:17,22
379:14,18
382:20,24
383:5,8,11
385:2,6 390:18
390:22 393:10
393:16,25
394:5 395:17
396:4,9,14,17
396:20 397:1,7
397:23 398:7
398:10,15
399:12,22
400:5,19,21,25
401:4,7,14,19
401:21,24
402:3,6,14,20
402:23 403:1,4
403:9,15,20,24
404:10,18,20
405:1,6,25
406:3,6,10,19
406:23,25
407:6,9,13,18
407:21 408:1,4
408:7,10,17,20
408:23 409:1,4
411:11,14
414:19,22
416:1,4,13,16
418:17,20
439:1,4 440:24
441:2 443:12
443:21 446:5
446:20,22
447:2,8,12,21
448:2,5,7,12
448:15,21,24
449:3,10,17,22
449:25 450:5
450:21,24
451:2,5,10,17
451:23,25
452:8,12,14,21
453:1,6,18,22
453:25 454:3
454:12,18
455:3,7 456:11
456:17,21

457:4,25
460:10,16,20
460:23 464:6
464:10 469:1,4
470:2,8,13
473:21,25
484:21,25
492:17,21
499:9,12,16,20
499:23 500:17
500:20,23
501:24 502:22
503:3,6,10,14
503:17 506:7
506:10,17,22
506:25 508:18
508:22,25
509:5,12,14,16
510:2,8 511:10
511:12,19
512:9,14,16,19
512:22,25
513:14,17
515:9,12
516:22,24
517:3,6,9,16
517:18,21,24
518:4,10,12,18
519:6,14,24
520:17,19
521:7,13,20,24
522:5,8,12,16
522:21 523:5
523:12,25
524:3,6,11
525:5,12,15,22
525:24 526:4,8
526:10,12,15
526:17,19,25
527:3,8,24
528:2,5,9,17
528:24 529:8
529:12,15,23
530:1,4,9,13
530:15,25
531:7,10,18,21
531:23 532:2,5
532:16,19,22
532:25 533:4,9
533:15,22

534:10,13,23
535:5,11,16
536:8,10,16,18
536:21 537:6
538:3,10,19
539:7,14,19
540:4,9,13,18
540:21 541:5
541:10,15
542:2,10,20,23
543:7,13
544:11,14,18
544:21,23
545:8,14,21,24
546:6,9,12,15
546:19,23
547:18 548:2,4
548:7,10,13,18
548:21 549:1
549:12,15,23
550:1,3,8,10
550:13,18,22
550:25 551:6,8
551:15,18,21
551:24 552:1
Coughs 411:11
counsel 349:8
350:8 372:25
391:10,12
507:24
counsel's 397:14
count 365:17
486:11
counts 377:6
389:9
County 328:6
couple 331:5
345:10 369:9
375:13 390:20
489:12 503:6
518:16 519:11
course 353:3
388:23 407:8
448:8 507:15
527:17 534:3
538:1
courses 412:2,16
court 328:11
332:16 345:9
359:11 364:9

385:7 387:1
392:18 409:24
449:1,4,14,19
457:16 519:3
522:13,25
523:8,10 524:1
526:19,21
527:1 536:23
544:2
Courthouse
328:6,7
courtroom
328:6 363:14
373:17
cover 336:25
427:20,21
437:16 443:1
537:24 538:15
covered 336:1
336:16 360:14
365:8 396:7,14
469:13 471:5
500:2 501:22
502:2 544:4
covering 473:6
covers 431:18
489:9
cracks 356:15
create 479:25
482:12,17
created 341:10
341:11 343:3
364:13 384:4,8
384:11,12
457:12 469:7
478:19 482:25
513:21
creates 478:12
creating 380:21
380:24 414:13
415:20
creation 341:7
466:16
creek 355:24
369:17,19
376:1,14,20
377:2 399:1,1
487:12 491:3
496:8 498:11
498:11 502:11

502:13,14
507:16
Creeks 370:11
crew 359:9,13
382:5
crews 498:14
critical 393:12
420:7,13
421:24 422:1,6
422:12,18
475:21 476:19
criticism 542:23
Crooked 374:16
375:25 376:13
376:21 377:1
487:13,25
496:8 502:11
cross 329:2
453:9
cross-examina...
346:7 349:15
485:1 518:22
534:18 537:12
542:17
cross-examine
520:10 525:10
539:5
crossing 472:11
crude 341:23
crush 427:21
crushed 480:23
crushing 427:12
437:24
cryptically
405:20
cube 508:7
cubed 466:12
469:8 509:19
cubic 466:19,20
484:8 509:10
culvert 508:12
culverts 423:17
458:16
cumulative
339:10 479:12
479:14
current 412:23
413:11,17
416:20 420:11
421:8 422:11

428:23 434:25
435:4 460:5
467:2 468:2
471:17 478:18
485:5
currently
412:21
curtail 345:19
345:23
curvature
473:24
curve 353:17
Cutthroat
376:18,22
CWA-10-2016...
328:4 553:3
CX 447:15
496:25
CX-0006 451:21
CX-01 352:3
CX-01B 514:8
CX-1 446:17
447:12 450:13
451:10 512:23
541:17
CX-10 541:21
CX-12 541:21
CX-16 414:22
541:22
CX-17 416:4
497:3 498:8
CX-19 439:4
CX-1A 448:18
450:2,16
455:19 459:10
541:18
CX-1B 451:11
455:25 456:18
459:10 511:1
511:17 512:4
512:16 541:18
CX-1C 452:2
456:3 541:19
CX-2 541:19
CX-20 441:2
CX-27 541:23
CX-3 541:19
CX-31 541:23
CX-33 411:14
541:24

CX-37 541:24
CX-38 470:14
510:3 511:14
512:20
CX-4 541:19
CX-44 447:16
CX-5 448:1
CX-6 541:20
CX-7 541:20
CX-8 541:20
CX-9 541:20
cycle 418:10
438:20 439:18

D

D 328:12 331:1
D.C 553:20
daily 497:15
499:4
damage 473:19
damaged 365:19
damages 488:2
damming
469:18
dams 435:2
Dan 329:4 332:4
370:1 463:6
477:8
darker 341:16
darn 526:13
data 341:23,25
342:13,17,19
342:22 343:6
343:17 386:16
393:9
date 387:4
493:18 553:5
553:15
dated 368:17
370:4 525:21
527:21 538:15
542:12
dates 493:7
494:12
Dave 328:4,21
553:4
David 329:6
408:25 409:7
409:16 455:10
553:18

day 335:14
360:8 365:14
442:9,9 443:10
454:22 498:25
499:6 511:24
daylight 479:4
days 490:18
dead 470:15
deadline 543:25
547:1,4
deadlines
546:24
deal 335:7,9
364:17 408:13
483:11 494:9
518:15
dealt 368:9
438:8
dear 526:5
debris 437:15
497:19
decide 466:6
494:12 535:1
546:7,21
decides 480:7
538:1
deciding 477:2
decision 368:25
402:10 405:22
519:4 528:12
528:14 529:2,5
529:13 530:2
531:8 539:10
539:25 543:18
547:14,20
548:11,14,19
550:5,22
551:11
decisions 548:24
declaration
405:23 525:20
528:19 529:10
530:17 532:6
535:18 536:2
536:11 537:6
537:18 538:21
539:3,6
declarations
539:9
declare 531:1

declined 421:18
decrease 513:7
deemed 418:20
deep 442:25
    471:19,20
deeper 373:19
    468:1 487:20
    512:6
defects 527:21
defend 529:19
Defendant
    518:24
define 384:20
    468:13 480:16
defined 390:6
definitely 337:3
    357:18 360:18
    393:23
definition
    356:12,19
    377:13 378:6
    378:18,24,25
    390:1,2,5
definitions
    356:10
degradation
    441:23 473:15
degraded
    422:13 473:13
    473:15
degree 382:8
    411:22,24
    412:3,12,17
    434:11
delay 444:11,17
delayed 444:9
delineate 334:5
delineation
    334:7 335:4
    340:21
delineations
    383:20
delve 400:22
denied 532:14
denote 380:12
denotes 515:22
dense 428:22
    492:10
densities 425:3
density 389:12

depart 547:25
Department
    497:9
dependent
    432:14
depending
    384:25 429:12
    465:4 548:5
depends 388:23
    389:4 436:18
    436:20
depicted 380:2
    450:13,25
depiction 358:5
deposited 363:7
    363:7
depression
    480:12,13,14
depth 336:24
    344:24 349:9
    350:1 351:14
    359:17,20,24
    360:12,21,23
    431:1
depths 360:1
derail 407:23
derived 398:12
    398:12
descending
    487:2 494:19
describe 343:22
    380:2 409:24
    410:7 412:2,16
    416:19 417:9
    420:20 421:8
    436:15 439:10
    439:12,15
    441:8 443:16
    444:10 445:24
    456:1,13
    457:15 459:13
    464:18 466:15
    469:10 470:3
    470:10,19
    473:9 484:3
described
    341:23 360:16
    423:3 432:24
    460:3
describing

471:6
designated
    421:24 422:1,3
    422:5 475:21
designed 482:19
    482:21
desired 386:5
despite 520:5
    537:18
destroy 475:20
destroyed
    465:18 479:5
detail 355:7
detailed 547:22
details 393:18
determination
    475:23
determinations
    369:21
determine 512:2
    527:13,22
    550:23
determined
    369:15,18
detrimental
    491:11,18
devolvements
    425:4
dialogue 531:25
    532:20
diatoms 431:9
die 442:18
died 479:22
differ 462:6
difference
    378:23 430:13
    461:17
different 334:23
    356:10 367:24
    368:10,18,19
    380:11 385:25
    394:14,15
    395:3,15
    444:15 461:14
    483:13 489:12
    504:12
differing 484:9
difficult 351:15
    354:24 423:18
    449:18 456:12

