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BP Rail Logistics Project environmental impact assessment, Bellingham, WA

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Rail Transport of North Dakota

Crude Oil to Cherry Point

Environmental Impact Assessment

Huxley College of the Environment

Western Washington University

Winter 2013

ESCI 493

Photo source: http://www.bnsf.com/customers/bakken-shale/home.html

Environmental Impact Assessment

Huxley College of the Environment

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Signature _____ Signature _____

Spencer Andrich Suzan Nasona

Signature _____ Signature _____

Andrew Inocencio Bill Sampson

Signature _____

Robert Bryson

Dear Concerned Citizen letter

As a part of a class project, we conducted an environmental impact assessment that examines the impacts of the BP Rail Logistics Project, which involves the import of crude oil from North Dakota to the BP Cherry Point Refinery. Our analysis was lead by the guidance and expertise of our professor, Dr. Leo Bodensteiner. The analysis focused on the impacts in the vicinity of the project site (i.e., Western Whatcom County).

The BP Rail Logistics Project is owned by BP West Coast Products, LLC. BP plans on constructing a 10,200 linear foot rail loop facility that will transfer materials between rail cars and the BP refinery. Crude oil is the primary material that will be transferred. In addition to the existing traffic at BNSF Custer Spur, one unit train will be in operation per day as result of the project.

Transport of crude oil will impact elements of the natural and built environment. This assessment examines the proposed action, alternative action and no action alternative as a result of the transfer of crude oil by train.

We thank you for your interest in understanding the impacts of crude oil transfer by train.

Sincerely,

The Oil Trains Environmental Impact Assessment Team

BP Rail Logistics Project

Environmental Impact Assessment

Bellingham, WA

Prepared for:

Environmental Science 493

Professor Leo Bodensteiner

Western Washington University

Huxley College of the Environment

Prepared by:

Spencer Andrich

Robert Bryson

Bill Sampson

Andrew Inocencio

Suzan Nasona

**The environmental impact assessment was a part of a class project that was conducted by students from Western Washington University, Huxley College of the Environment. It has not been undertaken at the request of persons representing local governments or private individuals, nor does it necessarily represent the opinion or position of individuals form the government or the private sector. **

Fact Sheet

Title

BP Rail Logistics Project Environmental Impact Assessment

Description

Proposed Action:
Crude oil from the Bakken fields in North Dakota is currently being transported to nearby refineries in WA State. BP at Cherry point is proposing to construct a 10,200-foot rail loop, which will serve as transfer station for the incoming oil trains. This rail loop will be large enough to withstand a100-car train while not obstructing nearby tracks. One train will either transport 20,000 every day or 40,000 barrels every other day.

Proposed Alternative Action:
In order to reduce and prevent the impacts of the project, mitigation should be increased on site and near vicinity. Multiple mitigation measures should be implemented such as noise baffles, constructed treatment wetlands, spill response measures such as absorbent booming and saw dust. Specific increased mitigation measures are discussed in the appropriate section.

No Action:
Under the no action alternative the proposed rail loop would not be built and the natural environment of the area would remain in its current state.

Location of Study Site

The project site is located in Blaine, Washington, located in the North 1/2 of Section 8, Township 39, Range 1 East, W.M. on Whatcom County Assessor parcel numbers 390108-067476, 390108-191484, 390108-336471, 390108-074352, 390108-204346, and 390108-067476 (BP West Coast Products, LLC, 2012).

Proposer

Huxley Environmental Impact Assessment Winter 2013-ESCI 493

Lead Agency

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Permits and Approvals

- Land Disturbance Permit -Whatcom County
- Revocable Encroachment Permit -Whatcom County
- Commercial Building Permits and associated Mechanical and Plumbing Permits -Whatcom County
- Electrical Permit -Labor and Industries
- Order of Approval to Construct -Northwest Clean Air Agency
- National Pollutant Discharge Elimination System Construction Stormwater General Permit -Washington State Department of Ecology
- Section 401 Water Quality Certification and Coastal Zone Management Act Consistency Determination -Washington State Department of Ecology
- Forest Practice Application -Washington State Department of Natural Resources
- Temporary Access Permit -Washington State Department of Transportation
- Section 404 Individual Permit -U.S. Army Corps of Engineers

EIA contributors

Spencer Andrich- Earth, Public Health and Aesthetics, Editing/formatting

Bill Sampson- Air, Transportation and Light and Glare

Andrew Inocencio- Plants and Animals, Natural Resources and Utilities

Suzan Nasona - Water, Recreation and Land Use

Robert Bryson- Public Services, Historical and Cultural Preservation, Housing

Distribution List

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Acknowledgements

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Dr. Leo Bodensteiner, Ph.D, Professor, Western Washington University

Lyn Morgan-Hill, Whatcom County Department of Planning

Bret Andrich, Global Diving & Salvage

Bill Kidd, Senior Director, BP External Affairs

Issue Date

March 15th, 2013

Public Hearing

6:30 PM; Tuesday, March 12th, 2013

WECU Educational Building

511 East Holly St

Bellingham, WA 98225

Table of Contents

Fact Sheet ***5***

Table of Contents ***8***

Glossary ***10***

1. Executive Summary ***14***

1.1 Purpose **14**

1.2 Site Description **14**

1.3 Proposed Action **16**

1.4 Alternative Action **17**

1.5 No Action **17**

1.6 Recommendation **17**

1.7 Decision Matrix **18**

2. Elements of the Natural Environment ***20***

2.1 EARTH **20**

2.1.1 Topography 20

2.1.2 Soils 20

2.2 AIR **22**

2.3 WATER **24**

2.4 Plants **32**

2.5 Animals **35**

2.6 Energy & Natural Resources **37**

3. Elements of the Built Environment ***38***

3.1 Environmental Health **38**

3.1.1 Noise 38

3.1.2 Public Health 40

3.2 Land and Shoreline Use **41**

3.2.1 Housing 41

3.2.2 Recreation 43

3.2.2 Historical and Cultural Preservation 44

3.3 Transportation **45**

3.4 Public Services and Utilities **46**

3.4.1 Public Services 46

3.4.2 Utilities 49

4. Appendices ***51***

Appendix A. EARTH **52**

Appendix B. Plants & Animals **53**

Appendix C. WATER **55**

Tables (WATER) 60
Appendix D. Environmental Health 62
***5. References* 65**

Glossary

Glossary of Terms

Bulk containers - A container used to transport and store fluid and bulk material.

Conductivity - The ability of water to transmit heat or energy.

Coniferous tree – needle-leaved and cone bearing trees, and tend to keep their leaves year round

Constructed treatment wetlands - Man made wastewater treatment systems that is designed using processes similar to that of natural wetland.

Cowardin classification system wetland classification system - characterizes wetlands according to water sources (i.e., freshwater or brackish) and the type of vegetation (i.e., forested, scrub-shrub).

Crude oil - The natural form of petroleum before it is refined.

Decatherms – unit of heat

Decibel – unit to express the intensity of a sound

Deciduous tree- trees that seasonally lose their leaves

Detention pond - An area that stores water for limited amount of time in order to prevent against flooding and at times erosion.

Discharge - Amount of water carried out by a stream.

Drainage system - A system that drains or carries excess water.

Emergent – wetlands dominated by rooted herbaceous plants (not woody plants)

Erosion – forces that wear away the surface of the earth and transport sediments such as water, glaciers, winds, waves, etc.

Floodplain - An area of low-lying ground that lies near a river. This area was created by sediments deposits from a river and it is likely to flood.

Glacio-fluvial deposits – sediment deposited from glacier fed streams

Glacio-marine deposits – sediments deposited by glacial melt water into an ocean or saltwater environment

Ground water – water that is stored beneath the earth and fills soil pore spaces and rock fractures

Heavy industrial impact zone - Area that allows the manufacture of raw goods.

HGM (hydrogeomorphic) classification system - classifies wetlands according to hydrologic and geologic features of the landscape within which the wetlands were formed.

Impervious Surface – a type of surface that has extremely low permeability so that fluids pass over and not through the surface; this includes asphalt, concrete, etc.

Loam – soil composed of sand, silt, and clay at about even concentrations

Marine terrace – Flat, horizontal or inclined land of marine origin

Megawatt – a unit of power and equals one million watts

Mitigation - Measures taken in order to avoid, minimize, rectify, reduce, monitor and compensate for the potential environmental impacts of a project.

Mountain View Upland - A diamond-shaped plateau block that has an area of 42 square miles found within Western Whatcom County Washington. The area consists of a low, rolling hills that rise to an altitude of 385 feet. It is bordered on the west by the Strait of Georgia.

Palustrine – inland, nontidal wetlands that contain trees, shrubs, and emergent vegetation, and includes marshes, swamps, and bogs.

Permeability – the porousness of a material and how easy it is for fluid to flow through

pH - A measure of how acidic an element is.

Polycyclic aromatic hydrocarbons (PAHs) – potent and persistent (long-lasting) atmospheric pollutants

Poplars – genus of 25-35 species of deciduous flowing plants

Riparian – the land area along the bank of a river or stream

Runoff – Water that is not absorbed in the soil and runs off surfaces where it is later collected at certain locations.

Salinity - The amount of salt in a body of water

Scrub-shrub – wetlands dominated by woody vegetation less than 20 feet tall

Secondary containment - A method used to prevent the spill of hazardous material by adding a second object that will house the hazardous material.

Sediment – natural material that is broken down by weathering and erosion and then transported by wind, water, ice, or gravity.

Soil – the top layer of earth's surface containing rock and mineral particles and organic matter

Sediment pond – a body of water that catches water runoff and stores it so that sediment and debris can settle to the bottom to form soil

Soil horizon levels – a layer of soil that is parallel to the surface, but has different characteristics than the soils above and below it

Sorbent boom – a ring like device that sits on surface water and contain the area of an oil spill and helps soak it up

Topography – detailed description or imagery of earth's surface features

Turbidity - Cloudiness in water which is of result of the presence of sediments movement.

Uplands – land that is generally elevated higher than the surrounding region and may contain differing wildlife and vegetation

Volatile organic compounds - These are organic chemicals that can be emitted in form of gas from certain solids or liquids. They are harmful to human health and environment.

Water hardness - A measure of the amount of calcium and magnesium in water.

Watershed - An area where all the water in the system drains into the same place.

Water table – upper surface of groundwater in which below the ground is saturated and where pressure of the water in the soil equals air pressure

Wetland – Land that is saturated with water and under normal conditions can support vegetation.

Wetland buffer vegetation - An area of vegetation that begins where there is wetland dependent vegetation and extends out into space that has another land use.

List of Acronyms and Abbreviations

BPD – Barrels per day
BP – British Petroleum
BRMSA – Brown Road Materials Storage Area
CDC – Center for Disease Control and Prevention
dB – Decibel
DNR – Department of Natural Resources
DO – Dissolved oxygen
EFSEC – Energy Facility Site Evaluation Council
EIA – Environmental Impact Assessment
EPA – Environmental Protection Agency
ESA – Ecological Society of America
HAZMAT – Hazardous materials
HGM - Hydrogeomorphic
HII – Heavy Impact Industrial
IER – Institute for Energy Research
IPIECA – International Petroleum Industry Environmental Conservation Association
MRL - Minimum reporting level
NAAQS – National Ambient Air Quality Standards
NPDES – National Pollutant Discharge Elimination System
NRCS – Natural Resources Conservation Service
NSEA – Nooksack Salmon Enhancement Association
NWCAA – Northwest Clean Air Agency
OHFOM – Oil-handling Facilities Operations Manual
OSHA – Occupational Safety and Health Administration
pH – Acidity levels (measure of hydrogen ion concentration)
PPE – Personal Protection Equipment
PPM– Parts per million
RM – River mile
SEPA – State Environmental Policy Act
SPCC – Spill prevention, control and countermeasures
SPP – Spill Pollution Prevention Plan
SWPPP – Stormwater Pollution Prevention Plan
UGA – Urban Growth Area
URA – United Research Services
USDA – U.S. Department of Agriculture
VOC – Volatile organic compound
WSDE – Washington State Department of Ecology
WSDFW – Washington State Department of Fish and Wildlife
WSDOE – Washington State Department of Energy
WSDOT – Washington State Department of Transportation
WRIA – Water Resource Inventory Area
WWTP – Wastewater Treatment Plant

1. Executive Summary

1.1 Purpose

The purpose of this environmental impact assessment (EIA) is to identify any environmental elements potentially impacted by the BP Cherry Point Refinery Rail Logistics Project; Both on the project site and the land (developed and undeveloped) and water bodies adjacent to the Burlington Northern Santa Fe (BNSF) railway within the western portion of Whatcom County extending from Larrabee State Park to the BP refinery at Cherry Point. The elements of the environment that will be examined will be divided into two categories: environmental and built. The environmental elements include earth, water, air, plants, animals, and energy and natural resources. The built environment includes utilities, transportation, land and shoreline use, public and environmental health, public services, light and glare, and noise.

The refinery brings in approximately 225,000 barrels per day (bpd) of crude oil, and the proposed 10,200 foot rail loop project is expected to take in one oil train (consisting of 100 cars) per day transporting roughly 20,000 barrels per day, or two trains and 40,000 barrels of crude oil every other day. The crude oil shipped by rail is expected to reduce oil shipments by oil tankers by a similar amount.

This document will address the impacts of the proposed action, as well as benefits and the impacts of an alternative action and a no action plan. The alternative action is to build the proposed Rail Logistics Project, but with additional mitigation to further reduce the impact(s) of the proposed project. The no action plan will be to not build the Rail Logistics Project and resulting in no impacts upon the refinery and project site. The primary environmental issues of the proposed action include a reduction in air and water quality, soil erosion, removal of vegetation and wetlands, removal of wildlife habitat, and impacts associated with train derailments and oil spills.

