BEFORE THE POLLUTION CONTROL HEARINGS BOARD

STATE OF WASHINGTON

AIRPORT COMMUNITIES COALITION, Appellants, CITIZENS AGAINST SEA-TAC EXPANSION, Intervenor/Appellant, vs. DEPARTMENT OF ECOLOGY and the PORT OF SEATTLE, Respondents.	PCHB No. 01-160

TRANSCRIPT OF PROCEEDINGS

DAY TEN

March 29, 2002
Lacey, Washington

ORIGINAL

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BE IT REMEMBERED that the above-entitled matter came on for hearing before the Pollution Control Hearings Board, Day One commencing on the 18th day of March, 2002, and continuing through Day Ten, the 29th day of March, 2002. The hearing was conducted at the Environmental Hearings Office, 4224 6th Avenue SE, Rowe Six Building 2, Lacey, Washington.

Sitting as the Washington State Pollution Control Hearings Board were KALEEN COTTINGHAM, presiding, ROBERT V. JENSEN, Board Chair, and BILL LYNCH, Member.

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I N D E X

I N D E X

E X H I B I T S

NUMBER	DESCRIPTION	IDENTIFIED	ADMITTED
No. 805	Functional assessment field forms re west side aquisition	10-0065	10-0067

March 29, 2002

Day Ten

MS. COTTINGHAM: Please be seated.

We'll go on the record.

Mr. Pearce, I believe you have one or two more witnesses?

MR. PEARCE: That's correct, Your Honor.

We call Dr. James Kelley.

JAMES C. KELLEY, having been first duly sworn or affirmed to tell the truth, the whole truth and nothing but the truth, testified as follows:

EXAMINATION

BY MR. PEARCE:

Q Good morning, Dr. Kelley. Could you state your name and spell your last name for the record?

A Yes. My name is James C. Kelley, K-e-l-l-e-y.

Q Is a copy of your resume` attached as Tab A to your prefiled direct testimony in this matter?

A Yes, it is.

MR. PEARCE: I note for the Board that Exhibit Number 1008 has been stipulated.

Q Could you briefly tell us what your professional

experience and education has been in your professional field?

A Yes. My education is in ecology and botany. I received a bachelors degree from the University of Vermont in botany. I received a masters degree from Michigan State University in plant toxonomy and plant ecology, and my doctoral degree from Michigan State University in aquatic ecology, where I researched functioning of wetland ecosystems. I have been employed by an environmental consulting firm for 16 years, where I've been performing wetland and other natural resource studies.

Q What is your familiarity with the Port's master plan?

A I've been working on this project for I believe almost six years, so I'm very, very familiar with the planning of the project itself with regards to wetland impacts, the evaluation of wetlands that are on site, the planning and mitigation and the presentation and the modification of those mitigation plans to meet agency requirements.

Q Did you perform a wetland delineation for the Port site?

A Yes, I did.

Q Can you look at Exhibit 1214 and identify that for me?

A This is the wetland delineation report for the master plan updated improvement project prepared by Parametrix and finalized in December of 2000.

Q Did the Department of Ecology review that?

A Yes, they did review this.

MR. PEARCE: I think we may not have the wetland delineation - it's a big one - but I'm not asking any detailed questions about it.

Q And did the Corps of Engineers review the delineation report?

A Yes, they did.

Q Could you briefly describe the conditions of the on-site wetlands preproject.

MR. EGLICK: Objection as to the form of the question. Vague, no foundation.

Q (By Mr. Pearce) Do you know what the conditions of the on-site wetlands were in 1995 and 1996?

A Yes, I do.

Q Would you briefly describe those conditions?

A Yes. The conditions were variable, but in general the wetlands have been degraded and modified by past development activities. There are a number of wetlands that occur on airport property that had been formerly developed as residential neighborhoods, and in those areas the houses had been removed. Some of the trees are still existing and wetland areas were gradually revegetating back to some native vegetation and quite a bit of non-native vegetation. And then in other project areas where the Port did not own the property, the wetlands were

largely in residential areas or in farmed areas and they were often bisected by streets or roads or driveways, they were often part of a lawn or part of landscaping. And then there were some wetlands that were basically abandoned farm land that were nestled between houses and along the edge of the creek, and some of those wetlands that had some native vegetation with nonnative understory.

Q I understand that you brought some photo boards with you this morning. Would you show those to the Board and explain where those photographs are on the map and explain where they are generally?

Let me move this big board to get it out of your way so you can use the easel.

(Witness steps to easel).

A These photographs depict conditions of the wetlands.

Q I'm sorry, if you could turn the easel toward the Board. The other folks can see.

A These photographs depict wetland conditions in various parts of the area at the time of my studies.

MR. EGLICK: I object and ask for two things. First of all, are these listed as exhibits and, if so, which ones?

Q (By Mr. Pearce) Are these photographs included in a report that you prepared?

A Yes. These photographs are included in a report titled

Wetland Photographs and Maps.

Q Okay. Did you take the photographs?

A Yes, I did.

Q Could I have you look at Exhibit 1246, right here.

A This is a report titled Wetland Photographs and Maps, Master Plan Update Improvements.

Q And did you take those photographs?

A Yes, I did.

Q Are they in your opinion representational of what you saw on the site?

A Yes, they are.

MR. PEARCE: I think that's ample for everybody to talk about the photographs.

MR. EGLICK: In the materials we received from the Port, we don't have anything behind 1246 --

MS. MARCHIORO: It's 2035 Ecology.

MR. PEARCE: It's 1246 here on the board.

MS. COTTINGHAM: We don't have the photos under 2035, we have the cover page. But we do have photos under 1246.

Do you have the photos?

MR. EGLICK: That's what I'm looking for. I don't have anything behind 1246, but behind 2035 I have some photos. I haven't found the ones that match what are up there.

MR. PEARCE: Well, we're using these as demonstrative.

MR. EGLICK: Wait a minute. Are the photos there behind 2035 or 1246 or --

MR. PEARCE: They're behind 1246, here is a copy if you would like to look at it.

MR. EGLICK: We don't have anything behind 1246. And then behind 2035, was that the alternative?

MS. MARCHIORO: Yes.

MR. EGLICK: Okay. Behind that there are color materials, but they are aerials. As far as I can see, I don't have anything that looks like what's been put up there on the board.

MS. MARCHIORO: Have you looked at the back portion of that, under tab Wetland Photographs?

MR. EGLICK: Do you have a page number?

MS. MARCHIORO: There's not, but it's about six or eight pages in -- or about four pages in of the photographs, the last three pages.

MR. EGLICK: Thank you.

Q (By Mr. Pearce) Could you describe that photograph for us, Dr. Kelley?

A Yes. This is the photograph of the channel of Miller Creek in the area that it would be relocated. And this site is located at the Vacca Farm area, the area in pink

on this map here. The channel is located within the vegetated area that we mapped as Wetland A1 in our delineation report, and the brown area, this channel is the cropland that was also being farmed at the time we did our study.

Q If you'll go ahead and just briefly show those photos?

A These are photographs that we saw early in the week that were taken by Eric Stockdale on a field trip with Ray Hellwig, myself, and Eric, showing the condition of the Vacca Farm area in the fall of the year when it was plowed and pumpkins have been disposed on the site, and then in the spring of the year when it was plowed and ready to be cropped. And in both cases you can see there's birds using the pumpkin residue and birds using the crop residue in the field.

Another location of the project area would be within the Miller Creek buffer enhancement area where our mitigation is proposed. This photograph shows some of the existing site conditions in the riparian wetlands that are immediately adjacent to the creek channel. So those lawn areas adjacent to the creek channel meet the technical criteria for wetlands and were delineated as wetlands and classified as emergent wetlands by the Corps of Engineers and Ecology. And these are the areas that would be part of our mitigation enhancement plan.

The lower board shows another example where there's some young trees growing within the wetland and lawn. In this area, this would be classified as a forested wetland because there are trees present. In my estimation, I would estimate that these are alder trees and I would estimate they are probably 20 to 30 years old.

Q Is there one other photograph?

A Yes. I just also wanted to point out that in these locations the creek channel has been riprapped with quarry rock and is in an unnatural state.

And then there's another photograph here that shows two wetlands that would be impacted. The top wetland is Wetland 35. And Wetland 35 occurs in this orange area here, and you can see it's orange because it would be filled by the project. And this is also a wetland that occurs largely in the back yards of houses, there's some storage that's actually occurring in the wetland, it's also largely lawn. There's a small area of shrub and forested area between two houses that was not maintained as lawn.

On the large panel of this board is Wetland 37. This is this large wetland area here in the central portion of the site where the wall would be constructed.

This photograph is taken from the east side looking to the west towards Miller Creek, so the line of trees

here in the photograph is Miller Creek and a narrow forested buffer along the edge of Miller Creek. In the foreground is emergent wetland which was pastured a few years previous to when this photograph was taken. And in the foreground this pasture would be filled as part of the project and more in the background of this pasture area would not be filled and that would be part of the restoration area.

So when we've talked a lot about the performance standards for wetlands post construction, this is one of the wetlands where those performance standards would apply to.

Q Thank you. Did you perform a functional assessment and impact analysis for the project?

A Yes, I did.

Q Can I ask you to look at Exhibit 2018. Is this the functional assessment and impact analysis?

A Yes, it is.

Q I notice it's dated -- well, what is it dated?

A It's dated December 2001.

Q Did you prepare an earlier version of this?

A Yes. I prepared a report in December of 2000 as well.

Q What changed between the December 2000 report and here and what was added to this report, if anything?

A This report was changed to reflect new mitigation that was

added at the Des Moines Way nursery site, which is located at the north end of the project area. It was changed to reflect the addition of new mitigation on the west side of Lora Lake. It was changed to reflect the addition of the new mitigation in Wetland A-17, which was part of the 401 condition. And it was also changed to add some additional tables and summarize some information regarding wetlands functions in tables at the request of the Corps.

Q In your opinion, is this functional assessment based on a process that's accepted in your profession?

A Yes, it is.

Q Okay. And is it recognized by any particular agencies?

A The report is based on best professional judgment for evaluating wetland functions. It is a science-based approach to evaluating wetland functions, it's the only method available for assessing the functions of slope wetlands, it's the only method available for Corps of Engineers and other professionals, so it's the method that has to be used when we're addressing slope wetland conditions.

Q Did the Corps of Engineers review the functional assessment?

A Yes, they did.

Q Did the Corps do an independent review?

MR. EGLICK: Objection. No foundation.

Q (By Mr. Pearce) Are you aware of the Corp's responses?
A Yes, I am.
Q How many meetings have you had with the Corps about the functional assessment, in your estimation?
A I've probably had several meetings that focused -- three to four meetings that focused only on the functional assessment and perhaps a dozen or more meetings that focused on a variety of issues, including the functional assessment.
Q Are you aware of whether the Corps has done an independent review?

MR. EGLICK: Objection. No foundation. He has had meetings with the Corps but he can't speak to what the Corps has or has not done, and I can't cross-examine on what the Corps has or hasn't done.

MR. PEARCE: He can speak to what he understands the Corps has done. It's not hearsay, it's his understanding of what the Corps performed.

MR. EGLICK: Well, it's really hearsay.

MR. PEARCE: It's not hearsay. It's his understanding of what the Corps performed, it's not what the Corps says.

MR. EGLICK: Well, the understanding is based on what he says the Corps said to him, and the Corps is not here to speak to that. As far as I know, he is not

offering any documents where the Corps says we did this or that, he is just kind of anecdotally saying what the Corps told him. And that's supposed to be the truth?

I can't cross-examine on that.

MR. PEARCE: You can cross-examine on his understanding of what the Corps says. It's clearly not hearsay, it's what Dr. Kelley knows.

MS. COTTINGHAM: I'll allow that line of questioning but not anything beyond.

Q (By Mr. Pearce) Are you aware of whether the Corps did any independent review?

A The Corps told me --

MR. EGLICK: Objection. That's exactly --

Q (By Mr. Pearce) Are you aware of whether the Corps did an independent review?

A Yes.

Q Did the Corps ask you for any substantive changes to the functional assessment?

A I mentioned earlier the Corps asked for some information to be organized in tables, information referring to the functions of each mitigation site and functions at each impact area of the project to be incorporated into the report.

Q Okay. Is that all the Corps asked you to do?

A Yes, that's all they asked me to do.

Q In your opinion, could another competent wetland ecologist peer-review this functional assessment?

A Yes, I believe that another wetland ecologist with familiarity with wetlands in the Pacific Northwest would be able to review this report and reach substantive conclusions about its validity.

Q There's been some discussion about the WFAM functional assessment. Why did you not use that?

A There were several reasons. That method was not available, was not published or had not been developed at the time we started our report. As the method became available the draft documents were circulated out to the consultant community, I reviewed them and I discussed with the Corps and I discussed with Ecology the applicability of those methods to this project. And as the documents finally were finalized in 1999, it was clear that they weren't applicable to the majority of the wetlands that were being impacted by this project, and with the concurrence of Ecology staff and Corps of Engineers staff, it was concluded that the best approach to the functional assessment for this project would be to use the approach that was used, because of the large numbers of slope wetlands that could not be addressed using the Washington Method.

Another issue is that the Washington Method and most

functional assessment methods focus -- they use undisturbed wetlands and high-quality, high-functioning wetlands as a reference wetland, and other wetlands are judged against those referenced wetlands. And the Corps of Engineers specifically was concerned about this project where there were so many wetlands that had been degraded and they were concerned about the functions of those wetlands within the watershed, they were concerned that using a method that was regionally based, had a regionally based reference standard, would underrate the functions that these wetlands were providing to Miller Creek and to Des Moines Creek within the watershed. So there was concern that we might underrate the functions and perhaps not provide enough mitigation, if we were to use this method.

MR. EGLICK: Ms. Cottingham, I move to strike all of that, because it's all just one huge paragraph of hearsay. He is explaining the Corps' concerns, but he is not the Corps. They could have brought in a witness from the Corps to endorse the functional assessment or not, or brought in a document from the Corps, and we might have argued over that whether it endorsed the functional assessment or not. Instead, we have this witness endorsing it for the Corps, and I can't cross-examine him on what the Corps said.

MR. PEARCE: Your Honor, if I could lay a foundation for that last statement.

Q Dr. Kelley, is the feedback from the Corps one of the bases for your professional opinion in this matter?

A Yes, it is.

MR. PEARCE: It's in. It doesn't have to be --

MS. COTTINGHAM: I believe his answers were why he didn't do something rather than something the Corps told him to do, so we'll allow, again on that earlier ruling narrowing his understanding.

MR. EGLICK: As long as we don't hear later in argument or in a brief that the Corps has addressed the functional assessment method. That's what I'm concerned about, to the extent that's what he is attempting to testify to.

MS. COTTINGHAM: Okay.

Q (By Mr. Pearce) Are the existing functions at the Vacca Farm -- well, could you explain to us which portion of the Vacca Farm site is prior converted croplands?

A Yes. On the Vacca Farm site, the prior converted croplands are the areas that are in pink on this exhibit. This is the farm plowed over.

Q Does the functional assessment disclose the functions and impacts to the Vacca Farm prior converted croplands area?

A Yes, it does.

Q Could you refer to that?
A Yes. I believe that Table 3-16, identified the functions that the existing cropland is providing, and those functions would be primarily flood storage because the cropland is in the hundred year flood plain of Miller Creek, and the other function would be for waterfowl habitat. As we've seen in the photographs, waterfowl forage on the site. But due to the annual plowing of the site, it provides little other waterfowl value, and the lack of vegetation on the site effects how it might function in improving or enhancing water quality and providing other biological functions.
Q How about the functions of Lora Lake. Are they considered in the functional assessment?
A Yes, the functions of Laura Lake are considered in Table 3-16 of the functional assessment.
Q Is Lora Lake a wetland?
A Yes, Lora Lake is a wetland. Lora Lake would be classified by the U.S. Fish and Wildlife Service wetland classification system as a palustrine wetland, it is a palustrine aquatic bed wetland. That would refer to the areas of Lora Lake where there's algae floating on the surface or where there's plants growing along the edge of the lake. And the more central portion of the lake where there's not vegetation would be classified as a palustrine

unconsolidated bottom wetland.

MS. COTTINGHAM: Would you spell that word for us, please?

THE WITNESS: P-a-l-u-s-t-r-i-n-e.

Q (By Mr. Pearce) Is there a section of the functional assessment that discusses cumulative impacts?

A Yes, there is.

Q Could you direct us to that?

A Section 4.4 addresses cumulative impacts.

Q Does that discuss cumulative impacts from the SR-509/I-5 access project?

A Yes, it does.

Q Could you look at your prefiled testimony at page ten, the last line, line 22.

Is there a typographical error you wanted to correct?

A Yes, there is. On line 22, between the word "will" and "eliminate," there should be the word "not," n-o-t.

Q That's a very important word, isn't it?

A It is a very important word, in my opinion.

Q Was there another correction you wanted to make to one of the tables in your testimony?

A Yes, there is. In attachment E, to my testimony, I provide a bar graph and I provide a several-page table. And on the first page of that table, Table 1 of 3, there is an error in the accounting of wetlands, and that error

double counts the wetland that results in an additional 36 acres of wetland being accounted for in this table. So the correct reading of the table would be to eliminate the Tub Lake wetland because that's accounted for as wetland N3b, and to eliminate the wetland titled N3. And then the wetland titled N3b is a 19.21 acre wetland, it includes Tub Lake and is a stagnant peat wetland and should be classified as a Category I wetland. This error occurred -- well, we had a power outage in my office and my computer crashed and I retrieved the wrong file. So that's what happened.

Q Has that changed any of the opinions in your testimony, that correction?

A No, it does not. My opinions on wetland impacts and watershed impacts are based more on evaluating whether our mitigation is actually replacing the functions of wetlands lost within the watershed. It's based on that fact rather than the percentage of acres that are being affected or the total amount of wetlands in the watershed.

Q Were you the principal author of the Natural Resource Mitigation Plan for this project?

A Yes, I was.

Q Could I ask you to look at 2014.

Are you familiar with the 401 certification that's at issue?

A Yes, I am.
Q Did that require a number of changes to the natural resources mitigation plan?
A Yes, it did.
Q In your opinion, have those changes all been made in this version?
A Yes, they have been.
Q I would like to talk you very briefly about the Auburn mitigation site. And if you could use the photograph you have there, just explain briefly to the Board what the site is like and what's happening there.

First of all, could you identify what year the photograph was taken?

A This is an aerial photograph taken by Walker and Associates on September 22, 1995.
Q Does that accurately -- have you been to the site?
A Oh, I have been to the site numerous times.
Q Does that accurately show the conditions of the site --
A Yes.
Q Albeit from a higher level?
A Yes.
Q Could you explain what the current use of the site is and what's going to be happening there?
A So the mitigation site is a 65-acre site. It's entirely abandoned farmland, so it's in a state of grasses that

typically grow in either after either pasture land or cropland has been left for several years. And it's located next to the Green River, and so the east side of the site is over here, the Green River borders the east side of the site. Let me turn this around. The east side of the site is over here at the Green River, the north side of the site continues to be farmed, as is the south side. And there's a drive-in and some residential development over on the east side of the site.

So some of this site is wetland, and that wetland again is characterized as emergent wetland and it consists of primarily pasture grasses that have been introduced from Europe.

Q Is there anything on the site that looks like how the mitigation, in your opinion, would eventually look after it occurs?

A Yes, the mitigation proposal for this site would be to develop a large amount of forested wetland, we would create about 19 acres of new forested wetland from upland pasture area and we would also enhance existing wetland -- I believe there's about 17 acres of existing wetland that would be enhanced to forested wetland, because the historical condition of a wetland in this setting would have been a forested wetland prior to development in agriculture. So those forested wetland communities are

similar to what's over on the east side of the site on a bar associated with the Green River.

Then the mitigation plan would also create some shrub wetland and it would also create some emergent and open water wetlands. There would be about six acres of shrub wetland and there would also about 6.6 acres of emergent and open water wetland. The emergent wetland created at this site would be very different than the emergent wetlands that are being filled at the airport. The emergent wetlands that are being filled at the airport primarily consist of lawn and wet areas of reed canary grass that are in between agricultural fields or in between houses or other places of abandoned property, whereas the emergent wetlands created here will have flooding and standing-water conditions for a substantial portion of the year. They will have a much greater habitat value for a diversity of wildlife and a diversity of wildlife use on the site.

Q Getting back to the in-basin mitigation. Mr. Stockdale talked a lot about the Miller Creek area. Could you show the Board here what the golf course mitigation site area looks like?

A Yes. The golf course mitigation is another area where we're enhancing wetland that's classified as emergent wetland. But this wetland is actually mowed - however

often you have to mow golf courses - and maintains actually part of the golf course play area. So it provides very limited function and has very limited habitat value. It is an area where waterfowl, particularly geese and ducks, graze, especially during the winter months.

The plan here would be to restore this wetland area back to a shrub-dominated wetland area and also to provide buffers around the wetland and to provide buffers along the creek area. The buffers along the creek area would be forested buffers and those would also replace upland portions of the golf course with a more native forested system to protect and improve the functioning of the creek.

MS. COTTINGHAM: Is that Des Moines Creek?

THE WITNESS: Yes, this is Des Moines Creek.

Q (By Mr. Pearce) Are you familiar with how many acres of the current site where wetland functions are provided?

A The current site meaning the golf course?

Q I'm sorry. Going back to the larger picture, the current airport site.

A Would you ask question again?

Q Are you familiar on how many acres for each level function you identified in the functional assessment provided?

A Yes. I've identified in the functional assessment -- I

don't recall the table number. There's a table in the functional assessment report that identifies or summarizes for any wetland where the functional assessment determined the rating was greater than low. I tallied those acres for each function and those are reported in the functional assessment, and also a table is in my testimony.

Q And how many acres of wetland restoration in your opinion will there be in the in-basin?

A There's about 12 acres of in-basin wetland restoration.

Q And about how many acres of wetland enhancement would there be in-basin, in your opinion?

A There's about 22 acres.

Q Have you prepared a little bar chart showing where those functions are -- well, why don't you show us the bar chart as a demonstrative exhibit and explain to us what that shows.

A This chart shows in blue the results of summing the acres of wetlands that will be impacted by the project by function, if that function was rated, had a value higher than low.

And the bar in red identifies by function the acres of mitigation where the goals of our mitigation plan as identified in the document are to provide these specific functions in the area.

Q The red line, does that include Auburn?

A No. The red line does not include Auburn.
Q Does it include buffer enhancement on site?
A No, this is only mitigation activities occurring in wetlands, so the red line is wetland restoration and wetland enhancement only.
Q With respect to the buffer enhancement, do buffers perform important ecological functions, in your opinion?
A Yes, they do in my opinion.
Q In your opinion, do they perform some of the same functions as wetlands?
A I think they perform most of the same functions as wetlands and, in this case, I think locating buffers adjacent to creeks and adjacent to wetland systems they can provide the same functions and for some functions they will provide those functions at the same level. For example, one of the important functions of creek buffers is to shade the creek and to have trees fall into the creek and deliver organic matter to the creek, which improves the aquatic habitat of the stream.

If you're examining that function, it really doesn't matter whether that tree is rooted in a forested wetland or forested buffer. If the tree falls in the creek, if the leaves fall in the creek, they accumulate in the creek bed and they provide that function to aquatic habitat.

Q Changing the subject a little, are you familiar with the

history of the Vacca Farm wetland?
A Yes, I am.
Q What in your opinion is the historic nature of this wetland area?
A Well, historically, this was a peat wetland.
Q What type of peat wetland?
A I've examined a 1952 soil survey where the field work for that survey was done in 1938, and I examined 1936 aerial photographs. The area is mapped as a riffle peat and riffle peat is a kind of peat that formed under forested and muck conditions. I have examined the peat myself by digging holes and boring holes up to six feet deep, and if you examine the peat in that soil, you can see fragments of woody debris, occasionally you'll bore into a log, and I did bore into a log and pulled up a piece of cedar tree that was buried in the peat.
Q Are you familiar with the report that Mr. Stockdale -- were you here for Mr. Stockdale's testimony?
A Yes, I was.
Q Did he refer to a report about peat soils in Washington?
A Yes, he referred to a report by Riggs that was done in the '50s.
Q Have you reviewed that?
A I have reviewed that report.
Q Is it consistent with your opinion?

A Yes, it is. That report also reported riffle peat as occurring here. It identified woody conditions in the peat, it identified muck soils and didn't attribute the muck soils to any particular plant matter. And then there were lenses or portions of the peat profile that had buried sedge peat within it.

Q Have you formed an opinion about whether the natural resource mitigation plan of the Vacca Farm will restore that area to its historic condition?

A I believe that this plan would restore the Vacca Farm site to a historic shrub-dominated wetland, and portions of the plan along the creek area itself would be forested riparian area, and that would be restoring back to predevelopment conditions. I think the development of this woody vegetation on the site over time is going to restore peat-forming processes to the site. The grading that will occur on the site will make the site somewhat wetter than it is now. And it has been partially drained to support farming operations. Making the site somewhat wetter will reduce the amount of plant decomposition as trees and leaves fall onto the site and that reduced decomposition will mean that organic matter will start accumulating again in the soil as peat.

Q I would like to talk briefly about other in-basin mitigation alternatives with you and ask you if you're

familiar with other in-basin mitigation opportunities in Miller, Walker, and Des Moines Creek basins?

A Yes, I've been asked this question a number of times. And we have examined a number of in-basin sites to determine if there are actual opportunities for mitigation.

Q Did you visit these sites?

A Yes, I did.

Q Did you visit them in the company of other federal or state agencies?

A Yes, I did.

Q What were those agencies?

A I visited sites with the U.S. Fish and Wildlife Service, the Environmental Protection Agency, Washington Department of Ecology staff, the Army Corps of Engineers, the Federal Aviation Administration, and the U.S. Department of Agriculture Wildlife Services staff who are responsible for evaluating and managing potential wildlife hazards at SeaTac airport.

Q What were your conclusions about those sites?

MR. EGLICK: Objection as to the form of the question. To be sure the question is about Dr. Kelley's conclusions and not your --

MR. PEARCE: I think I said "your" meaning Dr. Kelley.

MR. EGLICK: Okay. I appreciate that

clarification.