459:22 466:4
difficulty 433:6
diffusion 432:19
dig 356:21 427:8
    459:7 467:3
    480:12
digging 427:4
    435:18 467:6
digs 334:21
    434:21,22
diligently
    547:23
DIRE 329:2
direct 329:2
    331:13 332:8
    370:20 371:19
    372:17 377:6
    380:1 396:15
    397:22,25
    409:10 410:20
    426:17 427:5
    427:18 428:1
    455:14 470:22
    471:14,15
    506:2 520:9
direction 467:16
directly 387:11
    387:18 427:24
    464:1 503:23
disagree 357:13
    371:25 377:23
    377:23 506:6
disagreement
    357:21,23
disavowal
    537:19 538:25
discern 351:15
    354:25
discharge 381:5
    384:25 461:22
    465:12
discharges
    334:22 462:6,7
discontinue
    536:19
discretion 453:3
    453:24 551:10
discuss 331:22
    411:3 455:17
    478:10 517:11

531:21 549:5
    552:4
discussed 336:6
    339:21 340:3
    384:15 386:11
    391:11 420:8
    437:6,22
discussing
    332:12 424:6
discussion
    363:22 368:19
    371:8 476:9
discussion's
    448:11
disk 526:6,7
dislodge 479:1
dislodged 480:5
dispense 533:20
displace 427:22
displaced
    480:24
displacement
    392:10 429:14
    438:3 464:20
    464:20 465:9
    466:1 505:14
disregard 519:2
disruption
    336:8
disrupts 334:24
distance 355:19
    459:15 460:8
    504:18,20
distinction
    402:21
distinctive
    384:14,16
distribute
    502:20
distribution
    495:6,6
disturb 427:22
    472:25
disturbance
    334:19 344:6
    447:11 450:2
    450:13 464:2
    472:17
disturbances
    426:17 427:18

413:4 419:9
432:11,12
433:10 436:9
441:11,12
464:23 465:3,3
473:20 477:5
484:18 501:16
501:18 504:17
505:4,13
efficiently
547:23
effort 475:15
efforts 538:14
EFH 425:18
426:4
egg 439:13,14
474:24 475:1
eggs 424:2
426:25 428:6
432:12,17,19
432:21 433:3,7
433:8,8,9
439:17 462:10
480:23 481:2
486:16 492:3
493:17,18,19
495:20,24
eight 499:6
eight- 488:7
either 335:18
344:14 348:25
366:4 369:23
378:5 391:21
442:15 449:12
473:5 483:14
500:4 501:19
502:6 510:14
550:25
elected 534:21
534:25 537:15
electronic 449:7
449:20
electronically
544:7,10
Elk 376:12
email 368:6
369:25 370:1
embedded
424:19 459:7
481:16,18

482:6
embeds 424:16
embryos 428:6
emerge 433:4,9
433:9 492:4
emerged 493:22
emergence
439:14
employ 362:20
employed
409:17
employee
499:14
empty 478:20
encounter
546:16
endangered
395:10 413:2
420:14 422:1
444:12 445:22
455:23 500:5
engage 531:24
engines 437:17
enlarged 445:17
459:10 541:18
enlargement
446:10
ensure 333:19
349:15
enter 364:9
391:2 534:8
539:1
entered 402:1
404:15
entering 462:11
entertain 527:24
entire 422:2
426:3 472:11
472:14 480:25
486:21 489:17
491:2,5
entirely 358:7
358:11 364:10
390:7
entirety 528:16
535:15
entities 366:9
entitled 425:9
476:7
entrain 434:24

entrained 464:3
466:23
envelope 540:7
environment
379:3,8 436:24
environmental
328:1,17
370:10 426:12
435:6 436:4
473:11 483:6
497:9 550:14
553:11
EPA 349:8
350:8 363:22
383:10 388:18
391:10,12
397:20 404:5
408:25 411:9
414:17 415:24
419:22 438:24
440:22 444:4
447:15 448:16
497:13 504:6
507:24,24
518:22,23,25
522:3 548:1
EPA's 398:1
411:2 414:10
equal 337:16
Erlanson 328:4
328:21 331:24
331:25 333:1
333:23 335:2
337:23 339:14
339:19 341:2
345:6,8,11,13
345:15,18
346:6,8,21
347:25 348:1
350:3,15,17,24
351:4,22 352:1
352:10,14,16
353:9,13,19
357:2,6,8,10
357:15,25
358:10,15,16
361:14,16,17
362:14 363:9
363:10,14,24
364:10,13,24

365:8,10
366:13,16,22
366:25 367:3
367:15,19
368:1,21,25
369:2,6,12
370:9,15,18,21
371:1,6,7,25
372:6,9,11,13
372:18 373:8
373:10,12
374:8,9,10
375:4,6,9,12
375:15,20,23
378:5,11 379:5
379:12 380:7
380:21,23
382:9,21,23,25
383:6,13 384:1
384:19 385:19
386:6 388:25
389:3,8 390:19
390:20,24
393:15,19
395:18,19
397:8,9 398:9
400:6,7,17,20
401:9,16,19,20
401:23 402:1,4
402:13,17,22
402:25 403:3,8
403:14,23
404:2,3,12
405:23 408:8
410:3 411:12
411:13 414:20
414:21 416:2,3
418:17,19
439:1,3 440:25
441:1 444:25
446:21 447:17
453:13,14
454:17 463:10
463:20 466:9
469:7 477:11
477:16 484:21
484:24 485:2
493:4,5 497:3
497:5 499:25
500:1 501:4,8

502:1,24
503:18 506:9
506:13,19,23
507:2,3 508:21
508:24 509:15
509:17,18,21
509:24 510:5,7
510:9,10
511:11,18,21
512:12,18,21
512:24 513:1
513:11 515:11
515:14 516:21
517:6,8,14,17
518:12,16,19
519:9,13,20
521:14,19,23
522:4 523:7,19
523:22,23
524:2 525:21
526:18,22,23
527:16,20
528:2,4,7,17
529:7,11,14,22
529:25 530:3,7
530:12,16,18
531:5,9,11,20
531:22 532:1,4
532:8,18,21,23
533:2,8,14
534:14,21
535:17 536:4,9
536:12,17,19
537:14,22
540:5,25
544:11,12,16
544:20 545:5
545:13,19,23
546:3,8,11,14
546:18,22
547:17 548:3,5
548:8,12,15,20
549:11,14,22
549:25 550:2,7
550:9,12,17,21
550:24 551:4,7
551:14,17,21
551:23,25
552:7 553:4
Erlanson's

359:9 420:14
422:11 423:5
425:12 461:17
467:11 486:16
explained
359:12 378:19
394:11 481:6
explaining
422:19 471:3
expose 351:3
exposed 350:19
350:21,25
353:2 354:22
355:14 434:24
435:21 436:8
510:21 511:7,8
exposes 434:23
exposure 492:19
extend 349:22
397:5
extended 344:18
454:10 505:9
extending 339:1
514:21 516:15
extends 469:17
471:10
extensive 453:9
extent 343:8
349:13 364:6
371:18 393:5
393:13 394:7
394:11 404:23
437:2 506:11
519:15 533:5
534:13,19
537:10,17
539:24
extinction
421:15 440:21
extra 400:9
522:14 523:3
Extrapolating
440:19
extras 526:18
extremes 498:24
eyes 459:23

F

F 455:1
fact 344:17

363:25 370:12
373:14 374:13
386:18 402:10
405:2 447:22
449:7,20 481:8
487:8 518:24
520:5,7,8
529:12 532:6
535:12 537:15
537:21 539:4
factor 423:5,6,8
423:14,15,24
467:5,12,13
473:11 483:10
508:11
factors 377:15
394:9 422:18
422:19 424:13
425:24 459:3
facts 462:9
fade 341:19
fail 477:16
failed 518:23
failing 339:20
340:2
failure 477:20
fair 392:6 405:7
422:14 457:21
473:18 528:15
533:15
fairly 341:18
496:24
fall 374:19,22
389:2,5,10,14
419:12 420:16
420:22 421:17
426:5,5 428:23
430:19 475:19
483:15 485:7
485:12 486:3,9
488:14 492:1,1
502:6,13
503:15
falls 504:1
familiar 342:11
383:16 393:9
404:8 438:16
440:12 443:14
505:21 530:21
532:8,11

far 363:11 399:8
400:11,14,15
471:14,16
502:14 503:25
510:23 513:8
farther 338:11
358:3 385:12
385:17 461:11
461:12
fast 492:11
493:17
faster 460:5
468:1
fat 436:12
fearing 345:24
features 340:23
341:5 344:16
381:17,18
384:3,7 388:7
474:22
February 370:4
fed 478:18
federal 400:12
417:3 425:12
425:14 539:23
feed 432:4
442:10 490:17
feeding 479:17
feel 361:24
373:23 383:24
394:2 453:7,13
453:19 540:23
541:1 545:24
feet 338:19
339:1,3,4,8,17
339:18 356:4,4
395:25,25
396:3,10
397:25 398:1,4
399:7,21 400:2
462:13,25
484:8 503:25
504:8,13,19
515:21
felt 386:8
fewer 487:21
field 377:18
fields 385:25
Fifteen 413:13
fight 501:10,16