1.2 Site Description

The project site is located at Cherry Point in Whatcom County approximately 7 miles south of the town of Blaine, Washington. The site lies directly adjacent (to the east) of the refinery facility as seen at the top of Figure 1.2a

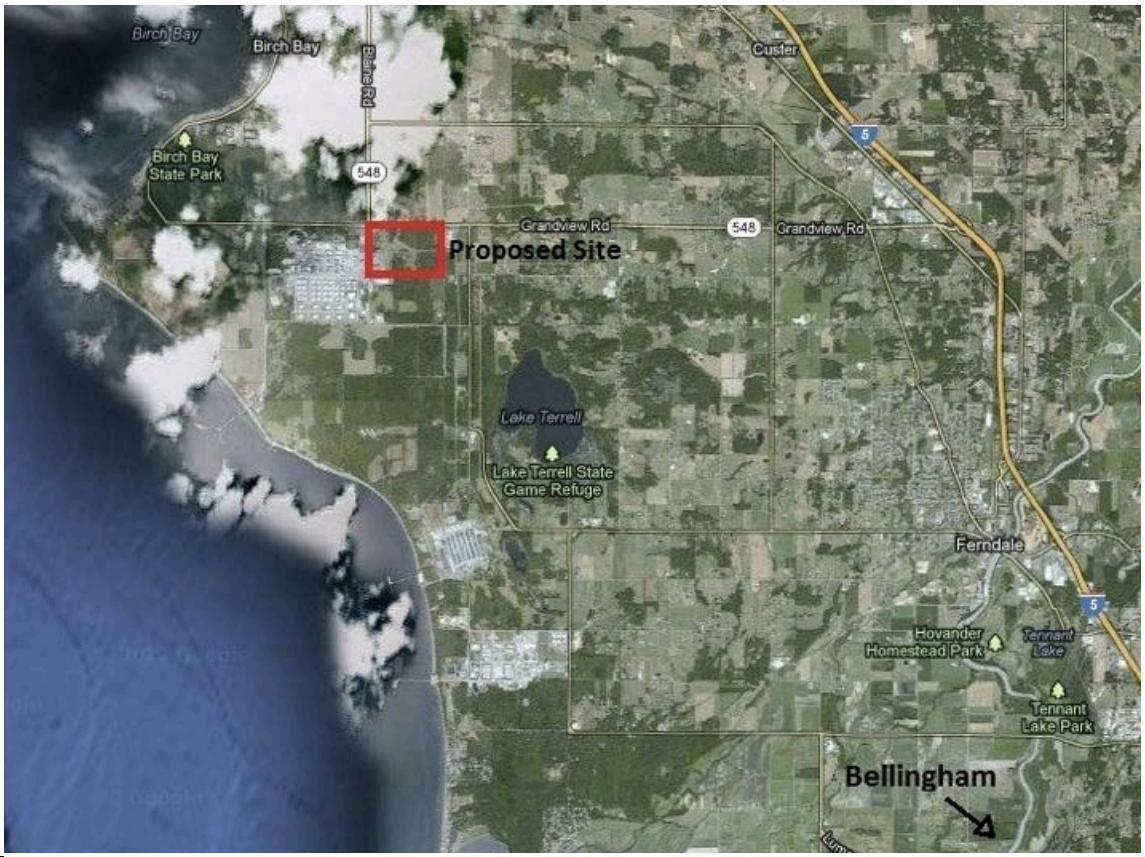


Figure 1.2a. Aerial view portraying the area of the proposed action

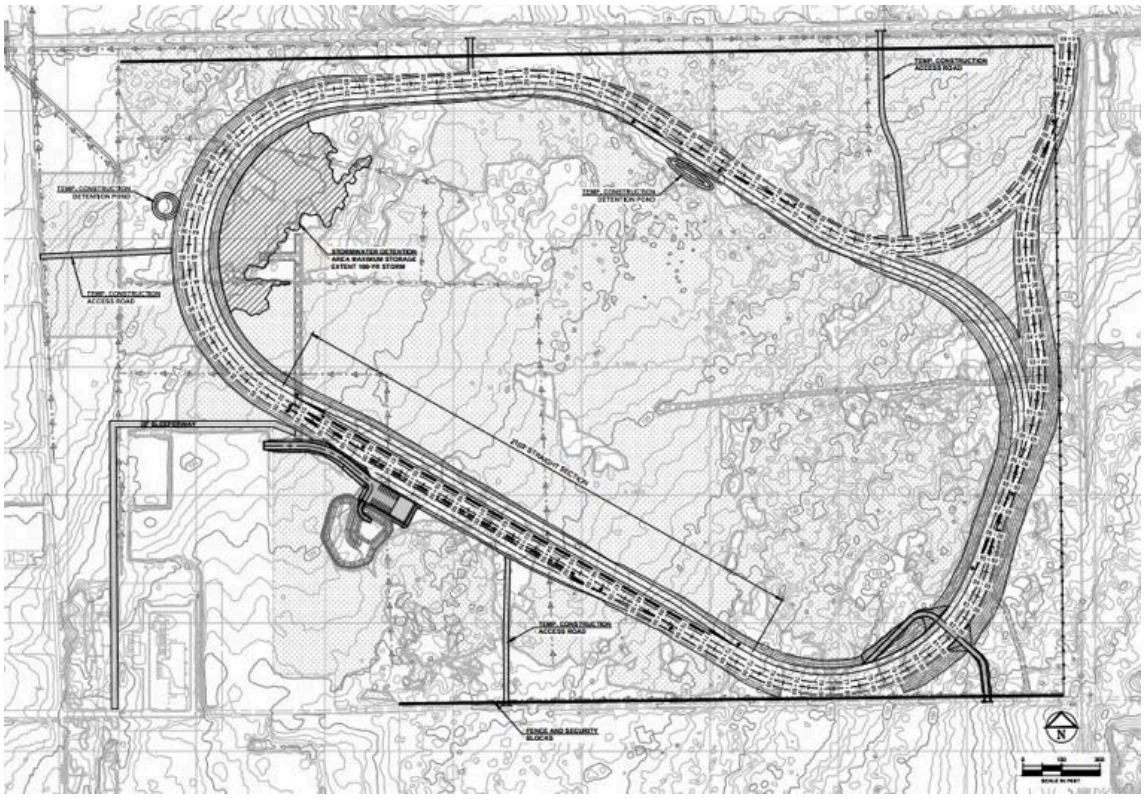


Figure 1.2b View depicting the proposed on-site rail loop

1.3 Proposed Action

The proposed action is to build a 10,200 foot double-track rail road loop and a crude oil transfer facility (Figure 1.2b; transfer facility is the structure on the southwest section of the rail loop) that will transfer the crude oil from the train cars with an elevated pipeline that will pump crude oil to storage tanks on the refinery site. The rail loop will be able to accommodate an entire train without blocking rail traffic on the BNFS rail line continuing south of the refinery, as well as train cars that will require maintenance and repair. An increase of one train per day does not pose a significant impact in train traffic, but the risk of an oil leak or spill on-site or on the BNFS rail lines can pose significant impacts upon the environment, vegetation, wildlife habitats, local economy, and human health and well-being.

The action will include the clearing of wetlands and forests for construction of the rail loop and transfer facility as well as access roads, security roads, parking lots, personnel operations shelter, utility tie-ins, storm water facilities, security features (including a chain linked fence topped with barbed wire surrounding the project site) and visual screening measures. Areas in the project area that will be temporarily damaged will be restored to normal conditions and planted with native vegetation, and permanent impacts will be compensated within two mitigation areas north of the project site on the north side of Grandview Road in the form of wetland and wildlife restoration and rehabilitation (further discussed in the water element section). In addition a vegetated 100 foot buffer will be placed at the northern border of the project site south of Grandview Road.

1.4 Alternative Action

Approximately sixty-six percent of the project site is categorized as wetlands so impacts to wetlands cannot be avoided, and the current project site is declared to have the least amount of wetland and wildlife impact compared to other proposed project sites. With this in mind the best alternative action is to further increase mitigation measures aside from those that have already been suggested in order to reduce, to the maximum extent possible, the impacts that train traffic and crude oil can impose upon the local environment and urban settlements.

Specifically, the primary mitigations that are to be implemented by this action include additional oil response trailers, and increased wetland mitigation. The oil response trailers will be periodically placed along the BNSF rail lines within Whatcom County that will allow easy access to oil response equipment such as oil booms, absorbent pads, skimmers, chemical dispersants, hay, sawdust, and other materials. An increase of wetland mitigation acreage in the BRMSA and Cogen/Facilities mitigation areas will restore more vegetation and wildlife habitat.

1.5 No Action

In the case of no action upon the project site there would be no increase in impacts towards wetlands, wildlife, or human health and well-being and the crude oil that is planned to be shipped by train on the BNFS rail lines will continue to be shipped by tanker ships.

1.6 Recommendation

The authors of this EIA recommend the alternative action to construct the proposed project with additional mitigation measures than those already proposed. With the risk of oil spills and leaks associated with train derailment and the transfer of crude oil and its potential impacts on air and water quality, local soils, vegetation and wildlife, and on human health it is important that as much mitigation be put into the project as possible to reduce the likelihood of these impacts.

1.7 Decision Matrix

Natural Environment	Proposed action	Alternative action	No-action
Earth			
Geology	0	0	0
Soils	-	-	0
Topography	0	0	0
Erosion	-	0	0
Unique physical features	0	0	0
Air			
Air quality	-	0	0
Odor	0	0	0
Climate	-	-	0
Water			
Surface water	--	+	0
Ground water	0	0	0
Flooding	0	0	0
Runoff	--	+	0
Public water supplies	0	0	0
Plants and animals			
Habitat	--	+	0
Unique species	--	+	0
Migration	0		0
Energy & natural resources			
Amount	0	0	0
Availability	0	0	0
Renewables	0	0	0
Scenic resources	0	0	0
Built environment			
Environmental health			
Noise	-	-	0
Risk of explosion	--	-	0
Public health	--	-	0
Land and shoreline use			
Existing land use	0	0	0
Housing	0	0	0
Light and glare	-	0	0
Aesthetics	0	0	0
Recreation	0	0	0
Historical & cultural preservation	0	0	0
Agricultural crops	-	+	0

Transportation			0
Transport systems	-	-	0
Vehicle traffic	-	-	0
Water and air traffic	+	+	0
Traffic hazards	-	-	0
Public service and utilities			
Fire/police	-	-	0
Schools	0	0	0
Parks and Rec	0	0	0
Maintenance	0	0	0
Communication	0	0	0

Key ++ = significant positive impact + = positive impact 0 = No impact
- = negative impact -- = ignificant negative impact.

2. Elements of the Natural Environment

2.1 EARTH

This section describes the current conditions of the proposed landscape and goes into detail about the topography, soils and other unique physical factors in the area of the proposed action.

2.1.1 Topography

Existing conditions-
The general topography of the proposed area is level with little to no variance in slope. There is a slight downward slope from the NW quadrant to the SE quadrant (BP West Coast Products, LLC, 2012).

2.1.2 Soils

Existing conditions-
There are three main types of soil in the area; The Whitehorn silt loam, the Labounty silt loam and the Birch Bay silt loam. As seen from figure (2) the Whitehorn silt loam and the Labounty silt loam occupy the largest area, while the Birch Bay silt area is small and sets atop the NW section of the quadrant. (BP West Coast Products LLC, 2012).

Whitehorn silt loam soil (0-2% slopes): This soil occupies the largest area and is located in the central west portion of the proposed region. This soil is formed in Bellingham glaciofluvial deposits. Other parent materials may include, glaciomarine drift and volcanic ash. The Whitehorn is a very deep, poorly drained soil with a moderately slow permeability rate and will have very little runoff or erosion. In this soil the water table may become high November through May unless drained (NRCS, 2012)

Labounty silt loam (0-2% slopes): This soil occupies the eastern part of the proposed area. This soil is formed in Bellingham glaciomarine drift with loess and volcanic ash. The Labounty is a very deep and poorly drained soil with a moderately slow permeability rate and will have very little runoff or erosion (USDA, 2001). The water table may become high November through May unless drained (NRCS, 2012).

Birchbay silt loam (0-3% slopes) This soil occupies the smallest area and is located in the NNE section of the proposed region. Birchbay is a very deep and moderately well drained soil that sits on glaciomarine drift plains. It was formed over glaciofluvial deposits from volcanic ash and dust accumulation by wind. Birchbay soil has very slow runoff and no hazard of erosion. The soils permeability rate varies among horizon levels

and is moderate in the upper section, fast in the sandy substratum and slow in the lower loamy section of the soil. (NRCS, 2012; Golder Associates, 2002).

The K Factor describes the susceptibility of a given soil type is to erosion. The numbers range from 0.05-0.69. The higher the value the more susceptible that soil is to erosion (Grodin, 1992)

Soil Type	Depth (in.)	K Factor
Birch Bay (12)	0-8	0.32
	8-24	0.24
	24-42	0.10
	42-60	0.28
Labounty (93)	0-12	0.32
	12-29	0.32
	29-37	0.37
Whitehorn (184)	0-10	0.37
	10-18	0.49
	18-26	0.24

(Golder Associates, 2002).

Proposed Action-

Potential Impacts: Although no "unstable" soils were identified in the 2005 Whatcom County Critical Areas Ordinance, the construction of the rail loop still has potential to increase the erosion rate of the soils. Also, 7.95 acres (3.8% of the project area) will be covered by an impervious surface such as asphalt or buildings (BP West Coast Products LLC, 2012). The largest potential impact from the proposed action would arise if an oil spill were to occur. This could occur from a train derailment or from a spill in the process of transferring oil from the oil car to the refinery. Crude oil can infiltrate down into the groundwater in soils and may pose a threat to human health (Saunders, 2012). Also, oil in the soil can have a negative impact on seedling growth in plants and other organisms (Nicolotti, 1998).

Mitigation: A Storm Water Pollution Prevention Plan (SWPPP) will be prepared. This plan will contain information about sediment control, requirements and locations of spots vulnerable to runoff and erosion. Best Management Practices will be implemented, including the use of temporary sediment ponds, which will reduce the rates of sediment flow (discharging of sediment to other areas) during construction. As seen in figure (3) silt fences could be built enabling sediment to be trapped before it discharges to other

areas (BP West Coast Products LLC, 2012). Moreover, Burlington Northern Santa Fe (BNSF) could have trailers with response equipment and oil containment supplies positioned at various locations on route to the refinery in case of an oil spill (Piper, 2012). It would also be critical to have containment boom and onsite responders at the transfer site to contain an oil spill.

Alternative Action-

Description: Increased mitigation efforts include increasing the size and scale of the temporary sediment pond. Expanding silt fences will also further mitigate soil from discharging to other areas. Also, BNSF should increase the number of response trailers/stations to be at more locations along the tracks. Currently, no specific numbers exist for the appropriate number of response trailers per mile of track. Research should be conducted to properly analyze response times for different intervals along the rail tracks. In the event of a spill, this would keep more onsite cleanup readily available.

Impacts: While increasing the size and scale of sediment ponds could further reduce the rate of sediment flow, they would also require more sediment to be displaced in the short term while the ponds are constructed. They would take up more area and could change the soil horizons. Expanding the silt fences would trap more sediment in place, thus discharging less soil. Also, increasing the number of silt fences would have a minimal negative impact on the environment.

No Action Alternative-

Impacts: Soils will continue to erode at the present rate.

Mitigation: There are currently no mitigation measures in place.

