

Summary

Olympic Pipe Line Company (OPL), a petroleum pipeline company located in Renton, Washington, is proposing to construct and operate a new refined petroleum products pipeline in Washington. The new buried pipeline would have an initial capacity of 60,000 barrels (bbls) or 2,520,000 gallons per day, with three pump stations operating. Up to three additional stations would come online as demand increased to an ultimate capacity of up to 110,000 bbls (4,620,000 gallons) per day.

The proposed pipeline is approximately 370 kilometers (km) (230 miles) long and would be an extension of the existing 644 km (400-mile) OPL pipeline system. The proposed pipeline would begin near Woodinville in western Washington and terminate at an existing storage and distribution facility in Pasco in eastern Washington (Figure S-1). A storage and distribution facility would be constructed at Kittitas, near Ellensburg.

As part of the Washington Energy Facility Site Evaluation Council's (EFSEC) permitting process, OPL submitted an Application for Site Certification (ASC) on February 5, 1996 and an amended ASC in May 1998. The ASC was reviewed by an independent environmental consultant (Jones & Stokes Associates) on behalf of EFSEC and the U.S. Forest Service (USFS). Additional information was requested from OPL to more completely analyze impacts and to address (avoid or mitigate) potential impacts of the originally proposed project. During this process, OPL made numerous changes in the project to respond to consultant comments and to agency concerns to reduce impacts. Several iterations of field studies, data collection, and analyses by OPL, and review by the consultant, occurred over the course of reviewing the project and the ASC. In addition, the consultant collected and analyzed additional information needed to support the impact analyses in the Draft Environmental Impact Statement (EIS). As a result, the EIS evaluates the potential impacts of the revised proposed project, as relocated, reconfigured, and avoided/mitigated by OPL.

OPL currently transports refined petroleum products for shippers in Washington from four northwest refineries (Tosco, Arco, Texaco, Shell) to various customers in Washington and Oregon via OPL's pipeline from the refineries south to Portland. OPL is a petroleum products carrier. Its primary mission is to carry product from these four refineries.

AGENCY ROLES AND DECISIONS TO BE MADE

Numerous agencies are involved in EIS preparation, consultation, and permitting decisions for the pipeline project, as shown in Table S-1.

Of these agencies, the Bureau of Land Management and EFSEC play key roles in issuing **Ambrella** authorizations that incorporate the input of other agencies, while EFSEC and the U.S. Forest Service have served as Lead Agencies in preparing the EIS. The roles of these three agencies are highlighted below:

- # **Bureau of Land Management.** The Mineral Leasing Act (MLA) was amended, in part (87 Stat. 576 and ff.), to provide efficiencies in granting MLA rights-of-way (ROW) across federal lands managed by multiple agencies by providing applicants the convenience of one application process and one authorization document. The Secretary of the Interior, through the BLM, is mandated to process MLA applications across federal lands managed by more than one agency with the prior consent of each agency head (the exact wording can be found at 87 Stat. 577 [sec.9(c)(2) of Act of Nov. 16, 1973 {P.L. 93-153}]). The regulations at 43 CFR 2880.0-7(a) reflect this statutory mandate. BLM, in accordance with the Act, will not issue a ROW across federal lands without the consent of the respective agency heads. This consent will be required before the BLM will issue a Record Of Decision (ROD). The BLM will request consents, in writing, from the agency heads. Assuming a ROD is affirmative, BLM will then issue one authorization (ROW grant) under the MLA for use of all federal lands. No additional authorization documents are required from other affected federal land managing agencies under the MLA. Subsequently, Notice(s) To Proceed will be issued as appropriate.

- # **Washington State Energy Facility Site Evaluation Council.** EFSEC coordinates all of the evaluation and licensing steps for siting major energy facilities in Washington. If a project is approved, EFSEC specifies the conditions of construction and operation, issues a Site Certification Agreement in lieu of any other individual state or local agency authority, and manages the environmental and safety oversight program of project operations. As part of EFSEC's permitting process, OPL submitted an Application for Site Certification on February 5, 1996 and an amended application in May 1998. EFSEC is also a co-lead agency with the U.S. Forest Service in preparing the EIS. EFSEC is the sole agency authorized to permit the project. Other agency landowners who otherwise do not have permit authority have full ROW authority over their lands.

- # **U.S. Forest Service.** The Department of Agriculture, U.S. Forest Service is the lead agency with EFSEC for developing the EIS. The Bureau of Reclamation, Department of the Army, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers are cooperating agencies in the development of the EIS and will issue separate agency consents before the BLM issues a ROD for the ROW application.

**Table S-1. Overview of Permit, Approval, and Consultation Requirements
for the Proposed Pipeline Project**

Agency	Permit/Authority
Federal Government	
Advisory Council for Historic Preservation	Consultation under Section 106/ <i>National Historic Preservation Act</i>
U.S. Army Corps of Engineers (ACOE)	Cooperating agency
	Section 404(b)(1) Individual Permit/ <i>Clean Water Act</i>
	Section 10 Permit/ <i>Rivers and Harbors Act of 1899</i>
U.S. Department of the Interior, Bureau of Land Management (BLM)	Record of Decision (ROD)/ <i>Minerals Leasing Act: Title I, Section 28 (c)(2) of the Mineral Leasing Act of 1920, as amended, November 16, 1973 authorizes the Secretary of the Interior to grant or renew rights-of-way (ROW) or permits and to enter into agreements with other land-managing federal agencies for the processing of applications for pipelines to transport oil, natural gas, synthetic liquid or gaseous fuels, or refined products produced therefrom.</i>
	Right-of-Way (ROW) Grant/ <i>Minerals Leasing Act</i>
	Temporary Use Permit/ <i>Minerals Leasing Act</i>
	Notice to Proceed
	Antiquities and Cultural Resources Use Permit
	Consultation
U.S. Department of the Interior, Bureau of Reclamation (USBR)	Cooperating agency
	Consultation and concurrence
U.S. Department of Defense (DOD), U.S. Army	Cooperating agency
	Consultation and concurrence
U.S. Department of the Interior, Fish and Wildlife Service (USFWS)	Cooperating agency
	Consultation and concurrence
	Section 7 and 10 Biological Opinion/ <i>Endangered Species Act</i>
U.S. Department of Agriculture, Forest Service (USFS)	Co-lead agency
	Consultation and concurrence
State Government	

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Agency	Permit/Authority
State of Washington, Energy Facility Site Evaluation Council (EFSEC)	Co-Lead Agency and Site Certification Agreement/ <i>EFSEC's responsibilities derive from the Revised Code of Washington (RCW) 80.50, and include siting large natural gas and oil pipelines, electric power plants above 250 megawatts and their dedicated transmission lines, new oil refineries or large expansions of existing facilities, and underground natural gas storage fields. EFSEC has been delegated authority by the U.S. Environmental Protection Agency to issue permits under the Federal Water Pollution Control Act and the Federal Clean Air Act for facilities under its jurisdiction.</i>
	Section 309/ <i>Clean Air Act</i>
	National Pollutant Discharge Elimination System (NPDES) Permits
Washington State Parks and Recreation Commission (WSPRC)	Easements
Washington State Department of Natural Resources (DNR)	Easements
All Landowners Along the Pipeline ROW	
Federal agencies (through BLM approval process and NEPA); state and local agencies; private landowners	ROW ownership agreements
Grant County P.U.D.	ROW and permit to cross Columbia River on Wanapum Dam

NEED FOR ACTION

As central and eastern Washington continue to grow, more petroleum products are required. Although historically petroleum products have been delivered to these areas from a combination of California refineries, Rocky Mountain refineries (via the Yellowstone and Chevron pipelines), and northwest Washington refineries, the market trend is toward meeting the increases in demand with product from northwest Washington refineries.

Product from northwest Washington refineries can end up anywhere in the state but is largely distributed within western Washington, eastern Washington in the Tri-Cities area, and central Washington near Ellensburg. The primary mechanisms of transport are:

- # the north-south pipeline serving western Washington and Oregon customers from Seattle to Portland;
- # trucks from Harbor Island in Seattle and directly from refineries crossing the Cascades via Snoqualmie and Stevens Passes to central Washington and the Moses Lake and Ellensburg areas; and
- # barges on the Columbia River which pick up product from the pipeline in Portland and carry it to Pasco, Umatilla, and Clarkston.