501:17
fighting 501:11
fights 501:20
figure 464:8
494:8
figures 337:18
file 542:12
543:23 544:25
546:1
filed 526:9,10,11
filings 538:16
fill 338:1 430:20
462:10,20,24
463:2 508:13
filled 335:14,17
filling 336:21
462:14,16
508:12
fills 424:6,7,16
fin 501:1
final 401:18
finally 363:11
406:22 444:19
543:14
find 442:16
465:18 480:10
490:15
findings 387:25
finds 480:6
fine 335:22
345:2 355:7
374:11 390:14
391:9 398:13
400:18 404:8
406:1,23 407:9
424:3,7,15
425:5 432:18
449:22,23
452:17 457:23
459:18 461:19
461:22 462:15
462:16,19
474:23 482:23
489:10 496:17
497:23 498:1
512:22 517:20
518:10 530:23
finer 335:19
337:5 344:25
354:1 355:1,3

355:4,5,11
363:5 390:9
428:22 462:7
fines 428:18
459:22 462:9
462:24 474:17
482:20
finish 382:22
454:15 530:11
551:19
firm 497:21
first 358:24
367:2 368:11
387:1 418:7
420:10 426:21
428:9 431:6
441:25 442:7,8
443:10 456:2
469:12 483:7
484:12 485:16
505:14,16
514:20 524:19
538:24 547:1,4
547:8
fish 334:11
335:24 362:10
362:25 366:3
392:20 394:19
395:10 411:25
412:19 413:3,4
415:18 419:9
420:19 425:11
425:16,17
426:2,25
427:13 428:7
429:12,15
430:1,2 432:6
436:9 437:16
439:17 440:20
456:10 462:10
462:20 464:21
464:23 465:8
465:13,16,20
465:25 466:3
468:7 477:1
478:13 479:8
480:6,10
481:10 482:13
483:11,14,20
484:1 485:6,10

494:7
generally
344:14 351:12
410:7 418:5
422:11 426:10
428:4,5 478:4
487:23 520:12
545:4
geology 412:4
geomorphic
434:12,14,20
geomorphology
434:22 472:24
478:19
German 385:4
gesture 473:23
gestured 353:6
456:18
gesturing
473:21
get-go 399:23
getting 331:4
372:15 393:17
536:13
gills 430:3 505:5
give 374:13
397:18 407:21
448:25 449:13
506:13 522:22
528:24 533:4
535:24 536:23
542:6 546:25
549:9
given 392:18
489:17 493:17
494:22 534:17
535:16 537:11
gives 457:22
492:2
giving 519:18
glad 520:20
540:10
glaring 546:12
glasses 511:9
glide 443:2
go 331:6,21
332:2 335:12
337:12,21
345:9 346:9
347:21 348:2

350:1 352:10
353:14 358:3,9
363:8 365:9,11
370:25 371:6
373:9,19 374:7
383:6 385:8
397:7 400:5
404:2 406:17
412:8 422:19
442:9 446:22
453:8,14 455:4
455:7 460:23
461:11 468:6
470:20 472:7
473:16 478:2
479:6 480:13
482:19 484:25
485:3 486:4,20
489:1 490:4,14
493:24 499:12
499:24 500:15
506:10 509:16
510:7,22
514:20 524:3
526:22 547:3
goal 342:18
444:3,5 485:6
goes 358:22
472:24 536:5
going 340:9
345:10 355:8,9
355:10 357:10
365:11 369:9
370:16,24
373:4,22
378:17 388:22
393:19 396:22
401:21 403:21
404:22,23
406:14 407:10
408:12 411:3
439:23,24
448:9 456:3,5
459:8 461:8
471:11,14,15
473:20 491:17
495:24 502:3
503:24 511:6
516:6 520:21
521:21 524:7

527:8 534:20
536:1,6,22
539:20 540:1
541:1 542:4
543:5,7,22
545:6 547:19
gold 428:17
good 332:10,11
364:17 406:10
408:21 409:12
409:13 454:12
456:6 458:21
465:13 467:23
481:13 486:17
492:13 495:23
497:6,18
502:18 517:17
551:23
good-faith
538:14
governing
549:17
governs 549:20
GPS 364:1,25
graded 435:13
graduate 412:6
grain 457:24
505:14
grains 429:6
granted 529:2
grappled 498:10
grassy 353:9
355:15
gravel 353:2,3,4
353:20 354:1,3
354:11,12,14
354:21 355:14
356:21,23
361:5 392:9
432:13 433:21
467:25 470:6
471:16 480:11
480:22,24
487:21 495:12
495:13,16,17
511:7,8,22
gravels 355:12
426:23 456:25
474:18 480:3,7
481:20 489:11

graze 432:3
great 331:10
332:1 347:12
347:24 352:13
393:25 409:4
449:24 450:16
454:18 469:4
524:5,13
526:15 542:2
552:1
greater 334:10
348:19 388:20
465:3 483:1
490:10
greatest 359:15
359:15
greatly 359:7
421:18 424:1
Green 352:8,18
354:10 451:7
ground 442:9
480:18
group 462:8
grow 490:16
492:11 493:17
growing 431:8
479:20 492:3
growth 431:13
432:2,4,20
433:7 440:19
441:11,16
guess 371:5
377:18 378:8
448:9,24
453:14 454:14
487:14 497:12
510:25 535:16
guessing 496:25
guy 519:23
guys 374:25
523:24

———— **H** ————
H 330:1
habit 475:21
479:17
habitat 334:25
415:18 417:12
417:19 420:8
420:13 421:24

422:1,6,12,18
423:13 424:8
424:14,19
425:11,16,17
425:18,22
426:2 427:6,22
432:7,10,23
439:16,22
441:25 442:5
442:16,21
444:15,16,19
445:21 455:23
456:5,10
465:17 466:6
467:24 469:13
469:14 471:6
473:5,7,12,15
473:16,18
476:20 477:1
478:13 481:11
481:19,25
482:1,13
488:11,15
507:23
habitat's 423:12
490:3
habitats 418:9
427:11 485:6
half 464:13
472:9,19
498:25 513:2
516:10 530:21
Hall 417:7,18,18
hand 353:7
367:25 447:9
473:23 524:4
524:13 540:19
handbook
400:13
handle 449:12
549:2
handwritten
473:22
hang 493:23
498:13
happen 362:2
405:10 505:19
505:20 543:14
happened 350:9
350:10

435:23 542:24
551:9
happy 453:12
527:24
hard 481:18,18
484:1 488:22
505:18
hard-fought
501:17
harder 423:21
harm 332:25
333:16 334:10
334:15,17
336:4 339:22
339:24 340:4
367:17 393:13
393:21 394:7
413:3 476:18
476:19 477:21
harmed 494:5
harmful 392:20
504:17,23,24
505:1,7
harms 419:10
419:11 444:6
477:7
harvest 425:2
hatch 433:3
493:19,19
hatched 491:16
493:21
hatchery 501:5
hate 448:7
head 493:3
hear 345:16
346:3 445:11
532:17
heard 371:15
hearing 393:13
402:8,12
403:12 405:14
450:6 454:20
474:9 523:14
525:8 527:7,10
527:17 528:15
533:9,23 534:3
535:14 537:15
537:19 538:18
540:15 541:2
543:15 547:12

552:8 553:5,10
hearing's 552:5
heavier 428:22
heaviest 502:17
heavy 395:7
423:16 426:22
433:15 434:6,9
436:17 437:12
459:3 496:10
height 360:13
held 416:20
help 385:7
421:12 463:21
494:20 509:7
helpful 342:19
342:22,24
346:18 394:1
449:8 524:20
528:22
helps 385:6
461:6
Heritage 553:19
hesitant 506:15
hide 465:18
479:7
high 341:20
384:17 394:12
394:20,21
423:11,19
424:9,19,22,24
425:3 427:7
458:4 462:5
464:22 478:18
480:8,13 483:7
483:16 486:6
486:15,18
488:6 489:8,20
490:9,11,11,12
496:2
high-flow 354:3
388:8 394:17
395:6 483:1
high-water
353:22,23
391:10 392:7
392:14,25
490:23
higher 385:13
428:7 471:21
474:17 480:5

486:24 505:19
514:9
highest 353:24
355:24 384:24
385:16 436:13
highlighted
367:4 369:11
highlighting
447:20
highly 425:21
428:5 429:5
430:25 434:8
436:5 467:21
505:17 510:21
Highway 422:25
hinged 475:23
historic 420:12
history 436:22
hits 505:14,16
hold 349:11
375:3,4 382:20
396:4 468:4
481:25 497:21
499:9,9 506:7
508:18
holding 354:17
517:9
holds 521:14
hole 335:16,18
335:20 336:21
337:6,9,17,20
337:25 340:16
341:1,7 343:25
344:10 346:9
348:9 350:4,7
350:11 351:6,6
351:16 356:1
358:19,22
359:4,15,17,22
360:21,23
361:24 363:11
363:15,16,16
363:17,19,21
363:24 364:4,7
364:10,12,13
364:13,23
365:15,15
382:6,7,9,15
382:17 383:1,1
383:2,3 384:13

387:8,13,15,22
388:10 390:25
427:6 428:15
463:20,24
464:9 466:10
466:11,16,20
467:1,3,6,8,10
471:13 472:1,4
472:9,12 473:5
474:3 478:16
478:20 480:12
481:8 507:25
508:7 509:9
515:23 516:3
518:24
holes 335:14
340:19,21,25
341:9 356:16
361:13 371:9
371:10 372:2,4
372:7 373:13
384:12,16
387:25 388:9
391:2,4 434:22
434:24 472:5
472:10,13,17
476:3 482:22
home 465:17
552:3
homes 479:4
honest 544:12
honestly 535:20
Honor 331:9,25
345:5 346:25
349:13 366:16
368:2,5 369:6
369:12 371:25
379:12,17
390:21 393:4
397:6,19
400:23 405:17
406:24 408:3
408:22 411:13
414:21 416:3
418:13,19
439:3 443:8,20
446:18 451:9
452:7,19
454:16 455:6
484:20,24

