

Final Environmental Assessment

Wallooskee-Youngs Confluence Restoration Project

Bonneville Power Administration
DOE/EA-1974
July 2015

This document is the Final Environmental Assessment (EA) for the proposed Wallooskee-Youngs Confluence Restoration Project. This document has been prepared as an abbreviated Final EA because there have been no substantial changes to the proposed action, alternatives, or environmental analysis presented in the Draft EA. This abbreviated Final EA provides changes made to the text of the Draft EA, as well as comments received on the Draft EA and Bonneville Power Administration's (BPA) responses to the comments. This Final EA should be used as a companion document to the Draft EA (DOE/EA 1974, December 2014), which contains the full text describing the project, its potential environmental impacts, and mitigation measures to reduce impacts. For readers of this Final EA who do not already have a copy of the Draft EA, it is available on the project webpage at www.bpa.gov/goto/WallooskeeYoungs.

Summary

Bonneville Power Administration (BPA) is proposing to fund the Wallooskee-Youngs Confluence Restoration Project. The project would restore a tidal marsh in the Columbia River estuary to improve salmon and steelhead habitat.

BPA released the Draft EA for the Wallooskee-Youngs Confluence Restoration Project on December 29, 2014 for public comment; the comment period ran through to January 28, 2015. BPA sent the Draft EA to agencies and interested parties and notified other potentially affected parties about the availability of the document, as well as how to request a copy.

Changes to the EA

A number of minor changes were made to the Draft EA and are presented below by the chapter and section in which they appear in the Draft EA. The majority of the changes are related to providing clarifying information that was not available during the development of the Draft EA. Where text has been modified, the original text is provided in context of where it was published in the Draft EA with deletions shown as strikethrough and additions underlined. Simple changes carried through the entire document are summarized.

Changes to Chapter 2 – Proposed Action and Alternatives.

The infrastructure ownership within the project area has been revised, section 2.1.1., and the change made throughout the EA:

The overhead cable line located along OR 202 is owned by Charter Communication, not Frontier communication as referred to in the Draft EA. Frontier has been changed to Charter Communication throughout the EA.

The ODOT infrastructure protection has been revised in section 2.1.2.1 on page 2-7:

A sheet pile wall and a short section of earthen berm would protect ODOT infrastructure (OR 202) from wind-derived wave energy and surface water (Figure 2-2 and detailed in Figure 2-3). Additionally, riprap (0.5 to 2-foot diameter rock) would be placed along the ODOT infrastructure protection elements to protect against erosion from waves. The sheet pile wall would be approximately ~~810~~ feet tall on the waterward (south) side and extend a maximum of 5 feet above the road grade of OR 202 with a guardrail on the interior. The sheet pile wall would extend along OR 202 for a total length of approximately 800 feet. The sheet pile wall's height would be approximately 4 to 5 feet above the road grade of OR 202 for 500 feet and would gradually decrease for the remaining 300 feet as the road climbs the upland knoll to the southeast. The northwestern end of the sheet pile wall would tie into a short earthen berm approximately 250 feet long. ~~The sheet pile wall extent approximately 500 feet, at an elevation of 4-5 feet above the road surface and gradually decreases in height as the road climbs up the knoll.~~

The project would also require re-routing a roadside ditch that receives runoff from OR 202 and upland areas. The ditch routes runoff along the landward (north) side of the highway and under the highway via a cattle pass into the ditch network within the project area (Figure 2-3). The clearance within the cattle pass has been reduced by siltation and functions primarily as a water conveyance. The cattle pass has not been utilized as a livestock crossing in many years by the current or previous property owner. The concrete cattle pass would be sealed to prevent tidal waters from extending under OR 202 and beyond. The cattle pass would be sealed at both ends with plugs of poured concrete or soil – a hole would be cut into the top of the cattle pass and concrete slurry would be poured from above to fill it. As it is within the ODOT right-of-way, ODOT has agreed to this approach. To facilitate drainage of the highway and upland areas, the ditch would be re-routed to flow towards the northwest and remain landward of the highway. Two new culverts would be installed ~~under roadways~~ to manage stormwater from OR 202 (See Figure 2-3.). One culvert would be installed under OR 202 to drain the area between OR 202 and the sheet pile wall. The other culvert would be installed under the northwestern access road to the tile shop to allow water that previously flowed through the cattle pass to drain towards to the Crosel Creek tide gate.