2.2 AIR

Existing Conditions-

The BP Oil refinery has an Air operating permit from the Northwest clean air agency (NWCAA) which allows them to release some pollution into the air. The permit was renewed January 2013 and is valid for 5 years (NWCAA 2013)

There are 5 major criteria pollutants that are part of the National Ambient Air quality Standards (NAAQS). The NAAQS are Ozone, particulates, carbon monoxide, sulfur dioxide and nitrogen dioxide. Air quality is scored on a scale of 0-500 with the goal of obtaining a value of 100 or less. In 2011 BP emitted 81 tons of particulates, 1028 tons sulfur dioxide 2051 tons of NOx, 454 tons VOC, and 675 tons of Co2. In 2010 the BP emissions were 151 tons of particulate, 1283 tons sulfur dioxide, 2223 tons NOx,, 486

tons of VOC, and 688 tons of Co2. All 5 criteria pollutants were reduced in 2011 compared to 2010 numbers. (NWCAA 2011)
For each criteria pollutant regulated by the NAAQS. Each monitoring area is either in attainment or not in attainment for each pollutant. The current standard for Ozone is 0.12 ppm, 150 micrograms per cubic meter for particulate matter over a 24 hour time period, 10 micrograms per cubic meter over 8 hours for carbon monoxide or 35 micrograms per cubic meter over 1 hour, 0.05 ppm nitrogen dioxide, .002 sulfur dioxide annually, and 60 micrograms per cubic meter annually of total suspended particulate matter.
Particulate matter can create health issues and increase the acidity of rain.
"CO is generally of greatest concern when it is emitted by mobile sources at congested urban intersections because the emissions in those cases occur at ground level in areas surrounded by pedestrians during stagnant weather conditions. "
(http://www.co.whatcom.wa.us/pds/2031/pdf/Ch4-2_Air.pdf)
Whatcom County is in attainment for all of the NAAQS. However emissions are fairly high which is probably because of heavy industry in the County.

Proposed action-

Impacts:

This proposal will have several effects on air quality that may require the permit to be revisited.

> "The permittee shall comply with all terms and conditions of this permit. Any permit noncompliance constitutes a violation of RCW 70.94 and, for federally enforceable provisions, a violation of the Federal Clean Air Act (FCAA). Such violations are grounds for enforcement action; for permit termination, revocation and re-issuance, or modification; or for denial of a permit renewal application.." (WAC 173-401-620(2)(a).

Therefore if BP falls out of compliance with the conditions set out in the permit the permit as currently written could be changed or revoked. The incoming oil from the Bakken oil field in North Dakota will increase activity so more pollutants will be released into the atmosphere especially particulate matter and VOC's.

In addition there will be dust and particulates thrown into the air during construction. Possible construction dust sources are from equipment welding painting clearing and grading. Construction is expected to take 12 months and the dust impacts are expected to be localized to the site. The project should not have a large impact on the overall air quality in Whatcom County. VOC is expected to increase by 8 tons per year due to drainage systems and storage tanks. There are no off site odors that will impact the project.

The use of trains instead of ships is expected to lower most NAAQS pollutants especially sulfur dioxide. There will be an increase in train traffic which will increase diesel emissions in the area. Diesel emissions from trains can cause eye nose irritation as well as headaches, repertory disease and lung cancer. The Air quality in Whatcom County is

pretty good and this project will have a small negative impact on air quality. The impacts of the project on air quality need to be monitored. There is a potential significant future impact if there is an accident or derailment which could release pollutants from the train into the air.

Mitigation:

Impacts from additional production at the refinery can be mitigated by using best available technology in all phases of the project especially construction. To reduce air emission NWCAA suggests that:"train idling shall be minimized to the greatest extent practicable including shutting down locomotives engines as soon as practicable when not in use and delaying restart until necessary for movement or departure from facility." This should cut down on emissions a little bit if followed. This practice places the environment over speedy wasteful lazy action (SEEPA document 2012).

Air impacts from the Trains can also be reduced by using Ultra low sulfur diesel which has 97% less sulfur compared to low sulfur diesel. (DOE 2013) This required mitigation will greatly reduce but not completely eliminate the impacts from the trains.

Alternative Action-

Since our Alternative is additional mitigation one alternative could also include applying the stricter annual State AAQS (ambient air quality standards) to the shorter term standards. Short term air quality is allowed to be slightly worse compared to the annual average. However taking into account other mitigation measures BP should be able to meet annual standards over the short or long term. This tougher standard would insure that BP stays in compliance with NAAQS and the Air operating permit.

2.3 WATER

This section describes the existing water resources and their quality as well as runoff/absorption and flood within the project site and Western Whatcom County.

Existing Conditions-

Surface Water Resources

Within the Regional Western Whatcom County Area

The BP rail logistics project site is considered a part of the Mountain View upland of Whatcom County (Newcomb et al., 1949). It is found within the Water Resources Inventory Area 1 (WRIA1), which is known as the Nooksack watershed (Washington Department of Ecology, 2002). The Nooksack watershed covers 1,250 square miles includes the Nooksack River and its tributaries. Within the area there is a mixture of

urban, agricultural and rural land use (Figure 6). In addition, Western Whatcom County contains numerous wetlands (BP West Coast Products, 2012).

Nooksack River

The Nooksack River is the major drainage system in Whatcom County (Newcomb et al., 1949). Smaller creeks drain local depressions in the area. The Nooksack River basin covers an area of 825 square miles (Washington Department of Ecology, 2012). It is located between the northwestern slope of the Cascade Mountains, where it flows through the foothills and lowlands to Bellingham Bay. The Nooksack River meanders across broad floodplains. There are marine terraces found on northwest and northeast of Lummi Peninsula near the Nooksack River delta and along the margins of the uplands southwest of Ferndale (Easterbrook, 1973). The area is mainly used for agriculture as dairy and raspberry farms (Washington Department of Ecology, 2012).

Within Project Area

The main water body within the project area is Terrell Creek. The creek is 8.7 miles long and drains into Birch Bay (Nooksack Salmon Enhancement Association, 2010). The area around the creek is constituted of a mixture of land uses, which include industrial, agricultural, residential and recreational.

The Surface water sources in the project site have drainage ditches that are a result of past agricultural practices (Easterbrook, 1973). Apart from drainage ditches there are no streams (BP West Coast Products, LLC, 2012). There are two watershed sub-basins that define the drainage system of the site. The largest watershed makes up about 85 percent of the project site and drains west through ditches. The smaller of the two watersheds is approximately 12 to 15 percent of the project site and drains north through short ditches that lead to a roadside ditch along the south end of Grandview Road. Water then flows through a culvert under Grandview Road, and continues to flow to a ditch north of Terrell Creek. Water flow diverts westward for about one mile where it drains into the Strait of Georgia. The drainage flow patterns of the site are expressed on Figure 9.

There are twenty-three wetlands found in the project area as shown on Table 1 (BP West Coast Products, 2012). These wetlands are labeled wetland A through W. Wetland A covers 56 percent of the project area. It is surrounded by deciduous and coniferous forest, poplar plantation and emergent wetland. These wetlands are all category III wetlands, except one wetland (Wetland U). Category III wetlands provide moderate levels of ecological function while category IV wetlands have low levels of function (Hruby, 2004). Wetlands on the project site are classified using both the Cowardin and Hydrogeomorphic (HGM) wetland classification system (Brinson, 1996; Cowardin et al., 1979).

Within Other Project Facilities

Wetland Mitigation Areas

In order to compensate for the permanent impact on the 16.86 acres of wetlands in the project area, mitigation will be carried out in the already constructed mitigation sites:

cogeneration/facilities mitigation area and Brown Road Materials Storage Area (BRMSA) mitigation area as represented on Figure 8 (BP West Coast Products, LLC, 2012). These mitigation sites are located north of Grandview Road. A total area of 140.11 acres will be allocated for mitigation.

Surface Water Quality

Within the Regional Western Whatcom County Area

Nooksack Watershed

A study conducted by Embrey and Fran (2003) showed that there was little variability in the water quality from the upper (at Ferndale) to the lower (at Deming) nooksack (table 2). Some parameters that were considered were conductivity and dissolved solids. The nutrient contents in the form of organic nitrogen concentrations and phorsporous were below minimum reporting level (MRL) in 10% of samples at lower nooksack while it was also below MRL for at latest half of samples at the upper nooksack. However, within the basin at Fishtrap creek the inorganic content levels were higher. There were also higher detections of pesticides and volatile organic compounds (VOCs). In addition, at least 90% of samples were above MRL. Areas of the Nooksack River are either classified as Class A or Class AA. The Lower Nooksack is classified as Class A (excellent quality), while the upper nooksack is classified as Class AA or extraordinary quality. Bellingham Bay, where the nooksack drains into is Class A (Washington State Department of Ecology, 2000).

In addition, the Nooksack River watershed does not meet fecal coliform water quality standards. In a report conducted by Washington State Department of Ecology (2000), it was found that fecal coliform violations occurred in all seasons and under all climate conditions.

Within Project Area

Terrell Creek

A study conducted by the Nooksack Salmon Enhancement Association (2010) showed that the water quality of the creek meets the Washington State Department of Ecology standards for freshwater for the following parameters: pH and turbidity (Figure 7). However, the water quality for the creek did not meet the Washington State Department of Ecology standards for temperature, dissolved oxygen (DO), fecal coliform. The conductivity and salinity levels of the creek were found to be within acceptable ranges. However, the stream flow of the creek was found to be very low at specific times of the year, especially at the end of the summer season.

Runoff/Absorption

Refinery Wastewater
Contaminated water from the BP refinery is sent to the Wastewater Treatment Plant (WWTP) through a process water sewer system (Northwest Clean Air Agency, 2013). Oily water and stormwater enter the WWTP through separate sewers while sanitary sewage is directed and treated in Birch Bay. The treated wastewater is discharged into the Strait of Georgia.

Oil Spills

As oil is handled at the Refinery, there were several incidents of spills over the years (BP West Coast Products, LLC, 2010). As indicated on figure 11 the onsite spills (represented as "other spills on the graph) that were reported can be greater than 1 barrel or 42 gallons. Also a new metric has been introduced in 2010 known as the loss of primary containment (LOPC), which will replace oil spills greater than 1 barrel in 2011.

Flood

As indicated on Figure 10, the project site does not lie within a 100-year floodplain (Whatcom County Planning, 2006).

Groundwater Resources

Geology
The project area lies within the Mountain View Upland, which is comprised of low glacially smoothed plateau and upland till plains (Newcomb et al., 1949). The uplands rise to an altitude of 300 to 500 feet above alluvial floodplains (Easterbrook, 1973). As a part of the Whatcom basin, western Whatcom County lies on Cretaceous clastic continental rocks (Newcomb et al., 1949).

Within the Regional Western Whatcom County Area
A majority of Whatcom County relies on groundwater for its domestic water supply (Newcomb et al., 1949). Groundwater in the western Whatcom County region is primarily used for domestic, industrial, and public water supply. There are approximately 3,000 dug wells, 475 drilled wells, 300 driven wells and 100 springs in western Whatcom County that yield approximately 6.5 million gallons of water per day.

Groundwater Movement
The availability and movement of ground water depends on how permeable the area that the water passes through is, the quantity and distribution of precipitation and the slope of the area (Easterbrook, 1973). Sand and gravel are highly permeable and can provide good sources of ground water. Silt and clay tend to have low permeability as they block ground

water movement. Thus areas comprised of silt and clay is considered a poor source of ground water.

Within Project Area

The project site consists of Bellingham glaciomarine drift, pebbly silt and clay material. This act as a barrier to groundwater movement and makes the area unsuitable for groundwater (Easterbrook, 1973). The area has complex subsurface topographies that create groundwater recharge and discharge sites. It is here that the wetlands were able to form in areas that are shallow in soil profile and where the topographic gradient is low (BP West Coast Products, LLC, 2012).

Groundwater Quality

Within the Regional Western Whatcom County Area

Western Whatcom County has low levels of dissolved mineral matter in its groundwater (Newcomb et al., 1949). They found that the water hardness in western Whatcom County ranged from 10 to 295 CaCO3, parts per million (ppm). The hardness of the shallow wells of the recent alluvium of the Nooksack and Sumas Rivers differs by location and depth. Many wells were found to have a water hardness of 60 to 80 ppm. Some wells had high levels of hardness that reached 175 ppm or more. Five tests conducted in the Mountain View Upland for chloride analysis showed that the chloride levels were less than 20 ppm. These chloride levels deviated in the western parts of the Mountain View upland (i.e., chloride levels were higher). Therefore, the water quality of Western Whatcom County meets the national secondary drinking water standards by EPA for chloride, which is 250ppm (United States Environmental Protection Agency, 2012). Newcomb et al., (1949), found that the groundwater sources are generally of good quality but that there are also areas of poor quality.

Within Project Area

The project area consists of Bellingham glaciomarine drift pebbly silt and clay material (Easterbrook, 1973). Therefore, it is a poor source of groundwater. Groundwater is not found in the BP Rail Logistic project site.

Proposed Action-

This section describes the impacts of the Rail logistic project on the existing water resources and their quality both during construction and operation.

Impacts: Surface water

The project will result in the permanent impact of 16.86 acres of wetlands being filled (BP West Coast Products, LLC, 2012). Wetland buffer vegetation of 19.75 acres will be removed. In addition, 0.51 acres of wetlands (wetlands A and W) and 0.47 acres of wetland buffer area (wetlands A and V) will be temporarily impacted during construction. However, during operation, the surface water sources in the region may be impacted by oil spills.

Runoff/Absorption

The Rail logistics project will result in the increase of 7.96 acres of impervious surfaces as indicated on table 4 (BP West Coast Products, LLC, 2012). Also, there will be an increase in the amount of stormwater discharge into the Strait of Georgia.

Flood

As the project site is not within a flood zone or unstable slope, it is not anticipated that the project will impact flood potential in the area.

Groundwater

Impacts to groundwater resources are not anticipated because groundwater sources are not found at the project site.

Mitigation: Surface water

BP West Coast Products, LLC (2012) plans to restore temporarily impacted wetlands and buffer zone after all construction work ceases. The restoration will involve recreation of the disturbed land by planting native plants. In order to ensure that restoration is successful, the area will be monitored. The buffer restoration zone will be monitored for 5 years. Washington State Department of Transportation data will be used as a guideline to meet quality performance standards for wetland mitigation.

In order to compensate for the permanent impact on the 16.86 acres of wetlands in the project area, mitigation will be carried out in the already constructed mitigation areas: Cogeneration/facilities mitigation area and BRMSA mitigation area (BP West Coast Products, LLC, 2012). It's proposed that there will be wetland creation, wetland rehabilitation, and buffer enhancement in these mitigation areas. The Cogeneration/facilities mitigation site was originally created to compensate for the wetland impacts associated with the proposed cogeneration plant. Since, the cogeneration plant was never implemented; its mitigation site will be used in the following project to compensate for wetland impacts (Table 3). BP plans to use mitigation ratios of 2:1 and 0.65:1 will be used to offset the impacts on category III wetlands and buffer zones. These mitigation ratios apply to the Cogeneration/facilities mitigation site. We proposed that the mitigation ratio for the buffer zones be increased because the BP proposed mitigation ratio would not be sufficient to mitigate for the permanent damage to 19.75 acre of vegetative buffer area. In addition, BP plans on using a 4:1 mitigation ratio to offset the impacts on category III wetlands. This mitigation ratio will occur in both the Cogeneration/facilities mitigation site and the BRMSA mitigation site. The mitigation ratio is higher because 0.96 acres of category III deciduous/ coniferous forest area is impacted.

