

1 **BEFORE THE ENVIRONMENTAL AND LAND USE HEARINGS BOARD**

2
3 FRIENDS OF GRAYS HARBOR and)
4 WASHINGTON ENVIRONMENTAL)
COUNCIL)

ELUHB 03-001 *ET SEQ.*

5)
6 Appellants,)

**PRE-FILED TESTIMONY OF
CLEVE STEWARD.**

7 v.)

8)
9 CITY OF WESTPORT et al.)

10)
11 Respondents)

12 _____)
13
14 Outline of Testimony

15 BACKGROUND 2
16 Current Position and Experience 2
17 EXPERT OPINION 4
18 Fish Habitat on the Project Site 4
19 Fish Access to the Site..... 8
20 Aquatic Habitat Existence Denied Despite All Evidence 9
21 Fish Stranding..... 10
22 Likely Impacts of the Links Project 11
23 Mitigation 13
24 Attestation..... 13
25 CONCLUSION..... 13
26
27
28

29 PRE-FILED TESTIMONY OF CLEVE
STEWARD - 1

Smith & Lowney, p.l.l.c.
2317 east john street
Seattle, Washington 98112
(206) 860-2883

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

6 **BACKGROUND**

7 **Current Position and Experience**

8
9 2. I am principal and owner of the environmental consulting firm, Steward and
10 Associates, located at 120 Avenue A, Suite D in Snohomish, Washington, 98290. I am also co-
11 director of the Sustainable Fisheries Foundation, a 501(c)(3) non-profit organization located at the
12 same address.
13

14 3. I am a fisheries scientist and consultant with over 25 years experience and
15 education in salmon and trout ecology and management, both as a government employee and as
16 a consultant. My company, Steward and Associates, provides technical assistance to a diverse
17 mix of clients in analyzing environmental impacts, complying with governmental regulations,
18 and resolving conflicts involving fisheries and aquatic resources, with emphasis on water
19 management, watershed analysis, habitat restoration, floodplains and wetlands, and fisheries
20 research and management.
21

22 4. I co-founded and am currently co-director of an international (U.S. and Canada)
23 non-profit organization, The Sustainable Fisheries Foundation, in 1994 to promote a balanced
24 approach to fisheries resource management and use, so that Pacific salmon and trout populations
25 remain viable, productive, and accessible to future generations.
26
27
28

1 5. I have had extensive experience in the fisheries management field and have
2 undertaken numerous projects for federal and state agencies, Indian tribes, universities, private
3 firms, and environmental groups from throughout the region. I am a recognized authority on the
4 habitat and migratory requirements of juvenile salmonids and have broad expertise in freshwater
5 ecology and fisheries management. I am frequently solicited to provide expert opinion and help
6 resolve conflicts involving fisheries and aquatic resources, including surface water management,
7 watershed impacts, salmon hatchery impacts, salmon smolt passage survival and behavior,
8 salmonid floodplain interactions and monitoring and evaluation techniques.

9
10 6. In 2000, I was appointed by the National Marine Fisheries Service to serve as a
11 scientific advisor to federal and state agencies engaged in the recovery of threatened and
12 endangered salmon and steelhead in the Willamette and Lower Columbia Rivers. I also serve on
13 the Greater Lake Washington Watershed Steering Committee and Technical Committee. In
14 addition, I serve as technical advisor to several federally recognized, Pacific Northwest Indian
15 Tribes on salmon recovery, habitat restoration, and federal relicensing of hydroelectric dams.

16
17 7. I have reviewed several documents related to the proposal to develop a golf
18 course at Half Moon Bay, near Westport, Washington. My review focused on fisheries and
19 wetland issues, with which I am generally knowledgeable due to my education and experience as
20 a consulting fisheries and aquatics scientist. The purpose of my review was to familiarize myself
21 with the proposed development, the affected area and resources, and evidence and arguments
22 made either in support of or in opposition to the project. I was asked to comment on the validity
23 of information presented in several project-related documents including the Declarations of Dr.
24 Fisher, Richard Hardy and Brady Engvall; reports, memoranda, maps, photos, survey records
25
26
27
28

1 and site plans; the 401 Water Quality Certification issued by the Washington State Department
2 of Ecology; and documents pertaining to the issuance of that certification.