A My conclusions regarding these sites were -- well, they were variable because we did visit a number of sites, and some of the sites we visited were just not suitable for wetland mitigation. The topography of the site was either too steep to excavate out and create a wetland, it was uncertain whether we would be able to establish a natural source of water that would maintain a wetland over time. And that applied to several of the sites that we visited. Several of the sites were very small, perhaps on the order of one or two acres, and they were nestled in between extensive urban development with no hydrologic connection to any creek, and there was concern whether wetlands could be created there and be sustained over time because it would be difficult to provide a protected buffer for the wetland.

There were also sites that were visited that were not in the watershed, they were in a watershed immediately south of the Des Moines Creek watershed, so mitigation at those sites would not provide functions for the Des Moines watershed.

Q If I could just direct you very briefly to one particular site, the Walker Creek headland wetland. Could you identify that table?

A Yes. This is Wetland 43. And this wetland is the

headwater of Walker Creek. The west side edge of the wetland is formed by Des Moines Memorial Drive, and Walker Creek flows from the wetland through a culvert down through these residential neighborhoods and eventually joins Miller Creek about a mile south, right near Puget Sound.

Q How about the little indent at the top, has that been mentioned as a possible mitigation site?

A Yes. This was identified probably in the summer of 1998 as a potential mitigation site, and we did examine that area from the road, it's private property and we did not have access to it, but you can see it from the road.

Q Okay. What are your conclusions about the suitability of that site for a mitigation site?

A Well, there's controversy over whether it's fill or not, we don't know whether it's an area that's been filled or not because we couldn't get on site to make that determination. The concept that we discussed in the field would be to excavate out fill, if indeed it were there, and to create new wetland.

In my opinion, that would not be substantial mitigation to compensate for the impact of this project because it's in the Walker Creek basin, for one thing, and the concern for additional mitigation that has been expressed to me by the Corps at the time we were doing

this work was to have additional mitigation in the --

MR. EGLICK: Objection. Hearsay.

MR. PEARCE: The concern was expressed to him.

MR. EGLICK: That's the hearsay. He can explain what his opinion is, but he is giving the Corps' opinion.

Q (By Mr. Pearce) Would you state your opinion, not the Corps, in the interest of time?

A So my opinion was to direct additional mitigation to the Miller Creek subbasin where the majority of wetlands are being impacted, so therefore the functions that are derived by the mitigation would benefit Miller Creek.

This wetland will not provide that.

And then a final consideration is the fact that this is a very large wetland, it's over 34 acres right now, and I'm not certain -- my professional opinion would be that adding additional mitigation would not really provide a measurable functional lift to the wetland, especially to Walker Creek, because the functions that this wetland would provide in terms of water quality, in terms of organic matter export and other functions that would contribute to the Ecology of Walker Creek could probably not be derived by mitigating in that location.

Q Did you have an opinion about whether the functions impacted in-basin are being adequately mitigated in-basin?

A Yes. My opinion is that all of the wetland functions that

are being impacted in-basin, with the exception of waterfowl habitat, are being mitigated adequately within the basin.

MR. PEARCE: No further questions. Thank you, Dr. Kelley.

MS. MARCHIORO: I have no questions.

MS. COTTINGHAM: Cross-examination.

EXAMINATION

BY MR. EGLICK:

Q Yes, Mr. Kelley. Were you here when Ms. Walter testified?

A Yes, I was.

Q Do you recall that I asked her about a meeting held by the Corps on July 11, 2001?

A Yes.

Q And isn't it true that at that meeting the Corps told you that the functional assessment was not replicatable?

A That's not true.

Q Okay. Did they express a concern that it was not replicatable?

A I was not at that meeting, so I don't know what the Corps said.

MR. EGLICK: I'm sorry, I thought you were. Let's go on to another thing then.

Could you put the bar chart up for a moment, please.

MS. COTTINGHAM: Can I ask a question about this bar chart before you begin? Is this an exhibit or part of an exhibit?

MR. PEARCE: It's merely a demonstrative exhibit, it's not a named exhibit.

MR. EGLICK: I actually had some questions, so that's kind of a good segue.

Q This isn't in the NRMP is it, this bar chart?

A No, it is not.

Q I guess I need to do something in the nature of -- I don't know whether it's voir dire or cross-examination, just to understand how you've compiled it.

The red bar represents mitigation acres, is that correct?

A That's correct.

Q And so you've added up acres representing mitigation of various types, is that correct?

A I added up acres of mitigation that were designed to obtain specific functions.

Q So the red bar doesn't represent, for example, just wetlands replacement, for example, as opposed to some other form of mitigation, is that correct?

A That's correct.

Q So when I'm looking at the -- you know, those long red lines that say "mitigation acres," and some of them are

pretty long or big or tall or whatever you call them, would that include, for example, the three acres of Lora Lake?

A Yes, it would.

Q And for Vacca Farm, would Vacca Farm -- at least some part of it is 6.6 acres, is that right?

A Yes. There's 3.3 acres in our mitigation plan of wetland restoration that is removing fill from fill that had been placed in previous wetland areas, and that area is represented on the bar chart. So that would be 3.3 acres of wetlands that don't currently exist in the landscape.

Then the remaining part of the bar chart represents wetlands that currently exist where we would go in and perform either restoration or enhancement activities.

Q That's the other question I have. Does the red represent just wetlands?

A Yes, it does.

Q So, in other words - what do you call it - buffers are not in the red?

A There's actually, in addition to what you see in red where wetland activities would occur, there's 54 acres of buffer designed up in uplands around these wetlands and around Miller Creek. And as I mentioned previously and I've mentioned in my testimony, these buffers would also contribute functions to the watershed. And I have not

added those functions into this chart which represents the replacement of impacts.

Q And does this also include -- I know there was one element of credit given for preserving wetlands that currently exist. Does the red include that as well?

A No, it does not.

Q So this then just includes wetland -- I think you're calling it "enhancement," is that correct, and a little bit of wetland creation, is that correct?

A I'm calling it wetland restoration. There's two types of wetland restoration, there's wetland restoration where we are reestablishing historic wetlands that have been filled historically.

Q Okay. And that's restoration where you remove fill.

And then you have some where you're saying it exists but you're enhancing it in some way, is that correct?

A Wetlands that exist where we are restoring them, there's certain wetlands that have -- for example, the Vacca Farm area where the functions are degraded and they are not currently vegetated, and those wetlands that are not currently vegetated we're calling wetland restoration.

And then there's the wetlands that are vegetated, the lawn areas, the areas on the golf course, those areas are included in this chart as wetland enhancement.

Q Okay. Then when you allocate the function out there,

those functions that you've allocated out there are based on the functional assessments of the wetland that you performed?

A No, it's more based on the goals that are established in the mitigation plan and the design of the mitigation plan to achieve those goals.

Q Okay. By the way, did you perform the functional assessments on each of the wetlands?

A Yes, I did.

Q And did you perform the delineations on each of the wetlands?

A Yes, I did. And staff helped me with that, staff helped me record data sheets, for example, to document the delineations.

Q Well, I actually noticed when I was going through the data sheets that there were about ten staff people on them, but I didn't see your name on any of them. Was your name on any of the data sheets?

A I'm not certain whether I'm on any of them. I reviewed every single data sheet and I identified to staff where data sheets should be taken to represent the wetland and also conditions.

Q Well, would you agree with me that actually there were about ten different people who did the on-site delineations and filled out data sheets, is that correct?

A I haven't counted. There are a variety of people, I just haven't counted.

MR. EGLICK: Thank you. No other questions.

MS. COTTINGHAM: Mr. Poulin.

MR. POULIN: No questions for CASE.

MS. COTTINGHAM: Mr. Pearce.

MR. PEARCE: None on redirect.

MS. COTTINGHAM: I have one question for you.

Are these acres that are reflected on the impacts there, are they actual acres or mitigation acres?

THE WITNESS: These are actual acres of wetlands.

MS. COTTINGHAM: Thank you.

Are there any other questions?

MR. LYNCH: I have one question regarding the same chart. There's a line for "OM" export. What does that mean?

THE WITNESS: That would be organic matter export. In easier terms to understand, that would be when I explained about trees falling into the creek, leafy material falling into the creek, so the wetland is located in a riparian area or next to a drainage channel, and organic matter can fall into the creek or channel and move into the creek habitat and start performing functions for the stream. So it might be food for aquatic invertebrates

that live in the stream, and that can be food for fish. In wetlands lingo, that's called organic matter export.

MS. COTTINGHAM: Any questions as a result of Board questions?

BY COUNSEL: No, Your Honor.

MS. COTTINGHAM: Thank you. You're excused.

MR. REAVIS: The Port calls Mike Bailey.

MICHAEL BAILEY, having been first duly sworn or affirmed to tell the truth, the whole truth and nothing but the truth, testified as follows:

EXAMINATION

BY MR. REAVIS:

Q Please state your name for the record.

A Michael Bailey.

Q Mr. Bailey, how are you currently employed?

A I'm a senior principal engineer at Hart Crowser in Seattle.

Q And how long have you been employed at Hart Crowser?

A Twenty-one years.

Q What's the nature of your work at Hart Crowser?

A I'm a geotechnical engineer.

Q Is a copy of your CV attached to your prefiled testimony?

A Yes, it is.

Q What is involved in geotechnical engineering, particularly as you have practiced it over your career?
A Geotechnical engineering is the engineering associated with earth, soil materials, groundwater, and bedrock. And the particular application of this project has been to assess the foundation conditions that support the embankment and the MSE wall, to assess the effect of earthquakes on the proposed construction, and groundwater effect on the proposed construction, and to develop specifications that utilize earth materials for construction in a manner that is predictable and assures performance of the structure.
Q When was Hart Crowser first retained to work on the third runway project?
A In May of 1998.
Q Now, here is a chart that's attached to your prefiled testimony as Exhibit E, which is a figure of the embankment. Could you just describe for us briefly what the various areas in the embankment are?
A Okay. Well, that's a cross section through the west MSE wall portion of the embankment, it's the portion of the embankment that's closest to Miller Creek. And it shows in cross-sectional view the natural soils which consist of about 20 feet of relatively soft or loose sediments overlying some very dense, glacially overridden soils that

are generically referred to as glacial till.

In the cross section, you can see the common embankment, which is the eastern portion of the fill, is retained by the MSE reinforced zone. MSE stands for mechanically stabilized earth, it's a construction technique that, in this instance, uses strips of reinforcement steel that are interlayered with the compacted fill in the reinforced zone and provides support to that fill and also support to a relatively thin concrete facing on the wall.

Q Are there examples of MSE walls around the Puget Sound region that we might have seen before?

A Yes. There are MSE walls, for instance, at the north end of the airfield and quite a number of other areas around here. It's a construction technique that's been used for about 30 years, so it's fairly common.

Q Can you describe for us what one looks like?

A Well, typically, as you look at it you just see a concrete facing, it looks like any other kind of retaining wall, you don't actually see the reinforcing or other evidence of how the wall stands up.

Q I would like to review with you briefly the process that was involved in creating the embankment MSE wall. And I believe you have a copy of your prefiled testimony there in front of you. There's an exhibit to that that might be

helpful as you walk through that, I think it's Exhibit B?

A Yes. Exhibit B is an organization chart for the third runway embankment design team and also shows some of the independent reviewers who have done peer review on the design.

Originally, Hart Crowser and HNTB were involved in evaluating methods of retaining the fill or of constructing the fill in this west wall area, and also at the north end of the runway and at the south end of the runway. The intent of the MSE walls was to limit the extent of the fill from encroaching into the wetlands beyond what was necessary for the runway and the associate safety zones adjacent to the runway, to limit the extent of the fill beyond the absolute minimum required for safety. And Hart Crowser and Parametrix and HNTB together looked at about 60 alternatives of different types of retaining walls, different embankment slopes, different methods of reinforcing those slopes, and we compared, as I say, about 60 alternatives and came up with a recommendation for the MSE wall that fits the geometry that it's currently being designed for.

And Hart Crowser's part that in that was to assess the capability of the ground to support the MSE wall. HNTB's part in that was to determine what the requirements were as far as the layout or the geometry of the wall so

that it could be constructed and not extend any farther into the wetlands than necessary but still provide the appropriate safety areas associated with airport operations on the runway.

Once we had done this evaluation of about 60 alternatives, different types of walls and geometry of slopes and walls, we brought into the discussion a couple of outside experts, Professor Robert Holtz of the University of Washington, who is an MSE expert, and Tony Allen, who is the state geotechnical engineer for the Washington State Department of Transportation and who also is an MSE expert, and we consulted, HNTB, Hart Crowser, with Professor Holtz and Mr. Allen, to identify design standards and criteria that should be used for processing the design and for selecting a wall designer.

From that discussion, HNTB requested qualifications from the community of MSE designers. Reinforced Earth Company was selected. Reinforced Earth Company is basically a pioneer in this kind of technology going back some 30 years, they have built in excess of 20,000 of these walls, including more than a dozen that are over 90 feet in height. They have just a very good team they were proposing to put on it in terms of experienced engineers, and so they were selected actually to do the wall design.

As that design was accomplished, there was additional input from an independent technical review board that was selected to look over our shoulder and provide comments on the completeness of our analyses and the methods of our analyses. And that review board consisted of four individuals: Peter Douglass is an engineer with considerable local experience, he was the facilitator. And the remaining members of board consisted of Professor Jim Mitchell, he is recently retired from Virginia PolyTech and is formally head of the department of civil engineering at the University of California at Berkley, he is an expert in soil behavior and MSE construction. Professor I.M. Idriss, at the University of California at Davis, is an earthquake engineering expert. And Dr. Barry Christopher, who is an independent geotechnical practitioner, he consults world wide on MSE technology. And so they provided outside review and comment on the design process.

Q Thank you. Were you present for Dr. Kavazanjian's testimony last week?

A Yes, I was.

Q Did you hear some comments or criticisms he made about the computer model known as FLAC?

A Yes, I did.

Q What are your responses to those comments?

A Well, I think that Dr. Kavazanjian is not as familiar with the FLAC analytical model as some of the people that have worked on the team, based on my understanding of his experience that he testified about.

MR. STOCK: Object. No foundation.

MR. REAVIS: I think he just said the experience he testified about, the foundation was laid.

MR. STOCK: If that's the basis of his opinions with respect to Dr. Kavazanjian's knowledge of the FLAC model, then there is no foundation.

MR. REAVIS: Let me see if I can just explore.

Q Have you read anything else that Dr. Kavazanjian has written or testified about?

A Yes.

Q And what would that be?

A Dr. Kavazanjian has written several letters regarding the design, including extensive comments on the FLAC model and his concerns as to whether or not it has been properly verified to be used as part of the design.

Q Did you read his deposition?

A Yes, I did.

Q I really don't want to ask you about Dr. Kavazanjian's knowledge. Can you just tell us then what your responses are to his comments, setting aside his knowledge of that model?

A Well, let me say first that the FLAC model is a finite difference computer technique, it's a very sophisticated model, it is one of three very different independent approaches that we use to test the design and the performance of the proposed walls during an earthquake. The basic design uses what's referred to as a limit equilibrium method that is based on the building code that is published by the American Association of State Highway and Transportation Officials. And while relying primarily on that limit equilibrium method for the basic design, the Port's design team has undertaken some additional measures to independently confirm results of that limit equilibrium design, and the FLAC model is one of those independent methods that we utilize to validate the design.

Q Now you mentioned in the design standard that you used, and I guess it's described in your prefiled testimony as the ten-percent-in-50-year standard. Do you recall that?

A Yes. The bases of seismic design is the --

MR. STOCK: The question was whether he recalled it.

Q (By Mr. Reavis) Can you tell us what that means?

A The ten-percent probability of exceedance in 50 years refers to the size of the earthquake that is used in the design. It represents an earthquake that has an average return period of once in 475 years.

Q Why did you select that particular standard for this project?
A That standard is consistent with the basis of the design that's used for a number of other transportation facilities and commercial or industrial facilities. It's consistent, although it's derived separately in a separate process from, but it's consistent with the requirements of the Uniform Building Code and it's consistent with the requirements of the AASHTO Building Code. The process of arriving at that standard considers all of the earthquake history in the Pacific Northwest and relies on attenuation and occurrence relationships to project the size of an earthquake that will happen on average once every 475 years.
Q You mentioned the AASHTO code. Can you tell us what those letters stand for?
A Yes. AASHTO is the American Association of State Highway and Transportation Officials. And the code prescribes design methods that are to be used for transportation infrastructure, including MSE retaining walls.
Q Now Dr. Kavazanjian testified, I believe, that the current AASHTO design is outdated. Do you agree with that?
A I'm --
Q What is the current design standard in the AASHTO code?
A Could you restate that?

Q Yes. What's the current design standard for a structure of this type in the current AASHTO code?

A The current AASHTO code uses an approach to seismic design that's called an algorhythmic risk map. And that produces a level of acceleration that is slightly below the ten-percent probability of exceedance in 50 years. The code encourages designers to do more site-specific analyses for particular cases, and that's what we did for this project.

Q Dr. Kavazanjian referred to a three-percent-in-75-year standard. Are you familiar with that standard?

A Yes. That's fairly close to a two percent in 50 years, which is in terms of the average return period. That's a standard that's used for some very important structures that are termed "lifeline" structures. It's also a standard that is used as a maximum threshold for analyses that are done in two parts, the first part of which is protection of life safety and the second part of which is prevention of collapse of a structure.

Q Now what standard, if you know, is applied to the construction of office buildings, for example, in downtown Seattle?

A Typically those buildings are constructed in accordance with a uniform building code which has an approach that yields a result that is very similar to ten-percent

probability of exceedance in 50 years that's used by the Corps.

Q Now, in addition to using these design criteria, did you perform any analysis of what would happen to the wall in the event of a design-level earthquake or a larger earthquake?

A Yes. We performed extensive analyses of what would happen to the walls or the embankment for the design-level earthquake, and we also considered the effects of somewhat larger -- and I might say, the design-level earthquake was evaluated using three independent method analyses, all of which gave consistent results. We also used some of those methods of analysis, but not all three, to look at the effect of larger earthquakes.

Q Can you tell us what the results of that analysis was?

A For the basis of design earthquake, we expect that the maximum displacement of the MSE wall would be somewhat less than a foot, probably on the order of about eight to ten inches.

Q By displacement, what do you mean?

A The top of the wall will shift, there will be some offsetting amongst adjacent wall panels, and at the end of the earthquake the wall will move about ten inches from where it started.

Q What does your analysis show with regard to larger

earthquakes?

A Well, with progressively larger earthquakes, the anticipated displacement is somewhat greater. We had a maximum earthquake analysis that we did using what is called the Newmark deformation analysis, using a seismic input very close to that three percent in 75 years, and we came up with about six or seven feet of displacement, but the wall did not collapse.

Q Thank you. Did you have an opinion about the likelihood of some event occurring where the wall collapses or it deforms to the extent that the soils spill out?

MR. POULIN: I object. It's a compound question and it's also leading.

MR. REAVIS: I just asked if he had an opinion. I can break it down.

Q Do you have an opinion about the likelihood that there will be an earthquake event so severe the wall would actually collapse?

A I do have such an opinion.

Q And what is it?

A I find that not likely, extremely unlikely.

Q And what about the second half of the question, which is do you have an opinion as to the likelihood that the wall would deform to such an extent that the soil would spill out?

A I do have such an opinion.
Q And what is that?
A There are instances where MSE walls have deformed in some cases on the order of tens of feet, there are other instances where MSE walls have lost their facing panels and there has been small localized movement of soil through the gaps in the facing panels or the gaps where the facing panels were, but these are not instances where there has been a catastrophic release of sediments into the adjacent area.
Q What is your opinion about whether that would happen in the design-level earthquake?
A I do not expect that will happen in the design-level earthquake.
Q Have you produced a report that summarizes some of your conclusions that we've talked about today?
A Yes, we did.
Q Let me ask you to refer to Exhibit 1301.
MR. STOCK: What's the number?
MR. REAVIS: 1301.
Q Would you tell us what Exhibit 1301 is?
A Yes. This is a summary report that we prepared for delivery to the Corps of Engineers in November of last year.
Q Now, let me ask you about 1301. Does that talk about what

is currently planned with regard to subgrade improvements?
A Yes, it does.
Q Can you tell us, since I used the term, what subgrade improvements are?
A In areas where the walls are to be constructed, the surficial soils in many instances are soft or loose and do not have the necessary strength or stiffness to adequately support the embankment and the MSE walls. Subgrade improvement means to basically improve those soils either in place or, as was selected for final design, to remove them and replace them with densely compacted fill that has the appropriate strength and stiffness characteristics to support the walls.
Q Did Hart Crowser consider more than one alternative for subgrade improvement?
A Yes. We started by evaluating nine different alternatives, considering both their ability to support the wall and their effect on groundwater movement. We retained two of those alternatives for a more detailed analysis, and then on the basis of some field tests we selected remove and replace as the preferred alternative.
Q Let me ask you then, have you produced any documents prior to this November 2001 report that discuss those alternatives?
A Yes.

Q Let me show you 1123 and 691.

MR. STOCK: I don't have anything behind 1123.

MS. COTTINGHAM: How about if we take a ten minute break.

(Recess).

MR. REAVIS: I think I've resolved the exhibit numbering issue. And the two documents I was asking him to look at are actually both exhibits to the wetlands functional assessment document that we discussed this morning, 2018. I don't know it's necessary to get that one out, I just have a couple of questions for him about that.

Q Mr. Bailey, there's been some question raised about whether this excavate and replace option for conducting subgrade improvements is in some sense a new development. Are you familiar with that criticism?

A Yes, I am.

Q Is that option discussed in these two exhibits to the wetland functional assessment, A-1 and B-1?

A Yes, they are.

Q What's the date of those documents?

A A-1 is June 19 of 1991, and B-1 is, I believe, July of 1999.

Q Do you have an opinion about whether the subgrade improvements will cause long-term effects on the wetland

hydrology?

A Yes.

MR. STOCK: Object. Foundation.

Q (By Mr. Reavis) Have you conducted an analysis of what effects the subgrade improvements might have on hydrology?

MR. STOCK: Objection. No foundation.

MR. REAVIS: Ms. Cottingham, I asked if he had conducted any studies. I don't think I have to have a foundation to ask if he has conducted any studies.

MR. STOCK: Okay. I'll withdraw my objection, it was a bit premature. I'll object on the next question.

MR. REAVIS: I fully anticipate that.

(Laughter).

Q Can you tell me if you've conducted any studies?

A Hart Crowser has conducted such studies under my direction.

Q Are you the project manager for this project?

A I am.

Q Can you tell us if you have an opinion about the hydrologic impacts?

MR. STOCK: Object. No foundation.

Still premature. I'll get it.

MS. COTTINGHAM: Overruled.

Q (By Mr. Reavis) Can you tell us what that opinion is?

MR. STOCK: I'm going to object. There's no

foundation to Mr. Bailey's expertise with respect to hydrology.

MR. REAVIS: I think he has testified he is the project manager. Under his direction, other Hart Crowser people performed analyses under his direction, and I think that he can testify about what work was done by his firm under his direction.

MS. COTTINGHAM: I'll allow the question.

Q (By Mr. Reavis) Can you tell us what your opinion is about that?

A Yes. Could I start by saying that that opinion is based on my training as a civil engineer, which includes movement of groundwater through soil.

Q Thank you.

A I do not believe that the subgrade improvements will have any detrimental impact on the movement of groundwater through subgrade improvement soils to the wetland downgradient.

Q Last subject then. Do you recall during your deposition being shown some photos of what appeared to be some sloughing at the site? I think those may have been the same photos that were used last week. But do you have any opinion about whether or not -- well, let me ask you a different question.

The suggestion has been made that that indicates

instability of the embankment soils. Do you agree with that?

A The sloughing does represent a small-scale local instability on the face of the embankment as it was constructed in phase III. As a result of that observation, and that was in the fall of 1999, winter -- excuse me, fall of 2000, winter of 2000/2001, when those first came to my attention, the method of construction for the permanent outer slope had been modified by changing the zonation of the soil, basically adding a zone of soil that has relatively free-draining characteristics to prevent that type of seepage-induced instability. And since that change was made, there has been very little further evidence of such small local instability, and that change is going to be used in all of the permanent embankment slopes.

MR. REAVIS: Thank you. That's all I have.

MR. KRAY: Nothing for Ecology.

MS. COTTINGHAM: Cross-examination.

EXAMINATION

BY MR. STOCK:

Q Mr. Bailey, let's talk about the photos for a second of the surficial sloughing that I showed you during your deposition and that, as Mr. Reavis indicated, were also

used here last week.

You agree, don't you, that those photos of the surficial sloughing show layering within the embankment?

A I don't know that the photos show layering in the embankment. The mechanism that we think caused the sloughs to develop would -- it includes the idea that there is layering and that the embankment soils are varying in their gradation from one lift to another. But I don't think you can see that in the photos.

Q Okay. Do you recall me taking your deposition on February 18?

A Yes, I do.

Q Do you recall this question and answer?

Question: Is that a result of the layering during construction of this part of the embankment? And we are talking about the photos.

Answer: The layering is part of it. I believe it's a result of changes in the gradation of the fill in one layer relative to another or in one zone relative to another.

That's on page 86.

Do you recall that question and answer?

A Yes. And that's what I was just trying to state, but I don't think you can actually see layers.

Q Thank you. You've answered my question, Mr. Kelley.

You've designed the MSE wall using the ten-percent-in-50-years design earthquake, correct?

A Correct.

Q You wouldn't design a 300-story office building in downtown Seattle using a ten-percent-in-50-years design earthquake, would you?

A I don't know.

Q Are you aware that the Washington Department of Transportation called for a three-percent-in-75-years design earthquake for construction of a new structure for the Alaskan Way Viaduct?

A I am not aware of that.

Q Isn't it a fact that there isn't a single federally funded highway project in the past five years that has not used a three-percent-in-75-years design earthquake?

A I would very much doubt that statement, but I haven't made a study of federal highway funding.

Q You can't, sitting here today, name a single federally funded highway project where a three-percent-in-75-years design earthquake wasn't used, can you?

A I have not made a study of federally funded projects and their design criteria.

MR. STOCK: I don't have further questions.

MS. COTTINGHAM: Mr. Poulin.

MR. POULIN: No questions for CASE.

MS. COTTINGHAM: Any redirect?

MR. REAVIS: No.

MS. COTTINGHAM: Any Board questions?

