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Gateway Pacific Terminal Proposal: Environmental Impact Assessment

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WWU – HUXLEY COLLEGE OF THE ENVIRONMENT

Gateway Pacific Terminal

Environmental Impact Assessment

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Carrera Casper
Theo Frey
Kayla Grayson
Walter Haas
Tim Kennedy
Brenden McClain
Casey Rogers**

Concerned Citizens Letter

Dear Concerned Citizens,

The purpose of this environmental impact statement (EIS) is to assess the probable environmental impacts of the Gateway Pacific Terminal, as proposed by SSA Marine. Impacts to both the natural environment and the built environment are analyzed. This EIS has been written in compliance with the Washington State Environmental Policy Act (SEPA), as detailed in the Washington Administrative Code (WAC) 197-11. It has been prepared as an academic exercise for the Environmental Studies program at Huxley College of the Environment and should not be regarded as an official EIS for the project.

The proposed Gateway Pacific Terminal at Cherry Point would serve as a dry bulk commodity exporting and importing facility and would be used to efficiently export grain, potash, and coal. If built at full capacity, it is expected that the terminal would be capable of exporting 54 million metric tons of bulk commodities per year, 48 million metric tons of which could be coal (McKay). The 1,092-acre site will feature railcar unloading stations, conveyance systems, service buildings, a stockyard, and shiploading facilities, including berths for three ships. In order to supply the terminal with export commodities, an increase in rail traffic (up to 18 additional trips per day) is proposed.

The alternative action analyzed in this EIS is the original Gateway Pacific Terminal proposal, which was proposed and permitted in 1997. This terminal was proposed for the same 1,092-acre site at Cherry Point and would also be used for dry bulk commodities, excluding coal. The shipping and storage capacity of the alternative action is much smaller than the proposed project and is estimated to only be capable of exporting 8.3 million metric tons of goods annually. This would lessen the project's environmental impacts, but also reduce its direct economic benefits.

This document lists and discusses the environmental impacts of both the proposed action and the alternative action, as well as mitigation measures to reduce those impacts. Previous studies, reports, published data, and agency documents were used to compile this analysis and our team hopes that it clearly and effectively highlights the significant environmental issues associated with the Gateway Pacific Terminal.

We invite the public to attend a presentation on the impacts of these actions at Western Washington University Academic West 410 on July 27, 2011 at 12:00 PM.

Sincerely,
Gateway Pacific Terminal EIA Team

David Burgesser
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Western Washington University

Gateway Pacific Terminal Proposal

Environmental Impact Assessment

Environmental Studies 436
Professor Jean Melious

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This document represents a class project carried out by students of Western Washington University, Huxley College of the Environment. It has not been undertaken at the request of any people representing local governments or private individuals, nor does it necessarily represent the opinion or position of individuals from government or the private sector.

Huxley College of the Environment
Summer 2011

Environmental Impact Assessment
Huxley College of the Environment

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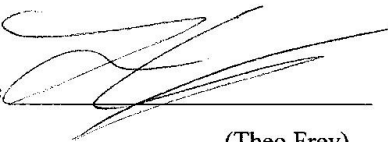
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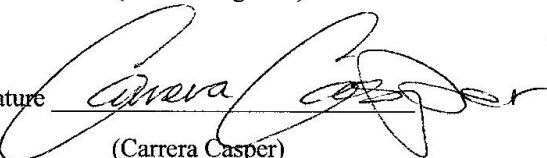
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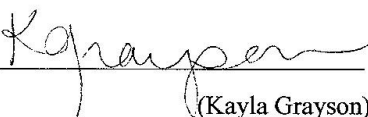
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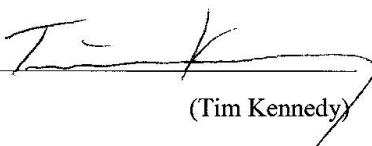
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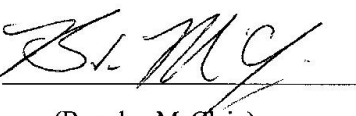
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Date 7-25-11

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Fact Sheet

Title

Gateway Pacific Terminal at Cherry Point

Description of Project

SSA Marine seeks to construct a full-service dry bulk commodity shipping terminal at Cherry Point, Washington. The proposed terminal will be the largest of its kind on the West Coast of the United States. If fully constructed, the terminal will have the capacity to annually export 54 million metric tons of bulk commodities, 48 million metric tons of which are expected to be coal (McKay). The project will involve constructing a railcar unloading station, stockyard, conveyance and shiploading systems, berths for three vessels, service buildings, and a storage and material handling facility, as well as making improvements to rail access at the site. The terminal will likely be constructed in two or more phases, depending on the initial customer demand (SSA Marine).

Description of Location

The proposed site for the Gateway Pacific Terminal is at Section 18, Township 39 North, Range 1 East, in Whatcom County, in the northwest corner of Washington State. The 1,092-acre site is located on the coast at Cherry Point, about 6.5 miles west of Ferndale, Washington and about 17 miles south of the Canadian border. The GPS coordinates for this site are 48.86855 N, 122.74646 W. See figures 1.1-1.3 for location maps.

Proposer

SSA Marine, Inc.

Lead Agency

Huxley College of the Environment

Related Permits and Authorizations (Pacific International Terminals, Inc.)

Whatcom County

Shoreline Substantial Development Permit

Building Permits

Major Project Permit

Certificate of Occupancy

Street Vacation Permit

Washington State Department of Ecology

Clean Water Act – Section 401 Water Quality Certification (regulates discharges to US waters, including wetlands)

Coastal Zone Management Consistency Determination

NPDES General Industrial Stormwater Permit

NPDES General Stormwater Permit for Construction

Washington Department of Fish and Wildlife
Hydraulic Project Approval

Washington Department of Natural Resources
Aquatic Land Lease Agreement
Forest Practices Permit (Washington State DNR)

Northwest Clean Air Agency
Clean Air Act – Order of Approval to Construct

U.S. Army Corps of Engineers
Clean Water Act – Section 404 Permit (regulates construction and discharge in navigable waters)
Rivers and Harbors Act – Section 10 Permit (regulates construction and discharge in navigable waters)
National Environmental Policy Act Review

NOAA Fisheries
Marine Mammals Protection Act Review
Magnuson-Stevens Act Review

US Fish and Wildlife Service
Endangered Species Act – Section 7 Consultation (requires consultation with US Fish and Wildlife Service to determine potential impacts to threatened or endangered species)

US Coast Guard
Approval for Private Aids to Navigation

Contributors

David Burgesser – Housing, Light and Glare
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Theo Frey – Energy and Natural Resources, Utilities
Kayla Grayson – Earth, Plants
Walter Haas – Water, Recreation
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Issue Date

July 27, 2011

Public Presentation Time and Date

July 27, 2011 @ 12:00 PM
Western Washington University Academic West 410

Applicant's Statement of Project Purpose and Need

The purpose of the Gateway Pacific Terminal is to provide a full-service export-import facility in Whatcom County, Washington for shipping, stevedoring, and warehousing. The facility will ship and store dry bulk commodity. Due to the deep waters that are provided by the project site, it is possible for a large marine terminal which requires bulk cargo ships to acquire the site. It will provide a port for American producers to ship their commodities such as grain, potash, and coal to Asian consumers. The Gateway Pacific Terminal also aims to create sustainable jobs and economic benefits for the county, state, and country. For more information on the applicant's statement of purpose and need, please visit www.gatewaypacificterminal.com.

Current Proposal Summary

The Gateway Pacific Terminal will be a full service dry bulk exporting facility. The current proposal expands upon the previous application to increase the potential output of the export facility. It is looking to export 20 million tons of coal the first year and increase to 54 million tons of coal per year after that. The proposed expansion would include the construction of a train loop for coal cargo, a railcar unloading station, a stockyard with an 80-ton coal capacity, conveyance and shiploading systems, berths for three vessels, and administrative buildings (see figure 2.1 for the site plan). The proposal is consistent with the heavy use industrial zoning for the Cherry Point area.

The geographic scope for the environmental impact statement will be national. The impacts of this project will be seen from Wyoming to Bellingham, with increased train traffic the whole way. When concentrating in on the actual project site the impacts are more concentrated and intense. Impacts from coal burning in China are a global impact from the project. Although the impacts are global and the scope is national the majority of the EIS will be concentrated on local impacts.

Executive Summary

EARTH AND PLANTS

The earth and plants contained within the proposed area will be directly impacted by the project. The main impact comes from the permanent degradation of 140.6 acres of wetlands, even though some areas will be actively restored. Due to this degradation, many healthy habitats will be altered or destroyed, putting stress on native species. Additionally, the project will permanently affect 50,850 square feet of streams and

ditches. Regrading of the ground will be necessary, bringing susceptibility to erosion of soils which are expected to enter wetland environments for further degradation.

AIR QUALITY

There are already facilities near the proposed site which diminish air quality. With the current proposal's addition of millions of tons of coal, the air quality will diminish further as well as when the proposed rail loop would be constructed. The proposal is offering many mitigation measures to combat this issue for both the transport and the storage of the coal.

WILDLIFE/ANIMALS

Significant habitat loss will occur, but proper mitigation can drastically reduce impacts upon terrestrial species (GPT, 2011). Hydrocarbon exposure from coal dust may impede upon both terrestrial and aquatic environments by decreasing the survival rates of larvae. Increased vessel size, traffic and amount of exported coal means significant attention should be paid to the Cherry Point Pacific Herring, which has experienced rapid population decline in the last twenty years, and is a key dietary component for federally protected salmon hatchlings, among other species (Cherry Point Aquatic Reserve Mitigation Plan). The exportation and subsequent burning of 48 million metric tons of coal abroad may also place added pressure upon marine environments by contributing to ocean acidification and warming surface temperatures (IPCC, 2007). Alteration of migratory routes of both terrestrial and aquatic species (namely birds and fish) may be altered as well, which may contribute in species declination.

WATER

The proposed action has numerous impacts on water use and quality. Though some of the effects can be mitigated or reduced there will be unavoidable impacts on both. The construction of the shipping docks as well as the use of these docks once completed will bring numerous potential impacts on water quality. Also water usage by the coal terminal will potentially take away from local water supplies.

TRANSPORTATION

Transportation is a main component of the Gateway Pacific Terminal Project. Railway transportation will increase in number from an average of 6 trains a day to an average of 10 to 12 freight trains a day once the proposal is implemented. This increase in the number of trains will tighten the rail capacity of the current lines and demand expansion and mitigation if the lines are to run successfully. There will be a significant impact to commuter traffic which will cause delays while the train crossings are in use as well as significant impacts to transport trucks. The proposal implements a rail loop at the terminal site as well. The rail loop will take the impact on the environment directly into account due to the construction and land use involved in the project.

ENVIRONMENTAL HEALTH/NOISE

The proposed terminal would contribute to the risk of the air quality and environmental health (noise, surface waters, wetlands, wildlife, risk of traffic accidents, risk of explosions, and vegetation) which is affected by the two existing terminals in the surrounding area.

LAND AND SHORELINE USE

The proposed project will not have significant effects on the land and shoreline use of the site area or adjacent properties. The only impacts will be changes in the physical character of the site and the loss of existing land use. However, these changes are in accordance with current zoning regulations, Whatcom Counties Comprehensive Plan and Shoreline Management Program. At this time there are no significant impacts from the transportation of coal on land use in Bellingham or anywhere else that rail lines are being used for this project. However, in the future if additional rail infrastructure is needed or environmental degradation occurs in relation to the transportation of coal this may change.

ENERGY AND NATURAL RESOURCES

The proposed action would have a significant effect on stocks of natural resources. The proposed action would result in a significant increase in demand for electricity, diesel fuel and water.

HOUSING

The proposal does not add or eliminate any housing units. However, it is likely that increased train traffic will decrease the value for houses near the rail line that feeds into the proposed terminal. This reduction in property value may also interfere with the success of the future redevelopment project, such as the Bellingham waterfront redevelopment, which plans to add substantial infill housing near Downtown Bellingham. These issues may be mitigated to an extent through establishing local policies to regulate train noise.

RECREATION

Bird watching is the only recreational use that will be completely eliminated by the construction of the coal terminal. Other impacts on local fisheries as well as kayakers and boaters will also be present but not as severe. Some mitigation measures for the impacts on commercial fisheries are available.

HISTORICAL AND CULTURAL PRESERVATION

The proposed action will destroy certain archaeological sites, and disturb others. Any surveyed and observed archaeological site should be thoroughly investigated by state law, and tribal peoples should be consulted. Loss of Lummi Nation traditional use at Cherry Point will most likely continue, most likely reducing tribal and recreational use both. Historical fisheries important to tribal communities, such as salmon and herring, may experience decreased rates of survival, consequentially harming tribal people.

Recreational use of the land will also be impeded. Increased train traffic, light glare and presence of coal in such quantities may also impede upon the cultural framework of people within Whatcom County.

PUBLIC SERVICES

Public services, such as emergency fire and police vehicles as well as ambulances, will be directly impacted by the proposed project. The impact comes specifically from the increase in freight trains passing through major road crossings. Due to this increase, on average per day there will be roughly 90 to 110 minutes of vehicular delay waiting for the trains to cross the tracks. This delay will put great stress on the emergency responses and will need to be mitigated by the city in order to reduce both traffic congestion as well as emergency vehicle response times.

LIGHT AND GLARE

The addition of the Gateway Pacific Terminal to the Cherry Point site will increase light pollution in the area and produce glare and skyglow, which will be visible from adjacent residences, the water, and the nearby islands at night. Screening and blocking the artificial lighting sources on the terminal will help to reduce wasted light. Additional train traffic at night may also cause glare issues for residences surrounding the Burlington Northern Santa Fe (BNSF) rail line.