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ODOT has approved (Tardif pers. comm. 2014) this design approach and would issue a use permit when design approval is complete. If required by ODOT, a long-term maintenance easement would be established or adjustments to the right-of-way designation would occur to assure long-term maintenance of the ODOT infrastructure protection elements. A five year performance period may be required by ODOT to assure that the infrastructure protection does not adversely affect OR 202 and would be outlined in the use permit granted by ODOT. To address higher than anticipated costs associated with the OR 202 highway protection measures following development of the Draft EA, Falling Springs has been pursuing cost share opportunities with ODOT and other entities.

The infrastructure protection along OR 202 included in section 2.1.2.1 (page 2-9, fifth paragraph) has been revised as indicated below:

The above-ground Pacific Power and ~~Frontier~~ Charter Communications overhead utility lines and poles along OR 202 ~~may~~ would be relocated to the northeast side of OR 202 ~~or upgraded~~ to allow for construction of the highway protection measures and protect the utilities. Two Century Link communication lines buried within the OR 202 right-of-way would be abandoned in place and replaced with new lines run on above ground utility poles on the northeast side of 202. ~~If necessary, the project would also move or reinforce the Century Link conduit and communication line buried within the OR 202 right-of-way.~~

The invasive species control section included in section 2.1.2.2 (page 2-13, second paragraph) has been revised as indicated below:

During construction, invasive species would be controlled through mechanical removal or herbicide along the levee and ~~with herbicide~~ in the tidal marsh, waterward of the levee. Non-native and invasive species within the levee-protected floodplain would be controlled upon project completion through exposure to tidal conditions. Invasive species in the riparian buffer would also be mechanically removed or treated with herbicides during construction. Removing vegetation along the levee and exposing the remaining levee area to tidal exchange would help reduce re-colonization of invasive species along the remnant levee sections.

The construction phasing in section 2.1.3 (page 2-20, paragraphs 3 and 4) has been revised as indicated below:

Phase 1B: Entails modifying channels, filling linear ditches and borrow ditches, disking the farm road network, and seeding all areas of soil disturbance with native grass seed ~~as they~~ the areas are brought to final grades (Figure 2-6). Remaining work from phase 1A may also occur.

Phase 2A: Entails clearing invasive vegetation from the levee, removing riprap from the levee, placing the cleared plant material and riprap into the bottom of the borrow ditch, and topping it with excess channel spoils from Phases 1A and 1B to bring the ditch to a final grade (Figure 2-7). Remaining work from phase 1A or 1B may also occur.

The second paragraph in the no action alternative (page 2-20) has been revised as indicated below:

Under the No Action Alternative the levee would continue degrading due to lack of maintenance and natural processes. It would likely breach during a high water or storm event, causing waters to flood into the site. The uncontrolled flooding of the site would put at risk the reliability of the BPA transmission system and prevent land access for maintenance or repairs. OR 202 would also be put at risk through exposure to tidal inundation without appropriate protection measures. If the levees were left to deteriorate and not immediately fixed, the site would transition to a tidal marsh ~~although~~ with a degraded ditch and limited relic channel network that would ~~not~~ provide limited habitat value. Emergency actions involving in-water work may be necessary to fix levee breaches. These actions could impact listed fish species through construction activities as well as by isolation of fish behind the levee network once the emergency action ~~is~~ was completed.

Changes to Chapter 3 – Affected Environment and Environmental Consequences

Table 3-1 in section 3.3.1.1.2 on page 3-10 has been revised as shown below:

Table 3-1. Invasive Plants Occurring within the Project Area

Species	Distribution	Weed List
Himalayan blackberry	Abundant throughout site	B N/A
Scotch broom	Limited – small patch on uplands near OR 202	B
Reed canarygrass	Abundant throughout site in levee-protected floodplain <u>along ditches and in the northern portion of the project</u>	N/A
Common reedgrass	Occasional - patches scattered throughout tidal marsh	B
English ivy (<i>Hedera helix</i>)	Limited – small patch on levee	B
Bull thistle	Common – scattered throughout site	B
Yellow flag iris	Limited – small patch riverside of the levee in the tidal	B
Purple loosestrife	Limited – small patch riverside of the levee in the tidal	B

The invasive plants construction effects have been revised in section 3.3.2.1 (page 3-14, last paragraph):

Invasive species are expected to decrease in cover as a result of the vegetation clearing during construction. Invasive species control would be achieved via mechanical (~~levee~~) and chemical control (~~tidal marsh outside of the levee~~), planting of native species, and implementation of a hydrological regime unfavorable to most invasive species in the project area. Existing invasive species present in the tidal marsh outside the levee are limited to less than 1-acre and would be controlled with herbicide or mechanically with hand tools or heavy equipment positioned on the levee or on wood mats or steel plates in the tidal marsh during construction to help prevent these invasive species from colonizing the restored area.