OPL responded to increased demand on their pipeline system from shippers in western, central, and eastern Washington by adding pumping equipment, using flow-improving polymers, and adding motor horsepower to add capacity to the north-south pipeline to Vancouver and Portland. However, these measures alone failed to keep pace with the demand on the existing system. Although OPL was able to increase transportation of product through the line to maximum capacity, shippers were forced to use increasing numbers of tanker trucks and barges to obtain needed product. As a result, eastern and western Washington shippers were curtailed and had to order product via other means. Under such conditions, common carrier pipelines are referred to as **oversubscribed** and pipeline owners are required to **prorate** the volumes they carry, so the shortage is allocated equally to all shippers.

Even though the north-south pipeline reached capacity in 1995, shippers have continued to order product from Washington refineries, even when the preferred delivery system (the north-south pipeline) was at capacity and alternate systems of delivery (truck and barge) were required.

With expected continued population and commerce growth in western, central, and eastern Washington, and demand on the OPL system from all three areas, OPL believes that the demand for the transport of products in their system, including products delivered to central and eastern Washington from western Washington refineries, will continue to increase about 1.5 percent annually. As the amount of proration continues to increase, shippers will be required to increase their use of multiple sources and modes of shipment to meet increasing demands for refined product. This demand has created a request by shippers for a more price-competitive means of delivery of refined petroleum products from western Washington refineries. Shippers have asked OPL to examine

whether a new pipeline could transport product to eastern and central Washington at a lower cost than the current barge and truck system. The proposed project, then, is primarily offered as a solution to shippers' request for a lower cost, more efficient, west-to-east delivery system, which would replace barges and trucks. Enough qualified shippers have signed letters of interest with OPL to fill half the proposed line at this time.

PURPOSE OF THE PROJECT

The purpose of the Proposed Action is to respond to a need to provide a cost-effective, efficient, environmentally sound means to transport refined petroleum products from western Washington refineries to central and eastern Washington to meet the long-range needs for product transportation. The applicant's proposal is to build a west-to-east pipeline to achieve that purpose.

ALTERNATIVES ANALYZED IN THE EIS

Proposed Action: Petroleum Product Pipeline

The proposed pipeline responds to the above-stated Purpose and Need by transporting petroleum products from refineries in Anacortes and Whatcom County to central and eastern Washington at a lower cost than other alternatives. It would avoid the need to offload the product from the existing pipeline onto tanker trucks and river barges, or from ocean barges onto river barges, or from Puget Sound barges onto trucks via Harbor Island. Conversion from one mode of shipment to another is not as efficient as a single mode (i.e., the pipeline). Also, construction of a new pipeline would be more efficient for those who can pick up petroleum product in Kittitas, rather than trucking it from Seattle across Snoqualmie or Stevens Passes.

The proposal would reduce the risk of accidental spills during the transfer from one mode of shipment to another, from barges on the Columbia River, and in Puget Sound, and from tanker trucks along the I-90 and U.S. Highway 2 corridors. The proposal would create a risk of spill along the pipeline corridor which does not now exist in these areas, and 29 percent of the line would require creation of a new utility corridor.

The proposed Cross Cascade Pipeline would originate on OPL's existing north/south lines just north of the King-Snohomish county line, extend east crossing Snoqualmie Pass into Kittitas County generally following the same direction as the I-90 corridor, cross the Columbia River in Grant County, and terminate at the Northwest Terminalling Company's existing terminal in Pasco, Washington. The pipeline would cross parts of about 78 wetlands and approximately 300 streamcourses and irrigation canals. The coated steel pipeline would be 35.6 centimeters (14 inches) in diameter from the Thrasher Station to the Kittitas Terminal and 30.5 centimeters (12 inches) in diameter from the Kittitas Terminal to the Northwest Terminalling bulk storage facility in Pasco.

Columbia River Approach Options

OPL and the EIS evaluated three route segment options for the pipeline:

- # through the Yakima Training Center (YTC);
- # inside the north property/fence line of the YTC (closer to I-90); and
- # north of I-90 through Ginkgo Petrified Forest State Park.

OPL's preferred alternative is the northern route through Ginkgo State Park. The YTC options are likely to conflict with Army training activities. Impacts of the approach options are summarized in Table S-2.

Table S-2. Evaluation of Constructing the Columbia River Approach Options

Resource Area	Ginkgo State Park Option	Yakima Training Center Options
Geology, Soils, and Seismicity	Localized disruption of Ginkgo Petrified Forest State Park, a nationally significant fossilized forest, and damage to fossils. Pipeline would pass through a 1.5-mile-wide landslide east of the park.	Neither YTC option would pass through or disrupt Ginkgo State Park, and YTC options would avoid the landslide east of the park.
Botanical Resources	Fewer impacts than YTC options to shrub-steppe vegetation, hay/pasture, and grass/forb communities and no impacts to sensitive plant species.	Each of the YTC options would affect about 9.5 acres more of shrub-steppe vegetation, 3.9 acres more of hay/pasture, and 3.3 acres more of grass/forb communities than the Ginkgo option. The southern YTC option would affect sensitive plant species, two populations of <i>Hoovers tauschia</i> .
Wetlands	This option would have the same wetland impacts as the fenceline YTC option.	For the fenceline YTC option, two scrub-shrub wetlands would be avoided. The southern YTC option would affect 0.08 acre more wetlands than the Ginkgo or fenceline YTC options, affecting two scrub-shrub wetlands (Category II and Category III).
Wildlife and T&E Species	Pipeline would be located within 591 feet of a Swainson's hawk nest, and other nests may be present. Timing restrictions might be required to avoid impacts to mule deer winter range located adjacent to Ginkgo State Park.	For the fenceline YTC option, burrowing owl and striped whipsnake are known to be in the vicinity but impacts would be minor. The southern YTC option does not cross priority habitat and impacts would be minor, although concerns for sensitive species would exist.
Water	Negligible or minor water quality impacts. Streams are intermittent and construction would occur when they were dry.	Both YTC options would have negligible or minor water quality and stream impacts, similar to the Ginkgo option.

Table S-2. Evaluation of Constructing the Columbia River Approach Options

Resource Area	Ginkgo State Park Option	Yakima Training Center Options
Fisheries	No significant fisheries resources exist with this option.	As with the Ginkgo option, no significant fisheries resources exist for either YTC option.
Air Quality	No air quality impacts would occur with this option.	As with the Ginkgo option, no air quality impacts would occur for either YTC option.
Noise	No noise impacts would occur with this option.	As with the Ginkgo option, no noise impacts would occur for either YTC option.
Traffic and Transportation	No traffic or transportation impacts would occur with this option.	As with the Ginkgo option, no traffic or transportation impacts would occur for either YTC option.
Cultural and Historical Resources	Avoidance of resources may be difficult because surveys found prehistoric sites covering large areas.	A survey of the YTC options was not completed.
Land and Shoreline Use	Minor impacts on land use would include increased noise, dust, and traffic; inconvenient access; and temporary disturbance to the rural and open space character.	For both YTC options, minor to moderate impacts would occur to the YTC from destabilized soils, which could then cause heavy vehicles (i.e., tanks) to sink when they Align in and spin.® The realistic nature of training exercises would be compromised during construction. Both options would require close coordination with the YTC to avoid conflicts and limit future training activities over destabilized soils.
Agriculture	No croplands or irrigation facilities exist on the State Park, and thus agriculture would not be affected.	As with the Ginkgo option, no croplands or irrigation facilities would be crossed or affected by either YTC option.
Recreation	The Ginkgo Petrified Forest State Park, including Wanapum Campground, would be crossed. Recreationists would experience major impacts from dust, noise, and views. Construction vehicles would increase traffic congestion. Construction during active use, from May through September, would be most disruptive to overall recreational experiences.	Neither YTC option would pass through or disrupt Ginkgo State Park and, therefore, no recreational impacts would occur.
Visual Quality and Aesthetics	This option would be located out of view of I-90 viewers.	For the fenceline YTC option, from MP 127.2 to 129.2, the pipeline would follow I-90 and travelers would see slope scarring when the route turns southeast and traverses up a slope between MP 129.2 and 130.2. It would also be visible from Hunzinger Road. For the southern YTC option, the corridor would be visible to personnel on the YTC and recreationists as it passes near Getty's Cove private campground near MP 144.7, passes adjacent to Wanapum Dam, and traverses down

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Resource Area	Ginkgo State Park Option	Yakima Training Center Options
		a steep slope to the Columbia River.
Socioeconomics	No socioeconomic impacts would occur with this option.	As with the Ginkgo option, no socioeconomic impacts would occur for either YTC option.
Public Services and Utilities	No public service and utilities impacts would occur with this option.	As with the Ginkgo option, no public service and utilities impacts would occur for either YTC option.
Health and Safety	No health and safety impacts would occur with this option.	As with the Ginkgo option, no health and safety impacts would occur for either YTC option.

