

BEFORE THE ENVIRONMENTAL AND LAND USE HEARINGS BOARD

FRIENDS OF GRAYS HARBOR and)
WASHINGTON ENVIRONMENTAL)
COUNCIL,)
)
Appellants,)
)
v.)
)
CITY OF WESTPORT et al.,)
)
Respondents.)

ELUHB 03-001 ET SEQ.
PRE-FILED TESTIMONY OF SARAH
COOKE

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PRE-FILED TESTIMONY OF SARAH COOKE,
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3 1. I have personal knowledge of the facts stated in this testimony and would be
4 competent to testify thereto. The remainder consists of my professional opinion based upon my
5 expertise in relevant fields, as discussed below:

6 **BACKGROUND**

7 **Experience and Involvement in Case**

8
9 2. I currently teach the Wetland Plant identification and Habitat Restoration classes
10 at Portland State University. I am a former instructor for the Wetland Certification Program at
11 the University of Washington, and the Masters wetland science program at The Evergreen State
12 College.

13
14 3. I have 18 years of experience in wetlands ecological research and environmental
15 consulting in the Pacific Northwest, and 22 years of experience in ecological, botanical, soils,
16 and geological research. I am the author/editor of *A Field Guide to the Common Wetland Plants*
17 *of Western Washington & Northwestern Oregon* (Cooke 1997) and a co-author of *Wetlands and*
18 *Urbanization: Implications for the Future* (Azous and Horner, 2001).

19
20 4. I have ten years of experience with researching the effects of stormwater on
21 wetland ecosystems as part of my involvement with the Puget Sound Wetlands and Stormwater
22 management Research program. The results of this research have been published in the Azous
23 and Horner book identified above. My contribution to the effort was to perform ten years of field
24 data gathering and to analyze the data in order to track the effects of stormwater on the
25 hydrologic regime and water quality and the resultant changes to individual wetland plants and
26 their communities. I have taken this research and incorporated the results into my consulting
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28

1 work and design wetland restorations and mitigations and determine wetland impacts based on
2 the known effects the research program was able to identify.

3 5. I have been a member of every Department of Ecology committee developing a
4 methodology for: wetland rating, hydric soils determination, wetland delineation, wetland
5 functions, and Best Available Science for buffers, mitigation, and replacement ratios, since 1988.
6 I am a listed co-author or reviewer for almost every Department of Ecology publicaiotn
7 pertaining to these issues since 1990. I teach classes throughout the region to agency staff and
8 consultants in wetland delineation, wetland rating, functional assessment, wetland mitigation,
9 and permitting. I given regular papers (a minimum of three a year) on all these topics at
10 regional and national conferences. I have been recognized by the International Society of
11 Wetland Scientists as one of three fellows the society has named since the inception of the
12 awarding of the fellow designation. I am the past president of the northwest chapter of the
13 Society of Wetland Scientists.
14
15

16 6. I have also worked on at least two golf course projects in the last few years. One
17 was a King County golf course (Mooney Swamp) -that I monitored each year for 10 years to
18 observe the total wetland ecosystem impacts on: water quality, hydrology, vegetation, birds,
19 amphibians, small mammals, and aquatic invertebrates) of urban stormwater and golf
20 maintenance (herbicides and pesticide applications). The other was a wetland inventory,
21 vegetation mapping, impact assessment, permitting, and mitigation design for the Gleneagle Golf
22 course and residential development in Arlington.
23
24

25 7. I hold a Ph.D in Geobotany and an M.S. in Plant Taxonomy from the University
26 of Washington.
27
28

1 8. I specialize in wetland science: inventories, baseline studies, impact analyses,
2 delineation, functional evaluation, creation, restoration and enhancement projects, both in design
3 and implementation, ecosystem monitoring.

4 9. I also have extensive experience in environmental-related permitting assistance on
5 the local, state, and national level. I have conducted scientific research on wetland ecosystems
6 for the Puget Sound Wetland and Stormwater Management Research Program. I also have
7 experience in OHWM determinations, rare plant surveys, soil assessments, watershed analysis,
8 vegetation mapping, and environmental assessments in the region.

9 10. I have considerable experience in developing assessment methodologies (wetland
10 delineation, functional assessment, and monitoring methodologies, for wetland ecosystem);
11 classroom instruction of wetlands ecology and restoration, delineation protocols, hydric soils,
12 and wetland plant identification; managing multidisciplinary teams; marketing, expert witness
13 testimony, designing and executing wetlands research; supervising subcontractors, and
14 generating reports and scientific papers.

15 11. Attached as an Appendix is a copy of my curriculum vitae.

16 12. I have commented on this project at various stages in the proceeding, beginning
17 with commenting on the SEPA Draft Environmental Impact Statement for the project. I also
18 provided testimony to the City of Westport Hearing Examiner on the Binding Site Plan for the
19 project. In that hearing I was the only expert witness to discuss marram grass lines, and I
20 expressed my expert conclusion based upon personal observation and analysis of pertinent
21 documents and aerial photos that the marram grass line in front of the condominiums and
22 irrigation lake had been consistently moving shoreward since August 2000, that the August 2000
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1 marram grass line shown on the project site plan was inaccurate, and that project components
2 were within the 200 foot setbacks.¹ That remains my expert conclusion.

