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 DOUGLASS A: PINEO** **ISSUE: STREAM CROSSINGS, PLANT COMMUNITIES** **SPONSOR: DEPARTMENT OF ECOLOGY**

Q: Please state your name.

A: Douglass Anderson Pineo.

Q: Where do you work?

A: I work at the State of Washington, Department of Ecology.

Q: What is your position?

A: I am shorelands specialist in the Shorelands and Environmental Assistance Program.

Q: What is your educational background and experience in shorelands management?

A: I graduated from Earlham College in 1973, with a Bachelor's degree in Biology. In 1977, I went to work for the Washington Game Department to conduct wildlife habitat surveys and identify significant and unique wildlife habitats in eastern Washington. I later moved to the agency's headquarters in Olympia, working in the Habitat Management Division reviewing environmental documents prepared under authority of the State Environmental Policy Act ("SEPA") and National Environmental Policy Act ("NEPA"), for proposals of all kinds where fish and wildlife and their habitats may be impacted. I wrote official responses to these documents for the Department, and coordinated environmental review and impact assessment for

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environmental protection permits such as Hydraulic Project Approvals ("HPA"), and permits issued under authority of the Shoreline Management Act ("SMA"), Section 10 of the Rivers and Harbors Act, and Section 404 of the Federal Clean Water Act. I evaluated the defunct Northern Tier Pipeline proposal, another Cross Cascades petroleum pipeline proposal, and wrote pre-filed testimony on potential fish and wildlife habitat impacts under the EFSEC process.

I did similar work with the Washington State Parks and Recreation Commission for a year before entering a graduate program in Environmental Science at Washington State University in 1981. In 1984, I worked with the Washington Forest Protection Association as a policy analyst on non-commodity forest resources management, emphasizing wildlife, water quality and fisheries issues.

Since 1985, I have been employed with the Washington Department of Ecology, implementing the state's role in the Shoreline Management Act, helping to develop watershed based approaches to shoreland and floodplain management and providing technical and policy assistance in stream science and shorelands management to local governments, citizens and property owners. My work has been increasingly focused on collaborating with other public and private resource managers and practitioners to develop and disseminate geomorphically based approaches to natural stream channel design for stream rehabilitation and fish habitat enhancement.

Q: Did you review documents pertaining to the potential ecological impacts of stream crossings associated with the Cross Cascades Pipeline proposal?

A: Yes.

Q: What documents did you review?

A: I reviewed the original and Revised Application, released in May, 1998: Section 1.4, Mitigation Measures; Section 1.5, Sources of Information; Sections 2.1, Section 2.14, Construction Methodology; Section 2.15, Protection from Natural Hazards; Section 2.17, Study Schedules, the Screening Level Pipeline Scour Evaluation Analysis, Tier 3 Analysis, Fisheries

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and Aquatic Resources Technical Report, the Vegetation Technical Report, the Biological Evaluation, and the Application Review of the Application for Site Certification, prepared for EFSEC by Jones and Stokes, Inc.. I also reviewed the draft Environmental Impact Statement.

Q: Are you familiar with the watercourses (streams and irrigation canals) which would be crossed by the proposed Cross Cascades Pipeline?

A: I am familiar with many, but not all 291 of them.

Q: Are you familiar with principles of natural stream channel design and stream rehabilitation?

A: Yes.

Q: What is the purpose of your testimony?

A: My testimony will address potential impacts to the natural character, resources and ecology of streams and rivers and their associated floodplains from construction and operation of the proposed pipeline, as proposed by Olympic Pipeline Company. My testimony will also address general deficiencies I identified in the Application and technical reports with some specific examples. I will address changes to the design and routing of the pipeline which would be the minimum necessary stipulations by the Department of Ecology, to any aspect of construction, impact mitigation, and ecological restoration and rehabilitation, or operation and maintenance of such a pipeline, regarding stream crossings only. My testimony will not address the many other deficiencies and unavoidable adverse environmental impacts characterizing the design, routing, and proposed construction, operation, maintenance and mitigation of the proposed pipeline.

Q: Do you feel the Application adequately describes the proposed stream crossings, their potential adverse impacts to terrestrial and aquatic shoreland resources and ecology, and adequate mitigation?

A: No. The Application and technical reports don't thoroughly describe the streams and rivers, plant communities, and fish and other wildlife communities present at each crossing, but

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instead characterizes them in a general way. Stream crossings are described narratively and graphically in only the most general way. Only conceptual, typical drawings, not to scale, are presented (Pages 2.14-2 through 2.14-4).

Q: Why are these general descriptions of streams and stream crossing methods not adequate?