UTILITIES

The proposed action will result in the PUD and other utilities having to handle a significantly large increase in demand for water and electricity, but it seems as though the capital in place for PUD and other affected utilities is more than capable of handling the increased demand even without mitigation measures.

Alternative Proposal Summary

The alternative to the proposed project is the 1997 Gateway Pacific Terminal plan. Similar to the current proposed plan, the 1997 plan is located at Cherry Point on the same land. It is also a multi-user import and export mariner terminal for bulk, break-bulk and other marine cargo's but is much smaller scale and primary focus is not exporting coal to Southeast Asia.

The proposed site will be 1,092 acres; approximately 80 acres for the upland terminal facilities and 100 acres would be used for a railroad-track loop to accommodate the trains transporting commodities to the site. The pier will be located in the waters of Georgia Strait between the two existing piers from other existing industries. This pier will be much smaller than the pier from the current proposed plan and fewer infrastructures are needed. The onshore bulk terminal facilities, also smaller, would be located in the same upland region.

The marine and upland facilities will accommodate the loading and unloading commodities and cargoes for both domestic and foreign markets. The portion of the total site to be used for marine facilities would be large enough to accommodate sufficient train storage and movement.

In planning for the long-term a wide range of commodities and other marine cargoes could be shipped from the facility including: alumina, salt, scrap metal, chemicals, grain ores, petroleum products, fertilizer, potash, sulfur and wood chips. In the more recent future (next 5 years), products received and shipped from the new facility would include: Feed grains, petroleum coke, iron ore, sulfur, potash, and wood chips.

Decision Matrix

	Proposed Action Impact	Proposed Action Impact after Mitigation
NATURAL ENVIRONMENT		
Earth		
Wetlands	--	-
Vegetation	-	-
Air		
Air Quality	-	-
Water		
Runoff	--	-
Wildlife		
Aquatic Wildlife	--	-
Terrestrial Wildlife	--	-
BUILT ENVIRONMENT		
Environmental Health		
Environmental Health	-	-
Noise	--	-
Transportation	-	-
Land Use	0	0
Energy and Natural Resources	+	+
Housing	--	-
Recreation	--	-
Historical and Cultural Preservation	--	-
Public Services	--	-
Aesthetics	--	--
Light and Glare	-	-
Utilities	+	+
KEY:	No Impact: 0 Large Positive Impact: ++ Large Negative Impact: --	Positive & Negative Impact: +/- Positive Impact: + Negative Impact: -

Earth and Plant Life

Existing Conditions

The proposed site contains a mostly flat topography with elevations ranging from sea level to 210 feet (Wetland Determination and Delineation, 14). It contains a vast amount of marine shoreline, with the westernmost portion containing steep to moderate slopes. Approximately 49% of the site has been determined as wetlands, which adds up to 530.6 acres (Preliminary Conceptual Compensatory Mitigation Plan, 33). Additionally, these acres have been found to provide moderate to high habitat functions. Most of the soil is moderately drained silt, with some gravel and sand. Additionally, the site contains 521 acres of wetlands, which provide a habitat for many plants and animals. Palustrine forested wetlands are most common for the site, along with wet pastures and hayfields. Vegetation is not common in these wetland types, but mainly includes pasture grass species (Wetland Determination and Delineation, 14-18).

The proposed area contains 1,132 acres within the Gateway Pacific Terminal watershed and 68 acres within the Birch Bay watershed (Preliminary Conceptual Compensatory Mitigation Plan, 19), which provide habitat for a variety of plants and wildlife. Much of the wetland and upland plants are in maintained pastures which consist of thick grasses, such as red fescue, bentgrass, sweet vernalgrass, velvetgrass, and plantain. In other pastures which are less maintained grass species can include foxtail, Canadian thistle, quackgrass, and orchardgrass in addition. The forest areas mainly contain red alder and black cottonwood trees, with some scatters of red cedar and Douglas-fir species as well. The forest understory contains many species, including vine maple, salmonberry, common snowberry, English holly, red elderberry, bracken fern, and clustered rose (Wetland Determination and Delineation, 18-31).

Proposed Action

Impacts

The project will leave direct permanent impacts to 140.6 acres of wetlands as a result of moving debris and soils to establish developmental grades of the ground. Additionally, it will temporarily impact 21.3 acres of wetlands (Preliminary Conceptual Compensatory Mitigation Plan, 43), causing significant restoration and monitoring following the impact. The regrading of the ground results in unstable soils, which erode easier into wetlands, streams, and drainage, which could affect the quality of water and species within that habitat. These impacts will reduce the habitat of birds due to lost forested wetlands in addition to the lack of open water and conifer forest. Approximately 50,850 square feet of streams and drainages will be permanently affected (Preliminary Conceptual Compensatory Mitigation Plan, 44). Currently, invasive species are quite dominant in the area. To remove or disturb the current habitat may result in expansion of invasive species as well.

Mitigation Measures

In order to mitigate the above impacts many measures are in store. First, the site plan for

construction will avoid all Category 1 wetlands. Using the avoidance technique during construction, a total of 305 acres of wetlands will be avoided. The permanently affected areas of the site must be actively restored where possible. Areas within the proposed limits should be regarded and replanted with native species once construction is finished. In addition to active restoration, wetlands should be created elsewhere in the watershed in order to create a balance. The rerouting of some streams and ditches will increase riparian zones and stream functions. Erosion can be mitigated by keeping the exposed areas limited to the active work area. This leaves no area unexposed and open for long durations. Additionally, 'housekeeping' measures may be used, such as wheel washes, to prevent erosion (Preliminary Conceptual Compensatory Mitigation Plan, 55-60).

Significant Unavoidable Adverse Impacts

Even though many of the impacts will be mitigated, those techniques do not prevent permanent damage to 140.6 acres of wetlands which provide healthy habitats for native species.

Alternative Action

Impacts

The alternative action will fill 5.85 acres of wetlands (1997 Alternative Proposal, I-11). There is also concern for the alternative action for surface water runoff from inland development causing slope instability (1997 Alternative Proposal, I-7).

Mitigation Measures

To replace the filled wetlands, it is suggested to create 5.9 acres of forested wetland with greater functional value than filled wetlands and provide compensation for the loss of Western Red Cedar trees to the Lummi Indian Tribe. Additionally, a 16.2 acre area of reed canarygrass should be enhanced to a forested wetland habitat I-12 of alternative. To reduce surface water runoff from inland development in the alternative action, it is suggested to set the site 100-feet back from the slope, leave vegetation on the slope to prevent failure, and grade the site to direct surface water away from the slopes (1997 Alternative Proposal, I-7).

Significant Unavoidable Adverse Impacts

There are no significant unavoidable adverse impacts in the alternative action.

Air Quality

Existing Conditions

The proposed site currently has some existing effects on the air quality. Currently, there are two shipping docks for BP's oil refinery, ALCOA-Intalco and Conoco Phillips at Cherry Point. Both terminals transport bulk materials and contribute to minimizing the air quality from fugitive dust from bulk materials and refugee emissions from ships and other vehicles.

Proposed Action

Impacts

During construction of the proposed site, the air quality would diminish due to dust from excavation, grading, and road building. Once constructed, the terminal and its expanded facilities would be exporting large amounts of coal. The air quality would be greatly affected by the exported coal. In order to not harmfully affect the air quality, these emissions would need to be controlled. The current proposal also includes the construction of a train loop. An increase in train, vehicle, and ship traffic will increase the amount of pollutants emitted.

Mitigation Measures

In the train unloading areas, coal will need to be moved inside covered or enclosed conveyor belt systems minimizing the amount of fugitive dust. Materials will be transferred into the ship's holds through special covered chutes. In order to reduce the dust from non-water soluble materials, sprinkler systems will be installed. Any runoff from rain or cleaning will be captured then pumped back into the terminal's water treatment system.

Significant Unavoidable Adverse Impacts

The proposed impacts of the air quality can be greatly minimized by the proposed mitigation measures, however, coal dust will still escape the covered areas and runoff will result in groundwater leaching.

Alternative Action

Impacts

The impacts for the alternative action would be similar to the impacts from the proposed action. The alternative action would result in the construction of the terminal, however the alternative proposed terminal would be smaller and not traffic coal. The alternative proposal would traffic bulk, break-bulk and other marine cargo.

The alternative actions would still result in the minimized air quality due to dust from excavation, grading, and road building. The terminal would still result in emissions from bulk materials. Vehicles, trains, and ships would still result in pollutants being emitted.

Mitigation Measures

The mitigation measures for the alternative action would be similar to those for the proposed action. The bulk materials would be transported underneath covered or enclosed conveyor belt systems in the hopes of minimizing the amount of fugitive dust.

Significant Unavoidable Adverse Impacts

The significant unavoidable adverse impacts for the alternative action would be similar to those for the proposed action. The alternative unavoidable adverse impacts, however, would not include coal dust. Refugee dust from bulk materials would be minimized significantly, but not all will be captured by the enclosed vicinities.

Water

Existing Conditions

The existing water quality at Cherry Point is already contaminated. When going to the project site you'll find signs warning against any shellfish consumption as the area is highly polluted. The area is zoned for heavy impact industrial use and is already home to several other industrial plants. There are currently shipping docks for BP's oil refinery, Intalco and Conoco Phillips at Cherry Point. The proposed site for Gateway Pacific's coal terminal however has not been developed. Any current adverse water quality at Cherry Point is a result of these other industrial sites.

Proposed Action

Impacts

The construction of the loading docks for the ships coming in and out of Cherry Point will adversely impact water quality. As no development has yet occurred for the project there will be extensive construction happening on the waterfront area, this impacting the quality of the water and the fish species that live in it. Once constructed the deep water docking area will deliver other adverse impacts to water quality due to coal transportation. Coal dust blowing off the rail cars and the carousel leading to the ships will contaminate the deep water with mercury pollution. Coal on the ships during the transportation process to China can also be blown off and into deep water, while the impacts of this won't be localized to the Cherry Point area it will further contaminate ocean waters with increased levels of Mercury. Deep water impacts also occur with the ballast cleaning of the ships, the flushing of the ballasts can introduce non-native species to the water as well as further contaminate the water with chemicals (Felleman, 2011).

A stockyard with an 80-ton coal capacity will be constructed to accommodate the high rate of coal exports. This will impact the groundwater quality due to groundwater leaching and could potentially impact drinking water for the surrounding area. This coal pile will also further contaminate water quality by groundwater movement from the pile to the salt marsh (ReSources). If hydraulic connectivity is found from the coal pile and train loop to the salt marsh there will be further water contamination as a result.

Mercury pollution in our waterway can also be impacted by the atmospheric transportation of coal. A 2005 USGS study found that increased mercury levels in Lake Whatcom is a result of atmospheric transportation (USGS). Thus increased coal exports to China will further contaminate local waterways here in Whatcom County.

Mitigation Measures

There are numerous mitigation measures to protect the water quality at Cherry Point. The first is what's called "pre-booming" which calls for containing any spills during the loading and unloading process to insure no mercury contamination from the coal on the water. Pre-booming is the process of surrounding all vessels and dock areas to prevent water contamination from spills. Another mitigation measure to protect the shorelines and

deep water of Cherry Point is the flushing of the ballast water 2 miles outside of the loading docks in the open water. This will prevent the introduction of non-native species as well as prevent further water contamination at the shoreline area. Measures to reduce the risks of spills are; loading and unloading rail cars in closed facilities, closing rail car hopper doors once emptied, an emergency cable running the length of the shipping gallery in case of emergency spill response and finally an emergency response plan including spill response activities (JARPA).

Mitigation measures for groundwater contamination are also present. The coal pile and other water-soluble contaminants will be covered and lined as well as routinely sprinkled with water to prevent coal dust movement. Water runoff from rain and groundwater movement will be captured and treated at on-site water treatment facilities (Gateway Pacific).

Spill response plans are a large component of the mitigation measures for the water impacts. Emergency response plans for spills during the loading and shipping process will reduce a majority of the adverse water impacts for the site. Storm water control measures and spill response plans will help control the water quality at Cherry Point (JARPA).

Significant Unavoidable Adverse Impacts

Although the mitigation measures will help to prevent a large amount of the coal dust contamination there will be at least some coal dust movement and groundwater leaching. Also the water usage by the terminal for all of its needs will take away from local water supplies. Furthermore the atmospheric transportation contamination can't be effectively mitigated and will affect our local waterways.

Alternative Action

Impacts

The impacts of the alternative action will be similar to the proposed action. The alternative proposal calls for a bulk export terminal for 8 million tons per year, the impacts of the construction of the docking area would be similar with the new proposal. The 80-ton coal pile would not be present with the alternative proposal and groundwater and local water supply impacts would be significantly reduced.

Mitigation

The impacts of storm water pollution can be minimized by the implementation of a Storm water management plan. On-site treatment facilities and retention plans to capture the storm water runoff before entering the aquatic area would reduce the impacts of storm water contamination. A SWPPP will be provided for additional storm water management activities.

Significant Unavoidable Adverse Impacts

Although similar to the proposed action no significant adverse impacts identified for the

alternative action, except for in the case of a large catastrophic spill.

Wildlife/Animals

Existing Conditions

Two miles of shoreline, aside from riparian vegetation and marine ecosystems currently exist as a crucial migratory route for salmon, and birds exist upon the proposal site. Shipping traffic will effectively exist at the designated Cherry Point Aquatic Reserve. Between December of 1997 and June of 2008 seven oil spills occurred, dispersing over 150 gallons of oil at Cherry Point (Preliminary Mitigation Plan, 2011). The Audubon society supports an estimate that a reduction of 79% of the biological life at Cherry Point in the last thirty years has occurred. Invasive aquatic vegetation also has displaced native vegetation crucial to the survival of native species, and has successfully reduced the survivorship of native species at Cherry Point (Cherry Point Aquatic Reserve Management Plan).