3 13. In preparing my testimony in this case, I have reviewed extensive documentation
4 relating to the project and the project site. Critical documents that I reviewed include the Joint
5 Aquatic Resources Permit Application (JARPA),² the Natural Resources Management Plan,³ the
6 Draft and Final Environmental Impact Statements,⁴ the Addendum to the EIS and attachments,⁵
7 the 401 Water Quality Certification,⁶ the Supplemental Biological Evaluation,⁷ the Stormwater
8 Pollution Prevention Plan (SWPPP),⁸ reports and letters issued by the Washington State
9 Department of Fish and Wildlife,⁹ reports and letters issued by the Washington State Department
10 of Health,¹⁰ as well as various correspondence between the applicant and Department of
11 Ecology, technical memoranda, maps, photos and miscellaneous project documentation.
12
13

14 **SUMMARY OF EXPERT OPINIONS**

15 13. It is my opinion that the applicant has failed to acknowledge the full extent of
16 wetlands on the project site north of Jetty Access Road. Wetland HMB was properly delineated
17 by the Corps in 1998 as being much larger than acknowledged by the applicant. I have
18 confirmed that the Corps' delineation was proper and that Wetland HMB and several other
19 wetlands extend or exist within the footprint of the proposed hotel/conference center
20 development. Wetland HMB is properly categorized as a category II wetland and is within
21 jurisdiction of the Shorelines Management Act.
22
23

24 14. The project as conditioned is likely to cause unacceptable impacts to water quality
25 and beneficial uses in the wetlands and downstream receiving waters. The conditions imposed
26 by the 401 Certification are inadequate to assure that water quality standards will be met or that
27 beneficial uses will be retained, and the mitigation is wholly insufficient.
28

EXPERT OPINION

1
2 15. All opinions stated herein are drawn from my review of the above described
3 documents, my site visit, and my expertise in the fields. Unless stated otherwise, all opinions
4 about project impacts refer to the project as conditioned by the 401 water quality certification
5 issued by the Department of Ecology (“401 Certification”).¹¹
6

7 **Site Reconnaissance of Wetlands North of Jetty Access Road**

8 14. I visited the project on all-day site visit held as part of this proceeding on June 15,
9 2005. During that site visit, I took measurements and photographs, and conducted some
10 delineations as discussed below. A reconnaissance report from this site visit is attached as
11 **Appendix B**, which is hereby incorporated as part of this pre-filed testimony. It accurately
12 describes my site visit and some of my expert conclusions.
13

14 15. During my reconnaissance, I found Wetland HMB to be a larger wetland than was
15 identified by ELS and there exist many additional wetlands in the area north of Jetty Access
16 Road that were not identified by ELS. Figure 3 of the Reconnaissance Report shows the wetland
17 boundary for HMB and adjacent areas that were identified by the US Army Corps of engineers in
18 1998. During the site visit, I identified the approximate boundaries of Wetland HMB, which
19 have also been placed on Figure 3. The CS wetland identifications more closely match those
20 identified by the Corps in 1998. The boundaries of Wetland HMB identified by the Corps and
21 CS are very dissimilar to those identified by ELS in 2000. The wetland area had been recently
22 mowed and graded and has been reported to have been disturbed in the ELS report.
23
24

25 In particular, the interior of Wetland HMB along the Jetty road and a few small willow
26 wetland patches to the north and east of HMB were not identified as wetland. The soils found in
27 the area identified as wetland by CS staff were identical to those omitted from the wetland
28

1 boundary by ELS (10YR 3/1 through 7.5 RY 3/1). The soils were found to be predominantly
2 sandy in texture with an organic duff layer of varying thickness. The sandy layers in the smaller
3 wetlands displayed prominent organic streaking in the lighter horizons layers. The vegetation
4 was also dominated by wetland indicator species and has many redoxomorphic features such as
5 oxidized rhizospheres.
6

7 **Coastal Dune Area as Rare and Important Ecosystem**

8 16. Undeveloped coastal dune ecosystems are extremely valuable and rare.
9
10 According to the Department of Ecology's Coastal Sand Dunes Study (Rueff, 1975)¹² only nine
11 coastal dune areas of notable size remained undeveloped in Washington in 1974. According to
12 the Study, this represented 12.5 lineal miles, as compared to 2,300 miles of saltwater shoreline
13 under the jurisdiction of the Shoreline Management Act.¹³ The project site is among the largest
14 of these undeveloped sites, and had by far the widest deflation plain component.¹⁴ Thus, it is
15 likely that the project site is one of the largest undisturbed interdunal wetland system in the State,
16 if not the largest. The Study recognized the importance of protecting these few remaining
17 undeveloped areas.
18

19 17. The study noted that while nine coherent areas of notable size were left in an
20 undisturbed condition, "continued pressure from adjacent new developments and rising demands
21 from the private and public sectors are likely to reduce their integrity to a point beyond which
22 these areas are no longer capable to maintain their natural structure and characteristics."¹⁵
23

24 18. The study advised, "Particular attention should be paid to the remaining natural
25 areas and their preservation. They constitute limited natural resources and only collectively
26 these key areas are representative of the unequalled biophysical systems and aesthetics of the
27 dune landscape."¹⁶
28

1 19. The Study recommended that "all responsible authorities coordinate their efforts
2 and undertake appropriate steps to protect the previously identified natural areas to the fullest
3 extent possible. Until their status has been defined and suitable boundaries and management
4 concepts have been formulated, local governments should place a moratorium on substantial
5 development of and physical alteration in those areas."¹⁷
6

7 20. I have studied the pre-filed testimony of Alfred Wiedemann submitted to this
8 Board in this matter. I incorporate by reference the conclusions reached by Mr. Wiedemann
9 regarding the fragility of the dunal system and the impacts that this project will have on it. In
10 doing so, I also rely upon the primary sources cited in his testimony.
11

12 **Project Proposed on Extremely Sensitive Site**

13 21. The proposed extensive development will occur in an extremely sensitive and
14 unique natural area.¹⁸ The wetlands system on the site are part of an interdunal wetland mosaic
15 that contains 350 acres of wetlands. (Trial Exhibit A6). The wetlands on the site extend deep
16 into Westport Light State Park directly south of the site. (Trial Exhibits A6, A7). The project
17 site and Westport Light State Park are currently in a natural, undeveloped state, dominated by the
18 interdunal wetland system.
19

20 22. The beneficial uses of the wetland are extensive based upon the information in the
21 record. These include:
22