A: Because the Applicant is asking for a level of trust that wouldn't be accorded to any other private or government construction proposal which crossed over or under a single stream or river, approximately 230 such streams in Washington. For instance, a utility pipeline carrying water or sewerage would require extensive permitting, and would be reviewed with the aid of a completed Joint Aquatic Resource Permit Application ("JARPA") form. Specific items are specified for the required site plans for JARPA, from which virtually all local, state and federal permits are issued. These site plans require site specific plan and section views depicting existing property boundaries, site topography and vegetation, proposed contours, volume, source, and composition of proposed fill, specific mitigating measures, and bank stratigraphy reconstruction measures.

Even for projects whose only objective and intent is stream rehabilitation for fish and wildlife habitat recovery, where letters of permission, reference to nationwide permits, or exemptions from formal permits (such as categorical exemptions from the Shoreline Substantial Permit Requirement) are often appropriate, full individual, site-specific project descriptions and plans are required. Put another way, projects whose sole purpose is to restore or enhance the very resources for which aquatic resource protection permit processes have been enacted by the Congress and the Washington Legislature, require far more complete and careful description than is presented for stream crossings in the Cross Cascades Pipeline Application before EFSEC.

Q: What is your opinion on whether the Applicant has shown compliance with the Shoreline Management Act and the individual Shoreline Master Programs ("SMPs")?

A: The Applicant states its intent in the Application to comply with all applicable local Shoreline Master Programs, but the proposed crossings of the many small and major streams supporting passage and spawning elements of salmonid anadromy are dismissed with the

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statements, "[t]he Application provides the *approximate locations* where shoreline areas would potentially be affected by the proposed project.", and "[t]he Application also provides a *description of typical construction methodology for construction within shoreline areas."* (page 1.6-15). Beyond indicating that such a utility is generally allowed in a particular environment designation, the applicable goals, policies, and use regulations for the several germain SMPs aren't set forth in the Application and aren't compared specifically with each stream crossing. Nothing remotely acceptable as site plans for any permit issued pursuant to the Shoreline Management Act is presented in any portion of the Application, supporting technical reports, or the EIS.

Q: What is your opinion of the stream crossing drawings submitted with the Application?

A: The typical stream crossing drawings, which depict only one cross section along the stream channel axis and perpendicular to the axis, show no construction clearing space. The text states a 30 foot construction area would be cleared, but doesn't show riparian plant communities other than a depiction resembling a potted plant in an office building foyer. Reference is made to staging equipment and materials at least 50 feet from the ordinary high water mark of streams, but no reference is made to where necessary roads would be built for the 1/3 of the 227-mile pipeline route not in existing utility corridors, and requiring direct impacts to undeveloped land. The text (but not any drawings) refers to mature cottonwoods in <u>some</u> floodplain and stream crossing locations, while field examination of the major rivers and many of the smaller streams will show extensive stands of cottonwood and alder, along with complex shrub understories at many locations.

Q: Are any stream crossings described narratively or graphically in conformance with the requirements for local, state or federal aquatic resource permits set forth in the JARPA Application, and in separate state and federal rule for relevant permits?

A: No.

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Q: Are you familiar with the federal permits, such as the various provisions of the Clean Water Act or the National Flood Insurance Program or the Rivers and Harbors Act required for a utility project such as this pipeline?

A: Yes.

Q: Are you aware of any state process which would exempt the Applicant from the requirement to obtain any relevant federal permits, such as various provisions of the Clean Water Act or the National Flood Insurance Program, or the Rivers and Harbors Act?

A: No.

Q: In your opinion, what is the Applicant asking permission to do with this project?

A: Bluntly put, OPL is asking for permission to cross close to 300 watercourses, including about 230 rivers and smaller streams, many with ESA-listed anadromous salmonid fish runs, almost 80 wetlands, and the Cascade Mountains, and to cut through some of the finest remaining examples of Washington's remnant shrub-steppe habitats, potentially or documented to be inhabited by sage grouse on the state's threatened and endangered species list, without disclosing specifically how it would intend to do so. Instead, OPL wants EFSEC and the people of Washington to simply trust that no significant irreparable environmental harm would occur from construction and operation for perhaps 50 years.

Q: Could you characterize potential adverse environmental impacts which would result from the construction and operation of the proposed pipeline at and near stream crossings?

A: Yes. Stream corridor impacts from construction and operation can be expected to occur in these major areas:

- Fluvial geomorphic processes including scour, sediment transport, channel morphology (cross section, gradient, meander geometry), avulsion;
- Riparian and associated wetland plant communities, and upland plant communities associated with stream corridors;

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- Fish and other wildlife populations, including phyla other than vertebrates;
- Visual impacts from stream crossings.

Q: Would you discuss your concerns about impacts to fluvial geomorphic processes?

