BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 96-1 OLYMPIC PIPE LINE COMPANY CROSS CASCADE PIPELINE PROJECT	APPLICATION NO. 96-01 **PREFILED TESTIMONY OF ERIK C. STOCKDALE** **ISSUE: WETLAND AND AQUATIC RESOURCE IMPACT, STREAM CROSSINGS, AND SECTION 401 APPLICABILITY** **SPONSOR: DEPARTMENT OF ECOLOGY**

Q: Please state your name for the record.

A: Erik C. Stockdale

Q: Where do you work and what is your title?

A: I am a senior wetland specialist with the State of Washington, Department of Ecology. I work at Ecology's Northwest Regional Office in Bellevue.

Q: How long have you worked there?

A: Since October 1992 (Six + years).

Q: Have you attached a Curriculum Vitae to your prefiled testimony?

A: Yes, I have. It is Ecology's Exhibit ECS-1 to this prefiled testimony.

Q: Does this fully describe your work experience and education?

A: Yes, it does.

Q: Are you familiar with the application filed by Olympic Pipe Line Company for the proposed Cross Cascades pipeline project?

A: Yes.

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Q: What area of expertise will your testimony discuss?

A: I have been asked to review the project for wetland and other aquatic resource impacts. I have also been asked to review the wetland and aquatic resource mitigation design for the proposed project. Because wetland and stream crossing issues are closely related, I have also reviewed the project for stream crossing impacts. My review has been limited to the alignment to the west side of the Cascade crest. Many of the general impact issues my review have raised, however, apply to the entire alignment.

Q: What is a wetland?

A: Wetlands are among the most important ecosystems on Earth. They are neither truly aquatic ecosystems nor truly terrestrial ecosystems. Essentially they are the transitional edge between the two. They are quite variable in their appearance. They can be at the edge of a river or a lake and on saltwater. They can be a shallow pond or swamp; a marshy field or forested bog. They can be shrubby areas filled with willows. But they all share three common characteristics: hydric soils, water tolerant plants, and the presence of water for a significant number of days during the growing season. Wetlands are variable in size, type, and location. Some wetlands dry out during the summer while others remain wet all year long. Water is the driving landscape force that influences the presence and variability among wetlands. In all, wetlands cover approximately 938,000 acres in Washington, or about 2 percent of the land in the state. Despite these seemingly incongruous differences, wetlands provide many important functions that we value as a society.

Q: What do you mean by wetland "functions" and "value"?

A: Wetland functions are the physical, chemical, and biological processes that occur in a wetland, or under the direct influence of a wetland. They include hydrologic functions such as the conveyance or storage of floodwater, chemical functions such as biogeochemical cycling, and biological functions such as primary and secondary productivity. Many of the functions performed by wetlands result in direct or indirect benefits and services to society. These benefits

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and services have been called wetland values. Wetland functions and values are roughly equivalent to the "beneficial uses" of a wetland.

Q: How would you define a wetland impact?

A: Wetland impacts are human-induced impacts that adversely affect the functions of a wetland. Impacts can be direct or indirect. Direct impacts include filling, draining, and clearing. They can also include hydrologic changes to a wetland, such as the addition of a significant amount of water to a wetland, or the diversion of water away from a wetland. Water quality impacts to wetlands include the addition of nutrients, sediments, or contaminants to a wetland. Other impacts include the introduction of exotic or non-native species. Indirect impacts result from direct impacts and can be delayed in space and time from the direct impacts.

It is important for the cumulative impacts from a project be evaluated for cumulative effects.

Q: What is the difference between an impact and an effect?

A: Impacts are the human influences that cause ecological stress, and effects are the resultant changes.

Q: What are cumulative impacts and effects?

A: Cumulative impacts are the incremental effect of an impact added to other past, present, and reasonably foreseeable future impacts.

Q: Would you describe generally what is wetland mitigation?

A: Wetland mitigation is a concept that is frequently misunderstood. The term mitigate means literally "to make less severe or painful; to moderate" (Webster's). In the wetland regulatory context it essentially means *to reduce the total adverse impacts of a project to an acceptable level*. This can be accomplished through a variety of methods. Wetland mitigation is usually defined in terms of a series of steps that should be taken in sequential order.