The wetlands will continue to be monitored for 10 years (BP West Coast Products, LLC, 2012). Currently, the BRMSA mitigation is three years into the 10-year monitoring period. It has met the performance criteria for wetland mitigation during these three years. The Cogeneration/Facilities mitigation site is in its first year of monitoring.

Runoff/Absorption

Potentially contaminated stormwater runoff that occurs during construction and operation will be treated on-site as well at the WWTP. A Stormwater Pollution Prevention Plan (SWPPP) and a Stormwater Site Plan will be incorporated in order to reduce stormwater and runoff impacts of the project (BP West Coast Products, 2012). Also, best management practices (BMPs) will be used throughout the duration of the construction period.

Spill Prevention

"Potential impacts from construction, contamination, spills and pollution will be reduced by maintaining construction vehicles in good conditions and implementing protective measures" (BP West Coast Products, 2012). Some of the protective measures proposed are dust control plan to reduce the introduction of dust as result of construction; Spill prevention, control and Countermeasures (SPCC) and Spill Pollution Prevention plan (OSPP). The SPCC/OSPP plans will be implemented in order to reduce and respond to spills. In addition, as a part of the SWPP plan a spill and prevention plan would be implemented in order to prevent spills from oil, fuel, hydraulic fluids and other sources of pollution during construction (BP West Coast Products, LLC, 2012). The spill and prevention plan would include emergency contact information and cleanup procedures. Kits to clean small spills would also be available on site. The SPCC/OSPP, Oil-Handling Facilities Operations Manual (OHFOM) and Oil Spill Contingency Plan will be utilized to prevent and reduce oil spills (BP West Coast Products, LLC, 2012).

> "The completed Rail Logistics Facility design will incorporate on-site spill prevention, containment and control measures. Site specific spill prevention measures within the transfer area will include a 1,500 linear foot transfer area with built-in secondary containment, which could consist of a concrete slab, containment curbing and catch basins to confine and channelize all surface water runoff and potential spill materials from the paved transfer area directly to the stormwater sewer system and WWTP. The underground collection header will also include provisions for spill prevention and emergency closure, which may consist of an emergency all-stop switch, incremental isolation valves, backflow prevention, and/or other similar measures. Other potential spill prevention measures may also include, but are not limited to, individual collection pans under each rail car, a leak detection system or containment provisions for the transfer pipeline from the rail offloading station to the existing refinery storage tanks, and/or a dual purpose constructed stormwater detention pond. Specific spill prevention and containment contingency measures will be determined by the final design (BP West Coast Products, LLC, 2012)."

Flood
No mitigation is required.

Groundwater
Mitigation measures are not proposed since groundwater sources are not found within the Rail Logistics project site.

Alternative Action-

Description:

Surface water
In order to treat wastewater and stormwater, the construction of a mixture of subsurface flow (vegetated submerged bed) and free water surface treatment wetlands is recommended in the project site. Treatment wetlands have been shown to effectively treat wastewater and improve water quality (Knight et al., 1999). The free water surface constructed well mimics the hydrology of a natural wetland while the subsurface flow constructed wetland consists of a vegetative media that acts like a wall that soaks in the wastewater and prevents it from coming in contact with humans or wildlife. When implemented in petroleum industries, subsurface flow and free water surface treatment wetlands have been shown to reduce oil and grease (Knight et al., 1999). In addition, the free water surface treatment wetland has been shown to efficiently reduce total dissolved solids, total nitrogen, ammonium nitrogen and total phosphorus. This study shows that these constructed wetlands can improve and treat the wastewater from the petroleum industries. Hence, it is recommended that both constructed wetlands be implemented here at the project site to treat wastewater and in order to offset the potential impacts of oil spills as well.

Runoff/Absorption
In order to avoid, reduce and prevent oil spills, the oil should be stored on site since the area is considered to be a heavy industrial impact zone (Whatcom County Planning and Development Services Department**,** 2012**)**. Storage on site reduces the chance of a spill near a residential area. In addition, spill response should be enhanced (See the Earth section).

Flood
No alternative actions are proposed since flood potential will not be impacted as a result of the project.

Groundwater
An alternative action is not proposed because groundwater sources are nonexistent within the project area.

Impacts:

Surface water

Since land would be allocated in the project site for the construction of the treatment wetlands, this might limit the area available for the construction of the Rail Logistics project.

Runoff/Absorption

As the oil is stored on site, there remains to be a potential for onsite oil spills. Also, as the spill response is enhanced there are potential impacts as well (refer to the Earth Section).

Flood

Groundwater

No major impacts are expected to occur to ground water sources and their quality from the alternative action.

No Action Alternative-

Impacts:

No major impacts are expected to occur to surface and ground water sources and their quality from the no action alternative.

Mitigation:

Mitigation is not required.

2.4 Plants

Existing Conditions

Asides from a small developed site, parking lot, and access road in the Southwest corner of the site, the project area remains dominantly covered by various upland and wetland plant species. The project area consists of wetlands, forested uplands, and historic agricultural areas that consists now of open space and grassland. The project site is covered roughly two-thirds by forest and the other one-third open pasture consisting of scattered clusters of shrubs, blackberry vines, or trees. The western portion of the site is primarily grassland and wetland; the eastern portion is primarily coniferous/deciduous forest. About half of the forested area is made up of hybrid poplars planted around 1990 to be harvested for pulp products (efsec 2003). Deciduous tree species that dominate the site include black cottonwood (Populus balsamifera), red alder (Alnus rubra), big-leaf maple (Acer macrophyllum), and paper birch (Betula papyrifera). Other tree species that exist on site, but in smaller quantities include the coniferous western red cedar (Thuja plicata) and grand fir (Abies grandis), and the deciduous quaking aspen (Populus

tremuloides). Except for Douglas fir (Pseudotsuga menziesii) which in some upland areas is more common, there is little variation between tree species in the wetlands and upland forest areas. Common shrub species in upland forest areas include snowberry (Symphoricarpos albus), red elderberry (Sambucus racemosa), Indian plum (Oemleria cerasiformis), trailing blackberry (Rubus ursinus), vine maple (Acer circinatum), salmonberry (Rubus spectabilis), oceanspray (Holodiscus discolor), and Himalayan blackberry (Rubus armeniacus). Shrub species common to the forested wetland areas include salmonberry, black twinberry (Lonicera involvucrata), vine maple, Douglas spiraea (Spiraea douglasii), currants/gooseberries (Ribes spp.), willows (Salix spp.) and red-osier dogwood (Cornus sericea). Herbaceous species commonly found in upland areas include sword fern (Polystichum munitum), fringecup (Tellima grandiflora), sweet vernal grass (Anthoxanthum odoratum; mostly in the fields) and bleeding heart (Dicentra formosa). Herbaceous species commonly found in the forest wetlands include lady fern (Athyrium filix-femina), field horsetail (Equisetum arvense), sedges (Carex spp.), reed canarygrass (Phalaris arundinacea), foamflower (Tolmiea menziessi), Kentucky bluegrass (Poa pratensis), and creeping buttercup (Ranunculus repens) (BP West Coast Products, LLC, 2012).

The BNSF rails leading into the site lie adjacent to dairy farms, cattle ranches, hayfields, seasonal crops, and other agricultural vegetation that includes “red fescue (Festuca rubra), bentgrass (Agrostis spp.), sweet vernalgrass (Anthoxanthum odoratum), common velvetgrass (Holcus lanatus), and English plantain (Plantago lanceolata). In less managed pasture areas, dominant grass species include red fescue, meadow foxtail (Alopecurus pratensis), Canadian thistle (Cirsium arvense), bentgrass, quackgrass (Agropyron repens), and orchard grass (Dactylis glomerata)” (Brownell et al, 2012).

Proposed Action-

Impacts:
About 42 acres of trees and vegetation will be removed for the construction and installment of the rail loop and associated facilities. Specifically, it is expected that roughly 29.5 acres of poplar, red alder, black cottonwood, western red cedar, Douglas fir, big-leaf maple, red alder saplings and willow will be removed. In addition 12.5 acres of softrush reed canary grass and blackberry will be removed. These will be permanent vegetative removals. It may be required to remove an additional acre of vegetation to install temporary construction filtration ponds and access roads, but these actions are temporary and will be replaced with native vegetation after the project is complete (BP West Coast Products, LLC, 2012).

The 23 wetlands identified on the site (see the Water Section) which differ in habitat (Table 1) and species, will be impacted differently in the overall project. The wetland habitat types to be impacted are in order from most to least affected: palustrine emergent habitat (9.55 acres), palustrine forest habitat (poplar forest; 3.21 acres), palustrine emergent/scrub-shrub habitat (2.83 acres), palustrine forest habitat (deciduous/coniferous forest; 0.96 acres), palustrine aquatic bed (0.27 acre), and palustrine scrub-shrub habitat (0.03 acre) (BP West Coast Products, LLC, 2012).

The BNSF rail tracks that leave Burlington and travel north into Whatcom County and to the project site pass through eight priority A-Forest Legacy Areas and four priority B-Forest Legacy Areas in Whatcom County. These areas (Figure 5) are determined by federal-state cooperation and are based on the land's important scenic or recreational values, riparian areas, fish and wildlife values, including threatened and endangered species, or other ecological values (Washington State Department of Natural Resources). It is in the best interest of the federal and state governments to protect these areas from development.

Mitigation:
138.9273 acres (66.47%) of the 209 acres project site are wetlands and so preventing construction upon wetlands is not possible, but where temporary uses occur, wetlands will be restored. Specifically this means about 0.51 acre of temporary wetland impact and about 0.47 acres of temporary wetland buffer impact will be restored with native trees and plants upon completion of the project. This will be guided by a planting plan and followed up by annual monitoring of wetland status in accordance to guidelines in the Wetland Delineation Report and Critical Areas Assessment Report (BP West Coast Products, LLC, 2012). The BRMSA and Cogen/Facilities mitigation areas (Figure 8) will be used to mitigate the 15.9 acres of wetland, 19.75 acres of wetland buffers, and 0.96 acre of wetland impact to coniferous/deciduous forests permanently removed by construction. These areas will provide wetland/habitat creation, rehabilitation, and enhancement. The Cogen/Facilities wetland mitigation area will host 45.91 acres (94.6%) mitigative actions, while the BRMSA mitigation site will host the remaining 2.64 (5.4%) acres of mitigative action. On the Cogen/Facilities mitigation site 12.82 acres will be used as upland enhancement to offset buffer impacts. At a 2:1 ratio, 31.8 acres on the Cogen/Facilities site will compensate for the 15.9 acres of wetland impact, and at a 4:1 ratio the 3.84 acres will compensate for the 0.96 acres of wetland impact to coniferous/deciduous forests; of the 3.84 acres 1.2 will be hosted on the Cogen/Facilities mitigation site and the other 2.64 on the BRMSA mitigation site (BP West Coast Products, LLC, 2012). About 100 feet of vegetation will act as an aesthetic vegetative buffer on the northern portion of the site along the south side of Grandview Road. Native trees and vegetation will be provided for the maximum extent possible. Other buffer projects may need to be associated with this in the near future. The railroad beds will be seeded or planted to stabilize the soil, and the Pond 1 storm-water treatment wetland cell will be planted with native wetland vegetation to aid in the stabilization of settled sediment and prevent re-suspension. (BP West Coast Products, LLC, 2012)

Alternative Action-

Description:
Increase oil response for land and aquatic oil spills such as placing oil response trailers and equipment shelters along the BNFS rail lines with equipment such as oil booms, skimmers, absorbent pads, chemical dispersants, sawdust, hay, and other materials. Also more wetland/habitat mitigation areas should be put aside for this project in the BRMSA mitigation site or in other undeveloped facility property.

Impact:
Storage for oil spill cleanup material, equipment, and vehicles may require additional removal of wetland and vegetation due to the construction and development of storage structures and access roads, but this will be minimal at most. This may lead to more wetland and rehabilitation and restoration elsewhere upon facility lands.

No Action-

Impacts:
There would be no crude oil trains inbound to the site so wetland and vegetation removal as well as the impacts of an oil spill will not exist; however the wetland restoration north of the site will not occur without the project.

2.5 Animals

Existing Conditions

The project site contains habitat for songbirds, American robin (Turdus migratorius), small rodents and insectivores such as raccoons (Procyon lotor), squirrels, opossums, and field mice; deer, and coyotes (Canis latrans), but threatened and endangered species have not been seen or are expected to occur on the site. The project site lies within a priority habitats and species area for Gray Wolves (Canis lupus) which are enlisted as endangered by the state (Washington Department of Fish and Wildlife), but have not been seen on the project site. They are not expected since no known packs or mating couples have been seen in Whatcom County, and the only sightings in the past decade have been two lone wolves that were most likely not local.

The BNFS rail lines pass through three Wildlife Areas in Whatcom County: British Petroleum, Intalco, and Nooksack (Figure 4).
"Habitat types here include submergent and emergent marsh, grasslands, open water and deciduous, coniferous and mixed forest. Without disturbance, the climax vegetation in this area would be western red cedar and Douglas fir. The Whatcom Wildlife Areas contain a wide range of wetland- and riparian-dependent species, as well as upland species. The area supports important habitat for wintering waterfowl and is located on the Pacific Flyway. It was purchased beginning in the 1940s primarily for waterfowl habitat preservation and public recreation, with more recent acquisitions focused on salmonid habitat preservation" (Washington Department of Fish and Wildlife).

The BNSF train route passes over or near several important water bodies including Samish Bay, Chuckanut Bay, Bellingham Bay, the Nooksack River, Terrell Creek and Lake Terrell. Chinook salmon (Oncorhynchus tshawytscha) and Bull Trout (Salvelinus confluentus), which have habitats in most of these water sources, are listed as endangered under the federal Endangered Species Act, and Chum salmon (Oncorhynchus keta), steelhead (Oncorhynchus mykiss), and Coho salmon (Oncorhynchus kisutch) are also

reside in the majority of these waters as well. Lake Terrell which lies about 1.8 miles southeast of the project site is a priority habitat area and breeding grounds for bald eagles (Haliaeetus leucocephalus) which are listed as State sensitive species. Lake Terrell also supports common loons (Gavia immer) which are state sensitive species; trumpeter swans (Cygnus buccinator) which are state priority species, wood duck (Aix sponsa), and large populations of other waterfowl. Cherry Point Pacific herring (Clupea pallasii) is a state candidate species and have spawning ground along the Birch Bay Shoreline which lies about 2 miles west of the project site. Birch Bay is also known to support the second largest colony of great blue heron (Ardea herodias) in Whatcom County (BP West Coast Products, LLC, 2002).