A: Yes. The Applicant caused a Screening Level Pipeline Scour Analysis evaluation to be produced which relies on attempts to use very conservatives assumptions regarding particle size and flows as substitutes for in-depth analysis of each system. The scour analysis technical report assumes a sand bed stream channel in all streams for scour analysis purposes, while acknowledging most streams in western Washington, in the Cascades and on the east slope of the Cascades have larger particle sizes in their beds. From working with Susan Shaw, a geomorphologist with the Washington Department of Natural Resources who is also reviewing this Application, she and I have a number of concerns about the rationales and procedures used to generate impact ratings in the screening process. The Applicant's technical report (Screening Level Scour Analysis Evaluation Report) claims only 41 of approximately 300 stream crossings are "scour critical." However, it is important to note that they claim only six warrant further geomorphic and hydrologic study, including major rivers like the Columbia, Yakima, and Tolt, as well as Swauk Creek.

The Screening Level Scour Analysis Evaluation Report cites Cabin Creek as having greater than predicted scour potential because of an upstream bridge and heavy large woody debris loading. Catherine Reed of Ecology's Central Regional Office in Yakima asked, concurrently with the consultants preparing the Screening Level Scour Analysis, why the pipeline wasn't proposed for suspension from the existing bridge. Together, the insufficient treatment of streams like Swauk and Cabin creeks, and lack of evaluation of scour and avulsion in major systems like the Columbia, Tolt, Snoqualmie, and Yakima systems raises serious concerns for me regarding these systems.

Q: Do you have concerns about how OPL did the scour analysis?

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A: Yes. Despite reference to potential logging and changing land use in drainages across the entire forested portion of the proposed pipeline route, OPL did not evaluate local scour effects from large woody debris ("LWD") moving through the stream systems, and gave short shrift to effects on hydrology from these potential activities in drainages which would be crossed by the pipeline (Page 3.4-106). OPL's only analysis of scour potential was that predicted by the employed modeling methodology. However, the problem is that not only may such LWD be anticipated in forested watersheds, it will likely be an increasing presence in stream systems as efforts to restore salmon runs and natural stream channel evolution are aggressively implemented in the immediate future.

Q: What about how the pipeline might affect or be affected by a crossed stream system during a major flood event?

A: Well, let me first give you a definition. Avulsion is described as a major channel change, such as a meander cutoff (Flufluvial Process in Geomorphology, Leopold, Wolman, Miller), which is typically associated with low frequency, high flow events such as the 500 year flows used in the screening level analysis. This infrequent but natural geomorphic phenomenon may be expected in many of the stream systems proposed for crossing by the pipeline in western Washington, the Cascades, and the Yakima system in Kittitas County, most of which will have anadromous and resident salmonid fish populations. Neither in the Application or in the Screening Level Scour Analysis is any mention made of potential for avulsion of any of the stream systems which would be crossed by the pipeline. With regard to the Application, on page 2.15-21, the briefest of references is made to flood impacts and protective measures. The Application makes virtually no attempt to link the Screening Level Scour Analysis Evaluation Report, the brief discussion of stream crossings in the Construction Methodology (Section 2.14), or other material with potential exposure of the pipeline from avulsion during flooding. The Scour Analysis report doesn't describe how the width of the meander belt (limit of maximum meander, as termed in figure 2.14-2) would be determined, but the construction methodology

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section of the Application (Section 2.14) states the pipeline would be placed below the maximum scour depth for the width of "the Limit of Maximum Meander" (Figure 2.14-2).

Q: What information did you review with regard to slope failure?

A: I reviewed the geotechnical analysis in the Application, and the Application elements dealing with stream crossings. Neither the Application or the screening level scour analysis addresses potential catastrophic slope failure and resulting geomorphic impacts at the proposed pipeline location in the Griffin Creek drainage, which is in DNR's Tokul Watershed Administrative Unit. Construction roads and possibly the crossing would undercut the toe of a deep-seated failure with excessive local scour potential. These unpredictable stream channel and floodplain effects are not addressed in the Application. Further, DNR management prescriptions for the Tokul Watershed Administrative Unit in this area call for no new roads to be built because of the potential adverse effects noted above, yet the pipeline crossing could not be accomplished without roads in this area:

Q: Do you have any other concerns about fluvial geomorphic impacts associated with construction and operation of such a pipeline?

A: Yes. The Applicant proposes to riprap the banks in unspecified areas of an unspecified number of stream crossings, while both Ecology, Washington Department of Fish and Wildlife, and local governments require other entities to stabilize disturbed and/or eroding banks using bioengineering. The more proper term is "biotechnical bank stratigraphy reconstruction." This body of techniques employs living plant materials as structural elements and also embodies bank stratigraphy reconstruction, using appropriate measures such as fabric-encased soil lifts, appropriate soil and gravel compositions, use of large woody debris, and other structural measures, to design and construct geomorphically and hydrologically appropriate bank stabilization. Such designs may be deformable at geomorphically appropriate rates. This pipeline proposal should be held to these same bioengineering standards and requirements.