The sequential order is as follows:

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(1) **Avoiding** adverse impacts (either by finding another site or changing the location on-site);

(2) **Minimizing** adverse impacts by limiting the degree or location of a project on-site;

(3) **Rectifying** adverse impacts by **restoring** the affected environment;

(4) **Reducing** the adverse impacts by preservation and maintenance operations over the life of the project;

(5) **Compensating** for adverse impacts by replacing or providing substitute resources or environments; and

(6) **Monitoring** the impacts and taking appropriate corrective measures.

Following this process is referred to as **sequencing**. Most people equate wetland mitigation with step 5, and this has led to the use of the term "compensatory mitigation" to distinguish this type of mitigation from the broader definition. My testimony will discuss how OPL has failed to avoid adverse impacts by failing to select a less-damaging pipeline route alternative.

The mitigation sequence is found in state and federal law, including State Environmental Policy Act ("SEPA") (WAC 197-11-768), Growth Management Act ("GMA"), Shoreline Management Act ("SMA"), National Environmental Policy Act ("NEPA"), and Section 404 of the federal clean water act (33 U.S.C. 1344).

In most cases, Ecology (as well as EPA and the Corps of Engineers) requires that an applicant demonstrate that they have followed this sequence in developing their project before permit approval is granted. Lower quality wetlands *(Category 4 wetlands in our rating system)* usually do not warrant the first step of avoiding the impact altogether. This is based on our assumption that these types of wetlands can be successfully replaced. With other wetlands, particularly higher quality wetlands, we are usually stringent in requiring that project proponents demonstrate that they have followed the sequence.

Ecology strives to work with project proponents to help design their project so that they can accomplish their objectives while avoiding and minimizing impacts to wetland resources.

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The earlier Ecology is involved in the process the more successful we can be in finding a win-win solution.

Q: Have you reviewed any material regarding this project?

A: Yes. I reviewed the following: The application; the draft environmental impact statement (draft EIS or DEIS); the OPL map atlas; the revised list of issues; and the Dames and Moore Wetland Report.

Q: What was your opinion on the completeness of the information in the application, the draft EIS and the mitigation report?

A: This project is one of the largest projects Ecology is currently reviewing in the State. Such projects require a significant investment in special studies, consultants, and legal assistance. A significant amount of field work and analyses have been presented. I particularly like the map atlas prepared for the project.

The information presented thus far, however, is not complete. The project is flawed at the outset by its selected routing through the Snoqualmie Valley, and the project is lacking an acceptable wetland and aquatic resource mitigation plan.

Q: Have you reviewed the proposed project alignment for wetland and other aquatic resource impacts?

A: Yes.

Q. As a senior wetland specialist for Ecology, what have you determined?

A: Olympic has selected a route through the Snoqualmie Valley that will result in significant, cumulative, adverse, but avoidable impacts. Olympic also has not followed the wetland mitigation sequencing in their efforts to mitigate for impacts. Neither the draft EIS or the application adequately evaluate alternative alignments with less environmental impacts. Bluntly stated, the alternative route is not salmon friendly and threatens endangered Chinook salmon and their habitat.

Q: What is the basis for your determination?

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A: As discussed earlier in mitigation sequencing, Olympic should have selected a route with the least environmental impacts and then should have selected impact minimization techniques within the least-damaging route.

Instead, I found that Olympic's project documents dismissed alternative routes apparently because of higher construction costs. Only after the route was selected were impact minimization measures used. Page 3.4-51 of the application states that pre-construction mitigation measures for the project include the consolidation of *"the pipeline route to a single corridor along roads, railroads, and in existing rights-of-way to* ***lessen*** *impact from habitat fragmentation."* (emphasis added). The alignment selection process is flawed because it did not focus on avoiding impacts by selecting a route with fewer impacts.

Q: What is it about Olympic's selected route that you consider fundamentally flawed?

A: Presently, the preferred alignment runs along the BPA right-of-way from the north King County line to the Cedar Falls Trail near the City of Snoqualmie. This alignment crosses some of the most significant salmon streams in the valley, including People's Creek, North Fork Cherry Creek (crossed twice), main stem Cherry Creek, Harris Creek, Tolt River, Griffin Creek, and Tokul Creek.