Wetland impacts have been further quantified in section 3.3.2.1 (page 3-15, wetlands section):

Wetlands would be temporarily impacted by construction activities in the pasture grass-dominated levee-protected floodplain, tidal marsh, and ditch vegetation communities. Construction impacts would occur within Wetland 1 related to vegetation disturbance from construction of tidal channels, filling ditches, and construction of the infrastructure protections. However, the wetland would ultimately increase in function as it forms a contiguous tidal marsh across the project area after construction is complete. Project implementation would convert 1.31 acres of Wetland 1 to uplands through the development of the BPA low-water access road (0.31-acre) and landings (1-acre). The low-water access road and landings have been designed to avoid and minimize impacts to wetland functions by maintaining hydrologic connectivity across the site, and minimizing the infrastructure footprint. Approximately 0.45 acres of Wetland 1 would be affected by riprap application during the ODOT infrastructure improvement work. In addition, approximately 8.41 acres of freshwater wetlands would be converted to tidal channels through the restoration of the tidal channel network and 9,202 linear feet (approximately 2.5 acres) of ditches within Wetland 1 would be filled and restored to tidal marsh.

Disturbance to Wetland 2 from excavation of the pilot channel within the wetland would be minimized to the extent practicable by using a work platform made of steel plates or wood mats for equipment. The pilot channel would result in impacts to 0.13 acres of tidal wetlands. Approximately 6 acres of uplands would be converted to tidal wetland and channels by lowering the existing levee (which is made of locally sourced soil) to 8.5 feet in elevation to develop wetland conditions and excavating tidal channel connections.

Wetland 3 would be graded, partially filled, and converted to a flat bottom, low gradient ditch designed to provide water quality treatment. ~~W~~ The entire 0.1 acre wetland 3 would be fully converted to “non-wetland ditch”, but the water quality functions would be retained by the broad, flat, low gradient ditch design that would allow for the filtering of runoff.

A typographical error has been corrected in the water resources no action alternative section 3.4.3 (page 3-23).

Under the No Action Alternative the floodplain capacity would not be increased and water quality would not be improved. Current hydrology, floodplain, and onsite degraded water quality conditions would continue. Pasture grasses would dominate the vegetation community, and sediment delivery to the Youngs and Wallooskee rivers and export of phosphorous, nitrogen, and organic matter would remain near current levels. There is the potential that the existing levee would erode over time and, without the OR 202 protection measures proposed in the Action Alternative, the highway and BPA transmissions towers, and potentially the land beyond it, would be subject to more frequent flooding.

Clarification has been added to section 3.11, transportation, regarding where effects to water related transportation is analyzed (page 3-70).

This section describes the potential effects of the Proposed Action on transportation. The analysis area for transportation includes all roads within the project area and roads that would be used to access the project area. Effects to water transportation associated with travel and recreation are addressed in section 3.4, Water Resource.

The caption for photograph 3 on page 3-55 in section 3.8.1.3, in aesthetics and visual resources, has been revised as indicated below to focus on specific information about the visual impacts in section 3.8.2.2.

Photograph 3. View across OR 202 from the northern tile shop driveway entrance looking southwest into site. BPA towers are visible in background. The sheet pile wall along OR 202 will extend approximately five 4 to 5 feet above the road surface elevation in this area.

Additional analysis has been added to section 3.8.2.2 in aesthetics and visual resources regarding the final design for the sheet pile wall along OR 202 (Page 3-57, second paragraph).

The sheet pile wall would add an industrial element to the northern border of the site, visible as a long, but narrow, linear feature adjacent to the site. The sheet pile wall would be adjacent to OR 202, an existing linear manmade landscape feature and would blend into this feature when viewed from a distance. The properties to the south and west of OR 202, on the other side of the Wallooskee and Youngs rivers, would not likely be impacted due to the distance (0.8 mile) from the sheet pile wall. The exposed portion of the sheet pile wall, below OR 202, would be visible from within the project area or the Youngs River (greater than 0.3 mile away). The wall would also be visible from OR 202, and may block views for some motorists into the project site, as it would extend up to five feet above the road surface elevation along approximately 500 linear feet of OR 202. The sheet pile wall would extend along OR 202 for a total length of approximately 800 feet. The sheet pile wall's height would be approximately 4 to 5 feet above the road grade of OR 202 for 500 feet and would gradually decrease for the remaining 300 feet as the road climbs the upland knoll to the southeast. Photograph 3 shows the view from the northern tile shop driveway entrance along OR 202 into the project area. This photograph is located in the area where the sheet pile wall would extend 4 to 5 feet above the road grade. This is the low point of OR 202 and in this area the sheet pile wall would extend 4 to 5 feet above the pavement. A portion of the sheet pile wall would be screened by a guard rail; however, it is expected that the wall will would limit the views into the site for some motorists and patrons of the tile shop. A cross section depicting the maximum visual impact to motorists along OR 202 from the sheet pile wall is provided in below in Figure 3-4. The potential visual impacts of the sheet pile wall are considered moderate, since views of the wall are would be limited due to distances but views into the site from OR 202 would be impaired.

