

3.9 NOISE

3.9.1 Affected Environment

Noise regulations (state, county, and local) specify standards that restrict both the level and duration of noise measured at any given point within a receiving property. The maximum permissible environmental noise levels depend on the land use of the property that contains the noise source (e.g., industrial, commercial, or residential) and the land use of the property receiving that noise. Noise standards applicable to this proposal are shown in Table 3.9-1. Sound levels associated with typical sources of noise are shown in Table 3.9-2. Potential noise sources from this project include

**Table 3.9-1. Maximum Permissible Environmental Noise Levels (dBA)
Ecology and King/Snohomish County Combined**

EDNA ^a of Noise Source	EDNA of Receiving Property ^b Day (7 a.m. - 10 p.m.)			
	Rural	Class A Residential	Class B Commercial	Class C Industrial
Rural	49	52	55	57
Class A Residential	52	55	57	60
Class B Commercial	55	57	60	65
Class C Industrial	57	60	65	70

^a EDNA = Environmental designation for noise abatement.

^b Class A = Residential areas of lands where human beings reside and sleep; such as residential areas, multiple family living areas, recreational and entertainment areas (campgrounds, parks, resorts), community service areas (retirement homes, hospitals, health and correctional facilities).

Class B = Commercial areas or land uses requiring protection against noise, interference with speech; such as commercial living and dining areas, motor vehicle services, retail services, banks, office buildings, and recreational areas not used for habitation (theaters, stadiums, fairgrounds, amusement parks).

Class C = Industrial areas or lands involving economic activities; such as agricultural, storage, warehouse, production, and distribution facilities.

Rural = Rural areas with King County zoning districts designated as A, F-r, E-P, S-E, G, and S-R greater than 35,000 square feet.

Maximum permissible levels during normal sleeping hours (10 p.m. to 7 a.m.) are further reduced by 10 dBA at Class A EDNAs.

construction noise, noise associated with the pump stations, noise at the Kittitas Terminal, and aerial flyovers of the alignment every 1 to 2 weeks.

Table 3.9-2. Weighted Sound Levels and Human Response

Sound Source	dBA ^a	Response
Carrier deck jet operation	140	
Limit of amplified speech	130	Painfully loud
Jet takeoff (200 feet)	120	Threshold of feeling and pain
Auto horn (3 feet)		
Riveting machine	110	
Jet takeoff (2,000 feet)		
Shout (6 inches)	100	Very annoying
New York subway		
Heavy truck (50 feet)	90	Hearing damage
Pneumatic drill (50 feet)		(8 hour exposure)
Freight train (50 feet)	80	Annoying
Garbage disposal in home		
Freeway traffic (50 feet)	70	Telephone use difficult
Air conditioning unit (20 feet)	60	
Light auto traffic		
Speech in normal voice (15 feet)	50	Quiet
In-house movement of people, no TV or radio	40	
Soft whisper (15 feet)	30	Very quiet
Recording studio	20	
	10	Very faint
	0	Threshold of hearing

^a Typical A-weighted sound levels. The "A" scale approximates the frequency response of the human ear.

Source: U.S. Council on Environmental Quality 1970.

3.9.1.1 Existing Sound Levels at Pump Station Sites

Noise monitoring was conducted by OPL in August and September 1995, and additional monitoring in August 1996, to characterize existing noise conditions in the vicinity of each station (Thrasher, North Bend, Stampede, Kittitas, Beverly-Burke, and Othello). At each pump station site,

monitoring locations were chosen which represented the most sensitive land uses in the vicinity of the proposed station. (OPL 1998.)

The Thrasher Station would be located on 46th Avenue near the existing OPL Woodinville Station. Land uses surrounding this site are primarily rural residential. At the Thrasher Station, measured sound levels ranged from 45 A-weighted decibels or dBA (night) to 74 dBA (day). At times the daytime sound levels exceeded the applicable noise standards due to nearby vehicle traffic and other sources of background noise (e.g., aircraft overflights).

The North Bend Station would be located south of SE 120th Street and south of the Cedar Falls Trail (at one time it was proposed for north of the trail). Land uses surrounding this site are primarily urban and rural residential. Measured sound levels ranged from 42 dBA (night) to 49 dBA (day). The nighttime standard was exceeded at several locations during the evening period.

The Stampede Pass Station would be constructed at a later date and only if needed. This station would be located near Stampede Pass Road, east of Lake Easton. Measured sound levels ranged from 44 dBA (night) to 66 dBA (day). The nighttime standard was exceeded at one location due to background traffic noise and other extraneous noise sources.

