



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
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July 1, 2008

Mr. John McAvoy, PE, Major Projects Manager
Federal Highway Administration
Western Federal Lands Building
610 E. 5th St.
Vancouver, Washington 98661

05-052-FHW

Ms. Linda Gehrke, Deputy Regional Administrator, Region 10
Federal Transit Administration
915 Second Avenue, Suite 3142
Seattle, Washington 98174

Dear Mr. McAvoy and Ms. Gehrke:

The U.S. Environmental Protection Agency has reviewed the Interstate 5 Columbia River Crossing Project Draft Environmental Impact Statement (DEIS) and Draft Section 4(f) Evaluation. We are submitting comments in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act.

The Columbia River Crossing (CRC) DEIS is a bridge, transit, and highway improvement project proposed by the Oregon and Washington Departments of Transportation (ODOT and WSDOT), Southwest Washington Regional Transportation Commission (RTC), Metro, Clark County Public Transportation Benefit Area (C-TRAN), and Tri-County Metropolitan Transportation District (TriMet) to improve safety and mobility in the I-5 corridor between Portland, Oregon and Vancouver, Washington. The CRC project is focused on a five mile segment of the I-5 corridor from SR 500 in Vancouver to approximately Columbia Boulevard in Portland. The alternatives include the No Action alternative and four multi-modal action alternatives. The action alternatives each contain similar highway improvements, high capacity transit in the form of either Light Rail Transit (LRT) or Bus Rapid Transit (BRT) with several transit alignment and length options, and either replace or supplement the existing bridges over the Columbia River. Each action alternative also improves bicycle and pedestrian facilities, considers tolling on the bridges, and implements transportation system management and demand measures (TSM and TDM).

EPA is generally supportive of this project, however we have concerns about certain aspects of the project as represented in the draft EIS. EPA commends the project proponents for proposing a multi-modal project and tolling along with Transportation System Management and Transportation Demand Management (TSM/TDM) measures. These are positive steps to reduce single occupancy vehicle (SOV) travel as well as to expand, diversify, and help to fund the transportation system. We also appreciate being involved in the InterCEP process, where, to the extent resources allowed, we offered comments regarding several natural resource aspects of the project. Our scoping comment letter of 12/14/05 identified additional points of interest for EPA. As a result of our review, we are primarily concerned about:

- The need for more information about potential impacts to groundwater and the Troutdale Sole Source Aquifer, particularly from pile driving activities in waters containing contaminated sediments, construction in hazardous materials sites, and routine excavation and construction activities.
- The need for project-related air quality analysis, particularly for near roadway concentrations of, human exposures to, and potential health effects from air toxics, diesel exhaust and particulate matter. Susceptible individuals and populations and sensitive receptor locations were not identified, and no mitigation is proposed.
- The need for identification, analysis, disclosure and mitigation for potential disproportionate environmental and human health impacts to low income and minority populations and communities residing in and near the project area.
- The need for more information regarding impacts to aquatic resources, including stormwater and construction-related impacts to water quality, 303(d) listed streams, and subsistence fishing uses.

We have additional concerns regarding the potential impacts resulting from land use changes and reduced travel times. More detailed discussion is provided in the enclosure. Based on the issues identified above, we have rated the EIS and each of its alternatives as EC-2, Environmental Concerns, Insufficient Information. An explanation of this rating is enclosed.

EPA thanks the Columbia River Crossing Environmental Office for meeting with us on June 10, 2008, and we thank the Federal Transit Administration, the Federal Highway Administration, and the CRC Office for the June 18, 2008 conference call with us to discuss environmental justice and related issues. We look forward to continued dialog to resolve outstanding issues. We are hopeful that our continued collaboration will result in a project that offers exceptional benefits for transportation as well as the human and natural environment.

If you have questions or would like to discuss our comments, please contact me at (206) 553-1601 or at reichgott.christine@epa.gov, or Elaine Somers of my staff at (206) 553-2966 or at somers.elaine@epa.gov. Thank you for the opportunity to be involved in this important project.