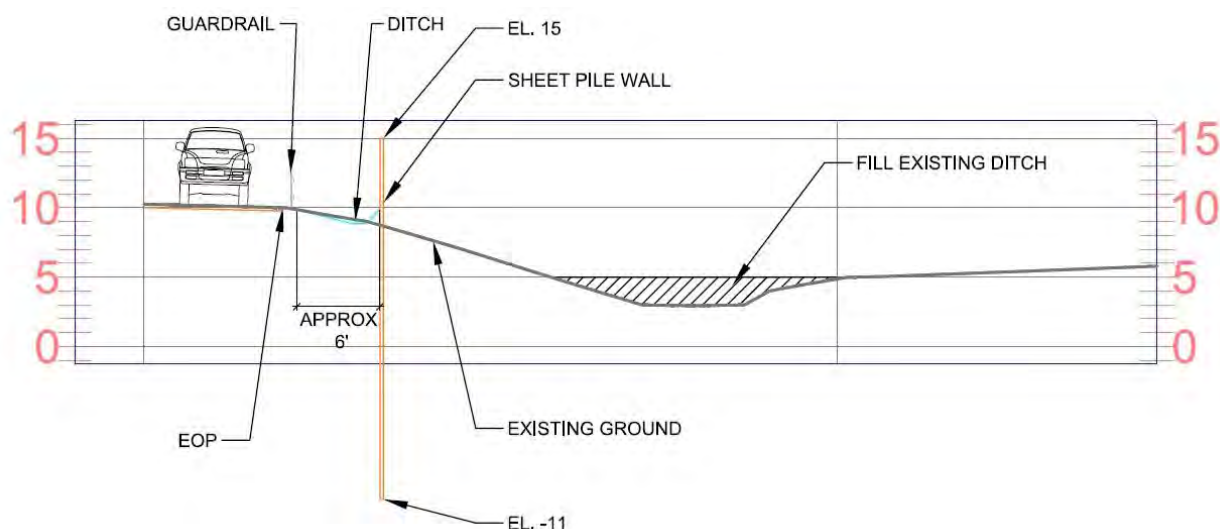


Figure 3-4: Cross Section Depicting Visual Impacts to Motorists Along OR 202

Public Comments

This section presents comments received on the Draft EA and responses to those comments. Comments were received via letter, comment form, and on the [Project webpage](#). The official public comment period was from December 29, 2014 to January 28, 2015.

BPA received comments from seven entities in writing through comment forms and letters. Each comment submittal was given an identifying number that corresponds to the order in which the submittal was logged into BPA's comment file. Table A-1 provides the comment submittal number and the associated author and affiliation.

Table A-1. Public Comments on the Draft Environmental

Comment Number	Comment Author / Affiliation
WYCRP14 0001	Pace / public
WYCRP14 0002	Rogers / landowner
WYCRP14 0003	Hellberg / public
WYCRP14 0004	Davis / landowner
WYCRP14 0005	Hogan / landowner
WYCRP14 0006	Ryan / public
WYCRP14 0007	Heiner / public

Comment WYCRP14 0001

BPA lacks authority to draw down and divert ratepayers' contribution to the Bonneville Fund for the Wallooskee-Youngs Confluence Restoration project unless it can be shown that the operation of the Federal Columbia River Power System has some specific nexus to the adverse impacts on fish and wildlife. Put somewhat differently, Bonneville is neither obligated nor authorized under the Northwest Power Act to provide mitigation for impacts authorized by state and local planning authorities that

allowed development of wetlands subject to tidal influence. Under the Northwest Power Act, the Administrator must confine mitigation activities to fish and wildlife enhancements that mitigate for the development and operation of the Federal Columbia River Power System. To the extent that state and local authorities and/or the U.S. Army Corps of Engineers, are the entities responsible for land use planning and development of wetlands, they are the entities—not ratepayers—that are required to undertake mitigation measures. To do otherwise, regardless of how laudable the potential improvements in survival of listed species might be, would violate the prohibition in the Northwest Power Act against providing “in lieu” expenditures. As an aside, I note that the Cowlitz Indian Tribe may soon be in a position to provide substantial funding for such restoration projects out of revenues it receives from gaming operations.