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The only drawings of typical stream crossings associated with the OPL proposal indicate riprap armoring, which suggests statements on pages 1.4-15 and 2.3-22 of the Application are misleading. Riprap armored crossings will not be acceptable, for the same geomorphic and ecological reasons angular backfill in the streambed is not acceptable under the SMA, hydraulic code and Section 7 consultation under the federal ESA: Good design of stream bank rehabilitation which fully functions ecologically and geomorphically requires a geomorphic characterization of the stream system beyond the description of the material presented in the Application or supporting technical reports. Such design often requires a deformable bank designed to allow normal stream channel evolution to occur. The Applicant's proposal assumes stopping normal stream geomorphic processes, as is made evident by proposed riprap bank stabilization, and doesn't address or evaluate rates of channel degradation including processes such as accelerated scour, lateral channel migration, or incision. These phenomena are mentioned in the scour analysis report, but they aren't calculated or evaluated from a design standpoint.

In short summary, the Application and screening level scour analysis evaluation both fail at the design level to distinguish intact, naturally functioning stream systems (ranging from the highly dynamic to the more slowly evolving, less dynamic systems), from stream systems degraded and altered by logging, channelization, dams, bridges, farming, urban development or other factors which have caused departures from geomorphic potential state. The Application contradicts itself by proposing ripraped banks while at the same time proposing to avoid scour-related impacts by locating the pipeline below the maximum (anticipated) depth of scour for a distance beyond the width of the "limit of maximum meander" (channel meander belt).

My comments on the EIS prepared for this proposal also highlight additional concerns about the proposed construction methodology for stream crossings and potential adverse impacts to fluvial geomorphic processes:

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> "Bullet 6 on page 3-163 proposes "angular material similar in size to existing bed composition;" This statement or provision underscores the inadequate evaluation of fluvial processes throughout the document, and supporting material including the screening level scour analysis. Streams and rivers move sediments which become rounded and are called cobbles. Sediment particles are imbrecated in the streambed, meaning they are sorted and oriented to flow such that they are more stable at a given velocity than randomly distributed or dumped material of the same particle size."

Q: Have you examined the cost estimates for the pipeline proposal from the perspective of stream crossings constructed and restored to current best practices and standards?

A: Yes. Overall, the costs of pipeline construction is not realistic considering the mitigation costs for stream impacts. Looking at Table 2.3-2, Estimated Cross Cascade Pipeline Construction Costs, it is clear that the table is broken down by proposed pipeline segment, but not by construction element. It is clear from the brief treatment of the proposed revegetation and mitigation measures proposed that these costs are grossly underestimated. Construction and materials costs for biotechnically stabilized stream banks following pipeline location would typically run from approximately $50 to $200 per lineal or front foot of treated shoreline, and does not include necessary riparian revegetation or adequate watershed level geomorphic and hydrologic characterization and design. This means that the only acceptable stream bank stabilization measures may be expected to cost $3,000 to $12,000 per trenched stream crossing, exclusive of the riparian-revegetation, technical studies needed for design, and the design itself. Design, engineering and construction oversight of biotechnical bank stabilization runs in the neighborhood of 15% to 20% of overall costs. Therefore, the more realistic costs of the pipeline would be much greater than the $105 million stated in the Application.

Q: Are you aware of the cleared zone surrounding the pipeline that is being suggested?

A: Yes.

Q: What is your opinion on having the cleared zone around the pipeline as related to the impact on streams?

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A: Any permanently cleared zone surrounding the pipeline permanently harms the functioning of any stream. Further undermining claims to mitigate riparian impacts, the pipeline design calls for a permanently cleared zone vegetated only with grasses ranging from 10 feet wide at the stream bank to 30 feet wide everywhere else, so that the Applicant can realize greater profits by employing aerial surveillance rather than ground-based**,** routine**,** ongoing inspection. While aerial surveillance is typical for gas and oil pipeline operation and leak detection, it imposes an unacceptable**,** additional geomorphic and ecological impact on stream crossings**.** It is important to remember that the presence, growth cycle and ultimate fate of riparian trees is intimately linked with stream channel evolution. As a required response to the recent and ongoing listings of many anadromous and resident salmonid fish populations under the federal Endangered Species Act, the state of Washington, in cooperation with citizens, federal and tribal governments and agencies is embarking on a long-term emphasis on stream corridor rehabilitation for preserving and enhancing water quality and restoring stream ecological function, including anadromous fish runs. Yet this Application contemplates permanent removal of between 2740 feet (137 stream crossings with "significant fisheries resources" (page 3.4-75) multiplied by 10 feet on each stream bank) to possibly a mile of riparian plant communities, with consequent loss of habitat, shading (thermal maintenance) and channel stability functions. In addition, at least 60 feet would be disturbed at each crossing, while proposed restoration standards are only 80% survival at five years. While emerging federal, state, tribal and local stream corridor and anadromous and resident fisheries restoration planning (Northwest Power Planning Council's Fish and Wildlife Mitigation Plan, Draft Statewide Strategy to Recover Salmon, January 1999) emphasizes adaptive management featuring ongoing monitoring and evaluation, this project proposes only five years of monitoring (page 1.4-22), even though most of the destroyed woody vegetation would be decades and in some cases centuries old. Shrubs, bunchgrasses, and perennial forbs in shrub-steppe plant communities similarly are usually many

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decades old, and would require much longer than the proposed five years of monitoring to assure complete recovery from damage.