These creeks are regionally significant salmon streams. Enhanced protection and stewardship of these creeks will be a key element of the region's response plan to the salmon listings by the National Marine Fisheries Service. Impacts from the proposed alignment pose a significant threat to the salmon resources in the Snohomish-Snoqualmie basin. These impacts can be entirely avoided by keeping the alignment lower in the watershed.

Three alternative routes that can be followed, individually or in combination. These are route alternatives I have discussed with Randy Sandin at King County. You may find that his testimony provides more detail on the route alternatives. Please see my attached map of the proposed route and the three alternative routes: Ecology Exhibit ECS-2.

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- Alternative 1: Follow the Snoqualmie Valley Trail at milepost 9.3 to where it connects to the Cedar Falls Trail near the City of Snoqualmie.

- Alternative 2: Follow the West Snoqualmie Valley Road: Intercept the proposed route at the High Bridge Road, which then crosses into King County on the West Snoqualmie Valley road. From here there are three crossings that can be used to move the alignment to the East Snoqualmie Valley Road (SR203):

  - At Carnation Farms Bridge (NE 80th);
  - At NE 124th (Novelty Hill Bridge); or
  - At the Woodinville-Duvall Road.

- Alternative 3: Follow the East Valley Road (SR203), beginning at several locations listed above, to where SR203 connects to the Cedar Falls trail near the City of Snoqualmie.

The three alternative routes keep the pipeline alignment lower in the watershed and avoid the creek crossings altogether. The combination of these alternative routes pose a significantly lower threat to the environment for several compelling reasons:

- Significant construction-phase impacts to several dozen miles of productive salmon spawning and rearing habitat downstream of the crossings (including critical Chinook salmon spawning grounds on the Tolt river) are avoided.
- Spill-related impacts to several dozen river miles of productive salmon habitat that occur downstream of the BPA alignment are avoided.
- Several severe landslide hazard areas (the most notable being the deep-seated rotational fault on the south slope of the Tolt River) are avoided.
- The majority of the wetland impacts for the project are avoided.
- Disturbance of several high quality ("textbook example") large woody debris complexes on several creeks are avoided.
- It limits construction-phase impacts to established transportation corridors and avoids construction in remote areas poorly served by suitable roads.

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- Once built, this alignment significantly decreases the threat to the environment by increasing spill detection and cleanup capabilities. Should the pipeline develop a leak, spills detection will be faster due to the exposure and use along the length of the alignment through the valley. Access to the pipeline for cleanup crews would be much faster and safer.
- Response time for spill crews would be significantly shorter (simply due to the fact that crews do not have to transport heavy equipment along the unimproved BPA right of way, which traverses very steep terrain, or along locked logging roads not designed for spill response). A shorter response time results in less product release, and overall reduced environmental damage. Please refer to Elin Storey's testimony for more on spill-response concerns associated with the alignment.

Q: Have you evaluated any specific river crossings and their associated wetlands?

A: Yes. The Tolt River is one of those.

Q: What is your opinion of that proposed crossing for the pipeline as it relates to the overall impact of the project?

A: The Tolt River crossing at milepost 24 is perhaps one of the most problematic along the entire route.

Q: What is the basis for your opinion?

A: The proposal is to bury the pipeline below the riverbed via an open cut trench. *"An open cup crossing can be rapidly installed during low flow conditions with minimal impacts."* (application, page 2.14-15). Other less-intrusive construction methods are dismissed in the draft EIS and application without justification, by stating *"the topography would preclude the use of a horizontally drilled crossing."*

The impacts at this crossing have been significantly underestimated. The Tolt is well known for avulsing or shifting channels repeatedly within its floodplain. This reach of the Tolt River has been mapped as a laterally migrating river channel, with a deep-seated rotational landslide hazard on the south slope. The north slope is also mapped as a landslide hazard. The

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Tolt is a Class 1 water at this location. The river floodplain is approximately 2400 feet wide at this reach, and the stream is forked in two channels. A high quality forested wetland occupies the floodplain with the river at this location. This hazard has been thoroughly studied by King County in the "Tolt and Raging River Channel Migration Study."