23 23. Groundwater recharge and purification. The project site and the largest wetland
24 on the site extend over the City's wellhead protection zone.¹⁹ The site also drains into what the
25 Washington State Department of Fish and Wildlife has stated is a particularly fragile area of the
26 Grays Harbor Estuary.²⁰ The receiving waters are already impaired in several respects. They
27 are listed on the 303(d) list for fecal coliform²¹ and suffer from eutrophication.²²
28

1 24. Fish habitat. The project application and supporting documentation incorrectly
2 state that there is neither fish nor aquatic habitat on site. However, fish use of the site has been
3 documented by both WDFW²³ and the applicant's own fisheries consultant.²⁴ Coho salmon
4 were identified by WDFW²⁵ and at least one private witness whose declaration I have
5 reviewed.²⁶

7 **Wetland HMB and Adjacent Undisclosed Wetlands Within Footprint of Proposed Hotel
8 and Convention Center**

9 25. The most significant observation I reached during the site visit was that large
10 jurisdictional wetlands exist directly beneath the proposed site for the luxury hotel and
11 convention center and adjacent facilities. The Applicant did not acknowledge the existence of
12 these wetlands in either its original or updated wetland delineations. Yet, there is no question
13 that these wetlands exist now, and it is equally clear that they were there when the Applicant
14 completed its first and second delineation.

15 26. My finding of wetlands under the hotel footprint is consistent with a 1998
16 delineation completed by the U.S. Army Corps of Engineers. In August 1998, the Corps of
17 Engineers delineated and mapped Wetland HMB as part of the Point Chehalis Revetment
18 Extension Project (USACE, August 1998; Trial Ex. A172).²⁷ The Corps' formal delineation
19 mapped a six-acre wetland. According to the Revetment project's documentation, only 1.4 acres
20 of the wetland were to be impacted, with the project designed to protect the remaining 4.6 acres
21 of the wetland. The Corps' delineation and its commitment to protect the 4.6-acre wetland were
22 incorporated into the Interagency Mitigation Agreement (USACE, October 7, 1998; Trial Ex.
23 A61)²⁸ and the Amended Water Quality Certification for the project. (Washington State
24 Department of Ecology 1999; Trial Ex. A63).²⁹

1 27. The Water Quality Certification issued to the revetment project was amended by
2 Ecology to require the Corps to comply with the Interagency Mitigation Agreement that was to
3 protect this interdunal wetland. The Corps agreed to this amendment to settle an appeal of the
4 Water Quality Certification that was pending before the Pollution Control Hearings Board over
5 the proposed revetment extension. (Stipulation and Order, 1999; Trial Ex. A65).³⁰
6

7 28. The Corps was required to protect the remaining wetland during the revetment
8 project. For example, it was required to install a clay barrier to avoid draining the remaining 4.6
9 acres of HMB wetland. This barrier was installed (Trial Ex. A65) and U.S. Fish & Wildlife
10 Service letter to Col. Rigby, (Sept. 24, 1998; Trial Ex. A66) confirmed that project would
11 incorporate measures to "prevent the remaining 6-acre wetland complex from being affected
12 hydrologically by the revetment." Subsequent official documents from the Corps mapped
13 Wetland HMB according to its 1998 delineation. (USACE Public Notice 2002).³¹ The Corps
14 completed a mitigation project for exactly this 1.4 acres of impacts. (USACE Restoration Plan
15 1999; Trial Ex. A67)³².
16
17

18 29. The Applicant's 2000 Delineation Report was prepared less than two years after
19 the Corps' delineation. In the intervening years, the revetment extension was constructed.
20

21 30. The Applicant's delineation of Wetland HMB in 2000 underestimated the size of
22 Wetland HMB by almost 3.5 acres from what the Corps official determination had been only two
23 years previously.ⁱ
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26

27 ⁱ If the Applicant's consultant had difficulty delineating Wetland HMB due to recent disturbance, the Applicant's
28 2000 Delineation Report should have relied upon the two-year old Corps delineation to determine the pre-
29 disturbance wetland boundaries. In that case, the rating sheets prepared for the 2000 Delineation Report should have
characterized Wetland HMB as "significantly disturbed." Instead, they indicated undisturbed wetlands.

1 31. My site visit confirmed that the Corps' 1998 delineation of Wetland HMB was
2 substantially correct. Thus, I confirmed that the Applicant's wetland delineation report
3 understated the size of Wetland HMB by approximately 3.5 acres. The Applicant delineated the
4 wetland as approximately 1.15 acres, rather than the 4.6 acres that the Corps delineation found.
5 (ELS 2000, ELS 2003).³³ I am unsure why there was such a large discrepancy between the
6 1998 and 2000 delineations except that it states in the report that "vegetation mowing/removal,
7 filling, re-grading, and other activities have occurred in the vicinity of this wetland during dredge
8 spoil placement and subsequent re-grading of the site." The site was therefore in a state of recent
9 impact (the vegetation removed, or the soils disturbed). The field data sheets also state that the
10 work was done in June, when the site will have dried out and so the soils and hydrology
11 indicators are difficult to discern.

14 32. I am certain that Wetland HMB was substantially the same size as delineated by
15 the Corps (minus the area that was filled as part of the revetment project). when the Applicant
16 completed its wetland delineation report. The wetland indicators I observed could not have
17 developed in the years since the 2000 Delineation Report. Moreover, there is no way that the six
18 acre wetland shrunk by 3.5 acres in two years, only to then grow back to its 1998 boundaries.