In short, as all sectors of the public and private enterprise in Washington, and all its citizens, are being asked to make unprecedented changes in how we live and work to accommodate and assure recovery of endangered anadromous salmonid fish stocks, so shall proposed energy utilities necessarily have to design facilities and conduct business in innovative ways. For these reasons, and more presented in following testimony, the entire pipeline right of way, including in shorelines and floodplains, should be required to be revegetated with the full compliment of the appropriate native plant communities. This means all destroyed trees, shrubs and other native plant materials should be aggressively restored, and stream crossings and floodplains not ecologically intact with respect to their appropriate native plant community before construction, should be rehabilitated with the appropriate native plant community.

Q: What is your opinion about routine inspection by foot as opposed to overflight of fixed-wing craft?

A: Regular and routine pipeline inspection must be carried out from the ground from vehicles and primarily on foot. Since only a portion of the pipeline would be located outside existing rights of way and utility corridors, this measure would not be expensive, especially after deducting costs of chemical and mechanical vegetation control (the Applicant states herbicides would not be used, but growth inhibitors are commonly used in utility corridors [Dow Agrosciences, "Vistas", Vol.11, Issue 3, Autumn 1998]). In any case, the Applicant states all plantings will be maintained so inspections necessary for this commitment will be ground-based anyway. If you want to make sure the restored plant communities survive and you want to catch spills at the earliest time, then get people on the ground inspecting on a routine basis.

Q: Did you review the documents for placement of spoils near stream banks?

A: Yes. Page 1.4-14 says staging areas will be at least 50 feet away from streambanks "where topographic conditions permit". The Applicant doesn't state who will make this

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determination on any of the approximately 230 stream crossings. Placement of spoils is proposed to be located at least 10' from the ordinary high water line, which would could have significant adverse impacts in future flood flows, as well as damaging or destroying riparian plant materials. Again, these impacts aren't discussed. In every case, substrate volume displaced by the 14 inch diameter pipeline and its bedding materials, plus the increased volume of backfilled native material, would result in excess spoils requiring disposal. The Application doesn't say more about the fate of these spoils. To eliminate impacts to flood flows and attendant adverse stream impacts, I recommend that the spoils be disposed of in areas outside of floodplains where no additional impacts to upland forested, grassland, or shrub-steppe plant communities and wildlife habitats would be disturbed or covered, or in any other way impacted, and where their placement wouldn't result in continued additional spread of noxious weeds.

Q: Do you have any comment on impacts to streams from backfilling the trench as it relates to stabilizing the pipe?

A: Yes. In many places in the Application, the pipeline is proposed to be coated with concrete at stream crossings to protect against scour impacts and counteract buoyancy. Yet, on page 1.4-15, the phrase "If the stream width warrants it" introduces this measure, but no determining criteria for concrete coating is presented. The Application states (p. 1.4-15) clean gravel will be used for the upper 1 foot of fill over the backfill trench in stream channels, but no methodology for sizing stream bed materials for sediment transport and other fluvial geomorphic and ecological appropriateness is presented. I expressed a related concern in response to the EIS prepared for this proposal:

> "The EIS proposes backfill with angular material (in stream crossings). Trench backfill with angular material appears to assume the crossed stream is already in a geomorphic potential state, and does not evaluate rates of change but rather assumes no change would occur. In short, no different than pipeline crossings constructed decades earlier in Washington, many of which have failed. There is no adequate linkage between this proposed construction provision and a comprehensive, watershed-based evaluation of fluvial geomorphic processes for each stream crossed."

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Q: Do you have an opinion on returning streams to their original contours after construction?