Options for Crossing Columbia River

OPL and the EIS also evaluated options for crossing the Columbia River. The five options and costs include:

- # dredging north of the I-90 Bridge (\$10 million);
- # crossing the I-90 Bridge (\$6.9 million);
- # horizontal directional drilling downstream (south) of Wanapum Dam (\$7.8 million);
- # crossing the Burlington Northern Beverly Railroad Bridge (\$7.6 million); and
- # crossing on Wanapum Dam (\$6.9 million).

OPL's preferred route is the directional drilled crossing downstream of Wanapum Dam. Environmental impacts of the five options are summarized in Table S-3.

Table S-3. Columbia River Crossing Options Evaluated in the EIS

Location	Geotechnical Feasibility	Environmental Impacts	Estimated Cost ¹
Dredging north of I-90 Bridge	gravel - feasible	need to minimize impacts to fish habitat and shorelines	\$10.0 million
Crossing on I-90 Bridge	structurally feasible	none	\$6.9million
Crossing on Wanapum Dam	structurally feasible	none	\$6.9 million
Drilling south of Wanapum Dam	gravel - feasible	need large cleared area for drilling base	\$7.8 million
Crossing on Beverly Railroad Bridge	structurally feasible	none	\$7.6 million

¹ All costs are based on routes beginning at Stevens Road east of Kittitas Terminal and ending at the

Beverly-Burke Pump Station.

Source: OPL Application for Site Certification 1998.

Pump Stations

Six pump stations would be located along the route, including the Thrasher Station in south-central Snohomish County, the North Bend Station located south of SE 120th Street and south of the Cedar Falls Trail, the Stampede Station near Stampede Pass Road and east of Lake Easton, the Kittitas Station located at the Kittitas Terminal at the intersection of I-90 and Badger Pocket Road, the Beverly-Burke Station located in Grant County about 6.4 km (4 miles) east of the Columbia River, and the Othello Station located about 9.7 km (6 miles) southwest of Othello and north of State Route 24 in Adams County. Three of these stations (Thrasher, North Bend, and Kittitas) would be initially constructed. The others would be constructed over time as a response to increased demand.

The Thrasher Pump Station would be located on about 1.5 hectares (ha) (3.7 acres) and each of the other pump station sites would be about 0.4 to 0.8 ha (1 to 2 acres) in size. Part of each site would be cleared. The Thrasher, North Bend, and Stampede Pump Stations would be enclosed in a building to protect the facility and provide noise abatement. The stations would be fenced and gated to limit access.

Block Valves

An estimated 29 block valves would be installed along the pipeline corridor. These valves would be remotely controlled from the pipeline control center and can also be manually operated as they are on the surface. They would enable an automatic response to any detected rupture or hole in the pipeline and would limit the amount of product released. Each block valve site would be a fenced area of approximately 9.1 by 12.2 m (30 by 40 feet).

Kittitas Terminal

A storage terminal would be built near the City of Kittitas. The Kittitas Terminal would occupy about 10.9 ha (27 acres) immediately north of I-90 and east of Badger Pocket Road. The terminal would ultimately have nine aboveground liquid petroleum storage tanks, with a total storage capacity of 36,120,000 gallons of product. In addition, one 420,000 gallon transmix/relief tank would also be included. The terminal also includes truck loading racks and parking for tanker trucks.

Pasco Delivery Facility

The Pasco Delivery Facility would occupy about 0.4 ha (0.9 acre) near the intersection of U.S. Highway 12 on Sacajawea Park Road, across the road from the Northwest Terminalling Facility

in Pasco. The site is level with minimal vegetation and is now unused. The facility would have metering equipment, a sample building, a control building, and other equipment. Two lines would connect to the Northwest Terminalling Facility, one for diesel fuel and one for gasoline.

Right-of-Way

Approximately 176.2 km (109 miles) or 47 percent of the pipeline corridor would be located within existing cleared ROW. About 90.1 km (56 miles) or 24 percent would be located immediately adjacent to existing cleared corridors. These areas are primarily roadways where existing utilities or roadway construction precluded placing the pipeline within the existing ROW. About 106.2 km (66 miles) or 29 percent would be located in new corridors.

Of the 370 km (230 miles) of pipeline, approximately 40.3 km (25 miles) of pipeline ROW are owned by federal agencies, 48.3 km (30 miles) of ROW are owned by state agencies, and King County owns approximately 3.2 km (2 miles). The majority of federal ownership along the proposed route is within lands managed by the U.S. Forest Service and the Bureau of Reclamation. The remaining 280.1 km (174 miles) of ROW are privately owned. The proposed pipeline would utilize two trail systems, the Cedar Falls Trail managed by King County and the John Wayne Trail owned by Washington State Parks.

Construction

Construction of the pipeline would take about 1 year and cost slightly more than \$105 million. The anticipated duration of pipeline construction at any one location along the corridor would be no more than 10 days except for larger water crossings where more time is needed. Construction progress would be slowest at road and waterway crossings, where several days may be required to complete the crossing by either boring or trenching. Construction progress in flat open terrain might be completed in as little as 2 to 3 days.

OPL proposes to have construction occur in three spreads, and a variety of crews within those spreads, to enable construction to occur concurrently at various places along the pipeline.

Spread 1 is generally comprised of the western portion of the pipeline and includes Snohomish County, northeastern King County, and the central portion of Kittitas County. It would require a peak construction workforce of 375. Under favorable weather conditions, construction would occur at a rate of 3.1 to 3.7 km (1.9 to 2.3 miles) per day and would take a total of about 1.75 months.

Spread 2, which is generally the central portion, is comprised of the mountainous segment of the pipeline, buried within the Snoqualmie Pass Tunnel over Snoqualmie Pass, as well as major river crossings. It includes eastern King County and western Kittitas County. It would require a peak workforce of 159 workers and would be constructed at a rate of 0.6 km (0.4 mile) per day for a total of 4.33 months.

Spread 3, the eastern portion of the pipeline, includes eastern Kittitas County, Grant County, Adams County, and Franklin County. It would require 375 workers during the peak and would be constructed at a rate of 3.1 to 3.7 km (1.9 to 2.3 miles) per day for a total of about 2 months.

The construction time frame on any spread would exceed these schedules if certain construction windows (timing restrictions to protect sensitive resources) cannot be met.

Pipeline would be transported by rail to four or five pipe staging areas measuring approximately 6.1 to 12.1 ha (15 to 30 acres) each. Pipe staging areas are locations where the pipe joints can be unloaded from railcars and temporarily stored while they await distribution (stringing) along the ROW. Potential staging areas near active or to-be-refurbished rail sidings include Everett, Easton, Ellensburg, Royal City, and Pasco. In addition to these pipe staging areas, contractors would have construction crew staging yards measuring 4 to 8 ha (10 to 20 acres) for office trailers and workcrew parking. The contractors would locate and make arrangements to secure a yard area for use by construction crews. This area would be used to locate office trailers, storage trailers, and fuel tanks, and would operate as an assembly point for construction crews to meet prior to proceeding on to the ROW.