21 33. In addition to Wetland HMB, I identified other jurisdictional wetlands within the
22 footprint of the proposed development north of Jetty Access Road. The Corps also apparently
23 identified these wetlands during its wetland investigation because they are shown on the Corps'
24 mapping of this property.ⁱⁱ

25 34. In forming my opinion about the size and existence of these wetlands, I followed
26 every necessary step in wetland delineation as required by Ecology's wetland delineation
27

1 manual. As discussed above, I am a recognized expert on the subject of wetland identification
2 and delineation. During this delineation, I found that the site conditions – including wetland
3 indicators – were accurately represented on the Wetland Determination Forms prepared for the
4 Corps’ 1998 delineation. I took photos of my observations. See my site reconnaissance memo.
5

6 **Wetland HMB Properly Classified as Category II Wetland**

7 35. Wetland HMB is properly rated as a Category II wetland under either the 1993 or
8 2005 Department of Ecology Rating Protocol. Attached to the Site Reconnaissance Report are
9 rating sheets on which I have conducted this analysis pursuant to the Washington State
10 Department of Ecology’s 1993 Wetland Rating for Western Washington method. Under the
11 method adopted in the 2005 revised Wetland Rating System for Western Washington, this
12 wetland would qualify for a Category II rating both by virtue of being an interdunal wetland over
13 1 acre in size and under the general wetland rating analysis.
14

15 **Wetland HMB Within Shorelines Jurisdiction**

16 36. I have extensive experience working with the concept of associated wetlands
17 under the Shoreline Management Act and have often been called upon to reach conclusions as to
18 whether a wetland system meets the definition of an associated wetland under the SMA.
19

20 37. I have reached the conclusion in this case that Wetland HMB is an associated
21 wetland within SMA jurisdiction. The Corps reached a similar conclusion when it stated in its
22 1998 report that “the wetland area is adjacent to and contiguous with, Grays Harbor. The
23 hydrology of the wetland is tidally influenced.” (USACE 1998; Trial Ex. A172).³⁴ This means
24 that the wetland boundary as determined in 1998 (and still very similar in 2005) would be
25 covered as a shoreline of the state.
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27

28 ⁱⁱ Because these smaller wetlands were not to be impacted by the revetment project, the Corps’ 1998 delineation
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1 38. I concur with the Corps' opinion based upon numerous pieces of evidence that I
2 have reviewed and that are typically relied upon in reaching such determinations. The
3 Applicant's addendum found that "As Exhibit 8 shows, ground water flow direction for most of
4 the site is towards Half Moon Bay rather than to the inner Grays Harbor area (the outlet for
5 surface water flow). This provides opportunity for mixing with ocean waters". (EIS Addendum,
6 p. 14; Trial Ex. A3).³⁵ Trial Exhibit A3 does show this and notes that groundwater elevations on
7 the site are tidally influenced. (EIS Addendum, note 3).³⁶ The wetlands I observed were also
8 within the 100-year flood plain as identified by FEMA map (FEMA 1981; Trial Ex. A144).³⁷
9 Under the methodology regularly used for identifying associated wetlands and under that method
10 described in the publication "How Ecology Regulates," wetland HMB is an associated wetland
11 subject to shoreline jurisdiction. Specifically, that publication states that "A wetland is associated
12 if it falls within 200 feet as measured on a horizontal plane from the OHWM or the floodway,
13 whichever is more inclusive, of a water body under shoreline jurisdiction" and that the entire
14 wetland is associated if any part of it is within such area. *How Ecology Regulates Wetlands*, p.
15 36 *et seq* (Trial Ex. A41). It also states that the entire wetland is associated when it is in
16 proximity to and either influences or is influenced by the water body. This standard is met,
17 according to Ecology's guidance, in the case of tidally influenced geohydraulic specifically
18 including dunal systems, spits and jetties, and beaches. In addition, this standard is met in the
19 case of interdunal wetlands that exist upon an aquifer that has hydraulic continuity with the
20 shoreline, according to the Shorelines Hearings Board's own prior rulings. Indeed, the SHB has
21 ruled that other interdunal wetlands within this same interdunal wetland system (*see Trial Ex. 6*)
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1 are within shorelines jurisdiction based upon meeting this test. Therefore, I conclude that
2 wetland HMB is within shorelines jurisdiction.

3 39. When a wetland is re-delineated, it should also be reclassified. This is especially
4 important in the case of interdunal wetlands since the Washington State Wetland Rating System
5 for Western Washington (revised) categorizes interdunal wetlands based upon their size.
6 (Ecology 2004; Trial Ex. A36).³⁸ The Rating System states:

8 Interdunal wetlands greater than 1 acre are Category II because they provide critical
9 habitat in this ecosystem (Wiedemann 1984). ... No methods have been developed to
10 characterize how well interdunal wetlands function, so wetlands cannot be rated by score.

11 Western WA Rating System, p. 9 (Ecology 2004).³⁹ Thus, all of the wetlands on the site,
12 including Wetland HMB, should be rated a category II wetland. Certainly the Applicant's
13 wetland consultant knows this since both he and I were on the review team that helped develop
14 this rating system.

15 40. In summary, the Applicant has undercounted the size of Wetland HMB by
16 approximately 3.5 acres and has totally failed to acknowledge the existence of several other
17 jurisdictional wetlands north of Jetty Access Road. This is significant because these wetlands
18 are in the footprint of the proposed luxury hotel and convention center. Wetland HMB is a
19 Category II wetland. The Corps found these wetlands to be tidally influenced and they are in
20 direct hydraulic continuity to the groundwater which the Applicant has found to flow directly
21 into Half Moon Bay.
22

24 **Applicant Redelineated Wetlands**

25 41. During the time of the site visit, the Applicant was redelineating many of the
26 wetlands on site. Francis Naglich was on site and indicated that he was redelineating the
27 wetlands because conditions had changed since the Applicant's previous delineation. I have
28

1 since been provided with the new delineation, which indicates that wetland delineations were
2 changed on both the western and northern portions of the property. (Trial Ex. A51). The new
3 delineation indicates that the majority of wetlands remained the same size.