A: All streambanks should be returned to original contours unless a different contour would be more geomorphically and ecologically appropriate. A number of references are made in the Application and appendices, such as the report on surveys for Larch Mountain and van Dyke's salamanders, to the incised condition of some stream channels along the proposed pipeline routes. The pipeline construction should take every available opportunity to improve hydrologic, geomorphic, and ecological stream functions, since so many unavoidable adverse impacts would occur from construction and operation. The Application (p.1.4-15) states streambanks will be returned to original contour "when possible," but doesn't say who'll make this determination, or who'll determine and document what the stream's original contours are. As to instream structures to accomplish returning the original contour (if in fact, this is the intent, which I am not at all sure it is), log deflectors are proposed for sediment deposition, but no accepted natural stream channel design criteria are cited, and no watershed-level geomorphic analysis is proposed including hydrology, stream planform, meander geometry, sediment transport, backwater effects, and local scour analysis, all of which would be required for adequate design of any channel restoration which might conceivably, but not likely, include instream structures. No drawings or site plans for any such structures are presented. The Application states use of riprap would be limited to areas where "flow conditions preempt vegetative stabilization". No definition of the term "flow conditions" is presented, leaving the reviewer to wonder if velocity, depth, volume or other criteria is implied. In any case, the Applicant's intent to prevent woody plant materials from being used in the proposed 10 to 30 foot wide clear zone virtually guarantees extensive use of riprap, which would preclude continuity of natural stream processes. This is not acceptable stream restoration or mitigation.

Q: Would you discuss your concerns about impacts to riparian and associated wetland plant communities, and upland plant communities in potentially affected stream corridors?

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A: Yes. Impacts would occur during construction and later during operation and maintenance of the pipeline. Some impacts have been addressed in the Application but many have not.

Aside from the geomorphic impacts associated with permanent removal of trees and shrubs in the pipeline right of way ("ROW"), there would be significant ecological impact on the over 30% of the proposed Cross Cascades Pipeline in the form of permanent wetland and riparian impacts, additional habitat fragmentation in forested and shrub-steppe plant communities, noxious weed spread, and the potential use of chemical growth inhibitors which affect weeds and native plants alike. Many plant communities which would be destroyed or heavily damaged for pipeline construction are composed of elements which are many decades or even centuries old. The structural and functional attributes of these plant communities cannot be replicated immediately, but will instead require many decades to restore. To mitigate and compensate these unavoidable adverse impacts, many but not all of which are identified in the biological assessment technical report, the Applicant would therefore need to rehabilitate damaged and destroyed shoreland and associated wetland plant communities at a greater ratio than the area and lineal feet of stream channel damaged. The Applicant proposes mitigation ratios for forested, shrub-scrub and emergent wetlands (page 1.4-22), but not riparian plant communities or adjacent upland forested, shrub-scrub, shrub-steppe, dry woodlands or grasslands.

Q: Have you reviewed any information on Cabin Creek in the documents?

A: Yes.

Q: Do you have concerns about this crossing?

A: Yes. As noted by the Applicant's consultants and Ecology in their DEIS comments, vegetation, scour and water quality impacts have been significantly underestimated at the proposed Cabin Creek crossing in Kittitas County. This crossing should be elevated onto the existing railroad trestle to avoid new adverse impacts to the stream corridor.

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Q: What concerns, if any, do you have about success of revegetation during or after crossings?

A: Only the timing for the proposed Columbia River crossing occurs during plant material dormancy. All other stream crossing construction windows virtually guarantee a high rate of failure of riparian woody plant revegetation measures. This fact of this revegetation failure rate is further complicated by the need to complete biotechnical bank stabilization measures, which are the only acceptable design methodology given the extensive cumulative adverse effects on stream processes from riprap stabilization, during pipeline installation. The careful construction needed to accomplish this type of bank stratigraphy reconstruction methodology, combining use of native plant materials and biodegradable structural materials is not easy to reconcile and integrate with the furious pace of typical pipeline construction, and proposed timing of stream crossings would not occur during plant material dormancy.

Q: Do you have specific concerns about the Columbia River crossing alternatives?

A: Yes. The Columbia River crossing will be highly problematic from the visual impacts standpoint, because of the extreme difficulty acknowledged by the Applicant, of re-establishing the shrub-steppe plant communities once disturbed. Noxious weeds are a major problem in the arid eastern side of the Cascades, and many of the weeds are evolved as sun-loving colonizers of disturbed soils.

Q: What concerns do you have about visual impacts resulting from the pipeline?

A: Page 1.4-34 and Section 5.1 of the Application grossly underestimate both the visual values of the Columbia River viewscape and viewshed in the area of all the proposed alternative pipeline crossings, and the visual impact resulting from constructing the pipeline in the steep terrain shrub-steppe and grassland plant communities (which the Application calls “rangeland” in this section, but shrub-steppe in discussion of plant communities) present in this corridor, such as at Swauk Creek. The Application support document, Biological Evaluation, acknowledges the extreme difficulty of restoring these plant communities, however, in direct contradiction, the