Pipe would be transported daily by tractor trailer to be placed along trenches for assembly. Construction would occur within a pipeline corridor that is 18 m (60 feet) wide or less, depending upon the width of the available corridor (such as in Tinkham Road which is a 3 to 6 m [10- to 20-foot] wide U.S. Forest Service Road). OPL has stated that the pipe would be placed a minimum of 3.1 meters (m) (10 feet) below major riverbeds, 1.2 m (4 feet) deep at other creek and water crossings, 1.8 m (6 feet) below railroad crossings, and 1.2 m (4 feet) below agricultural and other lands. River and stream crossings under any conditions would be placed a minimum of 0.6 m (2 feet) below projected maximum scour depths to meet federal DOT regulations. Specific scour depth potential would be determined during design.

The pipeline at each water crossing would be hydrostatically tested at least twice. A total of 1.5 million gallons of water would be needed to test the pipeline, plus 4.2 million gallons to test the tanks at the Kittitas Terminal. Water needed to conduct the hydrostatic testing would be obtained, if possible, from the Snoqualmie River, City of North Bend, Cascade Irrigation Canal, and Waluke Branch Canal. Potential secondary sources of water include the Alderwood Water District, Woodinville Water District, City of Carnation, City of Ellensburg, Port of Royal Slope, and the City of Othello.

After testing is complete, the test water would be analyzed and filtered before being discharged into a water body. Hydrostatic test water would be discharged into three locations: into the ground at the Stampede Pump Station, into the ground onsite at the Kittitas Terminal or into the Cascade Irrigation Canal near the terminal, and indirectly (through filtration) into the Snake River at the Pasco Terminal.

Operation

Pump stations would be controlled remotely from the OPL Renton facility and also controlled locally. The four OPL employees assigned to the OPL Renton facility would be responsible for local control and monitoring of product movements through the pipeline system. Four workers would be employed at the Kittitas Terminal during operation of the pipeline to handle incoming tanker truck loading activities. Two employees would be assigned to the Pasco Delivery Facility.

OPL would also contract with individuals or hire employees who live along the pipeline to respond to a spill within 1 hour of notification in accordance with state policy. It is OPL's policy to maintain a 60-minute response time. It is not known where these employees would be located or exactly how many contract employees would be hired.

An additional 6 to 10 OPL employees would be responsible for maintenance of the pipeline and the ROW. The width of the corridor to be maintained (i.e., the permanent easement) for the pipeline is 9.1 m (30 feet). The 30 feet would allow vehicles to access the area directly above the pipeline in the case of an emergency or for special inspection activities, and would enable small scale excavation of the pipeline where necessary for visual inspection and/or repair. Areas such as wetlands and farmland would not need maintenance clearing. Routine maintenance activities along the ROW would include visual inspection, periodic clearing of vegetation, repairs to ROW markers, and inspection and maintenance of the cathodic protection system. Visual inspection of the pipeline would include regular ground patrols and aerial inspections about once every 2 weeks. A circular, computerized sensing device (A smart pig®) would also be used, normally at 5-year intervals, to detect corrosion, dents, or other defects in the pipeline wall. Details about monitoring and maintenance would be provided after design and incorporated into approval requirements of the USFS, BLM, EFSEC, and other agencies. Details about spill response would be provided before operation as required by law.

No Action

Under No Action, shippers would continue to meet their additional needs with tanker trucks, ships, and barges. This would continue to be a more prevalent, more expensive, and less efficient transportation system for the shippers than the proposed pipeline. It would cost an estimated \$0.55 more per barrel to transport product via barge to Pasco under No Action than with the proposed pipeline. It would cost more per barrel to truck product to Kittitas than to deliver it by pipeline, but actual savings depend on tariffs and transport distance. It costs approximately \$0.02 per gallon to haul petroleum 75 miles, for example. This is \$0.84 per barrel.

When the OPL line reached capacity in 1995, shippers continued to have three options for transport: OPL, Chevron pipeline, and Yellowstone pipeline. Of these, OPL received the greatest demand and rate of oversubscription. That rate will continue with No Action. Shippers desiring to purchase northwest refinery product cannot receive it from Chevron or Yellowstone.

In addition, No Action would require more transfers from one mode of transport to another (i.e., to trucks and barges), when accidents are more likely to occur. The oil spill risk analysis in the

EIS demonstrates that No Action would have a greater frequency of spillage than the proposed pipeline and a greater risk of injury and fatalities to the public. There are problems with the current system, such as lack of capacity and severe delivery delays (12 hours to 3 days) on the mountain passes, and the quality of delivery would continue to degrade with more and more trucks and barges. Such problems in combination include weather delays affecting trucks, river or lock closures affecting barges, more transfers, more truck and barge traffic, and oversubscription.

Under the No Action Alternative, OPL would continue to operate its existing north-south pipeline system at its current at-capacity levels, and at rates that provide economic returns under tariffs approved by the Federal Energy Regulatory Commission and the Washington Utilities and Transportation Commission. Refined petroleum products from the refineries in northwestern Washington that are destined for central and eastern Washington would continue to be transported through the north-south pipeline and by other means, such as barges on Puget Sound (12 to 20 per month), the Columbia River, the Pacific Ocean and increased trucking.

Under No Action, because OPL is oversubscribed, increased trucking of product would continue to occur to help meet the increased demands for transportation of petroleum products. Truck traffic over the Cascades would rise from an average of 65 trucks per day in 1996 to an average of 128 trucks per day in 2026. Barging up the Columbia River would increase from about 292 trips annually in 1999 to 423 barge trips annually in 2019. Increased ocean barging would also occur, with subsequent transfer to the river barges in Vancouver/Portland for transport to Pasco. Increased Puget Sound barging would also occur with transfer at Harbor Island and onto truck for deliveries in western Washington and across Snoqualmie Pass. Barging on Puget Sound would range from 12 to 20 trips per month today to higher numbers, proportional to those above, in the future.

In contrast, if the project was built, upstream barging of petroleum product would cease on the Columbia River and Snake River, according to Tidewater Barge Lines representatives who control all such barging. Of the 65 trucks currently crossing the pass, all are either making local deliveries or are carrying product not available via pipeline due to oversubscription. These trucks would not have to cross the pass if the proposed pipeline is constructed.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Alternatives to the project that were determined not to meet the need included rail transport of petroleum products from Woodinville or Portland to Pasco, demand management (product conservation or fuel switching to natural gas), construction of a new north-south pipeline system (increased throughput on the existing line, a new replacement line inside or outside of the existing ROW, and an independent or interconnected parallel line), and other means of transport (trucking, barging, and other combinations). Several alternative pipeline corridors were also considered (two Snoqualmie Pass routes, Yakima Valley route, Stampede Pass route, and Stevens Pass route), as well as other locations for the pump stations and terminal. These options were evaluated and eliminated from further study, based on detailed criteria that are explained in the EIS.

POTENTIAL IMPACTS

Four categories were used to evaluate potential impacts to the natural and built environments: none/negligible, minor, moderate, or major. For most resources discussed in the EIS, potential impacts from construction and operation are estimated to be negligible to minor because of pipeline siting and other measures OPL has proposed as part of the project to reduce impacts. However, some potential impacts such as from temporary lodging needs and from construction in riparian reserves, could be moderate or major. Impacts from an abnormal event such as an oil spill range from negligible to major depending upon the potential spill. Impacts and mitigation measures are summarized in Tables S-4 and S-5.