4 **Applicant's Wetland Rating as Violation of Applicable Regulations and Best Available**
5 **Science**

6 42. When modifying the delineation, the Applicant also should have corrected the
7 erroneous rating of the wetlands. The wetlands on the western 1/3 of the site were properly rated
8 as Category II wetlands in the 2000 Wetland Delineation, but incorrectly downgraded to
9 Category III in the Applicant's 2003 Delineation.

10 43. The 2000 Wetland Delineation correctly treated the entire wetland system (with
11 the exception of six isolated wetlands A, B, C, BB, CC, and DD) as a single wetland mosaic.
12 The Delineation noted that "The project has a large upland/wetland complex extending from the
13 north to the south and covering the central and eastern portion of the site. When wetlands are
14 woven together into a mosaic with uplands and comprising more than 50% of the landmass, they
15 are rated as a single wetland system; in this case they are rated as Category II wetlands." 2000
16 Wetland Delineation, p. 14.⁴⁰ A single Wetland Rating Field Data Form was prepared for the
17 entire mosaic.
18

19
20 44. The Applicant used improper methodology in downgrading the western 1/3 of the
21 wetland mosaic on the property to Category III in its 2003 Delineation. The same consultant had
22 rated the wetland system a Category II designation in 2000 when the original delineation was
23 done using the 1993 Ecology Rating for Western Washington. You do not rate individual
24 portions of the same wetland on the same property differently. (pers comm.. Tom Hruby, author
25 of the 2005 DOE wetland rating method).The applicant's biologist then decided to break up the
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1 wetland and rate each piece separately, despite the fact that the wetland is a mosaic system with
2 contiguous hydrologically connected lobes.

3 45. In its 2003 Delineation Report, the Applicant bisected this mosaic into two, and
4 rated the wetland system as two separate mosaics. This was improper methodology under the
5 rating system. There is only a single wetland mosaic on this site and it cannot be treated as two
6 or more wetlands, even if the western portion of the mosaic demonstrates an earlier stage of
7 succession.
8

9 46. While interdunal wetlands are less understood than many other wetland systems,
10 one of the unique and valuable attributes of dune ecosystems is that their plant communities are
11 arranged in successive order. The Department of Ecology's Coastal Sand Dune Study noted that
12 "This arrangement causes a distinct zonation more or less parallel to the beach, which leads to
13 the formation of a model plant succession that is unique among the state's coastal ecosystems."
14 (Ruef 1975).⁴¹ It is improper to bisect the interdunal wetland mosaic and to provide lesser
15 protection to the earlier stages of succession.
16
17

18 47. The 2003 Delineation Report does not state that any new delineation or fieldwork
19 was conducted as part of the downgrading of the western 1/3 of the wetland mosaic. The first
20 redelineation appears to be the one that was performed a few months ago.
21

22 48. There are several other reasons why the 2003 Delineation Report was incorrect in
23 downgrading the western 1/3 of the wetland mosaic. First, the Applicant should not have
24 downgraded the 9.7 acres of wetland it labels Wetland "R". All available information shows that
25 this is not a separate wetland, but rather is an arm of the largest wetland on the property. Both
26 the City of Westport the Applicant inventoried wetlands in Westport Light State Park and these
27 inventories show that wetlands on the western 1/3 of the project, including Wetland "R" are
28

1 connected to wetlands on the eastern 2/3 of the project site. The Westport Interdunal Wetlands
2 Inventory, for example, clearly shows that Wetland "R," Wetland FA and Wetland FK connect
3 just south of the project property boundary; it correctly calls this a single wetland. (Adolfson
4 2000,).⁴² The Applicant's delineation cites this study but then improperly treats the western
5 portion of the wetland as isolated. (ELS 2000).⁴³ Similarly, the Applicant's wetlands inventory
6 of the Westport Light State Park property identified a large wetland connecting wetland "R" to
7 the wetlands on the eastern part of the project site. (ELS 2000).⁴⁴

9 49. Second, the downgrading of the larger wetlands on the western portion of the
10 property violates Best Available Science, which has been incorporated into the latest draft of the
11 Washington State Wetland Rating System for Western Washington, Ecology Publication # 04-
12 060-014 (WSDOE, April 2004).⁴⁵ Members of the technical review team included the
13 Applicant's wetland scientist, Francis Naglich and myself. Mr. Naglich took the lead on
14 commenting on the rating system for interdunal wetlands.
15

16 50. The new rating system rates interdunal wetlands above 1 acre as Category II
17 wetlands. (Ecology 2004).⁴⁶ Three of the downgraded wetlands are over 1 acre in size: WL
18 "OO" (72,519 sf), WL "II" (60,031 sf) and WL "R" (423,613 sf). Thus, these wetlands should be
19 classified as Category II based upon the new rating system and Best Available Science. If
20 applied appropriately, the protocol outlined in the new rating system, like the previous version,
21 would identify the entire mosaic as a single Category II unit.
22

23 51. The new rating system states that "Interdunal wetlands greater than 1 acre are
24 Category II because they provide critical habitat in this ecosystem. This resource is important
25 but constitutes only a small part of the total dune system. No methods have been developed to
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1 characterize how well interdunal wetlands function, so these wetlands cannot be rated by a
2 score." (Ecology 2004).⁴⁷

3 52. Two of the western wetlands that are greater than 1 acre are directly adjacent to
4 the proposed condominium complex. It appears that condominiums and other project features
5 are proposed within the buffers of these wetlands.
6

7 **Nonexistent and/or Inadequate Buffers**

8 53. It is my opinion that the buffers proposed in this project are wholly insufficient to
9 protect water quality and beneficial uses in the wetlands and downstream receiving waters. The
10 Applicant's site plan shows no buffers around the golf course, including the greens and tees
11 where the greatest concentration of fertilizers and pesticides are applied. This is in direct
12 contradiction of the Best available science on what we know about Golf courses and potential
13 impacts from golf-course –related activities on wetland ecosystems. The site plan shows
14 wetlands directly adjacent to these golf course features.
15
16