Response to Comment WYCRP14 0001:

Thank you for your comment. The proposed project would help mitigate the effects of the FCRPS on fish and wildlife. Witness, for example, section 1.2 of the EA which notes how the project would generate survival benefits to help offset the adverse effects of the FCRPS on salmon and steelhead listed for protection under the Endangered Species Act. Indeed, the project was developed specifically to aid BPA in fulfilling both its Endangered Species Act section 7 and Northwest Power Act mitigation responsibilities. No part of this project has been proposed or justified as being in any way “mitigation for impacts authorized by state and local planning authorities.” And no other entity is legally authorized or required to implement the project; therefore, BPA funding for the project would not be “in lieu of” mitigation required of other entities.

In addition, detailed information on the statutory context and how the project supports the obligations under the Northwest Power Act is provided in section 1.3.1 of the EA. The Northwest Power Act requires BPA to fund fish and wildlife protection, mitigation, and enhancement actions consistent with the Northwest Power and Conservation Council’s (Council) Fish and Wildlife Program. Under this program, the Council makes recommendations to BPA about which fish and wildlife projects to fund. The proposed project is part of the Cowlitz Indian Tribe Restoration Program, which was reviewed by the Council and the Independent Scientific Review Panel in November 2013. The Council recommended that BPA fund the Cowlitz Indian Tribe’s Program as a fish habitat enhancement project intended to mitigate for the development and operation of the Federal Columbia River Power System.

Comment WYCRP14 0002

Please have your studies look at:

Channel depth at the mouth of the Wallooskee river

WYCRP14 0002a

Increase in mosquitos and West Nile virus

WYCRP14 0002b

I need more information about:

Will this property be open for hunting and fishing

WYCRP14 0002c

Deer and elk using land that has been under water and flooded most of the time

WYCRP14 0002d

I have these other comments:

I have a boat dock on the Wallooskee river. I am concerned that the channel will fill in from changing the river flow direction.

WYCRP14 0002a

This property is winter range for our local deer and elk they will lose it if it is under water.

WYCRP14 0002d

Response to Comment WYCRP14 0002a:

Thank you for your comment. As discussed in section 3.4.2.2 of the EA a hydrologic analysis was conducted for the project to address concerns such as sediment deposition within the Wallooskee River. The *Hydrodynamic Modeling Assessment*, prepared by Environmental Science Associates in October 2014, specifically included analyzing potential changes in sedimentation patterns at private boat docks located along the Wallooskee River and at the river mouth. This modeling was conducted to address concerns received during the public scoping period. A modeling location at the pile supported dock at mouth of the Wallooskee River was specifically chosen to analyze the potential for increased sedimentation at the private docks and at the river mouth. The model included a full range of hydrologic scenarios (dry season, wet season, 100-year flood, and highest observed flood) for both the existing and restored conditions. Differences in water velocities and sheer stress (a measure of deposition and erosion potential) under these varying conditions were examined to analyze the potential for long term changes in sedimentation patterns.

Model results indicate that implementation of the project would not change the water flow direction or quantity within the Wallooskee or Youngs rivers. Restored conditions either resulted in very little (only at the 100-year flood events) to no change (in regular wet season conditions) in velocity or sheer stress within the Wallooskee River. The negligible or small changes observed in the model suggest that sedimentation patterns at the private dock locations and at the mouth of the Wallooskee River would not likely change as a result of the restoration project. Therefore the Wallooskee River mouth and the pile-supported floating docks south of the project area do not appear to be at risk for increased sediment deposition due to implementation of the project. In summary the model results indicate that project implementation is not expected to measurably change water depths or sedimentation patterns within the Wallooskee River (ESA 2014).

Response to Comment WYCRP14 0002b:

The potential for change in mosquito production as a result of the proposed project was included in section 3.10.3.2.2. The restoration elements have been designed to ensure adequate drainage and/or tidal flushing within the site, both to prevent fish stranding as tide waters recede and to ensure mosquito breeding habitat, characterized by stagnant pools of water, is not inadvertently created. The restored tidal marsh has been designed to drain at low tide and not create isolated pools of stagnant water which could increase mosquito production. In its current condition the site has many areas of stagnant standing water within the many drainage ditches in which mosquitos could breed. These stagnant water areas, currently isolated from tidal flushing by the tide gates, would be greatly reduced upon project completion. The newly created and modified tidal channels would be subject to tidal flushing, effectively limiting the mosquito's preferred breeding habitat. Furthermore, the restored tidal marsh would be open to fish which are expected to prey on aquatic-stage mosquitos within the tidal marsh further reducing mosquito production. As a result, the long-term effects on public health and safety from mosquito-borne disease would be low.