Access for construction equipment will be very difficult at this crossing. In order to dewater the channels, Olympic intends to access the upstream diversion point by running heavy equipment up the river. During low flow conditions there will be late winter steelhead eggs or alevin in the river substrate. Juvenile Puget Sound Chinook rear in the river at this reach during low flow conditions.

It is important to note that the operation of heavy equipment in salmon streams and rivers can and does result in significant impacts. I point your attention to Ecology's recent experience with the Washington State Department of Transportation. WSDOT recently (December 1997) repaired an embankment slide on the Mount Baker Highway by operating heavy equipment in the bed of the north fork Nooksack River. This work was done in violation of a state hydraulic permit and without the benefit of other state or federal permits. In the process, WSDOT crews destroyed six Chinook redds by filling and dewatering the channel. The Chinook redds constituted approximately ten percent of the return spawners in the river. An additional 20 pink salmon redds were also destroyed. Ecology and other state and federal resource agencies are currently assessing the value of the damage caused to these public resources. It is anticipated that the damage assessment will approach seven figures, not including the probable threatened or endangered status of Chinook in the Nooksack. Similar or greater adverse impacts to salmon resources can be anticipated if Olympic is permitted to build the pipeline at the proposed Tolt crossing.

The 1993 "Tolt Watershed Analysis Unit Watershed Analysis Report" was conducted to better understand the hydrogeomorphic and fluvial processes in the Tolt River watershed. My understanding from Bob Penhale, Ecology's Timber Fish & Wildlife coordinator is that

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Weyerhaeuser would be prohibited from clear-cutting trees on the landslide hazard slopes in the vicinity of the proposed crossing. Ecology's understanding is that Weyerhaeuser has no intention of harvesting any timber in order to protect the public resources at risk in the area.

Q: Are there geological hazards that can be destabilized by the crossing at the Tolt River location?

A: There is a deep-seated rotational landslide hazard on the south slope of the Tolt River crossing. It is approximately half a mile wide and 460 feet high and 145 feet deep.

Q: What about the reliance on the tensile strength of the pipe to mitigate for the severe landslide hazard at this location?

A: It is my understanding that Olympic intends to rely on the tensile strength of the pipeline at the Tolt crossing to withstand a catastrophic land movement event. It is not acceptable to rely on unproven technology to mitigate for such risks when clear alternatives are available.

An example of this risk is the current OPL line. My understanding of the Olympic Pipeline crossing under Ebey Slough just east of Everett in the lower Snohomish estuary is a case in point. A spill at that location (I believe in 1995) was reportedly caused by a pipe failure. The pipe failure was precipitated by mistakes made during the construction of the pipe that, years later, resulted in eventual loss of support of the pipe. Clearly, the strength of the pipe at that location was not sufficient to prevent a failure.

A crossing across a highly sensitive water body with a significant landslide hazard is not a risk we need to take.

Q: Is the Tolt River the only stream crossing you are concerned with?

A: No. I have focused my discussion thus far on the Tolt River because it is the poster child of project impacts. Other stream crossings present similar concerns, however, because they have similar resource values and OPL has not chosen a route to avoid cutting through them.

For example, Griffin Creek (crossing 28) is the major producer of coho salmon in the Snoqualmie River system. The majority of the coho spawning habitat in Griffin Creek begins

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less than a mile upstream from the crossing and extends 1.3 miles downstream. Threats to this critical spawning habitat can be avoided by keeping the alignment out of the Griffin Creek basin altogether. There is a beautiful, textbook-quality large woody debris structure that will be destroyed if this crossing is done by the methods proposed. There is a significant mature stand of conifer trees on the southern side of the crossing. These trees provide important shading to the creek during the summer.

Other problematic crossings are the north fork Cherry Creek (crossing 19) and main fork Cherry Creek (crossing 20). There is a landslide hazard on the south side of the main fork crossing that OPL proposes to stabilize with a buttressed fill. The creek currently flows at the toe of the landslide hazard. While I am not an engineer or geologist and cannot visualize how they can possibly stabilize this slope, I cannot understand how an engineered solution can be proposed at this location when the impact can be avoided in its entirely. The main fork is a shoreline of the state at the crossing. Cherry Creek is a valuable salmonid system in the Snoqualmie basin.