Table S-4. Summary of Moderate to Major* Construction Impacts and Mitigation for Proposal and No Action

Proposed Action		No Action
Impacts	Additional Mitigation Suggested	
Geology, Soils, Seismicity		
<p>P Mass wasting could occur and, if near water bodies, could have a minor to moderate effect on them.</p> <p>P Soil erosion could have a negligible to moderate impact on sedimentation, potentially affecting plants and animals, depending upon the volume of sediment released and the time of year that it occurred.</p> <p>P Major impact could occur to the Columbia River if horizontal directional drilling results in a leakage of bentonite drilling fluids into the river through the permeable stream deposits or by hydrofracturing the formation.</p> <p>P Trenching through Ginkgo Petrified Forest State Park could result in a small, localized, but irreplaceable loss of fossilized forest remains.</p>	<p>P Involve qualified contractors in the planning and implementation of drilling across the Columbia River. Prepare a feasibility study and initial drill alignment. Place an experienced pre-qualified driller on the rig at all times.</p> <p>P Perform additional explorations of the Columbia River crossing ground conditions before final design. Implement a test horizontal directional drill program.</p> <p>P Improve bore stability of Columbia River directional drill, such as by pre-assembling the entire pipe to allow a continuous pull and complete grouting of the hole during drilling.</p> <p>P Consider using a polymer drilling fluid that would break down, rather than bentonite.</p> <p>P Consider conducting a geological survey in Ginkgo Petrified Forest State Park to minimize destruction of fossil beds.</p>	<p>P Mass wasting impacts would not occur as a result of pipeline construction.</p> <p>P Soil erosion and sedimentation impacts would not occur as a result of pipeline construction.</p> <p>P Major impacts would not occur to the Columbia River from horizontal directional drilling</p>
Botanical Resources		
<p>P Moderate impacts from permanent loss (30-foot wide maintenance corridor) of riparian habitat and vegetation near salmon-bearing streams at stream crossings, such as the Tolt River, Griffin Creek, Tokul Creek, and Humpback Creek.</p>	<p>P In the revegetation plan and monitoring described below for all vegetation impacts, include willow wattling as a vegetation technique in riparian areas where revegetation could help stabilize streambanks and reduce erosion.</p>	<p>P No impacts would occur to riparian habitat and vegetation near salmon-bearing streams.</p> <p>P No impacts would occur to state threatened or sensitive plant species.</p>
Botanical Resources (continued)		
<p>P Moderate impacts are expected to state threatened or sensitive plant species, including one population of pauper milk-vetch in Kittitas County, two populations of Pipe</p>	<p>P Conduct additional field studies for the Pipe daisy and pauper milk-vetch to eliminate impacts by avoidance through rerouting, or reduce impacts by narrowing the</p>	<p>P No impacts would occur to 540 acres of somewhat degraded shrub-steppe plant communities.</p>

Proposed Action		No Action
Impacts	Additional Mitigation Suggested	
<p>daisy in Grant County, and one population of Pipes daisy in Adams County.</p> <p>P Moderate impacts are expected from disturbance of 540 acres of shrub-steppe plant communities (most are somewhat degraded), 26 percent of which is dominated by native shrubs and grasses. Restoration will be difficult and long-term (14 to 85 years).</p> <p>P Moderate impacts to 2 acres of a high-quality native shrub-steppe community on the steep east bank of the Columbia River, dominated by sagebrush and native grasses with an intact cryptogam crust.</p> <p>P Prepare a revegetation plan that specifies plant material size, planting densities, planting methods, seed mixes, application rates, timing of planting, and seed application. Include willow wattling as a vegetation technique in riparian areas where revegetation could help stabilize streambanks and reduce erosion. Monitor the revegetation plantings to ensure the revegetation plan is implemented as designed.</p> <p>P Prepare a contingency plan before construction begins that has been reviewed and approved by USFS/BLM and that addresses revegetation performance standards and measures to be taken if standards are not achieved.</p>	<p>construction corridor. Fence in the locations of sensitive plants that are to be avoided and use an onsite biological monitor during construction.</p> <p>P Include bitterbrush in the shrub-steppe seed mix where it is part of the natural community. Implement an onsite seed collection program and propagate container-grown plants to plant in high-quality, native portions of plant communities.</p>	<p>P No impacts would occur to 2 acres of high-quality native shrub-steppe community on the east bank of the Columbia River.</p>
Wetlands		
<p>P No moderate or major impacts were identified.</p>	<p>P None.</p>	
Wildlife		
<p>P Major impacts could occur if clearing took place during the spring nesting season (generally April 1 - July 15 of any given year) for sensitive species (i.e., northern goshawks, prairie falcons, ferruginous hawks, red-tailed hawks, burrowing owls, long-billed curlew, and sandhill cranes),</p>	<p>P Conduct clearance surveys or do not blast within 1 mile of known marbled murrelet or spotted owl nest sites; habitat potentially suitable for marbled murrelet, northern spotted owl, or peregrine falcon; or known bald eagle winter use areas from November 1 - March 15.</p>	<p>P No impacts would occur during the spring nesting season (April 1 - July 15) for sensitive species (i.e., northern goshawks, prairie falcons, ferruginous hawks, red-tailed hawks, burrowing</p>

Proposed Action		
Impacts	Additional Mitigation Suggested	No Action
<p>then nest and/or den sites of wildlife (i.e., tailed frogs, night snake, striped whipsnake, and Washington ground squirrels) could be directly lost. Impacts are considered major because most species of birds are protected under the Migratory Bird Treaty Act and, therefore, are legally protected from "take," which includes destroying nests or eggs.</p> <p>P Noise from construction adjacent to suitable habitat for threatened and endangered species could cause disruption of breeding behavior.</p> <p>P Moderate, small-scaled, localize impacts to small mammals, game birds, and other wildlife from loss of shrub-steppe vegetation, as described under Vegetation.</p> <p>P Moderate impacts to mammals from clearing trees located east of the Yakima River.</p> <p>P Moderate impacts to wildlife from clearing 207.6 acres of scrub-shrub habitat along BPA transmission line easements.</p>	<p>P Conduct informal consultation with the USFWS for T&E species, marbled murrelet CHUs, and northern spotted owl CHUs. Provide USFWS needed information and develop and implement silvicultural prescriptions.</p> <p>P Prohibit construction within 0.25 mile of the range of the northern spotted owl from March 15 - August 1, unless surveys have been completed and approved by the USFWS. Prohibit blasting anywhere within USFS lands during the northern spotted owl nesting season, unless approved by the USFWS.</p> <p>P Prohibit construction within the range of the marbled murrelet from April 1 - September 15, unless surveys have been completed and approved by the USFWS. Prohibit blasting anywhere within USFS lands during the marbled murrelet nesting season, unless approved by the USFWS.</p> <p>P Do not construct within 100 m of rivers and creeks from November 1 - March 15, unless clearance surveys are done to determine no bald eagles are present. Identify potential perch trees regularly used and replace if cut.</p> <p>P Do not construct from March 15 - July 15 unless clearance surveys are done within 0.25 mile for raptor nests.</p>	<p>owls, long-billed curlew, and sandhill cranes), and nest and/or den sites of wildlife (i.e., tailed frogs, night snake, striped whipsnake, and Washington ground squirrels) would not be lost.</p> <p>P No noise impacts would occur to disrupt threatened and endangered species breeding behavior.</p> <p>P No impacts would occur to small mammals, game birds, and other wildlife.</p> <p>P No impacts would occur to mammals from clearing trees located east of the Yakima River.</p> <p>P No impacts would occur from clearing 207.6 acres of scrub-shrub habitat along BPA transmission line easements.</p>
Wildlife (continued)		
	<p>P Limit vegetation clearance from March 15 - July 15 for other birds under the Migratory Bird Treaty Act, unless clearance surveys are done within 10 feet of clearing areas and approved by the USFWS. Prepare site-specific plans for nest site protection, with the USFWS and WDFW.</p> <p>P Do not construct from March 15 - August 15 within 0.25 mile of active nest sites. Conduct clearance surveys for nesting burrowing owls. Construct replacement burrows</p>	

Proposed Action		
Impacts	Additional Mitigation Suggested	No Action
	<p>per WDFW direction.</p> <ul style="list-style-type: none"> P Conduct clearance surveys for nesting long-billed curlew and avoid construction within 328 feet during the breeding season. P Do not construct within areas mapped by WDFW as priority sandhill crane habitat from early March - mid-May or from mid-September - early November. P Conduct clearance surveys in wetland, stream, river, and riparian habitats immediately prior to construction and remove tailed frogs, Cascades frogs, and other amphibians. Remove individuals and relocate eggs in accordance with WDFW and USFWS. P Do not disturb snake hibernacula from October 15 - May 1, coordinate with WDFW and USFWS where this conflicts with other species. P Cooperate with the WDFW for mitigation for Washington ground squirrels. P Develop specific performance standards for restoration of each cover type that would be affected, obtain approval from the USFS, and monitor for success. 	
Wildlife (continued)		
	<ul style="list-style-type: none"> P Plant patches of shrubs within the ROW in adjacent parcels in cooperation with landowners. P Replace any trees removed east of the Yakima River with a 2:1 ratio of established nursery stock, with approval of WDFW. Conduct monitoring and maintain as necessary to ensure survival for 10 years. P Develop specific timing restrictions with WDFW to minimize disturbance to wintering deer and elk. 	

