

1 PUBLIC HEARING BY THE PIERCE COUNTY HEARING EXAMINER

2  
3 In Re: )  
4 Administrative Appeal: AE1-10 )  
5 Appellants: Coalition to Protect )  
6 Puget Sound Habitat and Case Inlet )  
7 Shoreline Association )  
8 Shoreline Substantial Development )  
9 Permit: SD22-06 )  
10 Applicant: Longbranch Shellfish, )  
11 LLC )  
12 )  
13 )

14 Excerpt of Transcript of Proceeding

15 Before STEPHEN J. CAUSSEUX, JR.

16 Wednesday, March 16, 2011

17 APPEARANCES

18 For the Appellant Coalition to Protect Puget Sound Habitat:

19 LAURA HENDRICKS  
20 3919 51st Avenue Court Northwest  
21 Gig Harbor, Washington 98335

22 For the Appellant Case Inlet Shoreline Association:

23 CURT PUDDICOMBE  
24 P.O. Box 228  
25 Vaughn, Washington 98394

1 APPEARANCES - (continuing)

2 For the Applicant:

3 SAMUEL PLAUCHÉ  
4 LAURA KISIELIUS  
5 AMANDA STOCK  
6 Plauché & Stock, LLP  
7 811 1st Avenue, Suite 320  
8 Seattle, Washington 98104

9 For Pierce County Planning & Land Services:

10 JILL GUERNSEY  
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12 955 Tacoma Avenue South, Suite 301  
13 Tacoma, Washington 98402

14 Also present: Ty Booth, Senior Planner, PALS  
15 Adonais Clark, Environmental Designee, PALS  
16 Dave Risvold, Environmental Biologist, PALS  
17 Jenny Pelesky, Clerk

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24 Reported by: Linda M. Grotefendt, CCR  
25 License No. 3013

1 (Herein begins the excerpted portion of the  
2 transcript.)

3  
4 CAPT. CHARLES MOORE, having been previously  
5 sworn upon oath by the Hearing Examiner, testified as  
6 follows:

7  
8 THE WITNESS: Is the swearing in from yesterday  
9 still good?

10 THE HEARING EXAMINER: You're still sworn in, yes.

11  
12 NARRATIVE TESTIMONY

13  
14 THE WITNESS: Okay. Well, I've had a little time  
15 to look over some of the materials. So I want to make some  
16 statements about different types of plastic that are  
17 involved in the operation, because most of the testimony has  
18 revolved around the tubes themselves, but, actually, there  
19 are at least three different types of plastic involved in  
20 the operation, and they have different characteristics and  
21 do different things in the marine environment.

22 The zip ties are nylon. Nylon is denser than water and  
23 will sink to the bottom, as will the tubes or parts of tubes  
24 if they get broken off.

25 The netting is polyethylene, which floats, and it seems

1           like it may have been the reason why it was gathered in a  
2           different part of the water column in the trawls that were  
3           done. I should mention that the Tacoma Narrows Bridge,  
4           where the trawls were done, is a substantial distance from  
5           the majority of the geoduck farms.

6           And the idea that 17 percent of the cleanup that was  
7           done by the industry was from aquaculture and that the total  
8           was 72 dump trucks -- I did the math on that. That means  
9           they got 12 dump trucks full of debris from the aquaculture  
10          operations, which makes it kind of weird to dispute the  
11          quantitative analysis.

12          You know, there is a range there, but it's a substantial  
13          amount of aquaculture debris. If it's 12 dump trucks full,  
14          17 percent of 72 dump trucks, that's a substantial amount of  
15          debris, and it travelled from the area of the aquaculture  
16          operations to the Tacoma Narrows Bridge area, which is a  
17          substantial distance away.

18          So the plastic is mobile. And being of different types,  
19          it will occupy different areas in the water column and do  
20          different things.

21          Now, it was mentioned that there were research-and-  
22          development attempts made using things of this nature:  
23          screen. This is a polyethylene screen, which does float. I  
24          got myself a cup of water and broke a piece off. Now, you  
25          wouldn't expect this -- this is rather flexible and, when

1 it's initially installed in the operation, it would be very  
2 difficult to tear. It's a very tough plastic. But you can  
3 see this has had some bio-fouling. It's been exposed to  
4 tidal range.

5 And what hasn't really been talked about, and I  
6 neglected to really mention yesterday, was the effect of UV  
7 radiation on the plastic. The sun is really the primary  
8 degrader, cross-linker, of polymers. And this particular  
9 unit, having been exposed in the environment, is now  
10 brittle. So it was quite easy for me to break off a piece  
11 and float it in this cup of water to demonstrate that it was  
12 a lighter-than-water polymer. I'm sure that it's  
13 polyethylene.