Sincerely,

/s/

Christine B. Reichgott, Manager
NEPA Review Unit

Enclosures

cc: Ms. Heather Gundersen, CRC Environmental Manager

**U.S. Environmental Protection Agency
Detailed Comments on the
I-5 Columbia River Crossing Draft EIS**

Groundwater

The CRC DEIS has limited information on the groundwater system underlying the proposed project, including information about the federally designated Troutdale Sole Source Aquifer and about groundwater underlying the Oregon portion of the project area. It is important to disclose in the EIS that for a designated Sole Source Aquifer, the Safe Drinking Water Act states that "...no commitment for federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the [EPA] Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health, but a commitment for federal assistance may, if authorized under another provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer."

The Hydrology and Water Quality Technical Report mentions the Sole Source Aquifer and wellhead protection zones within the primary and secondary Areas of Potential Impact (APIs), and indicates that there may be temporary groundwater quality impacts from the construction of roadways or fixed guideways below-grade and close to the water table. The Report also states that the City of Vancouver has designated the entire area within the City boundary as a Critical Aquifer Recharge Area, and that no detailed analysis of the depth to water table within the project area has been conducted.

We are concerned that neither the Draft EIS nor the Technical Reports provide details regarding the physical environment of the aquifer and of the contamination risks. The discussion of potential groundwater impacts is equal in importance to the analysis of potential air and surface water impacts. It is important to provide this information in the EIS along with mitigating measures that will ensure the project is protective of the Sole Source Aquifer. As presented, the EIS does not enable EPA to make an informed evaluation of the potential impacts of the project on the groundwater resource.

Recommendations:

- In the Final EIS, include a section devoted specifically to groundwater, which includes the description of the Affected Environment, the impacts associated with the alternative and alignment options, and the environmental and human health effects of each.
- In the Affected Environment discussion for groundwater, describe the groundwater resources underlying the project area. In order to analyze potential impacts to groundwater and to the sole source aquifer in particular, the following information is needed: a figure that shows water level elevation contours of the area, cross sections depicting aquifer stratigraphy and water level depth, maps of any contaminant plumes known to exist in the area, and maps showing ground water flow directions. The project area should then be overlain on the figures and maps.

- We would suggest that the following information be included in the Environmental Consequences discussion for groundwater:
 - Maps of locations of all existing hazardous materials sites;
 - Maps showing existing ground water contamination;
 - Maps showing existing soil contamination;
 - Indicate whether there is a potential for an existing plume of contamination to be transported to a deeper part of the aquifer system as the holes are dug for the bridge pilings or other structures, or otherwise exacerbate the groundwater contamination issues in the project area;
 - A description of the impacts of the placement of bridge and overpass piers and pilings (indicate if there is a potential for contaminants to be transported from the soil or sediments into the ground water at any of these sites);
 - A map of existing wells, both private and public, and a description of the anticipated impacts on the wells and on the wellhead protection areas.
- Evaluate the groundwater impacts from all the proposed alternatives, including cumulative effects. Include in the ground water evaluation the specifics of existing contamination plume locations and proposed mitigation measures.

Air quality, Mobile Source Air Toxics

Operational impacts: The Draft EIS estimated operational emissions of all air pollutants from mobile sources for the four-county region and from four subareas or highway segments along the I-5 corridor. Based on the projected changes due to EPA regulations and fleet change over time, the EIS concludes (p. 3-277) that year 2030 emissions would be less than current conditions and the differences among alternatives would be unsubstantial. This regional scale air pollutant emissions discussion may be misleading since emissions at this scale do not necessarily correlate with ambient air quality. We believe that the Draft EIS needs to include additional information on the actual air quality effects of the project:

- The focus of the EIS should be on the change in air quality and clearly distinguish between project induced emission changes vs. changes caused by fleet turnover and more stringent new vehicle emission standards.
- The Draft EIS analysis focuses on emission trends that are not influenced by the project. It is difficult to provide meaningful disclosure of impacts of air pollutants through an evaluation of emissions alone. This approach dismisses the air quality impacts at the micro scale, meteorology and prevailing wind direction, topography, proximity of mobile sources to sensitive receptors, and the combined effects of other air pollution sources. The Portland Air Toxics Assessment demonstrates that there are tools available for this type of analysis.