MR. JENSEN: I have a question.

You mentioned that there were some examples of displacement that had occurred in tens of feet on these MSE walls, is that correct?

THE WITNESS: There is one particularly notable example of a wall that slid tens of feet but the reinforcement did not come apart, it basically translated horizontally or down slope laterally.

MR. JENSEN: Was there an earthquake associated with that movement?

THE WITNESS: Yes, there was.

MR. JENSEN: Do you know the size of that earthquake or the frequency of the earthquake?

THE WITNESS: I do not.

MR. JENSEN: That's all I have.

MS. COTTINGHAM: At the same time you were talking about this, the first example you gave was a displacement of about ten inches?

THE WITNESS: That's correct.

MS. COTTINGHAM: What duration or size of an earthquake was that?

THE WITNESS: That was for a -- the basis of the

design earthquake which has a ten-percent probability of exceedance in 50 years or average return period of once in 475 years.

MS. COTTINGHAM: And the second example you gave was six to seven-feet displacement. Do you happen to know -- you said larger earthquake, do you happen to know?

THE WITNESS: I don't have a specific return period for you. It was an acceleration-based analysis, and the acceleration, the peak acceleration was about two and a half times the peak acceleration that we have on the basis of design earthquake, but I could not tell you the return period without consultation with my notes. It would be something on the order of 2,500 to 3,000 years.

MS. COTTINGHAM: One in?

THE WITNESS: One in, yes.

MS. COTTINGHAM: Any questions as a result of Board questions?

BY COUNSEL: No.

MS. COTTINGHAM: Thank you. You're excused.

MR. REAVIS: That ends the Port's case.

(The Port rests).

MS. COTTINGHAM: Thank you.

How much time has expired?

MR. POULIN: At present the Appellant's side is 7 minutes, 11 seconds.

MR. STOCK: Ms. Cottingham, may we stop the clock?

MS. COTTINGHAM: You may stop the clock.

Mr. POULIN: And on the Respondent's clock, one hour 14 minutes and 53 seconds.

MS. COTTINGHAM: Looking good for your rebuttal witnesses, which is what we're moving into now.

MR. POULIN: For your information, Your Honor, we will not be calling Greg Wingard as a rebuttal witness today.

MR. STOCK: In terms of the order of our rebuttal witnesses, it will be Ms. Sheldon, Dr. Lucia, and Mr. Rozeboom.

MS. COTTINGHAM: Go ahead and start the clock. And call your first rebuttal witness.

MR. EGLICK: Can we stop the clock?

MS. COTTINGHAM: Yes, you can.

(Pause in proceedings).

MS. COTTINGHAM: Back on the record and start the clock.

And you are still under oath from your earlier testimony.

DYANNE SHELDON, having been previously sworn or affirmed to tell the truth, the whole truth and nothing but the truth, further testified:

EXAMINATION

BY MR. EGLICK:

Q Ms. Sheldon, I guess I wanted to start by you were here for Mr. Kelley's testimony, weren't you, concerning the demonstrative exhibit, the bar chart called In-basin Mitigation Functions?

A I was.

Q As a wetlands ecologist, can you explain to us your opinion of what that represents?

A I can explain what I think the Port is trying to represent; I'm not sure I can explain how they got there.

MR. PEARCE: Objection. Lack of personal knowledge about what the report is purporting to represent.

Q (By Mr. Eglick) So what is your professional opinion about whether or not that bar chart is an accurate representation of in-basin mitigation functions?

A I'm assuming, the way this bar chart was presented by Dr. Kelley, it is a graphic representation of the information contained in the NRMP on page 4-14 and it's Table 4.1-4, I believe. And what that table summarizes --

and if you don't mind I'll stand up so I can look at the chart to make sure, but from across the room with no glasses it appears as if the chart is a summary by acre of functions to be provided in the mitigation on site compared to the impact to those same functions by acre.

And in the NRMP, the exhibit number I forget at this moment --

Q 2014.

A 2014 is the exhibit number, is the exact same information in a less lovely form but a little bit more informative form. And what I want to point out from this table --

MS. COTTINGHAM: Can you wait till we get there, please?

THE WITNESS: I certainly can.

MS. COTTINGHAM: Page 4-14?

THE WITNESS: 4-14, Table 4.1-4.

A (Continuing) What this table is purporting to show is acreages of benefit by function. And I want to point out a couple of things. One, to understand where acreages for resident anadromous fish, for example, which is the first item on the table, there's an on-site acreage of 74.6 acres. And if you look to the right-hand side in the comment column, you'll notice that that acreage benefit is calculated off a hundred-foot buffer along Miller Creek for the length of the project area. So they are assessing

that in future conditions 200-feet width along Miller Creek will be providing resident anadromous fish benefit.

If you go down to the amphibian row, you'll see an amazing 87 acres of amphibian habitat in the future. And what this table doesn't represent is that in existing conditions pre the clearing and pre the filling that's ongoing right now at the airport, that there were already functions such as --

MR. PEARCE: I move to strike and object to that. There's no basis for her statement.

MR. EGLICK: Well, I think the witness is talking about the conditions that exist or existed prior to commencement of the project and that exist at the present time or have existed in the past. I don't understand the objection.

MS. COTTINGHAM: I'll allow the question.

THE WITNESS: I'm sorry, am I to continue?

MS. COTTINGHAM: Continue.

A (Continuing) The point I was attempting to make is that I was on this site only once in recent history, and at that point in time I stood on the fill plain, which was approximately 165-feet high, and it had been placed relatively recently, in the last year or two. And I was trying to make the point that prior to that kind of activity on the west side of the active airport zone this

was an old residential area, many of the houses were built in the '40s and '30s and '50s, and so the landscaping was quite mature and, yes, there were situations where there were structures and things in wetlands and near riparian quarters, there was lawn that was very typical.

But what has often been overlooked in the discussions to this point is that that material landscaping because of its complexity had a high species diversity of not only native species, which old folks liked to plant in the old days and they were remnant on steep slopes, but also a broad spectrum of landscaping species, old orchards, grapes, fruits, flowers, things that provide a wide benefit to a wide range of wildlife species, including things like amphibians. And what this assessment of increase in function doesn't represent is that pre the airport moving westerly there were existing levels of functions out there, and they have not been assessed. And so these acreages of gain need to be offset in your understanding of what was already out there ahead of time.

Now, I don't want counsel to cross-examine me and say: Ms. Sheldon, is urban habitat as good as what we're going to produce out here in 140 years? It is not. But we cannot discount that there is and was habitat being provided out there for a wide range of species. There was also groundwater exchange going on. They are not

assessing groundwater exchange in this functional assessment, which is interesting, because the slope wetlands are out there right now, which is one of the primary functions that people point to them as having.

The other thing about this bar chart and the Table 4.1-4 is that, as a professional wetland ecologist, and I've been doing this work for 25 years and I was one of only two private consultants who was asked to join the Washington State Department of Ecology on a two-year long process to develop this WFAM we've been talking about for two weeks, I don't know how the Port's consultants got from field conditions to this point on this table. In other words, their functional assessment method does not provide a protocol that I or any other wetland ecologist I know could walk out in the field, collect the data, run it through the same functional assessment method and approximate or replicate what the Port's consultants have come up with. The point being it is not possible for me to confirm or deny these findings.

There was an observation made by Ms. Walter in her pretrial testimony that I had not contradicted the findings of the functional assessment. Well, (a), I don't have access to the site to do field work and, (b), there is not a methodology or a protocol for me to go out and check it; it is based on the professional judgment of the

staff of the Port's consultants.

One of the things I wanted to provide in my stack of things here -- excuse me.

MR. PEARCE: Could we at least have a question asked of Ms. Sheldon?

MR. EGLICK: I was hoping to actually work into one there.

MS. COTTINGHAM: Hoping to make eye contact?

MR. EGLICK: It's my fate to be ignored.

Q Have you had an opportunity to review some of the functional assessment forms prepared by Parametrix for a portion of the airport site?

A We received the copies of some of the functional assessment forms that were done for I believe the west side acquisition portion of the airport, and we have -- I've made some limited copies of those field forms, which I believe were just passed out to you. It's examples of two field forms that were filled out to do the functional assessment.

MR. PEARCE: Is this an exhibit?

MR. EGLICK: No, it's not. It's part of her rebuttal testimony. These are not included, as the testimony has been, in the wetland function analysis or the NRMP, they were obtained from the Army Corps of Engineers. So they are a rebuttal exhibit and would have

to be separately marked I think as 805.

(Exhibit No. 805 marked for identification).

MR. PEARCE: I would object to this entry as an exhibit. They were obtained from the Army Corps of Engineers before discovery cutoff and they should have been listed as an exhibit on the exhibit and witness list that we all prepared. No exception for rebuttal exhibits.

MR. EGLICK: Of course there's an exception for rebuttal exhibits. We had no idea that we were going to need these, and it's in direct rebuttal to the testimony as to whether or not the functional assessment is replicatable, which is has come from several of the Port and Ecology witnesses. It's classic rebuttal. I mean they're saying they are surprised by their own form?

MS. COTTINGHAM: Can I ask if you're offering this for the truth of the matter or just as background information?

MR. EGLICK: Well, I certainly wouldn't want to vouch for the truth of the functional assessment on here, so I guess it's for background information of the form and how it's filled out.

MR. PEARCE: I would object on that basis.

MS. COTTINGHAM: I'll allow it in.

You can go ahead and answer the question.

(Exhibit No. 805 admitted for limited purposes).

A I will take responsibility for these forms not being a part of the record because, in my innocence, I assumed that because the functional assessment report, large and copious, was admitted as part of the record and that this is the data on which that report is based, I assumed that by nexus it would be allowed as part of the record. So I will take that responsibility and my apologies for the confusion.

The reason I wanted to make, again, just these two forms available to you is to illustrate two things. One, in my years of doing wetlands work, I have never seen anybody do a functional assessment method where you're filling out a data form to assess the functions of a wetland and what you have done is filled out this form for three wetlands at a time. And I -- literally the stack that was handed to me, I just picked up the first two field forms that were on top of the stack and the first data form addresses Wetland A-6, A-7, and A-8, and the second data form addresses Wetland A-12, A-13 and A-18. As a wetland ecologist, I'm not sure how one assesses a function of a wetland when you're filling out a form for three at a time.

The other general thing that I want to point out is that this is a field form that one goes in and you look at particular features. I guess these wetlands were so

identical that it was appropriate to use one form or two forms to do six wetlands; but what I don't have, and there's nothing that allows me to convert this data on this form, there's no protocol that allows me to convert the data on this form to a finding of either low, medium, and high, which is what the functional assessment report ends up encapsulating, obviously, and it's now perhaps not so surprising that much of the information in the functional assessment report is lumped by types of wetland rather than individual wetland. But the other thing that I don't have is how then one converts this data into these acreages.

Q Now, Ms. Sheldon, you were here for Dr. Kelley's testimony about the availability of what's been called the WFAM method?

A Yes.

Q And what is your opinion as to whether the WFAM method was available for wetland functional assessments at the airport site?

A Well, in Dr. Kelley's pretrial testimony, in paragraph two, I believe, he testified that he was trained or assisted in the development of the WFAM for both riverine and depressional wetlands in 1997. The draft working document of the functional assessment method was made readily available to anybody who needed it or wanted it in

1998 by those of us working on the process because we wanted it to be field assessed, we wanted it to be used in the field and field verified. So it was available apparently to Dr. Kelley in 1997 for his own testimony, it was readily available to anybody who wanted to use it in 1998, and what is interesting is that in Dr. Kelley's testimony -- his pretrial, excuse me, and let me get a citation for you here. I am looking at Dr. Kelley's pretrial testimony for this hearing, I believe, and in paragraph number 21 of that pretrial.

Q Page 7?

A That's correct. I'm going to read a sentence from this that says, quote: Several functional assessment methodologies were used for guidance in preparing the functional assessment. And he is referring to the functional assessment for this project.

There's a footnote with a number (4), and you go down to number (4) and it cites four different functional assessment methods. Interestingly, one of those is cited in the year 2000, so it was available in the year 2000 to do the Port's functional assessment method, but a document that was out and available in 1998 apparently wasn't available for the use.

The other thing that I found quite fascinating is, of the four methods that are referred to, two of them are two

different year versions of what in the profession we call the SAM method, the semi-quantitative assessment method, and the author here is cited as Cooke. That is the methodology that the Department of Ecology recommends not be used for assessing functions because it is relatively simplistic and it is not a very refined tool.

And then Dr. Kelley cites two other functional assessment methods, and he modifies four functional assessment methods, none of which are specific to Western Washington, none of which are specific to slopes. Instead of taking the WFAM method which -- yes, the one for Western Washington focused on two wetlands types, one of them depressional and one of them riverine, as I noted in one of my declarations, 41 percent of the wetlands on this site could have been assessed with the WFAM. And with minor modification, one could have done the slope wetlands as well.

Q Okay. I would like to switch gears here, if I might.

Some questions were asked yesterday and I think today, as well, about in-basin versus out-of-basin considerations on wetland mitigation. I want you to ask you about that.

First of all, do you know what basin the Auburn off-site mitigation is located in?

A The Auburn off-site is located in the Green River basin,

it's approximately 309,000 acres.

Q Okay. Could you give us a comparison of how large is the Miller Creek basin?

A The Miller Creek basin is just over 5,000 acres in size, so they're relatively -- approximately, Miller is sixty times smaller than the Green River is.

MR. PEARCE: Objection. Well, I'll question her back on cross, I guess.

Q (By Mr. Eglick) Can you, in your professional opinion, tell us whether or not the difference in the size of those two basins makes any difference in terms of the relative importance of wetlands located in them?

A Well, it's a factor of not only the size of the wetlands but also the configuration of the landscape setting of those two basins. The Miller Creek basin is immediately adjacent to Puget Sound, it's a relatively short drainage basin. What happens in the upper watershed, which is where the Port facilities are located, it has relatively quick access to the salt water system of Puget Sound immediately downslope. And so the change or loss of 20-plus acres of wetland out of that basin has some relative percentage greater increase of potential for impact than looking at the Green River basin, where the Auburn site is located and approximately 30 acres of wetlands is going to be enhanced -- that is, a combination

of enhanced and created. So that 30 acres of increase in the Green River basin is going to be basically undetectable within the watershed scale.

MR. PEARCE: Objection. Lack of foundation. There's been no studies testified to about this mitigation as compared to the Green River.

MR. EGLICK: She has read the NRMP, she is allowed to give her professional opinion on what the relative impacts will be. That is what we've all been discussing here.

MS. COTTINGHAM: I'll allow the question.

MR. EGLICK: But actually that's a good -- I got your attention.

MS. COTTINGHAM: You did.

Q (By Mr. Eglick) Could we then go to talking about for a moment, if you would, a question maybe even a Board member asked yesterday, about in-basin mitigation alternatives. And have you had a chance to look at how that is addressed, for example, in the NRMP?

A There is a figure in the NRMP, and it is Figure 7.2 --

Q Three, I think?

A Figure 7.23.

Q And it constitutes page 7-13, it's right after 7-12, if that is the one you're talking about?

A That's the one I'm talking about.

Q Exhibit 2014.

A It's a large colored pull-out exhibit.

MS. COTTINGHAM: It's a map?

THE WITNESS: Yes.

MR. EGLICK: Foldout color.

MS. COTTINGHAM: Ours aren't pull-out.

A (Continuing) Page 7-13, though it's not numbered as such.

What this map shows is it was potential mitigation sites that were identified in-basin, and this was in response to a question asked yesterday by the Board of what the opportunities were in-basin for additional mitigation.

And what this map shows is that there are several areas that are present in the basin. It's interesting that the criteria that was used for creating this map was that the mitigation sites had to be larger than ten acres, so they didn't look for small opportunities or multiple small opportunities in the basin.

MR. PEARCE: Objection. Lack of foundation.

A (Continuing) I believe it's cited in the text itself, if I wanted to take the time I could find it. The map I believe says that the sites are limited to those sites that are greater than ten acres, right at the bottom of the map.

MR. PEARCE: My objection stands, if her

testimony is saying that no one looked at other sites. If her testimony is limited to the map, I have no objection.

A (Continuing) Perhaps I misspoke. May I rephrase?

What I intended to say was this map is generated by sites that are ten acres in size or greater. I have no idea what people looked for otherwise, I'm just referring to this figure.

And the ecological point I want to make is that there is some value and in fact great value for having numerous smaller wetland areas, especially in such an urbanized basin, for providing wetland functions throughout the basin rather than concentrating functions or mitigation on larger sites. Now, there are many reasons for concentrating functions in larger sites, not the least of which is it's more cost effective; but ecologically speaking, a study that has been referenced I know in several different people's prefiled testimony here and previous declarations is the study done by Amanda Azous and Richard Horner of the effects of urbanization on wetlands. And that study has found that smaller wetlands oftentimes can have higher species diversity than larger wetland complex systems.

So the point I'm simply trying to make is that although sites were looked at, I think there's still opportunity in this basin for additional mitigation to be

done. And it might not be on large-scale sites, but the ecological benefit to the basin would be providing habitat and other wetland functions throughout the basin.

Q You were here, weren't you, for Dr. Kelley's testimony concerning the Walker Creek headwater wetland?

A I was.

Q In your professional opinion, is the Walker Creek headwater wetland one that could provide additional mitigation benefit in-basin?

MR. PEARCE: Objection. Lack of foundation. No foundation of what she has done, what she has seen, what she has studied with respect to the wetland.

Q (By Mr. Eglick) What have you been able to review with regard to the Walker Creek headwater wetland?

A I have reviewed correspondence between Ecology and Parametrix staff, I have looked at the conditions of the revised 401 certifications since September that have talked about things that need to be done within that wetland, I have glanced at the wetland descriptions within the wetland delineation report, and it appears as if that wetland does have some potential for providing in-basin function.

Q Now, I notice that this exhibit, Figure 7.2-3, that has the 10,000 feet arrow on it, which I believe there's been previous testimony that's a reference -- actually, it says

here, "the radius from proposed runways". Do you see that?

A I do see that.

Q Are you familiar with what's been called the Vacca Farm site?

A I am familiar with the Vacca Farm site.

Q And that's a site where some mitigation is said to be occurring. Do you recall that?

A It's a location where mitigation is proposed. And on this figure, if you look at the right-hand end of the arrow that's pointing to the 10,000-foot radius, immediately north there is a peach-colored cluster that's labeled number eight, and north of that slightly is where the Vacca Farm site is generally. It's sort of tucked immediately to the west of the peach-colored blob that's labeled number five on the figure.

MS. COTTINGHAM: My map is too small to see any numbers.

THE WITNESS: I'm very sorry.

Q (By Mr. Eglick) Well, then, maybe I could ask you to help us out. I notice there's a scale on this map. Have you been able to determine, for instance, the Vacca Farm site within 10,000 feet of the proposed runway?

A The Vacca Farm is clearly within 10,000 feet of the proposed runway, in fact the Vacca Farm is located

basically at the toe of the fill on the west side of the proposed embankment.

Q Okay. Let's talk for a moment and switch gears about this question that's been discussed quite a bit, of the definition of restoration versus enhancement. Are you familiar with these terms from your work as a wetlands scientist?

A I have heard them once or twice.

Q Okay. I assume you're being humorous. But they're terms you work with regularly?

A They are terms I work with regularly, they are terms that I teach with in most of the classes that I teach. And I will refer back to the WAC definition that has been cited, it's Chapter 173-700 of the WAC, and it says that enhancements are actions within existing degraded wetlands - and I'm paraphrasing that, giving you the key phrase here - and that restoration is actions taken to reestablish a wetland area.

Q Now, if you could, for a moment, take those as your definitions, apply them to the Vacca Farm mitigation area. How would they apply there in your professional opinion, those definitions?

A Well, I think actually a person who has spent more time on the Vacca Farm site might be more telling about the functions that the Vacca Farm provides in its existing

condition. And in my pretrial testimony at Tab D is a direct verbatim proceedings from a court case in which Dr. Kelley was involved on a parcel labeled parcel 92, which is at the south end of Vacca Farm, the general vicinity. That is Tab D on my pretrial. And if you find that, if you would turn to page 84, line ten. And line ten starts with, "the habitat value of these wetlands has been degraded". Now, Dr. Kelley is talking about in this entire verbatim transcript here, he is being queried about parcel 92, which in a moment I'll show you a map of where that is relative to Vacca Farm. And in the course of his answering questions, he talks at length about the Vacca Farm wetlands themselves, the prior converted croplands at Vacca Farm, and so the phrase that starts "the habitat value of these wetlands," he is actually referring to the wetlands within that greater Vacca Farm area. And I don't want to take your time to walk you through his testimony to show that to you.

The point I'm trying to get to starts in line 11: The function that the wetlands provide in providing flood storage may not have been degraded, portions of the wetlands still are in the flood plain. The functions that the wetlands provide in terms of groundwater discharge, the movement of groundwater to surface water, and the supplemental base flow to Miller Creek downstream may not

have been degraded by farming.

The point I'm trying to make here is that the functions of these prior converted croplands on Vacca Farm weren't preassessed. Dr. Kelley this morning in his testimony referred to - I'm doing this from memory - I believe it's Table 3-16 in the functional assessment document, which you don't need to turn to because I assume you'll check it later with all of your other readings. I read that quickly sitting over in a chair. It refers to the functions of farmed wetlands. And under the 404 language, farmed wetlands are very distinct from prior converted croplands, and farms in the assessment method are identified as farmed wetland number five and farmed wetland number six in that vicinity. Prior converted croplands in that vicinity are 6.6 acres.

Q In light of what you've just told us, would you consider the mitigation at Vacca Farm to be enhancement or restoration, in your professional opinion?

A In my professional opinion, the actions that are occurring at Vacca Farm are enhancement of existing wetlands that have existing functions. Now they don't provide the full sweep of functions, and certainly one of the functions that is touted, that is often touted as being missing, is wildlife habitat. Yet I've heard Mr. Stockdale from the Department of Ecology and he has shown you photographs of

the farm site at Vacca Farm with both birds being present feeding on the pumpkins and Dr. Kelley this morning again showing us photographs with birds feeding on the farm grains and feeding in those areas. So even in the state of being used for ag lands, they are providing functions, and I think Dr. Kelley, himself, who has spent, as he says, quite a bit of time there in this area, has noted that floodplain functions, groundwater-related functions are being provided. So they are existing wetlands.

Q Okay. I did want to ask you a question about the issue that's come up with regard to performance standards for wetlands as related to the 401.

First, let me ask you this. With regard to wetland hydrology, can wetland hydrology be monitored, in your professional opinion?

A It can be. And I have spent, I and my staff for the last five years have been monitoring a forested hillside seep and slope wetland in the city of North Bend. We have a year of hydrologic data on that wetland before any development occurred upslope of it and downslope of it, and we have been collecting four years of hydrologic data since this development has occurred around the slope hillside wetland, forested wetland.

Q Let me ask you another question then. I think one of the points that's been made in testimony from various

respondent witnesses is that hydrology can be monitored, if you will, indirectly, through monitoring plants, for example. Do you have a professional opinion as to whether or not that is an appropriate way to monitor wetland hydrology?

MR. PEARCE: Objection. I think that mischaracterizes her earlier testimony.

MR. EGLICK: I think that was the testimony, that there was a performance standard that monitored for wetland hydrology by monitoring whether or not the plants would still be there at some point in time.

MS. COTTINGHAM: I'll allow the question.

A No. Plants are not necessarily the canaries of wetland hydrology change. And using this forested wetland that I've been monitoring as an example, this development has significantly altered the hydrology of this forested wetland; we have not noted a change in the species composition, but we have a very clear change in hydrology and a consistent change over the years. So the reference Dr. Cassin made yesterday morning was the fact that the willows planted in the floodplain of Vacca Farm will be the indicator of a change of hydrology in that wetland because they would tell us whether or not adequate hydrology is present, well, willows have a range of adaptability of being from completely inundated a foot

deep to surviving in soils where there is water twelve inches below the surface, so the willows themselves do not provide that kind of indicator.

Q Let me ask you another question of performance standards. Are you familiar with the standard in the 401 permit that refers to checking for groundwater within ten inches of the surface from March to mid-April?

A I am familiar with that standard.

Q Do you have an opinion as to whether or not that standard will protect the hydrology of wetlands at the site?

A I have expressed concern from the very beginning that I do not believe that that performance standard will protect the wetlands on the site. I don't believe it will protect the wetlands that are proposed to be remaining downslope of the project area.

And for the benefit of time, I'm not going to ask anybody to pull it out, but if you would like to make a reference to the wetland delineation report, page 3-24, that has a description of the hydrology for Wetland 37. And it notes that in the middle of October it has surface water flowing through it. Now, October, as we all know, is at the very tail end of our dry season here in the Northwest, so if that wetland has surface water flowing in it in 1998 in the middle of the wetland at the end of our annual drought, then having a performance standard in that

wetland in the future that there only needs to be groundwater to within ten inches of the surface, then, the functions of that wetland will change over time.

Q Okay. And my last question, and we're very limited on time here but I did want to ask you about Dr. Cassin's testimony, I think you were here for that yesterday, concerning she referred to a predominantly forested situation that would occur as part of a mitigation.

Do you recall that?

A I do. She was referring to creating a forested wetland floodplain of Vacca Farm, and we have made copies for you that I've excerpted because yesterday you couldn't find some of these plant sheets. This is from Appendix A of the NRMP, and outside of this hearing those appendices were a separate bound large format document. So rather than trying to have you scurry for them again, we had copies of this sheet L5 made.

I wanted to point out two things. One, in the Miller Creek zone, the floodplain zone number one, which is sort of the second graphic box down, I wanted you to notice that all of the plants proposed in that first part of the zone are all labeled shrubs, and they're all of the genus salix, which is willows.

And then, again, I know we are short of time and you are probably tired of swapping pages back and forth. But

I will give you a reference from the Natural Resource Mitigation Plan, and that is a reference for the planting densities for the floodplain of Vacca Farm. And it's really quite important that you take a look at it, it's in Table 5.1-9, I believe. And I will double check that for you, I'm sorry, I will check that reference for you.