Proposed Action		No Action
Impacts	Additional Mitigation Suggested	
	<p>P Conduct clearance surveys for bats prior to disturbing habitat within cliff areas. Establish timing restrictions if roosts/breeding areas are found.</p>	
Water		
<p>P Moderate, short-term (less than 3 years) direct physical impacts from invasive trenching and bed and bank disturbance in 60 percent of the channels crossed (161 to 166). If blasting occurs in stream bedrock, shock waves could weaken residual bed material and unconsolidated bank material increasing their susceptibility to scouring and debris flow processes when saturated or at high flows. Streambeds could experience preferential scouring and sorting of the backfilled trench during the next bankfull or larger event. Sediments could be entrained and deposited in sensitive downstream reaches.</p> <p>P Major to minor, temporary impacts from invasive trenching causing erosion and sedimentation effects on water quality and channel conditions. Turbidity would likely exceed water quality standards during construction of crossings.</p> <p>P Major to minor impacts to water quality if substantial drilling muds seeped into the Columbia River.</p>	<p>P Identify culverts and their capacities to pass flows from a 100-year storm event. Replace and record design criteria for replacement of inadequate culverts.</p> <p>P Monitor culvert and channel conditions at all replaced culverts for 1 - 3 years, for achievement of desired fish passage and erosion concerns. Take corrective actions as necessary. Add new culverts to the long-term monitoring plan for all stream crossings.</p> <p>P Consider leaving some larger cut trees in the riparian area to enhance long-term LWD recruitment, water crossing stabilization, or fish enhancement. Consult with wildland hydrologists and fisheries habitat managers prior to placement of LWD.</p>	<p>P No impacts would occur to surface and groundwater resources and quality without the pipeline. However, the risk of oil spill-related impacts from trucks may increase as a result of more trucking of petroleum products. The same increased risk would occur for barging.</p> <p>P Little or no impact would occur to groundwater.</p>
Water (continued)		
<p>P Major, temporary impacts to City of Cle Elum, the Kittitas County PUD, and unlined irrigation canals in the lower Crab Creek drainage senior water rights if sediment impairs the use of those waters when needed, damages equipment, or increases treatment costs.</p> <p>P Develop detailed stream crossing plans and specifications for sensitive stream crossings. Adapt these plans in the field for application to all of the crossings.</p>	<p>P Use water surface profile models and flood-delevations and field indicators to identify the 100-year flood boundary, and ensure adequate burial depth of the pipeline at crossings. Consult a hydrologist or geomorphologist to assist in identification.</p> <p>P Bury the pipeline 2 feet below maximum scour depth throughout the entire floodplain.</p> <p>P Monitor the most sensitive stream crossings more</p>	

Proposed Action		No Action
Impacts	Additional Mitigation Suggested	
<p>P Consider using a polymer that begins to break down naturally in a few days, in place of betonite for drilling.</p> <p>P Monitor water quality downstream of trenched or drilled crossings during operation in or near channels known or suspected to contain salmonids. If a problem is detected, stop construction until situation is rectified.</p> <p>P Coordinate timing of invasive crossings upslope of Cle Elum and Kittitas PUD water intakes with them. Construct crossings under low-flow conditions to minimize sediment transport in the Yakima River washload.</p>	<p>frequently and intensively than now proposed by OPL.</p>	
Fisheries		
<p>P Moderate, short-term, localized impacts on fish and fish habitats from sedimentation during trenching at 161 - 166 crossing sites or surface runoff, particularly where invasive stream crossings are proposed within or above spawning grounds. The impacts of sedimentation in spawning grounds would be expected to last 1 - 3 years, depending on streamflows.</p> <p>P Moderate direct physical impacts to fish rearing and spawning habitat from invasive construction in 161 - 166 channels. Substrates would return to natural conditions within 3 years.</p>	<p>P Prepare site-specific crossing plans for streams with sensitive fisheries in cooperation and with approval from Federal and state agencies. Mitigate for short-term or permanent loss of fish habitat, as required by the agencies.</p> <p>P Complete a detailed analysis of alternative non-invasive crossing methods for sensitive stream crossings.</p> <p>P Replace culverts at Mill and Cold creek crossings to increase availability of bull trout spawning and rearing areas.</p>	<p>P No impacts would occur to fish and fish habitats from sedimentation during trenching at 161 - 166 crossing sites or surface runoff.</p> <p>P No direct physical impacts would occur to fish rearing and spawning habitat in 161 - 166 channels.</p> <p>P No impacts would occur to fish and habitat from spilled drilling muds.</p>
Fisheries (continued)		
<p>P Moderate to minor impacts to fish and habitat if substantial drilling muds seeped into the Columbia River, including T&E species.</p> <p>P Major (if T&E species are affected) to no impacts to fish, fish eggs, and larvae if blasting occurs in stream bedrock.</p> <p>P Moderate, short-term (less than 3 years) direct physical impacts to spawning habitat at the Tolt River and Cherry</p>	<p>P Evaluate existing culverts and consult with agencies regarding requirements for their replacement.</p> <p>P Provide construction and post-construction monitoring to ensure BMP effectiveness.</p> <p>P Monitor downstream of all drill and bore crossings to minimize potential impacts from drilling mud spills.</p>	<p>P No impacts would occur to fish, fish eggs, and larvae if blasting occurred.</p> <p>P No direct physical impacts would occur to T&E Puget Sound chinook salmon spawning habitat on the Tolt River and Cherry Creek.</p> <p>P No impacts would occur to bull trout</p>

Proposed Action		No Action
Impacts	Additional Mitigation Suggested	
<p>Creek crossing sites for T&E Puget Sound chinook salmon.</p> <p>P Moderate to minor localized impacts on bull trout spawning habitat below the crossings of Roaring and Meadow creeks.</p> <p>P If blasting occurs in or near streams that provide fish habitat, consult with appropriate agencies and prepare a blasting plan.</p>	<p>P Drill the crossing of the Columbia River during WDFW work window requirements to minimize impacts from spilled drill muds on salmonids.</p> <p>P Provide downstream monitoring of turbidity at all invasive stream crossing sites.</p>	<p>spawning habitat below the crossings of Roaring and Meadow creeks.</p>
Air Quality		
P No moderate or major impacts were identified.	P None	
Noise		
P No moderate or major impacts were identified.	P None	
Traffic and Transportation		
P No moderate or major impacts were identified.	P None	
Cultural/Historical Resources		
P No moderate or major impacts were identified.	P None	
Land and Shoreline Use		
P No moderate or major impacts were identified.	P None	
Agriculture		
P No moderate or major impacts were identified.	P None	
Recreation		
<p>P Minor to major impacts would occur to users of most of the 57 recreational facilities in the vicinity of the pipeline corridor. Most recreationists using the facilities would experience temporary (1 to 2 days, during daylight hours) dust, noise, and views of construction depending on the proximity of their activities to the 1,000-foot active construction zone, the movement of the construction from 2,000 to 10,000 feet per day, and the length of their stay.</p>	<p>P No additional mitigation measures are suggested beyond those proposed by OPL.</p>	<p>P No impacts would occur to recreationists from dust, noise, and views of construction.</p> <p>P No direct impacts would occur to the state park, two trails, and two golf courses. Snoqualmie Tunnel would not be closed to equestrian users for two</p>