- There is no analysis or disclosure of near roadway pollutants – their composition, concentrations, identification of the sensitive receptor locations and populations, and the associated potential human health effects¹. This information would be particularly relevant to the communities and populations living within approximately 500 yards of the roadway, although the distance may vary depending on traffic and environmental conditions, and are hotspot in nature when there are localized concentrations.

Recommendation: Provide an analysis of project related air quality impacts in the Final EIS that is responsive to the above comments.

Construction impacts: One of the important findings of the Portland Air Toxics Assessment was the impacts of construction sites on micro scale air quality. These air quality effects can be significant. Air toxics emissions, particularly diesel exhaust, are known or suspected to cause cancer or other serious health effects, such as respiratory, neurological, reproductive, and developmental effects.

Recommendation: Include in the air quality section additional information on the duration, nature of, and special extent of construction impacts on air quality. Include a discussion of potential health impacts. Identify the affected populations and sensitive receptor locations.

There are now many opportunities to reduce the effects of project construction. Please see the Clean Construction USA website at <http://www.epa.gov/otaq/diesel/construction/>. At this website are examples of construction mitigation measures not included in the Draft EIS. The website also includes case studies and examples of institutional arrangements for implementing this mitigation.

Recommendation: Augment the construction mitigation measures listed in the Draft EIS to include additional mitigation measures listed on this website, and commit to their implementation.

There is also a Construction Sector within the West Coast Collaborative at <http://www.westcoastdiesel.org>, which is a public private partnership to reduce diesel emissions. The Construction and Distributed Generation Workgroup explores opportunities to share information and/or seek funding for a variety of projects including: using the NEPA review process to require construction emissions mitigation plans; contractual incentives, and providing incentive funding for smaller companies for pollution controls. Projects such as the Columbia River Crossing are encouraged to participate in this Workgroup.

¹ A large number of recent studies have examined the association between living near major roads and different adverse health endpoints. Several well-conducted epidemiologic studies have shown associations with cardiovascular effects, premature adult mortality, and adverse birth outcomes, including low birth weight and size. Traffic-related pollutants have been repeatedly associated with increased prevalence of asthma-related respiratory symptoms in children. Also, based on toxicological and occupational epidemiologic literature, several of the MSATs, including benzene, 1,3-butadiene, and diesel exhaust, are classified as known and likely human carcinogens. Thus, cancer risk, including childhood leukemia, is a potential concern in near roadway environments. For additional information on MSATs, please see EPA's MSAT website <http://www.epa.gov/otaq/toxics.htm>.

Recommendation: Participate in the Construction and Distributed Generation Workgroup to share information, and help to advance additional means to mitigate construction emissions.

Correction to text: A correction is needed on page 3-274, where the text states that “No regional conformity analysis is required for the Vancouver area.”

Recommendation: Revise the above language to state, “No regional emissions analysis for conformity is required for the Vancouver area.”

Environmental Justice

The CRC project would potentially result in direct and indirect impacts to project area residences, businesses, and neighborhoods, which meet the criteria under Executive Order 12898 on Environmental Justice as being inhabited predominantly by low income and minority populations. Affected neighborhoods also include those that have unusually high populations of elderly and disabled residents. Children are also present throughout these communities, but they do not appear to have been accounted for in the demographic analysis of the EIS. Due to the diverse, largely disadvantaged, multi-cultural, and multi-lingual characteristics of the affected populations, neighborhoods, and communities, and because the project has the potential to exacerbate conditions that are currently affecting human health and well being in the project area, EPA believes that extra measures may be necessary to ensure effective public participation and sufficient and appropriate mitigation for project impacts.

We have environmental justice concerns primarily related to human health and safety, which are both project specific and cumulative in nature. These include air quality, noise, and neighborhood safety, particularly for children, the elderly, and the disabled. We also note potential impacts to community resources and the disproportionate economic burden to low income, elderly, disabled, and minority communities posed by current and potential future property impacts, potential human health effects, taxes, and tolls. We believe that that the potential mitigation concepts presented in the Draft EIS may not go far enough to address the magnitude and scope of potential impacts to these disadvantaged neighborhoods.