Here is the point. In this performance standard table, and it is the performance standard for creating the floodplain at Vacca Farm, it says that shrubs shall be planted at a density of 2,100 per acre. It also says that trees shall be planted at a density of 280 per acre. And then it says in parentheses, willow species will be considered as trees. And so for that floodplain zone, they have identified that willows -- and in any of the planting sheets that you look at, and unfortunately for your documents this may be the only planting sheet you have, but we can show you others. If you look down on this planting sheet under floodplain zone number two, you will see they have a list of trees. There's two species, and then again they list the shrubs. And under shrubs they again list salix as shrubs.

So putting these two documents together, the performance standards for future conditions states that in the future for the monitoring years -- I believe they are five, eight and fifteen, they have to have a density of

2,100 shrubs per acre and 280 trees per acre, parens, willows shall be considered trees.

MR. EGLICK: I think that's Table 5.17. And with that we have no other questions.

MS. COTTINGHAM: Any cross-examination.

MR. POULIN: No questions from CASE.

MS. OSBORN: No, I don't.

MR. PEARCE: Just a few.

EXAMINATION

BY MR. PEARCE:

Q You've testified a little about existing functions, Ms. Sheldon. You're not saying that residential lawn with houses provides as good a function as a scrub/shrub wetland with no houses and no human use, are you?

A I am not and I think I made that pretty clear as I testified.

Q With respect to the functional assessment, you're not saying that you can't go onto the site and look at the wetlands and determine what the functions are, are you?

A I believe I do not have permission to access that site. I had to have my field time arranged and I was accompanied and we were put into a van to access it.

Q If you were able to go onto the site, you could look at the wetlands and determine what the functions are?

A If I was asked as a professional wetland ecologist to perform a functional assessment of wetlands for SeaTac to expand its third runway, I would use a replicatable functional assessment.

MR. PEARCE: That's not my question. I move to strike.

Q And I ask the witness to answer my question could she perform a functional assessment, if she had access to it?

A I could perform a functional assessment if I had a functional assessment method to use.

Q You're saying that you personally don't have a functional assessment to use?

A I do not have any private nor would I create on my own based on my professional judgment a functional assessment method. I would use a peer-reviewed methodology.

Q You haven't done a functional assessment study of this site, isn't that correct?

A That's correct.

Q Are you aware of whether the Department of Ecology reviewed the functional assessment the Port did?

A Both Mr. Scottsdale and Ms. Walters, who is working with Ecology, said that they had, I think, on cross-examination --

Q I'm asking you what you're aware of, not what their testimony was. Are you aware of whether they reviewed --

MR. EGLICK: Well --

MS. COTTINGHAM: You can bring it out on redirect. He is trying to ask simple questions.

Q (By Mr. Pearce) I'm just asking a simple question. Are you aware of whether Ecology reviewed the functional assessment?

MR. EGLICK: If I could just state an objection, though. If the witness in responding to whether she is aware is explaining her awareness is from the testimony given here, I think that's a fair way to respond. He is asking about her awareness.

MR. PEARCE: It calls for a yes or no answer.

MS. COTTINGHAM: You can bring it out on redirect.

A Yes.

Q Thank you.

Does the WFAM method apply to slope wetlands?

A Not the one for Western Washington.

Q Okay. You mentioned about I think in your testimony potential impacts to Puget Sound. Have you done any quantitative study showing any impacts to Puget Sound for this project?

A No. But I do need to expand on that a moment to say I wasn't trying to imply that there would be impacts to the ecosystem of Puget Sound.

Q I would like to show you this. Very briefly, you're talking about the Walker Creek headlands. Are you talking about this area here?
A The people have been referring to the area, as Dr. Kelley referred to it this morning, that was a question of whether it was fill or not.
Q This area here?
A That's all I know is from listening here. I don't know anything more about that.
Q Okay. With respect to this planting plan you just handed us, would you look at the top of that, where it says Miller Creek Relocation Zone?
A Yes.
Q Is it your understanding that's just in the Vacca Farm area, not along the Miller Creek riparian corridor to the south?
A That's correct.
Q So this doesn't have anything to do with the Miller Creek riparian border to the south of Vacca Farm?
A I believe I was specifically referring to the Vacca Farm floodplain area, yes.
Q Is it your testimony that bigleaf maple, red alder, Black cottonwood and Oregon ash are not trees?
A I did not testify to that effect.
Q I thought you said there were no trees?

MR. EGLICK: Objection. Argumentative.

MR. PEARCE: I'm just trying to clarify the testimony.

MS. COTTINGHAM: I'll allow the question.

THE WITNESS: Madam, do I have to answer that as a yes or no question?

MR. EGLICK: I object. It wasn't a yes or no question.

MR. PEARCE: Let me rephrase.

Q Did you say whether there were no trees listed here?

A No, I did not say there were no trees listed here.

Q Thanks.

Is it your understanding that the Vacca Farm is proposed to be a forested wetland or proposed to be a scrub/shrub wetland or is it mixed?

A I believe in Dr. Cassin's testimony yesterday morning that she referred to it as creating a forested floodplain.

Q So do you know whether a portion of the Vacca Farm is proposed just to be a scrub/shrub wetland, or do you believe it's all proposed to be a forested wetland?

A Based on the documents that I've reviewed, based on the performance standards, based on the planting plans, with a careful review, that floodplain is going to be a scrub/shrub system. In the text I believe it's referred to frequently as a floodplain forest.

Q You're not a hydrogeologist, are you?
A No.
Q Were you here for Mr. Bailey's testimony?
A If that was this morning, I have to admit, I wasn't paying attention to his testimony, I was rather busy.
Q But you don't have an opinion about how much water will be delivered to the base of the embankment to the wetlands, do you?
A I have an opinion, but I'm not going to attempt to express it here because I have a feeling I will not be accepted as an expert in the field.

MR. PEARCE: Thank you. That's all of the questions I have.

MS. COTTINGHAM: Any redirect?

MR. EGLICK: No.

MS. COTTINGHAM: You're excused. Thank you.

Are there Board questions?

MR. JENSEN: Ms. Sheldon, in regard to the 401 certification, the standard of ten inches from the surface March mid-April, you testified about that?

THE WITNESS: Yes, sir.

MR. JENSEN: Mr. Scottsdale testified about that ten inches as including the concept that that water would wick to the soil and essentially be saturated soil during that time period?

THE WITNESS: Yes, sir.

MR. JENSEN: Do you agree with that?

THE WITNESS: Well, yes, sir. But there's a difference between saturated to the surface and inundated. Would you like me to explain?

MR. JENSEN: Go ahead.

THE WITNESS: Saturated to the surface is water that the performance standard says groundwater at ten inches, which means free water, if you dig a hole in the ground and walk away and come back, there will be free water between the soil particles standing there. Capillary action on some hydric soils will raise the effect of that water up to the surface.

The point I was trying to make is that these forested hillside wetlands, and I used Wetland 18, I believe, 437, as the example, actually have inundation and flowing water, which means there's actually water on the surface which thereby means that it's not only saturated from below, it's so saturated that there's water flowing on the surface. That's a very different hydrologic phenomenon.

MR. JENSEN: Is part of your critique of this criterion also the time from March to April?

THE WITNESS: Correct. That would be the easiest point in time for something to be wet in the Pacific Northwest is from March through April. It is also

a timeframe of the beginning of our growing season here, so when one does wetland delineations identifying the edge of the wetland, that is oftentimes considered the ideal time to be in a wetland to determine if it is a wetland. One of the reasons I had suggested or strongly recommended that preproject hydrologic monitoring be done on these wetlands is that the way the proposed standard is written is that's all there has to be for water in these wetlands, it only has to be wet to the surface with free water ten inches below the surface from March until April, and that's the only parameter they have to meet for hydrology, whereas these wetlands in preproject condition may have had flowing water across the surface. We don't know, we don't have enough data to tell, but when I hear there's flowing water across the surface in October, that tells me that that flowing water has likely been there all year. So we may be changing a year-round condition, they could be year-round saturated to the surface, they could be year-round saturated within six inches. If we change the parameter to at most there an eight-week period, that's all they have to do to be checked off on the okay performance list, that's all Ecology can hold them to legally.

MS. COTTINGHAM: Do you have an opinion of what an appropriate time period would be, if not April through

March?

THE WITNESS: I mean no flippancy if I say quite candidly, as a professional wetlands ecologist, what I would have strongly recommended is knowing how those wetlands functioned and what the hydrology was ahead of time to attempt to replicate it or match it in the future for both the duration of the inundation and the depth. So where was the water in the water table, was it above the surface or below, and how long was it there. So at this point one could still collect hydrologic data on those wetlands, at least for some period of time, and I know they have begun to collect that hydrologic data. There have been changes in the contributing basin. I believe the Board has been out and seen the site recently. There are changes in the watersheds, so we have what we have and I don't think anybody can take it backwards. That's what I strongly recommend.

MS. COTTINGHAM: Any questions as a result of the Board questions?

BY COUNSEL: No, Your Honor.

MS. COTTINGHAM: Thank you.

Your next witness.

MR. STOCK: We'll recall Dr. Lucia to the stand.

MS. COTTINGHAM: Dr. Lucia, you're still under oath.

PATRICK LUCIA, having been previously sworn to tell the truth, the whole truth, and nothing but the truth, further testified:

EXAMINATION

BY MR. STOCK:

Q Good morning, Dr. Lucia.

Have you had the opportunity to review the prefiled testimony of Dr. Mike Riley and his report relating to the groundwater flow and transport model?

A Yes, I have.

Q And do you have opinions with respect to that model?

A Yes, I do.

Q Before you express those opinions, could you briefly explain for us how Dr. Riley modeled the embankment fill?

MR. KRAY: Objection. No foundation.

MS. COTTINGHAM: Sustained.

Q (By Mr. Stock) You've reviewed the Riley report, have you not?

A Yes, I've reviewed it for its descriptions of how he modeled the embankment fill and the drainage layer.

MR. STOCK: And based upon his prior testimony with respect to his expertise, I believe a proper foundation has been laid.

MR. KRAY: I object. My point is you asked him

how Riley did it; it's his understanding of how Riley did it.

MR. STOCK: That is an objection to eat up time and I object to that type of objection. This is getting a little ridiculous, given the clock is winding down here.

MS. COTTINGHAM: Ask him his understanding.

Q (By Mr. Stock) Would you please state your understanding as to how Dr. Riley modeled the embankment fill?

A Yes. May I use this board?

Q Yes?

A In my review of his report, and this is a complicated subject, so I'll try to schematically show how this was done in my understanding.

To describe it briefly, I think Dr. Riley conservatively modeled in the embankment fill the transport of the metals as they went through the embankment fill to interface with the drainage layer. And the way in which he did that - we'll show this as the embankment layer and this will be the drainage layer down here - is think of it as a single soil particle, to try to make it easier to understand. What Dr. Riley did was to take some samples of soil from borrow sites and run the SPLP test on it in which a liquid is run through the soil.

Out of that you collect a liquid, and for example we'll take in the first case arsenic. They found that in

running these tests on arsenic that for each particle of arsenic, if we think about it that way, for each one particle here there were 1570 particles left in the soil. So the ratio that he gets, the partitioning factor is 1570. This is important, this I believe is the key to the model and key to understanding the validity of the model is how these parameters, particularly the partitioning factors, are derived.

Now, Dr. Riley in his prefiled testimony, in paragraph 18, talks about how in naturally occurring soils these contaminants, arsenic, lead, all of the other metals, are bound up within the soil particles, and there are some particles which are more loosely bound to the edges. So you would expect that for naturally occurring soils there would be a high ratio that you can't get these particles of lead or arsenic, in this case, out of the soil, they just won't come out, they don't leach very easily. And he correctly points this out. So he gets this high ratio here.

So in the embankment, as water moves past the soil, it tends to take these particles, some of these particles and move them out, and move them out at a ratio, a high ratio such as this, so that as it moves to the drainage layer it carries these particles, which it separates, desorbs or puts into solution from the surface.

Dr. Riley put the soil concentrations at their allowable levels, and I think this process of measuring how these particles become desorbed or dissolved to go into solution was correct.

Q Then explain for us what's your understanding of how Dr. Riley modeled the drainage layer?

A Herein I think is where the problem lies. And I think the drainage layer was ill conceived and that the drainage layer was modeled -- basically it acts as a huge sponge and it doesn't allow any of the metals to be transported out of the drainage layer.

Again, we'll have a particle of soil in the drainage layer. Now, these particles are moving through water, and in the drainage layer we have a different process which occurs; it's not removing particles from the surface, it's the particles then attaching themselves to soil particles. And Mr. Riley describes this process as well, quite well, actually, in his testimony.

I believe the fundamental error that was made here is that in looking at the retardation factors again, it took materials that were going to be used for the drainage layer and ran the SPLP test on them again and then collected particles as they came through. However, in this case we found the ratio was 22,900. Again, it indicates there's a -- it's very difficult to take the

particles out of the soil and put them into solution. In fact, the tests they ran, they couldn't get particles into solution. And these are artificially generated numbers.

So in Dr. Riley's model, what happens is that for all of the particles now that come out into the drainage layer, they go back into the soil at a ratio of 22,900 for every one that passes through. And I believe this is incorrect modeling because, as he points out correct here in the fill material, these metals are firmly attached to the soil particles because they are there from all of the geologic processes that occur. As he points out in his testimony and in Appendix C of his report, when you have water moving contaminants through soil, they attach to the outside, they don't place themselves internally like this, like they do in naturally occurring soils, so the process is not reversible, you can't run this test and say it works both ways.

What should have been done, and actually it's described in Appendix C of Dr. Riley's report --

MR. STOCK: Dr. Riley's report is Exhibit 1320.

A (Continuing) He says the experimental procedures for determination of metal partitioning coefficients for these purposes - we talk about this case here - generally involve bringing a sample of the soil in contact with an aqueous solution containing the metal of interest at a

known concentration and measuring the amount removed from the solution after some time has been allowed for equilibration. So what should have happened, we should have taken this liquid that came out of the SPLP test, run it through and then see how many would have attached onto the soil.

Q As a result of that problem, do you have an opinion with respect to the validity of the conclusions that Dr. Riley reached in his report?

A I think the conclusions he reached are erroneous. I believe they're erroneous because this mistake in the method of modeling the drainage layer causes the drainage layer to have a huge capacity to absorb metals, and that capacity really is due to a belief that the geologic processes that would allow natural soils to have these types of partitioning factors could be recreated as water runs through here. I think intuitively, without even doing an analysis, you would expect the partitioning factor for the absorption of metals to be less than the partitioning factor you get for leachment. They have less capacity, so you would expect this number to be smaller, so I would expect that number to be orders of magnitude less and therefore the ability of the drainage layer to retard these chemicals would be orders of magnitude less. Therefore, we can't really tell from

Dr. Riley's analysis how much metal is going to be transported through the drainage layer.

Q Did Dr. Riley do any modeling of the transport of TPHs?

A Yes, I believe he did, as well.

Q And would the same concept that you referred to here, the same problem apply there?

A I didn't look into the modeling of TPHs as we did with this, but this was an obvious error we felt in the modeling of the partitioning coefficients for the metals in the drainage layer.

Q Dr. Lucia, I want to switch gears, given the time, and talk about the low-flow analysis you did. And if you would put back up Figure 6.

Now, yesterday there were Port consultants that were critical of your assumption upon which you based your conclusions regarding the lag time associated with water infiltration through the embankment. Do you have a response to that criticism?

MR. KRAY: Objection. Lack of foundation.

Q (By Mr. Stock) Well, suffice to say, Dr. Lucia, that there were rather shrill comments with respect to the assumptions you made regarding the lag time of water infiltrating through the embankment. Can you explain for us the basis of the assumptions of your model?

MR. REAVIS: I object to the characterization of

the comments as shrill. I think that's unnecessary.

MR. STOCK: Well, I'll strike the shrill.

MR. KRAY: My objection -- Ms. Cottingham, may I have a moment to voir dire the witness?

MS. COTTINGHAM: You may.

MR. KRAY: Dr. Lucia, were you present in the courtroom hearing room yesterday?

THE WITNESS: No, I wasn't.

MR. KRAY: Did you hear the comments made with regard to this issue yesterday?

THE WITNESS: Not directly.

MR. KRAY: Objection. Lack of foundation.

MR. STOCK: I can ask a hypothetical of this expert witness.

MS. COTTINGHAM: Hang on just a second, let me think about this.

You will be allowed then.

And you will be allowed to critique it afterwards. Hypothetical.

Q (By Mr. Stock) If there were criticisms regarding your assumptions yesterday during the testimony of the Port consultants with respect to the assumptions you made regarding the lag time associated with water infiltrating through the embankment, what would your response be to those criticisms?

A Well, I think I could understand the criticisms, if they misunderstood the intent of what I was trying to portray, because I believe I testified the last time I was here that the work I did was not to analyze the low flow but it was to show the Port's consultants that there are a wide range of initial conditions that could exist and that the Port has taken parameters which can vary over orders of magnitude, selected single values and represented it as the answer.

And I think the real answer is that these parameters will all vary, no one can predict the conditions immediately after construction, and that the analysis ought to be done in a way that looks at the ranges of behavior that could exist. And this is a dry embankment as I understand in the hypothetical that they criticized me for. And it is dry. But the point is that to do a proper job here people need to understand the range of behavior that could occur and need to understand whether there will be a lag time and what that lag time could be.

Q And have you seen any analysis done by the Port or its consultants in that regard?

A No, I have not.

MR. STOCK: I don't have further questions.

MR. POULIN: No questions from CASE.

MR. REAVIS: I do have some questions, though, I

guess I think this is the problem I anticipated when Dr. Lucia didn't have any comments about Dr. Riley's report the first go-round. But now he's got several comments, and I can cross-examine him, but what really should have happened is for Dr. Riley to have heard these and he could have responded in his testimony. So now I'm left as a layperson trying to cross-examine him without having evidence for rebuttal. So I guess what I would like to request is that we allow Dr. Riley to address his comments in a brief period of time after this so he can explain these issues instead of trying to force me to try to extract this from Dr. Lucia on cross-examination.

MR. STOCK: Your Honor, I have a fundamental and strong disagreement with that. On December 26, the Port served its responses to interrogatories, and we've already referred the Board to those responses with respect to the testimony of Linn Gould. That's at Exhibit 295. And in those written responses with respect to their expert's testimony, they said with respect to Dr. Riley, quote: His testimony will be based on project specifications and conditions and/or his professional expertise and experience. Nothing was said in those interrogatory responses that Dr. Riley was going to be preparing a thick modeling report. We were not given that modeling report until the evening of February 15th.

This is appropriate rebuttal, we made an objection that Dr. Riley's report was lately disclosed, it was after the February 1 cutoff date. I understand the Board's ruling in that regard and obviously we'll respect that ruling, and that is why Dr. Lucia is here in rebuttal to the prefiled testimony and the testimony of Dr. Riley from yesterday. So we have the burden of proof, we have the right to go last and that is exactly what is happening here. So if Mr. Reavis is going to put Dr. Riley back on the stand, then I will strongly insist that ACC be allowed to put Dr. Lucia back on the stand in surrebuttal to those comments.

MR. REAVIS: That is exactly my point, that is why this should have been brought out on direct.

MR. STOCK: That is why Dr. Riley should have been asked to do this modeling before January.

MS. COTTINGHAM: You may turn the clock off.

I'm not going to allow beyond the rebuttal witness at this point in time. We are close to running out of time, so let's --

MR. REAVIS: May I have at least five minutes so I can ask Dr. Riley what I should ask Dr. Lucia? Because I don't understand this stuff.

MS. COTTINGHAM: Let's take a five minutes break.

(Recess).

MS. COTTINGHAM: Thank you. Be seated. You may continue.

MR. REAVIS: Thank you. I'll take a stab at this. I guess I don't want me going forward to be construed of calling him for rebuttal testimony.

MS. COTTINGHAM: Fine.

EXAMINATION

BY MR. REAVIS:

Q Dr. Lucia, as I understand what you're saying is there's a problem in the model because once these constituents are freed up from the naturally occurring soils then you have to do something to determine how they will absorb again into the drainage layer, those materials?

A The problem is that parameters that were derived for the model were based upon tests which is measuring the desorption or the dissolution of those chemicals into water, as opposed to running the test the way that Dr. Riley mentions in his report, that you should take the liquid from the toe of the embankment to run it through the drainage layer to see how it absorbs. They're two different processes.

Q Well, let me ask you to refer to Table B-4 of Dr. Riley's report. Exhibit 1230.

MR. STOCK: His prefiled?

MR. REAVIS: The report is 1320. Table B-4, as in boy, four.

Q Okay. Now is that a table --

Well, let me first ask you if you've reviewed that table in formulating your opinion?

A I looked at the table, yes.

Q Doesn't that represent the capacity of the soils in the drainage layer to reabsorb materials that have been essentially flushed from the upper part of the embankment?

MR. STOCK: Object. Vague.

MR. REAVIS: I've got a limited amount of time. If he doesn't understand it, that's fine.

MR. STOCK: I object to that, I think Mr. Reavis may not understand.

MR. REAVIS: Well, I'm doing the best I can with the limited amount of time.

MS. COTTINGHAM: I'll allow a little leeway. Ask your question as brief as you can.

Q (By Mr. Reavis) Isn't that table defined to set forth numeric calculations or numeric results of the capacity of the drainage layer soil and other soils to reabsorb any constituents that have been moved down from other portions of the embankment?

A I really couldn't answer that. My understanding of the

way in which the ability of the soils to absorb these metals is based upon the partitioning factors derived from the SPLP test. I don't know how this was used.

Q Is it is possible, is it not, to calculate the absorption capacity of certain types of soil?

A It is possible, yes.

Q Do you know if, in the left column there, if those are various types of soils coming from the different sources that Dr. Riley examined in the column labeled "sample"?

A Without knowing the nomenclature, I don't really know where the soil samples -- I would have to go back to the other tables.

Q Let me ask you about the iron oxide. If you see the second column over, extractable oxides, and under that is iron?

A Yes.

Q If you go all of the way to the bottom of TP-2 Comp 1, and in the column is 6,080. Do you know if that's a high or low figure for that particular absorption number?

A I couldn't tell you.

Q What about any of the other numbers on that table, can you tell me whether those are high or low absorption numbers?

A I couldn't tell you, I haven't compared it to any other numbers.

Q What effect does the last column, total organic carbon,

have with regard to absorption capacity?

A How do these numbers compare?

Q How does organic carbon in general relate to absorption capacities?

A The higher the organic carbon content the greater the absorption capacity.

Q Can you tell me whether these numbers are high or low in that last column?

A I couldn't tell you.

MR. REAVIS: That's all I have, thank you.

MS. COTTINGHAM: Mr. Kray.

EXAMINATION

BY MR. KRAY:

Q Dr. Lucia, you discussed the concept of using SPLP testing results and doing some further testing from those. Have you done any of that testing?

A For this project?

Q Yes.

A No.

Q You raised concerns about Dr. Riley's opinions, and those concerns are related solely to his opinions with regard to the drainage layer, is that correct?

MR. STOCK: Object. It mischaracterizes his testimony.

MS. COTTINGHAM: Can you restate your question.

MR. KRAY: Certainly.

Q The focus of your concern is on Dr. Riley's opinion with regard to the drainage layer, is that correct?

A Based on my review of the report, and I have not had an opportunity to go through all of the analysis because I don't have the computer input and the data to run the analysis, so based on my ability to review the report, my concern is not with the embankment soils and not with the way Dr. Riley modeled the embankment soils, but my concern is with the way in which the partitioning factors were derived for the drainage layer.

Q And your opinions are based solely upon your review of Dr. Riley's report, correct?

MR. STOCK: I object to that. That mischaracterizes his testimony. And what Dr. Lucia said points out how substantially prejudiced ACC is because of the late disclosure of the report and the lack of opportunity to review the electronic data and the computer analysis behind it.

MS. COTTINGHAM: I am going to allow him to answer that question.

Q (By Mr. Kray) Your opinions are based solely upon your review of Dr. Riley report, correct?

A And my experience and professional judgment, yes.

Q The only materials you've reviewed are Dr. Riley's report, is that correct?
A And other documents related to metals and partitioning factors.
Q With regard to the low-flow analysis, you've assumed that the embankment is dry during construction, is that correct?
A For the point of showing the boundary condition, yes.

MR. KRAY: No further questions.

MS. COTTINGHAM: Any redirect?

MR. STOCK: No redirect.

MR. POULIN: No questions from CASE.

MS. COTTINGHAM: Thank you. You're excused.

MR. STOCK: ACC will call its next witness, Mr. Rozeboom.

MS. COTTINGHAM: Oh, I'm sorry.

MR. STOCK: Dr. Lucia, the Board may have questions.

MS. COTTINGHAM: No, we don't have questions. Mr. Rozeboom, you're still sworn from your earlier testimony.

WILLIAM ROZEBOOM, having been previously sworn or affirmed to tell the truth, the whole truth, and nothing but the truth, further testified:

EXAMINATION

BY MS. OSBORN:

Q Mr. Rozeboom, have you been present for the testimony of Paul Fendt, Joe Brascher, Charlie Ellingson, Keith Smith, Kelly Whiting, Michael Cheyne and Steve Swenson in this proceeding?

A Yes, I have.

Q I would like to review the definition of a hydroperiod from Exhibit 1266, the Ecology 2001 stormwater manual. That definition is a seasonal occurrence of flooding and/or soil saturation; it encompasses depth, frequency, duration, and seasonal pattern of inundation.

Is it possible to model --

MR. REAVIS: Excuse me. What page?

MS. OSBORN: I'm sorry, it's the glossary, page 24.

Q Is it possible based on this definition to model a wetland hydroperiod?

A Yes, it is.

Q Have you done so?

A Yes, I have.

Q Now, Mr. Smith indicated that SeaTac airport comprises only five percent of the Miller and Walker Creek watersheds. Does that seem like an accurate statement to you?

A I think it's a rather misleading statement in the context of looking at the environmental impacts of the airport. I think it's misleading for several reasons. The first reason is that there's only the context of Miller and Walker Creek watersheds taken together, and the data for the airport shows that actually two thirds of the airport is located in the Des Moines Creek watershed. The comparison omits two-thirds of the airport.

Secondly, of the Des Moines Creek watershed, which is asserted here, their groundwater analysis has shown that a substantial portion of that watershed, over 600 acres, in fact, contributes to the base flows in Miller and Walker Creek. So there's far more area affecting those streams than the five percent.

