

**Shell Puget Sound Refinery (PSR) Rail Unloading Facility
Clean Water Act Section 404(B)(1) Alternatives Analysis**

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F I N A L

**CLEAN WATER ACT
SECTION 404(B)(1)
ALTERNATIVES ANALYSIS**

Crude by Rail East Gate

Prepared for:

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1.0 INTRODUCTION

This assessment has been prepared to document a range of available alternatives for siting a railroad facility, to define practicability criteria based on the project purpose and need, and to screen each alternative in order to identify the least environmentally damaging practicable alternative. This assessment is intended to document that proposed wetland impact associated with the proposed rail facility project is consistent with federal guidelines under Section 404(b)(1) of the Clean Water Act (CWA).

2.0 PURPOSE AND NEED

The Shell Oil Products US (Shell) Puget Sound Refinery (PSR), located in Anacortes, Washington, proposes to construct a crude rail unloading facility at the existing site of the refinery. Construction of the facility will enable the refinery to maintain its ability to produce gasoline and other fuels for consumers in Washington State and the Pacific Northwest, while reducing marine vessel deliveries of crude oil from Alaska's North Slope (ANS). As the proposed project would impact wetlands, this alternatives analysis is provided to comply with the requirements of the CWA Section 404(b) (1).

The basic purpose of the project is to receive crude oil, which is not a water-dependent activity. The overall purpose of the project is to provide the capability to receive crude oil from the mid-continent area to maintain the feedstock supply to the existing Shell PSR.

Need and Justification for Overall Project Purpose

Shell PSR is one of five major petroleum refineries in Washington State, with the capacity to refine 145,000 barrels per day of crude oil. According to a 2012 study by the Washington Research Council, the total production from the state's refineries was 536,000 barrels of crude oil per day, indicating that the Shell PSR accounts for approximately 27 percent of the state's fuel production.¹ Shell's current primary source of crude is from Alaska via marine vessel delivery; some additional crude is brought in to the PSR from Canada by pipeline. Shell PSR's principal products are automotive gasoline, ultra-low sulfur diesel fuel, and jet fuel. Gasoline manufactured at Shell PSR is distributed by pipeline and truck rack to consumers in Washington State and by pipeline to consumers elsewhere in the Pacific Northwest.

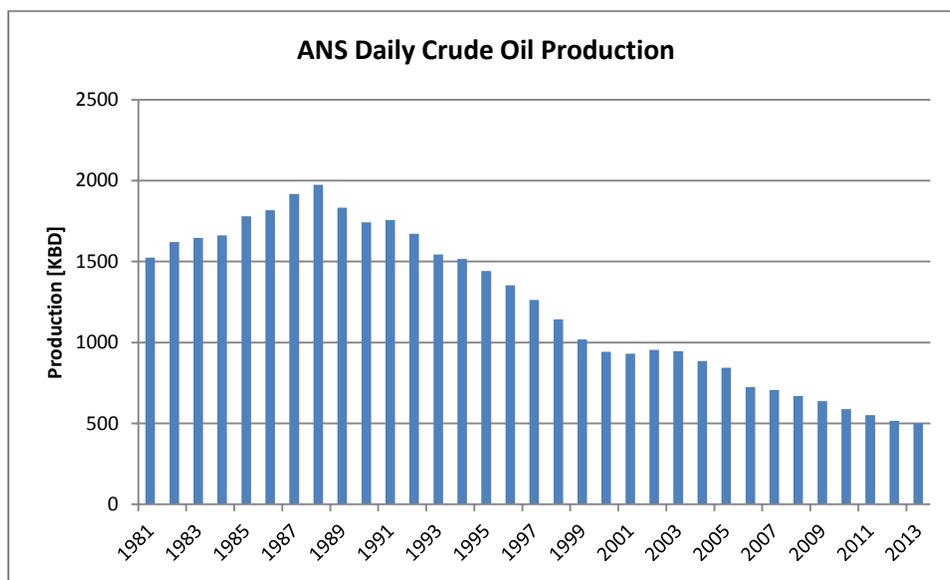
Shell PSR employs 460 persons directly and approximately 300 to 325 full-time equivalent contractors. Shell PSR contributes gross tax receipts of approximately \$44,000,000 per year and local property taxes of \$4,800,000 per year.

¹ Washington Research Council, *The Economic Contribution of Washington State's Petroleum Refining Industry in 2011*, Washington Research Council Economic Profile (August 2012).
<http://researchcouncil.files.wordpress.com/2013/08/2012refineryreportfinal040913.pdf>

Why a Different Crude Supply?

The Shell PSR requires a steady and reliable supply of crude oil to remain viable in the long-term. The Shell PSR currently receives crude oil by ship from ANS. ANS production has declined from its peak of 1,974,000 barrels per day in 1988 to production of 500,000 barrels per day in the year 2013.² This represents a 75 percent decline from peak production in the field in 1989. Annual average daily production history for ANS is shown in Figure 1. The ANS field continues to decline, with current projected production in 2023 at 315,000 barrels per day, or 84 percent below peak production.

Figure 1: ANS Daily Crude Oil Production



Source: EIA (September 29, 2014). <http://eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MANFPAK2&f=A>

Why Mid-Continent Crude Sources?

Production declines from ANS have required the facility to seek out other sources of crude. PSR continually reviews around 70 potential crudes suitable for processing in PSR's existing refinery units for economic viability. These analyses are commercially sensitive and proprietary to PSR and are performed by an on-site crude economist. Commercial viability of ANS alternate crude is determined, principally, by the cost of the crude and the cost to have the crude delivered to the PSR. In addition, Shell is limited to considering crude that can be processed by its existing

² U.S. Energy Information Administration (EIA). *Alaska North Slope Crude Oil Production (Thousand Barrels per Day, Petroleum & Other Liquids–Data* (September 29, 2014). <http://eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MANFPAK2&f=A>. See also *Alaska Feels the Pinch as Other States Pump Oil*, Wall Street Journal (August 11, 2014): 1 (figure reflecting declining production; North Dakota surpassed Alaska as the nation's second largest oil producer).

equipment and under its environmental permits. In recent years, no other crude supplies that Shell PSR can process are as economically advantaged as mid-continent (e.g., Bakken) crude, particularly where delivered by rail. The Wall Street Journal recently reported that Bakken oil has, since April 2014, “been about \$15 a barrel cheaper than crude from Alaska and abroad, according to commodities-pricing service Platts.”³

As noted above, Shell PSR does process some crude oil delivered by pipeline from Canada. Because of pipeline system capacity constraints along the Kinder Morgan TransMountain pipeline from Canada to Washington, crude oil delivery by pipeline from Canada is limited. Crude oil delivery to Shell PSR via pipeline cannot be increased due to physical capacity limitations of the pipeline.⁴

As a result of innovative drilling and recovery methods, domestic crude oil production has significantly increased in recent years. The U.S. Energy Information Administration (EIA) attributes the majority of crude oil production gains to growth in Texas and North Dakota. Overall U.S. crude oil production increased 15 percent from 2012 to 2013, and is at its highest levels since 1989. Increased domestic production has displaced crude oil imports, which have fallen 30 percent in volume since 2005. Domestic production now meets 49 percent of U.S. crude oil demand.⁵ The EIA projects U.S. tight oil production in the Bakken and in Texas formations to continue to increase to 4.8 million barrels a day by 2021 (from 0.9 million barrels/day in 2010), then decline to 3.2 million barrels a day by 2040.⁶

The Bakken area of North Dakota and Montana is particularly productive (and growing), inexpensive compared to other sources, and close to Washington State (Figure 2).