Our Environmental Justice concerns with the Draft EIS are that:

- The direct and indirect environmental, human health, social, and economic project impacts would likely affect the low income, minority, elderly, and disabled populations disproportionately as compared to populations that reside outside the project area and throughout the region.
- Some potential impacts, that could be significant, are not identified in the EIS.
- Analysis, disclosure, and mitigation for many impacts of the proposed project appear insufficient. As a result, the project may exacerbate conditions that are currently affecting human health and well being in the project area (such as air pollution, noise, financial stress, construction zone traffic, safety hazards, and health effects, potential contamination of drinking water and subsistence food supplies);

- Citizen allegations and documentation indicate that there is concern that the public participation process, while extensive in nature, may not have fully engaged and informed affected populations so that they feel they are well informed, involved, heard, and responded to in project development, implementation, and operation.

Census demographics: Two vulnerable populations are identified in the census demographics exhibit, “disabled” and age 65 or older. There has been no mention of children. The schools, (but not the childcare centers), in the project area were identified but there was no indication of how these vulnerable populations might be impacted by air pollution, noise, diesel construction vehicles, increased traffic, and other activities. Key to the vulnerable population discussion is health information. For example, the asthma rate for the school age population should be disclosed. Specific information of this nature with details on potential impacts can provide a better sense of where the impacts are actually occurring and who, which racial minority, for example, might be disproportionately impacted.

Recommendations:

- In the Final EIS, expand the demographic analysis to include children that would potentially be affected by the proposed project.
- Characterize/provide a baseline description of the existing health within the potentially affected communities and neighborhoods. For example, the following types of information would be relevant and useful: the asthma rate for children and adults, information about the rates of cardio-vascular disease, other respiratory impairments, and premature deaths.

Public involvement: There is not sufficient information in the Environmental Justice (EJ) Section of the Draft EIS to determine the extent and quality of the public involvement efforts. In our discussions with CRC Environmental Managers on June 10, 2008, we became aware of the depth and breadth of outreach and involvement efforts that were not described in the draft EIS. It was clear that an initial mailing of hundreds of post cards informing residents of possible displacements produced surprisingly few attendees at the subsequent public meeting on that subject. While later meetings reportedly saw improved participation, it is not yet clear whether affected individuals were adequately informed or involved. The fundamental question is whether or not the community members are satisfied with the level of participation, quality of information and the responsiveness of the CRC project proponents to their input. We would also like to know more about how the Community and Environmental Justice group evaluates the quality and effectiveness of its interactions and outreach efforts.

Recommendations:

- In the Final EIS, disclose more information about the participation levels and cross neighborhood representation at the various meetings, the concerns of the residents, what was learned in the process of trying to reach and involve diverse communities, and indicate how public input was incorporated into the project and decision making.

Cumulative impacts: Given the importance of cumulative impacts to EJ communities and other on-going and anticipated projects in the CRC project area or nearby, such as expansion of rail infrastructure, port expansions, and other road improvements and projects, a thorough

analysis specifically dealing with EJ implications of cumulative impacts is warranted. The cumulative impacts discussion in the EIS for EJ (p. 3-427) mentions only tolling as a possible negative effect on the affected communities, and implies that because the construction of I-5 in the early 1960s divided neighborhoods and displaced residents that were composed of more minority and low income persons than in Portland and Vancouver as a whole, that the CRC related impacts are comparatively minor and can therefore be dismissed. We do not agree that past impacts of greater magnitude should negate the current and potential future impacts of the communities affected by the CRC project. The E.O. 12898 was issued specifically to address these injustices, with the intent to fully confront the impacts and give a voice to those similarly affected in the future.

Environmental Justice views traditional environmental concerns, such as water quality, open space, and wildlife as connected to social, cultural, and economic life. There should be information in the EJ section that attempts to portray a holistic picture of the impacts on diverse communities.

Recommendation: In the Final EIS, discuss the following issues and any other pertinent examples:

- How the project might impact subsistence fishing by local residents in the project area;
- Whether there is any information on the extent of this kind of activity given the Russian, Vietnamese and African-American populations, the poverty levels and the proximity of shoreline in the project area;
- Whether there are urban creeks in the neighborhoods (such as Burnt Bridge Creek);
- How communities value and use these resources; and
- How this information has been incorporated into our understanding of impacts.