Proposed Action		
Impacts	Additional Mitigation Suggested	No Action
<p>P Minor to major impacts to users of a state park, two trails, and two golf courses. The pipeline is being buried under an undeveloped but trailed portion of Twin Falls State Park, 7.4 miles of the Cedar Falls Trail, and 21.1 miles of the Iron Horse State Park/John Wayne Trail. The recreationists at these three facilities could experience temporary trail closures, for up to 1 hour. Vegetation along trails may be damaged during stockpiling of soil along the trench, affecting the visual quality of the recreational experience. Disturbed vegetation would likely recover in 1 to 2 years. The pipe would be buried in the Snoqualmie Tunnel, with temporary pedestrian closures (up to 1 hour) possible during the 2-week construction period. Equestrian users would likely be excluded for the entire 2 weeks. The pipeline would be buried in the rough, cart paths, or trails of Echo Falls Country Club and Mount Si Golf Course. Courses would remain open but interruptions could occur for 1 to 2 days.</p> <p>P Major impacts to historical campers from displacement by construction workers at two state parks, Lake Easton and Ginkgo Petrified Forest State Parks, and other public and private camping facilities.</p> <p>P Potential major impacts for historical users of limited trailhead, campground, and other recreational parking facilities if displaced by construction worker vehicles.</p>		<p>weeks.</p> <p>P No impacts would occur to historical campers/users at two state parks, Lake Easton and Ginkgo Petrified Forest State Parks, and other public and private camping facilities.</p> <p>P No impacts would occur to historical users of limited trailhead, campground, and other recreational parking facilities.</p>
Visual Quality		
<p>P Moderate, temporary (2 - 3 years) impacts to suburban and rural residential areas (e.g., Woodinville and North Bend) from high viewer sensitivity near additional clearing of the ROW.</p> <p>P Moderate to major, temporary impacts to visual resources for recreationists are limited mostly to 28 miles of popular hiking trails and recreation sites, including sections of the</p>	<p>P No additional mitigation measures are suggested beyond those proposed by OPL.</p>	<p>P No impacts would occur to visual quality and aesthetics.</p>

Proposed Action		
Impacts	Additional Mitigation Suggested	No Action
<p>pipeline corridor along Cedar Falls Trail, John Wayne Trail, Tinkham Campground/Annette Lake Trailhead in the Snoqualmie Pass area, and the Yakima River crossing. In the Snoqualmie Pass area, tree cutting would be minimized but soil stockpiling on one side of the trench would cover herbaceous plants and extend into adjacent trees where the trail corridor is narrow. Disturbed vegetation within the trail corridors is expected to recover in 1 to 2 years. At the Yakima River crossing, time for recovery of vegetation will be longer (15 to 40 years and possibly longer) due to the difficulty in restoring shrub-steppe vegetation.</p> <p>P Exceedance of the USFS VQO of Retention and Partial Retention within the Mt. Baker-Snoqualmie and Wenatchee National Forests. Corridor would be evident within the foreground of recreation trails and forest cuts on slopes connecting the router between trails. Utility corridors would be visible in the middleground of primary scenic travel corridors such as I-90.</p> <p>P Moderate impacts where the corridor passes adjacent to farm buildings at close viewing ranges, or runs along dirt roads.</p>		
Socioeconomics		
<p>P Major impacts on availability of transient housing (hotels, motels, camping facilities) for historical recreational users would occur during the spring through fall because of displacement by non-local construction workers.</p> <p>P Loss of housing for historical users to construction workers could subsequently result in moderate local impacts from reduced sales revenues, because of altered spending patterns, in recreation-related retail businesses.</p> <p>P Lack of housing could also lead to moderate local pollution and health issues from unapproved camping and dumping of sewage wastes.</p>	<p>P Negotiate with private RV and campground owners to expand their facilities at OPL's expense for exclusive use by the construction workers.</p> <p>P Rent or arrange for use of local dormitories during off-season periods.</p> <p>P Rent or arrange for use of local housing.</p> <p>P Establish a sewage tank and pumping system to be used by construction workers.</p> <p>P Development an approval of a Transient Worker Housing</p>	<p>P No impacts would occur to available transient housing (hotels, motels, camping facilities), historical recreational users would not be displaced.</p> <p>P No impacts would occur from recreation-related reduced sales revenues for retail businesses.</p> <p>P No impacts would occur from unapproved camping and dumping of sewage.</p>

Proposed Action		No Action
Impacts	Additional Mitigation Suggested	
<p>P Consultation with the tribes and the SHPO, and evaluation of impacts on traditional cultural properties or other resources is ongoing and will be completed in the Section 106 process.</p>	<p>Plan.</p> <p>P Consultation with the tribes and the SHPO on mitigation for traditional cultural properties or other resources is ongoing and will be completed in the Section 106 process. Phase II will include recommendations.</p> <p>P Prepare a plan, meeting Native American Graves Protection and Repatriation Act requirements, specifying the treatment of human remains if discovered during construction.</p>	<p>P No impacts would occur to traditional cultural properties or other resources.</p>
Public Services and Utilities		
<p>P No moderate or major impacts were identified.</p>	<p>P None.</p>	
Health and Safety		
<p>P No moderate or major impacts were identified.</p>	<p>P None.</p>	<p>P</p>
<p>* This table summarizes only those impacts that would be moderate to major. Lesser impacts are described in the impacts analysis in Chapter 3.</p>		

Table S-5. Summary of Moderate to Major* Operations Impacts and Mitigation for Proposal and No Action

Proposed Action		No Action
Impacts	Additional Mitigation Suggested	
Geology, Soils, Seismicity		
<p>P Minor to major impacts if mass wasting and soil erosion occurred near water bodies.</p> <p>P Moderate to major impacts from potential failure of the slope at Peoples Creek (and the Snoqualmie River 1.2 miles downstream of the crossing), compression or extension of the pipe at Cherry Creek and Tolt River, and a slide on the western shore of the Columbia River could result in a ruptured pipeline and product spill.</p> <p>P Moderate to major impacts if an earthquake ruptured the pipeline.</p> <p>P Moderate to major impacts could occur directly to streams if stream scouring (most likely during floods) or rapid lateral migration occurred, exposing the pipeline and rupturing it.</p>	<p>P Perform geotechnical investigations at mass wasting areas having high or moderate potential for slope failure.</p> <p>P Concrete the rock portions of the slope of Peoples Creek and other similar creeks to buttress the slope and protect the pipe. Conduct subsurface explorations and detailed geotechnical studies to design this measure.</p> <p>P Place block valves south of the slide and on the slope north of Cherry Creek. Install surface and subsurface drainage measures to increase slope stability. Conduct a subsurface exploration program to determine if other measures would be required.</p> <p>P Consider installing flexible couplings at the top and toe of the landslide along the south slope of the Tolt River Valley to allow for creep movements of the earth mass. Block valves should be considered at this location. Block valves should be installed south of the top of the slide area and on the slope north of the river.</p> <p>P Install block valves at the west side of the slide on the Columbia River.</p> <p>P Evaluate potential for surface rupture along the active Saddle Mountains fault and, if needed, install flexible couplings, reinforce pipeline with increased wall thickness, and/or install block valves.</p> <p>P Conduct detailed evaluations of scour potential at individual stream crossings to determine depths of pipeline burial to minimize potential pipeline exposure.</p>	<p>P No impacts would occur from mass wasting or soil erosion and a ruptured pipeline.</p> <p>P No impacts would occur from slope failure and a rupture to Peoples Creek, Snoqualmie River, Cherry Creek, Tolt River, or the Columbia River.</p> <p>P No impacts would occur from a pipeline rupture if an earthquake occurred.</p> <p>P No impacts would occur directly to streams from stream scouring or rapid lateral migration and pipeline rupturing.</p>
Geology, Soils, Seismicity (continued)		