Bays near the rail tracks and the site property are inhabited by eelgrass (Zostera marina), kelp, and phytoplankton and provide the main source for food and shelter for both invertebrate and vertebrate animal species (City of Bellingham, 2008). In the bays, near-shore environment contains eelgrass meadows and beaches which provide habitat for forage fish such as surf smelt (Hypomesus pretiosus), sand lance, and Pacific herring. These three forage fish make up over 50% of local salmonidae species diets; however, these three species have been declining in the past couple decades. Juvenile salmon also are found near the shore where shallow depths make it harder for larger predators to navigate. Other animals that make their home in the shallower regions include little neck clams (Mercenaria mercenaria), manila clams (Venerupis philippinarum), crabs, and geoducks (Panopea generosa) (BP West Coast Products, LLC, 2002).

Proposed Action-

Impacts:
The project area was determined to be the best choice in inflicting the least amount of environmental harm on wetland habitats and animal health, but insects, small rodents, larger mammals, and birds may be displaced due to project activity and security fencing. The bays that lie adjacent to the BNFS rail line and the project site "provide critical plant, fish, and wildlife habitat that can be greatly affected by land and water based activities" (City of Bellingham, 2008). Fish and marine species and their habitats can be impacted by oil spills in the rivers, creeks and bays adjacent to the rail lines and project site caused by derailment or container leakage from trains containing crude oil.

Mitigation:
As mentioned in the Plant Section, the Cogen/Facilities and BRMSA mitigation areas north of the project and facility sites will mitigate wetland and wildlife habitats destroyed by construction of the railroad loop and associated and structures associated with the oil transfer facility.

Alternative Action-

Description:
Refer to alternative impacts of plants. The oil response equipment shelters should be placed to address immediate response to the main water bodies associated with the project impacts (Bay areas, Nooksack River, and Terrell Creek)

Impact:
Refer to alternative impacts of plants.

No Action-

Impacts:
There would be no change or impact on the project site; however the wetland and rehabilitation measures will not occur without the project.

2.6 Energy & Natural Resources

Existing Conditions-

Natural resouces that currently exist on site are natural gas (refer to Utilities section), crude oil and petroleum products (gasoline, diesel, and jet fuel), water for domestic and industrial use, soils, and timber (poplars). Energy on the site is provided by 85 megawatts of electricity explained in the utilities section. The trains on the BNSF rail lines that will be shipping crude oil run on ultra-low sulfur diesel (ulsd) fuel which has a sulfur content of 15 parts per million (ppm) or lower (U.S. Department of Energy); ulsd has 97% less sulfur than low sulfur diesel (lsd) and also helps to prevent deterioration of pollution control devices that deteriorate from high sulfur content and build-up.

Proposed Action-

Impacts:
During construction there will be an increase of on-site electricity provided by Puget Sound Energy for lighting and heating in construction offices, temporary lighting for construction on the project site, and for operating certain construction equipment. Diesel and gasoline will be used to power generators, and construction vehicles and equipment. Natural gas and propane will be used as well to power construction equipment and heaters. There will also be removal of soil during construction as well as poplars planted for pulp production.

Mitigation:
Turn off construction equipment and vehicles when they are not being used or so that they do not run idling while waiting to be used. Only have vehicles on for working or to warm up before usage. Have heaters and generators running only when they need to be run. Use electricity as much as possible to prevent on-site pollution from diesel and

gasoline. The implementation of gravity drains and pump motors with variable speed drives can also increase energy conservation.

Alternative Action-

Description:
Use the most energy efficient technology and resources.

Impact:
Impact will be similar to proposed action, but with potential energy conservation.

No Action-

Impacts:
There would be no need to increase the usage of energy or natural resources on site.

3. Elements of the Built Environment

3.1 Environmental Health

This section outlines and describes the environmental impacts the proposed action, alternative action, and no action may have on public health and noise pollution.

3.1.1 Noise

Existing conditions-
Currently, noise in the area of the proposed project is coming from neighboring facilities and buildings on BP property as well as road noise from vehicle traffic on Blaine and Grandview roads. Also, Chemco, a wood enhancement company, is located directly across the street from the proposed location.

Proposed Action-

Impacts: In the short term there will be increased noise pollution due to construction of the proposed rail loop. This will include loud machinery and increased construction traffic on site (BP West Coast Products LLC, 2012). Most of this noise will occur during daylight hours and will vary depending on the construction activity.

Under the proposed action, one BNSF train per day would be both going to and from the proposed site. This will have a relatively small noise impact at the proposed site,

as the train should not be any louder than any existing noise. The trains will use the existing BNSF tracks that run along the coastline and will have minimal impact on noise in the area. The noise from the train can include, but is not limited to, whistles/bells, train horns, engine noise, and wheels turning on the tracks. According to John Redden a Senior Railroad Engineer, the minimum dBA of a locomotive horn is 96 at 100 feet in front of the train, while the maximum is 110 dBA. To put it in perspective a normal conversation is approximately 60-70 dBA, while a shout is 80-90 dBA. According to the U.S Occupational Safety and Health Administration (OSHA) prolonged exposure to noise over 85 DB will result in hearing loss.

Mitigation: A 100-foot vegetated buffer will be kept along the northern perimeter of Grandview Road and would help to reduce some of the noise from the rail loop (BP West Coast Products LLC, 2012). Also native trees could be kept when possible to help absorb some of the noise. Other mitigation measures on site include keeping the working hours primarily during the day as well as turning off equipment that is not being used. Mitigation efforts for the train may involve keeping the trains to stringent vehicle noise specifications. Having the train use resilient or damped wheels could reduce the noise level by 10-20 dB (Towers). Creating sound barriers along the train's path may also dampen the noise level by 6-10 dB (Towers). A community impacted by the train noise has the option to apply for a "Quite Zone" classification. A train may not sound its horn while in a "Quite Zone".

Alternative Action-

Description: Increased mitigation efforts include increasing the size and scope of the previously discussed barriers as well as extending "Quite Zones" above and beyond original placement. The size of the vegetation buffers on-site could also be expanded to combat more noise.

Impacts: Increasing the size and scope of the sound barriers could be aesthetically displeasing and the barriers would take up more space leaving less room in-between residential areas and the train tracks. Increasing the vegetation buffer would combat noise while keeping more native species in place.

No Action Alternative-

Impacts: Under this alternative, no new trains would be added causing the noise level to stay at the present level

Mitigation: Since no new trains would be added, mitigation would stay at its current level.

3.1.2 Public Health

Existing conditions-

- Currently, The health impacts are due to fossil fuel emissions from the refinery. The hazards associated with oil are onsite at the BP refinery or in the transfer of oil from oil tankers to the refinery. Figure (1) illustrates the current state of the proposed action. It is highly vegetated and undeveloped, thus there will be no impact to public health until construction starts. The oil will be transferred in covered cars at the frequency of up to one incoming and one outgoing train per day.

Proposed Action-

Impacts: An oil spill, either by train derailment or a spill in the transfer process (from the train car to the refinery), would cause the largest potential impact to public health. The oil could have major impacts to the environment and surrounding areas. According to the Manhattan Institute, a hazardous waste spill is 34 times more likely to occur from a U.S railway than from a pipeline if the volume and distance are the same (IER, 2013). Many toxic chemicals may be present in crude oil, several of which can cause a number of health effects in people and wildlife (ScienceCorps, 2010). Benzene and polycyclic aromatic hydrocarbons (PAH) are two toxic chemicals present in crude oil (CDC, 1999). These are volatile toxins, meaning they can spread from crude oil into the air and can spread very easily. Benzene exposure to crude oil can occur through inhalation of polluted air, ingestion of contaminated food, and oil coming in contact with the skin. Benzene is a carcinogen, thus exposure may result in an increase risk of leukemia and other cancers (CDC, 1999). Side effects may include nausea, vomiting, respiratory stress and chest pain (Orcutt, 2010). For example, after the Exxon Valdez spill, 15% of all workers later suffered from respiratory problems due to their exposure to oil (Orcutt, 2010).

Studies have shown oil spill cleanup workers, with the highest levels of exposure to crude oil, exhibit the most adverse effects (Krisburg, 2010). A 1993 study from the Exxon Valdez spill found that there were long-term psychological effects such as anxiety and posttraumatic stress syndrome found in community members and workers around a spill site (Krisburg, 2010).

Mitigation:

Safety

Many safety procedures and mitigation efforts need to be met in order to safely and efficiently manage an oil spill. These include having workers and responders wearing the appropriate gear/equipment. The appropriate level of PPE (Personal Protection Equipment) needs to be worn or available onsite (IPIECA, 2002). Figure (15) demonstrates the appropriate PPE to be worn for certain chemicals and response tasks. Examples of important PPE include HAZMAT suits, respirators, gloves, boots, and safety glasses. Decontamination zones need be set up where responders and workers can safely remove their contaminated equipment. Another important aspect of emergency management includes implementing a notification system used to alert nearby residents and workers of the spill.

Containment/removal
Having response trailers set up along certain intervals of the track will help decrease the response time in case of a derailment. These response trailers should include sorbent boom capabilities, absorbent materials such as saw dust, as well as dispersant chemicals. Moreover, temporary holding tanks may need to be on site to hold and transfer the spilled oil (Nuka Research, 2009). Depending on the volume of spilled oil, Vac-trucks may need to be present to "suck up" any loose oil (Bret Andrich, 2013). Dump trucks and excavators can then be used to clean up and transport the rest of the contaminated soil.

Alternative Action

Description: Increased mitigation measures include implementing periodic drills to train on call responders. Different types of drills should be practiced multiple times a year. Full-scale drills should simulate the real event when possible and will help to determine the responder's level of preparedness. Communication between BNSF and BP officials will be key to efficiently respond to a spill in a short amount of time.
Impacts: Drill implementation will increase the efficiency level of a spill cleanup, as well as bring to light any red flags or defects in the response plan.

No Action Alternative

Impacts: Under the no action alternative, no trains will be added, causing no new adverse health effects to the people in the area.

Mitigation: See previous statement.

3.2 Land and Shoreline Use

3.2.1 Housing

Existing Conditions-

The project site is zoned within the heavy impact industrial (HII) use area on Cherry Point. No housing or residential buildings are present at the project site (BP West Coast Products, LLC, 2012). No housing or residential structures will be constructed at the project site, nor will any existing structures be eliminated. Some land running along the rail spur contains rural residential development; however none is in the immediate proximity of the proposed rail line. There exist residential developments along the rail lines throughout Whatcom County.

Proposed Action-

Impacts:
The proposed Rail Logistics Project is not anticipated at impact any residential or housing structures at the project site itself; the zoning designation of the site precludes any such development. However, the presence of rail lines and the amount of railroad traffic are related to property values within the railway corridor (Simons & El Jaouhari, 2004). Railways can also impact residences within their proximity with rail noise and view obstruction.

Mitigation:
Mitigation to housing largely consists of mitigation of noise, unsightliness, and light pollution. Noise, light, and to some degree unsightliness of railway traffic can be mitigated thorough the construction of noise baffles or wall-like barriers lining the railway corridor (UIC, 2010). These barriers would significantly reduce the impacts on residential areas.

Alternate Action-

Description:
A significant amount of train noise and light can be reduced with noise baffling alone. With the use of other strategies and technologies, impacts to housing can be significantly mitigated against. In terms of noise, rail wheel squeal, a significant source of 'annoying' rail noise, can be mitigated with regular maintenance, the smoothing of the rail/wheel interface, and modification to brake systems (Tickell, Downing, & Jacobsen, 2004). Light and light pollution can be mitigated with added hoods and covers to limit glare. The aesthetics of noise baffling are largely a matter of taste, however mitigation of their impacts can include attractive architectural design, landscaping, and camouflaging.

Impacts:
Impacts to housing would be limited to the unsightliness of the additional rail traffic and the noise baffles.

No Action Alternative-

Impacts:
If the proposed action were not to take place, there would be no impact on existing housing or residential structures.

Mitigation:
No mitigation would be necessary.

3.2.2 Recreation

Existing Conditions-

Within the Regional Western Whatcom County Area

Existing recreational areas are located two miles of BP (BP West Coast Products, LLC, 2012). The Birch Bay State Park is found northwest of BP Refinery while the Whatcom County Point Whitehorn Marine Reserve is on the west. Southeast of the BP refinery, Lake Terrell Wildlife Area is located. Also, the shorelines of Birch Bay and Cherry Point act as recreational areas.

Within Project Area

An outdoor recreation center reserved for BP refinery personnel only is located southwest of the refinery complex, just north of the BP pier (BP West Coast Products, LLC, 2012).

Proposed Action-

Impacts:
There are no anticipated impacts from the project on recreation or recreational areas.

Mitigation:
Mitigation measures are not proposed or recommended to offset the impacts on recreation since no impact is anticipated as result of the project.

Alternative Action-

Description:
No alternative action is proposed since there are no impacts within the area to recreation.

Impacts:
No impacts are anticipated.

No Action Alternative-

Impacts:
No major impacts are expected in land use and recreation in or within near vicinity of the project area from the no action alternative.

Mitigation:
Mitigation is not required.

3.2.2 Historical and Cultural Preservation

Existing Conditions-

No known cultural or historical sites or artifacts, as listed in local, state, or national preservation registries, exist in the project site. Cherry Point has historically been part of Native American lands, including the Nooksack, Lummi, Sammish, and Swinomish tribes, and it is possible that such items and locations do exist. Research by URS conducted in 2012 inventoried 6 nearby historical and cultural locations, 2 of which were within ½ mile of the project site, but no such locations were observed within the project boundaries (BP West Coast Products, LLC, 2012, p. 30). In addition 19 previously identified archaeological sites exist within a 1 mile radius of the project site (Stenger, Becker, & McDaniel, 2012, p. 15).

Proposed Action-

Impacts:
Potential impacts include the disruption of unknown cultural or historical sites of artifacts at the project site during the groundbreaking and construction phase of the project. Such an unearthing is unlikely, however. Also some known archeological sites lie within 0.05 miles of the construction site (Stenger, Becker, & McDaniel, 2012). The integrity of nearest of these sites could be disrupted by ground disturbing activity.

Mitigation:
An Archaeology Monitoring and Inadvertent Discovery Plan has been developed by BP as recommended by the URS that will be followed during all construction and ground disturbing activities. A professional archeologist will be on-site and oversee any ground disturbing activities. Should any discoveries be made, all activities will be stopped and the appropriate Tribes and Agencies contacted (Stenger, Becker, & McDaniel, 2012).