Finally, the analysis as described looks to the mouth of the streams as providing the basis for comparison, and in all of the other hydrologic assessments we're looking at we're looking upstream to the points of compliance, that's the most upstream point at which all of the airport impacts will be felt. So if you move the comparison to an upstream point where the airport impacts are not diluted

by downstream property, in ballpark terms I would estimate that the airport properties account for perhaps 30 percent of Miller Creek flows at the point of compliance; Walker Creek, for which there's a very, very large groundwater contribution, probably on the order of 80 or 90 percent; and Des Moines Creek is a probably on the order of 60 percent. These are just ballpark numbers, but certainly the airport has potential, more than a five-percent potential to affect the flows and the condition of the streams at the points of compliance.

Q Now, do the low-flow impacts on the streams occur only at the points of compliance?

MR. YOUNG: Objection. Leading.

MS. COTTINGHAM: I sustain the objection.

Q (By Ms. Osborn) Where do the impacts occur in the stream?

A The impacts occur from where the airport development starts through to where the development stops, and then where those points translate to water flowing from the airport property to the stream. So the impacts on the stream would begin actually above the points of compliance, and then any impacts which still remain at the point of compliance, that same impact would continue down the course of the stream down to the mouth.

Q Thank you.

Switching subjects here, the question of calibration.

Several Port and Ecology witnesses have testified that whether a model calibration is adequate is a matter of judgment.

What is your judgment regarding the Des Moines Creek low-flow calibration?

A The Des Moines Creek calibration for low flow is very bad.

Q And do the Port and Ecology witnesses disagree with you on that judgment?

MR. YOUNG: I object. Lack of foundation.

MS. COTTINGHAM: Sustained.

Q (By Ms. Osborn) Have you heard the opinions of Port and Ecology witnesses regarding Des Moines Creek calibration?

A In part.

Q Have you reviewed prefiled testimony of Port and Ecology witnesses on modeling in the Des Moines Creek basin?

A Yes.

Q Do the Port and Ecology witnesses disagree with your judgment of the Des Moines Creek calibration?

MR. YOUNG: I renew my objection. I think he said he heard only part of the testimony.

MS. COTTINGHAM: I'm not sure that's what he said, but why don't you continue and lay a foundation.

Q (By Ms. Osborn) Have you heard Mr. Whiting's opinion of the Des Moines Creek calibration?

A I have heard his opinion.

Q Does he disagree with you?

MR. YOUNG: I object. His opinion is stated in his testimony.

MS. COTTINGHAM: Why don't you ask him what his opinion is.

MS. OSBORN: I've asked him what his opinion is. I'm trying to determine whether the Port and Ecology witnesses have provided contradictory evidence.

MR. YOUNG: The testimony is what the testimony is.

MS. OSBORN: Well, Mr. Young doesn't want Mr. Rozeboom to say what he is about to say, that's the problem.

MR. REAVIS: The problem is that that is for the Board to decide, to evaluate this witness's testimony against the other witness's testimony. It's not for him to try to do the Board's job for it, I don't think it's proper to ask that, what he thinks they disagree on, that's what we've all heard as the evidence.

Q (By Ms. Osborn) Well, Mr. Rozeboom, what is your understanding of Mr. Kelly Whiting's opinion about the Des Moines Creek calibration?

A Mr. Whiting's testimony described it in one instance as being poor and in another instance as being less than good.

Q Did the Port's witnesses provide opinions about the Des Moines Creek calibration?

A No. The Port's witness was Joe Brascher brought to this proceeding, and Mr. Brascher denies involvement with the Des Moines Creek model calibration.

Q Now, what is your judgment of the Walker Creek calibration?

A The Walker Creek for low flows is also quite poor.

Q What evidence to you offer to form that opinion?

A The measured calibration is to look at or compare how the simulated flows compare to the recorded flows.

And if the Board could retrieve the low-flow analysis or refer to it later if it prefers --

Q It's Exhibit 1308.

A And once you retrieve that, I'll point you to two pages of that document.

Q Appendix A is midway through the exhibit. We're looking at page A-24, which actually contains a plot, a blue and red plot.

MS. COTTINGHAM: Attachment A?

MS. OSBORN: Appendix A.

MS. COTTINGHAM: I think this is the exhibit yesterday that we had trouble with.

MS. OSBORN: How about if we give you the exhibit number and pages and move on with our testimony.

It is Figure 3-5, Walker Creek near wetland, observed versus calibrated low flow, 1991.

MS. COTTINGHAM: Ask your questions because I'm not sure it's going to be worth the time.

Q (By Ms. Osborn) You were offering your opinion about why the Walker Creek calibration was poor.

MR. YOUNG: I object. This has been asked and answered. He testified in his direct exam.

MS. OSBORN: This is rebuttal to Mr. Brascher's opinion that the Walker Creek calibration is adequate. We're explaining why it's not.

MR. YOUNG: He has already testified.

MS. OSBORN: Mr. Young is eating up my clock.

MS. COTTINGHAM: I'll allow the question.

MS. OSBORN: Thank you.

A First off, this hydrograph calibration for low flow for 1991 is particularly important for two reasons. The first reason is that this gage, as stated by Mr. Brascher in his testimony, is located pretty much at the point of compliance, so this is the point of compliance for Walker Creek.

MS. COTTINGHAM: Can you tell us what the figure number is there so we can find it?

THE WITNESS: Figure 3-5, it's located on page A-24.

MS. COTTINGHAM: Continue.

A The second reason that this is particularly important is that the Port's mitigation plan for Walker Creek is based pretty much exclusively on the year 1991, and that is revealed in the prefiled direct testimony of Paul Fendt, on his page 14, paragraph 49, which had begun on the previous page.

And what Mr. Fendt says is the mitigation is determined from 1991 because they had adopted a two-year low flow as the criteria for mitigation and the 1991 represented a two-year low flow, therefore, they are examining what happened in 1991 only and determined the mitigation from 1991 only. So there's two reasons why this particular year of calibration is quite important.

When you look at the chart you will see that it has two curves, one is a blue line representing the gage data and the second is a red line representing the simulated or calibration data. What's notable is the calibration data falls far, far below the blue letter reserve data, it's not quite half but it's nearly one half of the amount. What that says is that the calibration, especially for this critical year which is the basis of the mitigation plan, is off by nearly a factor of 50 percent.

Q Moving on to the question of modeling the borrow areas. In response to your testimony regarding borrow areas three

and four, Mr. Fendt has stated that there was no need to model the excavation of those areas because the effects are temporary and reversible.

First of all, could you locate on the map where the borrow areas are?

A Yes, I can. This is Figure 1.3-1 of one of the documents, and it shows borrow areas three and four and one (indicating).

Q Do you agree the impacts of excavation are temporary and reversible?

A No, I do not.

Q Why not?

A First, there's no plan to reclaim and re-import six point some million cubic yards of material that will be excavated and removed from the sites; secondly, there's no plan to replant those areas with forests, which is the present condition of those sites.

Q Now you have also raised concerns about the modeling of the IWS lagoon, and Mr. Fendt responded that the footprint of the lagoons are too small to be of significance to the model. Is Mr. Fendt's testimony responsive to your concern?

A Mr. Fendt's testimony misrepresents the point I was getting at, and we've had this back and forth in some of the prior correspondence. I think in my declarations

filed in the case I first raised the point of the impact of why the lagoons, and in the second declaration I clarified that the response was nonresponsive to my comment.

The heart of the comment is that while these lagoons may be less than ten-acre size total footprint, they are receiving runoff from an area of some 400 acres in size. These lagoons, particularly one and two, the ones which receive water first, are or were dug in soils reported to be gravelly-sandy material, and one would expect gravelly sandy material to have a high infiltration capacity.

So the concern I have is that while these lagoons were never constructed with the intent or objective of infiltrating that runoff to groundwater, one of the effects of having them on line in the early years is they have a lot of runoff from the 400 acres to infiltrate the groundwater and then down to the streams.

Q Moving on to the question of use of time steps. You had indicated in your testimony that it rains five percent of the time, and Mr. Fendt offered that it rains for days at a time in Western Washington. Can you reconcile these two statements?

A The reason why it doesn't make sense mentally is people don't tend to think in terms of 15-minute time steps, people tend to think in daily time steps in terms of their

activities. I actually went back and looked at the same 15-minute data set and reprocessed that data last night to see what the data shows with respect to a daily frequency of rainfall.

Q And is that the demonstrative exhibit we've just passed out to the parties and the Board, the rainfall duration analysis?

A Yes, that is the exhibit.

Q You prepared this last night?

A That is correct.

Q And what does it show?

A It shows that on a daily time span or a one-day period, one would expect that over the last 50 years it would be raining approximately 43 percent of days.

Q And for 15-minute time periods?

A And for 15-minute time period, again, it confirmed the earlier number of approximately five percent.

Q Now what is the significance of using 15-minute time steps to calculate infiltration?

A The 15-minute time step provides a flash runoff, and that's consistent with heavy cloudbursts which occur in a short period of time, it has an intense burst of rainfall which has an intense burst of runoff and the intense bursts can overwhelm the capacity of the soil to soak up and infiltrate the water. So if you have the cloudburst

events represented in the model, that's going to produce rates of runoff which are unable to be infiltrated into the embankment.

MR. YOUNG: Your Honor, their time is up. It's says 125.07, 8, 9 --

MS. COTTINGHAM: I'll allow a few more questions.

MS. OSBORN: I just have not even five more questions, we're just about done.

Q What is the significance of using different time steps or 15-minute time steps or hourly time steps for low streamflow impacts?

A In this case, the concern really is how much water can get through the initial soil horizon into the body of the embankment. And the 15-minute time steps will cause more water to run off, and less water to go into the embankment. The result of that is that the 15-minute time step would produce less water coming out of seepage flow to the streams.

Q And what does the King County Storm Water Manual say about use of 15-minute time steps?

A Well, the King County manual at page 3-23 of the 1998 manual provides a table that specifies what type of time steps to use with what type of analysis. They specify that a 15-minute time step analysis is required for the

design of conveyance overflow gages, and this is a conveyance overflow analysis, how much water will be conveyed over the filter strip and will overflow.

Secondly, the King County manual requires a 15-minute time step to determine the design flow for a certain water quality facility which happened to use filter strips and bioswales. And filter strips at the airport is very much similar to a filter strip with bioswale for which the King County requires that.

Q And we have provided an excerpt of the 1998 Surface Water Design Manual. This is what you've been discussing?

A Yes, it is.

Q Okay. This is from Exhibit 2068

Finally, on the question on the mix and match modeling, Mr. Brascher and Mr. Ellingson testified that they disagreed with you that use of a single model is an appropriate way to model the embankment hydrology.

Is that what you testified?

A That is not. And I've gotten into this the first time I was before the Board. My objection is to using one bottling approach for a predevelopment condition and then using a centric or sophisticated model approach for the post-development condition. And my preference would be that the Port had used the more sophisticated approach for both the future and the current condition so that the

modeling assumptions are consistent with each other and you're limiting the variables that show up as possible impacts.

MS. OSBORN: That's all I have.

MS. COTTINGHAM: Mr. Poulin, do you have questions?

MR. POULIN: No questions from CASE, Your Honor.

MS. COTTINGHAM: Is there cross?

MR. REAVIS: I have a few.

EXAMINATION

MR. REAVIS:

Q You described earlier the ballpark numbers. How did you derive the ballpark numbers?

A Visually looking at the size of the watershed and the size of the watershed which is occupied by the airport as shown on the exhibits in the Port's documents.

Q You didn't do a quantification of that?

A No.

Q The Des Moines Creek basin plan was created a number of years ago, was it not, the model for that plan?

A I don't have knowledge of that.

Q Do you know who was involved in the creation of it?

A I was not involved with that.

Q Okay. You don't know whether the City of Des Moines or

the Port or anybody else collaborated on that model?

MS. OSBORN: Objection. Counsel is testifying and the witness has answered. He said he didn't know.

MR. REAVIS: I'm just asking a follow-up question though to know if he knows this particular aspect of it.

MS. COTTINGHAM: I think it was asked and answered.

Q (By Mr. Reavis) Do you know whether or not that model is being used to calibrate development in the area where that model was?

A I have no firsthand knowledge.

Q You talk about lagoon lining and infiltration from the lagoons. You haven't done anything to quantify the amount of that infiltration?

A No.

Q With regard to 15-minute time steps and the requirements of the -- which manual is this?

A That's the 1998 King County Surface Water Design Manual.

Q Did you hear Mr. Kelly Whiting testify?

A Yes.

Q First off, Mr. Whiting uses the King County manual and works for King County, is that right?

A That's correct.

Q Did you hear Mr. Whiting testify that a one-hour time step

was appropriate for this site because of the slope of the grass and the filter strips?

A I heard him testify to that. I question his judgment in this instance.

Q He is the guy who regularly works with the manual on behalf of King County?

A The King County manual specifies that bioswales, for instance, have a slope which begins at one percent; and filter strips, I understand, have a two-percent slope. I understand that filter strips have a length of 75 feet, typically, whereas a bioswale as specified in the manual has a minimum length of 100 feet. So the numbers are not out of line by the service facilities which are specified in the manual.

Q You disagree with Mr. Whiting's interpretation of the King County manual as applied to this site?

A In this specific application.

Q What was described in the question to you as mix and match modeling, you don't have any quantitative information to determine whether or not that does actually represent an error here, do you?

A There is actually an error, there are several sources of error.

Q Have you quantified those errors?

A In very approximate terms, one of those.

Q Are you quantifying in very approximate terms, does that make sense to you?
A Yes, it does.
MR. REAVIS: That's all I have.
MS. COTTINGHAM: Mr. Young.

EXAMINATION

BY MR. YOUNG:
Q The 15-minute data is not real data, is it?
A It is real data, by some measures.
Q Well, it's not like somebody measured rain every 15-minutes, what it did is took an hour and divided it up by 15-minutes?
A That's not completely true.
Q What does it mean when you say you recorded hourly data and disaggregated the 15-minute data?
A The data at SeaTac airport and many other gages is recorded on an hourly time step, one number reported as the rainfall accumulation over a one-hour period. There are other gages, many operated by King County, which record data through smaller time steps, such as and including 15 minutes. So the basis for the disaggregation has been done by others. I've been told to examine the 15-minute data for other gages and determine from other nearby gages what the pattern of 15-minute data is. So

the 15-minute distribution is based on real data, from data I believe in this case from Star Lake which is located in the general area of SeaTac, and that distribution based on real 15-minute distribution is then applied to the hourly record of the SeaTac. So while there is some disaggregation involved, the hourly data are certainly recorded and the 15-minute distribution is certainly based on real data.

Q Doesn't the other exhibit here say that -- do you have it in front of you, this other page from the King County?

MS. OSBORN: Objection. I'm sorry, I didn't understand what that question was. I couldn't hear what you were saying.

Q (By Mr. Young) Look at the other page from your exhibit.

MS. OSBORN: The other page meaning the excerpt from the King County monitoring manual?

MR. YOUNG: The other handout, I'm sorry.

MS. OSBORN: So from Exhibit 28.

Q (By Mr. Young) At the very top there, do you have it in front of you?

A Yes, I do.

Q It says KCRTS runoff files are provided with hourly 15-minute time steps?

A It does.

Q Then it goes on to say the 15-minute time series are

generated from the original historical hourly precipitation records which were synthetically disaggregated into 15-minute time steps using 15-minute rainfall records in high velocity --

A That's what I believe I said.

Q That's what you said?

A That's what I said.

MR. YOUNG: That's all the questions I have.

MS. COTTINGHAM: Any redirect?

MS. OSBORN: I do have one.

EXAMINATION

BY MS. OSBORN:

Q Mr. Rozeboom, you were asked whether you have done any modeling to quantify the differences between use of an existing model -- use of one model for existing conditions and use of another set of models to model future conditions. Did you have access to those models?

A I'm sorry --

Q Did you have access to the Port's modeling of the embankment, did you have the program, the computer files available to do that kind of analysis?

A We do not have the -- we have some of the models that were provided digitally I think after the discovery date in the materials that were excluded from what we were supposed to

look at, but those models came without any instructions as to what files were supposed to represent what situations. So I received some information late.

I'm not sure I understand your question.

Q I'm just trying to ascertain whether you had the tools available to do that kind of quantifiable check, to model?

A Could I explain one of the discrepancies I said which I approximately quantified?

MR. REAVIS: That goes beyond the scope of the question.

Q (By Ms. Osborn) Did you have that information available, the models available to you?

A We had --

Q I understand you had part of the data, part of the files; did you have all of it, were you able to replicate the Port's modeling?

A We did not have all of the files, but we are not groundwater hydrogeologists, and if we had the Hydrus model I would not have been able to run it myself.

MS. OSBORN: Thank you.

MS. COTTINGHAM: Further questions?

BY COUNSEL: No questions.

MS. COTTINGHAM: Any Board questions?

You're excused.

And I hope you stop the clock. How close are we?

MR. POULIN: I think we are under the grand total.

(Laughter).

MS. COTTINGHAM: Assuming that this side will give you their minute.

Well, thank you for keeping this as close as possible. What I'm going to suggest is that we give you plenty of time to prepare for the closing. And how about if we start at 2:30. Is that adequate time?

And what I would like is some help in arranging this and getting the podium in. And I would also like to suggest that we use the chess clock for keeping track of the closing argument time. And I'm going to give an hour for each side, so you're going to have to figure out how you're going to share it. So be back here and we're going to start at 2:30.

(Noon Recess at 12:40 PM)

MS. COTTINGHAM: Back on the record.

We are here now for closing arguments. Before we start the closing arguments, I would like to on behalf of the Board thank the parties for their presentations over the last two weeks. This case is probably the largest and most complex ever to come before the Board, definitely the one with the most exhibits, as evidenced by the fifteen volumes of binders and the nine binders of prefiled testimony.

The management of this case has probably challenged you as much as it's challenged us, and I would like to, in addition to thanking the attorneys, I would like to thank the paralegals. I believe a special thanks is in order for Andrea Grad, Christine Winkleman and Wendy Clements. So thank you very much for managing the documents for us.

Following the closing arguments, the record will remain open for a limited period of time and for a limited number of purposes. First of all, pursuant to the Board's order, the record will remain open for the publication of certain depositions, along with the objections. So we're still waiting for the response to the objections. And when we receive those, along with the documents, the Board will rule on the objections and they will be entered as part of the record.

The Board will also finalize the list of admitted

exhibits and indicate for what purpose. The basis of that will be the matrix of what was presented before the hearing and with the addition of the few exhibits that were offered during the hearing by the Appellants. It is my intent for those exhibits that are part of the record but were not actually referenced by a witness to be allowed as background but not for the truth of the matter asserted, and the matrix that we finalize will indicate that.

Finally, there are some outstanding issues related to redacted prefiled testimony, and I will assure that the record clearly shows the testimony with the redactions, and in the case of the revised prehearing testimony I believe of Mr. Garland. I will also assure that the record reflects the unredacted matters, in case there is a question on appeal.

Finally, the parties have also agreed to a timeline for the submittal of draft findings of facts and conclusions of law, and I will memorialize those time frames in the next week or so, well, in the next couple of days. The Board has 90 days from the close of the hearing today to render a decision, and a written decision will be made available immediately after the board renders its decision. Written copies will be sent to the parties and shortly thereafter a copy will be available on our web

site.

And with that we'll move right into closing arguments. And as by previous arrangement, we've given one hour to each side. The Appellants have the burden in this case, you will go first, and if you so wish you may reserve some of it.

MR. EGLICK: We would like to reserve twenty minutes for rebuttal, if we could.

MS. COTTINGHAM: And we are going to use the clock.

MR. EGLICK: That's Mr. Poulin's department.

MR. POULIN: Yes.

MS. COTTINGHAM: By the way, I would just like to comment that I think the timekeeping, although I'm sure it added a bit of stress to all the parties, it made sure that we were able to conclude this case in the allocated amount of time. As Mr. Poulin said, right on the money with the sharing of time. So I appreciate the timekeeping.

So, Mr. Eglick, you may proceed.

MR. EGLICK: Thank you.

MS. COTTINGHAM: I think for the record, for the televised record, it would be appropriate for you to introduce yourself and who you represent.

MR. EGLICK: Thank you.

Once again, then, for the record and for the Board, this is Peter Eglick, and I'm from the Seattle law firm of Helsell Fetterman, and with my co-counsel, Kevin Stock, Mike Witek, and Rachael Paschal, and then Mr. Poulin, for CASE, we represent the Appellants.

I also want to thank the Board for the courtesy that's been shown, it's been sometimes tense, working against that clock tends, I think, to make the attorneys a little bit jumpy and we appreciate the Board's understanding.

If this case were a movie, I think we would have to say it was shot out of sequence, you didn't hear the wetlands testimony in one neat package and the low-flow testimony in one neat package and so on, and that I think is probably a disadvantage for everyone concerned. Given the nature of closing and the time we have, I'm not sure I'm going to be able to give the closing in sequence either, but I'm going to try to, and first remind you of the framework.

The question is, is there reasonable assurance that water quality standards and water quality law will not be violated? Did Ecology have it when it issued the 401 certification? The Respondents would have you believe that the question also is, does it exist now? To the

extent the Board accepts that as the issue before it, we think the answer to both questions is a resounding no. This is still, to quote from the Battle Mountain Gold case, a work in progress, and a work in progress cannot get a 401 certification, just as one could not be granted in Battle Mountain Gold. What's at stake here is, as Battle Mountain Gold discussed, the replumbing of watersheds, valuable wetlands, Class AA streams, that means they're extraordinary waters of the state. And as Tom Luster, the State's senior expert on 401 until he was removed from the 401 application here and then left the state's employ a couple of months later, reminded us, extraordinary waters of the state have protections in the water quality standards, Class AA, that go beyond for example Class A or Class B. All of the characteristic uses, not just most, for example, are to be protected. The antidegradation standard in the water quality regulations therefore applies. And both protections here require denial of the 401.

I'm going to actually now move into a few what I like to call warm-up issues, and these are ones that I think can be easily dealt with but they illustrate the problem that we have had with this 401 application over the years that the Port has successively submitted. And what they reflect is once again a work in progress and really a

refusal on the part of the applicant, the Port of Seattle, to buckle down and do what would need to be done to prove reasonable assurance.

Let's take one short, small example, the agreed order under MTCA. The agreed order was entered in two years ago, I believe 1999, it's in the record, it said there will be numeric model to show the fate and transport of contaminants from the AOMA area. Has there been that numeric model performed? No. You've had conceptual PPA, preferred pathway analysis, you've had everything but what the agreed order said must be done, and the Port has had three years to do it and Ecology has had three years to require it to be done. The answer that you get from the Respondents is, well, we conceptually decided that in fact if we did the model nothing would be shown. Well, the governor certified, the governor of this state, Governor Locke, certified to the federal government in 1997 that what was necessary for reasonable assurance was the actual numeric modeling. That's in a letter, in the record, to the federal Department of Transportation. That's what's necessary, the standard was set, it hasn't been performed. No reasonable assurance, no compliance with the agreed order, 401 certification is inappropriate.

Let's take another issue, and this one I think is a bit more complex, but only in the sense that I think

there's been some confusion concerning the facts, and I think we've cleared that up in this hearing. That has to do with the issue of water rights. Water rights in this state are governed by statute and the statute requires that when you are going to capture water, public water, and appropriate for a beneficial use, then a water right must be obtained. The precedent for that or the requirement for that is in the state law itself, and it's not a matter of policy, it's a matter of what the law requires.

What we have here is a circumstance where a water right has been dispensed with. I suppose the question that could be asked is, well, do you really need the water right to get to the point of reasonable assurance? We think the answer is definitely yes, because without the water right you have no protection for the instream flow which the Port must contribute in perpetuity to meet water quality standards. Now, you know, there have been some arguments, well, we've never required a water right before for stormwater detention. Well, this is not stormwater detention and release by infiltration, this is stormwater being captured and released in perpetuity for a particular purpose and a particular point of compliance and a particular very technically calculated rate. So it's entirely different than what you would do in a subdivision

or anything like that. And I think the witnesses from Ecology, when it got right down to it, confirmed that and confirmed that they issue water rights for low-flow mitigation plans. Ecology's water rights managers referred to the Kitsap PUD and the Trend West instream rights in the Yakima basin as two such examples.

The issue before the Board, I think, is whether or not it's going to enforce the law or give Ecology a pass on this. And our position is simple: The law requires a water right, there's a valid purpose behind requiring that water right, not that the purpose needs to be proven in this proceeding, because the law is the law and the water right should be required.

With regard to the question of whether the streams in this area we're talking about are closed, the Board should keep in mind that they are closed, but the record also reflected that they could well soon be open, and when they are open, there are pending applications on that exhibit called the WRATS list, W-R-A-T-S, which reflect that in fact there could be problems instream with the appropriation of water or taking water by other parties.

Let's talk for a moment on I think another issue that is in some ways easy but very, very important, and we did have some testimony on it today, so it's probably a good one to address now. That's this MSE wall. This is a wall

of, I think in our brief we said a pharaonic, and by that I meant related to pharaoh, you know, the guy from Egypt, proportions, it is monumental. This wall is being constructed looming over Miller Creek, a Class AA protected water of the state. One would think in that circumstance, when you're building a 135-foot high wall, topped by a 20-foot embankment in a seismically and environmentally sensitive zone, that you would be using at least the standard that's required for building a federal highway. I mean we're protecting aquatic resources here, one would think that would be the case, but that's not the case here. There's never been a wall of this size like this before that has been subjected to earthquake shaking. It's never happened, it's never been tested, it's of unprecedented scope and there is substantial uncertainty remaining concerning its seismic performance. Now some of that uncertainty I think could have been eliminated if folks had come in today and the last few days and rather than talking about all of the experts who looked at it, if they had said we're using the standard that you have to use for a federal highway, at least. But that wasn't the testimony, the testimony in fact was that a lesser, less conservative standard was being used. And that's a mistake and that means that there is a substantial risk and certainly not reasonable assurance.

Now those are some of the I think basic issues and perhaps shorter issues that are now cleared to the side. But let's talk about the fundamentals here that have taken up a lot of the testimony. And they have to do with starving streams, obliterating and then perhaps ameliorating your obliteration of wetlands when you bring in these 20 million cubic yards of fill, and it also has to do with what's going to be in the fill.