If consequential greenhouse gas emissions due to both the proposal site and transportation of coal, along with increased rates of coal burning explicitly from the implementation of the proposal site are to be considered, then global impacts upon species must be recognized. Increased oceanic temperatures due to global warming, as well as ocean acidification contribute to significant ecosystem and species loss, particularly in tropical coral ecosystems (IPCC, 2007). It has been suggested that a warmer than normal PDO has contributed to significant alteration of Cherry Point aquatic ecosystems, affecting Cherry Point Pacific Herring stocks crucial to this ecosystem. Predictions for current global warming trends suggest species loss of up to 70% in certain ecosystems (IPCC, 2007).

A number of species exist within the proposal site. Birds, fish, mammals, and microalgae, among others, compose a portion of the vast biological community present at the proposal site. Numerous residential bird species, such as Bald Eagle and Blue Heron, use this ecosystem as either permanent or migratory habitat. Migratory bird species use Cherry Point as an important stopping point, as it is considered one of only eighteen bird habitats in Georgia Strait and the Strait of Juan de Fuca combined (see figure 3.1). Mammals, such as deer, voles and raccoon use the site for foraging and habitat. Marine mammals include orca, grey and sperm whales, harbor seal, sea lions and Pacific Harbor and Dalls Porpoises, to name a few. Fresh water amphibians, like salamander and frogs also utilize wetland and streams at the proposal site. Herring and Surf Smelt use near shore eelgrass beds for spawning, along with other foraging fish species and bottom fish species. Micro and Macro algae also utilize the near shore sedimentary environment for habitat. Dungeness crab, other crustaceans and shellfish use the Cherry Point Aquatic reserve as habitat, which have been historically harvested in this area . The marine ecosystem also contains a unique high energy near shore habitat rich in nutrients, due to steep bathymetry (Cherry Point Aquatic Reserve Management Plan).

Twelve federally protected endangered species and 6 state protected endangered species

have been identified within the Cherry Point Aquatic Reserve. Some of these species include the Marbled Murrelet (migrant shoreline bird species) and the Southern Resident Orca whale, which are directly depended upon salmon, herring and other bottom fish populations. Three species of salmon, along with Bull trout are also protected species (Cherry Point Aquatic Reserve Management Plan).

Cherry Point Pacific Herring are genetically distinct herring that spawn in the early spring, roughly two to three months after normal herring stocks in the Puget Sound. The timing is significant, as Cherry Point Pacific Herring provide a vital food source for hatchling salmon that feed on the larvae in the spring (Felleman, 2011) The pacific herring is currently under review for protection by the State of Washington. Historically this stock has been larger than any other stock of herring in the state combined. Since the industrialization of Cherry Point in the 1950's, increased shipping traffic is associated with a positive correlation in the depletion of the herring stock, with the most significant decrease in herring stock occurring in the last twenty years (see figure 3.2). Conoco Phillips, BP and refineries located North of Cherry Point in Blaine may contribute to subsequent hydrocarbon exposure of larvae that correlates with increased rates of deformation and decreased survival rates, but significant evidence has yet to show this (Preliminary Mitigation Plan, 2011). The destruction and contamination of vital spawning habitat, along with a warm PDO contribute to decreased total surface area of spawning habitat, which stands to be the most significant threat to the species today (see figures 3.3 and 3.4) (Cherry Point Aquatic Reserve Management Plan).

Existing conditions at the BP site has attracted fish species to spawn on pilings. Light pollution at the site may disrupt the natural migratory routes of salmon. It may also alter the natural spawning areas of herring and other foraging fish, particularly when considering the alteration and destruction of micro and macroalgae, such as kelp and eelgrass crucial to the reproductive habits of certain foraging fish species, particularly herring. Light pollution may also disrupt or alter the migratory routes of certain bird species (Cherry Point Aquatic Reserve Management Plan).

Proposed Action

Impacts

Loss of riparian vegetation, wetland habitat, and disturbance of shoreline habitat would occur under the current proposal. The sheer amount of coal suggested for exportation from Cherry Point also suggests coal dust pollution may decrease survival rates of algae and aqueous species and increase rates of deformation among these species, due to increased hydrocarbon, lead and mercury exposure in aquatic habitats, as well as terrestrial species (Project Information Document, 2011).

Visual and acoustic sensitivity at the proposal sight will increase, and subsequently impact fish at unknown proportions. The migratory path of birds and fish may be affected by the implementation of the port, but specific effects are unknown at this time. Disturbance of sandy, intertidal habitats will impede on the growth of micro and macro

algae crucial for the reproduction of certain foraging fish. These Intertidal habitats also provide habitat for Dungeness crab and shellfish that, aside from providing for their normal ecosystem services, provide food sources for local peoples (Cherry Point Aquatic Reserve Management Plan).

The dumping of ballast water in the near shore environment, and in the Strait of Georgia consequentially introduces invasive species into the Puget Sound and Cherry Point Aquatic Reserve. Invasive species are currently responsible for roughly 55% of species extinction in island ecosystems (Invasive Species Specialist Group, 2011), and may effect species within the San Juan Islands, aside from impacts directly at Cherry Point.

The structure of the pier and subsequent stevedoring is proposed to be built in the high energy environment, which is the only high energy habitat at the proposed site. Shipping traffic may alter current flow in this environment.

Increased usage and combustion of coal abroad, explicitly from the implementation of the proposed pier at Cherry Point, will be associated with mercury and carbon dioxide emissions (and other GHGs), which contribute to global warming and alteration of oceanic temperatures. Oceanic acidification is also a result of increased greenhouse gas emissions, which significantly affects global biodiversity, particularly of shellfish, crustaceans, coral and planktonic species (IPCC, 2007).

Increased shipping traffic may also increase rates of gear loss in the Strait of Georgia, Juan de Fuca, and at Cherry Point, which may significantly impact bottom fish species, crustaceans, aquatic vegetation, mollusks and marine mammals (Cherry Point Aquatic Reserve Management Plan, 2011).

Mitigation Measures

Significantly impacted species should be compensated a comparable habitat within a reasonable distance of the proposal site. If proper compensation cannot exist where significant impacts occur (particularly in the case of endangered and protected species) than the proposed port should not be implemented. A mitigation site will be designated, to displace the potential loss of habitat (GSA, 2011).

Cherry Point Herring Stock requires toxicology studies to determine if the native stock is threatened with the implementation of the new port. The consequential loss of geographic surface area of spawning grounds for Cherry Point Herring should also be analyzed under these conditions (Preliminary Mitigation Plan, 2011).

The covering of stevedoring conveyors, as suggested by the GSA should be implemented to prevent the dispersal of coal dust and other export goods. Booms should also be place around ships during stevedoring to prevent dispersal of oil from small spills and from hull

failure, should hull failure occur. Coal trains should also require covered coal cars to reduce incidence of coal dispersal.

Ballast water should be released at least 200 miles from the Strait of Georgia to prevent dispersal of invasive species into the Puget Sound (Cherry Point Aquatic Reserve Management Plan, 2011). Current regulation does not enforce this as often as it should, and must be ensured before the implementation of the project.

Significant Unavoidable Adverse Impacts

Displacement of terrestrial and aquatic habitats will occur, with potential impacts upon native species, some of which are protected both federally and by the state. Proper mitigation measures should be taken to reduce the dispersal of coal dust both on land and in aquatic ecosystems. If protected species are expected to experience rapid decline of survivorship, the project proposal should move to a different location, or be terminated.

Alternative Action

Impacts

Impacts will be similar to the proposed action. Decrease in pier size and port size will provide the same physical footprint on the land. Without such large quantities of coal being exported, and decreased train and shipping traffic, incidence of hydrocarbon exposure will drastically reduce. This may limit risks, but overall the permanent displacement of terrestrial habitat will mostly likely be equivalent. Marine and fresh water species will experience a great reduction in hydrocarbon exposure, but the shoreline environment is still subject to environmental pressure due to increased shipping traffic, though the impacts in this proposal site are still largely unknown.

Mitigation Measures

Mitigation of the alternative action is greatly reduced by the absence of 48 million metric tons of coal. The absence of coal dust decreases risk of hydrocarbon exposure, and the essential footprint of habitat loss would be much less than the proposed project. However, habitat compensation for lost ecosystem services.

Environmental Health

Existing Conditions

The proposed site currently has some existing effects on the environmental health. Currently, there are already two existing, functional terminals within the surrounding area. BP's oil refinery, Intalco and Conoco Phillips at Cherry Point produce noise pollution, run risks of accidents and risks to the natural environment.

Proposed Action

Impacts

The proposed project would generate several direct and indirect risks. Direct risks to human health include train or auto accidents and indirect risks to human health from environmental degradation such as increased risk of sickness from air or water pollution. Health problems in association with the burning and/or leaching of coal include, but not limited to, cancers, bone deformation, black lung and other respiratory diseases, sterilization, and kidney disease. The proposed terminal has the potential to directly affect the natural environment. Primarily, the impact on wildlife comes from disturbing, removing, and redistributing the land surface.

In the proposal, there would be an increase in train, ship, and vehicle traffic. This increases the risk of explosions and traffic accidents.

Mitigation Measures

Risk from Explosion

- Place administrative and maintenance facilities, and areas with high worker concentration away from grain and fuel storage areas.
- Limiting the number of train crossings and intersections encountered during the transport of products.
- Following traffic safety and transport laws within the site, county, and elsewhere.

Risk from Traffic Accidents

- Separate timing of shift changes and train movements
- Increasing the size of shoulders on busy roads
- Improving the road and signalized railroad crossing

Surface Waters

- Use Best Management Practices (BMPs) during construction and normal operations, including the use of hay bales, silt fences and situation ponds.
- Operate and maintain an effective storm water drainage and recovery system
- Store water soluble materials in enclosed storage facilities

Vegetation

- Develop and implement a spill response and recovery plan

Wildlife

Recommended measures reducing adverse effects of construction activities, spills, and explosions, include:

- Maintaining buffer areas around the site, wetlands, and stream
- Maintaining a 100 foot vegetated buffer along any streams in the area to maximize the buffer between the road and railroad
- Implementing a spill recovery plan on and off site

Wetlands

Recommended measures include:

- Maintain vegetated buffer zones between rail and road ways which are between riparian and transport areas; and
- Adopt and implement a spill recovery plan which addresses spills into surface waters and wetlands areas

Significant Unavoidable Adverse Impacts

There is an incalculable risk to human health and the environment from explosion and spills.

Alternative Action

Impacts

The impacts for the alternative action would be similar to those for the proposed action. The alternative action proposes for a terminal that would be smaller than the current proposal. The environmental health would still be negatively affected and the increase in vehicle traffic runs the risk of accidents.

Mitigation Measures

The mitigation measures for the alternative action would be similar to those for the proposed action.

Significant Unavoidable Adverse Impacts

The significant unavoidable adverse impacts for the alternative action would be similar to those for the proposed action. The health risks due to coal burning and/or leaching that cause health issues such as cancers, bone deformation, black lung and other respiratory diseases, sterilization, and kidney disease, would need to be reduced dramatically.

Noise

Proposed Action

Impacts

During construction, there would be temporary increases in sound levels near the terminal site, near road improvements and near the new rail line as a result of pile driving, excavation, grading, and construction.

During operation, the idling ships at the terminals would produce loud noise throughout that day and nights disrupting the surrounding area due to them running ship generators.

The proposed action includes the addition of 30,000 lineal feet of track to construct a rail loop system. The railway used in the Gateway Pacific Terminal project is an existing Class I railway. This proposed loop would be located north of the terminal storage facilities. With the added loop, an increase in railway traffic would be an understatement. Noise pollution from train whistles and the rail lines would be a huge impact on the surrounding area and its neighborhoods.

Mitigation Measures

The proposed action offers electrical power to docked ships to enable them to operate needed systems without running ship generators.

Construction noise could be minimized with properly maintained equipment, noise muffling equipment or temporary barriers, minimizing incidence of equipment back-up alarms, and minimizing dragging of construction materials where feasible.

Train noise can be reduced through establishing Federal Railway Authority (FRA) permitted quiet zones in urbanized areas (“Quiet Zones”). Maintenance of equipment and sound barriers can also help reduce train noise.

Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are expected to occur.

Alternative Action

Impacts

The impacts for the alternative action, which does not include a rail loop system, would be much different than the proposed action. The Cherry Point area would still be polluted by the noise from the ships’ running generators.

Mitigation Measures

The mitigation measures for the alternative action would be similar to those for the proposed action.

Significant Unavoidable Adverse Impacts

The significant unavoidable adverse impacts for the alternative action would be similar to those for the proposed action.

Transportation

Existing Conditions

Currently, there is an existing railway connecting the proposed terminal site to the resource providers. However, there is no established rail loop on the proposed terminal site to give unloading access from the trains to the ships at the terminal. Today, there are currently 6 freight trains of a similar length as those proposed in the terminal project running daily through Bellingham, occupying roughly 30 minutes a day of crossing time (Cascade). There are 24 trains, either passenger or small freight, running through Bellingham total, including the 6 larger freight trains.