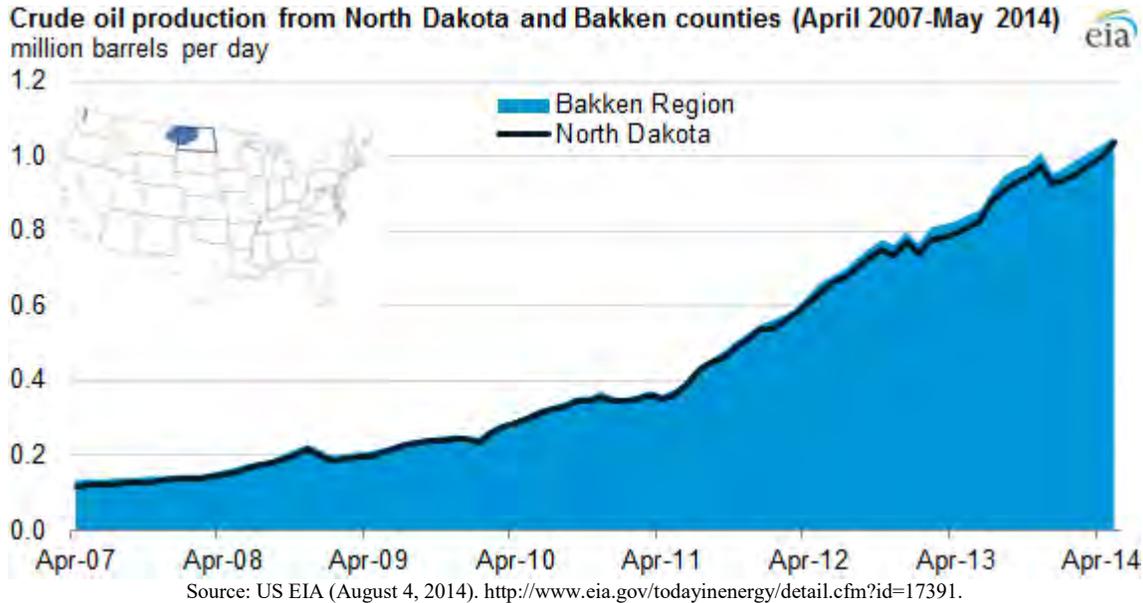
³ Alison Sider and Cassandra Sweet, *California Finally to Reap Fracking’s Riches; Crude-by-Rail from Bakken Shale is Poised to Reverse State Refiners’ Rising Imports*, Wall Street Journal (Oct. 7, 2014). <http://online.wsj.com/articles/california-finally-to-reap-frackings-riches-1412700677>

⁴ Kinder Morgan has filed an application with the Canadian Government to expand the TransMountain pipeline and is in the process of developing feasibility studies regarding potential pipeline expansion. See <http://www.transmountain.com/regulatory-process> (last visited February 13, 2015). However, it remains uncertain when or if Kinder Morgan will obtain necessary permits to construct pipeline upgrades, when such upgrades will be completed, if permits may limit final pipeline capacity expansion, and whether Shell could secure a portion of any additional capacity should it become available. See *New Headwinds for Trans Mountain Oil Pipeline*, Oil Daily (Oct. 9, 2014), available by subscription at http://www.energyintel.com/pages/eig_article.aspx?docid=863443.

⁵ EIA, *U.S. Crude Oil Production in 2013 Reaches Highest Level Since 1989, This Week in Petroleum* (Mar. 12, 2014). <http://www.eia.gov/petroleum/weekly/archive/2014/140312/twipprint.html>.

⁶ EIA, *International Energy Outlook 2014* (Sept. 9, 2014). http://www.eia.gov/forecasts/ieo/more_overview.cfm.

Figure 2: Crude Oil Production from North Dakota and Bakken Counties

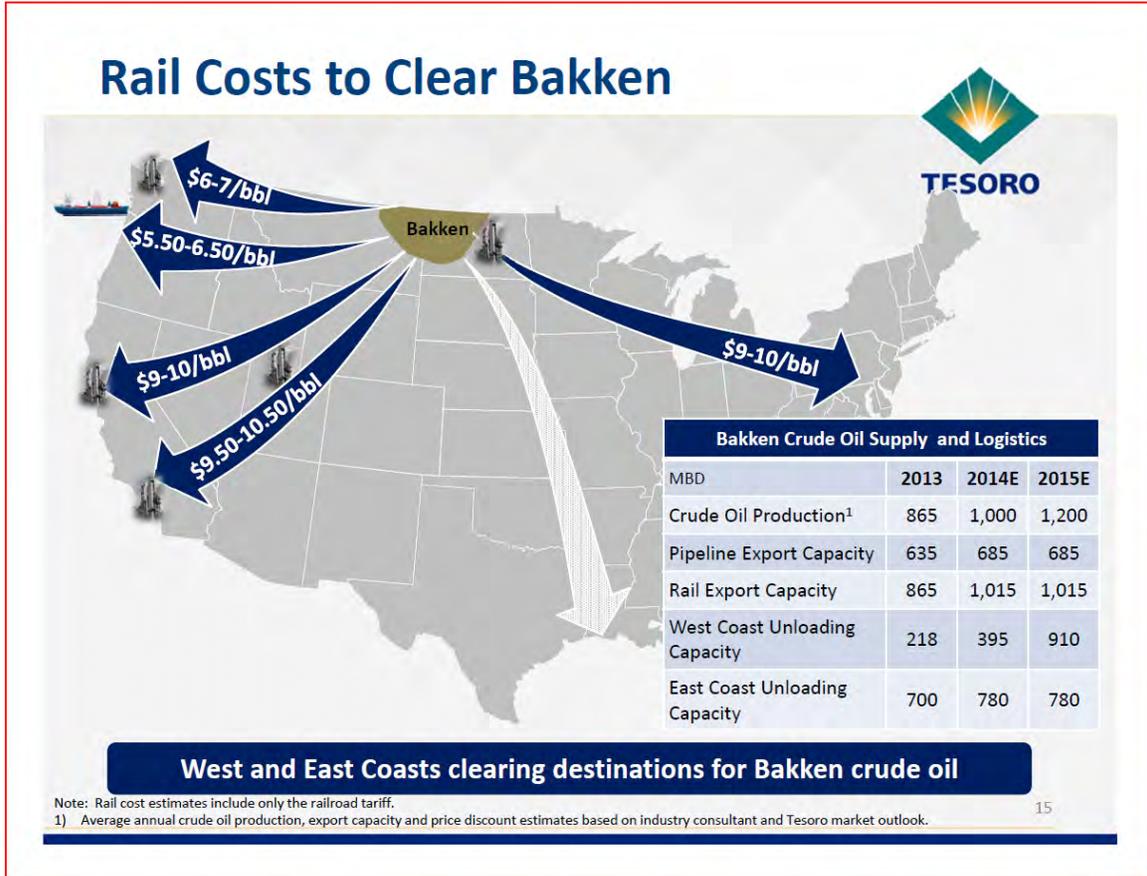


As Bakken production increases, Shell PSR is advantageously located to compete with other refineries across the country for access to Bakken crude oil by rail. Most Bakken crude is transported by rail.⁷ As Figure 3 (prepared by Tesoro) indicates, rail transportation costs of Bakken crude to Washington State are advantaged by \$2 to \$3 per barrel versus other west and east coast refineries.⁸ This means that costs to the consumer are reduced and overall transportation miles are less to transport equivalent volumes of Bakken crude, if refineries in the Pacific Northwest are able to receive rail deliveries of Bakken crude.