Now one of my kind of ways that I look at this case, and I was thinking about it when we were in this room earlier, is, if you wanted to know what was in this room by sampling, and let's say that you only had to take a couple of samples, and for a room of this size, that is probably all you would have to do under these fill criteria, if you only took a couple of samples and you took one from behind the Board where the notebooks are and then one from over there where the notebooks are, the sample would tell you that this room was composed of notebooks. If you happened to take samples from back here, what the samples would tell you is the room is composed of people. But that would be four samples, and you're only taking two. Picture yourself in a circumstance where you have a quantity upward of a hundred thousand cubic yards, up to a million, and you're only taking six samples. Are you going to find the notebooks,

are you going to find the people? But we're not talking about notebooks and people, we are talking about contaminants, and what we have here is a circumstance where 20 million cubic yards of fill are being imported with every chance, no reasonable assurance, in fact every chance that hot spots, that contamination will be missed. Why? You have a Phase I assessment, well, that's documents, that is going and talking to people on the site, that's not going to find your contamination. You have a Phase II assessment which involves some sampling, but, yes, very, very limited, very limited in terms of the number of samples. And then let's look at the criteria that apply to that sampling. TPH, not a naturally occurring substance, but apparently it is for purposes of the fill criteria in the 401. You have other harmful substances, contaminants, that are above natural background levels that are permitted, so even if you find a contaminant under the sampling criteria that have been established by the Department of Ecology in this 401, that won't result in the material being excluded from the site or barred as an imported fill.

Then let's go to the other phase as well, and that is, if you are so lucky or unlucky that you happen to find some contamination, well, the answer is then: Can't come. Or is it? And here is where Ecology and the Port can't

agree, I mean we know from the testimony of Port witnesses and from the documents that contaminated fill has been brought on the site using the so-called SPLP method to test and get around the protective criteria. Yet we had testimony here, and if it was confusing for the Board, I have to say it was confusing for Appellants as well, we had testimony here that said, well, you can't do that, you can't use the SPLP to get around the finding of contamination. There's no agreement on that. Ecology and the Port don't even agree on how these criteria work, it's impossible to have reasonable assurance under those circumstances, or even if they did agree, frankly, given what the criteria are. And I think it's important to keep in mind with regard to the testing that even where SPLP testing has occurred and substances have passed that testing, the testing has been done using dilution factors that are inconsistent with what the protocol in the 401 seems to call for, greater dilution factors. No one knows how to apply this, is the truth of the matter, no one can agree on what it means, and yet 20 million cubic yards of fill are going to be imported on that basis.

The final point on this, recall Kevin Fitzpatrick came in, a water quality person from the Northwest Regional Office, and he said, well, allowing TPH was a mistake. Well, it's a mistake that's in the 401, we

agree, but it's been allowed, TPH is being imported. Who was ignored in this process? Not just ACC comments; Peter Kmet, the senior toxic cleanup program environmental engineer, was ignored. His recommendations were for a greater, a more comprehensive, several hundred samples. Not accepted, marginalized. There were mistakes made in terms of determining what was the actual levels or natural background because one of the Ecology staffers misinterpreted a hitchhiking sign as being a thumbs up, it was supposed to be a warning, caution, read the footnote and understand what it means, but he understood it to mean something different. So we ended up with natural background levels not set at real natural background but set too high to provide protection. No reasonable assurance.

This is not a project where adaptive management is going to solve problems with importation of contaminated fill. Let no one tell you that when fill laced with excessive levels of gasoline or petroleum-based products or arsenic or some other contaminant is brought in that then it can be surgically removed later out of the 20 million cubic yards that will be applied at the site. Well, what's the answer? The answer that we get is don't worry about it because it's not going anywhere. And we have had a little bit of discussion of that over the past

few days and some of it continued today. And the assumption is we've done a model and the model shows this material is just never going to leave the embankment area and end up in the waters of the state, the wetlands and the streams.

But Dr. Lucia explained it's not so, the model that was used to supposedly demonstrate that is deeply, deeply flawed. I might say, these fill criteria are not there by accident, I think until recently -- we know until recently there was never a claim that they wouldn't migrate. That was a late claim, a late study and we lost our motion to exclude it. But I think the fact that the model, as flawed as it was, was not even offered until very late, it suggests the fact that no one ever thought before that that's a plausible argument to make. So contaminated fill is a serious problem and one that I think underlies the question of whether or not this is a project that should proceed.

I do want to add something in what I mean by out of sequence here. But there are a couple of exhibits that we cited in the course of testimony and briefing that I would urge you to take a close look at, and we'll offer you the numbers in our proposed findings. But those are exhibits that indicate that a factor crept in here that shouldn't have: Cost. Now there's nothing in the water quality

standards that says it's okay to bring in contaminated fill, if it saves the applicant money. But there are a couple of exhibits, one a draft of the 401 and another a memorandum I believe from Chung Yee, where the understanding is expressed that the reason Mr. Kmet's recommendation for several hundred samples in these huge quantities of contaminated fill was not accepted is because there were cost considerations. And that's just not right. The cities that I represent expect the water quality standards to be applied without fear or favor to the Port, to their citizens, and in fact they are, and the Port is not entitled to get a pass on sampling for contaminated fill because it would be expensive. And that's just not a basis for avoiding protection of water quality.

Stormwater quality is I think another area where we frankly are baffled by how a 401 certification that the water quality standards will not be violated could have been issued. The history of the Port's effluents, stormwater effluent, is not a good one. It's been known for years that there are, and we can use the euphemistic exceedances, we can use -- some people want to say violations, other people want to say, no, you can't prove that, but it's been known for years that there are exceedances, the Port's own documents and Ecology's own

documents reflect that and including for contaminants that are of concern, for example, for fish, such as copper. We know that Des Moines Creek is listed on the 303-D list for fecal coliform. I had to laugh when one of the witnesses got up and talked about how they had traced the fecal coliform back to birds, until I asked the question and elicited the response that there also was a study showing that there were fecal coliforms coming off the airport property attributable to humans. There is a track record here and it is one that you have in the record before you to review at your leisure.

There have been NPDES permits in 1992, I believe, and then another one about four or five years ago and they now tell us another one is coming up. And what we're essentially told is the NPDES permits, the past ones haven't fixed it but the new one will, so that's what we should all count on, adaptive management, compliance schedules, whatever one wants to call it. That does not satisfy the requirements for 401 certification. 401 certification is a one-time certification that the project as built, constructed, maintained and operated will comply with water quality standards. It must look upstream, downstream, direct and indirect impacts. And, if you recall, that was a quote I read you from Ecology's published brief to the U.S. Supreme Court in the PUD

Number 1 case. So that's the standard. The answer that we've been fixing it for ten years and will keep on fixing it for -- I think Mr. Fitzpatrick said they had another twelve, if they wanted to take it, does not meet the 401 requirement for reasonable assurance now that water quality standards will not be violated. And the fact that this certification has been issued despite the trail of tears, so to speak, of exceedances is in some ways to my clients shocking.

Now, one of the things that I think has been offered as an excuse is that we can't tell, I think Mr. Fitzpatrick's actual testimony was we don't know whether the Port is now violating water quality standards, we can't say yes, we can't say no. That would be of concern in any circumstance, but it's particularly a concern where it's almost celebrated in the testimony, in the responses to cross-examination, it is waved as a flag, it is relied on: We don't know. And that is distressing, first of all because we don't believe that a 401 certification can be issued in the face of a "we don't know whether there are violations," we think that means it's can't be, but it's also distressing because as Tom Luster and others have pointed out, they could know. It is possible. It is possible to test, sample stormwater effluent in a way to determine whether it meets water

quality standards. And we need look no further than the Cascade Pole permit which Tom Luster attached to his testimony. Kevin Fitzpatrick tried to dismiss that as dealing only with one particular type of contaminant used by wood preservers, but that's not true. If you please look at that attachment to Mr. Luster's testimony, you'll find there is a whole list of contaminants that are to be tested for Cascade Pole's stormwater effluent. The protocol is there, it can be done, and it includes, for example, copper. It can be done. And we are dealing with a public agency, the Port, and a public agency, Ecology, that should have been able to figure that out by now. In any event, they haven't.

I would like to talk for a moment, if I could, about wetlands. And this is a very, very confusing area, but one that I think doesn't need to be so. There are a few things you should start with. Wetlands are waters of the state, they are protected under the water quality standards. We all know their value at this point is not only established in the regulations but in the literature. And incidentally, each Board member, as requested, will get a copy of the National Academy of Sciences book Compensating for Wetland Losses, which talks about the value of wetlands and how it's best compensated for.

The problem with the entire wetlands program here is

it's based not on good wetland science or good regulatory experience, it's a numbers game, and in some ways it's a very, very disappointing numbers game coming from Ecology itself. Let's start with the fact that the mitigation acres, the mitigation proposed in terms of quality and quantity does not meet Ecology's own guidelines as set out in that publication, How Ecology Regulates Wetlands. It just doesn't. And you've heard the excuses, well, there's language in there that says you can vary these things, and, yes, it does say that, but not you can vary it to reduce the protection or the compensation. In context, what the language says is you can vary it and you may have to vary it to actually increase protection. But what has happened here is that for every one of the ratios in that guideline, Ecology has allowed a more generous ratio to the Port which results in less true compensation and protection. And the numbers game goes beyond that. And what I urge you to do, and it will be tedious and head spinning work, but take a look at the attachment to Mr. Kelley's prefiled testimony. We didn't have time to go into this in detail in the actual hearing, but take a look at the attachment to Mr. Kelley's prefiled testimony, the attachment to Mr. Stockdale's prefiled testimony, the attachment to Dr. Cassin's prefiled testimony, and then compare that to the same table in the NRMP that shows the

ratios of wetland mitigation losses and compensation. They're all different. Some things in one of those tables are put in preservation -- excuse me, in enhancement that in another one of those tables is put in restoration, and that's a big difference in terms of the ratio that's applied. Now how did that happen? Because as it was realized that otherwise the numbers wouldn't work out people started shifting them around. There are more numbers games than that though and they're more fundamental. You can't take credit for restoring Vacca Farm when you've gone into King County Superior Court and your expert has gone in, the same expert who appeared before the Board, has gone into King County Superior Court and testified under oath that it's already a wetland. And that's at bottom what happened here. Please read Dr. Kelley's sworn testimony in King County Superior Court, which the Port used to reduce the value of Vacca Farm for purposes of condemnation, and then compare it to what's being said here about Vacca Farm. They don't square. Vacca Farm is not a wetland restoration.

Lora Lake. Lora Lake has things going on the margins, it's true, but it's being given compensation and credit for wetland enhancement and wetland credit for that over the three acres of open water. It's not delineated as a wetland in that sense, but it's still getting credit

for compensation for things that are happening on the shoreline. There's no functional basis for that in any of the Port's NRMP materials. You won't be able to find anything that analyzes what functionally was the baseline for Lora Lake that is now being boosted by what's happening on the shoreline. We had some testimony about it when I asked about it here, but the testimony was very vague: Well, this is going to help what's happening on the open water. It doesn't work that way, you have to have a functional baseline and then you have to be able to move up from that to say what you're enhancing and why that provides a benefit.

The functional assessment issue is also very fundamental in this regard. The fact is that other than the functional assessment materials that we provided through Ms. Sheldon today as a rebuttal witness, there is no functional assessment data forms as part of the exhibits here that anyone could review and attempt to replicate. The baseline functional assessments for these wetlands were done on a basis that no one can review, they were not done based on a peer review method, and as Ms. Sheldon pointed out, from the few that we now obtained through what was submitted to the Army Corps, it appears it was done improperly because, for example, you have functional assessment for three wetlands at a time on one

form. That's not the way it's done, and for good reason. What happens if you don't do an irreplacable peer reviewed functional assessment is that when you're talking about all of the great benefits that you're going to get in terms of function, you don't really know where you started so you don't know where you end up. So it's a numbers game, it's in some ways a shell game with regard to wetland mitigation, and what you end up with is there's very little actual mitigation in-basin.

If you don't accept, as you should not, the idea that upland riparian buffers provide a substitute for wetlands, they may be valuable but they don't provide a substitute for wetlands, if you don't accept the idea that you can get wetland credit for preservation for wetlands that must already be preserved under the law -- incidentally, when you look at those figures, you'll see that they actually give themselves credit for preserving wetlands that the law says they have to preserve, something that Battle Mountain Gold said would not fly. If you don't accept the idea that you can play these numbers games in terms of enhancement in wetlands that are already wetlands when you are not changing the functions, then there's really negligible in-basin mitigation.

Auburn doesn't provide in-basin mitigation. And the water quality standards of this state were not changed by

RCW 90.74, as Mr. Stockdale acknowledged, you must have in-basin mitigation replace functions or the water quality standards are not met.

Walker Creek headwater, I'll just mention it briefly. Mr. Stockdale testified in his deposition and reaffirmed in the room before you that he would have to tell the Board that that was an area of mitigation, an opportunity that the Port had not pursued that was there. End of story, it's there, it hasn't been pursued, cost is king for the Port, and Ecology has gone along with it. That's why we are where we are today.

Let's talk about low flow in the few minutes I have left before turning it over to Mr. Poulin for CASE. Low flow is a very important issue here, because of course if you starve the streams, then you have not protected them and protected their Class AA characteristics. Twenty million cubic yards of fill. When will the water get through it and actually make it to the streams? Well, Dr. Lucia came in with a model and said, well, you know, if you want to look at one version of reality here, it could be six years. There were screams, shrill criticisms from the Respondents saying, well, that's not realistic because you assume the soil was too dry and so on and so forth. Where is their model? Their assumption has been all along, It'll be there tomorrow, the water is going to go

through and it'll be there tomorrow, and if it's not, we're going to adaptively manage the streams.

Apparently the idea is the stream dies and you bring it back by CPR. It doesn't work that way for streams. The stream dies, the stream doesn't magically get brought back. So low flow is critical.

Another aspect of the low-flow quandary, the conundrum here is how are you going to provide augmentation water. They've been through three different proposals, the first two failed, the last one which we've said requires a water right entails what they used to call I think in the old days really a Rube Goldberg proposal for taking these materials, these waters, storing them in stormwater vaults for months at a time and then metering them out. Those waters have copper in them, we know where the storm water is coming from. Those waters are going to have unknown impacts on the streams. The mechanisms for paying that water out, or making sure it gets to where it needs to go, are uncertain, unproven, untested, we are way, way, way off in the realm of uncertainty.

Now when I gave my opening argument, one of the things that I referred to was Samuel Taylor Coleridge, and it was snowing then and it's not snowing today, so we've come two weeks. And in those two weeks, I think -- I believe, I think the record shows that what we've

demonstrated is that Ecology for whatever reason has suspended disbelief, they have given a pass to this project, said, there are lots of things we need to talk about, there are lots of IOUs out there, but we'll collect on them later and meanwhile you go ahead, we can certify you now.

We ask the Board not to suspend disbelief. The principle of Battle Mountain Gold is that you can't suspend disbelief on a 401 certification. And, no, this is not a gold mine on top of a mountain, but then again 20 million cubic yards of fill in the watersheds of three streams in sensitive areas is maybe even more sensitive and more critical, especially in urban areas where these things are getting much more scarce and are much more highly valued because these resources are scarce. Please. This is a precedent that will be read all over the state. And we would ask that the precedent you set in this case is that no matter how big the project or how many experts are brought in to say we'll pay on the IOUs later, that's not the principle of the Clean Water Act, it's not the principle of the 401, and the Board will not allow it.

Thank you. And Mr. Poulin will take the remainder of our opening time.

MR. POULIN: Rick Poulin on behalf of CASE.

CASE intervened to make sure the Board understands that this case is not about the Port of Seattle's desire to expand, it's not about bad weather delays, it's not about Ecology's authority to approve any projects it thinks might work out in the long run, it should not be about political power getting what it wants. At heart, this case should be about one precious thing, water. It's not about water in a concrete vault or some long dead stream running through an underground pipe; it's about three living, vibrant streams and the crucial headwaters and wetlands that assure their survival, it's about the way that we as a society have agreed that clean water is entitled to the highest protections under state and federal law, and it's about how we honor our commitment to protect water, creeks, fish and wildlife habitat, even when it's difficult, even when it means we have to acknowledge our limits, and even when it doesn't fit into somebody's master plan.

There is clear evidence that the Port's stormwater discharges cause or contribute to violations of the water quality criteria in the streams downhill from SeaTac Airport. And because our time is very limited, I'm asking you to focus on one creek, one outfall, and one parameter: The Port's discharges of copper in storm water from SDS 3

into Des Moines Creek. Why copper? Not because it's the only criterion that the Port likely violates, the Board has heard testimony in the past two weeks about turbidity, about zinc, about fecal coliform. But copper matters. You've also heard the testimony of Dr Strand about the impacts of copper on fish, it's not disputed, it's considered a toxic substance under the state water quality criteria. Copper is also a well known and obvious problem contaminant, and it's also an important issue here because copper has been an intractable problem that Ecology's laissez-faire, iterative approach has utterly failed to resolve.

Why outfall SDS 3? Because it characterizes the future discharges associated with the construction of the third runway. You've seen how the vast majority of the airfield drains through SDS 3, there are virtually no off-site inputs. One of the Port's witnesses, when answering my question, stated that it's all from the Port. SDS 3 employs the same BMPs, depending on how you calculate it. We saw yesterday a section of the CSMP that states that are no treatment BMPs for the stormwater drainage system. And SDS 3 has suffered longstanding exceedances of water quality criteria. Now, although Ecology and the Port claim there's no evidence of noncompliance with water quality standards, the record is

absolutely clear that that's wrong. There are multiple documented admissions by both Ecology and the Port that the levels of copper in discharges of storm water from SDS 3 and in Des Moines Creek exceed the freshwater acute criteria for Class AA streams. Ecology and the Port can backpeddle furiously but they can't unring the bell. There are multiple documented admissions. The 1997 Storm Water Receiving Environment Monitoring Report that we've talked about repeatedly, Exhibit 426, see pages 33, 35, 38, 39, the NPDES permit fact sheet itself, Exhibit 136, pages 26 and 29. Indeed, the previous 401 certification, not the recent August 2001 certification but the July 1998 401 certification, Exhibit 1104 at page 10 says unequivocally both Des Moines Creek and Miller Creek have been identified as having excessively high storm flows and levels of contaminants above state water criteria. No mincing of words there. The September 1998 Attorney General McDonald letter to the Port, Exhibit 803, candidly concedes, acknowledges that there are violations of water quality standards associated with Port stormwater discharges. The annual stormwater monitoring reports provide additional evidence, the 2001 Des Moines Creek study that we looked at yesterday, Exhibit 686, more confirmation on the record that the level of copper in Des Moines Creek exceeds water quality standards. Kevin

Fitzpatrick conceded that an Ecology employee of the Northwest Regional Office has recommended Des Moines Creek for listing on the 303-D list. Even Dr. Stubblefield, in his prefiled and here in his testimony, confirmed that there are ongoing exceedances of copper in Des Moines Creek.

Why do these discharges matter? Well, obviously, the violations of water quality in the receiving water are crucial, because they indicate that any discharges from the Port that contribute to those exceedances would compound those violations of water quality standards. It's crucial to remember that the Port has no mixing zone. That is not disputed, and it's clear on the face of the permit. But John Drabek, Ecology's employee who is not here as a witness but whose deposition testimony is available to the Board, said, quite candidly, unless a mixing zone has been granted, compliance with surface water quality criteria is at the point of discharge. The receiving water already exceeds the water quality criteria, so when the Port's discharges add copper at many times the level of the copper criterion, that constitutes a violation of the water quality standards. Now we have heard many, many technicalities, excuses and explanations as to why that simply ain't so. We've heard about hardness, we've heard about the one-hour average, we've

heard about discharges being monitored in the pipe rather than in the creek. Well, let's talk about them.

I see the Drabek deposition at page 69 where he states that he has enforced hardness and water quality criteria violations on the basis of hardness data that is commonly known based on historical information, not contemporaneously sampled. The fact that there are other discharges in some parts of the airport doesn't help the Port here because the receiving waters are already maxed out, as we just said; therefore, there is no mixing zone, there is no grace period, there is no slack in the system. The Drabek deposition also confirms that the one-hour average sampling requirement for the acute criteria is not an obstacle here. He flatly said: We use grab samples. Grab samples are what a lot of the data is based on. There are also flow-rated composites. They by law are required to accurately characterize the discharges from the Port's system. For the Port to walk in here now and say, Oh, you can't use that information, it's not good enough, I think is rather disingenuous.

The Port also complains that they don't sample at receiving waters, they sample at the pipe. That gets us right back to the apples in the mixing zone. They are not entitled to the benefit of dilution, particularly in streams that are already maxed out. And the fact that

there are differences between total recoverable copper and dissolved copper, that's taken care of by footnote (dd). You can't have an oral argument without mentioning a footnote, I don't go there because it's an ugly footnote, don't go there now, but WAC 173-201A-040(3), footnote (dd), says in effect when seasonal partitioning of the metals in the receiving water is not known, then you can use the total recoverable instead of the dissolved fraction. Kevin Fitzpatrick agreed to that in his deposition at pages 65, 66, and particularly 67. He also agreed that Ecology does not know the seasonal partitioning of copper in the receiving waters and therefore the total recoverable is fine. So even now more than ten years after storm water became covered under the Clean Water Act and Ecology recognized that copper is a significant problem they have only two notions to offer, more of the same and a scheme to revise the criteria through a WER study so that it's easier for the Port to comply.

Now, it's instructed to look at the original 401 that I cited earlier, that's Exhibit 1104. There are two radical differences in Ecology's original approach to this problem and its current approach. First, they required treatment of the storm water, they listed a specified series of optional BMP chains or trains, sequences of

BMPs, that might be adequate to address copper, particularly dissolved copper in the stormwater runoff. Those requirements are gone. Now Ecology says, Well, just do whatever the basic menu in the King County plan requires and we'll assume that's good enough, and if it's not good enough we'll get back to that sometime in the future.

Second, the original 401 required receiving water monitoring to determine compliance with water quality criteria. That's Exhibit 1104 at page 13. Data collected will be used to determine whether the Port is in compliance with state water quality standards. Nothing about that in the new 401.

Now the solution that they offer, the site-specific study -- or the water effects ratio, the WER, that is no substitute because the process does not result in compliance, it results in the slow-motion generation of a water-quality based effluent limit following the creation of an interim limit and a final limit and a compliance schedule. Kevin Fitzpatrick said: I think the compliance schedule could last for twelve years.

It's worse than Peter recalled. The twelve-years doesn't even begin until the final effluent limit is in place under the permit. Ecology and the Port are essentially asking the Board to ignore the exceedances and

they argue that they shouldn't count because their in-house preliminary study, which they did not provide in complete or admissible form, will enable them to triple or quintuple the applicable criteria at some uncertain future date. That is not good enough. Battle Mountain Gold requires more, it requires ongoing compliance with the water quality standards, not future compliance after years of exceedances.

I will reserve the balance of my time for rebuttal. Thank you.

MS. COTTINGHAM: How much time is remaining on the clock?

MR. POULIN: We've elapsed 43 minutes 21 seconds, so just under 17.

MR. YOUNG: Members of the Board, for the record, I'm Tom Young, representing the Department of Ecology. I also want to thank you for your patience and for listening to us over the past two weeks. We appreciate that very much.

I want to begin with a quote from the prefiled testimony of Gordon White. Gordon White you'll remember is the signatory of the 401 in this case. He said, quote: Ecology's review team provided the highest level of scrutiny and thoroughness to this project. This level of review was greater than any I have ever witnessed in my

twenty years of working on environmental and natural resource protection issues in local and state government. The team of staff experts and consultants that Ecology assigned to this project were the highest quality and expertise the agency has to offer.

The Board only has to look around the room and look behind you now at all of the studies and reports and reflect back on all of the testimony that's been presented in this case, all of the analysis of this project, to know the truth of what Mr. White says there. The Board also needs to look at Ecology's very first exhibit, which is actually number 2003 because of the numbering system, which are the facilitated meeting notes that documented more than thirty meetings in 2000 and 2001 and the painstaking step-by-step process by which all aspects of this project were studied from each and every issue addressed and involved.

There's more here than just intense effort by Ecology's team of experts. Here there is a 401 certification that includes specific mandatory detailed requirements that reasonably assure that water quality standards will be met. Let me summarize those for you now and I'll come back to them in more detail. Number one, the Port must comply with a comprehensive stormwater management plan, a four-volume plan that meets and exceeds

the requirements of the King County Surface Water Design Manual. Secondly, the Port must conduct a water effects ratio study and incorporate appropriate effluent limits into its NPDES permit before it may discharge operational storm water from any impervious surfaces.

Three, the Port must comply with a stringent fill survey and sampling procedure, an unprecedented procedure based on MTCA, to insure that the third runway embankment does not contain pollutants that will leach to area streams. Number four, the Port must retain, treat and release storm water from the specially constructed stormwater vaults to mitigate for the low-flow impacts of the project. Number five, the Port must implement a detailed, comprehensive natural resources mitigation plan that includes 111 acres of in-basin mitigation and 65 acres of out-of-basin mitigation.

These are the requirements that give reasonable assurance. Now there are other provisions in the 401 but these are the heart and soul of the document. By contrast with these specific detailed requirements, the ACC and CASE, the Appellants here, offer only speculation, overgeneralizations, and unfounded assumptions to support their case. I'll just give you two examples. Consider number one, Dr. Lucia's assumption that the fill will be dry and that it will take years for the water to flow

through it. That is an unrealistic assumption. Take Ms. Sheldon's testimony that the NRMP does not include the approximately seven acres of prior converted cropland in the Vacca Farm. Well, in fact it does include those acres in the NRMP, public meeting notes. The ACC and CASE offer no substantive alternatives here but simply second guess the decisions that Ecology made in this case.

Let me touch briefly on the legal standard that applies here. First of all, this is of course de novo review, the Board can consider all of the evidence, regardless of whether that evidence was before the agency. Secondly, the Appellants, ACC and CASE, have the burden of proof, they must show by a preponderance that neither Ecology nor the Board has reasonable assurance in this case. On technical issues, the Board should defer to Ecology's experts in their areas of expertise. And what those standards mean is that a mere disagreement among the experts is not sufficient for the Appellants to carry their case, they must present the preponderance of evidence that Ecology's choices here were unreasonable or that the water quality standards will not be met. Finally, rely upon future submittals such as monitoring reports, construction drawings, replacement pages for the NRMP or the low-flow plan, do not deprive Ecology or the Board of reasonable assurance, because this is an

iterative process. Ecology has continual oversight over the process and that oversight is backed by Ecology's enforcement power. If conditions are not complied with, we can enforce them to make sure that they are complied with.