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Application states that impacts would be minimal (page 5.1-92). The Vegetation Technical Report cites a number of shrubs, forbs and grasses including two rare plant species found in this series of plant communities, but recommends only seeding a few sage brush and native grass species, and none of the many native forb species (Page 3.4-17). Experience in Washington indicates planting sage brush is most effective as tubelings, and seeding is most effective on snow (Margaret Pounds, Yakima Training Center ["YTC"] Management Plan). Fall seeding is recommended for native species to afford natural stratification (cold dormancy) of the seeds, not to prevent "drying out" in the summer, as claimed in the Vegetation Tech. Report. Hydroseeding is proposed for revegetating disturbed areas, but this technique has never been used successfully for reestablishing a native shrub-steppe plant community in eastern Washington. Without question, the inadequate rehabilitation of native shrub-steppe in the Columbia River corridor would be a significant visual and native plant community impact resulting from the pipeline proposal construction. A horizontal directional drilling technique is proposed (before a crossing site has been finally chosen), for the Columbia, and would involve large areas on either bank to be disturbed for the massive equipment and pipe materials storage and staging. The Application states (Page 3.4-99), these would be "well away from the active stream channel," without defining these terms or presenting any scale site plans. The impacted area would be highly visible, fragile shrub-steppe plant community, none of which has been purposefully restored in the state of Washington, despite some success in establishing big sage (*Artemesia tridentata ssp.)*. Other streams would also suffer significant long term visual impacts from stream crossings, including the Yakima and its tributaries, especially Swauk Creek.

Q: Do you have other comments regarding the vegetation impacts associated with the Columbia River crossing?

A: In my comments reviewing the EIS prepared for this pipeline proposal, I addressed vegetation and other impacts and problems associated with the current, undecided Columbia River crossing alternatives.

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While horizontal drilling is planned for the Columbia River, the least expensive and least environmentally damaging crossing would be on an existing railroad bridge downstream from Vantage, or at Wanapum Dam.

From my EIS comments:

(1) OPL states on page 2-47 discussion about an I-90 crossing, Beverly RR bridge, and a Wanapum dam crossing has not been finalized. This presents an unclear, moving target. No reviewer can assess Columbia River crossings because there is no well-developed plan for a preferred route. Columbia River crossing options impacts are discussed in scattered elements of the EIS, and the primary visual shoreline impacts (as would be addressed in elements of the relevant [Grant and Kittitas) Shoreline Master Programs) involve shrub-steppe on the adjacent upland approaches. The brief discussion in paragraph 5, page 2-47 of relative threat of potential adverse operational impacts is inadequate.

(2) Page 3-51, first paragraph acknowledges the significance of the superb, undisturbed bunch grass dominated shrub-steppe on the basalt scarps and talus along the eastern (left) shoreline of the Columbia, while paragraph 3 of page 3-279 dismisses the Columbia River crossing visual impacts with the editorial rationalization and value judgment that "there are minimal vegetation and visual features along the river banks." Lower on the same page, the EIS acknowledges that "slope scars would be visible to travelers on the roadway", and "slope scars are anticipated to be seen by recreationists using the river." Such value judgments, especially in light of the widely acknowledged dramatic basalt cliff and shrub-steppe landscapes through which the Columbia flows in the Vantage/Beverly area, is inappropriate and should be corrected, with the significant, irreparable impacts acknowledged.

(3) Page 3-54 of the EIS acknowledges that restoring shrub-steppe plant communities, exemplified by the ecologically intact examples on the Columbia at most of the crossing alternatives is "difficult and long term". In fact, it has never been accomplished in the state of Washington. No further discussion of what "difficult and long term" means is present in the EIS or appendices. The extremely high probability of noxious weed invasion is skirted with the bland statement that "cheatgrass and other non-native grasses could establish." Erosion potential after cryptogam (also called cryptobiotic) crust destruction on steep slopes such as the Columbia River banks and adjacent uplands at the crossing options is cited (page 3-54-56) but no adequate restoration or mitigation is addressed in the EIS or Appendices. The EIS states a revegetation plan on page 3-56 and in the same paragraph (second) acknowledges it will fail. While the EIS states a shrub-steppe cryptogam layer requires 14 to 85 years to establish, only a 5-year monitoring program is contemplated (page 3057). No standards for success or contingency plan is specified. Contingency plans are cited but not discussed. Again, incomplete information makes meaningful evaluation of potential impacts of the proposal impossible. Ecology would only stipulate to contingency and monitoring plans which extend for the operational life of the pipeline proposal.

(4) As noted above, the discussion of visual impacts beginning on 3-273 is wholly inadequate and even dismissive to citizen recreationists and travelers in eastern Washington. A statement on page 3-279, says The landscape setting (of the Yakima

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Training Center) is hilly shrub-steppe which extends for miles with few, if any landscape features of visual interest." Such a statement reflects an aesthetic so narrow that it defies description.

(5) The same attitude is repeated in paragraph 3 of the same page, stating "[w]here the pipeline route crosses the Columbia River, there are minimal vegetation and visual features along the river banks." A half dozen crossing routes are described, none is chosen, the Columbia in this reach flows through a dramatic coulee with massive basalt cliffs, views of which are provided from the only scenic overlooks built into Interstate 90 on either side of the Cascade crest.