17 54. This lack of buffers demonstrates a complete lack of regard for the well
18 established body of wetland science that indicates that buffers are absolutely critical to wetland
19 health and survival, and maintenance of water quality and beneficial uses, not to mention the
20 huge potential for ecosystem (vegetation and wildlife) impacts given the chemicals that are used
21 on golf courses for maintenance of the greens. .
22

23 55. Buffers are essential to protect the biological integrity of any wetlandⁱⁱⁱ.
24 Department of Ecology has recognized that best available science indicates that a minimum of
25 150 foot buffers are required between high intensity land uses such as golf courses and
26 interdunal wetlands. (Wetlands in Washington State, Volume 2, 2005; Trial Ex. A35).⁴⁸ This
27
28

1 150 buffer has already been reduced in recognition of the fact that interdunal wetlands often are
2 disturbed and may support a more resilient ecosystem as compared to some other wetlands.
3 Normally a 300 foot buffer is the minimum required between a golf course and a Category II
4 wetland. This project is proposing no buffers in some areas! How the project proponents justify
5 a reduction of 100% from 300 feet to 0 feet is absolutely not in compliance with Best Available
6 Science and is simply not justifiable.
7

8 56. Although the Best Available Science documents were only recently finalized,
9 they merely reflect a slowly evolving body of literature. *See Wetlands in Washington State,*
10 *Volume 1: A Synthesis of Science (Trial Ex. A76).* The science contained in these volumes is not
11 new, nor are their recommendations. For example, before consolidating all of the existing
12 literature and recommendations in the Best Available Science documents, Ecology relied upon
13 several documents that required similar buffers. For example, they recommended a minimum of
14 50-100 feet buffers to protect wetlands from normal trampling by people and pets.^{iv} A minimum
15 buffer width of 80-200 feet was recommended for water quality protection. The Applicant's
16 consultant has acknowledged that "the majority of the golf course falls within this 100-ft buffer."
17 (Trial Ex. A90) The Applicant's proposed 0 foot buffer width disregards well established
18 science. *See Wetland Buffers: Use and Effectiveness.* (Trial Ex. A76)
19
20

21 57. Buffers are especially important when the wetland is surrounded by land uses
22 requiring applications of herbicides and pesticides, such as a golf course. Again, we look to best
23 available science, which indicates that no use of pesticides should occur within 150 feet of
24
25

26 ⁱⁱⁱ Castelle, A.J., A.W. Johnson and C. Conolly. 1994. Wetland and Stream Buffer Size Requirements Journal of
27 Environmental Quality 23(5).

28 ^{iv} Castelle *et al.* 1992. *op. cit.*

29 Shisler, J.K., R.A. Jordan and R.N. Wargo. 1987. Coastal wetland buffer delineation. New Jersey Department of
Environmental Protection, Division of Coastal Resources, Trenton NJ.

1 wetlands, noting that even these setbacks are not necessarily adequate if there are threatened or
2 endangered species on site. (Wetlands in WA Vol 2 – Appendix 8-C, Table 8c-8; Trial Ex.
3 A35).⁴⁹

4 **Prohibited Buffer Width Averaging**

5 58. It is also my opinion that the use of buffer width averaging on the site does not
6 protect water quality or beneficial uses. The Applicant’s mitigation plan assesses buffer impacts
7 based upon the acres of existing wetland buffers that will be developed. But the efficacy of a
8 wetland buffer depends on its width, not its total acreage.^v Averaging in this situation, where
9 buffer width goes below that recommended, in some cases to zero, will have a negative impact
10 on the wetland’s water quality and habitat functions.
11

12 59. It is my opinion that buffer width averaging as proposed by the Applicant around
13 the condominiums, the golf course, and the luxury hotel / conference center will have a
14 cumulative negative impact, especially when considered with the other impacts associated with
15 the project. In order to approve buffer averaging under the WSMP, it must be shown that the
16 averaging will not impair or reduce any of the following wetland functions: “habitat, water
17 quality purification and enhancement, stormwater detention, ground water recharge, shoreline
18 protection, erosion protection, and other functions of the wetland and buffer.” This standard is
19 not met in the context of this proposal. The proposed buffer width averaging, which reduces
20 buffers to 25 feet in several instances, certainly will “impair or reduce” these beneficial uses.
21

22 60. It also appears that other requirements for buffer width averaging are not met.
23 The Applicant admits that after “averaging” there is still a net of 12 acres of wetland impacts.
24
25
26

27 ^v Castelle, A.J., C. Conolly, M. Emers, E.D. Metz, S. Meyer, M. Witter, S. Mauermann, T. Erickson, S.S. Cooke.
28 1992. Wetland Buffers: Use and Effectiveness. Adolfson Associates Inc., Shorelands and Coastal Zone Management
Program, Washington Department of Ecology, Olympia, Pub. No. 92-10.

1 *Trial Ex. A74*). Thus, the Applicant admits that it does not meet the requirement that “The total
2 area of the buffer on the subject property is not less than the buffer, which would be required if
3 averaging were not allowed.”