Let me talk now about the specific areas at issue here, starting with storm water. You recall hearing the testimony of Kelly White. He was an independent reviewer in this matter, a King County employee. He testified that the stormwater management plan meets and exceeds the technical requirements of the King County Surface Water Design Manual. His painstaking review of that document is documented in the facilitated meeting notes that I referred to earlier. You can see how he step-by-step brought that plan from a condition of being inadequate to the condition of compliance with the King County manual. In fact, the SMP, as you know, goes beyond the requirements of the manual in at least two respects, it requires a retrofit both for water quality and flow control of the Port's existing facilities, and it requires that the Port meet a more stringent flow regime based on a mostly forested condition, that's the 75-percent forested condition that you've heard testimony about.

These are not trivial requirements. You'll recall Mr. Whiting's testimony regarding the North Employee

Parking Lot, a new vault being constructed there as part of the retrofit. You'll recall also the testimony of Mr. Rozeboom, the ACC's expert, that meeting the stringent flow regime requires larger structures, more exacting release rates, and is protective of the stream because it prevents erosion. The 401 also requires a water effects ratio study to determine the toxicity of the Port's storm water and to establish appropriate effluent limitations in the Port's NPDES permit.

And here I want you to recall the testimony of Kevin Fitzpatrick, who said that the, quote - I think these were his exact words - science and art, closed quote, of stormwater management is not sufficiently advanced to provide methods to derive water-quality based effluent limits for storm water. The water effects ratio study is designed to get that information in a scientifically rigorous manner.

The water effects ratio study is allowed under the water quality standards and it's stated, I believe it's stated in footnote (dd) that Mr. Poulin referred to, that that is also consistent with EPA's guidance. EPA's guidance is in the record and we'll provide you that exhibit number in our proposed findings. You'll recall also the testimony of Ed O'Brien, he is the author, remember, of the new stormwater manual that just came out

in September of last year from Ecology. He said the site-specific study here is appropriate because of the size of the airport and its contribution to the watershed.

Now the ACC's arguments here and CASE's arguments are based primarily on the monitoring reports. You've spent a lot of time looking at those reports from 1997, 1998, 1999 and so on, and they claim they show violations of the water quality standards, and that is simply not the case. We've talked about all of the variables here, the hardness, the dissolved versus particulate metals, where the sampling is taken, is it in the stream, is it in the pipe, and so on. The Appellants cannot show you a single monitoring result showing exceedances of the criteria in the stream for the necessary period of time, whether it's a one-hour average or four hours, depending on whether you're looking at acute or chronic, that are attributable to the Port's discharges. Kevin Fitzpatrick, again, he testified that the Port is in compliance with its NPDES permit because it's utilizing the BMPs that are required in that permit.

The ACC also referred a number of times to the reasonable potential analysis that it claims was done that shows that BMPs are inadequate to control storm water. If you look at that document, it is not a scientific analysis, it was a group at a working meeting making

estimates of what BMP efficiencies were and performing a literature review in that regard. It's a kind of back-of-the-envelope calculation. The water effects ratio study is a scientific study that will sample the water, determine the toxicity of that water and determine the means to control which, as you remember, Kelly Whiting said it is feasible to implement under the stormwater management plan.

Let me address the fill criteria. And here again you recall the testimony of Kevin Fitzpatrick and also of Chung Yee. Kevin Fitzpatrick said, remember, that the 401 takes a, quote, belt and suspenders approach to the fill criteria. The belt is the restriction to the 401 on possible sites and the testing requirements of Phase I and Phase II are requirements that have to be met, the suspenders are the actual numbers, the criteria themselves. The key on this is that this is an unprecedented requirement, no 401 has ever had any fill criteria in it at all until this one. No 401 has had a sampling process at all until this one. And you remember Mr. Luster acknowledged that. The only ones that he can recall in the thousands that he dealt with were ones relating to sediments, for which there are standards.

The criteria in the 401 are based on, as you know, the MTCA Method A standards. And you recall Chung Yee

talking about how he calculated those numbers with the three-phase back calculation, which is important because it's based upon the idea of protecting surface and groundwater. That is one of the purposes of MTCA, and that is what the three-phase calculation does is calculate a concentration that would be protective of surface and groundwater. And as a backstop overarching this is the fact that Ecology can refuse flow for any reason under the 401. It can say no, if it is concerned.

Now the ACC's argument here is to challenge the sampling regime and you heard Mr. Eglick talk about that and to challenge the criteria themselves as being erroneously calculated. However, the ACC presents no evidence that fill criteria, that fill at the criteria levels will leach pollutants into the streams, they present no evidence at all to show migration. In fact, Dr. Riley's work shows that such migration would not occur, even if you assume that fill is entirely contaminated at the levels in the 401, and he even found that if you assume levels in the fill that are higher than the levels in the 401 for some things, they still would not leach into the water. That's a scientifically based conclusion.

Now, with regard to sampling, the way that the process works is that first you have to have an approved

site under the 401, and then you do a Phase I review to determine whether there's any potential of contamination. If it passes the Phase I, then you sample according to the criteria in the 401. Why is that adequate? Because you're dealing with a site that has already passed through a Phase I assessment. If the Phase I indicates no potential for contamination, the sampling is designed simply to confirm that. You're dealing with a presumptively clean site and that is why the sampling criteria are what they are in the 401. Now, if the fill does not pass the Phase I, if there's some indication in the literature review and interviews and so on, if there is some indication of possible contamination, then you go to a Phase II, and in the Phase II a more extensive sampling protocol is developed and the Port has to come to Ecology and work on that to get a full picture of what is in the fill.

A more extensive sampling process is warranted at that point when you're in Phase II, because you've already got some indication from Phase I that the fill has a potential for contaminants. Now, this is where Pete Kmet, who was referred to earlier, comes into play. Where he advocated for a more extensive sampling regime, he was assuming you were talking about a contaminated site when he was saying that if you've got a contaminated site you

need to do more sampling to figure out what's he got there. He was not talking about a site which has already passed a Phase I assessment and which is presumptively a clean site, the choices of which are already restricted under the 401 and remediated sites and so forth are prohibited.

Let me now turn to wetlands and address that. Here the key testimony is the testimony of Eric Stockdale and Katie Walter. Mr. Stockdale, you remember, he explained in detail the five-step process that Ecology goes through to develop the NRMP, and here again you can go back to the facilitated meeting notes and you can see how this evolved. Mr. Stockdale, you remember, testified how it evolved from no in-basin mitigation to the level of in-basin mitigation that we have here today. That is another example of the diligence and effort that Ecology has put into this project, as Mr. White spoke of.

The five steps that Mr. Stockdale went through with you are: First of all, you evaluate the impacts; secondly, you determine what type of mitigation is needed; third, you use ratios as a general guide; fourth, you determine if the total mitigation credit offsets the impacts; and, fifth, you make sure that the mitigation will be successful by looking at monitoring and performance standards and so on. Mr. Stockdale walked you

through that process, I'm not going to do it in the interest of time, but I think the key point here is that the riparian restoration -- his conclusion was that the riparian restoration of Miller Creek, you remember the riparian buffer zone, is a better form of mitigation than having a checkerboard of isolated sites in that region which are not sustainable and not likely to be successful. And ACC's own experts even acknowledge the value of riparian habitat, and the Board is familiar with that from other cases, as well.

The ACC's contentions with regard to wetlands are all refuted by either a close review of the NRMP itself or by the testimony that was offered in the past two weeks. For example, you remember Ms. Sheldon questioning whether a forest would actually grow along Miller Creek, she talked about how there were willows in the planting plan and so forth, but if you look at the planting plan for the riparian area, it shows exactly how a forest will be achieved, it talks about the species that have to be planted, including conifers, and the survival rate.

She also spoke to the hydrologic performance standard. This was the groundwater to within ten inches of the surface and the claim was that that was inadequate. That standard is the standard used by the Army Corps of Engineers. And you remember Mr. Stockdale's testimony

that that groundwater within ten inches of the surface results in water all of the way up to the surface because of the wicking action.

Another claim that the ACC makes is that the functional assessment was bad and that the Washington functional assessment method should have been used, but the testimony is, the unrebutted testimony is that that method cannot be used on slope wetlands, and 77 percent of the wetlands we're talking about here are slope wetlands.

Low flow. Again, this is unprecedented. No project has been required to mitigate the low flows at this level of detail and at this extent in a 401 before. Again, the development of this plan was an iterative process, it started back in 2000 with some analysis of the flow to the embankment and so forth, the Port built on, remember, the legislative study that was done of the embankment, the Port built on that work and developed the low-flow plan in July of 2001. Mr. Kelly Whiting, again, our independent reviewer, reviewed that plan, he had some comments about it and those comments were incorporated as conditions in the 401. The Port then submitted a revised plan in December which he testified addressed or rendered moot most of his earlier comments. He then reviewed that plan and he had some additional comments, he requested a validation report and other refinements, and

Mr. Brascher's testimony is that those things can easily be accomplished.

Now, what the ACC wants focus on here is the discussion of calibration, and you heard testimony this morning on this point. Calibration of course is the matching of the model flows with the observed flows. No calibration can ever be exact, the testimony is in agreement on that, it's strictly a matter of judgment, there are no standards that apply to determine when you have a good calibration and when you don't. In Mr. Whiting's judgment, he found that the calibration of Des Moines Creek was acceptable because it was based upon the Des Moines Creek basin plan and the modeling that was done for that plan which is being used as the basis for the construction of the facilities in Des Moines Creek now. He also testified that calibrations in Miller and Walker Creek required a validation report and, again, Joe Brascher said that was an inconsequential matter that could be divided. So what we have here is we have models that everyone agrees are the appropriate models in place, a concept that is feasible, that has been developed in great detail, and while there are some refinements, that does not deprive the Board of reasonable assurance, because we have Mr. Whiting's oversight and the enforcement power of the Department to assure that the

plan is implemented correctly.

I want to address water rights here very briefly in my time remaining. This is a legal issue, we fully briefed it in our summary judgment pleadings, there has been no evidence presented that will change it into a factual issue or that changes any of the information that was already presented in the summary judgment hearing. Ecology has never required a water right for a stormwater management system and this proposal here does not involve a beneficial use of water, so for that reason no water right is required.

In conclusion, the ACC has not met its burden of proof that there be will be violations of water quality standards. What we have is a 401 with an unprecedented level of detailed specific requirements, a stormwater management plan that meets and exceeds the requirements of the King County manual, fill criteria that meet and exceed the requirements of the Army Corps or Engineers, wetlands mitigation that meets and exceeds by two times the amount of mitigation that would be required under Ecology's guidance, and a low-flow mitigation plan that goes beyond any known regulatory requirement. Those are the reasons why we have reasonable assurance and those are the reasons you should affirm Ecology's decision.

Thank you.

MS. COTTINGHAM: Let's stop the clock for a second.

(Pause in proceedings)

MS. COTTINGHAM: Back on the record.

MR. REAVIS: May it please the Board.

For the record, my name is Gil Reavis with the firm of Brown, Reavis and Manning. Mr. Pearce and I will sum up on behalf of the Port of Seattle. I want to join with other counsel in thanking the Board for being attentive, despite our best efforts I'm afraid sometimes the material was a little bit dry.

We began this case by talking about what we believe is unparalleled mitigation, and I believe that's a fair characterization of what you've seen in the past two weeks. What you've seen is a result of years of work performed by the Port and Ecology with regard to this project. You've heard the testimony of many highly qualified professionals. Many of those people that testified have worked on this project for years. You've heard from Elizabeth Leavitt, Paul Fendt, Jim Kelley, Eric Stockdale, Kevin Fitzpatrick, all people who have been working on this project for long hours over many years.

I think it's evident from listening to their testimony that they are proud of the work that they have done. They are proud to have produced a project that

serves the transportation needs of the region while protecting water quality in the vicinity of the airport. What the evidence also shows is that there has been a long history of environmental review of this project, including a five-year review by Ecology, starting when the first 401 application was filed in 1996. Frankly, there is no way that any of us in a two-week time period can understand all of the details of this project, given the volume of the material, but at some point, we all have to rely on the experts who evaluated this project, those who have testified before you in this hearing and those who the testifying witnesses have relied on.

Ecology had its own technical experts to review the Port's proposals to determine whether water quality laws will be violated by the construction of this project. Ecology has done that and they have reached in their own minds a decision of reasonable assurance.

Now, on the other side of the coin what you have are ACC's witnesses, who have offered what can best be described as additional comments or suggestions or criticisms or issues. I think what's missing here is any analysis, any quantification and any real proof that there will in fact be some impacts, or, if there will be some impacts, are those impacts significant enough to destroy reasonable assurance. That doesn't mean that ACC's

experts are not qualified professionals, many of them are, they are simply doing a different job. And that job as has been discussed is a job of a reviewer. Dr. Latham, Mr. Rozeboom, Dr. Kavazanjian, Ms. Sheldon, are reviewing other people's proposals. Their job, frankly, is to raise questions, it's not to provide the answers.

On the other hand, Ecology and the Port are required to provide the answers. As you've seen in testimony in numerous instances over the years, the Port and Ecology have listened to the comments of ACC's experts, have modified their plans accordingly, and have proceeded with the project. So at some point someone has to evaluate their comments and decide whether they are significant and whether those justify changes.

Now, the critical fact here is that -- and I'm sure no one forgets this, but ACC has the burden of proof. Raising questions doesn't prove that Ecology lacked reasonable assurance. The missing ingredient here is actual proof that there will be some quantifiable impacts to water quality. Now I'm going to talk about three separate areas here, and I'll try not to repeat a lot of what Mr. Young said. I'm going to talk about low-flow mitigation, fill criteria, and contaminant transport to the embankment and MSE wall. Obviously, I can't review in the time here all of the evidence that has come in in the

last two weeks; what I want to do, though, is I would like to take a step back and see how these pieces fit together and what evidence we believe is significant.

So, first on to low flows. The initial point I want to make is the low-flow plan concept is actually quite simple. Since the creation of new impervious surfaces causes more runoff, less infiltration, there is less water for area streams in the summer months when it's dry. Now the Port's plan is to take the same water that would have infiltrated and store it so that it can be released to the same streams in the same manner that it would have been released had the natural conditions prevailed. There are two methods of storage. One is storage in the embankment itself, which is storage in the fill, and that is a lot like the natural conditions. It infiltrates into the soil, it seeps out over a period of time, recharges the streams when they need it.

The second method of storage is a lot like stormwater vaults, in fact many of them are vaults here, it's vaults, it's meters, it's pipes. Technology for accomplishing this is actually quite common, I don't believe it's a Rube Goldberg, I think it's the type of system that stormwater managers deal with every day and there has been testimony about that. The key fact here I think is there are no feasibility concerns with implementing the low-flow plan.

I think that's what you heard from the Port's witness and that's what you heard from Mr. Whiting.

Now, the other thing to remember here is the impacts to these streams are actually quite small. Mr. Fendt produced a diagram yesterday showing that we are talking about tenths of an inch by and large in the streams and no impact at all to Miller Creek. In order to mitigate for this impact, the Port has engaged in a lengthy modeling effort to predict future conditions. The modelers have defined the low-flow periods, they have determined how much water will be needed, when it will be needed, and where it will be needed in order to mimic the natural conditions. And that's the goal here.

Now, in order to reach the model we have today, the Port has gone through many iterations, and Mr. Eglick asks, Where is the Port's model? I think you've heard lots of testimony, perhaps even more than you wanted to, about the model and the details of the model and how we got to where we are today. Now, ACC's response has been to criticize the modeling, and I think if you look at the evidence, what you'll see is they're criticizing sort of around the margins of the model as opposed to the core of the modeling effort and the results produced.

Calibration is a good example of that. What all of the experts agree on, and Mr. Young alluded to this, is

that calibration requires that you exercise professional judgment. The experts also agree that there's no way to achieve a perfect match between the model results and the observed conditions. So the point is there's always room for disagreement about model calibration; in fact, before this hearing started you heard testimony that Dr. Leytham and Mr. Rozeboom, who work in the same firm, didn't even agree on the model calibrations. So what that does is that gives ACC a lot of fodder for comments to criticize the model because everyone admits you can always continually improve the model calibration; but at some point in the judgment of the model somebody has to say this is good enough. And that's what the Port's experts have decided. Mr. Brascher, who's been engaged in this process of modeling for twenty years, Mr. Ellingson for twenty-five years, and Mr. Crawford -- Dr. Crawford, Norm Crawford, who you heard a little bit about, peer- reviewed Joe Brascher's work. I can't put Dr. Crawford into context any better than Dr. Willing, another one of ACC's experts, did, but what Dr. Willing said is: I don't call many people experts, but if there's one guy I'll call an expert it's Norm Crawford.

And that's the gentleman who wrote the HSPF model, he is the gentleman that reviewed Joe Brascher's work and concurred. So our position is that those models are

adequately calibrated to predict the results here. Kelly Whiting said he has a few outstanding issues, but he believes the plan could be feasibly implemented.

Now, finally, I think you have to look at adaptive management in this context, because the Port and its modelers believe the impacts have been adequately identified. And what happens if they're wrong, Mr. Fendt testified about that, that if there are adjustments that need to be made to the system, there's plenty of opportunity for those adjustments to be made. And this is all described in the contingency plan, which is a part of the low-flow plan. You can change the filling times for vaults, you can change the release rates or the times, you can build more vaults, and you can adjust the water flows. So the point is the system has enough flexibility to deal with minor modeling errors which is what we believe the comments of ACC show, if they show errors at all.

So moving on to fill criteria, then, I think it's clear everyone acknowledges that these criteria are in fact unprecedented. When they were being formulated, Mr. Luster said he had no place to go to simply pull numbers off the table. But even before the first 401 was issued, Ecology and the Port worked out an agreement to regulate the fill. You heard Ms. Clark testify about that, two agreements, one in 1998 and one in 1999. And

the Port wasn't under any legal compulsion to create those agreements, they simply negotiated those with Ecology prior to the issuance of the 401.

Now, the critical point I think with regard to fill criteria is that the Port's consultants have devoted a lot of time and effort and scientific study to produce fill criteria that are in fact protective of water quality. Linn Gould testified. She is a risk assessor and this is what she does for a living. There are probably very few people in this state who know more about soil and particularly petroleum in soil than Linn Gould does. Mike Riley testified about his modeling of metals in the embankment, a very conservative model, as Dr. Lucia acknowledged, very conservative modeling, and even if the embankment contained the maximum levels of every constituent, it's not going to violate water quality standards even for a period of a thousand years.

Now, I don't believe that you'll find in any of ACC's evidence any proof disputing calculations by Ms. Gould or by Dr. Riley. What they have done is raised some issues about that. Mr. Eglick has suggested that no one ever really thought about this whole process. I don't think that is so. Fish and Wildlife Service obviously thought about it when they issued the biological opinion. You've seen the evidence from ACC when they dismissed their

lawsuit under the Endangered Species Act, they acknowledged that the biological opinion gave them exactly what they wanted, which was additional protection for Chinook salmon, bull trout and marbled murrelets in these particular streams.

Now ACC's experts have just not linked up their concerns or their issues with any actual impacts. Dr. Strand was very forthright saying he has concerns, he has issues, but he hasn't done any calculations. And Dr. Lucia is much the same. Now, Dr. Lucia, as you recall, testified this morning about Dr. Riley's model. Again, he raised another issue that he believed exists that invalidates the Riley model. I think it's pretty clear that Dr. Lucia had not even read this entire report. Remember I asked him about that Table B4, which actually has those absorption rates that he claims are improper, and he wasn't even familiar with the table. So I think again you have a classic example of someone raising comments; but Dr. Riley has actually done the analysis, done the calculations, and formulated the opinions.

Now, I want to say a couple of words about the SPLP test, because it seems that ACC believes this is a loophole in the process. But quite the contrary, the SPLP test is the only true way to determine how much of these constituents will actually end up in the water. It's not

a model, it's reality, it allows you to determine if there is in fact a water quality impact. So the Port is not trying to overcome the numeric criteria by using the SPLP, what the Port is trying to determine is whether or not there's actually going to be an impact, and that's what SPLP is used for. Why is it necessary? Because, you heard Ms. Gould talk about 90th percent background soil, if you use completely natural, uncontaminated soil, by definition you're going to have exceedances ten percent of the time, if you're testing for 14 metals at the same time, you're going to have exceedances 80 percent of the time, again, using soil that is uncontaminated under the definitions in the 401 certification. What the SPLP test allows you to determine is whether in fact that's going to pose a water quality issue.

Now, a couple of words about sampling, because I think this issue has been misunderstood as to what the 401 requires and what Mr. Kmet's recommendations were and were not. First, the sampling in the 401 says it's a minimum, you have to understand that Ecology can require more if it's warranted. Secondly, and ACC seems to want to skip this step or say that it's not really important, but the Phase I, Phase II process is in fact important to determine whether or not these sites are contaminated. These are not tests that can be dismissed. These are

types of tests and there are standards for them, that people use in make property acquisition decisions all of the time, so people are relying on those tests and investing millions of dollars in real property based upon this very test set out in the ASTM standards.

With regard to Mr. Kmet, you'll see some e-mails in his deposition. ACC didn't call him as a witness here even when they could have. Now, Mr. Kmet's e-mails suggest using some sampling protocols contained in the Model Toxics Control Act. I recommend that you read the regulation that he cites in evaluating those to see what he is talking about. The recommendations for large numbers of samples relate to contaminated sites, MTCA sites, the intent is to have naturally occurring fill. That's why Chung Yee did not accept Mr. Kmet's recommendations. You heard him testify about that, he didn't ignore Mr. Kmet, he decided that Mr. Kmet's recommendations and the table from MTCA was intended for contaminated sites; his intent here and Mr. Fitzpatrick's intent was to not have those contaminated sites.

Now, Dr. Lucia in fact admitted that six samples could be enough, three samples could be enough, it all depends on the variability. So what has to happen here is the Port will submit its samples, Ecology will decide whether or not there's sufficient variability to require

more samples, and Ecology can in fact require more samples. If the Port decides that Phase II is necessary, the Port has to consult with Ecology to decide what the sampling plan will be. That's not limited to six.

Now, let me say a few words about petroleum because this issue has come up and, as you know, there are two levels for petroleum hydrocarbons in the embankment. The drainage layer cover is set at 460, that's parts per million or milligrams per kilogram. The remainder of the embankment is at 2,000. Both of those numbers have been determined to be protective, they have standards in the Model Toxics Control Act, and Ms. Gould has talked about back calculations for those numbers.

Now, Mr. Fitzpatrick testified about a somewhat different view of the 401 certification than the Port has had. And I say this very advisedly, because the Port believes that the numbers in the 401 are in fact protective. But the Port understands that this Board has the authority to change conditions in the 401, so I guess the question comes up, why not simply take those numbers out and add zeros in there? And I think you have heard the evidence of why that would be inappropriate. Two reasons. First, you saw the evidence about Black River Quarry. That site, as Ms. Gould testified, is a site where they're blasting this material out of the side of a

mountain; it's not contaminated in a sense that it's been affected by human activity, yet it ended up with total petroleum hydrocarbon readings in the fill material because the machinery that was used to crush the rock had little bits of asphalt in it. Ms. Gould acknowledged, and this is no secret to anybody, but earth is moved in trucks and trucks run on oil and gas, so there's going to be the occasional inadvertent exceedance, and that's why there are petroleum hydrocarbon levels in the 401, we believe. What Ms. Gould and Ms. Clark testified is there are natural substances occurring in the environment which will indicate, on an analytical test, TPH. So even though there is no refined petroleum, you can get an exceedance or a reading of TPH under the analytical methods being used. So another reason why zero would be inappropriate.

So what is a fair standard? You've heard testimony from Ms. Clark that the Port is not actually allowing time for ASTM to bring two thousand parts per million into the third runway. The bid specifications that have been prepared still list the number of 460, that number actually comes from what's called the Eco table in the MTCA regulations which are designed to protect terrestrial organisms, plants and animals that actually use the soil, it's a very conservative figure and very protective.

Let me say a couple of words about the agreed order,

because I don't believe that ACC is reading that order and the Governor's certification letter accurately.

I don't have the exhibit number, but don't take my word for it, don't necessarily take any lawyer's words for that, I would urge you to go back and read the exhibit itself. But my recollection is, it says that the Port has to complete the groundwater study in accordance with the agreed order. And the person who knows whether or not the Port is complying with that agreed order is Ching-Pi Wang; he testified that the Port was complying.

Now, if you think about that groundwater study, it's to study the whole area under the agreed order, to determine whether the contamination is moving north, south, east, or west. If what you want to determine is are these contaminants going to migrate to the third runway, you don't have to complete the north, east and south components, what you have to do is focus on the western migration of those contaminants, and that's what was done by Mr. Wang and Mr. Strong in their analyses. So I think that the Port is complying with that agreed order, complying with the Governor's certification, but in order to answer the question that's really relevant here, what Mr. Wang requested is that the Port study preferential pathways and possible migration for the third runway.

The last topic I'm going to talk about, and I won't spend a lot of time on it, is the MSE wall. I think this is a good example of the different roles that are being played by the experts here. Dr. Kavazanjian is a reviewer, he hasn't quantified any of his opinions, again he is raising issues. On the other hand, you heard from Mike Bailey, who is an engineer who has designed this project in conjunction with HNTB, another large engineering firm, RECO, Reinforced Earth Company, which has designed I don't know how many thousands of MSE walls Mr. Bailey said, but a lot, and what they call the Embankment Technical Review Board, which is Dr. James Mitchell, Dr. I.M. Idriss, Dr. Barry Christopher. Remember when I asked Dr. Kavazanjian, do you know Dr. Mitchell? He said, yes, he is the person who supervised my dissertation. Do you consider him to be an expert? Yes. So I think you've got many of the world's leading experts peer-reviewing all of the work that has been done by Hart Crowser and these other large firms. Volumes and volumes of work have been produced, you only saw some of the ones in the exhibits here.