One last stream crossing issue to note is this: The risk to the environment from this project does not end once construction is complete and the site is "stabilized." High sensitivity resources (e.g. salmon spawning and rearing streams) will be at risk of a spill for the life of the pipeline. The risk can be reduced to zero for the stream segments I have mentioned above by moving the alignment lower in the watershed.

Q: Do you know what a Section 401 water quality certification is?

A:. Yes. The water quality certification is the primary mechanism Ecology uses to implement the provisions of the State Water Pollution Control Act (Chapter 90.48 RCW) and the State's role in the federal Clean Water Act.

Section 404 of the federal Clean Water Act regulates the placement of fill in waters of the United States including wetlands. The US Army Corps of Engineers administers the permitting program for this law. Section 401 of the federal Clean Water Act requires that proposed dredge and fill activities permitted under Section 404 be reviewed and certified by Ecology that the

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proposed project will meet state water quality standards. The federal permit is deemed to be invalid unless it has been certified by the state.

The certification process requires an in-depth review by highly qualified technical staff. Ecology typically includes wetland specialists, water quality specialists, hydrogeologists, and engineers in its review process.

Q: If Ecology had the authority to do so, would you recommend issuance of a Section 401 water quality certification?

A: The combination of route alternatives I suggested above are feasible and significantly reduce the environmental impact from the project. However, given the clear environmental benefits of the suggested alternative, Ecology would not be able to issue a Section 401 water quality certification for the project. Furthermore, based on Ecology's experience with the federal section 404 wetland permit process, the suggested route represents a viable alternative under the Clean Water Act's alternative analysis. Ecology's comments to the Corps on the section 404 permit will provide further details.

The EIS summarily dismisses other alternative routes through the Snoqualmie Valley due to cost reasons. While costs are certainly a driving factor in any development endeavor, costs alone cannot be used to dismiss less environmentally damaging alternatives. EIS stands for "Environmental Impact Study", not "Economic Impact Study."

In order for Ecology to issue a certification for this project, Olympic would have to satisfy the Corps of Engineers alternatives analysis and demonstrate that the selected alignment was the least damaging alternative. Olympic would also have to develop a better wetland mitigation plan for unavoidable impacts.

Ecology's certification of a project is essentially a "good housekeeping" stamp of approval. The certification states that a project meets and/or protects state water quality standards. The current alignment does not give me "reasonable assurance" that water quality standards will be met.

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Q: Let's talk about wetland mitigation in more detail. When wetland impacts are unavoidable, what is required of the impacting party?

A: Well, bear with me because this explanation is involved, but necessary, to understand how to mitigate for unavoidable impacts. I will give you what is basically a "Wetlands Mitgation 101" in short.

When adverse wetland impacts are truly "unavoidable," an applicant is required to develop a compensatory mitigation plan. This can include: 1) creation of a new wetland; 2) restoration of a former wetland; 3) enhancement of a degraded wetland; or 4) some combination of the three. In some instances, preservation of high quality wetlands and/or adjacent high quality uplands may be acceptable as part of an overall mitigation "package."

Historically, creation of new wetlands in upland sites has been problematic, primarily due to the difficulty in establishing an adequate water regime to sustain wetland conditions. Ecology emphasizes restoration of former wetlands or enhancement of significantly degraded wetlands as the preferred methods of compensation. With these methods, establishing an adequate water regime is usually more certain.

The primary questions we ask in determining the adequacy of a compensatory mitigation method, location or plan are:

(1) What are the type and extent of functions being impacted by the project?

(2) How will the proposed mitigation replace these functions?

(3) Will the proposed mitigation be successful and sustainable?

Thus, the appropriate type of compensatory mitigation will depend on the individual circumstances of the project. It will also depend on the opportunities for mitigation in the area of the project since we usually require that the replacement wetland be located in the same drainage basin. It is difficult to replace hydrologic and fish habitat functions in a different drainage basin and impossible to replace them in a different watershed. However, the old notion that

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compensatory mitigation must be "on-site" is now seldom required since adequate opportunities are rarely available on a given project site.