⁷ U.S. Department of Transportation, *Pipeline and Hazardous Materials Safety Administration Draft Regulatory Impact Analysis*, Docket No. PHMSA-2012-0082 (HM-251) (July 2014): 2.

⁸ Tesoro Corporation. *Transformation Through Distinctive Performance*. Simmons Energy Conference. (February 27, 2014).

Figure 3: Rail Costs to Clear Bakken



Source: Tesoro Corporation

Because all of the other Washington State refineries have either built or have under construction crude rail facilities designed to accept mid-continent crude, Shell PSR views this project as necessary to ensure its competitive viability.

Based on Shell PSR’s review of available supply and delivery costs, this project proposes to build a rail facility to receive crude oil from the rapidly expanding production in the mid-continent of the U.S., including the Bakken oil fields in North Dakota.

3.0 PRACTICABILITY CRITERIA

Guidelines have been established by the Environmental Protection Agency under CWA Section 404(b)(1) (40 CFR Part 230) which prohibit discharges of dredged or fill material into waters of the U.S. for projects that are not water dependent, if there is a practicable alternative to the proposed project that would have less adverse impact on the aquatic ecosystem, including wetlands, and that does not have other significant environmental consequences (40 CFR § 230.10(a)). Under these guidelines, practicable alternatives are those that are “available and capable of being done after taking into consideration cost, existing technology, and logistics in

light of overall project purposes” (40 CFR § 230.10(a)(2)).⁹ In considering alternatives, the U.S. Army Corps of Engineers (USACE) must take into account objectives of the applicant’s project.¹⁰ The USACE has developed policies further explaining these regulatory requirements.¹¹

In order for a site to be practicable for a rail facility, it must meet each of the following criteria:

- **Size and Configuration:** The size and shape of the project site must accommodate an entire unit train with the ability to accommodate one incoming and one outgoing train at the same time. This is necessary to keep the adjacent Burlington Northern Santa Fe (BNSF) mainline open for other users. The minimum size and shape of the project site are also driven by several BNSF minimum design criteria that are intended to provide safe and effective operations. Limitations on curve radii and distances between reversing curves are intended to minimize the risk of derailments and oil spills. On-site alternatives do not require additional crude oil storage as the material is pumped directly into the refinery. Off-site alternatives would require new tanks to store oil and may require other supporting infrastructure such as wastewater treatment facilities and utilities, increasing the site size. A typical loop track requires a minimum of 200 acres of land, and a typical ladder track requires a minimum of 45 acres of land. The facility shape, site conditions, and available storage tankage and supporting utilities can affect the acreage required.
- **Topography:** Project site topography must be relatively flat to meet BNSF design criteria. This project incorporates a limiting grade of 0.3 percent in the unloading area, which facilitates safe operating conditions and minimizes the risk of accidental rail car movement during offloading activities.
- **Proximity to Refinery:** The project site must be located where the project can take advantage of existing refinery equipment, such as piping and tankage, and staffing (such as maintenance crews), and be effectively managed in coordination with refinery operations. The project site must also be in close proximity to the existing refinery to permit adequate response times for security and emergency response personnel. The Shell Downstream Manufacturing Emergency Response Specification, which is a Shell mandatory corporate standard applicable to its refineries, requires that emergency personnel be able to respond to fires within 15 minutes. The emergency response personnel are all located at the PSR and have the responsibility of providing “First Response” to all refinery emergencies. Trained emergency response personnel are Shell volunteers who hold full-time jobs in the refinery, often in the operations and maintenance departments, and thus must be located at the refinery. The refinery emergency response equipment, which includes fire trucks, pumps, foam, hoses, and personal protective equipment, is also securely stored at a permanent fire station within

⁹ See, e.g., *Bering Strait Citizens for Responsible Res. Devt. v. U.S. Army Corps of Eng’rs*, 524 F.2d 938, 947-49 (9th Cir. 2008); *Sylvester v. U.S. Army Corps of Eng’rs*, 882 F.2d 407, 409-10 (9th Cir. 1989). Ninth Circuit courts have recognized the legitimacy of practicability factors such as site topography and geology, property contiguity, and size of property necessary for development. See *Butte Envtl. Council v. U.S. Army Corps of Eng’rs*, 620 F.3d 936, 946 (9th Cir. 2010).

¹⁰ See *Jones v. Nat’l Marine Fisheries Serv.*, 741 F.3d 989, 1001 (9th Cir. 2013).

¹¹ U.S. Army Corps of Engineers, Seattle District, *Alternative Analysis Guidance* (October 23, 2003).

the refinery. The Shell team is specifically trained to respond to hydrocarbon-related emergencies. When an emergency alarm is sounded the emergency response personnel immediately muster at the fire house inside the refinery to don their emergency gear, learn the location and type of emergency, and determine the type of equipment needed. Then the emergency personnel deploys to the emergency site. In the case of an off-site location, proximity must also factor in the time needed to maneuver onto public roads and navigate traffic lights, vehicle and pedestrian traffic, and public road conditions. As a result, Shell evaluated alternative locations within 6 to 7 miles of the main exit from the PSR.

- **Proximity to BNSF Rail System:** The project site must be directly adjacent to existing BNSF rail infrastructure in order to receive inbound rail deliveries. For off-site alternatives, the site also must have direct access to the Kinder Morgan Pipeline (adjacent).
- **Security:** The project site must be located in an area that can meet applicable security requirements. The Shell PSR is subject to a wide range of enhanced federal security requirements, which dictate that Shell conduct an assessment of a site's critical assets, potential threats/risks, and security vulnerabilities. Shell is also required to implement a site security plan that satisfies risk-based performance standards established by the Department of Homeland Security. Each project site alternative was evaluated using a site risk assessment for safety and security implementation that included evaluation of vehicular access to the site and adjacent refinery facilities, the ability to physically secure the site, and the potential for blockages of roads by incoming and outgoing trains, especially public roads or roads with a safety or security function.
- **Safety and Emergency Management:** The project site must be located in an area that can meet applicable safety and emergency management requirements. Shell has incorporated the need for prevention and response to emergencies in the design and layout of the facility. These actions are taken to protect the personnel within the refinery and the public. Potential off-site locations were evaluated for location of adjacent businesses, private property, and public roads and facilities that could be adversely affected or damaged by an emergency on a Shell facility. Public or private properties that could not be confidently protected from such an emergency would not be acceptable sites. The Crude by Rail East Gate Project included a rigorous planning stage that reviewed the various project site options, and evaluated the strengths and weaknesses of each site from an emergency management standpoint. Specific issues that were evaluated at each potential site include the following:
 - Spill prevention design
 - Stormwater management
 - Effective management of potential equipment malfunctions
 - Ability for Shell Emergency Response personnel to quickly and safely respond to emergencies
 - Ability for local external emergency response professionals to quickly and safely respond to emergencies

- Capacity for effective worker ingress and egress at the site
- Prevention of injury of workers and the general public
- Mitigation of potential impacts to the environment

As mentioned under the Proximity to Refinery criterion, Shell evaluated alternative locations within 6 to 7 miles of the main exit from the PSR to comply with emergency response and management standards.