Mitigation: For impacts that primarily affect the neighborhoods and communities adjacent to I-5 and within the project area, particularly the populations of low income, minority, elderly, and or disabled, the potential mitigation measures do not appear sufficient to offset project impacts that are largely born by the most disadvantaged populations in order that substantial public benefits may be derived. Thus, in addition to other mitigation recommendations included in our CRC Draft EIS comments, we suggest a number of ways in which mitigation might be strengthened:

To mitigate the impacts to disadvantaged neighborhoods in the project area, the DEIS discusses potential relocations, such as displaced homes, businesses, and facilities. However, there is no mitigation discussed for impacts associated with partial takings that do not result in full displacement, or for impacts such as encumbered home sales and business leases due to potential project impacts. A means to mitigate these impacts should be discussed and developed with those affected.

For noise impact mitigation, residential sound insulation is mentioned as an FTA-allowed measure, but not traditionally funded by FHWA. Only noise walls were deemed feasible and reasonable by FHWA and appear as the only likely mitigation to be offered. We recommend including the FTA residential sound insulation mitigation measures, and other measures that would be appropriate and feasible, including, but not limited to, the planting of vegetation.

The potential mitigation listed for CRC tolling impacts do little to alleviate these financial impacts. Reduced rate transponders are not very helpful for those who cannot afford to own a car. Considering the scope of current and additional impacts being borne by the affected neighborhoods, it would seem appropriate to offer the low income residents free fare transit passes, and reduced fare passes to other affected residents.

The Delta Park transportation project in Oregon provided the affected low-income and minority communities with community enhancement funding. The communities do not administer the funds, but they select the projects that would be of benefit to their respective communities. This is a positive form of mitigation that could be provided in the affected Vancouver and Portland neighborhoods.

Disabled and elderly individuals could be especially impacted by project construction within their neighborhoods, and by increased traffic accessing Park & Ride facilities located in or near their communities. To mitigate safety hazards to disabled and elderly pedestrians, it would be helpful and appropriate to provide shuttle services to meet their transportation needs both during project construction and to access public transit once the project is operational.

Recommendation: Adopt these mitigation measures and/or others not listed here that are recommended by concerned individuals and organizations, to lessen the existing CRC project-related, and cumulative impacts on the affected communities.

Aquatic resources

Water quality and stormwater: The DEIS states (p. 3-384,385) that between 35 to 38 acres of untreated impervious surface would remain for each build alternative, and refers the reader to the CRC Conceptual Design Stormwater Report for a discussion of applied guidelines. It would be helpful to include an explanation as to why the remaining 35-38 acres would be untreated. It would also be helpful to know how stormwater would be treated and managed on the replacement or supplemental bridges.

The DEIS also states (p. 3-385) that Burnt Bridge Creek and the Columbia Slough could have increases in certain pollutants as a result of the CRC project compared to current conditions. The existing conceptual stormwater design would result in increased loads of dissolved copper in both of these 303(d) listed water bodies, and it is not stated whether or not other pollutant loadings would also be increased. On page 3-386, pollutant loadings are provided but effects on water quality and pollutant concentrations in water bodies are not quantified/estimated.

Construction impacts and stormwater pollutants would further degrade Burnt Bridge Creek, which flows into Vancouver Lake. Area residents, particularly people of low income, commonly fish in Vancouver Lake for subsistence. The DEIS does not disclose this or discuss the potential human health effects from this potential environmental consequence of the proposed project.

Recommendations:

- Provide a description of the stormwater treatment/management design in the Final EIS. Disclose the fate of stormwater from the remaining 35 to 38 acres of impervious surface, and describe how stormwater would be managed on the new proposed bridges.
- Disclose the environmental consequences of project specific and cumulative stormwater pollutants upon all project area water bodies, including Burnt Bridge Creek, Columbia Slough, and Vancouver Lake. Discuss the potential human health effects from swimming and fishing activities in Burnt Bridge Creek and Vancouver Lake from project specific and cumulative pollutants.