Response to Comment WYCRP14 0002c:

As discussed in section 3.6.2.2 there are currently no public recreational opportunities provided in the project area. Anecdotal accounts indicate informal recreational hunting may have been allowed in the past by a previous land owner. The BPA conservation easement requires that the Cowlitz Indian Tribe prepare a management plan outlining parameters for allowed land use, stewardship, and public access upon project completion. Hunting and fishing access to the site would be contemplated during development of the management plan and public input would be sought at that time. Fishing from OR 202 adjacent to the project site would not be affected.

Response to Comment WYCRP14 0002d:

On the Pacific Coast, from Northern California to the Olympic Peninsula, elk use tidal wetland habitats for foraging, resting cover, and as travel corridors. Roosevelt Elk herds are often observed foraging in tidal marsh habitat in the Siletz Bay Wildlife Refuge on the Oregon coast (<http://www.fws.gov/oregoncoast/siletzbay/>). Animals would continue to have free access to the restored marsh habitat and adjacent uplands of the project site. While deer and elk are frequently observed at the site, Clatsop County maps major and peripheral deer and elk range only in the northeast section of the 5-mile analysis area, but not occurring within the project area, (refer to section 3.5.1.2 of the EA and Clatsop County webmaps at <http://maps.co.clatsop.or.us/applications/login.asp>). The mapped deer and elk range would not be affected by project activities. Threats to elk from habitat loss are not due to tidal habitat restoration, but are generally a result of development, logging and road construction, as well as forestry management practices, such as dense replanting, that prevent sunlight from reaching the forest floor and supporting vegetation on which elk feed. Deer and elk are expected to continue using the restored site.

Comment WYCRP14 0003

I need more information about:

*future public access for waterfowl hunting
& other recreational activities?*

WYCRP14 0003a

I have these other comments:

*Why does an out of area Tribe bear given control
over the area, why not a local group such
as the Clatsop Nation based at the local Clatsop Tribe?*

WYCRP14 0003b

Response to Comment WYCRP14 0003a:

Thank you for your comment. Access to the project area for the purposes of hunting is addressed above in comment WYCRP14c. Recreational activities would also be addressed during the development of the management plan for the property and public input would be sought at that time.

Response to Comment WYCRP14 0003b:

The Cowlitz Indian Tribe is sponsoring the proposed project. The private owner of the underlying property and mitigation developer, Astoria Wetlands, chose to work with the Tribe and agreed to convey the property to the tribe under certain conditions. The proposed project is part of the Cowlitz Indian Tribe Restoration Program, which was reviewed by the Council in November 2013. The Council recommended that BPA fund the Cowlitz Indian Tribe's Program. The Cowlitz Indian Tribe's Program originally identified this site for restoration in 2009 and subsequently partnered with Astoria Wetlands to draft design concepts, and began discussions with the Corps regarding the permitting process for modifying levees.

Comment WYCRP14 0004

I have these other comments:

*My concerns are are you putting us at greater risk of flooding and
increasing our probabilities of being affected by a possible tsunami. We are not in
a tsunami zone now. Will we be then?*

WYCRP14 0004a

*Also I don't believe that increasing wildlife in an urban development is safe for
either wildlife or drivers on Hwy 202*

WYCRP14 0004b

Response to Comment WYCRP14 0004a:

Thank you for your comment. Flooding potential is addressed in Section 3.4.2.2 of the EA. The Federal Emergency Management Agency (FEMA) has assessed the floodplain for the area and determined the 100-year base flood elevation at the site to be 12.0 feet (NAVD88). The most recent Flood Insurance Study shows the project area would be inundated during the 100-year base flood due to the poor condition of the levee (FEMA 2010). The water surface elevation of the 100-year flood exceeds the height of most of the existing levee (9.5-13 feet NAVD88). The model results found that, because the larger wetland area created by levee breaching and restoration results in additional floodplain capacity and conveyance for flood flows within the Youngs and Wallooskee rivers, the Proposed Action is expected to reduce the local flood profile and associated flooding (ESA 2014). The Proposed Action

would result in minor reductions in floodplain water levels within the project area and adjacent areas during a 100-year base flood. No increases in base flood water levels were predicted for the area analyzed, including for adjacent levee systems and areas east of OR 202. Reductions in base flood levels range up to approximately 0.1 feet. Reduced water levels, though minor, would result from the increased hydrologic connectivity of flood conveyance associated with the restored floodplain (ESA 2014).