Alternate Action-

Description:
Of the 19 previously identified archeological sites within 1 mile of the project site, all but 4 have been unevaluated. Evaluation of these known sites could give insight into the likely-hood and type of possible sites encountered in the project site. A number of the known nearby sites have been impacted by construction. A thorough archeological survey of the project site could help minimize the chance of further disturbances occurring.

Impacts:
It is possible that the alternate, increased-mitigation action would result in unearthing of a historical or cultural site. It is much more likely that there will be no impact associated with this action.

No Action Alternative-

Impacts:
If the proposed action were not to take place, there would be no impact on existing historical or cultural sites, artifacts, or structures.

Mitigation:
No mitigation would be necessary.

3.3 Transportation

Current conditions-

The main rail line is already congested with passenger and freight trains. Currently there are 24 BNSF trains and 4 Amtrak passenger trains on the main line per day the main rail line goes along the 1-5 corridor and thru Bellingham. At crossings movement at the intersections comes to a halt for 4-8 minutes depending on how long the train is and how fast it is moving. This can be a nuisance for residents and a major obstacle to police, fire, and ambulance workers. Emergency responders get stuck at rail crossings and there is nothing to do except wait. Increased train traffic can also increase the risk of a train accident involving pedestrians or motorists at crossings.All of the trains along the I-5 corridor share the same one way single track and there is siding in a few places (North Sound regional rail study 2004) this means that if there is a train derailment or landslide train traffic comes to a complete stop.

Proposed action-

The proposal from BP involves a rail loop holding station in order to efficiently and safely take in Bakken crude oil from oil trains.

Impacts:
The project proposal involves a 10,200 foot rail loop which will link with the Custer spur line. There will also be a bypass track so a train can be repaired or stay out of the way if there are scheduling problems. There will be a double track so if there are delays in unloading the next oil train will not have to wait for the first train. Delays at crossings cause mobility problems for emergency vehicles, pedestrians, bicyclists, motorists, and local businesses.

Delays at rail crossing would be especially problematic A 56 car train will cause a 4-5 minute delay at each crossing. In addition since there is only one track there is a chance that oil trains may have There is already a lot of pressure put on the main BNSF line in terms of train traffic which is very important to Western Washington. Also the heavy freight trains put pressure on the rails which increases the risk of a derailment. Each oil train car holds about 25-31 thousand gallons of crude oil and weighs over 250 thousand pounds. Initially there will be one oil train every other day although this may increase to

one train each day. The rail loop is designed to ease congestion at the Cherry point area where several heavy industries operate. Additional Transportation impacts include possible delays at Grandview and Kickerville roads due to the construction. There is expected impact to public Transportation operations (SEPA document page 31) the proposal also includes 16 parking spaces and an access road.to make maintenance on the rail loop site easier.

Mitigation:
Mitigation could also involve upgrading rail lines and spill response plans in the event of an accident. In additional BP will work with BNSF to try and have as much rail activity as possible at the BP site happen at off peak hours which would probably be at night. This would probably cause a slight increase in noise and light disturbance at night but the day time transportation impact would probably be more significant.

3.4 Public Services and Utilities

3.4.1 Public Services

This section describes the existing conditions, impacts, and mitigations of the proposed project on public services in the project area. The services impacted by the proposed project include fire, police, medical and emergency responders.

Fire and Medical

Existing Conditions-

Fire services to north Bellingham, Ferndale, and Pt. Whitehorn are provided by Fire District 7 of the Whatcom County Fire Marshall (Whatcom County Fire Marshal, 2007). Stations 43 and 46 are manned around the clock, Station 41 is manned during business hours, and Stations 42, 44, and 45 are not manned and rely on volunteer response (Whatcom County Fire District Seven). The only hospital located in Whatcom County is St. Joseph's in Bellingham, approximately 17 miles to the south east.
A staff of trained and experienced emergency, health, fire, and safety responders and an inventory of the required and necessary equipment are on-site and personnel able to respond at all times (BP West Coast Products, LLC, 2012, p. 34). Specially trained fire personnel and fire response equipment (pumper trucks and trailers, hazardous materials trucks, fire retardant foam, and a looped water system with hydrants) are available to respond at all times to the variety of fire threats on the refinery grounds. The refinery maintains a fully staffed medical facility, with a Registered Nurse, Physician's Assistant, on-call Emergency Medical Technicians, rotational pool of doctors. For additional medical response and medical evacuation, there is ambulance service, a helipad, and

communications systems with St. Joseph hospital. The medical facility also works in coordination with Whatcom County Emergency Medical Response Services.

Proposed Action-

Impacts:
There is no expectation that the Rail Logistics Project will result in any additional use or demand on public fire or medical services during normal operations. However, it is true that construction sites tend to have higher chances of fire events. Rates of injury are also higher on work sites (Clarke & Goldstein, 2003). Any typical use of these services is expected to be managed by private BP fire and medical staff on-site. In the case of an emergency beyond the capabilities of BP staff, public emergency personnel will respond. In addition, each train is estimated to take 8-10 to fully pass at each rail crossing (BP West Coast Products, LLC, 2012, p. 32). With 2 trains per day, it is possible that fire and medical response time could be delayed.

Mitigation:
The primary mitigation for fire and medical services in the proposal plan is the availability of those services on-site. Secondary mitigation includes increased communication with fire and medical service providers to ensure swift and effective response to emergency incidents. Also, BP plans to schedule train movements so as to minimize the delay at crossings during peak traffic hours.

Alternate Action-

Description:
The Rail Logistics Project plan includes sufficient mitigation for fire and medical services in the case of normal operation. However this project involves up to 255 workers during the construction stage, hundreds of rail cars, and thousands of gallons of hazardous and flammable materials (BP West Coast Products, LLC, 2012, p. 4). If an emergency event on a large scale were to take place, the private, on-site services would be quickly overwhelmed and the impact on public fire and medical services could be significant. Increased mitigation would include additional communication between private and public fire and medical services and additional trainings and exercises to improve response and coordination in the event of a significant emergency event.

Impacts:
Increased mitigation measures would result in little impact to public fire and medical services during normal services. In an emergency event or an event that overwhelmed the capabilities of private on-site personnel, there would be more effective response. The impact due to delay at rail crossings would remain, however.

No Action Alternative-

Impacts:
If the proposed action were not to take place, there would be no impact on existing fire or medical services.

Mitigation:
No mitigation would be necessary.

Police and Emergency Response

Existing Conditons-

The Whatcom County Sheriff's Office provides law enforcement and response to Cherry Point as well as maintains the Division of Emergency Management. Responsibility for emergency/disaster mitigation, planning, response, and recovery falls on the DEM. The DEM manages, inventories, and oversees the more than 10 billion pounds of hazardous materials and more than 85 facilities in Whatcom County (DEM, 2007). They also take part in 50 response calls to HAZMAT- related incidents annually and participate in regular trainings and response exercises. In addition to the local Whatcom County HAZMAT authorities, the Spills Prevention, Preparedness, and Response program of the Washington State Department of Ecology (Jensen, 2007), the Pacific States and British Colombia Oil Spill Task Force (Pacific States/British Columbia Oil Spill Task Force, 2012) (an international consortium of senior personnel from regulatory agencies with authority over oil spills along the Pacific coast of the US and Canada), and other agencies are developing programs, plans, prevention and response to hazardous materials spills and incidents.

In terms of security, a private 24 hour professional security force provides service and patrols. The project facility is secured with gated entrances and 6 ft. chain link security fencing topped with 1 ft. of barbed wire (BP West Coast Products, LLC, 2012, p. 5).

Proposed Action-

Impacts:
There is no expectation that the Rail Logistics Project will result in any additional use or demand on police or emergency response services during normal operations. Security and response to minor incidents is expected to be managed sufficiently by private staff on-site. However, construction sites tend to be related to problems of theft of supplies and equipment (Clarke & Goldstein, 2003). Any response to law enforcement calls will fall under the jurisdiction of the Whatcom County Sheriff’s Office and place additional demand on their office. In the event of large spill event, there will be a significant impact on spill response and control authorities.

Mitigation:
The primary mitigation for security and emergency response services in the proposal plan is the availability of those services on-site. Spill mitigation includes the implementation of Spill Prevention, Control, and Countermeasures and Oil Spill Pollution Prevention regulations. In addition, plans and protocols for the occurrence of a spill are in the site's Oil-Handling Facility Operations Manual and Oil Spill Contingency Plan.

Alternate Action-

Description:
The Rail Logistics Project plan includes sufficient mitigation for police, security and emergency services in the case of normal operation. However this project involves 100-car trains carrying thousands of gallons of oil and fuel (BP West Coast Products, LLC, 2012). If an emergency event on a large scale were to take place, the private, on-site services would be quickly overwhelmed and the impact on public law enforcement and spill response services could be significant. Increased mitigation would include additional communication, collaboration, and cooperation between private and public spill response services. Additional trainings and exercises could improve response timeliness and coordination in the event of a significant emergency event.

Impacts:
Increased mitigation measures would result in little impact to public police, security and emergency services during normal services. In an emergency event or an event that overwhelmed the capabilities of private on-site personnel, there would be more effective response. The impact due to delay at rail crossings would remain, however.

No Action Alternative-

Impacts:
If the proposed action were not to take place, there would be no impact on existing police or emergency response services.

Mitigation:
No mitigation would be necessary.

3.4.2 Utilities

Existing Conditions-

Utilities currently on-site are provided by Puget Sound Energy (electric), Birch Bay Water and Sewer District (domestic water and sewer), Whatcom County Public Utility District No. 1 (industrial water), Ferndale Pipeline (natural gas), Sprint (telephone), and Star Touch (internet). Utilities necessary to serve the completed Rail Logistics facility are currently available within the refinery and will be provided to the project area via connections to existing on- site service distribution systems. Tie-ins will be made to

utilities such as electricity, potable water, telephone, internet, sanitary and stormwater sewer systems, instrument air (for measuring equipment, display instruments, conversion/transmission instruments, control instruments, and control valves), and firewater. “To the extent practicable, utility installations will be co- located with the elevated pipe-way that will extend from the existing refinery storage area to the west side of the project site, where it will connect to the Rail Logistics transfer area” (BP West Coast Products, LLC, 2012) These extensions will mostly be developed from the west and southwest portions of parcel numbers 390108-074214 and 390107-317235 SE¼ Section 7 (BP West Coast Products, LLC, 2012).

Current refinery operations currently requires approximately 85 Megawatts (MW) of electricity which is supplied by the Puget Sound Energy (PSE) Point Whitehorn Power Generation Plant through two 115-kV transmission lines (BP Cogen EIS Draft). The Ferndale Pipeline, which BP shares with Alcoa Intalco Works aluminum smelter, has a daily capacity of approximately 104 million standard cubic feet, or 104,000 decatherms per day (Dth/d) with a supply pressure of 500 pounds per square inch gauge (psig) at Sumas and 250 psig at Cherry Point. Current demands for the Ferndale Pipeline ranges from 6,000 to 38,000 Dth/day, with an average demand of 15,000 to 20,000 Dth/day. (BP West Coast Products, LLC, 2002)

Proposed Action-

Impacts:
Utilities that will need to be provided in the BP Rail Logistics Project include electricity, water, natural gas, sanitary sewage, refuse service, telephone, and internet. Increased use of electricity will be needed for the additions of site and building lighting and heating, technical equipment, internet and phone, security measures (video surveillance), and increased safety gate usage on the rail tracks. The increase in electricity is not expected to have an impact on electrical supplies or influence the current price paid for electricity (BP West Coast Products, LLC, 2012).

Alternative Action-

Description:
The alternative action is to use the most efficient lighting and electrical equipment possible. More efficient water, sewage, and refuse technologies and installed equipment could replace current setups.

Impact:
Installation of some of these utilities may require the temporary removal of soil and vegetation, but should be restored after utility installments are finished.

No Action-

Impacts:
There would be no need to increase any current utilities

4. Appendices

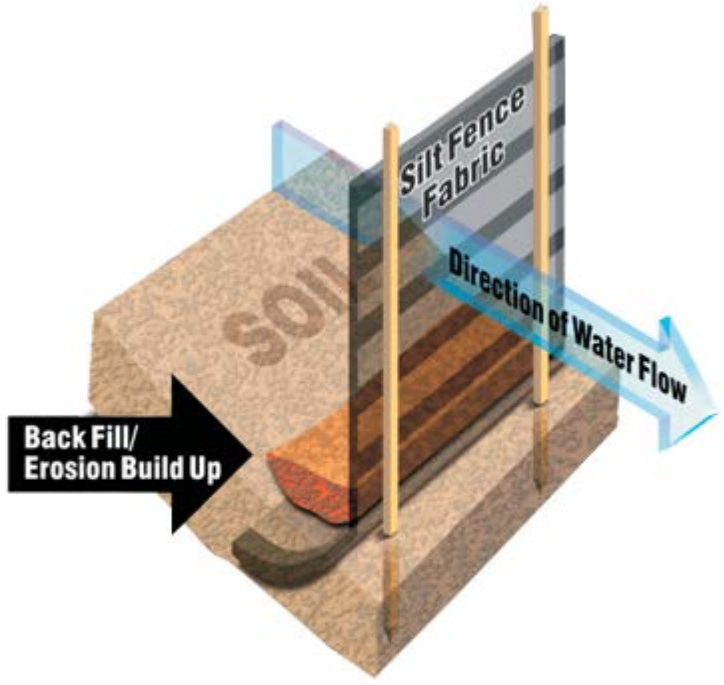
Source: Google Earth

Fig 1. Proposed site location for BP rail loop

Appendix A. EARTH

Source: NRCS, 2012

Fig 2. Map of soil types in the proposed area. Whitehorn Silt Loam (184), Labounty Silt Loam (93), and Birchbay Silt Loam (12)