- **Integrity of Refinery Operation:** The alternative must be able to be constructed and made operational without requiring that the operation of the refinery, or the adjacent Tesoro refinery, be interrupted (i.e., shut down). For example, if the main water line into the refinery from the City of Anacortes is shut down for a period longer than 24 hours, the PSR would experience a complete shutdown. A complete shutdown of refinery operations would disrupt the supply of fuel products to the West Coast. Complete shutdown of the PSR would result in daily loss of manufacture of 2,730,000 gallons/day of gasoline, 1,470,000 gallons/day of diesel and 714,000 gallons/day of jet fuel. Shutdown would also result in a loss of refinery revenue. Shutting down and restarting the refinery would result in increased air emissions associated with stopping and re-commencing production. Because the water line also serves Tesoro, Tesoro’s refinery could experience a similar shutdown and production losses/increased emissions. Together, interruption of refinery operations could mean loss of automotive and aviation fuel production from two of the five refineries in Washington State. In addition, it was determined that project construction may not require dismantling and rebuilding of vital parts of the refinery, due to even greater financial, fuel supply, and air impacts of taking out of service and rebuilding existing facilities. To illustrate the importance of ensuring continuity of operations, all critical maintenance and plant upgrades are planned such that there has not been a complete PSR refinery-wide shutdown in over 25 years.
- **Availability of Site:** The project site must be available for Shell PSR for this project. For example, Skagit County’s zoning and other land use ordinances restrict conversion of farmland to industrial uses. The Crude by Rail East Gate Project included a rigorous planning stage that reviewed the potential availability of various off-site project locations in consultation with the Skagit County Planning Department. As noted in USACE (2003) guidance, just because a site is not zoned appropriately for industrial development does not eliminate a site from consideration. However, the steps required for rezoning or obtaining a variance can be considered in terms of logistics, costs, and existing technology.¹²

4.0 POTENTIALLY PRACTICABLE ALTERNATIVES

Potential alternatives can be method alternatives, location alternatives, or configuration alternatives.

¹² *Alternative Analysis Guidance*, U.S. Army Corps of Engineers (October 23, 2003).

4.1 METHOD ALTERNATIVES

The Shell PSR currently receives crude oil by all of the practicable alternative methods (e.g., ship and pipeline) aside from the rail system. However, these potential method alternatives are precluded in this case because these methods are not practicable alternatives for receiving crude oil sources from interior, landlocked locations with no access to pipelines or ports for shipping.

Pipelines for shipment of mid-continent crude oil to the northwest do not exist, and there are no known plans at this time for a pipeline to be installed to serve the Northwest. Additionally, the mid-continent crude source locations are too distant to make truck transport an economically viable method alternative. For sources over 1,000 miles away (like North Dakota), the cost of rail transport would be dramatically less than the cost for truck transport, and there would be less seasonal variation in transport reliability. Additionally, rail would result in far less air pollution emissions relative to truck traffic. It would take approximately 400 truckloads to be equivalent to one unit train. In addition, safety is a major concern. Rail freight transportation incurs about 12 percent of fatalities, 6 percent of the injuries, and 1 percent of the accidents that trucks do per trillion ton-miles.¹³ Therefore, as explained in greater detail below, there are no other method alternatives available that meet the purpose and need of the project.

Why Rail Delivery to Shell PSR Refinery?

At this time, the only practicable means for transporting crude oil from the mid-continent to the Shell PSR is by rail.

Water-borne vessel transport directly from North Dakota/mid-continent land-locked production areas to Washington State is obviously impossible. High transportation cost, limited vessel availability, and transit distance/complexity precludes cost effective shipment of crude oil from the U.S. Gulf Coast to the West Coast.¹⁴

Although pipeline transportation typically is less expensive than other methods, due to the location of the booming oil production in North Dakota and other mid-continent oil fields, pipeline transportation options are unavailable for Shell PSR. No crude oil pipelines currently serve the West Coast from North Dakota or elsewhere mid-continent.¹⁵

¹³ H. Barry Spraggins, *The Case for Rail Transportation of Hazardous Materials*, Journal of Management and Marketing Research Vol. 3 (Jan. 2010). <http://www.aabri.com/manuscripts/09224.pdf> (MAY NEED APPROVAL TO REPRINT.)

¹⁴ Turner, Mason & Company, *California, Here I Come – Shale Crude Heads West (Maybe)*, (March 4, 2014). <http://www.turnermason.com/blog/2014/03/04/california-here-i-come-shale-crude-heads-west-maybe/>.

¹⁵ EIA, *Crude Delivered by Rail Continues to Supply West Coast Refineries*, (October 1, 2014). http://www.eia.gov/petroleum/weekly/archive/2014/141001/includes/analysis_print.cfm. An interactive mapping tool allowing view of existing crude oil and other (refined product, natural gas liquid, and natural gas) pipelines and other infrastructure is available at: <http://www.eia.gov/state/maps.cfm?v=Petroleum>.

As illustrated by the public debate over the Keystone XL project, approval of new interstate crude oil pipelines through this region would be extremely costly, controversial, and take years, and ultimate project development is far from certain. There are no pipelines, existing or proposed, that could transport oil from North Dakota/mid-continent to Washington State, and none are contemplated to be built in the foreseeable future.¹⁶

Transporting Bakken crude oil from the mid-continent via truck would not be economically practicable and would be less safe than transport by rail. Moving freight by rail is four times more efficient than by highway.¹⁷ Approximately 400 truckloads per day would need to travel the 2,400-mile round trip from Williston, North Dakota, to Anacortes, Washington, to equal 1 unit train. The combined total of 960,000 road miles per day would result in diesel consumption of approximately 120,000 gallons per day. Shell and rail industry calculations of fuel consumption for rail transport indicate that it would consume 80 percent less fuel than road transport. Greenhouse gas emissions produced from trucking would be correspondingly higher than rail.

Crude oil delivery by rail is also safer than delivery by truck. Rail freight transportation incurs about 12 percent of the fatalities and 1 percent of the accidents versus trucks per trillion ton-miles.¹⁸ A study published in the *Journal of Management and Marketing Research* compared the relative safety risks of various industrial occupations.¹⁹ Total industry injury rates for railroads versus other industries indicate for employees directly in those industries, rail is much safer than trucking.

Regarding safety incidents of hazardous material cargoes, as Figure 4 indicates, transport by rail is clearly an order of magnitude safer than trucking.