Proposed Action

Impact

The railway proposed for use in the Gateway Pacific Terminal Project is already an established Class I railway until it reaches the project site. The existing railway, with some modifications or upgrades to sections of track, such as automatic block signaling, are needed in order to reach full rail capacity. Beginning in Wyoming, the tracks go north through Montana then west through northern Idaho before crossing into eastern Washington. Once the tracks reach Washington, they turn south and travel along the southern edge of the state before turning sharply north and following the Washington coastline until they reach the ultimate destination of Bellingham, Washington. The proposed intermodal terminal rail loop would be built to connect the Burlington Northern Railway (BNSF) at Aldergrove Road to the BNR Intalco/Cherry Point branch line (ReSources). See figures 4.1-4.3 for railway maps.

The proposed rail loop system would consist of nearly 30,000 lineal feet of track and could store up to three 100-to-110 hopper car unit trains at the same time. The loop tracks would be located north of the terminal storage facilities with a spur track extending to serve the facility. The loop track and a portion of the spur line would be located partially on the adjacent Arco property (1997 Proposal). See figure 4.4 for the proposed rail loop at Cherry Point.

There will be an impact to the surrounding areas from the creation of the rail loop. Impact to truck traffic will be the greatest because transport trucks use the rural roads surrounding the proposed rail loop location. With each incoming and exiting train, the truck traffic will be stopped approximately 20 minutes as the trains are coming in and leaving at a slower speed .

An automated dumper and conveyor system would be constructed along the loop system for the loading and unloading of coal and other bulk materials. Trains would be pulled by an electric engine through a receiving or unloading station in a continuous operation.

Materials would be dumped in an unloading hopper connected to a conveyor system which will move the materials to the storage area and from a storage area to the pier for loading onto vessels.

The marine vessels waiting to be loaded with the materials also impact transportation as a whole. These vessels are expected to triple in number after the terminal is completed, with each having a carrying capacity of around 170,000 deadweight tons. The marine vessels are large and bulky and therefore cause a lot of wake, rendering smaller boats unable to commute in the waters surrounding the proposed terminal. This has the potential to impact smaller shipping endeavors as these boats may have to find a new route or go slower through the channels to be able to effectively handle the wake.

The Washington Department of Transportation reports that from 1995-2005, some \$608.7 million was spent to upgrade rail service between Portland, Oregon and Vancouver, British Columbia, benefiting Amtrak, Sound Transit, and BNSF Freight Service. Most of this funding came from the federal government, with the BNSF railroad company contributing \$9.5 million, or 1.5% of the total funding received (Crossway). If the railway is to be adequately upgraded, both rail capacity and terminal static capacity will need to be considered. Impact to the financial state of affairs of the Washington Department of Transportation will need to be considered as they are predicted to be the department responsible for funding most of the upcoming necessary changes to the tracks. Utilizing this much of the department's funding to make the necessary improvements to the railroads will impact road traffic as well because there will be less funding available to make necessary road improvements.

Road traffic will be severely impacted due to the increase in train traffic. On average, each of the 10-12 additional trains traveling through Bellingham are around a mile and a half long, blocking traffic crossings for roughly 9 minutes apiece. With 10-12 trains daily, traffic will be stopped for approximately 90-110 minutes each day. Such a delay will mean major traffic blockages at rail crossings. During rush hour, the blocked crossings will create roughly 30 minutes of delay for every 9 minutes of train crossing due to traffic congestion. Commutes to and from work will be lengthened daily and the overall quality of life for commuters will decrease with the implementation of the current proposal (ReSources).

Mitigation Measures

For train transportation, there are few mitigation measures available. The proposed track route is already established and the trains are already built and in service. The rail loop has few mitigation measures as well because the rail loop must be a certain width if the trains are to be able to turn around. The rail loop's impact on the shoreline will be mitigated through the Shoreline Management Act, which will determine the distance the rail loop must be built from the shoreline to protect valuable habitat (Shoreline Management Program). As for the marine vessels, the US Coast Guard currently monitors the shipping traffic of the area, so they will need to expand their efforts to cover the terminal as well to ensure smooth transactions.

Significant Unavoidable Adverse Impacts

The proposed impact in terms of environment, air, noise and traffic caused by the railroads can all be considered unavoidable because the tracks already exist until they reach the terminal site. Within the terminal site, the unavoidable impact includes the loss of land and natural environment caused by the creation of the rail loop.

Alternative Proposal

Impact

The 1997 proposed terminal rail loop will be built to connect the Burlington Northern Railway at Aldergrove Road to the BNR Intalco/Cherry Point branch line.

The rail loop proposed in the alternative has the same dimensions and extent as the rail loop from the current proposal. The major difference is the number of trains to enter and exit the loop as well as the type of products being transported through it. The alternative proposal estimates an addition of 4 mile-long trains a day transporting a variety of products, the majority of which being agricultural products and potash. There will still be an impact with this proposal, but a significant decrease in trains and product type will drastically decrease the impact to transportation of all types. The alternative proposal's trains would block intersections for an average of 7 minutes per crossing which would lead to approximately 30 additional minutes a day in total that train crossings would be in use.

The impacts of the alternative proposed train system are much less severe and would better benefit both the commuter traffic as well as transport trucking traffic because there would be fewer and shorter trains daily.

Mitigation Measures

The rail loop has few mitigation measures because the rail loop must be a certain width if the trains are to be able to turn around. The rail loop's impact on the shoreline will be mitigated through the Shoreline Management Act, which includes the distance the rail loop must be built from the shoreline to protect valuable habitat. The marine vessels impact will be mitigated through the use of the US Coast Guard monitoring.

Significant Unavoidable Adverse Impacts

Within the terminal site, the unavoidable impacts include the loss of land and natural environment caused by the creation of the rail loop.

Land and Shoreline Use

Existing Conditions

The Gateway Pacific Terminal's infrastructure is planned to be developed on approximately 350 acres within the total 1,092 acre project area. This 1,092 acre area is currently underdeveloped and vegetated land which includes: forest, pastures, hayfields, mowed utility corridors, and abandoned fields. Recent land uses have included pasture, hay farming, and firewood and pulpwood harvest. The neighboring properties include the BP Cherry Point Refinery to the north, Washington Department of Natural Resources (WDNR) land to the east, and a large privately held parcel towards the south currently used as pasture. The southern extent of the Strait of Georgia forms the south and southwestern boundary and the Burlington Northern Santa Fe (BNSF) Railway's Custer Spur lies in the easternmost portion of the project area and includes the Elliot Rail yard. Other nearby land uses includes the Lake Terrell State Wildlife Refuge to the east and the closest residential areas in proximity are located around 1.5 miles to the east lying between the project area and the Wildlife Refuge. Other industrial facilities in the vicinity include the ConocoPhillips' Ferndale Refinery and the ALCOA-Intalco Works just southeast. ("Project information document," 2011).

Under the current Whatcom County Comprehensive Plan the project area is designated as part of the Cherry Point Industrial Urban Growth Area (UGA). This area is zoned for heavy-impact industrial land use (HII, Whatcom County Code (WCC) 20.68) and because the proposed terminal property is in the Cherry Point Major Industrial UGA, it is also subject to the Cherry Point Industrial District (CPID) regulations (WCC 20.74). The purpose of the CPID (WCC 20.74.010), is to implement the policies of the Cherry Point Major Industrial UGA section of the Whatcom County Comprehensive Plan by establishing a range of land uses and types of development appropriate for the area. It also encourages large scale master planning of industrial sites and to preserve sites of sufficient size to accommodate major port and industrial development.

According to the Whatcom County Comprehensive Plan, the Cherry Point UGA contains approximately 7,000 acres of industrial land. This land has long been planned and designated by Whatcom County for industrial development. The existing industrial developments that occupy the land cover about 4,100 acres of the total Cherry Point industrial lands. The proposed Gateway Pacific Terminal will account for 1,092 more acres, and with the existing industrial sites the total of land used will be 5,192 acres; this will leave around 1,800 acres left in the Cherry Point UGA (see figure 5.2). All of the existing industries are dependent on water and rail access for moving commodities to and from their facilities. Whatcom County has identified this area for deep-water port industrial development, and the Comprehensive Plan and zoning regulations provides for this type of development (WCC 20.68.010) as well. As identified in the permitted use section (WCC 20.68.050, subsection .059), "Bulk commodity storage facilities, and truck, rail, vessel and pipeline transshipment terminals and facilities," are permitted uses. The BNSF Railway's proposed improvements to the Custer Spur falls mainly within the area zoned for rural use (R, WCC 20.36). The Elliot Yard is located within the HII zone

and the Light Impact Industrial zone (LII, WCC 20.66). Transportation facilities, including railways, are a permitted use in the Whatcom County Code within both the HII and LII zones (see figure 5.1).

Under Whatcom County's Shoreline Management Program (SMP), the property is designated as part of the Cherry Point Management Area. Port and water-dependent industrial facilities are permitted and the SMP is codified as WCC Title 23. The SMP policies section (WCC 23.100.17), states "Development of the Cherry Point Major Port/Industrial Urban Growth Area will accommodate uses that require marine access for marine cargo transfer, including oil and other materials. For this reason, water-dependent terminal facilities are encouraged as the preferred use in the Cherry Point Management Area." Further, under subsection A3, "Facilities that allow for multiple use of piers, cargo handling, storage, parking and other accessory facilities are encouraged."

Proposed Action

Impacts

Approximately 350 acres of the 1,092 acre site would be developed with industrial uses, resulting in the loss of existing land use and permanently altering the physical character of the site. The proposed development would also contrast with the open undeveloped character of the site area. If however, the vacant properties develop in accordance with the HII designation, the proposed land use would be consistent with the future land use patterns planned for the general area. BNSF Railway's proposed Elliot Yard improvements would not have any major impacts on land use because they would occur within the existing Major/Port Industrial UGA and would be consistent with land uses identified under the existing zoning and Comprehensive Plan. At this time there are no significant impacts from the transportation of coal on land use in Bellingham or anywhere else that rail lines are being used for this project. However, in the future if additional rail infrastructure is needed or environmental degradation occurs in relation to the transportation of coal this may change.

Mitigation

No measures are proposed for impacts to land use, as no adverse impacts would occur. This is contingent on following Whatcom County's Comprehensive Plan, current zoning regulations and the Shoreline Management Program's guidelines.

Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts to land and shoreline use patterns are expected to occur.

Alternative Action

Impacts

The land use impacts of the alternative action would be similar to those of the proposed action. However, since less land would be developed (180 acres of the 1,092 acre site, instead of 350 acres), the alternative action would have less of an effect on the physical

character of the site.

Mitigation

The land use measures of the alternative action would be similar to those of the proposed action.

Significant Unavoidable Adverse Impacts

The significant unavoidable adverse impacts of the alternative action would be similar to those of the proposed action.

Energy and Natural Resources

Existing Conditions

Under current conditions there are no natural resources being consumed at the proposed site. Natural resources that are located on the site that could be used are timber which has been logged before, ground water and farm land.

Proposed Action

Impacts

Construction of Terminal

The proposed action will require the construction of multiple structures. The construction will require equipment powered by electricity, oil, natural gas and propane. The electricity will mainly be used for lighting the construction area and partially for running equipment. Oil in the form of gasoline and diesel fuel, natural gas and propane will all be used to power heavy machinery and other equipment. Some amounts of available timber will be removed from the site to make room for the necessary structures ("Project information document," 2011).

Operation of Terminal

Once the proposed terminal is up and running it will affect the usage of electricity, oil, water and coal.

Electricity

The electricity will be used at the facility for lighting, heating and powering equipment ("Project information document," 2011). A large source of electrical consumption will come from an automated dumper and conveyor system that will unload the coal from the trains place it in the storage area and load it onto barges. The estimated electrical demand for the proposal is 25 megavolt amperes (MVA) yearly for the terminal itself ("Project information document," 2011), there will also be some increased electrical demand at locations along the path that the goods to be exported will follow (ReSources).

Oil

The oil will largely be used for transportation services in the form of diesel. The proposed action would result in an increased number of trains and barges to transport the good to be exported by the proposed terminal. Both the trains and barges are powered by diesel fuel (ReSources).

Water

There will be two types of impacts on water from the proposed action. The first is that 5.33 million gallons of water per day will be used by the terminal. A large amount of the water will be used to suppress coal dust. ("Project information document," 2011) The proposed action will also result in an increased demand for water at locations other than the terminal for the use of coal dust suppression and other services (ReSources). The

other affect that the proposed action may have is the degradation of ground water at and around the site. Degradation of ground water could come as a result of the site's plan to use a septic field to handle its treatment of sewage ("Project information document," 2011). Ground water degradation of could also come as a result of using water to suppress coal dust. The runoff of water used to suppress coal dust could seep into ground water in the area and contaminate it with coal and other hazardous materials (ReSources).

Coal

The result of this proposed action may be an increased demand for coal. The proposed action will lower the cost of consuming coal for some markets and therefore result in the overall demand for coal to rise (ReSources).

Mitigation

Degradation of ground water caused by runoff from coal dust suppression could be avoided if the water used was collected and not allowed to freely seep into the ground. Some optional mitigation could be to install solar panels to reduce the demand for electricity, the demand for oil could also be reduced by using newer more efficient trains and barges (the proposed action would be using trains and barges that are old designs and less efficient than those now available).

Significant Unavoidable Adverse Impacts

The impacts of this proposed action are largely unavoidable. Even with mitigation large amounts of electricity, diesel and other energy sources would be needed as a result of the proposed action. Unless another way to suppress coal dust is implemented the water usage demanded by the proposed action is also largely unavoidable.