Wetlands and waters of the U.S: The DEIS, page 3-367, states that the Stacked Transit Highway Bridge (STHB) design would avoid more wetland acres of fill than the replacement design and would have 18% less structure in the Columbia River, although more smaller piers may be added to support this design (p. 3-372). The STHB design would also decrease the pollutant load in stormwater slightly more than the other bridge alternatives. It appears that the STHB design could potentially be considered to be the Least Environmentally Damaging Practicable Alternative (LEDPA), but the DEIS does not address this issue.

Recommendation: Consult with the Corps of Engineers and EPA to ensure that proposed actions will comply with legal requirements, including the Section 404(b)(1) guidelines, determination of the LEDPA, and to discuss conceptual mitigation plans. Include a discussion of these issues in the Final EIS.

The Draft EIS (p. 3-336) states that the Vanport wetlands connect to a wildlife corridor to the west that has few development interruptions. These wetlands are connected to other large remnants of the floodplain wetland system, which increases its value to wildlife needing larger habitat areas. Currently, large numbers of ducks, geese, swallows, and other migrating birds use this habitat.

Recommendation: Due to their high value wetland functions and connectivity, impacts to the Vanport wetlands and to their connections within the floodplain wetland system should be avoided.

Impacts to the Columbia River: The Draft EIS provides little information regarding the logistics and impacts involved with demolition and/or construction of new bridges and other project components on the Columbia River. Consequently, the impacts of construction and the need for mitigation are not sufficiently disclosed in the EIS.

Recommendation: In the Final EIS, disclose the nature, timing, and duration of any habitat modifications or impacts, such as dewatering, loss of riparian areas, bank hardening, debris and pollutant loadings, or other impacts, that would be necessary or likely as a result of project construction and demolition activities.

Noise and vibration – impacts on fish and aquatic wildlife: The DEIS, p. 3-314, indicates that noise from pile driving in deep water at 150 ft from the source can reach 190 dB, and that fish are killed or injured at 180 dB and above. While attenuation is quicker in shallow water,

there is no explanation of how deep is deep, or how shallow is shallow. There is also no disclosure about the likely effects on the protected species and species of concern listed on p. 3-340 of the Draft EIS, which includes numerous fish species and two species of marine mammals, or on diving birds, from the project construction. Mitigation measures such as bubble curtains are mentioned, however, there is no explanation of the effectiveness of mitigation.

Recommendation:

- Include in the Final EIS information about the anticipated impacts on fish and wildlife in the project area, and beyond the project area, from noise and vibration during project construction, operation, and maintenance.
- Discuss potential mitigation measures and their effectiveness, and include mitigation commitments.

Impacts of Land Use Changes and Reduced Travel Times

The DEIS indicates that land use changes and growth are anticipated, both as a result of local planning and as a result of this project. Some growth will be concentrated near transit stations (transit-oriented development or TOD) and some growth may occur at the margins of urban growth boundaries as a result of reduced travel times. Neither the Land Use section nor the Cumulative Impacts Section discuss the potential impacts of growth on natural resources such as air and water quality.

Replacement Crossing Alternatives propose to double the number of highway lanes from six to twelve. EPA is concerned that roadway expansion of this magnitude, even with tolls and transit, may stimulate travel demand for use of privately owned vehicles (POVs), and may contribute to pressures for dispersed development.

In the Land Use Section (p. 3-135), the DEIS indicates that the analysis of potential induced growth was performed using a comprehensive literature review and comparative analysis of case studies. While this can be a helpful approach, we believe that additional analysis is merited for a project of this magnitude and importance for the region. We could agree in principle with the conclusions of the analysis that having a centralized urban core with good public transit, zoning, and transit oriented development would tend to foster maintenance of the urban centers and help to minimize dispersed development. However, the recent and current trends in land use and growth, particularly in the Vancouver area (see *The Columbian*, 5/16/08 article by Michael Andersen: “Growth board rules in favor of preserving farmland”), provide a stronger indication of the growth pressures and patterns that may be expected with the significant transportation improvements proposed by the CRC project, and in combination with other significant transportation improvements along I-5 and near the project area that are listed in the Draft EIS. We think more work is needed to evaluate the travel and land use change that would be stimulated by these individual and cumulative projects, and their associated impacts upon air, water, and land resources, as well as their socio-economic and human health effects.