507:2 509:4
511:18 513:16
516:23 517:5,8
517:23 518:1,9
519:20 520:1
521:12 522:3
524:8 525:17
525:18 527:2,5
528:8,23
530:18 531:11
532:8 533:21
533:24 535:4
536:5 538:1
539:1,13 540:8
540:17 541:3
542:1 544:13
545:5 548:3
550:9 552:6
Honor's 349:14
538:8
HONORABLE
328:12
hop 512:9
hoped 336:5
439:12,15
hoping 333:17
397:18
horizontally
432:16
hour 452:24,24
505:9
hours 437:18
453:11 498:3,4
499:1,6 505:9
housekeeping
517:10,15
518:15 542:5
Hughes 337:24
348:4 364:4
370:2 380:5,6
380:22 381:19
382:10 384:10
387:7 445:8
451:22 511:24
512:11,12,16
512:17
Hughes' 339:16
347:17 364:2
364:25 380:15
382:14 383:15

396:9 423:1
492:12,24,25
493:2 504:22
leniency 349:14
371:21 397:3
406:12 520:4
lenient 408:2
535:21
lessens 504:20
lesser 348:19
let's 346:9
348:14 353:9
354:11 365:15
365:15 406:4
407:19 446:23
447:8 454:14
462:25 495:10
511:1,7 513:4
523:16 524:3
lethal 428:6,8
430:8 438:2,4
462:10
letter 366:11
413:9 414:10
414:16 537:24
538:15
level 342:16
344:8,10
351:16 385:1
392:15 397:13
429:9 430:7
436:13 458:3
464:19 465:3
465:14 473:14
504:24 514:8,9
514:19,21,22
levels 429:12
485:6 504:23
liability 529:3
lieu 540:16
542:16
life 418:10 431:4
431:15,23
438:20 439:18
441:13,13
536:5
lifecycle 440:1
441:13
lifelong 491:21
lift 467:13

lifted 428:18
433:22
light 341:15
429:19
likelihood 389:1
436:15 467:18
476:17
limb 487:2
494:19
limine 524:10,19
limit 422:18
477:10
limitations
475:24
limited 368:12
372:16 405:12
limiting 422:20
423:4,5,7,14
423:15,23
424:13 425:24
459:3 483:10
line 354:17,18
373:3 469:23
470:23 516:9
516:12
linear 339:8
386:18
lined 516:11
lines 543:22
link 364:22
links 422:3
listed 413:4
420:19 423:14
443:25 444:4
476:18 487:4
488:16 500:10
501:6,7
lists 422:17
literature
410:10,10
430:25 458:15
477:4
little 345:12
347:15 348:22
351:14 354:24
378:4 404:11
406:25 408:11
427:15,20
472:25 495:20
502:2 506:2

509:22 511:5
515:22
live 394:16
lived 427:23
lives 465:17
load 437:1
497:16 499:4
loaded 476:16
loads 423:20
433:15 437:12
459:3
located 374:15
location 335:10
380:19 444:24
445:3,5,20
455:22 553:6
lock 490:15
lodge 520:2
LoLo 369:17
370:10 399:1
491:3 498:11
long 404:6
405:17 412:22
433:14,19
442:9 448:10
501:16,20,23
517:14 536:5
548:16 549:16
long-lasting
433:12
long-term
336:13 437:9
longer 348:20
427:23 463:24
466:22 479:7
492:4 504:8
look 333:7 334:8
348:12 351:19
351:23 352:17
352:18 353:5
354:8,9,16
356:22 368:20
368:24 369:5
374:25 395:12
418:11 424:19
443:3 451:19
468:14 470:5
470:13 494:18
498:8 510:4,25
511:1,1,2,2,3

512:5 516:8,10
522:23 528:18
528:20 529:19
531:16
looked 344:12
351:6 419:22
428:1 458:11
470:9 507:11
looking 333:5
339:16 348:14
352:19 353:17
356:9 444:3
446:3 457:1
472:16,19
510:3 511:23
512:1 523:17
531:19
looks 381:3,4
420:10,12
459:4 470:16
513:9 522:23
loose 481:25
lop 494:20
loses 465:17
loss 466:6
lost 473:5
480:25
lot 345:8 371:8
372:1 374:3
393:18 424:15
462:24 487:22
490:13 496:5
498:16 542:24
lots 488:3 490:2
low 429:11
442:15 483:21
483:24 484:5
486:10,19
491:18 493:23
low-flow 435:10
lower 353:25
354:4 385:18
420:17,23
464:8 475:1,2
481:19 482:1
483:13 485:12
500:11,14
511:15 512:7
lowest 480:8
lunch 407:4,14

453:4,24 454:1
454:6 455:16

M

ma'am 367:9
411:13
machine 429:19
magnifies
436:14
magnitude
342:16 343:4
Magnuson
415:16 425:10
main 337:2
351:10 376:2
376:19 380:10
381:4 420:23
420:25 421:3,6
422:2 423:1,9
485:11,12,20
488:4 491:4
502:10,20
maintain 339:7
422:8 444:7
478:19
maintaining
395:11
making 357:7
444:7 473:15
530:2
mammalogy
412:5
man 356:21
497:7
manage 490:19
managed 417:11
500:14
management
361:9,19
362:15,18
379:7 385:20
385:23 386:1,2
386:9 412:1,19
415:17 419:23
425:11
managing
417:18
manipulatable
338:7
manipulated

named 340:19
naming 340:21
nanograms
496:18
narrowed 423:2
natal 439:16
National 409:20
natural 361:7,10
377:14 394:12
395:1,11,12
433:21 435:12
436:19 452:22
453:4 478:18
480:10 483:1,8
naturally 427:8
436:19 442:24
442:25 444:19
nature 367:22
522:19 534:2
navigable
377:11 378:14
near 363:7
437:20 487:25
nearby 429:2
nearly 504:21
necessarily
373:2 389:23
394:5 485:21
535:6 538:6
necessary
383:25 537:8
need 346:19
351:24 357:3
371:23 397:2
407:22 408:18
422:8 424:5
427:2 442:12
454:8 469:1
499:21 522:6
531:24 533:2,2
533:3 535:6
542:5,21
545:25 551:1
needed 400:22
422:10 425:19
515:10
needs 523:10
NEPA 343:10
370:3
Nephelometric

429:18
nest 432:13
480:9,14,17,17
480:20,24,25
481:2
nests 485:14
nets 465:5,6
neurotoxin
436:8
never 350:5
364:12 479:3
new 372:20
375:5,8,14,19
403:2,7 446:9
446:12,13
449:11,13
473:14 547:12
Newsome
374:16 376:1
376:14,20
377:2 487:12
487:24 496:7
502:11,13,14
507:12,13,15
Nez 488:18
night 442:10
nine-mile 488:7
Nineteen 412:24
NMFS 412:22
413:17 416:22
417:4 425:15
477:2 499:14
NMFS's 475:10
475:16
NOAA 366:3
369:20 417:24
492:19
non-minor
546:20
nonexistent
486:13
Norma 370:1
normal 383:18
495:6
normally 519:8
northwest 494:7
Nos 521:4 537:3
notary 539:14
note 445:16
452:19

noted 386:12
434:10 466:1
486:4 520:21
notes 510:3
553:10
notice 328:10
507:8
noticeable
341:18
novel 525:6
527:15 534:2
NPDES 397:11
399:9 518:20
519:3
NTU 397:12
461:9,10
NTUs 429:13,17
429:25 430:9
458:5 460:1,15
461:11 464:17
464:22 503:23
504:14 505:2,3
505:7,8,10
number 333:8,9
333:18,24
334:1,3,18
335:3 338:16
339:5,15
340:10,13,16
340:16,17
343:15,25
344:1,18 348:9
348:9 361:24
363:11,12,17
363:17,19,21
363:22,24,24
364:7,10,11,12
364:13,23,23
365:15,15,17
371:10 382:2,4
382:6,7,17,18
383:1,1 387:8
390:25 391:1
392:5 393:6
394:6 464:9
466:11 471:5
472:1,1,4,8
474:3 475:1
494:14 507:6,6
515:23 518:25

530:19,19
numbers 335:6
340:25 393:7
420:11 422:9
444:8
nursery 439:16
439:22 491:15

───────────
O
───────────

O 329:1 331:1
455:1,1,1
oath 331:17
349:16,17,21
539:16 540:5
object 371:18
393:4 404:21
405:15,19
411:12 506:11
objection
349:12 371:4
371:21 373:21
374:7 378:1,9
382:21,23
393:11 396:5
396:22 398:8
414:19 416:1
418:18 439:1
440:24 499:7
499:10,24
506:8,18 520:2
520:16
objections
403:16
objects 520:6
obligation
425:12
observation
503:22
observational
504:16
observations
384:11
observe 340:17
360:9,11
380:21 399:18
459:11
observed 337:15
363:20 399:6,7
485:14 502:7
obtain 411:22

411:24 412:12
obtaining 412:3
412:17
obvious 334:16
obviously
404:22 405:8
521:7 540:21
542:17
occasional 519:2
occasions
472:11
occur 394:15
395:2 429:11
501:16
occurred 384:16
424:25 464:12
474:20 475:3
502:9 507:17
507:21
occurring
394:14 444:6
479:10 483:8
487:17
occurs 389:19
394:24 461:9
467:17 475:15
ocean 421:1
500:11,12
October 362:4
363:20 364:4,7
364:14 365:1
380:9 382:13
387:3,13,15
388:3 463:19
466:11
offer 404:1
405:23 419:10
484:22 509:3
525:13 533:22
533:25 537:20
538:22 543:10
offered 403:11
522:14 527:11
543:9,17
offering 367:12
393:22 411:2
offers 534:1
Office 328:1
553:12
official 449:4