Alternative Action

Impacts

The impacts on energy and natural resources for the alternative action would be similar to the impacts from the proposed action. The alternative action would also result in the construction of a shipping terminal. The differencing between the proposed and alternative actions it that alternative action would be a smaller terminal and would not handle coal. The construction of the alternative actions terminal would still result in an increased demand for electricity, oil, natural gas and propane, compared to the current condition. The reasons for the demand of those resources would be the same as the proposed actions but, the terminal would not be as large as the proposed actions so comparatively to the alternative action would result in less demand for those resources. Since the completed terminal of the alternative action would be smaller but serve a similar purpose to the proposed actions there would still be an increased demand for electricity, oil and water compared to the current condition but again it would be smaller than the increased demand caused by the proposed action. The increased demand for electricity, oil and water would be for similar reasons to the proposed action. The main difference between the proposed and alternative actions would be the demand for water.

Since the alternative action would not involve the transportation or export of coal water would not be needed to suppress coal dust (1997 Proposal).

Mitigation

The mitigation measures for the alternative action would be similar to those for the proposed action.

Significant Unavoidable Adverse Impacts

The significant unavoidable adverse impacts for the alternative action would be similar to those for the proposed action.

Housing

Existing Conditions

The proposed site of the Gateway Pacific Terminal at Cherry Point is vacant land and zoned as Heavy Impact Industrial. There is currently no housing within nearly three miles of the site. However, in urbanized areas throughout the proposed train route, both single and multi-family housing lies within close proximity to the Burlington Northern Santa Fe (BNSF) tracks that will be used to ship commodities to the terminal.

Proposed Action

Impacts

The Gateway Pacific Terminal proposal does not include the construction or removal of any housing units. However, with an increase in train traffic along the rail line feeding into the terminal, it is likely that housing units along the BNSF tracks will decrease in value, which results in a monetary loss for homeowners. Previous studies have found that property value along rail lines in the US can decrease on average between \$72 to \$264 per daily train trip added, depending on the distance from the train tracks and the size of the housing unit (Simons, & Jaouhari). The project applicant stated that there could be an increase in 18 daily train trips through urbanized areas along the Burlington Northern Santa Fe (BNSF) railway, where housing developments lie adjacent to the tracks (Stark). This could result in a net value loss of between \$1,296 and \$4,752 for each of these housing units.

The City of Bellingham is in the process of planning a waterfront redevelopment near the connecting rail line, which is planned to include up to 2,270,000 square feet of new residential housing units to accommodate infill growth (Port of Bellingham). An increase in rail traffic and a decrease in property values will likely hinder the success of this redevelopment, as well as other housing development along the rail line, and slow the addition of new housing units.

Mitigation

To minimize the proposal's adverse impact on housing, train noise must be mitigated. Train noise can be reduced through establishing Federal Railway Authority (FRA) permitted quiet zones in urbanized areas ("Quiet Zones"). Other methods include properly maintaining the trains and their tracks and constructing sound barriers along the railway.

Significant Unavoidable Adverse Impacts

Even through the use of mitigation measures, not all train noise will be eliminated, and property values and future housing plans may still be negatively impacted.

Alternative Action

Impacts

The alternative action would not construct or remove any housing. However, the facility proposed in the alternative action would have a decreased capacity for storage and exportation and could only accommodate two to three trainloads per day. Including return journeys, this would result in four to six daily train trips through urbanized areas and potentially produce a \$432 to \$1,584 loss in value for each housing unit surrounding the rail line, depending on the size of the unit and its distance from the tracks. Due to this reduced loss in housing values, the alternative action would have a diminished impact on the success of the housing constructed in Bellingham's waterfront redevelopment, in comparison to the proposed action.

Mitigation

The mitigation measures for the alternative action would be similar to those for the proposed action.

Significant Unavoidable Adverse Impacts

The significant unavoidable adverse impacts of the alternative action would be similar to those of the proposed action.

Recreational Impacts

Existing Conditions

Recreation at the Cherry Point area is already shaped by other industrial plants and existing shipping terminals. Recreational uses of the shoreline area are virtually non-existent, there are toxic warning signs against shell fish consumption. The open waters though are home to Kayak enthusiasts and boaters. Commercial fisheries have historically used the area for catching Dungeness Crab. The actual project site is undeveloped and currently used by birdwatchers as a prime bird watching area.

Proposed Action

Impacts

Bird watching activities will be effectively halted by the construction of the Gateway Pacific coal terminal, as it will completely alter the natural landscape. The current site is undeveloped and native birds are able to live in their native habitat, with the development of the land into heavy industrial use native birds will be flushed out and bird watchers won't have access to the site.

Commercial fisheries will also be impacted by the shipping terminal, Dungeness crab species will be reduced from the construction of the ship docks as well as herring populations. During construction herring populations will suffer (see herring section), through the food chain this will reduce crab populations (1997 EIS). This will have an adverse impact on coastal recreational fisheries. It is not expected that the terminal will permanently affect these commercial fisheries, except in the case of a catastrophic toxic spill, only during the construction of the terminal and the years following immediately after.

Kayakers and boaters in the Cherry Point area will be impacted by the construction of the shipping terminal and the increased vessel traffic. WAKE kayakers is a group of kayak enthusiasts for Whatcom area (WAKE), they will lose some of their shoreline kayaking areas with the construction of the terminal, also the increased ship traffic will highly impact their recreational use of the Whatcom shoreline waters. The increased vessel traffic of 487 large vessels per year rather than 140 is a significant increase and kayakers and boaters in the Whatcom area will be highly impacted by this increase.

Mitigation

Mitigation measures include timing the construction of the shipping terminal to reduce the impacts on local crab and fish species. Also allowing commercial fisheries the use of the developed shoreline area for fishing activities will offset some of the negative impacts associated with the development.

Significant Unavoidable Adverse Impacts

Although the impacts on herring and crab populations are not expected to be long term

the impacts in the immediate future will be unavoidable. Mitigation measures for timing construction and allowing boat access to shoreline facilities will reduce these impacts but not completely. The impacts on bird watching cannot be mitigated as the area will be developed and lose its native bird species. The increased vessel traffic will have far reaching impacts on boaters and kayakers. There is no way to mitigate the increase of 140 vessels per year to 487, kayakers and boaters will lose a huge chunk of territory as a result of this project.

Alternative Action

Impacts

Impacts of the alternative action are similar to those of the proposed action. There would however be less of an increase of vessel traffic to impact kayakers and boaters. The shipping terminal and project site would still be developed and still impact recreational and commercial fisheries. Bird watching would also still suffer from the construction of the export terminal.

Mitigation

Immediate impacts on commercial fisheries as a result of the dock construction are unavoidable. Bird watching at Cherry Point is also an unavoidable impact.

Significant Unavoidable Adverse Impacts

Impacts from the elimination of bird watching terrain is the biggest unavoidable impact. In the event of a catastrophic spill the adverse impacts would be far worse and unavoidable.

Historic and Cultural Preservation

Existing Conditions

Since time immemorial the Lummi, Nooksack, Sammish, Swinomish, and other tribal Indians have gathered and lived at Cherry Point. Archaeological evidence on the site dates back as recently as 200 years ago and as far back as 15,000 years ago. Numerous sites have been identified, such as a midden, with more under current survey (Cherry Point Aquatic Reserve Management Plan, 2011). The current existence of British Petroleum, Conoco Phillips refineries and Intalco-Alcoa aluminum smelting operation all currently impede access to the cultural traditions of the Lummi Island Nation, who have legal rights over historic fishing and traditional gathering sites. The proposal site is the only remaining resting land between the BP refinery and Intalco (Preliminary Mitigation Plan, 2011).

Recreational use of the site by the public exists at and/or near the proposal site. The shoreline of the current site can be accessed for recreational use, and is open to the public. It is the only stretch of open shoreline between the BP refinery and the Intalco-Alcoa aluminum smelting operation. Lake Terrell State Refuge is located just east of the proposal site, which is a popular grouse hunting location in fall.

Proposed Action

Impacts

Aesthetic value of the land, along with the recreational value of the land will lessen, as shoreline and riparian access decreases. The proposed export pier will increase shipping traffic, which has the potential to impede access to two miles of shoreline. This shoreline is useful for fishing and harvesting of aquatic species to both the public and Lummi Nation. Increased train traffic and dispersal of coal dust may also impede upon the recreational use of the nearby Lake Terrell Game Reserve.

Degradation of marine ecosystems due to coal dust, increased shipping traffic, and stevedoring may further impede pacific herring population, specific to Cherry Point which supports migrating salmon populations also significant in tribal traditions and preservation. Light and glare from the export pier may further degrade the migratory paths of salmon species, herring and birds (among others), important to the cultural traditions of tribal communities and the public. Western Red Cedar important to Lummi Nation Traditions will also be felled (EIS, 1997).

Light and glare from the facility may significantly contribute to immense light pollution currently existing at Cherry Point. Light pollution has been linked with cancer and sleeping disorders when prevalent around humans. The presence of light in the night sky also disconnects local people to the natural night sky and will contribute to decreased aesthetics in the area (Cherry Point Aquatic Reserve Management Plan, 2011).

Archaeological sites of the Lummi Nation and other surrounding tribal people may also be disturbed or destroyed in the construction of the facility, such as sites 45-WH-83 and 45-WH-84 (Cherry Point Aquatic Reserve Management Plan, 2011). Some destruction of archaeological sites is unavoidable (EIS, 1997).

Mitigation Measures

Consolidation of shipping lanes will minimize noise effects upon certain species with tribal significance, as well as decrease risk of gear loss. The Lummi Nation and GSA should negotiate the physical location of shipping lanes to protect access and existence of tribal ceremonial and fishing grounds (Cherry Point Aquatic Reserve Mitigation Plan, 2011). Further surveying must be conducted of the proposal site to determine archaeologically significant locations. Archaeological sites must be handled on a government to government basis, in conjunction with the Lummi Nation, and operation of the site should be in accordance with state law and the Centennial Accord (Cherry Point Aquatic Reserve Mitigation Plan, 2011). Planting Western Red Cedar within an equivalent ecosystem and Lummi cooperation may be a valid form of compensation for loss of these trees (EIS, 1997). Covering coal cars on trains may significantly reduce coal dust dispersal in the area, which will benefit Lake Terrell Game Reserve and native species.

Significant Unavoidable Adverse Impacts

Sight of the pier and the large cargo vessels would impede the natural aesthetics of the area. Furthermore, light and glare from the facility will impede on the natural night sky. The pier and presence of such large vessels and vessel traffic may also continue to impede on tribal traditions. Archaeological sites, such as 45-WH-83 and 45-WH-84 will be destroyed, many may be moved and disturbed, which may cause harm to tribal communities (EIS, 1997).

Alternative Action Impacts

Impacts associated with the development of the alternative action result in reduced impacts as the proposed export terminal, though some sites will remain permanently destroyed or disturbed.

Mitigation Measures

The same mitigation measures should be taken as in the proposed action.

Significant Unavoidable Impacts

Though vessel traffic and size of the export pier will be reduced, equivalent effects may be observed to tribal traditions and recreational usage.

Public Services

Existing Conditions

Public services are categorized as entities such as police services, fire services, and ambulances. Currently, public services in Bellingham are delayed on average by six freight trains a day operating on the BNSF rail line. These freight trains use about 5 minutes per crossing at the current rate, occupying roughly 30 minutes a day of traffic (Cascade).

Proposed Action

Impact

The proposed terminal project increases the number of trains traveling through rail crossings from six freight trains a day to approximately ten to twelve (Gateway). The length of the trains in the proposal also increases from roughly one mile in length to a mile and a half in length. The proposed increases equate to greater time lost during train crossings for emergency vehicle traffic. It is estimated that each train will take nine minutes to pass, meaning that accumulated throughout the day, 90 to 110 minutes will be lost daily at crossings to train traffic. At most crossings, emergency vehicles will be blocked when a train is crossing. This would mean that for roughly 90 to 110 minutes a day, emergency vehicles would have no way of getting to their destination when a train is crossing until it has passed.

Mitigation Measures

In order to ensure that emergency vehicles maintain the ability to get to response sites quickly, either an emergency vehicle bridge going over main crossing sites or alternative routes which avoid the train crossings will need to be established. Both measures will be expensive and will be time consuming to create successfully.

Significant Unavoidable Adverse Impacts

With the increase in train traffic, the delays in road traffic are unavoidable. Without strong mitigation measures set in place, the impact on public services will be severe and even with strong mitigation measures; it will still be significant.

Alternative Action

Impact

The 1997 proposal would mandate fewer trains running to the terminal than the current proposed action but an increase in train traffic is still predicted. The impact to public services and emergency vehicles will still increase with the proposal, even though the impact will be less than the current proposal. The 1997 proposal indicates an increase of about 4 trains per day which would result in an additional 30 minutes per day of traffic delays to both commuter cars and emergency vehicles (1997 Proposal).

Mitigation Measures

In order to ensure that emergency vehicles maintain the ability to get to response sites quickly, either an emergency vehicle bridge going over main crossing sites or alternative routes which avoid the train crossings will need to be established. Such measures will be expensive and will be time consuming to create successfully.

Significant Unavoidable Adverse Impacts

With the increase in train traffic, the delays in road traffic are unavoidable. Without strong mitigation measures set in place, the impacts on public services will be severe and even with strong mitigation measures; the impact will still be significant.

Aesthetics

Existing Conditions

As described in the land and shoreline use section, the current conditions of the proposed site are underdeveloped and vegetated lands which includes: forest, pastures, hayfields, mowed utility corridors, and abandoned fields. However, from the current shoreline site location you can see existing infrastructure from both the ConocoPhillips' Ferndale Refinery and ALCOA-Intalco Works. According to Whatcom County's SMP, aesthetics section (23.100.17.A.6), "All development should be designed to avoid or minimize negative visual impacts on the scenic character of the area and to ensure visual compatibility with adjacent non-industrial zoned properties."