Q: Are there other streams about which you have major concerns regarding proposed pipeline crossings?

A: Yes. The Tolt is a highly dynamic system, and an important salmon and steelhead stream. The Snoqualmie River floodplain would receive a major portion of construction impacts, as would the Yakima and important tributaries including Swauk Creek, where both forested riparian and shrub-steppe plant community impacts and major visual impacts would be unavoidable.

Q: What is your opinion on whether OPL's documents address construction and operational impacts to fisheries resources?

A: Construction and operational impacts to fisheries resources are likely but are not adequately addressed in OPL's documents. Field experts now understand that adverse impacts to normative dynamic stream processes adversely impact resident and anadromous fish populations. These fisheries impacts are statistically much more likely than a spill, since the adverse geomorphic impacts from project construction and operation as described in the Application and supporting documents are very likely and, for many, certain to happen, while a spill is likely to exhibit a lower probability of occurring. Section 3.4 cites a stream crossing sensitivity methodology (page 3.4-108), which is predicated in part on a "Fisheries Utilization Sensitivity Index" (Table 3.4-8), assigns a "Moderate" sensitivity to streams containing resident salmonids, and a "High" sensitivity to streams with anadromous salmonids. No explanation is given for the discrimination between resident and anadromous salmonids, despite the high sensitivity of such

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ESA-listed resident salmonids as bull trout, and the fact that west slope cutthroat trout, which also require excellent water and aquatic habitat quality, are currently being reviewed under the ESA listing process.

The federal Aquatic Conservation Strategy has nine objectives (Application page 3.4-107), all leading with the phrase "[m]aintain and restore…", while the pipeline proposal contemplates riparian habitat destruction, only partial rehabilitation, and long term diminished function for at least 55 stream crossings with anadromous and resident fish, in the Yakima and Snoqualmie Basins. Note that the objectives read: "[m]aintain and restore", NOT "[r]estore and maintain". These nine objectives specifically include "[m]aintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands…" It is patently clear the pipeline cannot be constructed in such a way as to conform to the nine objectives of the Aquatic Conservation Strategy, or its four components:

(1) Riparian Reserves; (2) Key Watersheds; (3) Watershed Analysis; and (4) Watershed Restoration. The proposed actions such as "clearing for staging areas for pipeline construction at these sites will be confined to the minimum necessary," "minimizing sedimentation," directly contradict all nine Aquatic Conservation Strategy objectives expressed in the four components.

Q: Overall, what is your opinion of OPL's efforts to describe project impacts?

A: Despite the mass of narrative devoted to these potential impacts, fluvial processes, riparian ecology, and channel stabilization measures are generally poorly treated in the Application and supporting reports. Acreages of impacted riparian and associated forested, shrub-scrub and shrub–steppe plant community aren't estimated (Page 3.4-105), though they would require several orders of magnitude longer to recover from construction and operation impacts than the wetted channels themselves, where some form of open trenching is proposed. Page 3.4-104 describes adverse impacts to already deficient temperature criteria on six streams, which would result from removing trees in the riparian corridor for pipeline construction, without suggesting any mitigation. Yet, pages 3.4-106-7 cite the Aquatic Conservation Strategy applying

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to USFWS and BLM lands in drainages within Pacific Ocean Anadromy, describe stream crossings which plainly would not conform with this strategy, and do not plainly so state. Plainly stated, the documents aren't good decision tools. Stream crossings must be designed to prevent the possibility of pipeline exposure from vertical or horizontal channel changes in intact and disturbed watersheds, and must employ biotechnical bank stratigraphy reconstruction (stabilization). Monitoring measures and contingency plans must be extended for the life of the proposed pipeline. The proposed project must also describe methods for retiring the pipeline at the end of its economic or operational life.

Throughout the Application, impacts are described as minor, yet the term "minor" is never defined in context, by issue or impact category.

Like the EIS, the Application suffers from a lack of accountable standards for specifying criteria for successful ecological restoration on any of the aquatic, riparian, wetland or upland plant communities which the pipeline would cross, other than agricultural lands. Generally, measures for reestablishing native upland, riparian and wetland plant communities (ecological restoration) demonstrate these plans are only conceptual and reflect a lack of awareness of the costs and complexities associated with design, installation, and long-term monitoring which would be required to achieve success. The Application also fails to address specifically the goals, policies and use regulations of the relevant SMPs, raising concerns that the intent of the SMA will be subverted in the EFSEC process. EFSEC staff aren't practiced in evaluating proposal for consistency with the intent and provisions of the SMA, and evidently, neither are the Applicants or their consultants, based on my review of the Application and supporting documents and the EIS.

DATED this _____ day of March, 1999.

DOUGLASS A. PINEO

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