Recent research has been conducted at OSU that uses simulations to evaluate the potential tsunami effects along the Columbia River using a maximum 9.0 magnitude earthquake. The associated tsunami, at the highest tide of the year, would surpass the elevations of the 100-year base flood and would over top the existing levee and portions of OR 202. The research determined:

- Just offshore from the mouth of the Columbia, the tsunami would raise water levels about 11.5 to 13 feet.
- Just inside the mouth of the Columbia River, the water would rise about 13 feet.
- At river mile six, approaching Hammond, Oregon, the river would rise about 10 feet.

The occurrence of a tsunami within the project would be expected to raise the water levels to an elevation greater than the existing levee and it is expected that the entire levee would be overtopped. Therefore, no change in the extent of tsunami impacts or tsunami zone designation is expected from the fact of the restoration.

If the project is not built, the levee would continue to erode and fail, and, without building new protection measures, OR 202, and potentially the land beyond it, would be subject to more frequent flooding. Additionally, if the levee was to self-breach, utility infrastructure would remain susceptible to flooding, putting the safety and reliability of the BPA transmission system and other utility infrastructure at risk.

Response to Comment WYCRP14 0004b:

The primary purpose of this project is to provide increased fish habitat for juvenile and salmon and steelhead that utilize the Columbia River estuary. Changes in wildlife habitat within the project area for wildlife species such as deer and elk, potentially causing vehicle conflicts on OR 202, is discussed in comment WYCRP14 0002d. It is expected that the deer and elk that currently use the site, and are found around OR 202, would continue to use the site and the population levels and use of the site would not change appreciably. The cattle underpass has been silted in and does not provide sufficient clearance for use by deer and elk and is not readily accessible due to its location within a deep ditch. Due to the limited clearance and accessibility the filling of this underpass is not expected to change the potential for wildlife-vehicle conflicts along OR 202. Since deer and elk would continue to use the site, and their population levels and access are not likely to change, there would be no increased risk of vehicle conflicts on OR 202.

Comment WYCRP14 0005

Perhaps you can assist.... I commented earlier & had several questions/concerns. Have any of these questions been answered in this EA document? It is a lengthy report & I have been unable to find answers within it in the time frame for comment. If not answered here, where/when will they be considered?

Comment WYCRP13 0008 (received from same entity during project scoping)

At the request of staff at the open-house scoping meeting held on January 14, I am submitting these comments. I have lived for 35 years along the river on the opposite side from the proposed project near the mouth of the Walluski. There are 4 concerns....

1. Erosion on the private home sites across the river from the project due to changes in the river's flow....
2. Changes in river depth due to decreased water flows that would impact the boat floats from our properties into the river.
3. Potential silting in the Walluski where it meets the Youngs river. At low tide the depth already lowers to 3 ft or less.
4. After all the studies are complete & the project is completed & the above concerns have been taken into account, who do I call when issues arise anyway? Who has to pay for the dredging, retaining walls or whatever when there is a problem? Doesn't seem like current residents should have to fight, go through lengthy time consuming bureaucratic processes or pay for corrections due to unanticipated negative impacts such as those mentioned above.

WYCRP14 0005a

WYCRP14 0005b

WYCRP14 0005c

WYCRP14 0005d

Response to Comment WYCRP14 0005:

Thank you for your comment. Comments received during project scoping were incorporated into the analysis and addressed within the text of the draft EA. As these comments touched on several areas a response to each specific concern and the section where it is addressed in the EA is summarized below.

Response to Comment WYCRP14 0005a:

As discussed in section 3.4.2.2 of the EA a hydrologic analysis was conducted for the project to determine if implementation of the project would cause changes in erosion rates or patterns. The *Hydrodynamic Modeling Assessment*, prepared by Environmental Science Associates in October 2014, specifically included analyzing potential changes in erosion patterns at the home sites south of the Wallooskee River to address public comments received during the scoping period. A modeling location at the pile supported dock at mouth of the Wallooskee River was specifically chosen to analyze the potential for increased erosion. The model included a full range of hydrologic scenarios (dry season, wet season, 100-year flood, and highest observed flood) for both the existing and restored conditions. Differences in water velocities and sheer stress (a measure of deposition and erosion potential) under these varying conditions were examined to analyze the potential for long term changes in erosional patterns.

Model results indicate that implementation of the project would not change the water flow direction or quantity within the Wallooskee River. Restored conditions either resulted in very little (only at the 100-year flood events) to no change (in regular wet season conditions) in velocity or sheer stress. The very

little or no changes observed in the model suggest that erosion patterns along the Wallooskee River would not likely change as a result of the restoration project. Therefore, the home sites along the Wallooskee River south of the project area do not appear to be at risk for increased erosion due to implementation of the project. In summary the model results indicate that project implementation is not expected to measurably change erosional rates along at the private home sites south of the Wallooskee River (ESA 2014).