Stimulated travel, dispersed development, and loss of natural resource lands may also be at odds with the Oregon and Washington Governors’ goals for reducing greenhouse gas emissions. While tolls and transit would soften these effects, there is insufficient analysis and

disclosure in the DEIS to compare the Supplemental (8 traffic lanes) and the Replacement (12 traffic lanes) Alternatives with respect to their potential to stimulate travel and growth and their associated impacts to air, water, and land resources, including climate change. It seems logical to expect that some degree of congestion, such as may result from the more moderate I-5 expansion proposed in the Supplemental Alternatives, would likely encourage greater use of alternative travel modes (which is anticipated in the Supplemental Alternatives as proposed), and affect discretionary travel decisions.

Recommendations:

- In the Final EIS, include a discussion of potential impacts of growth on air and water quality.
- Consult the FHWA web page for additional methodologies to evaluate the indirect effects of stimulated travel and growth. Results should reveal changes in travel behavior and the likely destinations/locations of eventual land use change.
- Seriously consider selecting a preferred alternative that places less emphasis on the expansion of I-5 and more emphasis on the provision and use of public transit, bicycle and pedestrian modes, and on TDM and TSM strategies.

Ecological connectivity, wildlife

We fully agree with the statement on page 3-336 of the DEIS that I-5 is an important barrier to wildlife passage for land-based species, and that the existing underpasses and stream crossings on I-5 provide for some connectivity, but they are not well-suited to or designed for wildlife movement. Substantially widened highway and bridge facilities with higher traffic volumes and speeds would present additional safety hazards for motorists and wildlife, and would exacerbate and the impassable nature of I-5. To improve human and wildlife safety and prevent wildlife-vehicular collisions, maintain biodiversity, and provide corridors that contribute to regional adaptation to climate change, we believe that all possible opportunities be taken to improve the permeability of I-5. For the same reasons, it is important to take this opportunity, as suggested on page 3-353 of the DEIS, to re-establish or improve riparian features along the Columbia River and its associated water bodies wherever feasible as a form of mitigation for past and current project-related environmental impacts.

Ecological connectivity is a broader concept than wildlife movement in the landscape. It includes the connections and interactions between land and water, the transfer of water, wood, soil, nutrients, genes, species, and related processes. For example, ecological connectivity is impaired when a stream is channelized and separated from its flood plain; when shoreline structures or bank armoring block sediment flows and shoreline enrichment processes; when dams are built or culvert installation block fish passage; when wetland fills or impervious surface prevent ground water aquifer recharge; when hillslope cuts breach seepage areas, springs, or underground aquifers; and when aquatic habitat hydrological alterations and development interfere with surface water/ground water interactions and riverine hyporheic zones. Environmental impact assessments need to focus much more on identifying these connections and the consequences of severing them; project design should incorporate the means to preserve and restore them.

As discussed in the DEIS, bridges also provide habitat for wildlife, such as the swallows and peregrine falcons that inhabit the existing bridges. Replacement or supplemental bridge design could and should also incorporate features that would provide needed wildlife habitat.

Recommendations:

- Consult with ODFW and WDFW, USFWS, and NOAA Fisheries, tribes, and interested/concerned non-governmental organizations regarding the opportunities, needs, locations, number, and design of wildlife crossing features and improved hydrological and fish passage structures that could be incorporated into the design of the CRC project.
- Consult with these same entities and other relevant landowners regarding the potential for riparian area re-establishment and improvement along the Columbia River and its associated water bodies as a form of environmental mitigation for project-related impacts.
- Consult with the above agencies and relevant interest groups, such as Bats International, Audubon Society, and other wildlife organizations regarding bridge and highway design features that would provide wildlife habitat. Include discussions regarding management of roadside vegetation to either attract or detract wildlife from the roadways and guideways as appropriate.

Financial analysis

The EIS provides helpful discussion of economic and financial related issues. There remain a few items that we believe would contribute to a better understanding of the project's impacts and feasibility:

Ensuring fair distribution of benefits and adverse effects: Mitigation for tolls is discussed in the EIS (p. 3-179), however that mitigation should be strengthened to provide meaningful mitigation for adverse financial effects to low income residents (see comments on Environmental Justice above). The impact from potential sales and property taxes to the affected populations in general, and particularly to those segments of the population that would fall within the Environmental Justice discussion, have not been addressed.