3 8. I have visited the site during a full-day site visit scheduled as part of this
4 proceeding. I visited various areas of the site including the southern fire access road and the
5 forest avenue ditch, in which fish have been identified by Washington Department of Fish and
6 Wildlife (“WDFW”).
7

8 **EXPERT OPINION**

9
10 9. All opinions stated herein are based upon my review of the above-described
11 documents, conversations with individuals familiar with the proposed action, review of project
12 material, and my professional expertise and experience. Unless stated otherwise, all opinions
13 about project impacts refer to the project as conditioned by the Department of Ecology’s 401
14 water quality certification (“401 Certification”).
15

16 10. It is my opinion that the project is likely to cause adverse and unacceptable
17 impacts to fish and fish habitat. The conditions imposed by the 401 Certification are not likely to
18 ensure that state or federal water quality standards will be met or that beneficial uses will be
19 retained.
20

21 **Fish Habitat on the Project Site**

22 11. My conclusions are very similar to those expressed by the Department of Fish and
23 Wildlife in its September 30, 2003 letter to the applicant. WDFW reached the following
24 conclusions:
25

- 26 • “[J]uvenile coho salmon can and do access the site and likely all the wetlands it contains,
27 and use these wetlands for winter rearing.” This conclusion was based upon WDFW
28

1 employees' personal observation of coho in the Forest Avenue ditch and along the
2 roadway that traverses the southern boundary of the site (frequently referred to as the Fire
3 Road). The depth of water within the wetlands (up to 3 feet) gave the coho access to the
4 wetlands on the site making WDFW "confident" that numerous salmonids would have
5 been found on the site.

- 6
- 7 • During their site visit, WDFW found the Fire Road submerged and that the water was too
8 deep and fast to wade. The water appeared to be deep enough to enable fish to access
9 adjacent wetlands on the site.
- 10
- 11 • Seasonally inundated wetlands are commonly used by juvenile coho as overwintering
12 habitat; access and use of such habitat is thought to increase their probability of survival.
13 Off-channel ponds and wetlands that are hydraulically connected to adjacent streams
14 used by juvenile coho for spawning and summertime rearing are actively sought out by
15 young-of-the-year coho in the fall as they redistribute into overwintering areas.
- 16
- 17 • "[A]mple evidence exists to document salmonid use of these wetlands in high water
18 years, despite statements made to the contrary in the EIS Addendum".
- 19
- 20 • The conclusions of the Addendum "were based upon a survey conducted in mid-June of
21 2003, when the area was obviously bone dry during the worst summer drought on record
22 for Washington State, and after salmon in residence during the typical winter months,
23 such as in February of 2002 when these fish were observed, had long ago smolted and
24 left for their next stage of ocean-adapted life."
- 25
- 26 • Being "adaptive and well versed in utilizing actively fluctuating water levels when it is to
27 their survival benefit, [Coho] likely will utilize every available piece of water in this
28

1 system for rearing and feeding. This means that they will access all of the wetlands on
2 the property and beyond.”

- 3 • The impacts to wetland buffers and fills will impact fish by reducing and degrading their
4 habitat. The four irrigation lakes, numerous stormwater systems, 20 bridges and miles of
5 cart paths will also have a “dramatic negative impact on the survival of coho that enter
6 this system.”
- 7
8 • All of these features, and most of the cart paths and other areas, appear to be at elevations
9 that will become flooded and accessible to fish. Coho are likely to these systems where
10 they will be exposed to contaminants, increased predation risk, and water level
11 fluctuations that may result in stranding and death. To avoid these threats, WDFW
12 recommended that the development needs to be elevated above flood level.
- 13
14 • The applicant’s mitigation plan does not mitigate for salmon impacts since the proposed
15 on-site wetland preservation and creation areas already comprise salmon habitat, and the
16 proposed mitigation site (i.e., the Mar Vista wetlands) are isolated and therefore are not
17 likely to mitigate fish impacts.