14 So polyethylene is the most absorptive of persistent  
15 organic pollutants. A lot of the testimony here has focused  
16 on metals. But, really, what concerns me most about plastic  
17 pollution is its ability to absorb what we call persistent  
18 organic pollutants, the oily pollutants that are used in  
19 agriculture and industry, things like PCBs, DDE, also the  
20 products of combustion that I talked about yesterday in the  
21 distillation of the atmospheric pollutants into this sea  
22 surface micro layer. They're what we call the polycyclic  
23 aromatic hydrocarbons.

24 These petroleum-derived pollutants absorb into the  
25 matrix of this polyethylene very readily, much more

1 readily -- it was pointed out that PVC is a more rigid  
2 plastic. It's got all this chlorine in it. It's not as  
3 permeable as these ones that are mostly just carbon and  
4 oxygen. So the polyethylene really is a better absorber of  
5 contaminants and a transmitter of contaminants in the marine  
6 environment.

7 In fact, it's the best of the plastics at absorbing and  
8 then desorbing in the gut of creatures that ingest these  
9 plastics. The chemistry is such that it's capable of  
10 desorbing and removing those contaminants that have absorbed  
11 to it into the gut of the animal. So the photodegradation  
12 that's taking place, cross-linking the polymers, making them  
13 brittle so that they break off -- this will occur faster in  
14 the nets than it will in the PVC pipe.

15 And just from my own research, just to inform you about  
16 the delectability of plastic, the desirability to eat  
17 plastics, I brought these that I found in the marine  
18 environment. This is a soap bottle that's been completely  
19 pecked here by some animal. Here's one bottle that is full  
20 of shark bites. You can see the impression of the teeth of  
21 the shark.

22 And here is a bottle that's nothing -- the bottom of the  
23 bottles are typically a bit thicker. So this particular  
24 bottle had been completely eaten away, and all that's left  
25 is the base of the bottle, with a little mark from the

1 molding machine.

2 So these are not specific to Puget Sound. These are  
3 from another part of the Pacific Ocean. But the point is  
4 simply that losing 17 dump trucks full of plastic into the  
5 marine environment -- it's not logical to assume that there  
6 will be no ingestion of that plastic. It's also not logical  
7 to assume that the persistent organic pollutants that have  
8 been absorbed to it won't desorb into the organism that  
9 ingests it. And I believe that that is a significant  
10 adverse impact.

11 Now, as to the ability of the material to leave the  
12 aquaculture site, I just want to demonstrate here -- and I  
13 haven't done anything to alter this tube that, I guess, was  
14 found in a cleanup. But it's attached -- the screen is  
15 attached to the tube by one of these nylon zip ties, it  
16 looks like, or perhaps a rubber band, since I don't see the  
17 clutch on the zip tie. Yeah, it must be a type of a rubber  
18 band.

19 But in any case, the energy that's required to remove  
20 this is very slight, and this is a floating plastic. This  
21 is a polyethylene net that wants to leave the tube, in the  
22 sense that, as the tide comes in, it's buoyant, and tube is  
23 heavier than water, so it's -- they're sort of fighting  
24 against each other. One wants to stay in the sediment, and  
25 the other one wants to get up and leave. That's a

1 prescription for a loss of the material to the environment.

2 Also wanted to address the issue of the polymerization  
3 of PVC. It was mentioned, by Dr. Schenck, that the vinyl  
4 monomer is toxic, but that, when it's rigidified in the  
5 polymerization process, it loses that toxicity.

6 But what she failed to mention was that the  
7 polymerization process is never 100-percent perfect. It's  
8 an industrial process. It uses catalysts and, when one  
9 polymerizes these vinyl monomers, one has within that  
10 plastic a certain amount of free vinyl monomer that can  
11 leach out into the environment.

12 And so even though the majority of the plastic is less  
13 toxic than the monomer, there are still monomers in that  
14 which will leach out as they come in contact with the marine  
15 environment.

16 Now, let's see. I have here -- I was provided by  
17 Ms. Hendricks with a couple of photographs, and they seemed  
18 instructive in your review of the permit inasmuch as they  
19 show the kind of changes that occur to the operation as time  
20 goes on.

21 The first picture that I'd like to show you is one --  
22 now, we saw a very interesting video of tubes that were  
23 uncovered by the netting, which I assume is part of the  
24 routine culture of the clams, that netting becomes unneeded  
25 after the clams reach a certain stage. They're no longer

1 subject to predation. I guess sea otters aren't a problem.  
2 So they take the nets off, and, in the video, there were no  
3 nets.

4 However, in this particular picture which I'm going to  
5 -- I don't have copies of, so I'll just bring it over to  
6 you. It shows an array of tubes in which some nets are  
7 there and some nets are missing. Some tubes are whole, some  
8 tubes are broken.