4 61. Because no buffers are provided around the golf course, the applicant also cannot meet the third
5 criteria, that “No part of the width of the buffer is less than fifty percent of the required width or twenty-five feet,
6 whichever is greater.”^{vi}

7 **Project Will Degrade Existing Beneficial Uses**

8
9 62. It is my conclusion that the project will degrade existing beneficial uses of the
10 wetlands. The filling of wetlands and buffers, the deforestation of large swaths of forested
11 wetlands, the use of pesticides and fertilizers, and the introduction of intense recreational uses
12 will destroy this wetland system and its functions. This wetland system is a high functioning
13 wetland. It is used by a wide variety of birds and wildlife as reported by David Evans &
14 Associates (1991). It is also utilized by fish including coho salmon (*Trial Ex. A70*). The U.S.
15 Environmental Protection Agency has suggested that this project be rejected and the site be
16 considered an Aquatic Resource of National Importance (*Trial Ex. A139, A140*). I concur with
17 this conclusion. The functions that will be impaired will include hydrological functions such as
18 groundwater recharge and water quality benefits, habitat for birds, fish and wildlife, and aesthetic
19 benefits to the adjacent public lands and State Parks. The functions of these wetlands are well
20 documented in the existing literature and the testimony of other expert witnesses submitted in
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26 *Castelle et al. 1994 op cit.*

27 ^{vi} The code’s consideration of the “total area of the buffer on the subject property “ suggests that
28 eligibility for buffer width averaging is decided on a project by project basis. Instead, the
29 Applicant applies these standards to individual components of the project (condominiums and
hotel).

1 this case. If this project is built, many of these functions will cease to be present in the
2 landscape.

3 63. The University of Washington has modeled the shadows cast by the taller
4 buildings proposed by the applicant and has found that they will cast shadows on the wetlands as
5 well as the State Park. (Trial Ex. A26). The applicant's Supplemental Biological Assessment
6 correctly identifies that indirect impacts to wetlands will also result from changes to hydrology.
7 (Trial Ex. A5). Yet, there has been no attempt to quantify the significance of these impacts.
8 Instead, the applicant's consultants have consistently understated the project's impacts. For
9 example, the Biological Assessment suggests that interdunal wetlands will experience fewer
10 impacts from hydrological changes because they experience seasonal changes in water levels.
11 This conclusion is incorrect. The project's changes in the hydrology of the site could have major
12 impacts to wetlands and their functions, and could potentially destroy them, but this analysis
13 cannot be completed because the applicant has not conducted any analysis of the project's impact
14 on hydrology.
15
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18 **Stormwater Treatment Inadequate to Protect Wetlands**

19 64. I am qualified to render opinions on the appropriateness of structural and non-
20 structural best management practices for the protection of wetland. I have studied the pre-filed
21 testimony of Richard Horner, Ph.D. submitted to this Board in this matter. I incorporate by
22 reference the conclusions reached by Dr. Horner about the failure of the applicant to propose All
23 Known and Reasonable Technology ("AKART") and the likely impacts that will result from the
24 applicant's stormwater discharges to the wetlands. I also can confirm that wetlands are
25 particularly sensitive to the types of chemicals used in golf course maintenance and that the large
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1 open water components of the wetlands on the site make them particularly vulnerable to
2 pollution.

3 **Inadequate Mitigation for Impacts**

4 65. The mitigation proposed for the buffer impacts is inadequate as it will not protect
5 the wetlands on the golf course site. The plan proposes to mitigate for the impacts to wetland
6 buffers by restoring upland dunes — 21.72 acres on site and 5.00 acres at another location.
7 Since these restoration areas are removed from the wetlands being impacted, their restoration
8 will not protect those wetlands from the impacts most likely to occur — trampling and other
9 encroachment and water quality degradation.
10

11
12 66. The ecosystem that will be destroyed by this development is a unique system in
13 the State of Washington in terms of the size of the interdunal wetland system, its importance to
14 fish and wildlife, and its water quality functions. Thus, it is not possible to mitigate for the
15 destruction of this system.
16

17 67. The best available science effort educated all of those involved how little is
18 known about the functions of these rare ecosystems. We know they play important functions,
19 but we're not sure exactly how or why.
20

21 68. Due to the importance of these interdunal systems, best available science indicates
22 that when interdunal wetlands are destroyed, they should be mitigated by creation of interdunal
23 wetlands only. (Ecology 2005; Trial Ex. A35).⁵⁰ Thus, out-of-kind mitigation has been rejected
24 for interdunal wetlands.

25 69. The Applicant proposes to mitigate much of the impacts through preservation. In
26 my experience, preservation is inappropriate mitigation for this type of habitat loss. It results in
27 a net loss of habitat. In this case, Westport has adopted a Shoreline Master Program that does
28

1 not recognize preservation as mitigation. It states “If a wetland area is filled ... wetland
2 mitigation shall be required. This may include a substitution or increase of wetland area, or it
3 may be a restoration of wetland functions and values at an existing wetland in accordance with
4 best available science at the time.” Preservation of pristine wetlands, as proposed here, does not
5 and should not count as mitigation.
6

7 70. The Applicant incorrectly suggests that the Scot’s broom is posing such a
8 significant risk to these wetlands that controlling the Scot’s broom is adequate mitigation for
9 many of the proposed significant impacts. This is not the case. Scot’s broom is a problem on the
10 site because neither the Port of Grays Harbor nor Mox Chehalis have made any effort to control
11 it. If I failed to weed my yard for 20 years, weeds would become similarly unruly. But Scot’s
12 broom can be controlled economically (Trial Ex. A131).⁵¹ The property owner should consider
13 this a responsibility, not as a justification for destroying critical ecosystems.
14

15 71. The Applicant proposes to create wetlands on the site by excavating dunes in the
16 interdunal system down to wetland level. This plan seems ill conceived and has been found to be
17 only moderately successful and only somewhat compensated for impacts. (Trial Exhibit 152).
18

19 72. In my experience, the wetland mitigation plan should include long term
20 monitoring. A five-year monitoring plan is insufficient to assure the restoration of estuarine
21 wetland habitat as is proposed at the Firecracker Point mitigation site. Typically, the Department
22 of Ecology recommends that ten years of monitoring be done and agree that this is a minimum
23 amount of time that is necessary to determine if a site is succeeding and to perform contingency
24 actions to assist with portions of the site that are not performing as expected.
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1 **Applicant’s Clearing of Unflagged Wetlands**