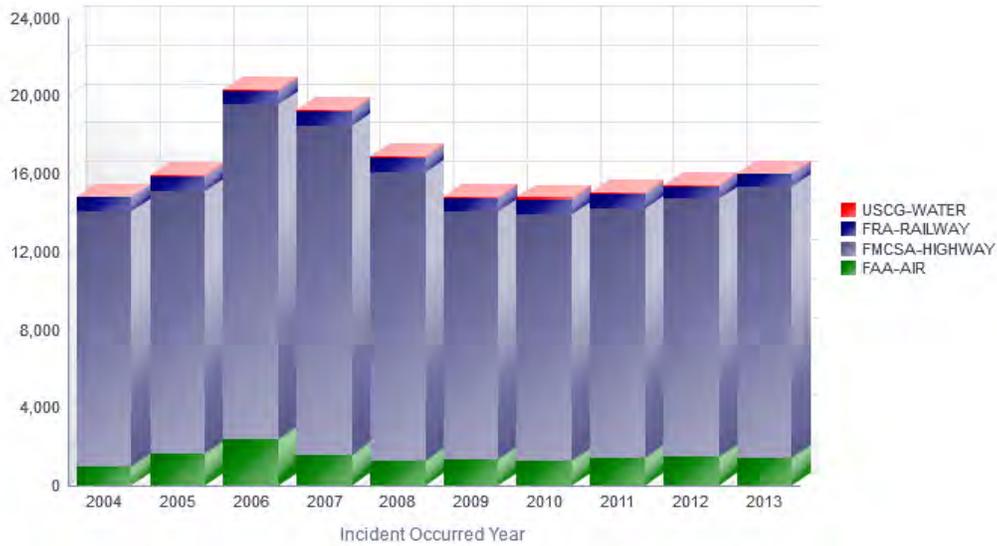
¹⁶ Katherine Lynn, *Shipping Oil by Pipeline has a Future in Bakken*, *Prairie Business* (October 2, 2014). <http://www.prairiebizmag.com/event/article/id/18546> ; and *FACTBOX-U.S. Crude-by-Rail Projects; 2013 Shipments Up 71 Percent from 2012*, *Chicago Tribune* (Jan. 13, 2014). http://articles.chicagotribune.com/2014-01-13/news/sns-rt-usa-cruderrail-factbox-20140113_1_bpd-u-s-shale-refinery.

¹⁷ CSX, *Fuel Efficiency*, no date. <http://www.csx.com/index.cfm/about-csx/projects-and-partnerships/fuel-efficiency/>

¹⁸ H. Barry Spraggins, *The Case for Rail Transportation of Hazardous Materials*, *Journal of Management and Marketing Research* Vol. 3 (Jan. 2010). <http://www.aabri.com/manuscripts/09224.pdf> (MAY NEED APPROVAL TO REPRINT.)

¹⁹ *Ibid.*

Figure 4: Incidents by Mode and Incident Year



Source: U.S. Department of Transportation, *Incidents by Mode and Incident Year*, Pipeline and Hazardous Materials Safety Administration, Office of Hazardous Materials Safety (October 2014). <http://www.phmsa.dot.gov/hazmat/library/data-stats/incidents> (10-Year Incident Summary Reports).

Furthermore, Shell PSR does not have the truck unloading facilities in place to accept 400 trucks per day delivering crude oil. Building the necessary truck unloading racks and related access roads would add cost and result in construction impacts similar to building a crude rail unloading facility. Sustained increased vehicle traffic would also likely cause more inconvenience and traffic impacts to the local community than rail transport. In short, truck delivery was determined by Shell to be too costly, less safe, and environmentally less preferable than rail delivery.

Finally, Shell PSR considered availability of a combination of transport options, particularly rail plus vessel (likely barge) traffic. Rail plus vessel delivery adds incrementally greater cost to the crude supply than rail-only delivery, due to the need to ship the crude oil by boat in addition to rail, likely for a substantial distance. Although some commercial rail-marine terminals have been proposed in Washington, only one is currently operating—U.S. Oil in Tacoma, Washington. The U.S. Oil terminal principally serves an adjacent refinery and does not have the volume capacity to supply Shell PSR's needs. Other potential projects have been cancelled or are undergoing extended permitting environmental reviews, so it cannot be assumed they will be approved or available to Shell PSR.²⁰ Terminals further away were determined to be uneconomical for long-term supply and economic viability because of additional shipping costs associated with such locations. In addition, combining rail and vessel transport would not have this project's benefit of taking oil-laden vessels off Puget Sound waters.

²⁰ See *Moving Crude by Railcar Stalls on the Track*, Wall Street Journal (December 5, 2013); Washington Department of Ecology, *Westway and Imperium Project Frequently Asked Questions*. <http://www.ecy.wa.gov/geographic/graysharbor/FAQterminals.pdf>

Why this Rail Unloading Project?

Existing rail facilities at the refinery are not designed to receive and unload crude shipments. To accommodate the volume of railcars of crude from rail, Shell PSR proposes to construct a rail facility that will allow a unit train to safely and efficiently move off the adjacent BNSF rail line into an unloading facility at the refinery. This adjacent BNSF mainline, also known as the Anacortes Subdivision, is actively used by Shell, the adjacent Tesoro Anacortes Refinery, and other neighboring industries.

Why a Unit Train?

A “unit train” is a dedicated train of approximately 100 to 120 rail cars plus locomotives, providing dedicated transport by rail from source to destination, and return, for a single customer. More commonly, rail shipments are via “manifest trains” which combine rail car shipments for multiple customers. Rail cars shipped via manifest trains are typically disconnected from other rail cars and locomotives at multiple locations during transit, whereas rail cars shipped via unit trains stay connected as one “unit” from source to destination.

A unit train was determined to be necessary for this project due to economic and logistic benefits compared to using multiple manifest trains. Shipment of Bakken crude via unit train would be much more efficient than shipment via manifest trains. The cost savings for unit train shipment of Bakken crude to Anacortes is estimated at over \$2 per barrel. In addition, it is estimated that shipment via manifest trains would double the transit time. Delivery durations and arrival times for manifest trains are much less predictable than for unit trains, meaning there would be added logistical costs at the refinery if rail cars were delivered intermittently on a manifest basis. Finally, there are very few loading facilities in North Dakota that will load crude to manifest cars.

4.2 LOCATION ALTERNATIVES

Both off-site and on-site locations were considered for the Project. The on-site location alternatives are shown on Figures 5 through 8 and the off-site locations are shown on Figures 9 and 10. These figures show the approximate rail alignments, but do not show associated facilities (e.g., stormwater ponds, tanks) or other modifications (e.g., changes to existing roads) that may be required for a particular site.

During the assessment of these potential locations, two types of facility layouts were considered: rail loop and ladder track. The rail loop type of unloading facility needs to be long enough to allow a unit train to be completely off the mainline railroad and unload progressively without needing to be separated into segments. Such a configuration requires a larger acreage than the ladder-track design, in which the unit trains are separated into segments on parallel tracks for unloading.

4.2.1 Locations Adjacent to the Refinery

Since Shell PSR is located on a peninsula with topographic constraints that is already substantially developed, there is not adequate space for a rail loop layout. Potential location alternatives for ladder-track designs that meet the basic criteria of proximity to the refinery

include sites adjoining the east, west, and south sides of the refinery. There are no other adjacent sites available due to the Tesoro Anacortes Refinery on the north, and other constraining infrastructure. Potential on-site locations adjacent to the refinery include:

- **Site 1 (Eastern Alignment).** A site on the east side of the refinery, west of East March Point Road, south of North Texas Road, and north of South March Point Road (the proposed location).
- **Site 2 (Central Alignment).** A site on the south side of the refinery, between South Texas Road and South March Point Road, and adjacent to the existing BNSF rail line.
- **Site 3 (Western Alignment).** A site north and east of the existing BNSF rail line and mostly west of Thompson/Bartholomew Road. Note: Thompson Road becomes Bartholomew north of the intersection with South March Point Road.
- **Site 4 (Coker Alignment).** A site on the south side of the refinery that would utilize an existing rail alignment currently used to export petroleum coke from the refinery.
- **Tesoro Crude Unloading Facility.** Tesoro Anacortes Refinery has a recently constructed crude unloading facility.