18
19 *(Trial Ex. A150; A8).*

20 12. WDFW’s conclusions regarding overwinter use of the area by juvenile salmon are
21 supported by the observations of a local resident (Richard Hardy), who has testified that he found
22 observed a dozen or so juvenile salmon stranded in a puddle on the Fire Road during early April
23 2004.

24
25 13. WDFW’s conclusions regarding the accessibility of overwinter habitat are
26 supported further by an inspection of the topographic map for the site. Water stage during this
27 period can reach 10 feet or more above sea level – appreciably higher than the elevation of much
28

1 of the site. Surface water covers most of the site at this time, enabling fish access to areas that
2 are inaccessible during the dry season. Attachment A shows potential pathways by which
3 juvenile salmon could enter and leave the site during a typical winter high water period.

4 14. While I have not personally observed salmon on the site, I am familiar with the
5 electrofishing and species identification techniques used by WDFW and know them to be
6 reliable. Moreover, in this instance, WDFW fully documented its findings with reports, maps
7 and photographs. The findings of WDFW are consistent with other parties' observations, as
8 described above. This type of reconnaissance and verification of site conditions is typically
9 relied upon by members of my profession in reaching the types of conclusions set forth in this
10 testimony.
11

12 15. Although the wetlands on site are relatively immature, they have high habitat
13 value because they are physically connected to nearby fish-bearing waterways. Juvenile coho
14 salmon and threespine stickleback have been observed in the wetlands, to which they presumably
15 gain access and egress via natural channels, ditches, and culverts. (*Trial Exhibit A150, A8, A71*).
16 Although accurate estimates of fish distribution and abundance have not been made, it is likely
17 that the wetlands provide significant amounts of high quality overwintering habitat for fish and
18 other aquatic organisms. Coho salmon and sticklebacks, in particular, exhibit life history
19 strategies that utilize temporary "off channel" areas during the winter months, when high flows
20 in main channel areas increase energy demands and the risk of mortality. Without access to
21 slower velocity off-channel habitats, including wetlands, the survival and productivity of these
22 species would be substantially reduced.
23

24 16. As noted by WDFW biologists, coho salmon utilize the wetlands on the site for
25 overwintering purposes. Given their documented presence in the wetlands during the winter, any
26

1 areas that are inundated during this time should be considered fish habitat for the purposes of
2 evaluating the potential impacts of the proposed action. The extent and usability of fish habitat
3 can be inferred from the topography, hydrology and drainage characteristics of the site and the
4 known habitat preferences and life history strategies of salmon. Based upon my evaluation of
5 information provided by the Applicant, fish habitat very likely extends throughout the site, and
6 the potential for its wintertime use by juvenile coho is high.
7

8 17. Coho salmon are priority species in the State of Washington. (Trial Ex. A8).
9

10 **Fish Access to the Site**

11 18. WDFW's Regional Habitat Program Manager, Steve Manlow, reported seeing
12 juvenile coho salmon stranded in a roadway depression as water subsided in the area. I note that
13 the Department's site visit during the informal appeal process was after waters had subsided and
14 therefore should not be exclusively relied upon to assess fish use or impacts. Although some fish
15 may be stranded in pools when the water table lowers in the spring, this does not mean that fish
16 cannot enter and exit the site during the wet season and during flood events. Moreover, wetlands
17 and natural depressions created by hydraulic forces are likely to be connected to a greater extent,
18 and therefore less apt to strand fish, than are roadway potholes and other depressions caused by
19 human activity.
20
21

22 19. The culverts and tide gates downstream of the wetlands do not currently prevent
23 fish from entering or leaving the site. From a photograph taken of the culvert during the wet
24 season, it appears that water velocities and depths provide for adequate fish passage. At the time
25 the photograph was taken, it appears that the culvert conveys a significant amount of water; the
26 estimate of 4.6 cfs provided by Mr. Brady Engvall appears to be reasonable and consistent with
27
28

1 WDFW's statement of high velocities on the southern fire road. This is a significant amount of
2 discharge and would indicate that flows from individual wetlands upstream are also significant at
3 this time.