2 73. During my site visit, I observed that the Applicant had conducted major
3 vegetation clearing using tractors within wetland HMB (see attached photographs). I was
4 surprised that the wetlands were not flagged before this clearing took place. Indeed, we saw
5 evidence that tractors had been run directly through wetland areas. It was clear that the
6 Applicant had attempted to remove Scot’s broom. However, the Applicant also removed
7 significant wetland plants from the wetlands. For example, I took photos of sedge and bulrush
8 removal within Wetland HMB and also a photo of a large willow that had been destroyed during
9 the operation. Willows are wetland plants and there were two areas where willows were
10 grubbed. It is unlikely that blackberries grew in the understory of these willows and I saw no
11 evidence of blackberry canes or roots in these areas and I know of no other reason that the
12 Applicant would destroy it.
13
14

15 74. Given this extremely sloppy and project in unflagged wetlands, I find little
16 comfort from the Applicant’s repeated assurances in the SWPPP and other documents that
17 “Within Golf Course Boundaries, individual wetland areas are flagged off and will not be
18 disturbed.”
19

20 **Wetlands on Site Located on Accreted Land.**

21 75. It is my conclusion that many of the wetlands on the site that are proposed to be
22 filled are on accreted land. I rest this conclusion on analysis of aerial photographs, as well as
23 various documents I have reviewed and which are typically reviewed for reaching such
24 conclusions, including those attached. For example, a comparison of the two aerial photos
25 attached to this testimony (Trial Ex. 137) clearly show that most of the land on the project site
26 has formed since the construction of the South Jetty. I am fully qualified to analyze aerial photos
27
28

1 to reach conclusions such as theses. I taught the aerial photographic interpretation laboratory for
2 the Geology Department while at the University of Washington and worked in their remote
3 sensing lab for four years. The conclusion that the wetlands on are accreted land is supported by
4 the applicant's Wetland Mitigation Plan (Trial Ex. A3), at p. 18, which states "The Mosaic of
5 interdunal wetlands and uplands is a unique landscape and environmental feature that is only
6 found in the most recent (within 60 years) accreted areas of the Pacific Coast." Similarly, the
7 local respondents' coastal expert David Simpson testified: "I would agree that most of the project
8 site is on land that has accreted since the – the initial construction of the south jetty." *Verbatim*
9 *Transcript of May 21, 2001 Public Hearing. (Trial Ex. 37).* Other government documents
10 attached show the shoreline before the construction of the South Jetty. (Trial Ex. 37) Best
11 available science supports the conclusion that these interdunal wetlands should be classified
12 differently than other wetlands and are deserving of more stringent protection by virtue of their
13 scarcity and their important ecological functions. *See* BAS Documents (Trial Ex. 34-36).

17 CONCLUSION

18 76. I relied upon the above-referenced exhibits and documents attached hereto, which
19 I consider to be authentic and reliable for the purpose of reaching the conclusions stated herein,
20 except as stated herein. The underlying facts and data within these sources are of a type
21 reasonably relied upon by experts in my field in reaching the types of conclusions set forth in
22 this testimony.

24 77. I have found that the hotel and conference center footprint contains previously
25 undisclosed wetlands that are within shorelines jurisdiction and are properly categorized as
26 Category II wetlands. The applicant has significantly understated the level of impacts that will
27 result from the project. The project as conditioned will have unacceptable impacts on the

1 existing uses of the wetland and ecosystem and these will not be mitigated and therefore it
2 cannot be said that water quality standards are being met.

3 Stated under oath this 8th day of August, 2005, in Seattle, Washington.

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7 Sarah Cooke, Ph.D.
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1 Trial Exhibit A59.

2 Trial Exhibit A4.

3 Trial Exhibit A3.

4 Trial Exhibit A1.

5 Trial Exhibit A3.

6 Trial Exhibit A134.

7 Trial Exhibit A5.

8 Trial Exhibit A135.

1 ⁹ Trial Exhibits A149, A150.
2 ¹⁰ Trial Exhibit A154.
3 ¹¹ Trial Exhibit A134.
4 ¹² Trial Exhibit A56.
5 ¹³ *Id.*
6 ¹⁴ *Id.*
7 ¹⁵ *Id.* at pp. 22.
8 ¹⁶ *Id.* at p.28.
9 ¹⁷ *Id.*
10 ¹⁸ Trial Exhibit A16.
11 ¹⁹ Trial Exhibit A1.
12 ²⁰ Trial Exhibit A2.
13 ²¹ Trial Exhibit A81.
14 ²² Trial Exhibit A80.
15 ²³ Trial Exhibit A150.
16 ²⁴ Trial Exhibit A3.
17 ²⁵ Trial Exhibit A150.
18 ²⁶ Trial Exhibit A71.
19 ²⁷ Trial Exhibit A172.
20 ²⁸ Trial Exhibit A61.
21 ²⁹ Trial Exhibit A63.
22 ³⁰ Trial Exhibit A64.
23 ³¹ Trial Exhibit A162.
24 ³² Trial Exhibit A67.
25 ³³ Trial Exhibit A1, A3.
26 ³⁴ Trial Exhibit A172.
27 ³⁵ Trial Exhibit A3.
28 ³⁶ *Id.*
29 ³⁷ Trial Exhibit A144.
30 ³⁸ Trial Exhibit A36.
31 ³⁹ *Id.*
32 ⁴⁰ Trial Exhibit A1.
33 ⁴¹ Trial Exhibit A56.
34 ⁴² Trial Exhibit A6.
35 ⁴³ Trial Exhibit A1, A3.
36 ⁴⁴ *Id.*
37 ⁴⁵ Trial Exhibit A36.
38 ⁴⁶ *Id.*
39 ⁴⁷ *Id.*
40 ⁴⁸ Trial Exhibit A35.
41 ⁴⁹ *Id.*
42 ⁵⁰ Trial Exhibit A35.
43 ⁵¹ Trial Exhibit A131.