Also, in the past we typically required "in-kind" compensatory mitigation, usually meaning that the replacement wetland must be the same type of wetland as the one being impacted (e.g., a cattail marsh for a cattail marsh). This is still often a requirement since it is difficult to replace lost functions with a different type of wetland. However, Ecology makes an individual assessment in each case and has occasionally decided to accept, or even encourage, out-of-kind replacement. This is usually due to one or more of several factors. Sometimes the wetland being impacted is of low value such as a depression dominated by exotic invasive plants such as reed-canary grass.

In some cases there may not be adequate opportunities to recreate or restore the same type of wetland in the area and there may be an excellent opportunity to create a different, usually higher-value wetland in the area. In other cases we have judged that a different type of resource restoration makes more ecological sense in a particular situation. For example, we have allowed the restoration of stream and riparian corridors in exchange for a minimal loss of wetlands in areas where stream resources have been significantly degraded, particularly in eastern Washington.

Another mitigation concept is the use of replacement ratios. A replacement ratio is the amount of wetland area created, restored or enhanced in relation to the amount of wetland area impacted. For example, historically a replacement ratio of 1:1 was common. This means for every acre of wetland impacted an acre of wetland would be created. In recent years the ratio has increased and seldom is a 1:1 ratio acceptable to any regulatory agency. This increase is due primarily to two factors: 1) the likelihood of success of the compensatory mitigation and 2) the length of time it takes to successfully create or restore a wetland.

Compensatory wetland mitigation projects have historically been less than 100% successful. Different studies have determined that roughly half of the attempts to create wetlands

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have failed. Given this poor track record, and the fact that it takes anywhere from several years to several decades to create a fully functioning wetland, replacement ratios greater than 1:1 are used as a means of equalizing the tradeoff. While the goal is always to replace the lost functions at a 1:1 ratio, it is almost always necessary to increase the replacement acreage in order to accomplish this.

At present Ecology recommends replacement ratios based on the rating of the wetland and/or the type of wetland.

The recommended ratios are as follows:

Wetland category	**Creation and Restoration**	**Enhancement***
Category 1 (all types)	6:1	12:1
Category 2 or 3 • Forested • Scrub/shrub • Emergent	Forested - 3:1 Scrub/Shrub - 2:1 Emergent - 2:1	6:1 4:1 4:1
Category 4	1.25:1	2.5:1

- *The mitigation ratios are doubled for wetland enhancement. Enhancement as compensation for wetland losses results in a net loss of wetland area. The net gain in wetland function from enhancement is usually less than from creation or restoration.*

These ratios are general guidelines that are adjusted up or down based on the likelihood of success of the proposed mitigation and the expected length of time it will take to reach maturity. Good hydrologic information on the proposed mitigation site is necessary to establish a likelihood of success. In addition, the track record of the type of proposed compensatory mitigation is an important factor.

For additional information on wetland mitigation ratios, and how Ecology approaches the establishment of project-specific mitigation ratios, refer to the following two publications:

- *"How Ecology Regulates Wetlands"* (publication no. 97-112, available at http://www.wa.gov/ecology/sea/pubs/97-112.html), Ecology Exhibit ECS-3; and
- *"Wetland Mitigation Replacement Ratios: Defining Equivalency"* (publication no. 92-08, available at http://www.wa.gov/ecology/sea/pubs/92-08.html), Ecology Exhibit ECS-4.

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Q: Given the justification you have provided to explain the target mitigation ratios listed above, has OPL provided sufficient mitigation for wetland impacts?

A:. No. OPL has proposed inadequate wetland mitigation measures. The "mitigation measures" section of the draft EIS is two pages long and does not provide information on the location and type of wetland mitigation. (*See* Application p.3-78). Proposed mitigation is limited to "*prepare a wetland mitigation plan before any ground disturbance begins that focuses on replacing wetland functions at impacted wetlands as identified in the wetland report for this project.*" It also proposes that a monitoring plan be prepared and implemented. These plans need to be developed and approved as part of the environmental review process, and not after the SEPA process is complete. The documents do not provide an adequate basis for the identified amounts of mitigation. The documents should clearly analyze the impacts to wetland functions along the corridor, and propose a mitigation plan that compensates for those lost functions.