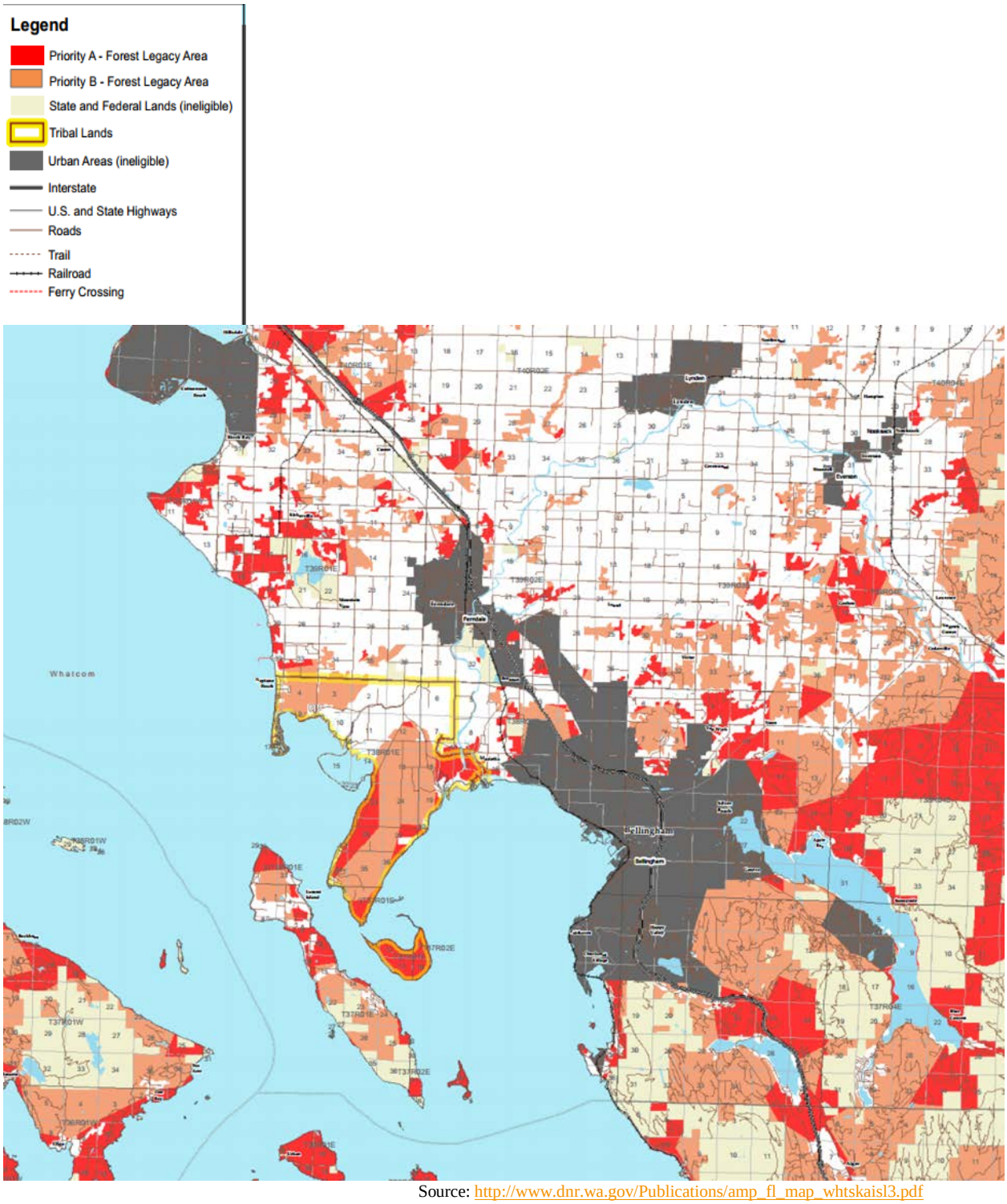
Source: EPA, 2007

Fig 3. Diagram of a silt Fence

Appendix B. PLANTS & ANIMALS

Source: http://wdfw.wa.gov/lands/wildlife_areas/whatcom/

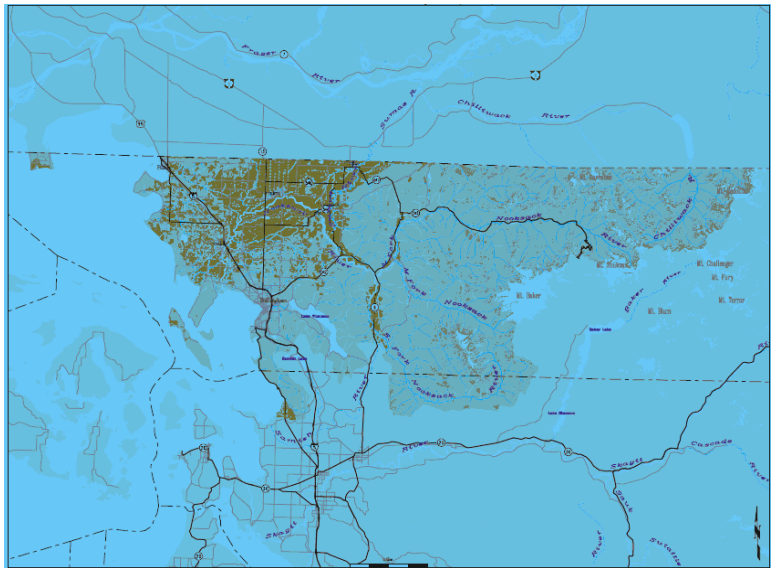
Fig 4. Whatcom County Wildlife areas represented in green



Source: http://www.dnr.wa.gov/Publications/amp_fl_map_whtskaisl3.pdf

Fig 5. Forest Legacy areas. Priority A areas represented in Red and Priority B areas represented in pink

Appendix C. WATER



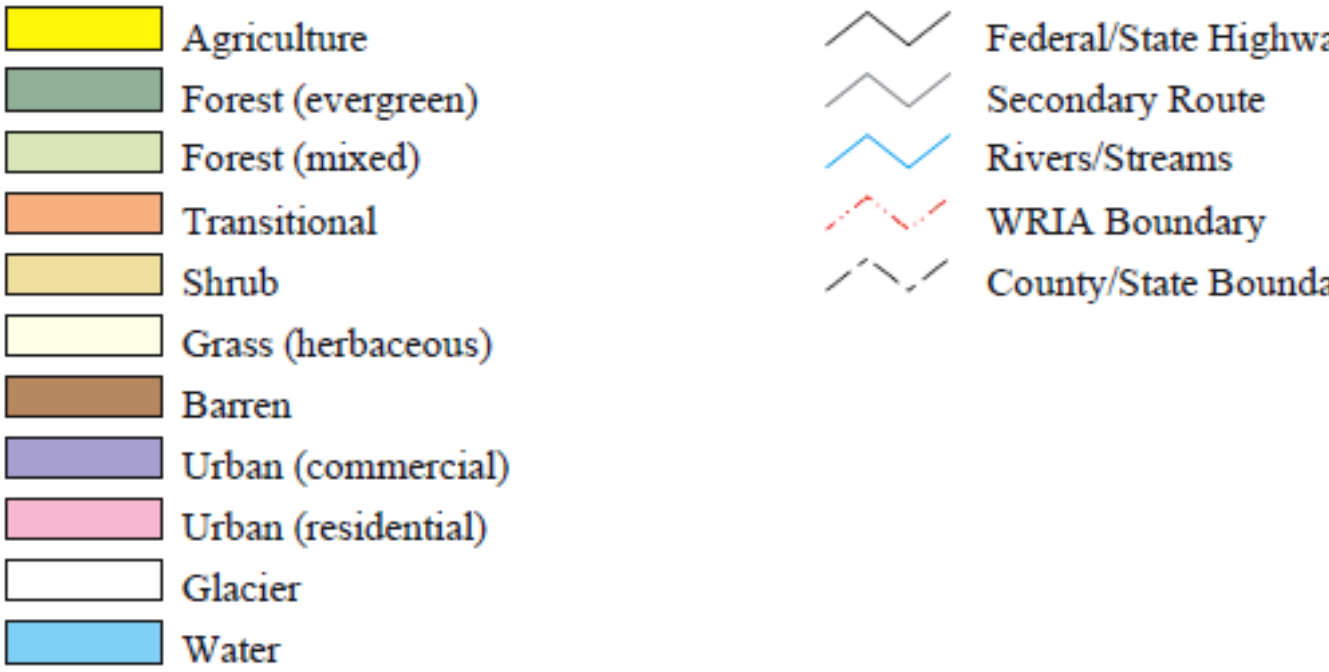
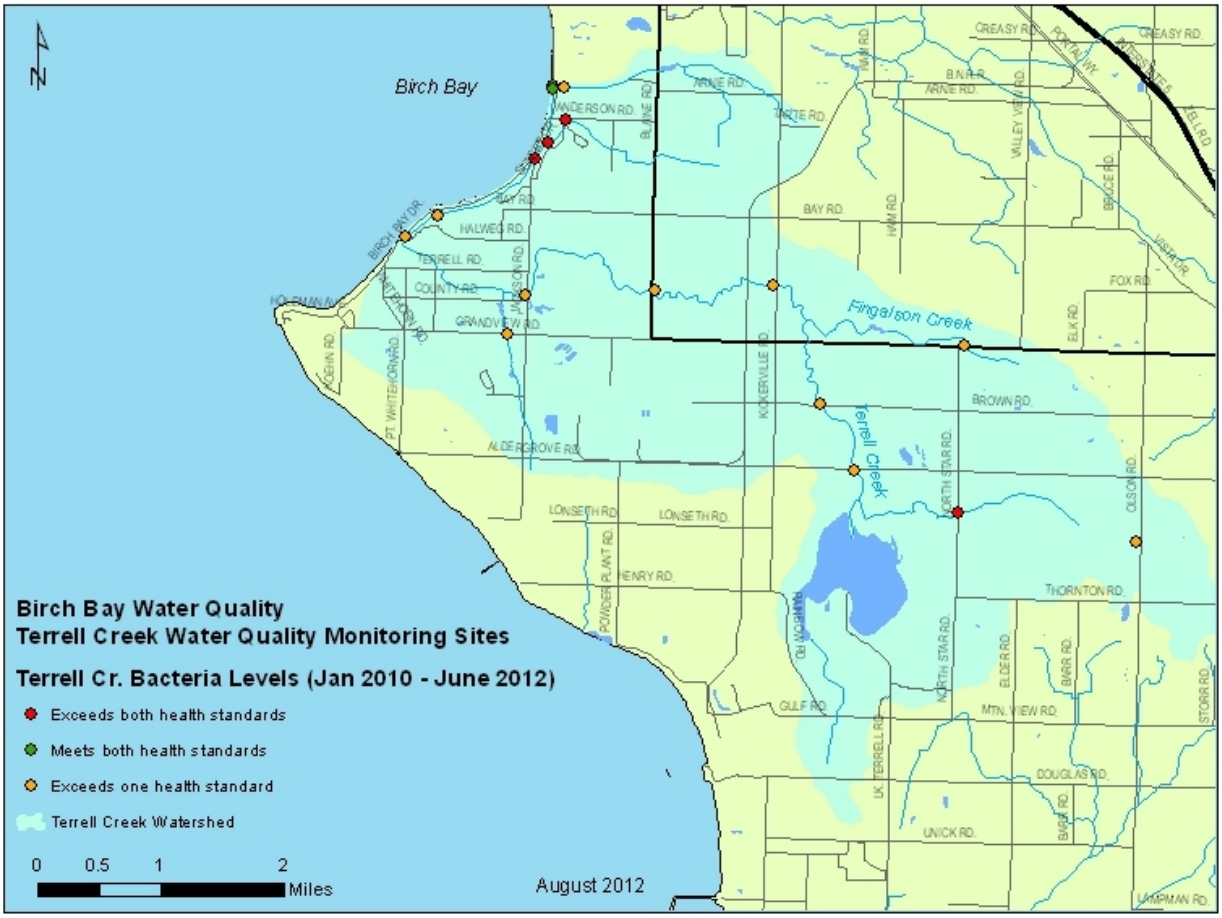


Figure 6. Land use in WRIA1. Refer to legend above. Washington State Department of Ecology (2002a, 2002b).



Site	# of samples	Maximum FC/100mL	Geometric Mean FC/100mL	% Exceeding 100 FC/100mL	Status[1]
Ter 0.1	61	2,400	30.9	9.8	
Ter 0.1*	61	3,500	27.2	9.8	
Ter 0.7	60	13,000	54.3	21.7	
Ter 1.6	59	3,900	35.9	16.9	
Ter 1.9	46	3,600	40.0	21.7	
Ter 3.3	48	400	23.9	16.7	
Ter 5.0	57	4,600	42.0	22.8	
TerKick	16	180	26.2	18.8	
Ter 7.8	58	6,000	47.0	32.8	
Ter 8.4	58	2,100	20.1	17.2	
TribTerLP1	60	2,400	47.5	28.3	
TribTerBC1	41	18,000	82.7	41.5	
TribTerBC2	47	17,000	94.3	38.3	
TribTerJ1	40	4,000	25.3	17.5	
TribTerFIN1	48	3,700	9.0	14.6	
TribTerFERN1	47	25,000	80.7	31.9	
TribTerFERN2	15	380	20.6	20.0	

[1] Green dot indicates meeting both fecal coliform water quality standard thresholds, orange dot indicates exceeding one threshold, red dot indicates exceeding both thresholds.

Figure 7. The water quality at Terrell Creek. Whatcom County Public Works, 2012.

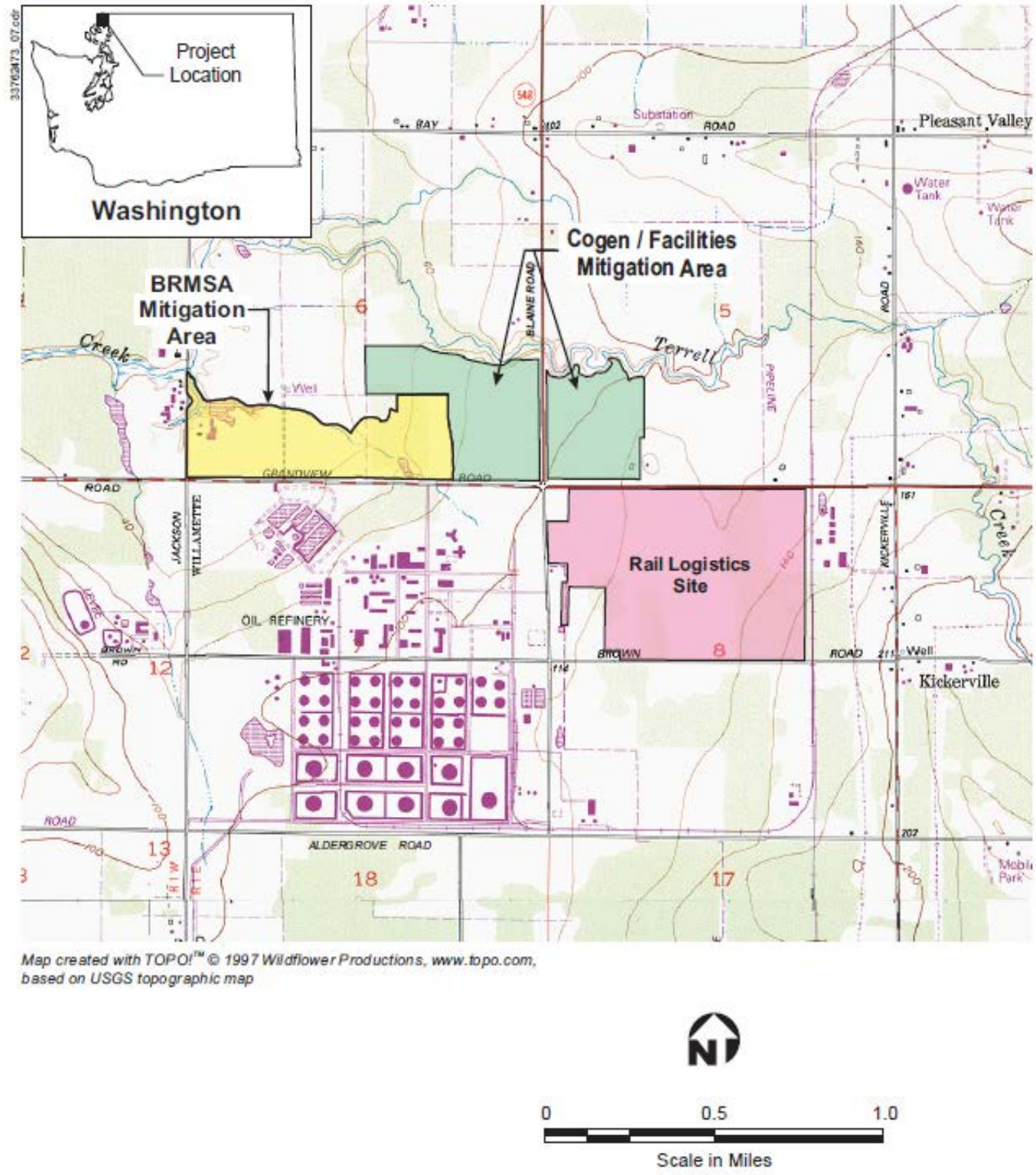


Figure 8. Wetland Mitigation Area (URS, 2012)

Figure 9. Drainage patterns within the project area. BP West Coast Products, LLC, 2012.