The Kittitas Station would be located at the proposed Kittitas Terminal on agricultural land at I-90/Badger Pocket Road. Existing sound levels in the vicinity of the Kittitas Station and Terminal ranged from 49 dBA (night) to 66 dBA (day). The existing noise environment was dominated by traffic noise from I-90 and noise from agricultural activities.

The Beverly-Burke and Othello Stations would be constructed at a later date if needed. The Beverly-Burke Station would be located in Grant County about 6.4 km (4 miles) east of the Columbia River in uncultivated rangeland. The Othello Station would be located approximately 9.7 km (6 miles) southwest of Othello near Highway 24 on agricultural land. Measured sound levels at both stations ranged from 40 dBA to 50 dBA. There were no exceedances of either the day or nighttime noise standard at either location.

3.9.1.2 Existing Sound Levels at Kittitas Terminal

The Kittitas Terminal (which would most likely be classified as an industrial noise source) would be constructed near the existing I-90 interchange, approximately 1.6 km (1 mile) south of Kittitas. There are two gas stations/convenience stores near the interchange. The area is generally surrounded by agricultural land. There are no permanent residences or other sensitive noise receptors immediately adjacent to the site.

Noise monitoring was conducted by OPL at five locations in the vicinity of the proposed Kittitas Terminal in September 1995 to characterize existing noise conditions. As noted above, existing noise levels in the vicinity of the Kittitas Terminal ranged from 49 dBA (night) to 66 dBA (day) and were dominated by traffic noise from I-90. (OPL 1998.)

3.9.2 Environmental Consequences

3.9.2.1 Proposed Petroleum Product Pipeline

Construction Impacts. Construction noise would occur over short time periods during limited hours along the alignment. The Kittitas Terminal is the largest single project facility and the potential source of the greatest amount of construction noise.

Short-term impacts due to construction activities would be expected along the pipeline corridor and at the pump stations. Primary noise impacts would be associated with earth-moving equipment and other construction activities. Conventional construction equipment, including bulldozers, graders, scrapers, and heavy-duty trucks and cranes, would be used at these sites. Construction impacts would be temporary, lasting only for the duration of the construction period. For a discussion of noise impacts on wildlife, see Section 3.5, Wildlife.

Most noise standards exempt construction noise between the hours of 7 a.m. and 10 p.m. According to OPL, no nighttime construction activities would be required. As a result, the noise impacts due to construction would be negligible.

Operation Impacts. Major noise sources associated with operation would include the Kittitas Terminal and the six pump stations. According to OPL, three pump stations would be built initially (Thrasher Station, North Bend Station, and Kittitas Station) and two (Thrasher Station and North Bend Station) would be fully enclosed to reduce noise and provide protection from the elements. Most of the pump stations and the Kittitas Terminal are located in relatively isolated and unpopulated areas without nearby residential receptors. The Kittitas Terminal is the largest single project facility and the potential source of the greatest amount of operational noise.

Pump Stations. The Thrasher Station would be an enclosed facility. According to Owens' Corning guidance for sound transmission loss, the enclosure would reduce noise transmission by 40 dBA. Operation of the Thrasher Station would not increase existing noise levels at nearby receptors during the day or evening periods. The noise impact due to pump station operation at this location would be negligible.

The North Bend Station would also be enclosed to reduce sound transmission. The enclosed pump station at this location would not cause an increase in noise levels at nearby receptors and would have a negligible impact.

The Stampede Pass Station would not be among the first pump stations constructed. At the Stampede Pass Campground (near the pump station site), traffic noise from I-90 is audible. Operation of the pump station at this location would not increase overall noise levels in the area.

The Beverly-Burke Station would not be enclosed. The estimated noise level for the proposed pump station would be 80 dBA at a distance of 4.6 m (15 feet) from the source. At a distance of 18.3 m (60 feet) from the pump station, the noise criteria would be met. (OPL 1998.) There are no

residential receptors within miles of the pump station; therefore, there would be no noise impacts. The site is in a remote agricultural area.

Similar to the Beverly-Burke Station, the noise generated by the Othello Station would not impact the nearest residence due to the noise attenuation over a very large distance in this remote agricultural area.

Noise impacts associated with the Pasco Delivery Facility would be similar to the other pump stations. Because the equipment associated with the Delivery Station would be enclosed, noise impacts associated with its operation would be minimal.