399:21 400:1
ornithology
412:4
ought 403:11
523:2
outcome 548:5
outside 355:17
360:10,10
370:24 371:19
396:7
over-wintering
441:25
overall 422:14
437:1,3 462:8
473:4,16
475:10
overlying
467:14
overrule 378:8
396:22
overused 437:11
overwintering
442:8
oxygen 432:18
432:20 433:8
435:21 436:8

___

P

___

P 331:1
p.m 454:22
455:2 552:8
P.O 328:21
pack 552:3
packed 467:4
page 333:5
338:17 340:11
340:12 347:4,4
347:6,14,16
352:3 379:23
380:3 381:25
381:25 382:3
420:1,6 421:20
421:23 422:15
422:17 425:6,9
447:10 450:13
451:11,20
456:22 463:16
466:12 469:9
470:14 471:23
471:25,25

475:6 476:5
498:8 510:5
511:14 514:10
515:4
pages 445:15
506:20
paid 519:22
paper 438:22
449:13,19
544:7,20
papers 418:3,6
parameters
371:12 487:6
pardon 347:6
452:9
part 337:2 338:5
338:12 341:15
362:19,21
365:23 375:2
376:12 377:20
377:25 379:2,3
381:4 386:12
386:20 395:4
400:10 402:5,9
402:23 423:18
423:19 434:17
484:12 489:14
489:19 492:8
500:8,8 522:9
523:15 524:15
527:23 535:9
537:11,12
538:6 539:8,10
542:24 549:15
partially 459:6
474:16
particle 348:20
348:23
particles 356:17
377:20 394:13
428:22 429:20
462:3,16,17
463:2
particular 334:9
335:13,15,16
344:2,22
384:25 385:15
386:5,23
389:22 395:14
438:7 444:24

500:17,20
521:18
particularly
433:13
particulars
364:18
parties 328:10
331:6 446:7,10
521:16 543:23
544:3 548:8
passage 362:10
362:25 423:18
423:22 425:24
pasted 398:21
Pause 332:15
367:6 369:7
411:6 449:9
452:18 460:22
Pay 365:14
paying 519:21
peak 395:13
433:21 483:13
483:14 486:20
486:24 487:3
490:19
penalties 549:18
penalty 519:5
531:3 543:19
people 407:2
422:13 494:6
Perce 488:18
percent 372:7
386:24 391:23
392:14,15,24
392:25 393:2,2
424:3,3 460:14
467:5,9 473:7
474:3,4,23,24
488:22 489:7
489:13,15
490:24 491:20
493:21 494:20
494:21 508:9
508:10 509:10
percentage
472:21
percentiles
494:18
perfect 352:9
406:2 452:8

467:6
perfectly 467:8
performed
335:4 438:6
period 454:1
465:15 513:23
periods 483:1
peripheries
489:22
periphery
483:15,18
490:4
perjury 367:21
531:3
permit 397:11
397:21 398:1
399:10 414:11
419:21 504:6
518:20 519:3
532:14,15
permits 549:19
permitted
343:12 383:21
388:15,17,21
392:1 403:18
514:1
permitting
524:16
persistence
342:17
person 380:23
personal 391:6
personally
348:11 485:14
548:16
perspective
457:15
pertains 392:23
phase 519:5
photo 351:19
352:19,20
353:10 355:6
357:15 380:4,7
380:11 446:2
450:2 451:6
452:1 457:13
466:16 515:15
photograph
347:11,19
351:17 352:7

353:8 357:22
380:20,25
381:8 450:15
456:1 457:9
463:19,19,21
469:9,20
470:14,22
511:15 512:7
512:11,17
514:9 515:4
516:11
photographed
341:2 382:10
383:14
photographs
346:11 380:3
380:13 383:24
445:4,5,17,19
445:24 456:13
459:10 471:24
472:23 474:10
474:13 488:22
512:13 541:18
photos 337:7
362:3 364:1,4
364:25 366:1
380:15,15,18
381:11,16,18
381:19 382:12
382:12,14
384:11 446:13
455:18,21
459:11,21
471:25 472:2
photosynthesis
431:12 432:2
physical 456:8
481:24
physically
449:21
physics 377:22
physiological
429:23
physiology
412:20
pick 331:21
335:19 408:12
488:11
picnic 479:16
picture 348:2,3

previous 344:12
348:6 360:8
399:2 421:19
431:22 447:11
450:2,12
507:25
previously
332:5 343:9
344:13 398:16
398:18 404:7
404:15 411:17
415:2 416:6
439:6 441:4
455:11 524:18
537:2 543:4
prey 436:12
479:2
primarily 335:7
361:3 386:17
389:7 413:1
418:8
primary 410:10
431:12 432:1
432:12 438:22
456:2 459:2
prior 333:14
334:6 366:21
367:13 383:15
383:24 416:20
448:16 550:16
Pro 328:21
probable 355:21
probably 338:13
404:5 407:4
427:2 463:25
496:13 498:25
500:15 515:18
515:20 543:18
549:24
problem 423:10
479:13,15
498:22
procedure
539:11
proceeding
331:18 349:22
519:5 542:25
proceedings
553:8
process 392:19

413:5 482:23
533:12 539:23
542:6 549:6
processes
394:12 400:15
produce 425:5
425:19 439:17
479:20 480:2
produced
402:11
producers 432:1
producing
377:15
production
431:12,20
456:2 481:19
productivity
426:8
profound
344:16
program 342:7
413:22 415:19
475:14,16
476:23 489:17
493:24 504:7
programs
342:11
progress 337:25
project 344:3
399:1,2
projects 413:24
417:3
pronunciation
409:2
proof 363:12,25
364:8 374:13
proper 480:10
537:11
properly 358:21
473:12
properties
434:15
proportion
474:17
proportions
473:2
proposed
332:23 342:7
344:3 475:11
475:17 476:11

477:9 498:9
524:14 525:24
526:1,3 533:11
538:7,12
proposing
404:12
protected
476:25
Protection
328:1,17
553:12
protective
475:14,25
476:12,16,25
497:25
prove 370:12
375:10 518:23
proven 518:22
provide 334:14
342:6 347:1
371:21 372:22
405:11 406:12
419:9 456:7
457:3 498:23
510:20 548:18
provided 365:1
365:22 372:17
402:21 481:23
538:15,17
proximity 461:2
publicly 526:2
550:5
published 342:5
418:2
pull 347:13
524:20,20
525:22 550:6
pulled 507:11
pulling 375:8
purely 547:15
purports 370:1
purpose 342:1
343:18 419:5,7
539:20 541:2
purposes 367:12
368:16 401:15
406:16 527:7
528:16
pursuant 328:10
444:4 542:14

push 453:3
539:6 540:7
put 337:5
358:21 383:19
398:25 399:14
399:20 400:2,2
464:3 469:15
495:24 519:22
519:23 520:20
531:13 532:14
532:25
putting 460:6
467:7

───── Q ─────
qualifications
411:4
qualified 373:24
quality 396:1,13
396:18 437:19
496:7,8 497:10
502:19
quantify 393:20
question 336:15
337:15 339:25
350:2,8,13,14
350:20 358:4
361:15 365:9
366:7 370:19
373:23,24
374:2,3,8
375:11 378:7
391:22 393:12
393:21 395:20
397:20 401:13
403:17 427:16
431:20 454:4
465:13,22,23
466:2 478:21
482:4 486:17
487:11 489:5
489:20 491:22
496:6 499:17
507:1 509:17
511:20 515:11
545:4,10 546:4
question's 510:6
questioned
539:25
questions

333:20 345:4,7
345:23 358:14
372:16 373:6
375:21 379:16
383:1 390:16
390:19 393:24
396:23 400:19
400:20 405:9
445:16 484:19
484:22 489:13
506:14 515:8
520:7 534:2,17
537:10 547:25
quick 336:15
368:5 369:5
517:12
quickly 347:13
362:14 444:20
449:11 463:4
465:19 490:21
501:19 509:6
541:7 547:21
quit 489:3
quite 345:20
356:19 393:2
457:17 470:15
487:14 489:9
509:1 520:12
549:25
quoted 371:2
519:1

───── R ─────
R 331:1 455:1
rains 483:9
raise 400:21
427:10 515:9
rake 362:16
raking 362:8
range 420:7
421:17 458:22
498:12
rapid 462:21
rare 486:13
501:21
rates 428:7
reach 334:5,10
334:13,15
362:9 389:22
406:21 471:11

472:20 486:2
487:18 502:16
reaching 410:5
reactivated
435:25
reactivation
436:3
read 333:20
369:9 371:3
425:25 496:12
528:8 530:3,8
530:25 531:11
536:6,20
545:22 546:9
546:21
readily 433:20
433:22 480:5
486:11 488:8
490:13,13
503:13
reads 369:14
ready 331:6
352:14 455:4
484:22,24
real 361:2 509:6
realize 495:3
531:15
really 355:6,19
362:14 368:16
368:18 372:14
391:19 393:12
394:6 405:14
407:14 454:3
457:22 459:5
468:6,7 481:12
488:1,2 490:21
496:19 528:4,7
533:18 536:22
539:20 543:9
544:14 545:1
545:14,16
546:6
realms 551:13
rear 420:25
421:2
reared 440:3
rearing 376:7
418:9 424:1,4
432:25 433:1
439:15 441:24