4.2.2 Off-Site Locations

Off-site locations included sites not directly adjacent to the refinery, but along the railroad and close enough to the existing Kinder Morgan pipeline to make a pipeline connection from the unloading facility to the refinery feasible. Since the BNSF railroad runs along the shoreline of Padilla Bay with only a narrow strip of land between the railroad/Padilla Bay and Highway 20 immediately east of the refinery, sites to the east of Padilla Bay were considered.

Shell considered off-site alternatives early in the planning process that would potentially accommodate a rail unloading facility. One area (**Off-Site Area 1**) is an undeveloped site zoned agricultural and located approximately 6 miles east of the refinery, west of the intersection of Farm to Market Road and State Route 20. Another area (**Off-Site Area 2**) is an existing lumber mill zoned industrial and located approximately 6.3 miles east of the refinery, east of the intersection of Farm to Market Road and State Route 20. Figures 9 and 10 illustrate the locations of the sites.

4.2.3 Comparison of Location Alternatives

The potential site alternatives are further described below then compared with respect to the practicability criteria. A summary of each alternative and the practicability criteria is included below in **Table 1**.

Site 1: The proposed project site is located between South March Point Road on the south and North Texas Road on the north, and between East March Point Road on the east and the existing refinery facility on the west. The project scope generally includes the following improvements:

- Arrival/departure rail track
- Unloading area with two tracks and a concrete containment pad

- Designated rail section referred to as a “Bad Order track,” with repair facilities for rail cars that are identified as having issues that require repair before being dispatched
- Personnel operations building and appurtenant facilities and limited parking. The personnel/operations building will contain controls to allow for the efficient operation of pumps and equipment directly associated with the unloading system
- Perimeter inspection/security road
- Pumps and an above-ground pipeline to connect the proposed project to the existing storage tanks
- New road connections. Roads have been added and/or modified for efficient ingress/egress of operating personnel, efficient access for refinery emergency response personnel and equipment, and for safe and efficient access for outside emergency equipment and personnel such as the local fire department
- Relocation of segments of the Olympic Pipeline, the Kinder Morgan Pipeline, and power lines. The existing locations of these pipelines and power lines conflict with the location of the new rail and unloading facilities. Because of the limited space on the Shell property to align a new rail system and unloading facility, conflicts with the pipeline and power system are unavoidable
- Stormwater facilities
- Oily water containment facilities, including pump and piping facilities to route water to the refinery’s effluent plant
- New electrical power substation
- Fire response facilities, including monitors, hydrants, fire-fighting foam equipment and supplies
- Other appurtenances and support facilities typically associated with this type of facility

The rail facility will consist of approximately 8,000 feet of unloading tracks with a concrete unloading pad, approximately 1,300 feet of track for temporary storage of rail cars that are taken out of service for repair and maintenance, and about 7,200 feet of train-staging track. Rail ingress and egress will be by a connection to the existing BNSF mainline located to the south and will require modifications to the BNSF rail configuration.

The crude oil transfer station will include vent headers, a containment area, drain connections and collection header, and tank car grounding. An operations shelter, storage shed, electrical structure, and small employee parking lot will also be constructed in proximity to the crude oil transfer facility.

The unloading area will be sloped to the center from each end to aid in preventing tank cars from rolling backward to the mainline and to contain potential spills. The facility will also contain a compressor to supply air to the tank cars in the unloading area to ensure the brake system is energized in the brake position.

The project will also include various site preparation activities including, but not limited to, clearing; grading; installation and construction of associated infrastructure improvements, such as stormwater infrastructure; and extension of existing services and utilities, including electricity, sanitary sewer, potable water, etc. Construction of the project will require the relocation of segments of two existing pipelines and some power lines. Two ponds are proposed to provide permanent stormwater control measures.

Site 1 meets all practicability criteria. The site has adequate space for the rail and its associated facilities. The site is immediately adjacent to the refinery and the BNSF rail, allowing for appropriate security and emergency management response. It can be secured from public access within the refinery fenceline and is proposed to be subject to heightened security controls that the refinery employs under the Maritime Transportation Security Act. Construction of the project on this site will not negatively affect the integrity of the refinery since construction will not cause an interruption of Shell or Tesoro refinery operations or require removal of existing refinery units. In addition, the site is zoned for industrial use and would not require relocation or impair access to adjacent businesses or residences. It is the safest and most securable site by virtue of its location. The site has a substantial amount of wetlands, including actively grazed pasture wetlands, forested wetlands, and forested wetland/upland mosaic.

Site 2 is located on the south side of the refinery adjacent to the existing BNSF rail line. In order to have adequate length, it would extend under Bartholomew Road and across South Texas Road. It meets the practicability criteria for topography, size and configuration, and proximity to the BNSF railway and the refinery. This site fails the security criterion because the unit could not be fully contained within Shell property when unloading. The unit upon delivery would be staged entirely in the BNSF right-of-way (ROW) and exposed to public access. The unit cannot be isolated from the public while parked in the ROW for either the incoming or outgoing units. Additional fencing, lighting, installation of remote security cameras, and supplemental full time security patrol could not improve the area sufficient to ensure no public access since it must be open for use by BNSF. It fails integrity of operation because significant changes in vital access and infrastructure links would be required, such as replacement of the Bartholomew Road bridge and relocation of the main 20-inch steel water line into the refinery, which is attached to the bridge (see Photo 1). These changes would interrupt both Shell and Tesoro refinery operations.



Photo 1

Looking north at Bartholomew Road Bridge, water pipeline, and BNSF right-of-way

The existing BNSF ROW would need to be significantly widened to accommodate the additional track for handling of both incoming and outgoing unit trains in a manner that does not disrupt movement of unit trains to Tesoro or manifest trains to both Tesoro and Shell. The BNSF line and the new parallel track to service the unit trains would need to pass under Bartholomew Road, which currently crosses the rail on a narrow wooden bridge. Bartholomew Road would be closed and traffic disrupted while the existing bridge is removed and replaced. Replacement of this bridge would require shutdown of Thompson/Bartholomew Road, and would require taking of a portion of the property owned by the car dealership that is located on both sides of this road from South March Point Road to Highway 20. South March Point Road would also be disrupted and require rerouting during rail construction.

The rail line widening and rerouting of South March Point Road would directly and materially interfere with existing nearby businesses. These businesses depend on traffic into and out of their facilities. The road would be blocked during construction of the road modifications. Road widening would also require taking frontage property from some of these private businesses to allow the relocation and widening of the road. Although the properties are not agriculturally zoned and thus are potentially available for acquisition by Shell, it is unclear that the landowners

would agree to provide access in light of the commercial disruption that would result. Since the site failed three of eight practicability criteria, approaching the landowners regarding availability would be futile.

The main water line from the Anacortes City water main that feeds the refinery would have to be relocated to allow for the removal of the existing bridge. The refinery and the adjacent Tesoro Refinery are directly impacted by any disruption in the water flow from this line and to ensure safe operation, would require an outage. The relocation of the water line and the replacement of the existing bridge would need to be completed prior to an expansion of the BNSF rail line.

The Site 2 alternative fails the security and safety and emergency management criteria because so much of the refinery's safety and emergency access is via South Texas Road, which would be periodically blocked by a unit train as it is staged for movement into the ladder-track unloading area (Photo 2). Grade separation via a new road overpass and a modified intersection would not be feasible at South Texas Road because it would require taking the road out of service for extended periods of time. South Texas Road is the only available route for major supply trucks and equipment; taking it out of service would interrupt refinery operations and impact facility integrity by preventing receipt of critical supplies delivered to the PSR by heavy truck. Taking South Texas Road out of service would also remove one of two major emergency access routes (the other being Bartholomew Road which would also be blocked for this alternative for bridge replacement). The site also has a substantial amount of wetlands, including high-category forested wetlands.