Kittitas Terminal. The predominant noise source would be at the Kittitas Terminal. Noise sources would include increased truck traffic to and from the terminal, noise from the truck loading rack, and noise from the pumps delivering product from storage tanks to the loading rack. The nearest commercial receptors to the terminal are the Texaco and BP gas stations, south and west of the proposed terminal, respectively. The nearest residential receptors are approximately 0.8 km (0.5 mile) south and east of the terminal. Operational impacts associated with the Kittitas Terminal were estimated by adding noise generated due to operation of the terminal to the existing ambient noise levels at each receptor in the vicinity of the site.

Loading Rack Operations. To estimate noise impacts associated with the loading rack operation, noise monitoring was performed at a similar facility in Renton, Washington (OPL 1998). During the truck loading cycle at the Renton facility, one truck produced a sound level of 81 dBA at a distance of 9.1 m (30 feet) from the noise source. According to OPL, the loading rack at the proposed terminal would be able to accommodate two trucks loading product simultaneously. If one truck loading operation produced a noise level of 81 dBA, then two simultaneous loading operations would create a noise level of 84 dBA at 9.1 m (30 feet) from the center of the noise source, based on logarithmic addition of the two noise sources.

The loading rack operation would increase existing sound levels by approximately 2 dBA at the Texaco station west of the terminal. An increase of 2 dBA would be imperceptible to the average individual (in general, sound level increases of 3 to 5 dBA are generally noticeable to most people). At the nearest residential receptors, sound level increases would be less than 1 dBA and would be negligible.

Kittitas Pump Station Operations. In addition to truck loading operations, noise impacts would also result from operation of the pump station at the Kittitas Terminal. Impacts associated with pump station operations were estimated based on noise data collected from an existing pump station in Renton (OPL 1998). The hourly equivalent constant sound level or Leq recorded at the existing pump station in Renton was 80 dBA.

Noise level increases due to operation of the pump station would be less than 2 dBA at all receptor locations, which is a negligible impact.

Combined Noise Impacts at the Kittitas Terminal. If the loading rack and the pump station operated simultaneously, a combined noise level would be generated. The pump station

would operate 24 hours per day, while the loading rack may operate intermittently throughout the same period. To assess a worst-case scenario, it was assumed that both sources would be operating simultaneously. At all receptor locations, the combined noise impact from simultaneous operation of the pump station and the loading rack would be less than 3 dBA and would be a negligible impact.

Aerial Overflights. OPL would perform fixed-wing airplane aerial surveillance at altitudes averaging 305 m (1,000 feet) above ground level over the pipeline corridor to visually inspect the alignment at least once every 2 weeks. The noise generated during these inspections could be an annoyance to residents, hikers, or campers in the vicinity of the pipeline corridor. Duration of the noise from the overflight would be less than a minute at any location. Helicopters are not proposed to be used.

Columbia River Approach and Crossing Options. Noise impacts would be the same for all Columbia River crossing options, most of which cannot be seen by air. YTC crossing options that use or come close to Ginkgo Petrified Forest State Park would have greater, though infrequent, noise impacts due to aerial flyovers.

Cumulative Impacts. Noise emissions from pump stations and the Kittitas Terminal would be minor and not in the vicinity of other noise sources. No cumulative impacts would occur.

3.9.2.2 No Action

Under the No Action Alternative, the proposal would not be constructed; current modes of product transport would continue and would increase in volume. Additional truck traffic would be required to distribute product to eastern Washington markets. According to OPL, truck traffic on major roadways would increase from 50 to 60 tanker trucks per day now, to 128 trucks per day in 2026. Given the existing traffic volumes on I-5 and I-90 (10,000 to 30,000 vehicles per day depending on location), this increase in truck volumes would have a negligible impact on noise.

3.9.3 Additional Proposed Mitigation Measures

None are proposed.

LIST OF ACRONYMS

hourly equivalent constant sound level or Leq.....3-191

LIST OF CITATIONS

(OPL 1998.).....3-188
(OPL 1998.).....3-189
(OPL 1998.)3-190
(OPL 1998).3-191
(OPL 1998).....3-191

LIST OF FIGURES

LIST OF TABLES

Table 3.9-1.3-187
Table 3.9-2.....3-187
Table 3.9-1. Maximum Permissible Environmental Noise Levels (dBA)Ecology and King/Snohomish
County Combined.....3-187
Table 3.9-2. Weighted Sound Levels and Human Response3-188

LIST OF APPENDICES