Recommendation: Include a discussion of potential sales and property taxes that may be imposed to finance components of the CRC project. Disclose what these taxes would be used for, and what the potential economic impacts would be, particularly for low income communities and residents. Express the economic impacts in relevant terms, such as, per capita costs per year.

Finance plan: In Section 4.2.1 the EIS states that "A finance plan will be developed during the FEIS stage and will incorporate both the FHWA and FTA methodologies." An issue relevant to the inclusion of a finance plan is a project's financial feasibility, as mentioned in the DEIS's Project Abstract (p. iii). We note that this approach does not allow reviewers and the public the opportunity to compare alternatives' financial feasibility at the DEIS stage in order to inform the choice of alternatives.

We believe that sufficient information should currently be available, with the necessary caveats and assumptions, that can form the basis for a Draft EIS stage Financial Plan appendix, for the purpose of addressing project financial feasibility issues. The project's four action

alternatives lend themselves to facilitating the inclusion of a preliminary financial feasibility analysis in that there is little substantial variability among them. The analysis could also use sensitivity analysis to address issues where variability would have to be considered

Recommendation: Include sufficient and necessary financial information, if possible, in a document for public review prior to issuing the FEIS. This could be accomplished by using the approach and formats suggested in FTA's *Guidance for Transit Financial Plans*. The *Guidance* is based on currently available information.

Business mitigation measures: Loss of revenue to a displaced business is an adverse effect resulting from the project, particularly within the low income and minority communities. These impacts should be evaluated and steps should be taken to mitigate these impacts.

Recommendation: Include in Section 3.4.5 a discussion of loss of revenue to businesses and what mitigation could be anticipated as part of the relocation assistance program.

Hazardous Materials: The DEIS (p. 3-406) indicates that 427 potential hazardous materials sites were identified within 500 ft of the project area. Of these, 31 sites ranked as potentially high risk. The Marine Drive south alignment is located adjacent to the Harbor Oil Superfund site on North Force Avenue where petroleum, PCBs, pesticides, and other hazardous materials are located. In the Draft EIS, it is unclear whether the identification, site assessment, liability investigations, and clean up of hazardous materials sites have been factored into construction schedules and cost analyses. Detailed investigations have not occurred, but are needed to estimate environmental hazards, human health risks, cost and time needed for clean up and subsequent project construction.

Recommendation: Disclose whether the project construction schedule and cost estimates have factored in the site assessment, liability investigations, and clean up of the hazardous materials sites that would be encountered during project construction. If not, provide an estimate of time and costs associated with the cleanup of these sites and include these in the project financial analysis.

Tribal consultation

We commend the CRC project for their efforts to consult with Native American tribes, and for being responsive to their request to avoid upriver bridge placement to avoid potential burial grounds. We also commend the project proponents for their discussions with tribes regarding plants and animals of cultural significance as traditional food, craft, and medicinal sources. The DEIS, however, does not indicate whether anything would be done to protect or enhance these resources.

Recommendation: Clarify in the Final EIS how the information provided by the tribes regarding traditional food, craft, and medicinal sources will be used in project planning and implementation.

EIS Document Design

Unusual features of the CRC DEIS are that it provides only a rudimentary Table of Contents, but at the beginning of chapters, provides a listing of chapter subjects and sections. We think that a more traditional approach of providing a complete Table of Contents would facilitate the review of this large EIS. The reader is also frequently referred to the Technical Reports on each subject for more information, as the analytical information in the DEIS often seems minimal to cursory. It is customary to include all important information, including a description of assessment methodologies, in the main document, the EIS, and reserve unnecessary details for the appendices for those who simply desire more detailed information. By relying heavily on the readers' use of the Technical Reports for each subject, the EIS may not sufficiently inform the reader as a stand-alone document, and through its reliance on the Technical Reports may become "encyclopedic" in nature.

Recommendations:

- Include a complete Table of Contents in the Final EIS.
- Incorporate more information from the Technical Reports to sufficiently inform the public and decision maker about the assessment and analytical methodologies and results in order to sufficiently support conclusions made in the EIS.