4
5 **Aquatic Habitat Existence Denied Despite All Evidence**

6 20. The applicant has consistently denied the existence of aquatic habitat on site and
7 this spurious assumption has undermined virtually their entire environmental analysis. The
8 applicant's ESA Compliance letter, the Natural Resources Management Plan, the Biological
9 Assessment, the DEIS, FEIS, and Addendum all are based upon the premise that there is no
10 aquatic habitat on site. The analysis contained in these documents is therefore fundamentally
11 flawed, and the preventative and mitigative actions recommended and/or imposed by such
12 analyses are not likely to achieve their stated purpose. For example, the NRMP does not adopt
13 standards or protocols that will adequately protect fish and other aquatic organisms in nearby
14 waterways.
15

16
17 21. I question whether 25-foot no-spray zones, as called for in the NRMP, will
18 prevent significant exposure of fish to pesticide residues and other chemical contaminants. Fish
19 and aquatic invertebrates are highly susceptible to pesticides and other water-borne contaminants
20 that can impair their ability to survive and reproduce. The effects of pesticides on aquatic biota
21 are reviewed in the testimony of Phillip Dickey, Ph.D.; I concur with his conclusions as to likely
22 impacts.
23

24
25 22. The scientific literature has documented extensive morphological, physiological
26 and behavioral anomalies in fish that have been exposed to sublethal concentrations of
27
28

1 pesticides. For example, several studies indicate that certain pesticides can impair salmonid's
2 ability to swim and to transition from freshwater to seawater.

3 23. It is impossible to determine the full extent of the project's impacts on fish
4 without first fully quantifying the amount of habitat present, and the effects of the project on that
5 habitat. Another shortcoming of the effects analysis conducted by the applicant is that it is based
6 on limited field observations, primarily made during the summer period. The applicant's
7 conclusion that wetlands are dry and fish are not present applies only to summer months, and
8 should not be extrapolated to other times of the year.

10 24. The extent of fish habitat and fish use on the site, and the full potential of adverse
11 impacts by the proposed action, should be determined during the period when fish are expected
12 to be present. This period would potentially include any time that the wetlands are inundated
13 and sufficient flows exist for fish to move up and downstream. Most importantly, site conditions
14 and fish usage should be evaluated when juvenile coho salmon are known to seek out and occupy
15 overwinter habitats such as those present on site.

18 **Fish Stranding**

19 25. The Applicant is incorrect in suggesting that coho salmon entering the wetland
20 system are likely to become stranded and die as water levels recede. Juvenile coho, in particular
21 fish of the size expected to overwinter in the wetland complex, are capable of moving
22 volitionally with and against weak currents such as those that would prevail in the spring. It
23 should be noted that water at any given location in the wetland complex will flow consistently in
24 one direction as the water table is lowered the wetland drains in the spring.
25
26
27
28

1 26. At this time of year, coho pre-smolts do not exhibit a strong positive rheotaxis or
2 fidelity to a particular location (e.g., territory); consequently, they are able to orient and emigrate
3 from the wetland successfully at the appropriate time. The behavior of the fish and the hydraulic
4 conditions of the wetlands will not, in my opinion, lead to an increased incidence of stranding.

5 27. As WDFW correctly recognized, coho salmon often use wetland systems for
6 overwintering purposes, which presumably confers survival benefits on the fish. Coho would be
7 unlikely to overwinter in off channel habitats if stranding- induced mortality was significant.