441:24 442:5
444:15 475:2
485:21 488:9
492:7
reason 399:20
402:4 423:9
492:1 530:16
535:5 543:9
reasonable
494:13
reasonably
505:15 534:18
reasons 423:25
460:3,4 467:23
rebuttal 405:2
recalibration
458:21
recall 337:18
392:4 397:24
recalled 332:6
455:12
receive 471:17
485:24 533:16
544:6,9,19
547:13
received 330:3
411:19 415:4
416:8 417:20
417:23 439:8
441:6 450:20
451:16 452:6
521:6 541:16
receives 333:11
receiving 547:12
recess 408:9
530:14
recessed 331:11
454:21
recognize 411:7
414:9 415:13
528:3
recollect 532:13
538:6
recollection
400:1 531:3
recommendat...
499:5
reconvene 454:7
454:21
reconvening

331:3
record 369:10
371:2,5 375:14
378:19 382:12
402:5,9,16
404:6,15
408:11 409:15
443:8 446:24
448:12,13
455:3 482:2
520:3,20 524:8
524:12,23,24
527:6,23
528:16 530:15
534:3 535:10
537:20,25
539:2,4 540:11
540:22 542:19
542:21 547:13
551:11
record's 511:13
records 488:25
recover 425:2
recovering
473:19
recovery 422:10
444:8,18
recross 329:2
390:23 397:3
515:13
recurs 426:21
red 480:8,16,17
480:22,23
488:1,23
491:16 492:4
redirect 329:2
379:15,19
396:7,12 453:9
513:15,18
reds 389:10,12
389:14 486:9
488:19,25
493:21 502:7
502:13
reduce 335:23
335:25 336:12
338:25 339:10
386:4 432:20
432:21 437:1
437:14,19

444:14 474:24
476:17,18,19
reduced 424:2
431:19 432:3,5
479:18
reduces 362:24
424:1 431:12
432:18 433:6
reducing 336:15
386:23
reduction 423:8
441:16
reductions
431:19 440:20
441:10,15
reel 501:12
refer 346:19
450:10,10
550:4
reference 350:1
397:14 447:3
448:22 502:23
508:20 512:10
550:20
referenced
350:4,6 497:10
528:6 549:6
550:15
references 405:3
referencing
470:17
referred 352:17
410:21 411:16
414:1 415:1,5
416:5 438:9
439:5 440:4
441:3 446:7,7
450:17 451:13
452:3 521:1
529:12 537:1
referring 354:14
363:16,19
366:14 367:24
391:16 403:12
455:18 502:23
511:15 512:20
512:23
reflects 524:25
refraction
429:19

refugia 456:5
502:18
regard 336:21
337:14 346:19
370:3 373:1
393:19 396:9
403:25 521:14
543:19
regarding 394:9
419:2 433:25
445:8,12 463:9
474:7 475:10
475:13 476:9
477:9 478:7
484:10 514:15
515:3
regardless 371:9
390:4 534:7
regards 491:8
regs 549:13
regulations
379:10 400:13
497:18 504:2
regulatory
397:17
rehabilitation
335:8 336:5
relate 442:2
446:25 456:16
related 393:6
397:20 399:5
413:18 418:8
418:10 420:13
434:14 437:6
438:6 441:17
444:23 510:6
relates 420:11
relation 382:16
502:24
relationship
335:10
relative 393:20
394:8 456:21
relatively 342:9
344:6 351:14
384:13 461:21
482:22
release 467:15
501:2
released 464:1

408:7,20 419:3
428:21 434:21
437:17,19
444:14 447:12
447:21 449:5
449:21 450:11
451:6,23 452:8
454:5,18 455:4
455:7 459:23
460:20 461:8
462:18 463:3
469:19 470:7
470:25 476:13
479:11 484:6
484:21,25
485:23 487:17
488:8,21
490:21 494:3
496:4 497:17
499:2,4 501:4
501:23 504:10
504:13 508:17
510:19 511:16
511:23 512:8
514:11 516:1,2
516:14,18,19
516:24 517:18
517:19,24
518:4 519:6
520:18,18
523:8 524:4,21
525:25 529:7
529:11 530:9
533:14 536:11
542:2 543:13
544:23 545:7
549:9 550:21
552:1
right-hand
356:8
rightmost 353:7
rights 549:4
riparian 422:21
422:24 423:4
425:23 437:13
483:17
risk 421:15
437:18 438:4
440:16 483:21
493:23 510:22

Risks 440:21
river 332:22
351:7,8,9,11
352:22 353:1
353:16 354:21
354:22 355:17
355:24 360:6
366:6 368:18
371:12 374:16
374:17 375:25
375:25 376:7
376:12,13,20
376:21 377:4,5
377:10,25
378:13 383:17
384:20 385:12
389:7,22,24
391:14,24
392:10,13,14
392:24 393:1
395:13 396:2
413:19 418:9
418:15 419:3
419:18 420:18
420:22 421:2
421:16,25
422:4,5 424:11
426:5,13
427:17 431:5
435:15 437:20
441:22 475:18
475:19,21
481:5 484:4
485:8,10,11,13
487:4,13,25
488:1 489:7
491:2 496:8
497:15 500:11
500:15 502:8
502:10,12
503:11 511:23
river's 426:17
riverbed 425:22
rivers 368:10
378:15
road 508:12
543:5
roads 425:3,3
rock 349:3
380:17,18

381:13 392:9
427:1 469:25
514:13 516:2
516:12
rocks 341:17
348:17 350:18
381:10 424:17
431:10 433:21
443:1 456:4
457:2 469:23
470:23 471:7
481:17 509:25
510:11,15
512:5 515:18
516:8,11
rocky 459:5
rod 501:11
role 412:23,25
413:11,17
414:13 415:20
416:25 417:4
417:10 477:2
roles 417:21
roll 426:25
433:22 462:4
Ron 542:13
roots 431:8
Rosa 417:5
roughly 464:13
467:5 472:9
486:21
rounded 348:17
348:23 349:3,6
353:3 386:25
rove 491:13
rule 400:8,9,11
400:11 542:14
546:2 548:6
rules 542:15
548:23 549:5,7
549:12,17
ruling 373:11
523:13 540:24
548:9
run 374:19,20
428:19 456:8
494:19,21
502:6 541:12
rundown 542:6
running 434:13

437:17 516:18
runoff 392:8
489:8
runs 422:25
rushed 530:5
RX-1 405:18
524:15,17,20
RX-2 403:12
519:10 520:3
521:25 524:17
533:12 534:7
RX-3 405:18
524:17,21
RX-4 403:13
519:10 520:3
522:1 524:17
533:12
RX-9 403:13
519:10 524:16
524:17

———————
S
S 329:1 330:1
331:1 455:1,1
455:1
SA 417:2
sacrifice 523:25
safe 480:14
492:14 552:2
sake 467:11
salmon 374:20
374:20,23
389:3,5,10,14
418:11 420:16
420:22 426:4,5
426:5 438:21
439:19 440:1
440:21 441:13
442:1 475:19
480:17 481:1
491:23,24,25
501:18 502:6
salmonids
413:15 425:20
429:4,4 444:15
487:11,16
sample 496:15
sampled 496:14
496:16
samples 365:13

sampling 365:25
365:25 388:3
sand 345:1
353:21 355:12
423:11,20
424:15,17,20
427:9 429:6
430:4 433:13
433:16,20,22
442:11 443:3
444:16 456:8
456:25 459:3,4
459:5,7,18,18
462:3,6,15,19
462:23 463:2
474:17 481:22
481:25 486:16
487:22 488:3,4
488:6 505:14
sandbars 487:21
sandbox 443:3
444:21
sands 428:18
434:4 461:19
489:11
Santa 417:4
save 345:9,15
saw 337:24
350:5 498:12
saying 336:25
338:4,14 344:2
357:25 362:2,8
391:17 515:16
532:6
says 338:18
364:9 391:3
451:7 489:16
504:8,11 511:3
scale 344:2
392:12 419:2
473:8 490:10
scattered 502:21
scenarios 503:6
scheduling
543:21
scheme 397:17
science 411:25
412:13 419:8
scientific 410:10
418:2 427:25

scientists 417:25
484:9,14
scope 343:22
371:19 372:14
372:21 396:8
scour 496:2
se 328:21 394:6
season 335:16
337:4 339:12
341:10,12
383:25 387:2
387:10,12,19
387:23 479:20
494:8,12 495:7
seasons 435:10
493:16
Seattle 328:18
second 349:11
351:25 375:4
382:20 384:15
396:4 446:6
465:23 484:8
489:19 499:10
506:7 508:18
521:22
secondly 469:16
section 335:9
361:2 389:24
413:1,2 417:1
420:6,9,10
421:23 425:9
476:7 502:7,9
sediment 345:1
345:2 377:7,9
377:13,16,18
377:25 378:7
378:12,19,24
378:25 385:11
390:1,5,12,14
390:14 392:9
394:12,13
410:11 422:23
423:23,23
424:4,6,10,15
424:21,23,24
425:5,5 432:18
433:25 434:3,7
434:7 457:24
459:3 464:12
465:6 467:7