Photo 2
Looking west on South Texas Road at railroad crossing and Fidalgo Bay

Site 3 is located north and east of the existing BNSF rail line and mostly west of Bartholomew Road. This site meets the practicability criteria for topography and proximity. As with Site 2, Site 3 fails the security criterion because the unit cannot be fully contained within Shell property when unloading. The unit upon delivery would be staged entirely in the BNSF ROW and exposed to public access. The unit cannot be isolated from the public while parked in the ROW for either the incoming or outgoing units. Additional fencing, lighting, installation of remote security cameras, and supplemental full time security patrol could not improve the area sufficient to ensure no public access since it must be open for use by BNSF. Site 3 also fails to meet the practicability criteria for size and shape, for integrity of operations, and for safety and emergency management for similar reasons as Site 2. The overall length of available track is insufficient to handle a unit train. A unit train length is approximately 6,480 feet, which is greater than the distance available between the north end of the project site and South Texas Road. As a result, under this alternative South Texas Road would be blocked continuously for 24 hours with each unit train.

In addition, under this alternative the Refinery West Emergency Road and the entire west side of the refinery would be blocked during unloading of trains, making this emergency exit unusable.

Relocating the Refinery West Emergency Road on the west side of the refinery was determined to be impracticable. There is no rail unloading configuration that would fit on this site with the track length limitation. Without adequate space to make these accommodations, a case for use of this alternative site is impracticable.

In accordance with WAC 480-62-220, railroad companies must not block a grade crossing for more than 10 consecutive minutes, if reasonably possible. Due to lack of track space at Site 3, both South Texas Road and the Refinery West Emergency Road would always be blocked whenever there is incoming or outgoing unit; thus, compliance with WAC 480-62-220 would be impossible. The South Texas Road crossing is shown in Photo 2. These two roads provide access for emergency response, major truck loads into and out of the refinery, and daily public traffic to and from the refinery. Due to the public safety implications of blocking two main arteries used by commercial and emergency vehicles, this alternative was determined not to be practicable.

Under this alternative, the southern end of the rail configuration would also require widening of the BNSF ROW, similar to Site 2, to allow incoming and outgoing Shell unit trains to clear the mainline, allowing clear access to Tesoro by unit and manifest trains. The bridge and water line (shown in Photo 1) would be impacted in the same way as with Site 2. Availability of privately owned property that would need to be acquired for expansion of the ROW and relocation of South March Point Road is uncertain, as with Site 2. Since the site failed four other practicability criteria, approaching the landowners regarding availability would be futile.

Site 4 is located close against the south side of the refinery and would use the existing coker rail. This site meets the proximity, security, and site availability criteria. The site fails the topography requirement (slope) because the slope of the existing rail spur is too steep for safe operation per BNSF specifications. The slope also causes this alternative to fail the emergency management criterion. In addition, the site fails the size and shape criterion because there is not enough space surrounding the existing spur for a unit train. It fails the integrity of operations criterion because movement of petroleum coke is a vital function that would be disrupted and trying to fit into the site would require shutting down other vital refinery functions.

Off-Site Area 1: This site would encompass approximately 200 acres of active farmland (including farmed wetlands). Both loop and ladder-track designs were considered for this site. This site meets seven of the eight practicability criteria identified. However, the site is zoned for agriculture, and an industrial crude-by-rail facility is not a permitted use in that zone. The site would have to be rezoned in order to be used for the proposed project.

All annual rezoning proposals are considered together, once a year, so that cumulative effects can be assessed. Citizens, groups, or agencies must submit an application to amend the designation of one or more parcels of land by the last business day of July for docketing that year. Rezone proposals can take up to 3 years for a final decision. Most rezone attempts which would convert farmland to other uses have been unsuccessful.

Based on recent court decisions in Skagit County and communication with Skagit County staff and farming groups, rezoning this area to allow industrial use is extremely unlikely to occur. To illustrate this point, Attachment 1 shows agricultural rezone attempts from 2005 to 2014. There

were 24 proposals assigned a request number by Skagit County: 20 in 2005, 2 in 2006, and 2 in 2011. Only 2 of these 24 proposals were approved.

Of the 20 Agriculture-Natural Resource Land (Ag-NRL) rezoning requests from 2005, 19 were denied by Skagit County in 2007. The primary reason for denial was that the re-designation from Ag-NRL would be inconsistent with the Growth Management Act (GMA) and the Skagit County Comprehensive Plan agriculture resource designation criteria. There were 11 rezoning requests for inclusion in an Urban Growth Area (UGA) and 10 were denied because of lack of city support and a land capacity analysis. The Town of La Conner rezoning request to UGA was approved because of existing facilities already in place.

Two rezoning applications, a luxury yacht marina and a residential unit, were considered and both were denied for docket in 2006. One rezoning application was denied in 2011 for a proposed manufacturing building. A rezoning application to re-designate as Rural Reserve to construct a single family home in the Skagit Beach community was approved in 2011 because of the lack of prime agricultural soils, the absence of ongoing agricultural activities, and critical area constraints that would limit new agricultural activity. No applications to rezone from Agricultural have been submitted or pursued since 2011.

Two denials within the last 10 years particularly demonstrate the difficulty of rezoning agricultural land. Two school districts in Skagit County attempted to get comprehensive plan and zoning designations changed from Ag-NRL to UGA to allow the sites to be used for schools (see Attachment 2). However, both attempts failed. The only successful rezone changes were small acreages adjacent to existing UGAs that had been mapped incorrectly and were shown to be inconsistent with the Ag-NRL designation criteria listed in Chapter 4 of the Skagit County Comprehensive Plan.

The Off-Site Area 1 alternative was considered unavailable for industrial use because the site is active commercial agricultural land that is clearly consistent with the Ag-NRL designation criteria. These conclusions were confirmed through a series of interactions between the applicant and Skagit County. Attachment 3 contains correspondence with Skagit County documenting conclusions regarding Off-Site Area 1.

Off-Site Area 2: This alternative site is east of Off-Site Area 1 on land zoned as Bayview Ridge Heavy Industrial (BR-HI). This site contains several parcels owned by several different business entities and a private homeowner. A lumber mill, concrete business, and private residence are currently located on Off-Site Area 2. Only a ladder-track design was considered viable for this site because of presence of these existing facilities.

The site meets the topography and proximity to BNSF rail system criteria. However, this site fails the size and configuration, proximity to refinery, security, and the safety and emergency management criteria. Use of this site would not require a rezone request; however, there are multiple landowners who may not be willing to sell. It is uncertain whether this alternative meets the site availability criterion. Since the site fails four of the eight practicability criteria, approaching the landowners regarding availability would be futile.

While a ladder track may be designed to fit on the land between the existing businesses, there would not be enough space for the associated features such as the oily water containment facility (tank and separation system) and the firewater tank and pump system. In addition, placing a crude unloading facility would disrupt the current use of the site. It would require removal of the residence and permanently eliminate the existing access to the concrete business. Construction of the rail would also temporarily shut down the lumber mill operations.