8 28. My conclusion that coho salmon would be capable of successfully emigrating
9 from the site is not inconsistent with the reports of fish becoming stranded in depressions on the
10 Fire Road. I consider it more likely for fish to become stranded by manmade features like the
11 Fire Road than in unaltered natural habitats. It is true that stranding may occur in natural
12 Fire Road than in unaltered natural habitats. It is true that stranding may occur in natural
13 systems in response to water level fluctuations, but it happens infrequently and does not diminish
14 the overall importance of the site as habitat.
15

16
17 **Likely Impacts of the Links Project**

18 29. Given the significant amount of filling and grading required, the project can be
19 expected to adversely affect fish and fish habitat at the site. The magnitude of wetland
20 disturbance and its potential ecological impact, as described in project documents, appears to be
21 understated. However, as I noted above, the true and full extent of project effects cannot be
22 accurately estimated without additional study. Lacking such information, there is no basis for
23 the conclusion that the project will provide legally required protection to fish and fish habitat,
24 nor that mitigation is sufficient to avoid a net loss of fish habitat. Preservation and mitigation
25 options should be considered on the basis of the likely impacts on existing wetlands, including
26
27
28

1 the functions and values of the lost fish habitat, the functions and values of the proposed
2 mitigation, and the likelihood of success of the proposed mitigation.

3 30. The site plan shows that golf course features will impact fish habitat throughout
4 the site and may affect fish utilization and performance in off site areas as well. The fish habitat
5 likely to be affected by the project extends well beyond the boundaries of the delineated
6 wetlands. Even without knowing the full extent of fish habitat, I am reasonably certain that fish
7 and fish habitat will be negatively impacted if the project is built.

8
9 31. The connectivity of fish habitat on the site, which is a prerequisite for its
10 utilization by fish, may not be maintained since bridging is provided only over delineated
11 wetlands. Salmonids using the site may travel in as little as one to two inches of water and may
12 travel anywhere there is such passage, regardless of the existence of jurisdictional wetlands. The
13 applicant has conducted no analysis or mapping of open water on the site and therefore we
14 cannot know how much fish habitat will be impacted.

15
16 32. The Public Notice of Application for the 404 permit shows that virtually the entire
17 site will be either graded or filled. (Trial Ex. A162). Given the lack of analysis of fish habitat,
18 there is no way to determine how much of this grading and filling will destroy or limit fish
19 habitat.

20
21 33. It is unlikely that the proposed action will facilitate fish movement into and out of
22 the wetland complex due to the overall reduction in wetted area and flow, and the fragmentation
23 of wetland habitat that will occur in response to golf course development.
24
25
26
27
28

1 **Mitigation**

2 34. Given the scarcity of interdunal wetlands, their importance, and the difficulty of
3 mitigating loss of such features, I believe that the current mitigation plan is likely inadequate
4 with respect to mitigating impacts to fish and fish habitat. I reach this conclusion for several
5 reasons. There has been no attempt to quantify fish impacts and the mitigation plan attempts only
6 to mitigate for wetland impacts. Thus, the proposed mitigation actions are not designed to
7 mitigate for fish impacts and for the most part do not. As a result, there will be a net loss of fish
8 habitat and this loss will likely be significant.
9
10

11 **Attestation**

12 35. In reaching the conclusions stated herein, I relied upon the above-
13 referenced exhibits and documents attached hereto, which I consider to be authentic and
14 reliable. The underlying facts and data within these sources are of a type reasonably relied
15 upon by experts in my field in reaching the types of conclusions set forth in this testimony.
16
17

18 **CONCLUSION**

19 36. Based on the foregoing, it is my professional opinion that the Links project will
20 cause adverse impacts to fish and fish habitat that current mitigation plans are unlikely to correct.
21 The risk of incurring unacceptable impacts, and the possibility of avoiding or mitigating those
22 impacts, is heightened by the applicant's representation that fish and fish habitat are not present
23 at the site, and will therefore be unaffected by the proposed project. The premise and therefore
24 the conclusion cannot be supported. Based on the evidence, and taking best available science
25 and my own observations into consideration, I am persuaded that the project is likely to
26
27
28

1 significantly and adversely affect, both directly and indirectly, existing ecological functions and
2 values.

3 Stated under oath this 8th day of August, 2005, in Seattle, Washington.
4

5 *Cleveland R. Steward* 

6 _____
7 Cleve Steward
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28