Response to Comment WYCRP14 0005b:

As discussed in section 3.4.2.2 of the EA a hydrologic analysis was conducted for the project to determine if implementation of the project would cause changes in sedimentation patterns or water levels. Please see the response to the similar comment WYCRP14 0002a.

Response to Comment WYCRP14 0005c:

As discussed in section 3.4.2.2 of the EA a hydrologic analysis was conducted for the project to determine if implementation of the project would cause changes in sedimentation patterns or water levels. Please see the response to the similar comment WYCRP14 0002a.

Response to Comment WYCRP14 0005d:

Comments, questions, and concerns after project implementation can be addressed to BPA public affairs at 800-622-4519. Please reference the Wallooskee-Youngs Confluence Restoration Project. Through the preparation of this environmental assessment and completion of associated studies and modeling BPA has worked to assess and determine potential adverse impacts that are likely to occur as a result of project implementation. The hydrologic analysis conducted for the project indicated that river flow, depth, and erosion and sedimentation patterns are not expected to be measurably altered as a result of the project, so the need for the actions contemplated in the comment is not expected to arise.

Comment WYCRP14 0006

13 Jan. 2015

Bonneville Power Administration
Portland, Oregon

Re: Wallooskee-Youngs Confluence Restoration Project

Everyday I have a very pleasurable nature experience on my travels down Highway 202 on my way to Olney. I can not believe that sheet piling along the highway has any value to a real nature experience. This is not the natural solution to the road issue. If the project is completed I would hope we can see a more effective and pleasing solution to provide the protection of the road.

Thank You

Response to Comment WYCRP14 0006:

Thank you for your comment. As discussed in section 2.3.3 extensive effort was put into finding alternative ODOT wind-wave mitigation features prior to arriving at the sheet pile alternative. Using a sheet pile wall to protect OR 202 was determined to be the only feasible highway protection approach after geotechnical analysis. A vegetated earthen berm was originally considered for highway protection, with a low slope (10 feet horizontal to 1 foot vertical) to dissipate wave energy. To fully dissipate the effects of the wind-wave energy, the berm would have needed to be built along OR 202 to an elevation 1 foot lower than the proposed sheet pile wall. Constructing a berm this high would have required the filling of approximately 4 acres of wetland, detracting from the restoration area and ecological value. Additionally, the weight of an earthen berm would have impacted the adjacent highway due to compressible soils underlying OR 202, causing the roadway to sag as much as 1 to 2 feet requiring additional repairs to the highway and greatly increasing flooding concerns. The appearance of the sheet pile wall was considered in design and discussed in section 3.8.1 of the EA.

Comment WYCRP14 0007

Please have your studies look at:

Rather than breaching the dike in a few places, the dike should be leveled - removed completely. This way the tide could flood + ebb naturally instead of being forced through a few holes in the dike.
do the job right ~~Remove~~ Remove the entire dike

WYCRP14 0007a

I need more information about:

I have these other comments:

instead of the Coquille Tribe managing the land the Chewook Indian Nation should be allowed to do so. Chewook are not dead this is our land

WYCRP14 0007b

Response to Comment WYCRP14 0007a:

Thank you for your comment. The restoration design, including the decision to breach and lower the levee, rather than remove it completely, was developed to accelerate site evolution to achieve mature tidal marsh conditions with consideration of the environmental impacts and cost. Portions of the site behind the levee have subsided up to four feet from pre-levee conditions leaving the levee protected floodplain much lower than the exterior tidal marsh. The project design was developed to encourage sediment deposition in the subsided areas in order to increase the elevations to match historic conditions. Following excavation activities, the remnant lowered levee would be lowered to approximately 8.5 feet, the elevation of the mean higher high water level. The remnant levee sections would be expected to develop into a tidal marsh and be inundated by high tides. Breaching the levee in specific locations would route tidal flows in and out of the site in a controlled manner to further

promote the establishment of a functioning tidal network. Tidal channel and breach locations were based on historic aerial photographs from 1939 to the present depicting historic conditions of the drainage patterns. Figure 2-4 included in the Draft EA visually depicts the tidal marsh evolution expected to occur after restoration of the tidal marsh. Lowering the levees to the subsided marsh elevation would have increased both the adverse environmental construction effects and cost, provided minimal improvements in estuarine function, and limited site evolution over the long term.

Response to Comment WYCRP14 0007b:

See response to Comment WYCRP140003b above.