Figure 10. Floodplains within WRIA1. Whatcom County Planning, 2006.

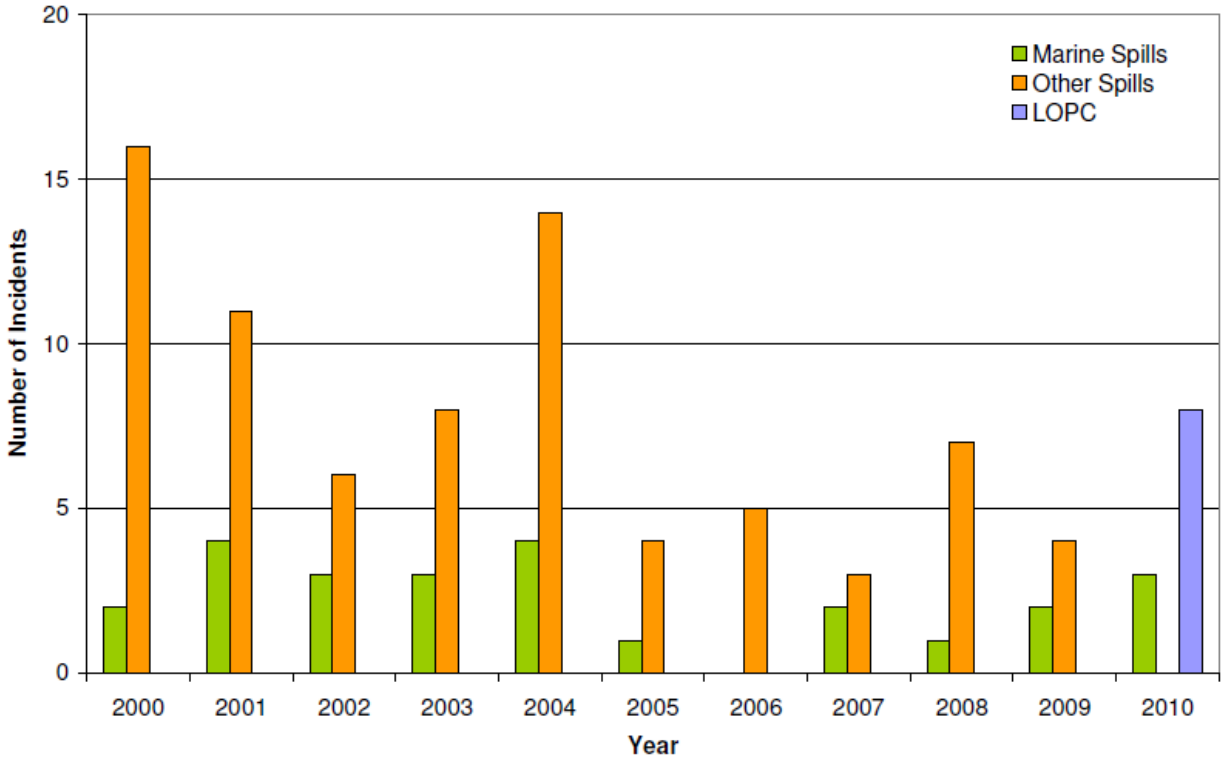


Figure 11. The number of incidents of oil spills at BP Cherry Point. BP West Coast Products, LLC, 2010.

Tables (WATER)

Table 1. The wetlands in the area and its size, category, classification and buffer zone. BP West Coast Products, LLC, 2012

Wetland Name	Wetland Size (acres)	Wetland Category	HGM Classification	Cowardin classification	Buffer width (ft)
A	117.48	III	Depressional/slope	Forested/emergent/scrub-shurb	150
B	11.83	III	Depressional/slope	Emergent/forested	80
C	0.08	III	Depressional	Emergent/forested	80
D	0.18	III	Depressional	Forested	80
E	0.0035	III	Depressional	Forested	80
F	0.0062	III	Depressional	Forested	80
G	0.0051	III	Depressional	Forested	80
H	0.0016	III	Depressional	Forested	80
I	0.014	III	Depressional	Forested	80
J	0.017	III	Depressional	Forested	80

K	0.033	III	Depressional	Forested	80
L	0.36	III	Depressional	Forested	80
M	0.12	III	Depressional	Forested	80
N	0.10	III	Depressional	Forested	80
O	0.0049	III	Depressional	Forested	80
P	0.003	III	Depressional	Forested	80
Q	0.003	III	Depressional	Forested	80
R	0.03	III	Depressional	Scrub-shrub	80
S	0.036	III	Depressional	Scrub-shrub	80
T	3.69[1]	III	Slope	Forested	80
U	0.12	IV	Slope	Emergent	50
V	0.27	III	Depressional	Aquatic Bed/Schrub-shrub	150
W	4.54	III	Depressional	Emergent	80

[1]Study Area acreage; wetland extends outside of the study area boundary.

Table 2. The Surface water quality at the Noosack Basin. Embrey and Fran, 2003.

Parameter	Measured concentrations		
	Lower Nooksack	Upper Nooksack	Fishtrap creek
Conductivity (µS/cm)	89	75	240
Dissolved Solids (mg/L)	58	49	151

Embrey and Fran, 2003

Table 3. The proposed mitigation plan to compensate for impacts on wetlands.

Impact	Area of Impact (acres)	Mitigation Ratio	Mitigation Acres	Mitigation Location
Category III wetland	15.90	2:1	31.8	Cogen/Facilities Mitigation Area
Wetland Buffers	19.75	0.65:1	12.82	Cogen/Facilities Mitigation Area
Category III deciduous/coniferous forest wetland	0.96	4:1	3.84*	1.2 acres in the Cogen/Facilities Mitigation Area 2.64 acres in the BRMSA Mitigation Area

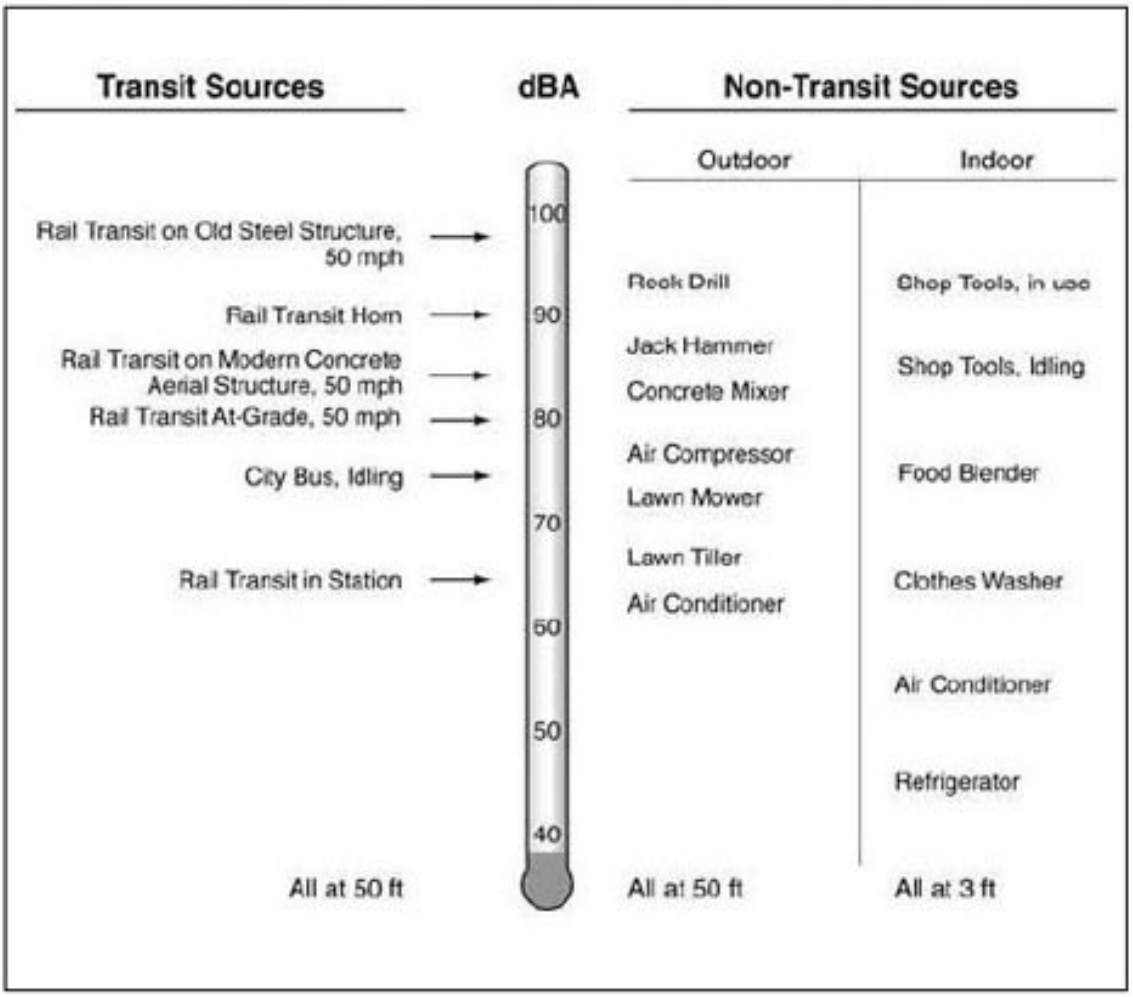
BP West Coast Products, LLC, 2012

Table 4. The impacts of the project on impervious surfaces.

Impervious surface areas		
Feature	Area (square feet)	Area (acre)
Roads, parking, Transfer Area	289,869	6.65
Buildings, Foundations	3,200	0.73
Stormwater pond	24,367	0.56
Approximate Total	346,236	7.96

BP West Coast Products, LLC, 2012

Appendix D. ENVIRONMENTAL HEALTH



Source: Towers, 2010

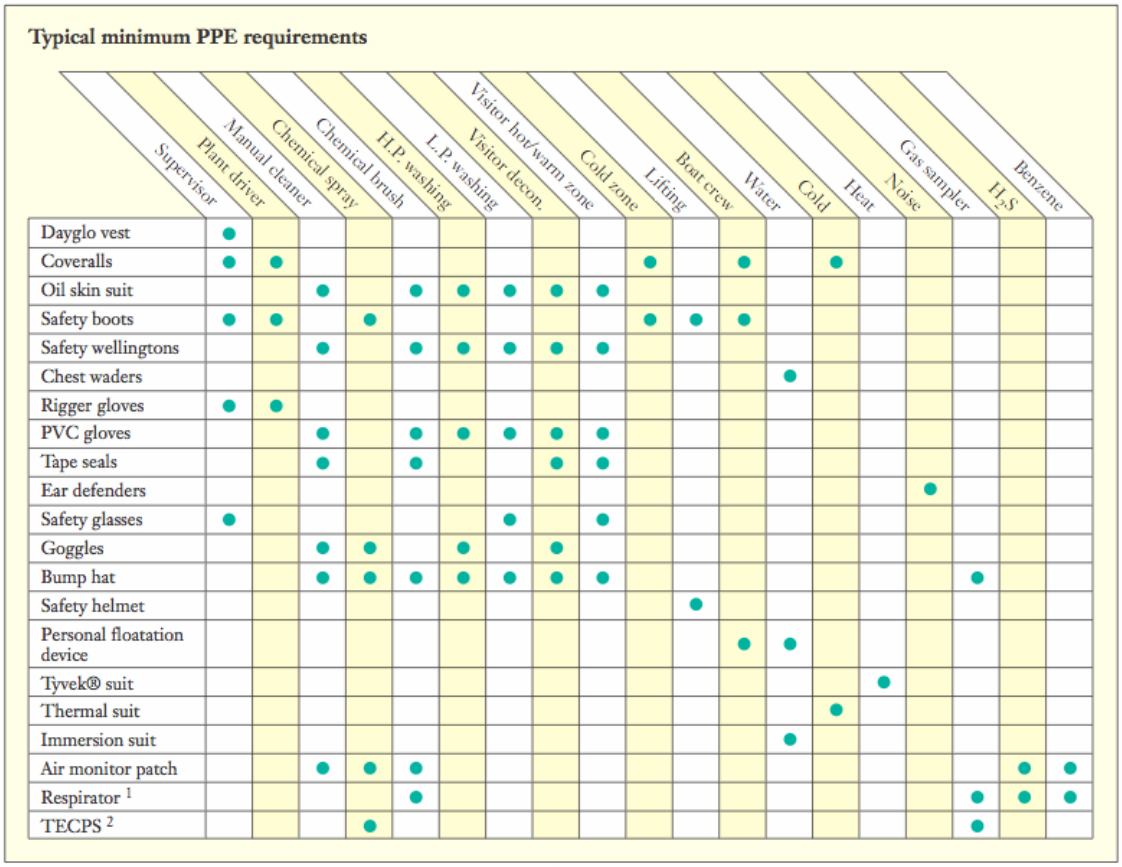
Fig 12. Typical A-Weighted Maximum Sound Levels

Source: Photo courtesy of Spill Control, Inc.

Fig 13. Example of sorbent boom mitigation.

Source: Island Guardian, 2006

Fig 14. Example of an Oil Spill Response Trailer, photo courtesy of Island Guardian



Source: IPIECA, 2002

Fig 15. Chart demonstrating the appropriate levels of PPEs worn in varying environments

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