Q:. Will the project result in "no net loss" of wetland functions and values?

A:. The proposed wetland mitigation ratios will result in a "net loss" of wetland functions because they are not high enough to replace lost functions. For example, page 3-72 of the draft EIS states impacts to forested wetlands will be mitigated at an enhancement ratio of 2 to 1. The document fails to provide a defensible basis to justify this ratio. What criteria did OPL use to establish this ratio? Were impacts at each crossing evaluated individually, or was this ratio established for the project as a whole? This ratio is significantly lower than ratios determined by Ecology to achieve no net loss of wetland functions and values. Furthermore, Olympic has not selected a route through the Snoqualmie Valley that avoids most of the wetlands altogether.

Q: Do you think wetland impacts have been characterized properly.

A: No. My review of the documents has led me to conclude that the description of impacts has been minimized. The documents understate the likely impacts that will result from the project.

Q: Can you give me an example?

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A: A good example would be the fragmentation of habitat that will be caused by the pipeline. Habitat fragmentation is a significant impact associated with many linear projects. Take a look at OPL's current alignment through Ebey Island on the lower Snohomish River as an example. A review of a recent aerial photograph of the forested wetland on the Department of Fish & Wildlife property on Ebey Island shows a permanent scar. Ecology Exhibit ECS-5 Impacts from such crossings can never be fully mitigated. What we need to keep in mind is that these impacts to ecological systems can be avoided by alternative routes clearly available to Olympic. The documents for this project have not adequately addressed the direct and cumulative effects of habitat fragmentation.

Q: So do the documents adequately evaluate cumulative effects on wetlands?

A. Cumulative effects are not addressed adequately. The draft EIS and supporting technical documents attempt to evaluate direct impacts to wetlands but lack detail on indirect impacts and resultant effects (such as from fragmentation of wetlands, and indirect effects). They also do not evaluate the amount of wetland buffer that will be affected, nor provide mitigation for loss of wetland buffers. (see Application p.3-73). Water quality impacts to wetlands during construction are not evaluated.

Page 3-73 of the draft EIS states that approximately 1 to 2 percent of the total existing forested buffer area around the wetlands would be removed. These impacts are subsequently dismissed as minor and no mitigation is proposed. The total amount of wetland buffer affected - not a percentage- should be determined and mitigation provided. Otherwise, adverse impacts to wetlands will occur.

The documents state that an estimated 5.65 acres of wetlands will be directly impacted during construction. Cumulative impacts from water quality degradation, groundwater flow interruption, accidental drainage, sedimentation, soil compaction, disrupted surface hydrology, loss of buffer, fragmentation, and vegetation removal have not been addressed.

Q: Have the amount of direct impacts been properly assessed?

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A: No. The number of acres of impacts will be larger than stated. For example, wetland crossings will result in permanent impacts to the wetlands, particularly forested wetlands. Page 3.4-21 of the application states that 17.07 acres of wetlands will be temporarily impacted by the project, with zero (0) acres of permanent impact. The documents assume that once the crossings are revegetated, the impacts have been mitigated. This is not a correct assumption.

Page 3-71 of the draft EIS states that "additional wetlands may be avoided when the final alignment design is completed." Could the final alignment design potentially increase wetland impacts? What are the unknown variables that can change when the final alignment is completed? These are questions needing answers from OPL.

Also, Page 3-72 of the draft EIS states that scrub shrub and emergent wetland crossings can "easily be reestablished through revegetation." Ecology cannot readily find support for this in the literature nor support the statement based on staff experience with mitigation projects in the state. Can OPL provide examples of other pipeline projects to support this? Ecology's water quality inspection files for pipeline projects indicate otherwise.

Q: Have water quality protection measures, required during construction to protect wetlands from water quality impacts, been properly evaluated?