9 THE HEARING EXAMINER: Is this in the record as an  
10 exhibit?

11 MS. HENDRICKS: No. No. I just gave it to him.

12 THE HEARING EXAMINER: Do you want to show --

13 MS. KISIELIUS: Can we look at it?

14 MR. PLAUCHÉ: Where is this taken from?

15 MS. HENDRICKS: This was a picture of Totten Inlet.

16 MR. PLAUCHÉ: Do you know what farm?

17 MS. HENDRICKS: It's the Taylor farm.

18 MS. STOCK: How about a date?

19 MS. HENDRICKS: It was either 2006 or 2007.

20 MR. PLAUCHÉ: Do you know which Taylor farm it was?

21 MS. HENDRICKS: It was -- I don't know. I can't  
22 tell you.

23 MR. PLAUCHÉ: I'm asking because Taylor doesn't use  
24 tops, so it's not calculating that that's a Taylor farm.

25 MS. HENDRICKS: Well, it's on the shoreline of

1 Totten Inlet. I can't tell you specifically right now.  
2 It's Totten Inlet.

3 MR. PLAUCHÉ: We won't object to the picture.

4 THE WITNESS: I won't give these other photographs  
5 to you. It's the same sort of deal where they're --

6 THE HEARING EXAMINER: That's okay. We're going to  
7 admit this one. So --

8 THE WITNESS: Yeah. Well, there's no need for me  
9 to dwell on that except to say that there is a -- and the  
10 evidence shows, I mean, from the industry itself, that there  
11 is a loss and that they're concerned about it. And the  
12 question is, really, before you: Does it amount to a  
13 significant adverse impact?

14 And I'm here to tell you that, based on my research,  
15 based of these ingestion studies that we've done, based on  
16 the number of studies that are coming out showing fish  
17 ingestion, it is a significant impact.

18 With this new field of science, this new inquiry into  
19 the environmental impacts of plastic, it sort of obeys the  
20 Biblical injunction "seek and ye shall find." If you really  
21 look for these things -- and I admit that, when they looked  
22 in the sediments, they couldn't find PVC. But we also  
23 learned that it would be extremely microscopic, small  
24 amounts that would be missing after an extended period of  
25 time, that they would be transported away from the site,

1 that they weren't found in the site, which -- and indeed,  
2 the trawling that was done, that found the aquaculture  
3 residue, was not near the aquaculture site.

4 So it's the very mobility of plastics in the marine  
5 environment that makes it have such adverse impacts. And I  
6 described some of the different ways in which those impacts  
7 are manifested yesterday.

8 Let's see what we've got here. Now, I'm a proponent of  
9 aquaculture, and I want to give you a scenario. In some  
10 future world, I believe we will be able to get together and  
11 not have a five-year delay in realizing these permits. And  
12 I think what I can offer up as an ideal future scenario is  
13 aquaculture that is part of a green machine that is carried  
14 out on a land-based farm.

15 What we're able to do with halophyte agriculture, which  
16 is salt-loving plants like salicornia, is process effluence  
17 from agriculture before they get back into the marine  
18 environment and also retain any of these losses from the  
19 various tubes and materials used in the aquaculture  
20 operation on land.

21 So I can actually imagine reclaiming damaged wetlands  
22 areas in geoduck aquaculture by having the installation be  
23 an enclosed area surrounded by land in which the runoff is  
24 then passed through a farm of saltwater-loving plants, the  
25 halophytes, that will bio-remediate any toxics in the water

1 and stop the migration of any losses of equipment from the  
2 farm before it goes back into the ocean.

3 It's as if you make a fence of greenery, a bio-swale of  
4 plants. And these salicornia actually contain a seed which  
5 has the quality of oil of safflower oil. The University of  
6 Arizona has done experiments creating generations of these  
7 plants. So you'd have -- we've had testimony from the  
8 agricultural sector and the aquaculture sector, and I  
9 believe they can be combined in a future operation which  
10 provides food and fuel and does not -- and actually  
11 remediates and improves the marine environment.

12 So I don't want to come off as someone who wants to see  
13 this industry fail. I want this industry to succeed, and I  
14 believe the possibilities are endless for them to be a  
15 positive contributor.

16 THE CLERK: Your time is up.

17 THE WITNESS: Thank you.

18 THE CLERK: Thank you.

19 THE HEARING EXAMINER: Thank you, sir.

20  
21 (Herein concludes the excerpted portion of  
22 the transcript.)  
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25

1 CERTIFICATE

2 STATE OF WASHINGTON )  
3 COUNTY OF KING )

4 I, LINDA M. GROTEFENDT, a Certified Shorthand  
5 Reporter and Notary Public in and for King County,  
6 Washington, do hereby certify that I reported in machine  
7 shorthand the above hearing; that the foregoing transcript  
8 was prepared under my personal supervision and constitutes  
9 a true record of the above hearing.

10 I further certify that I am not an attorney or  
11 counsel of any parties, nor a relative or employee of any  
12 attorney or counsel connected with the action, nor  
13 financially interested in the action.

14 WITNESS my hand and seal in Renton, County of  
15 King, State of Washington, this 30th day of March, 2011.

16  
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18  
19  
20 \_\_\_\_\_  
21 Notary public in and for the  
22 State of Washington, residing  
at Renton.

23 My commission expires 1-2-2012.  
24  
25