Now, the design standard, I believe Mr. Bailey answered, it is in fact protective, it is the current AASHTO standard, regardless of what the AASHTO standard may be someday, it is the standard being used in downtown

Seattle, according to Mr. Bailey, for construction of high-rises, it's very similar to that, I think he said there's a building code that produces essentially the same results. But lastly on this issue, you have to look at assuming there is an earthquake and there is what the engineers describe as failure, what does that mean? Mr. Bailey said in all probability it means a few inches, perhaps a few feet of deformation, but no realistic chance that the wall is going to collapse or that there's going to be a significant enough failure where the soil will come out from behind the wall and damage the streams. And that's really what we're talking about here, is there going to be harm to the streams, and I think Mr. Bailey has answered that for us.

I'm going to turn it over to Mr. Pearce. I think I've left him some time to discuss some of the other issues here.

MR. PEARCE: For the record, I'm Roger Pearce, representing the Port of Seattle.

I would like to talk briefly about the water-right issue. Here, because there's new impervious surface, the rain water no longer infiltrates, and that changes conditions. And there are two consequences of that. One is that there is faster runoff, and that increases peak flows during storm events; second, there's less

infiltration, and that decreases the summer low flows. In this case, just like most other cases in Washington, Ecology has required the Port manage its storm water, both to mitigate the peak flows and to mitigate the low flows.

Low flow mitigation is not different from peak flow mitigation, and Mr. Fendt and Mr. Swenson discussed that with you. In peak flow mitigation, the storm water is collected, detained, sometimes for many months, and then released in a precise, measured manner in order to mitigate the impacts caused by the creation of the impervious surfaces. The goal is to mimic, as far as you can, the prior flow regime in the stream.

The low-flow plan here is identical. The stormwater is collected, it's detained for a number of months, it's then released in a measured manner to mitigate the impacts caused by the creation of that impervious surface. The goal again is to mimic, as far as you can, the prior flow regime in that stream. So there's no difference between the two.

ACC says this is a more detailed plan than infiltration. But it's just as detailed and just as precise as the peak-flow mitigation that you're so familiar with. Ecology has never required a water right for stormwater management for mitigation of this type; if you require a water right for low-flow mitigation, you

have to require a water right for every stormwater mitigation project in the state. That is an absurd result, we think, and we think Ecology's position is very clearly supported by the water code. If you look at 90.54.020, and I would refer you to the prior briefing on this on the motion for summary judgment, the water code makes a very clear distinction between beneficial uses and water management.

I would like to move on to wetlands. The issue here is the antidegradation policy, basically, whether there will be a net loss of wetland functions, that's the question that we need to answer, that the Board needs to answer. Here, the proposed mitigation exceeds the requirements for most projects, provides mitigation in excess of Ecology's two-to-one target. The evidence from Dr. Kelley, Dr. Cassin, and Mr. Stockdale, is that all impacted wetlands functions will be replaced, in fact, more than replaced, even in-basin all wetlands functions impacted in that basin, except waterfowl habitat, for public safety reasons, is being replaced. The Appellants have not shown that the impacted wetland functions will not be mitigated. They raise a lot of concerns but they have no proof.

I would like to speak briefly about why off-site mitigation is appropriate in this case and required for

public safety. In this case, unlike many others, the FAA forbids creation of new wildlife hazards within 10,000 feet of a runway, and there are serious public safety concerns. The FAA imposed this requirement in its 1997 record of decision. And if you look in the NRMP, there's a discussion of this issue, it's between 1994 and 2000, reported wildlife/aircraft collisions at this airport averaged 22.5 a year. So this is a significant constraint in our ability to create a wetland mitigation in-basin. The Washington law specifically allows for out-of-basin mitigation. RCW 90.74, for public infrastructure projects, says the Departments of Ecology and Fish and Wildlife can't limit the scope of options in a mitigation plan to areas on or near the project site.

But the Port and Ecology did not stop with the out-of- basin mitigation. Thirty acres of new wetlands in Auburn, almost twenty acres of enhanced wetlands in Auburn, you saw the site in Dr. Kelley's testimony this morning. Here Mr. Stockdale explained to you that Ecology worked extremely hard to maximize the mitigation in-basin, he worked with the FAA and worked with the Port to create mitigation in-basin and they replaced the wildlife hazards like Vacca Farm and the golf course areas with high functioning wetlands. The testimony of Dr. Cassin, Mr. Stockdale, and Dr. Kelley, also shows that all of the

potential wetland in-basin mitigation sites were looked at by the Department of Ecology and by the Corps of Engineers. Those other opportunities nearby are very limited, generally they're either not sustainable, they're too small, or it's not possible to create wetlands with good functions on those. Those were all evaluated.

If I could talk briefly about the functional assessment. This is another example of ACC raising concerns. They criticized the process of how Dr. Kelley did the functional assessment. You heard about it being not replicable, about critiquing his data sheets, wanting him to use some other model, basically. Dr. Kelley said it's not a problem to peer-review this model, in fact the DOE and the Corps of Engineers could peer-review the model. What the ACC did not say about that functional assessment is that it's inaccurate, there's a lot of strong words in ACC's briefs in this matter but there's no evidence that the functional assessment doesn't fairly represent the predevelopment conditions. In fact, Dr. Kelley did the WFAM assessment on the wetlands that it was appropriate here to do them on - that's Appendix H of his testimony - and it came out showing actually lower functions, our functional assessment was more conservative than the WFAM method.

Performance standards were another example of raising

a concern. Ms. Sheldon in fact said, well, things may be a little different after this project than before the project. But look closely at what they don't say; they don't say that the performance standards are inadequate to produce the wetland functions that are targeted here, and that evidence is from Dr. Cassin and Ms. Walter.

If I could talk briefly about the ratios. I know the Board was concerned about mitigation ratios in the stay decision. The key here, the evidence shows, is replacing the wetland functions that are being impacted. As Mr. Stockton explained, mitigation ratios are broad guidelines, they are very flexible, you look at the quality of the wetlands you're losing, you look at the sustainability and quality of the resources you're creating. Based on those factors, DOE applied these general criteria appropriately. ACC wants this to be a numbers game, they want to make it terribly complicated; it's not, it's a wetland functions game, and it's quite simple. All wetland functions here have been compensated for. In sum, the wetlands were assessed correctly, that assessment was reviewed by DOE, the mitigation package was on-site and off-site for these wetland impacts, it's unprecedented, the out-of-basin compensation is clearly allowed here, the in-basin mitigation will fully replace the functions impacted in mitigation, and I think it's no

question in the wetlands area there's reasonable assurance the existing beneficial uses are protected.

To speak with my remaining time about water quality, the issue here is whether the state's water quality standard will be met in area streams. There are three highly urbanized streams, numerous sources of discharge to these streams, and the constituents of concern we've heard about here, copper and zinc, are very common from multiple sources, including all of the roadways and highways that discharge to these streams.

The evidence showed you over the past two weeks that ACC failed to show reasonable assurance is lacking. Through the NPDES process here, there is complete assurance that water quality standards can be met. The Port is regulated now, we have an existing NPDES permit, Dr. Wisdom and Mr. Smith talked to you about that, it's in compliance with that NPDES permit, Mr. Fitzpatrick told you that. From all of the reports in the tables we went through, there was no evidence in those reports and tables that there are existing violations for which the Port is responsible.

Mr. Poulin really asked you to ignore the law. The law requires that in order for there to be an ambient water quality criteria violation you have to have a number of things, it has to be hardness corrected data, it's got

to be one-hour average data, it has to be instream data, it has to be total dissolved fraction, not total recoverable. That's what the regulations say. But what all of these samples show is that most of them are not in the receiving waters. All of our sampling -- the Port has been required to do BMP sampling to assess its BMPs, so they're done well upstream, most of them, hundreds of thousands of feet upstream, in order to assess the BMPs. And most of them the sampling is done prior to discharge through a water quality treatment facility. Most of them are not corrected for hardness, it's not for dissolved fraction, it's not averaged over the appropriate time period, in fact the '97 report you've heard so much about is averaged over a storm event, which could be a half day or a day. I would also note that the Fitzpatrick deposition and the Drabek deposition transcripts are not in the record and I think the Board should ignore the references to those.

There is evidence of temporary exceedances instream, and we take that very seriously. It shows small exceedances, it shows them only in Des Moines Creek. No one is sure yet whether that copper and zinc is from the Port of Seattle or from the roadways next to it that discharge to those streams. But I think Dr. Willing of ACC, Mr. Fitzpatrick, and Dr. Stubblefield, all showed you

that there were clearly ways to address any exceedance problems if attributable to the Port. And the site-specific analysis and the water effect ratio study is addressing that. The WER is a preferred method under the water quality standards, it is recommended by the EPA, no discharges are allowed until it's completed, and it's clearly feasible that we'll know all of the relative contributions that the Port and other entities -- and we know that the WER is likely to be six times the standard we're talking about, and that would be a very protective standard, that is the protective standard under the Clean Water Act. There are numerous BMPs, if necessary, that can be applied to meet any effluent limit. Dr. Willing, ACC's own witness, told you about those BMPs.

If I could briefly discuss a couple of other things. The whole effluent toxicity issue, Dr. Wisdom talked to you about that, a hundred personal survival, no toxicity in SDS 3, which is the outfall that Mr. Poulin talked to you about. Glycols. Reported concentrations in glycols, orders of magnitude below any concentrations that cause toxicity. 303-D. Des Moines Creek is only listed for fecal coliform in 303-D. This proposal, the evidence before you does not provide any additions to that.

What we've learned in the past two weeks about storm water is that it is a complex issue. Mr. Fitzgerald said

that it's difficult to regulate, and that is because the standard fluctuates wildly, it's hardness related, it goes all over the place. The storm water is sporadic, it's dependent on rain events. There's a large number of sources which makes analysis difficult, the types of pollutants here are very common roadway pollutants, in fact the Port is really building just a large roadway, a third runway with taxiways. So even though documenting this issue is challenging, it's not -- it really is just storm water and, if necessary, after the WER study, there are multiple treatment options available, if needed. It's important for the Board also to understand the extent to which the water quality at the airport has been and will be improved if this project is approved. Virtually the entire stormwater infiltration and treatment system at the airport, not just the stormwater system associated with this project, is being retrofitted and it's being retrofitted to meet standards that are basically predeveloped, 75-percent forest, 15-percent pasture, 10-percent impervious surface. There will be marked water quality benefits also from removing existing polluting uses in the bioarea.

In my final two minutes, I would like to talk about the relationship between the principle of the Clean Water Act, the relationship between the NPDES permit and the

401. Ecology's policies are where a 401 and a 402 are necessary they will be applied in a complimentary manner, and a 401, however, can go beyond a 402, what a 402 would require, and that's what happened here. Ecology required a retrofit of the entire airport, it's required protective field criteria, it's required a site-specific study. So the evidence here, unlike Battle Mountain Gold, where there was clearly -- an NPDES could not issue to a cyanide lake on top of a mountain where the applicant was going to be gone in fifteen years and there was no way to treat the storm water there, the evidence here is completely the opposite. You have compliance with the permit, there are no exceedances attributable to the Port, minor or small exceedances in locations under limited circumstances, a site-specific study can determine those that are the Port's contributions and deal with them, prior to any discharge we have to have effluent limits to protect that ambient water quality standard. It's a classic case where the NPDES permit, the NPDES control is very plainly and clearly feasible, therefore the Department of Ecology had reasonable assurance that the water quality standards would not be violated.

I think I'm 20 seconds out of time, thank you very much for your attention. We remind you that ACC has the burden of proof in this appeal and we don't think they've

met their burden of proof on reasonable assurance.

Thank you very much.

MR. EGLICK: Well, we are the Appellants, we have a burden of proof but it's not the one that Respondents have described here. If you look at the Battle Mountain Gold case, the Battle Mountain Gold case does not say that the 401 was overturned there because the Appellants proved to some tenth degree of quantification that there was not reasonable assurance. What the Board did was look and say, is there certainty? Is there assurance? And if there isn't, then the 401 cannot stand. And that was what was proven in Battle Mountain Gold, that there was not reasonable assurance. That can be found on a quantitative level, I suppose, in some circumstances, and in some it can be found simply by examining the evidence and saying this doesn't make any sense, this doesn't meet the requirements of the law, this defies logic, this defies nature. And here I think we have a little of each of those.

I guess I want to start then looking at the issues with low flow because it is a fundamental issue and one that goes to the very survival of impacted streams in the affected basin. There is an expert on low flow who doesn't work for the Port and doesn't work for ACC, and that's Kelly Whiting. The bottom line on Kelly Whiting's

testimony is that he still is not satisfied with the low-flow modeling and the low-flow plan. All you need to do is go and look at his memorandum describing the flaws to date through February 23, he can't concur in the low- flow modeling and the low-flow plan. That's where Kelly Whiting is, and he is as close as you're going to get in this case to someone who is independent.

What's the answer then? The answer is the Port cannot show reasonable assurance, Ecology did not have reasonable assurance. What are some of the problems? Well, they can be divided into two parts, modeling and implementation. When you look at modeling, you've got two kinds of flaws, inaccurate inputs and poor calibration. You've heard from Dr. Lucia, Dr. Leytham and Mr. Rozeboom, each testified about serious problems with the Port's model inputs and assumptions. And with respect to the embankment, for example, the testimony was that the Port has underestimated runoff from the runway, overestimated infiltration, and we have that vivid picture, if you will, from Mr. Rozeboom, saying: Well, gee, we're up on top of the embankment, where is all the infiltration? The puddles are all around and they're not going anywhere; oversimplified soil composition rendering the water travel time suspect.

And I think that, if you recall, was the photograph

that Dr. Lucia pointed to. This is not cake batter that's uniformly mixed in the Sunbeam Mixmaster, this is layers of different kinds of materials that result in performance being not in a uniform way in terms of water travel time. And Dr. Lucia showed that very graphically.

Failure to model excavation activities. And by that I think, for example, it's kind of ironic in a way, there's modeling for where the fill was going, but on the other hand there was no modeling put into the equation for where fill was being removed and the millions of cubic yards from borrow areas right next to Des Moines Creek, and that was something that was mentioned. Different models were utilized to examine existing versus future conditions, and a third model, the slice model, was utilized that added unnecessary complexity and uncertainty. And in the end we ended up with a product that not only our witnesses but as Mr. Whiting said is still not there. Now, Mr. Crawford -- you know, Dr. Willing said Mr. Crawford was an expert, and I suppose if Crawford had been in the chair there and said this is all great, I would be making a different closing argument. But you never saw Norm Crawford here, what you had was hearsay saying, Well, he gave us one memo and we followed some of his recommendations but not all of them.

And then we also had testimony, and please check me

on this, he said, "And he wrote us another memo." Not in the record, nothing said about what that second memo said. And I think that's very instructive. Taking Norm Crawford's name in vain as someone who has endorsed what's occurred here I think is going to take more than pointing to an empty chair and a nonexistent or nonproduced memo as an endorsement for the low-flow plan.

I'm going to switch topics for a moment because that made me think of something that I don't want to forget, and that is we're talking about talking about people who aren't here. And this is off the topic, but I want to say it while I remember it. We have offered Pete Kmet's testimony by deposition, and the suggestion that we could have called him and did not I think is unwarranted. Before the hearing began, we offered his deposition and we've designated portions of it, and I expect them to come into the record. So the suggestion that why isn't Mr. Kmet here to tell you what he thinks, you'll have his deposition. Counsel for Respondents of course participated in that, and you can see for yourselves what the senior toxics program engineer at Ecology had to say. Meanwhile, before you have that, you could look at Exhibit 15, and you don't need to do it now, but if you look at Exhibit 15, about the fifth page in, when we're talking about this question about what Mr. Kmet said about

sampling and what he thought was being sampled and so on, take a look at 15, page four, the answers are there and they're not I think the ones that you heard from Respondents. What you heard from Respondents was something that suggested that Mr. Kmet was referring to sampling recommendations for contaminated sites alone, and that's just not the case. Having made that digression while I remembered to do it, we are still on our out-of-sequence movie, I'm afraid.

Let's go back to low flow for a moment. King County has called for changes in the low-flow plan. Ecology is apparently waiting for them. And what we're hearing from Respondents is that, well, ACC has no answers, it's just raising questions. And I think the real situation here is that the Port has no answers in response to repeated questions. And whatever answers we are going to get are going to come manyana, by this theory, after the 401 is issued and approved. And that's just wrong and inconsistent with the law for 401. And that's the fundamental problem with this case.

I did want to address also the questions regarding the team, the Ecology team, and Gordon White said we had a great team. Well, the only problem with this team is you had to be a team player to stay on the team. Tom Luster wasn't a team player: Gone. Pete Kmet made

recommendations that didn't fit with the program: Gone. Even Chung Yee, at the point where apparently he wasn't with the program, he wasn't allowed to review the SPLP: Gone. So, yes, it was a team, but I am not sure that the team actually got a result that represented reasonable assurance as opposed to something that was preordained. I wasn't going to mention this, but you've heard all of these mentions from Mr. Young about over thirty facilitated meetings and so on and so forth. What Mr. Young didn't tell you but the record reflects and indeed some of the deposition testimony is going to pin this down even more that you're going to read is that there were lots of facilitated meetings, as well, if you want to call them that, that were called at the Governor's Office or by the Governor's staff at the behest of the Port to put pressure on Ecology. And I'll say no more, but look carefully at the depositions and ask yourselves why is it that a 401 that was supposed to be a product that everyone could be proud of that was issued on August 10th with a press release that's in the record saying this is a remarkable achievement in environmental protection was then revoked about a month later and another one was substituted. If it was so remarkable, what happened to it? Well, what happened to it was that the Port didn't like it, so it was revoked and the scope was changed, and

that is substantively very key for your review. The original scope of the 401 was correct, it included operation, maintenance of the facility, direct and indirect impacts and so on. The 401 as it was reissued in September, and it had a number of nonprotective changes, but one that is particularly significant is it substituted the coverage language that says this covers 404 projects. If you look at the deposition testimony of Ann Kenny, and I believe she repeated it here, and of Ray Hellwig, what you'll find out is that these folks who were the key people who wrote this thing don't know what a 404 project is. They said that was going to be a matter of negotiation with the Port after issuance of the 401 and that negotiation is still ongoing. So it's a 401 that had a definable scope, some modicum of protection, and it was revoked and reissued with a more limited, undefined scope. It's reminiscent of the retrofit.

I must mention, you didn't hear much about it today, but retrofit has been a battle cry. We're going to retrofit for storm water and everything is going to be fine. But remember, we're going to retrofit if it's feasible. Feasibility is undefined, we don't know whether it's cost, we don't know whether it's physical feasibility, we know the stormwater plan already says that some retrofits aren't feasible, so we have got a head

start on nonretrofit. And that's one of the main arguments that was made throughout this hearing with regard to storm water quality.

Let's talk again for a moment about contaminated fill and SPLP. The Port is essentially using SPLP samples or SPLP testing to pass samples that exceed the numeric criteria in the 401. And any situation that they are not I think is inaccurate, I think the loophole was evident in Beth Clark's testimony that four of the seven current borrow sites did not pass the numeric criteria, but they passed the SPLP which then let them go ahead. By the way, a Phase I assessment is not something that people do to make a million dollar purchase, remember the Phase I assessment is just you go talk to people and you check some documentary records and so on, and I don't think there's anything in this record that says anyone is spending a million dollars or even a hundred thousand dollars on a Phase I assessment. It's very clear that in this state and around the country, frankly, the idea that we needed to document what was put on a site is a relatively recent idea, so the documentary assessment, you know, what do the records show was put at a site, is not providing the protection needed.

And let's talk for a moment about one of the other supposed protections, and that is the idea that we're

using the state certified borrow pits. Well, those are certifications by the Department of Transportation that have to do with geotechnical qualities of the borrow material for roadway purposes, this is not an environmental protection. And that was brought out in Ann Kenny's testimony and in the exhibits as well.

I'm not going to be able to address everything I would like to, but I think that wetlands is something that must be addressed further. And there are a number of different things to be said. The Port has suggested that a hydrologic standard that they use or that is used in the 401 protects wetland hydrology, and the Army Corps has acknowledged that. It's kind of mixing apples and oranges. There's a hydrologic standard in the 401 that is similar to a standard used for wetland delineation by the Army Corps and others, but that's not a standard for protecting wetland hydrology, that's the standard on the front end for how you identify a wetland. The question that we have raised here, and we haven't just raised it, we've also answered it, is that that standard will let wetlands that are characterized by surface waters and by inundation, all of those characteristics that were mentioned with specific wetlands cited, that will let those wetland functions and their characteristics diminish because the standard takes them down to a very low common

denominator. And checking to see if the plants have died or not or are doing okay is not a canary, as Ms. Sheldon said, and the prescription for the Port and Ecology, I suppose, to discuss what made the plants die when there's a very direct way to protect the wetlands, if you want to -- if you want to, and that's to put in the hydrologic standards.

Now, is that a foreign concept? No. And we've listened to all of this testimony saying that it was a foreign concept, that you can't measure the hydroperiod of a wetland. But in fact, if you look at Exhibit 2028, which is the Ecology Western Washington Stormwater Manual -- excuse me, I've got the wrong exhibit number and I apologize for that. If you look at Exhibit 1266, which is the Western Washington Stormwater Manual, and you look at page D-13, for example, what you'll find - and pages surrounding that page - what you'll find is that the Ecology manual talks about hydroperiods for wetlands, how you measure them, how you define them, and it says this is something we're going to do. So you have heard testimony from witness after witness from the Port and the Ecology folks saying: We don't do this, we don't know how to do it, it's never done. Not so. And not just from their own witnesses but from their own document. And I have to assume they simply have not read this. By the way,

hydroperiod for a wetland is even defined in the document.

The wetland mitigation ratios are ones that certainly lend themselves to, as I think Mr. Pearce said, a numbers game; but we're not the ones playing the game. Take a look at the credits being given for things that really are on the margins, on the fringes. You're getting credits for enhancement of nonwetland areas. You're getting credits for restoring wetlands that are already categorized as wetlands with functions, which the Port has acknowledged. The numbers are being played with and the actual mitigation ratio, if you start adjusting the numbers back to where they belong, is less than one to one. And all of this talk about functions being replaced and all of that, all assumes that for example you can replace a wetland function by enhancing, in quotes, a nonwetland area, and that that will substitute for it. It's not the law, it's not the water quality standards. Maybe there should be a law that says that you can get rid of all of the wetlands, as long as you do some enhancement in riparian forests, but that's not the law. And it's also, according to our scientists, and there is some disagreement there of course among the live witnesses, not good science, but also Ecology's own publication, How Ecology Regulates Wetlands, does not recognize this mechanism, this innovation. And it is an innovation to

allow the Port project to pass and we think it's one that should not be allowed because, frankly, the result will be diminution below a critical mass in these watersheds of wetland function. You heard over in Auburn the wetlands that are being created are a drop in the bucket; over here they're a much more significant part of the puzzle.

Mr. Reavis suggested - and I'm switching topics here again - that if the Port discovers a problem in the sampling for contaminated fill, the Port will go out and do more sampling, and it referred to the contract criteria and so on. I think it's important that you realize that the 401 doesn't require that; that is Mr. Reavis talking about what the Port contract specifications might say. It's just another example of what you're being asked to do here, that is, to suspend disbelief, assume that things will go one way with the 401 and the documentation says something else. That's the problem underlying this entire 401, the work isn't done, assumptions about happy outcomes are being made without any basis, and you don't need to be a scientist, I think, to see that in most cases. It's totally contrary to the principles established in Battle Mountain Gold for certainty. We would ask you to tell these folks, well meaning as they may be, to go back, to get it done and do it right before they certify it.

Thank you.

MS. COTTINGHAM: Again, I would like to thank the parties for their presentations today and over the past two weeks. It's been a grueling exercise and I think I wouldn't be honest if I apologized for the rigidness of my keeping us to the time schedule. I think it was a suggestion of Judge Hicks that we use the chess clock, and I appreciate the parties in their adherence to the time schedules, it probably kept you all a little more focused as well as getting us done in time.

I also would like to recognize the dedication of some of the public who have sat in the hearing from beginning to the end, and it's not often that we have the public sit through this technical of a hearing from start to finish, so I would like to recognize that.

I would also like to know when we can expect to receive the comments on the depositions to be published.

MR. EGLICK: In the press of events, we have not had a chance to look, other than superficially, and we've noticed that the objections from Ecology seem to be in the nature of both, there's some legal argumentation, there are some counter designations, and then there are some specific objections, so I think it's going to take us quite some time to go through them. Mr. Hellwig's came a little bit after the others. And we're hoping not to work this weekend, I might add. Our families are hoping we

won't, anyway.

MR. STOCK: Could we suggest Thursday with the other material?

MS. COTTINGHAM: Thursday with the other material would be fine. So I would like to remind you again that what comes in on Thursday is your comments or suggestions on the draft outline of the opinion, and then the responses and the entirety of the packet on the depositions to be published.

MR. EGLICK: And we'll take the labor in order to put that together so you have the deposition covered by their submission and ours.

MS. COTTINGHAM: Thank you. And I will memorialize a bunch of these things that we've talked about later in the hearing in an order, but I just wanted to remind you about Thursday, since you might not get my order until Wednesday or Thursday.

With that we'll stand adjourned. Thank you.

BY COUNSEL: Thank you, Your Honor.

(Proceedings concluded at 4:40 PM).

C E R T I F I C A T E

STATE OF WASHINGTON)

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COUNTY OF THURSTON)

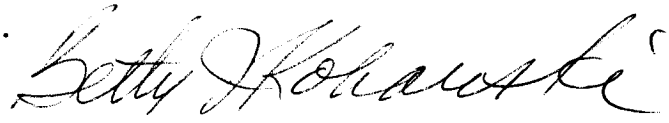
Betty J. Koharski, Notary Public in and for the State of Washington, residing at Olympia, does hereby certify:

That the annexed and foregoing Transcript of Proceedings, pages 10-0001 through 10-0218 was reported by me and reduced to typewriting by means of computer-aided transcription;

That said transcript is a full, true and correct transcript of my shorthand notes of proceedings heard Before the Pollution Control Hearings Board on March 29, 2002, at Lacey, Washington;

That I am not a relative or employee of counsel or either of the parties therein or otherwise interested in said proceedings.

WITNESS MY HAND AND OFFICIAL SEAL this 10th day of May, 2002.



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