471:15 474:23
482:23 486:16
496:21 498:18
sedimentation
410:11 430:11
430:14,19,22
431:4 432:7
433:11 435:2
472:18
sediments
374:12 390:9
424:7,12
428:12 429:1
429:22 430:14
430:15 435:18
442:11 467:14
467:15 469:15
482:17
see 337:10
338:15 346:14
352:21 353:4
354:10,12,17
354:18,20,21
354:22 355:3
355:18 358:1
366:20 368:21
369:2 380:22
380:24 381:3,7
381:9 387:18
387:21 402:4
408:4 429:9
445:25 446:1
456:2,3,24
457:2,9,17,18
458:7 459:24
460:7 461:5
466:24 468:14
468:15,17,22
469:21,22,25
470:2,5,24
472:15 474:17
476:25 486:10
488:23 489:2
495:10 498:21
503:13 510:5
511:6,8,22
512:4 513:8
515:17,22,23
516:6,6,12
546:12

seeing 357:17
368:12 488:18
538:25
seek 527:13,22
seeking 529:16
533:17
seen 344:13
361:11 367:7
374:22 377:6
490:25 491:5,6
549:22,25
send 544:2,15
548:8
sending 544:24
sense 452:16
499:19 502:3
540:18
sensitive 334:11
429:5 430:25
464:21 505:17
sent 464:14
537:24 538:4
538:15,15
547:24
sentence 531:1
sentences
369:10,10
separate 356:16
separated
481:20
separation
436:22
September
494:3
serious 392:21
429:14
serve 412:21
445:21 455:22
478:12 539:20
541:1
service 332:19
333:14,17
334:4,17 336:4
366:2 370:2
388:17 399:18
400:9,13
409:20 413:23
417:21 420:19
437:10 458:15
475:13 504:7

544:2
Service's 369:21
session 517:15
set 398:20
448:25 449:5
493:6,16 494:1
551:22,25
sets 439:22
setting 499:15
seven 340:20
513:10 520:14
shade 423:9,13
shades 431:7,11
shallow 442:25
457:18,20
458:8 467:25
468:22 470:6
488:9 510:21
shape 425:23
434:15
share 538:11
539:25
sharp-edged
350:18
shift 494:23,25
495:3,4,7
shoot 462:4
shoreline 350:19
353:3 381:5
512:5
Shoshone 417:6
417:17
shovel 361:20
show 364:4
367:1 479:3
538:13
showed 361:11
showing 380:9
shown 382:18
shows 380:6
431:1
side 338:7
344:14 348:13
348:13,14,15
351:7,9 352:19
353:8,9,11,13
354:11,12,13
354:20 355:19
356:8 461:5,5
489:22 510:14

510:23 511:7
511:23,23
sign 333:12
530:18 531:12
531:12
signed 527:20
530:20 534:6
537:17 539:3
significant
473:20 489:9
545:9,16,20,25
546:5
silica 434:5
459:24
silt 353:21
355:12 374:11
377:19 391:12
391:13 457:22
459:19 461:19
461:20,22
462:9 486:16
489:11
similar 341:1,6
343:15 417:1
443:25
simple 443:3,4,4
443:5 486:12
simplification
444:16
simplified
423:12 424:18
simplifies 424:8
424:18 442:5
442:20
simply 442:13
537:25 547:2
simultaneously
405:21
single 505:18
sinking 462:12
sinks 508:13
siphons 464:25
sir 342:12
354:18 356:11
426:9 443:14
491:9 496:4
508:6 511:22
513:5 515:23
sit 453:15
541:14

spreading
362:24
spreads 361:20
spring 374:16
374:20 376:6
376:17 377:15
392:8 427:7
483:8 486:5,21
489:8 490:1,22
491:23 492:2,5
494:24 495:5
502:6
spring-summer
426:4 486:1
488:14 502:16
503:7
square 343:11
386:19,24
515:21 541:6
Sr 328:4,21
553:4
stability 456:8
stable 468:7
480:9,9
stablest 490:14
staff 359:16,16
359:19 370:1
stage 408:18
536:22
stages 428:8
staggered 547:7
stamp 448:8
450:14 451:11
stand 366:18
401:17 445:18
standard 396:1
standards
396:13,18
standpoint
362:17
star 380:16,17
starred 381:11
381:13
stars 380:12
start 334:6
346:9 383:2,3
429:9 446:3
447:8 493:20
494:3 504:25
512:5 541:17

546:25
started 331:4,22
356:2 378:22
391:1 467:9
476:20 482:3
Starting 455:25
state 361:10
382:8 388:18
391:23 409:14
414:11 417:3
434:14 444:18
486:1 498:2
stated 358:17,22
363:23 364:12
365:18,18
398:17 485:9
485:10 489:4
507:4 519:1
521:9 535:17
statement 357:7
357:13 361:4
366:20,21
367:13,24
371:11 377:24
378:16 379:10
498:6
statements
388:6 529:18
534:5,14,16
538:23
states 328:1
377:12 506:1
531:4 553:11
statistical
494:14
status 420:7,10
420:13 421:8
421:24 422:12
stay 343:11
394:20 428:21
430:2
steelhead 366:5
369:16 374:21
376:24 377:3
420:18 421:2
421:16 422:4,5
475:19,22
485:8,10 486:4
486:7,12,14
488:17,18,19

500:16 501:19
502:4 503:12
steeper 487:20
steer 435:4
stem 376:2
420:23,25
421:6 422:2
423:1 485:11
485:13,21
488:4 491:4
502:10,20
step 444:2
Stern 505:22,23
Stevens 415:17
425:10
stick 480:3
sticking 457:20
470:1,16,25
stipulate 382:25
383:4,10
stipulated 391:1
stipulations
538:7,12
stock 500:9
stones 427:9
stop 338:23
357:1 411:11
430:21 504:19
stopped 479:21
479:22
stopping 399:6
452:23 453:5
stops 356:23
stored 436:12
straight 516:9
straightforward
505:12
stream 334:21
334:23 335:25
335:25 336:8
336:16 338:19
339:8 342:9
348:18,20,21
348:24,25
349:1,2,4,5
351:13,16,18
353:4,21 356:3
356:8,15
360:12 363:1
373:14 377:20

384:23,23
385:1,15
394:20,25
395:7 413:25
418:8 421:4
428:17 431:7
432:16 434:16
434:22 435:19
436:2 437:13
438:21 439:16
456:8 462:14
468:5,10,14,15
468:22,23,24
469:19 470:1
472:10,11,20
472:22 473:1,7
473:24 480:4
481:7,16,16
482:6 483:16
483:18,22
489:10,22,25
491:15 496:9
497:20 500:10
503:24 513:3,4
513:6
streams 342:10
491:3 496:16
Street 553:20
strength 439:22
stretch 535:24
strict 372:24
strong 425:19
strongly 437:4
structure 456:8
457:3 481:24
studies 427:25
441:20 463:9
497:12
study 341:22
342:5,5 387:2
439:11 441:9
458:19 496:7,9
497:16 505:22
506:3,12
stuff 370:11,12
530:21,22,23
532:12 545:6
sub-basin
497:15
sub-yearling

491:15
subject 348:18
396:7 405:13
438:7 478:6
542:17
sublethal 430:6
437:23 438:1,2
438:4 441:11
441:11 465:3
501:16,18
submit 449:6
450:7,8 518:7
521:17 547:5,9
submits 333:11
submitted
332:19 405:23
522:2 527:19
528:11,20
531:7 535:13
537:21 539:4
539:10,22
subsequent
341:20
substantive
545:3,9
substitute 540:1
substrate
348:18,23
354:25 355:1,3
355:11,16,16
355:18 360:5
361:6 394:13
410:20 425:22
426:18 427:17
434:16 462:11
462:18 463:1
463:23 468:16
468:20,23,24
468:24 471:10
480:1,4,5,11
480:18 510:21
substrates
426:23 430:17
430:18 432:13
464:4 467:4
471:20
subsurface
432:15
successfully
501:21

successive
473:14 474:25
suck 482:20
suction 332:21
334:5,20,20
335:19 337:5
339:21 340:3
342:10 343:9
343:13 358:20
358:20 366:3,7
366:9 367:16
369:15,18,22
370:3 379:7
385:21 388:15
388:16,20,21
389:16 391:11
391:14,19,25
392:10,19,22
392:23 393:14
394:8,15
395:15,23
398:17,19
410:2,16,17
413:22 414:11
415:19 418:16
419:2,17
426:10,11,16
427:3,18 428:1
428:11 430:10
434:19 435:14
436:23 437:6
441:21 442:2,4
442:20 443:17
472:3 475:11
478:8,11,16,25
481:3,8,14
482:5,11,16
483:2,5,18
484:10,15,16
489:5,6 490:8
490:24,25
493:6,14,25
498:3 513:22
514:1
suffer 388:7
suffice 456:22
sufficiently
343:18
suffocation
427:13

suggest 367:12
424:9
suggests 368:6
Suite 328:18
553:19
sulphur 435:21
436:7
sum 425:18,24
summarize
410:13 419:7
summary
443:17 539:11
summer 395:2,6
465:15 492:8
494:24
sundown 498:16
sunup 498:16
suppose 546:20
supposed
395:23
sure 349:24
361:7 364:20
365:8 371:4
375:7 378:3,5
390:3 399:11
401:14 402:13
404:21 405:25
406:18,19
407:9,18
408:17,23
447:1,22
448:19 450:10
451:18 452:21
476:10,22
492:16,16
493:25 496:15
497:8 498:22
508:19,25
511:13 513:17
516:3 523:5
524:2 530:12
541:12 542:10
548:4 549:11
550:13
surface 354:7
362:7,10
435:20 437:17
462:1,18 463:1
463:1,4 468:15
468:16,17