Proposed Action		No Action
Impacts	Additional Mitigation Suggested	
	<p>P Where potential scour depth exceeds reasonable trenching depths, use horizontal directional drilling instead.</p> <p>P Install block valves on streams where a high or unpredictable scour potential exists.</p> <p>P Conduct studies to confirm that, where the pipeline placed in an embankment above or below existing culverts, culverts are adequately sized to accommodate peak flood events. Where areas are susceptible to mudflows and debris flows, consider use of horizontal directional drilling instead and the installation of block valves.</p> <p>P Conduct a flood study for horizontal directional drilling of the Columbia River to assess if floodwaters would cover the launch and receiving pit areas. If so, protect the pipeline from damage that could be caused by scouring.</p> <p>P If the Beverly Railroad Bridge is used for the Columbia River crossing, conduct a detailed structural analysis and seismic stability analysis to determine whether substantial rehabilitation of the bridge is required.</p>	
Botanical Resources		
P No moderate or major impacts were identified.	P None.	
Wetlands		
P No moderate or major impacts were identified.	P None.	
Wildlife		
P Moderate impacts from permanent loss of 1.82 acres of northern spotted owl habitat within the 30-foot-wide corridor may result in a significant adverse modification of designated critical habitat, but would not likely affect viable populations.	<p>P Develop and implement site-specific management plans, and consult with the WDFW, for areas that may be sensitive to regular entry and/or low-level flights. Areas could include nest sites, deer and elk winter range, and the sandhill crane migration area in the lower Crab Creek area.</p> <p>P Do not conduct tree cutting maintenance from March 15 -</p>	<p>P No impacts would occur from permanent loss of 1.82 acres of northern spotted owl habitat.</p> <p>P No impacts would occur from permanent loss of 1.82 acres of northern spotted owl habitat.</p>

Proposed Action		
Impacts	Additional Mitigation Suggested	No Action
	<p>July 15 (nesting season) unless clearance surveys are conducted to verify no nests are present. Conduct surveys in cooperation and approval from USFS or WDFW.</p> <p>P Conduct aerial and driving inspections of the pipeline so that sandhill crane flocks are not disturbed. Develop and implement site-specific management plans in consultation with the WDFW and USFWS.</p> <p>P Do not drive through wintering deer range when snow cover averages greater than 2 feet. Develop and implement site-specific management plans in consultation with the WDFW and USFWS.</p>	
Water		
<p>P Moderate to major water quality impacts if stream erosion, migration, or scouring exposed the pipeline, a spill or chronic leak occurred, and product entered surface waters.</p> <p>P Major impacts if a spill or chronic leak occurred and product contaminated needed senior water rights.</p> <p>P Major groundwater quality and well/spring impacts if a spill or chronic leak occurred from corrosion or unauthorized excavation and product entered the groundwater.</p>	<p>P At each stream crossing, survey both of the elevations of the installed pipeline and the reconstructed streambed and banks. Install and survey a benchmark and a second reference point near each crossing. Monitor the cross-sectional morphology at each crossing at 1, 3, and 5 years after construction. Repeat monitoring after each storm event that substantially exceeds the peak storm observed in each WRIA during the first 5-year interval. Whenever the depth of the pipeline is halved relative to the original burial depth, notify appropriate agencies and assess whether stabilization measures are appropriate. If bed elevation reaches the original maximum scour depth, meet with agencies and identify and modify stabilization and spill prevention measures.</p>	<p>P No impacts would occur to water supplies and quality from the pipeline. However, increased trucking on roads across the same streams and along the same corridors (e.g., I-90) would increase risks of spills into those areas (although smaller in extent). Increased transfers and barging in the Pacific Ocean and on the Columbia River could lead to increased chances of spills and impacts to water quality.</p>
Fisheries		
<p>P Moderate to major impacts to fish, water quality, vegetation, sensitive areas, and possibly groundwater could occur if a spill or chronic leak occurred and product entered surface waters.</p>	<p>P No additional mitigation measures are suggested beyond OPLs implementation of the spill response and pollution prevention plan.</p>	<p>P Major to minor impacts on fisheries from increased use of tanker trucks and barges, associated increased likelihood of spills from accidents (although at lower volumes than the pipeline), and impacts to fisheries if spills occur in or</p>

Proposed Action		No Action
Impacts	Additional Mitigation Suggested	
		reach nearby waterbodies.
Air Quality		
P No moderate or major impacts were identified.	P None.	
Noise		
P No moderate or major impacts were identified.	P None.	
Traffic and Transportation		
P No moderate or major impacts were identified.	P None.	
Cultural/Historical Resources		
P Consultation with the tribes and the SHPO, and evaluation of impacts on traditional cultural properties or other resources is ongoing and will be completed in the Section 106 process.	<p>P Consultation with the tribes and the SHPO on mitigation for traditional cultural properties or other resources is ongoing and will be completed in the Section 106 process.</p> <p>P Prepare a plan, meeting Native American Graves Protection and Repatriation Act requirements, specifying the treatment of human remains if discovered during operation.</p>	P Increased trucking and barging would increase the probability of accidental damage from spills if they occur near identified and undiscovered sites along the Columbia River, below Pasco and along the I-90 corridor.
Land and Shoreline Use		
P The project is inconsistent with the Mt. Baker-Snoqualmie National Forest Land and Resource Management Plan, as amended by the NFP, because of removal of standing second-growth trees on lands designated as Late-Successional Reserves adjacent to the Humpback Creek crossing (#78). It may be inconsistent with other Standards and Guidelines also.	P No additional mitigation measures are suggested beyond those proposed by OPL.	P No impacts would occur to land and shoreline use.
Agriculture		
P No moderate or major impacts were identified.	P None.	
Recreation		
P No moderate or major impacts were identified.	P None.	
Visual Quality		

Proposed Action		No Action
Impacts	Additional Mitigation Suggested	
<p>P Moderate impacts from the Beverly-Burke Pump Station because of proximity to Beverly-Burke Road and lack of screening.</p> <p>P Major impacts from the Kittitas Terminal because of its industrial character in an agricultural/grazing area and its visual dominance from I-90.</p>	<p>P No additional mitigation measures are suggested beyond those proposed by OPL.</p>	<p>P No impacts would occur to visual quality and aesthetics.</p>
Socioeconomics		
<p>P Major impacts would occur to Tidewater Barge Lines, Inc. from loss of petroleum product shipping business, lost revenues and a potential lay off of 100 employees.</p> <p>P Lost petroleum shipping for Tidewater could lead to moderate impacts to farmers and grain elevators from increased costs of shipping other commodities, such as grain, because of the loss in cost-efficiency of combined round-trip shipment of grain and petroleum products.</p>	<p>P Implement OPL-funded training or job placement services for Tidewater Barge Lines, Inc. employees who are laid off.</p>	<p>P No impacts would occur to Tidewater Barge Lines, Inc., resulting in retained revenues and employees. If more barge shipping of petroleum products were to occur to meet increasing demands in central and eastern Washington, Tidewater would experience increased revenue and potential increases in employee levels.</p> <p>P No impacts would occur to the costs of shipping other commodities, such as grain.</p>
Public Services and Utilities		
<p>P No moderate or major impacts were identified.</p>	<p>P None.</p>	
Health and Safety		
<p>P Major reduction of petroleum products shipping on Puget Sound and the Washington coast (12 to 20 shipments per month) and elimination of upriver barging of such products up the Columbia River.</p> <p>P New petroleum spill risk across Cascades and farming areas east of the Cascades to Pasco.</p> <p>P Elimination of two tank farm terminals on the Snake River. Creation of a new tank farm terminal at Kittitas.</p>	<p>P Additional block valve near Keechelus Lake.</p> <p>P Additional protective coating at all exposed crossings.</p> <p>P Lined trench at sole source aquifer crossings.</p>	<p>P Continually increasing risk of spills from barges on the Columbia River, from trucks across Stevens and Snoqualmie Passes, and from barges on Puget Sound.</p> <p>P Continued operation and risk of two terminals on the Snake River.</p>

Proposed Action		No Action
Impacts	Additional Mitigation Suggested	
P Reduced accident and fatality rate associated with elimination of tank or truck activity across Cascade Passes.		
* This table summarizes only those impacts that would be moderate to major. Lesser impacts are described in the impacts analysis in Chapter 3.		

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