A: Water quality impacts to wetlands during construction are poorly evaluated. Mitigation measures and BMP's are proposed and described in various documents, but the documents lack description on how they will be effectively implemented. This is of particular concern as physical conditions change along the corridor. The documents do not discuss how the best management practices (BMP's) and mitigation measures will be employed consistently, given that the pipeline will be constructed by different crews, and at three separate locations. I question how will consistent oversight be provided and whether reasonable assurance can be given that the mitigation measures and BMP's pass this test.

Q: Have wetlands along the construction corridor been adequately delineated and evaluated?

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A: No. The documents submitted thus far are incomplete. Page 3-67 of the draft EIS states that information for 6 of the 78 affected wetlands was not available at the time of printing of the draft EIS. This information was similarly unavailable at the time that the Application was submitted. When will this information be provided, and how will it be evaluated to ensure that it receives adequate review, given the timing surrounding the review of this project?

Q: Have the hydrologic impacts to wetlands been thoroughly evaluated?

A:. No. The draft EIS states "*potential hydrologic impacts are considered minor because wetland and soil specialists would monitor all wetlands during construction …*" (page 3-75 of draft EIS). The presence of trained wetland and soil specialists during construction is an important and necessary reality for implementation of the project. It does not, however, provide a substitute for data to support the conclusion that impacts will be minor. (p.3-75).

The draft EIS does not indicate if OPL has determined the depth of compacted till at the numerous wetland and stream crossings. If not, how and when will this be determined in the field to avoid hydrologic impacts to the wetlands? What criteria will field staff use to determine if trench plugs are indicated?

OPL has not proposed or developed a hydrologic monitoring plan to support this conclusion that "*hydrologic impacts are considered minor*." Ecology typically requires a rigorous monitoring program to evaluate hydrologic impacts (changes in a wetland's hydroperiod) as part of a 401 water quality certification for large projects. OPL should be required to develop and implement a rigorous hydrologic monitoring program in order to provide reasonable assurance that the project impacts stay within the predicted range.

Q: What kind of process did OPL use to select appropriate wetland mitigation locations?

A: I am not sure. I am still waiting to review a document that would constitute a "draft wetland mitigation package." The documents submitted thus far are lacking a detailed description of the criteria and process to be used to select mitigation sites. Page 3-77 of the draft EIS states that 14.5 acres of degraded wetland "would be enhanced to further compensate for

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wetland impacts" but does not provide details on where that mitigation will be performed. In order to evaluate the effectiveness of OPL's wetland mitigation proposal, Ecology needs to review the details of where the mitigation will be conducted, how the mitigation sites were selected, what type of wetland mitigation will be provided, etc. How did OPL determine that 14.5 acres will be sufficient to offset impacts? Ecology will need to review the wetland mitigation plan at the same level of detail as that required for projects being reviewed for an individual water quality certification. The necessary level of detail is outlined in a multi-agency document titled "*Guidelines for Developing Freshwater Wetlands Mitigation Plans and Proposals*." Ecology Exhibit ECS-6 (Ecology publication no. 94-29, available on Ecology's website at http://www.wa.gov/ecology/sea/pubs/94-029.html).

Q: What are "impaired" water bodies?

A: These are water bodies that have impairment in some area of water quality, such as temperature, dissolved oxygen, or metals. The Clean Water Act sets standards for certain water bodies with regard to temperature, dissolved oxygen or metals, and when those standards cannot be met, then the water bodies are said to be impaired. This recognition of impairment results in the water body being listed by the federal government on what is known as a 303(d) list. That list requires that the state take action to correct the impairment within a certain period of time. The correction of impairment is a complicated process, usually involving the work of both state and local government.

Q: Will the Olympic project affect water bodies listed by Ecology as "impaired"?

A: Fourteen waterbodies crossed by the proposed pipeline corridor that are on the state's 303(d) list of impaired waterbodies, as stated in Table 3.6-1 of the draft EIS. Of these fourteen water bodies, eleven are on the list for temperature exceedances. Any clearing of riparian vegetation along these waterbodies most likely will result in further impairment due to temperature problems because of the loss of shade cover. The proposed project should include measures to avoid this impact, and provide mitigation for unavoidable impacts.

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DATED this _____ day of March, 1999.

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