Proposed Action

Impacts

The proposed action would alter the visual character of the upland development site from an undeveloped vegetated state and farmed land to industrial in nature. The new rail infrastructure and rail access would pass through existing fields and change that area as well. The increase in train activity through Bellingham's proposed waterfront redevelopment site could have adverse effects on the visual character of the area.

Some of the industrial structures would be visible from public roads near the site. Also, industrial structures would be visible from the beach and from the water. In the immediate site vicinity, the pier structure would dominate the view from the beach and increase the industrial character of the marine area.

Mitigation

Although not specifically required, existing or added trees and other vegetation could help reduce the visual impacts from both the water and the beach. Neutral colors and materials not prone to reflection could be utilized in the construction of the larger structures to minimize visual impacts.

Significant Unavoidable Adverse Impacts

Industrial development of the site would alter the physical character of the uplands and the shoreline. The marines structures, additional trains, and berthed ships would be visible from the beach and passing watercraft. The upland storage area would be partially visible from the water and many structures may be visible form public roads adjacent to site.

Alternative Action

Impacts

The aesthetic impacts of the alternative action would be similar to those of the proposed action in that structures will still be visible from the shore, water and public roads. However, since less land would be developed on (180 acres of the 1,092 acre site, instead of 350 acres), and coal infrastructure is not needed; the alternative action would have

much less of an effect on the aesthetics of the site and the surrounding area.

Mitigation

The mitigation measures of the alternative action would be similar to those of the proposed action.

Significant Unavoidable Adverse Impacts

The significant unavoidable adverse impacts of the alternative action would be similar to those of the proposed action, but as mentioned above these impacts would still have far less of an effect on aesthetics than the proposed plan.

Light and Glare

Existing Conditions

British Petroleum, ALCOA-Intalco, and Conoco Phillips currently operate industrial facilities along the Cherry Point shoreline. These facilities operate at night and produce significant lighting, which is visible from the surrounding water and islands. The British Petroleum, ALCOA-Intalco, and Conoco Phillips ports are all smaller facilities than the proposed terminal, and thus, require less lighting. The British Petroleum refinery, which lies inland and to the north of the proposed site also requires night lighting and produces visible skyglow in the area. See figures 6.1 and 6.2 for existing conditions.

Proposed Action

Impacts

The proposed Gateway Pacific Terminal would be contained in a Heavy Impact Industrial zone, but would require sufficient lighting to safely carry out night operations, which could negatively impact the surrounding environment, including adjacent rural and residential lands. The use of bright yard and stringer lights on shipping terminals and vessels produces glare, overillumination, and skyglow, which are forms of light pollution. About 60% of the light from a typical unshielded light fixture is considered unproductive and wasted light. Light pollution has been found to negatively impact the health of plant and animal populations, as well as disrupt the circadian clock in humans, which can lead to various forms of cancer (Chepesiuk). The necessary port lighting for the Gateway Pacific Terminal will significantly add to the amount of light pollution originating at Cherry Point. Glare from the terminal's night lighting and reflective surfaces will likely be visible from boaters on the water and from residences and campers on the nearby islands. Skyglow from these lights will also reduce the night sky visibility for adjacent residences, as well as those on the water and islands.

The proposed action could potentially lead to an increase in 18 daily train trips along the Burlington Northern Santa Fe (BNSF) rail line, which connects coal suppliers in Montana and Wyoming to the terminal at Cherry Point. Each of these additional rail trips will be operating at night along their route. The Federal Railway Authority (FRA) mandates that train headlamps be at least 200,000 candela in brightness, which is enough to fully illuminate a person 800 feet in front of the head car (US DOT). Therefore, the trips added by the proposed action will likely cause significant glare impacts for housing units adjacent to the rail line.

Mitigation Measures

The proposed project may mitigate the negative impacts of artificial lighting through the use of screening and blocking methods. To reduce skyglow and maintain productive lighting, the terminal may use hooded or directional lighting to help focus light downwards. Reflective surfaces in the terminal's yard maybe treated to decrease glare, such as by painting these surfaces with matte finishes. Vegetation may also be used as a

natural screening method for parts of the terminals.

Significant Unavoidable Adverse Impacts

Even with the use of mitigation measures, not all light pollution originating at the proposed terminal will be eliminated or blocked from the view of adjacent residences, the water, and the islands.

Alternative Action

Impacts

Although the alternative action terminal would use the same 1,092-acre site as the proposed action, its export capacity would be significantly smaller and would produce less light pollution. At full capacity, the proposed action could accommodate about 487 vessels per year; the alternative action would only be able to accommodate 140 smaller vessels per year, which would result in reduced glare and overillumination from the shiploading systems, stockyards, and vessels docked at the site (Pacific International Terminals, Inc.; Whatcom County).

The alternative action would add four to six daily train trips along the BNSF rail line, compared to the proposed action, which could add 18 daily train trips when operating at full capacity (Stark). This reduction in train trips would reduce glare impacts for housing units near the connecting rail line.

Mitigation Measures

The mitigation measures for the alternative action would be similar to those for the proposed action.

Significant Unavoidable Adverse Impacts

The significant unavoidable adverse impacts of the alternative action would be similar to those of the proposed action.

Utilities

Existing Conditions

The site proposed for the Gateway Pacific Terminal at Cherry Point currently has very few utilities on location. There is currently one power line that runs through the site. While there are few utilities located directly on location access to utilities is somewhat easily available through neighboring properties.

Proposed Action

Impacts

The Gateway Pacific Terminal proposal would require the use of electric, water, telecommunications, and septic system utilities.

Electricity

Electrical power would be provided to the terminal by the Whatcom County Public Utility District (PUD) via a new dedicated 115 kilovolt (kV) overhead line connected to the transmission system located adjacent to Aldergrove Road. The main substation would be built near the connection point east of the East Loop rail embankment. The power would be distributed from the main substation to 7 substation located throughout the site. The estimated electrical demand for the proposed terminal is 25 megavolt amperes (MVA) yearly ("Project information document," 2011). There would also be increased demand for electricity caused by the transportation of the goods to be exported at the terminal (ReSources). The impact of the project would mean increased demand for electricity but it appears that existing capacity would be sufficient for the proposal.

Water

Industrial grade water would be supplied via a 12 inch underground pipe from the existing water main at Aldergrove Road by the PUD. The PUD holds the rights to 53 million gallons of industrial water per day and is currently supplying approximately 17 million gallons a day of to the industries located at Cherry Point. PIT currently holds a contract with PUD for 5.33 million gallons per day. It is expected that 5.33 million gallons per day will be sufficient to supply the terminal with all its water needs, including coal dust suppression. The treatment of industrial water with a reverse-osmosis treatment will provide potable water ("Project information document," 2011). There would also be increased demand for water caused by the transportation of the goods to be exported at the terminal, specifically for the use of suppressing coal dust while it is being transported (ReSources). The impact of the project would mean increased demand on water supplies but it appears that existing capacity would be sufficient for the proposal.

Telecommunications

There are multiple options available for the telecommunications needs of the terminal. For land line telephone services Quest and Verizon have services available to the proposed area. Cellular service is also available from multiple providers. Both internet

and cable television services are available from Comcast and Verizon. Over all the availability of telecommunication services is high and it appears that existing capacity would be sufficient for the proposal ("Project information document," 2011).

Septic System

For the wharf the sanitary sewage will be treated on site and disposed of at an offsite location. The rest of the facilities sewage will be treated on site and released into a septic field on site. Since the treatment of all sewage will be handled on site and the local sewer systems are not affected it appears that existing capacity would be sufficient for the proposal ("Project information document," 2011).

Mitigation

The current infrastructure of the utilities to be affected by the proposed action appear to be more than capable of handling the increased demands caused by the proposed action, as such no mitigation would be necessary. But optional mitigation could be to use the most water and electric efficient equipment available.

Significant Unavoidable Adverse Impacts

The unavoidable impacts of this proposal are that the terminal will use relatively large amounts of electricity and water.

Alternative Action

Impacts

The impacts on utility services for the alternative action would be somewhat similar to the impacts from the proposed action. Since the location of the alternative action is the same site as the proposed site all the availability of utilities is the same as the proposed action. The differences would be in the amount of electricity and water needed. The electric and water needs of the alternative action would be less than the proposed action because while the alternative action would be a very similar site it would be a smaller operation over all. The demand for water of the alternative action would also be less than the proposed action because the alternative action would not involve the storage or transport of coal and there for would not need water to suppress coal dust.

Mitigation

The current infrastructure of the utilities to be affected by the alternative action appear to be more than capable of handling the increased demands caused by the alternative action, as such no mitigation would be necessary. But optional mitigation could be to use the most water and electric efficient equipment available.

Significant Unavoidable Adverse Impacts

The unavoidable impacts of this proposal are that the terminal will use a relatively large amount of electricity and some water.

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Appendix A: Glossary

Automatic Block Signaling - An automatic system that prevents two trains moving in the same direction from occupying the same section of track simultaneously. As the lead train exits a section of track, it automatically triggers the signal to allow the following train to enter.

BNSF - Burlington-Northern Santa-Fe railroad. The railroad company which owns the railroad being proposed for use.

Class I Railroad - A railroad with average annual gross operating revenue of \$250 million or more, in 1991 dollars. The threshold is adjusted every several years by the Surface Transportation Board to reflect the effects of inflation and other factors.

CPID - Cherry Point Industrial District.

Glare – Reduced visibility resulting from overly bright light.

Hopper Cars - A railroad freight car that can be either covered or uncovered, and has doors on its sides or undersides. Hopper cars are used to transport loose bulk commodities such as grain, ore, and coal.

Hydrocarbon – An organic molecule containing both hydrogen and carbon.

Intermodal - The use of two or more modes of transportation to complete a cargo move. For example, truck/rail or rail/ship.

Light pollution – Excessive and bothersome artificial lighting.

Lummi Island Nation – a composition of Lummi, Nooksack, and Samish Indians.

PDO – Pacific Decadal Oscillation.

Pre-Booming - Containing spills and contamination.

Rail Capacity - The number of trains that can occupy a given segment of track over a given period of time.

Skyglow – The illumination or partial illumination of the night sky, resulting from artificial lighting sources.

SMP - Shoreline Management Program.

Static Capacity - The ability of a yard to accommodate standing equipment (i.e. cars that are stored, awaiting movement, or awaiting processing).

Stevedoring - Loading and unloading ships.

SWPPP - Storm water pollution prevention plan.=

Temporary Impact – Expected disturbance followed by active restoration within the same growing season.

Time Immemorial – Before human memory or record.

UGA - Urban Growth Area.

WCC - Whatcom Community Code.

WDNR - Washington Department of Natural Resources.

Appendix B: Figures



Figure 1.1 – Cherry Point in relation to Whatcom County, Washington (Google Earth)

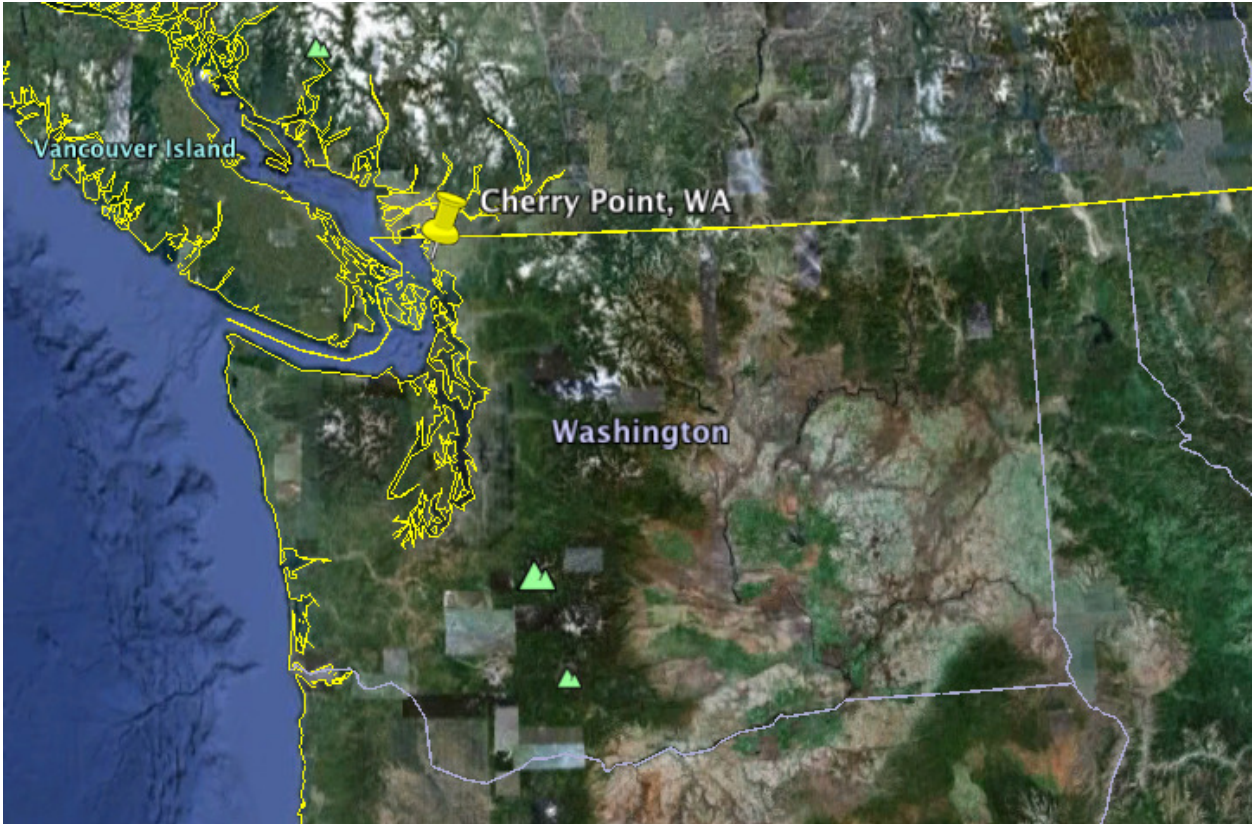


Figure 1.2 – Cherry Point in relation to Washington State (Google Earth)