469:17 470:1
470:25 471:7
471:11 481:9
481:18 495:23
514:24 515:1
515:18 516:16
516:16
surprise 538:24
surrogate 434:7
434:8 504:15
504:16
surrounding
360:14
survey 486:12
489:3
surveys 486:13
survival 418:8
418:10 424:1,3
426:8 432:21
441:13,17,18
442:1,15
444:14 474:24
475:2,2 491:19
survive 392:17
392:20 393:1
489:21,21
490:19
surviving
394:17
suspended
385:16 392:9
429:5,6 430:15
430:16,18
462:2,3 464:14
467:2
suspension
428:12,23
429:1,22
430:14,19
549:19
sustain 374:7
398:10 499:23
sustainable
371:20 393:11
398:8 506:18
sustained 371:5
Swan 328:22
swearing 525:7
sweet 487:16
488:7

swell 467:4,12
467:13,17
482:24 508:20
509:10
swim 433:4
510:14,17,22
swimmers
510:13
swimming
373:18
sworn 331:17
332:5 349:18
349:18,21
409:8 455:11
529:17 534:6
537:18 539:3
540:16
system 377:21
379:2 420:18
481:5 482:17
485:13
systems 377:10
377:25 378:13

_____
T
_____

T 329:1,1 330:1
455:1
T-H-A-L-W-...
385:5
table 422:17
424:9
tail 493:3
tailfin 493:1
tailing 340:20
358:18 359:10
361:10 383:3
464:5 472:7,8
472:8,12 507:5
509:19 515:25
tailings 335:21
335:22 336:1
336:17,21
337:4,5,6
338:2,9,12
341:1,15,17,18
343:3,25
344:11,22
348:9 349:8
350:6 358:21
358:25 359:24

359:25 360:2,5
360:11,15,25
361:8,21,24
363:12,17,21
363:24 364:11
364:23 377:8
382:6,15,18
384:14 388:11
390:25 428:21
435:1 464:13
466:25 469:6
469:11,15,23
469:25 470:6
471:18,19
472:1,13,18
473:4,6 479:25
480:7 509:20
512:4 514:21
515:16 516:5,6
516:15 518:25
tails 480:11
495:20
take 334:7 337:4
348:8 351:24
352:18 365:13
365:16 368:20
368:24 374:25
401:17 406:4
427:8 444:2
446:5 453:4,12
454:5 465:2
472:9 476:18
489:6 500:12
500:21,22
501:23,24
506:20 510:4
511:2 528:18
528:20,22
529:19 530:5,6
536:14
taken 338:15
348:3,5 352:20
358:18 359:1
380:5 382:13
408:9 425:1
434:10 500:4
508:7 511:24
529:16 530:14
takes 361:20
388:24 462:24

489:6,19
508:16 547:22
talk 371:10
396:13 426:9
426:15 466:8
talked 336:15
341:14 367:15
373:14 390:25
392:2 396:11
427:15 471:5
480:19 533:12
talking 341:21
343:24,24
346:21 352:24
353:7 354:9
360:25 363:21
368:6 370:6
385:20 392:13
392:16 403:25
447:17 456:17
468:19 485:18
486:15 502:8
502:11 507:16
534:24
talks 549:4
tape 359:14
tapes 553:10
task 547:19
team 351:5
395:22 416:22
417:24
technical 413:24
417:2
technically
372:21 396:21
398:7
technicians
340:19 359:1
362:4 364:3,7
365:22 380:8
380:15
tell 335:5 340:24
354:24 384:3
398:19 488:22
496:20,22
temperature
371:13 372:4,7
373:2,15 423:5
423:7,10
486:25 487:5

temperatures
483:9,11
ten 343:14 368:8
389:6
tend 336:12
341:19 351:15
353:24,25
354:3 385:17
386:4 425:4
462:4 486:24
487:1,12
502:17 546:16
547:2 548:22
tendency 494:16
506:6
tender 418:14
tends 353:16
432:20 433:22
term 334:4
384:22 492:17
terminology
500:18
terms 333:13,21
346:24 419:12
476:1 513:21
514:5
testified 332:7
332:25 345:19
349:20 370:20
372:20 373:7,8
373:13 393:8
397:22 398:2
402:12 409:9
418:25 442:20
451:22 455:13
461:13 465:7
465:24 466:10
514:8
testify 371:16
397:24 401:22
403:21,22
405:10 409:25
410:1,15 517:7
531:24 534:21
537:15
testifying 407:3
407:10 418:3
testimonial
518:2
testimony

341:22 346:18
347:18 349:10
349:14 350:14
361:4 363:13
365:12,19
368:2 371:19
372:16 374:13
380:1 391:3,5
392:18 393:5
395:22 401:1
403:19 406:21
407:5 433:25
443:10 445:12
450:1 452:24
463:9,18 474:2
474:7 477:9
486:5 506:12
508:9,20 509:8
520:5 527:10
534:2,15,20
535:3,14 537:9
537:13,14
540:2,15 541:2
542:16,16
543:24
testing 496:18
507:20
thalweg 351:7
351:10,15,18
354:2 355:23
384:20,21,22
385:4,10,15
459:17 460:6
468:1 510:23
thank 337:10
340:9 341:21
345:17 347:8
347:20 352:4,9
369:1 379:6
382:19 385:6
385:19 390:16
390:18 393:25
395:17 396:25
397:6 400:5,17
400:24 401:1
406:24 408:3,6
408:7,8,22
409:5 421:20
422:15 426:9
428:11 431:21

443:6,12
444:22 446:4
452:7 453:6
454:16,17,18
457:4 459:9
460:21,24
463:5 466:8
469:4 471:2,9
471:22 473:25
475:4 478:6
491:8 492:24
495:10,10
497:17 503:17
505:21 509:16
511:11 512:25
515:7 516:24
517:1,24 519:5
519:6 523:15
524:21 527:1,3
530:13 541:4
542:22 543:12
546:14 550:9
551:17 552:1,5
552:6,7
theory 350:11
thereof 520:11
thermal 493:16
502:18
thickness
344:24
thin 437:14
thing 345:16
362:11 372:12
377:6 386:2
395:9 398:24
427:23 443:2
450:11 458:15
458:22 478:22
481:22 490:10
490:16 491:14
502:4 505:11
514:20 535:14
things 339:12
345:10 365:4
368:16 386:19
397:17 399:19
407:23 410:12
413:25 495:1
496:10 498:21
509:7 513:22

517:10 518:17
519:4 532:9
533:16 545:11
545:12
think 331:11
333:4 341:22
341:25 347:23
350:1 357:17
362:8,19
364:16,19
367:11 368:12
369:2,10 370:2
373:3,17 378:1
378:3,7 380:1
382:21 393:8
393:10,11,18
393:18,22
394:10,10
396:6,11
397:19,21
399:3,10,23
400:23 401:10
402:17 405:2
406:14 417:14
423:3 428:17
431:25 442:19
443:10 446:14
446:23 448:10
448:13,19
449:22 450:23
454:4,7 455:4
456:14 460:18
465:8 470:4
471:5 478:23
480:15 491:24
492:17 493:8
496:2 500:15
502:2,3 506:17
509:2 510:2,17
512:12 513:7
515:22 518:21
518:23 522:13
523:12 524:22
527:21 528:5
528:21 530:23
530:23 533:3
536:7,9,12,13
537:7 540:14
541:25 542:9
547:22 548:22

22 518:21
541:22 549:15
22.22(c) 542:14
220 339:1,3
22nd 337:24
348:6,10 380:5
387:7 410:2
25 460:1,13
464:17
28 541:23
29 541:23

3

3 334:2,3,18
335:3 472:12
30 433:16 458:5
460:1,14,15,18
464:17 503:23
303-impaired
487:5
303D 373:15
303D-impaired
371:13
33 330:11
410:24 411:5,9
411:18 416:13
332 329:5
34 416:12
525:19 541:24
346 329:5
35 541:24
3500 481:1
37 340:10
379:22,22
471:23
379 329:5
38 463:16
466:13 514:10
541:24
39 541:24
390 329:5

4

4 328:6 330:15
404:4 498:9
521:5 534:7
536:14,16,17
537:4
40 458:5 460:18
492:5 503:23

505:3 549:13
40-some 344:3
409 329:6
410 330:11
411 330:11
414 330:7
415 330:7,8
416 330:8
438 330:9
439 330:9
440 330:10
441 330:10
45 454:7,11,13
450 330:4,4
4500 481:1
451 330:5,5
452 330:6,6
46 328:21
485 329:6

5

5 340:16 341:7
343:25 347:4
352:3 363:11
363:17,19,21
363:24 364:7
364:10,12,13
364:23 365:15
371:10 382:7,9
382:17 383:1
387:8 390:25
445:15 447:10
450:14 451:11
464:9 466:11
472:1,4,9,12
474:3 494:20
494:21 515:23
518:24 542:12
5's 348:9 507:6
5- 528:22
50 397:13 425:1
429:25 433:16
473:7 505:3
50-mile 489:17
500 396:3
506:20
500-foot 397:11
504:1
513 329:6
515 329:6

521 330:14,15
537 330:14,16
55 474:3
553-1938 328:19

6

6 347:4,6,14,16
445:15
60 492:11,15
63 474:4

7

7 335:6 340:16
341:7 344:1
348:9 361:25
363:12,17,22
363:24 364:11
364:23 365:16
382:6,18 383:2
391:1 413:2
417:1 471:5
472:1,4,9,9
474:4 518:25
536:15
7's 507:6
7th 387:3

8

8 335:6
8:28 328:11
331:2,5
80 492:9,15
800 339:8
800-foot 398:5
83449 328:22
8th 380:9 382:13
387:3

9

9 330:15 335:6
404:5 520:3
521:5 522:1
533:13 534:7
536:16,17
537:4
90 493:21
900 328:18
96 417:14
98101 328:18
987 476:5

99 416:23
995 420:1