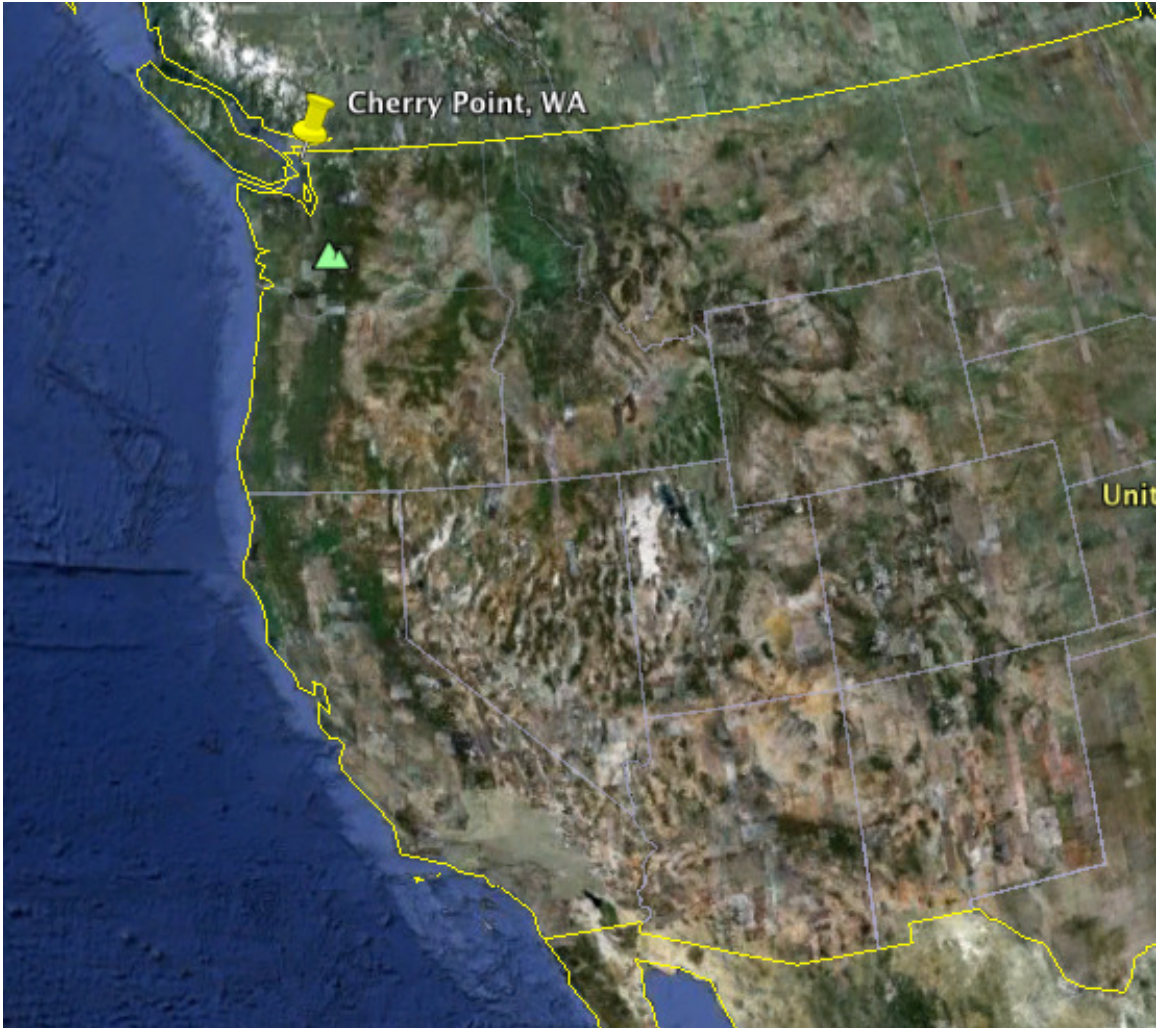


Figure 1.3 – Cherry Point in relation to the Western United States (Google Earth)



Figure 2.1 – Proposed Gateway Pacific Terminal Site Plan (SSA Marine)

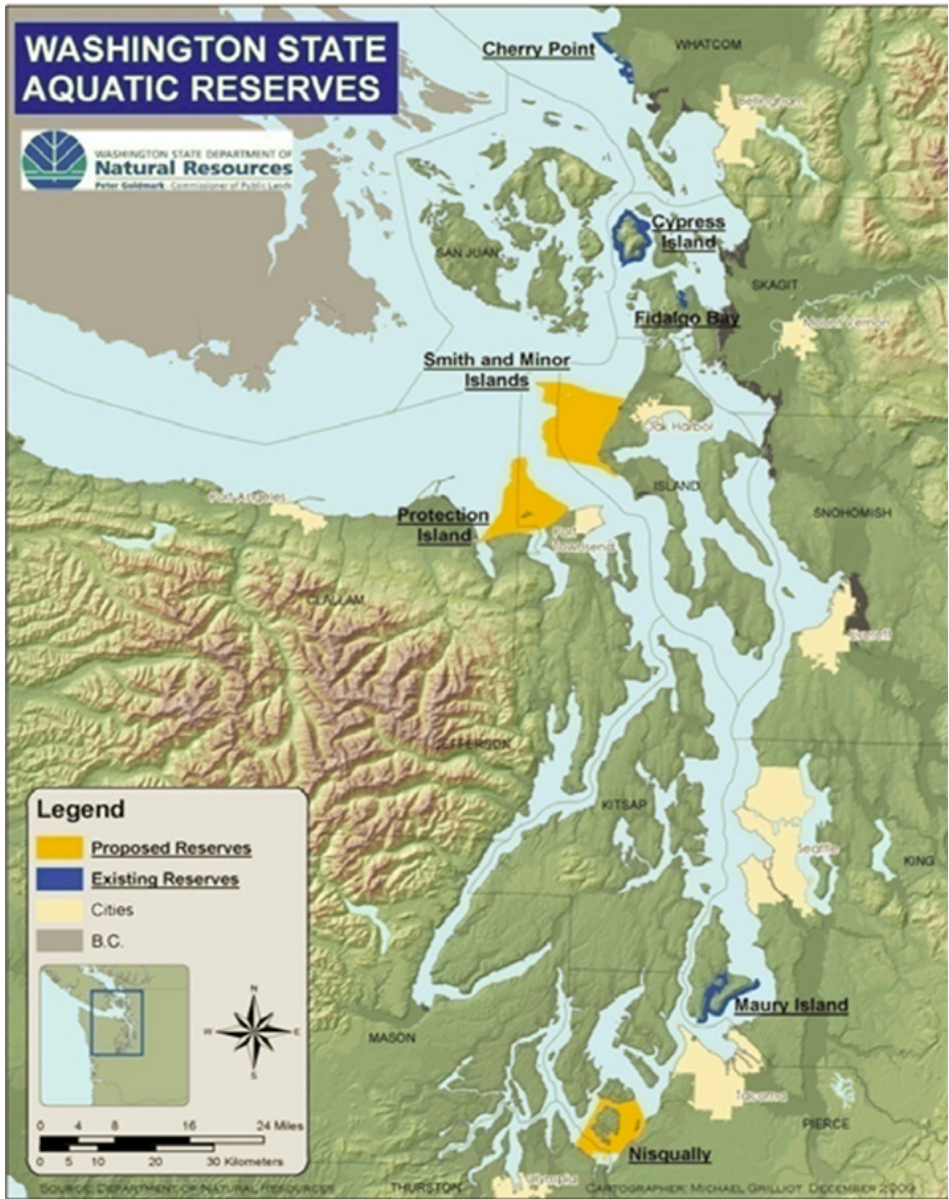


Figure 3.1 – Washington State Aquatic Reserves (Washington State DNR)

Figure 10 Cherry Point herring stock spawning biomass and fishery landings (short tons), 1973-2008 (WDFW unpublished data).

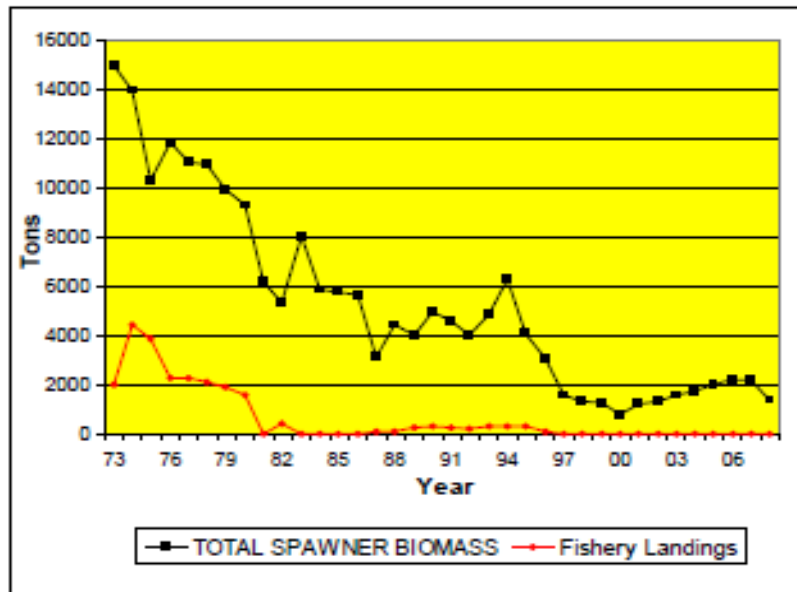


Figure 3.2 – Cherry Point herring stock spawning biomass and fishery landings (short tons), 1973-2008 (WDFW unpublished data)



Figure 3.3 – Spawning escapement for Cherry Point herring, 1973-1980 (WDFW unpublished data)

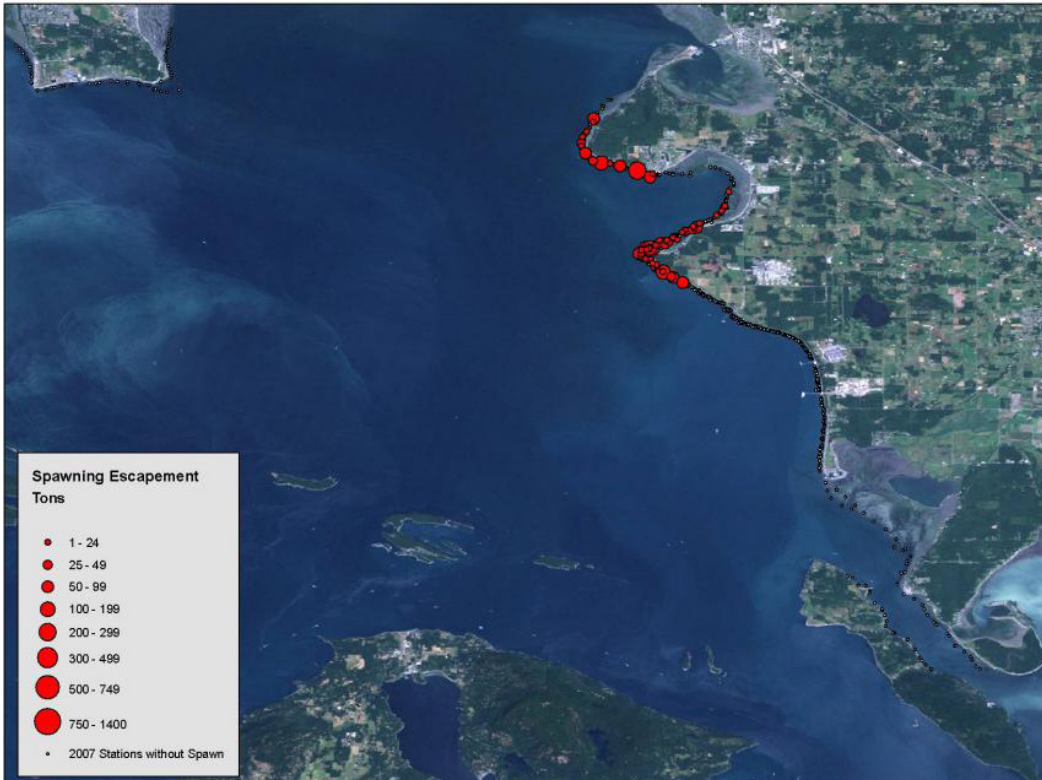


Figure 3.4 – Spawning escapement for Cherry Point herring, 2007 (WDFW unpublished data)

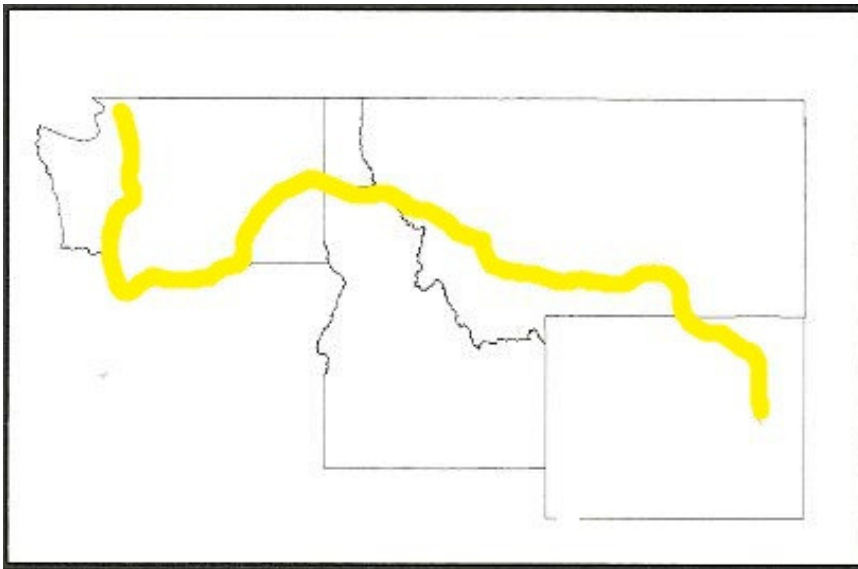


Figure 4.1 - Train route from Powder River Basin

Figure 1. Washington State Rail System

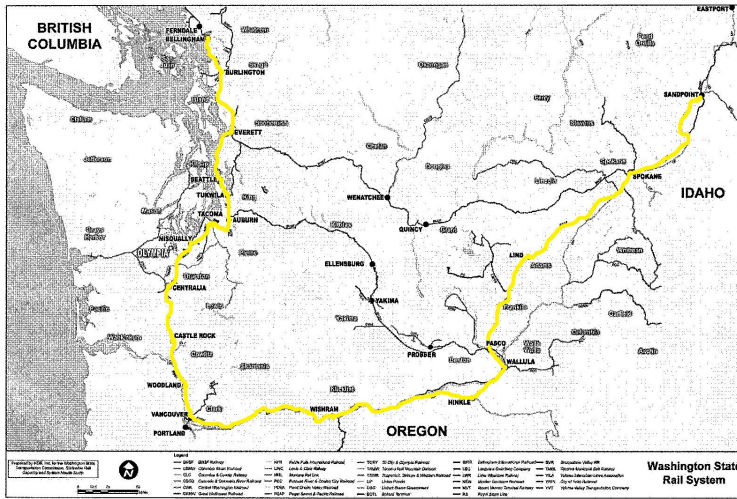


Figure 4.2 - Train route through Washington State

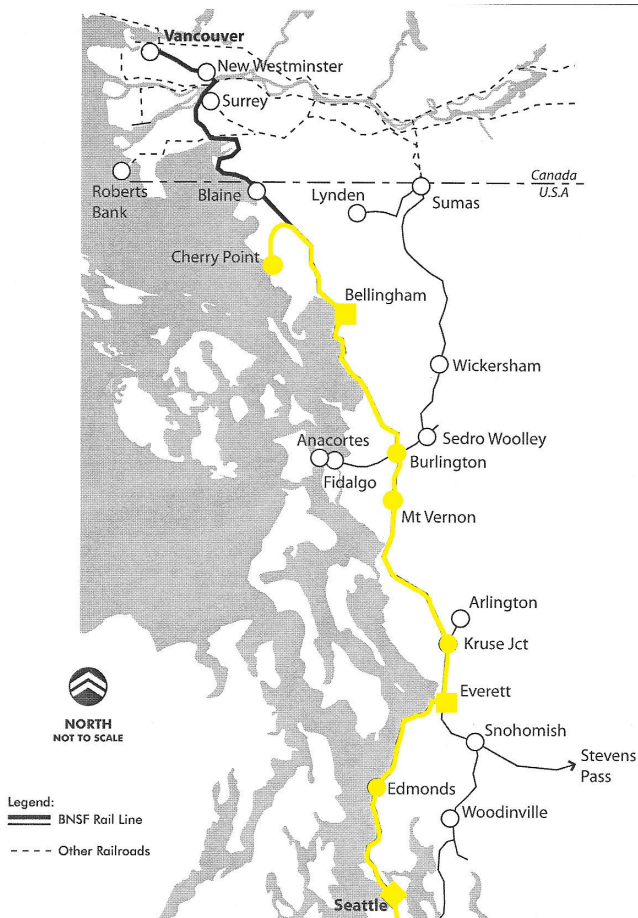


Figure 4.3 - Train route up Puget Sound to Cherry Point

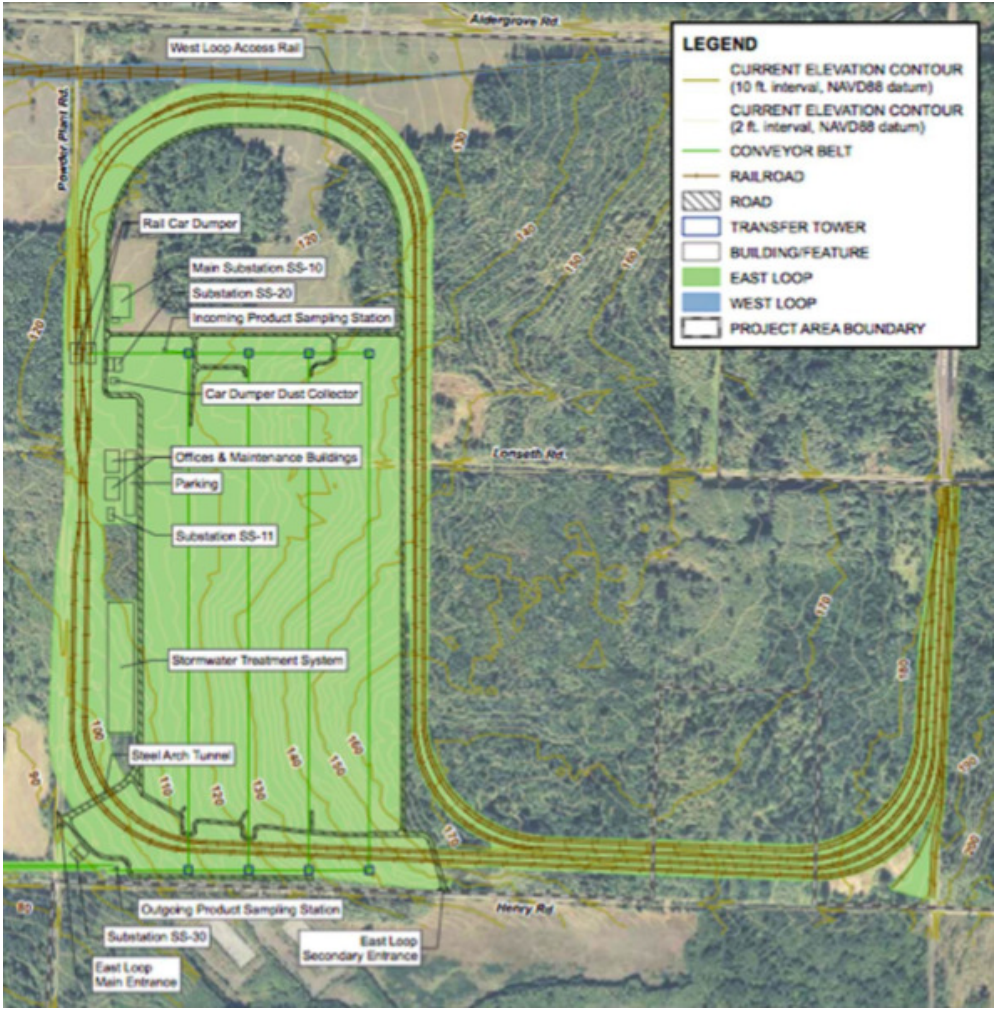


Figure 4.4 - Map of proposed rail loop at Cherry Point (SSA Marine)

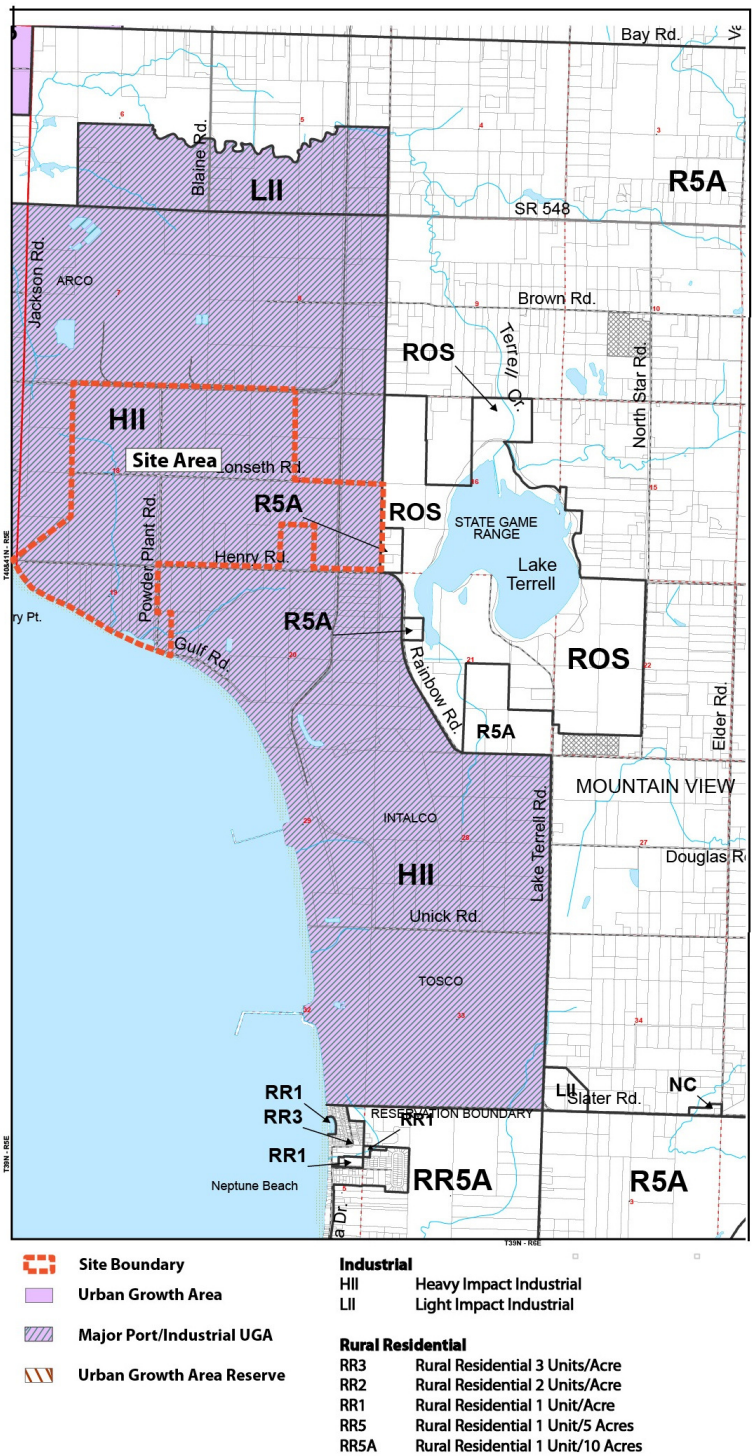
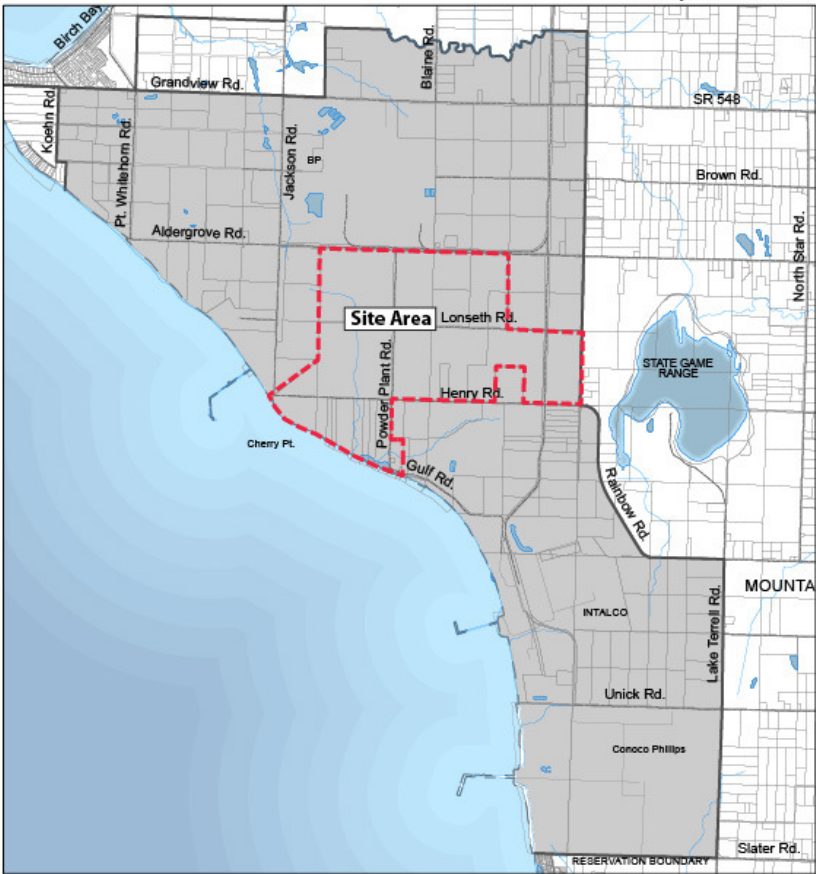


Figure 5.1 - Cherry Point zoning map (Whatcom County)

Map UGA-10



- Cherry Point Urban Growth Area

Whatcom County
Comprehensive Plan
- October 2009

- Urban Growth Area
- Site Boundary

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0 0.15 0.3 0.6 0.9 1.2 Miles



Figure 5.2 - Cherry Point urban growth area map (Whatcom County)



Figure 6.1 - Existing ALCOA-Intalco terminal at night



Figure 6.2 - Existing British Petroleum terminal at night