The site fails the emergency management criterion because there would only be a single means of ingress/egress for the unloading facility. Use of this site would increase the potential risk to the general public, as the lumber company operations would be located within the rail lines. In addition, the Shell Downstream Manufacturing Emergency Response Specification requires that the PSR's emergency equipment be able to respond to fires within 15 minutes. This site does not meet this requirement. Therefore, this alternative also fails the proximity to refinery criterion.

This site fails the security criterion; due to the proximity of the rail unloading facility, access rail tracks, oil storage tankage, and other features to ongoing business operations and to uncontrolled roadways fully accessible to the public, this alternative would present very significant security challenges. Additional fencing, lighting, installation of remote security cameras, and supplemental full time security patrol could not improve the area sufficient to ensure no public access since roads must remain open for use by other businesses, including BNSF Railway.

Other Potential Off-Site Areas: All otherwise potentially suitable properties adjacent to the BNSF rail and the Kinder Morgan pipeline that would meet PSR Practicability Criteria are zoned for agriculture uses (and include farmed wetlands). As a result, no other off-site locations were found that meet Practicability Criteria based on land use compatibility.

Tesoro Crude Unloading Facility: One apparent alternative is the use of the crude rail unloading facility at the adjacent Tesoro refinery, supposing that it could be modified to also supply the Shell refinery. Business competitors cannot be required to make facilities available to a competitor. Even if a deal could be struck in principle, the site would have to accommodate the requirements of both refineries. In order to do so, it would have to handle at least two incoming and two outgoing trains on the same day and perhaps a third incoming or outgoing train, depending on schedules. The existing unloading pad infrastructure is only capable of handling one incoming unit train and one outgoing unit train a day, and there is not enough room to construct or operate another crude unloading operation on the Tesoro property. Therefore, this apparent alternative was not considered further.

No combination of sites is practicable. No combination of Sites 2 and 3 will work because doing so would interfere with other vital rail and vehicle access needs and would interrupt the integrity of refinery operations and safety response to emergencies within the refinery. A combination of Sites 3 and 4, or 2 and 4, would not work for the same reasons. In order to make Site 1 work and minimize impacts, it already overlaps with area that would be required for Sites 3 and 4. Table 1 compares the practicability of each alternative site.

Table 1. Location Alternative Practicability Criteria Comparison

Practicability Criteria	Site 1 (Applicant's Preferred)	Site 2	Site 3	Site 4	Off-site Area 1	Off-site Area 2
Size and Configuration	Meets	Meets	Fails	Fails	Meets	Fails
Topography	Meets	Meets	Meets	Fails	Meets	Meets
Proximity to Refinery	Meets	Meets	Meets	Meets	Meets	Fails
Proximity to BNSF Rail System	Meets	Meets	Meets	Meets	Meets	Meets
Security	Meets	Fails	Fails	Meets	Meets	Fails
Safety and Emergency Management	Meets	Fails	Fails	Fails	Meets	Fails
Integrity of Operations	Meets	Fails	Fails	Fails	Meets	Meets
Availability of Site	Meets	Unknown	Unknown	Meets	Fails	Unknown

4.3 CONFIGURATION ALTERNATIVES

Site 1 meets both the purpose and need and all the practicability criteria. Based on this, Site 1 was investigated further to identify the design configuration that meets the project purpose and need with the least amount of aquatic impact. There are limited configurations for the rail facilities that could be accommodated on Site 1 because of constraints of the required rail design parameters and existing facilities that have to be avoided. Two rail configurations, one longer and narrower and the other shorter and broader, are possible rail layouts on Site 1. Each has been laid out to meet BNSF unit train design requirements and the intent to minimize wetland impacts to the extent possible with that layout. The two configurations are shown on Figures 11 and 12.

- **The Two-Track Option** is the proposed layout. This configuration allows the train to exit the existing BNSF rail line west of the March Point Road intersection.
- **The Four-Track Option** is shorter and wider than the two-track option. However, to make it work, the BNSF rail line would have to be modified east of the March Point Road intersection.

The two-track and four-track configuration options were analyzed in detail. During field surveys for the configuration alternatives, a sensitive cultural resource site was found. This cultural resource location was not previously recorded. The site is located in an area that is only included within the four-track configuration.

The impacts of the configuration alternatives are summarized in Table 2 below.

Table 2. Configuration Alternative Impact Comparison

Configuration	Estuarine Wetland and Tideland Impact	Forested Wetland Impact¹	Freshwater Non-Forested Wetland	Total Wetland Impact²	Other Impacts
Two-track option	0	3.3	17.0	20.3	Would disturb two eagle nests.
Four-track option	0.1	2.9	24.5	27.5	Would disturb a sensitive cultural resource site. Would disturb two eagle nests.

¹The forested wetland impacts includes the forested wetland mosaic impacts. The forested wetland mosaics were estimated to be 70 percent wetland/30 percent upland during field investigations, and the impacts have been adjusted accordingly.

²The total wetland impact here is direct, permanent impact based on cut and fill lines and does not include temporary or indirect impacts.

5.0 IDENTIFICATION OF THE LEAST ENVIRONMENTALLY DAMAGING PRACTICABLE ALTERNATIVE

Based on the alternative location analyses discussed in Section 4, Site 1 is the only practicable site for the project. The alternate configurations on Site 1 are similar in terms of the practicability criteria.

The four-track configuration would be broader, resulting in more total wetland impact. The four-track configuration would have 12 percent less direct impact (by area) to forested wetlands, but it would also include a small amount of impact to estuary wetlands associated with Padilla Bay, because the configuration would involve more work on and adjacent to the BNSF rail line. Additionally, the four-track option could directly impact a sensitive cultural resource site.

The proposed two-track configuration would result in the least amount of wetland impact area. Although it would result in 0.4-acre of additional forested wetland impact relative to the four-track option, this is assumed to be a relatively minor concern when considering that the two-track configuration would avoid 7.2 acres of direct wetland disturbance. Additionally, this alternative would have no direct impacts to the estuary wetlands associated with Padilla Bay and would avoid disturbing the archaeological site.

Therefore, the least environmentally damaging practicable alternative is the two-track layout on Site 1.



Source: USGS 7.5-minute topographic quadrangle, Anacortes South, Washington, 2011

Legend

 Approximate Rail Alignment



0 2,000 4,000
Scale in Feet

Figure 5
On-Site Location, Site 1



Source: USGS 7.5-minute topographic quadrangle, Anacortes South, Washington, 2011

Legend

 Approximate Rail Alignment



0 2,000 4,000
Scale in Feet

Figure 6
On-Site Location, Site 2



Source: USGS 7.5-minute topographic quadrangle, Anacortes South, Washington, 2011

Legend

 Approximate Rail Alignment

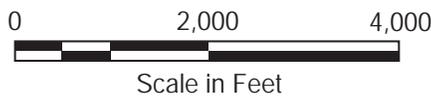


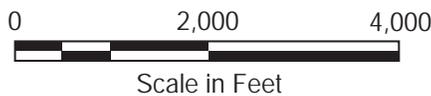
Figure 7
On-Site Location, Site 3



Source: USGS 7.5-minute topographic quadrangle, Anacortes South, Washington, 2011

Legend

 Approximate Rail Alignment



Job No. 33764101

Figure 8
On-Site Location, Site 4



Alternatives Analysis
Crude by Rail East Gate
Shell Puget Sound Refinery

33764101_10.ai



Source: USGS 7.5-minute topographic quadrangle, Anacortes South, Washington, 2011 and La Conner, Washington, 2011

Legend

 Approximate Rail Alignment



0

4,000

8,000

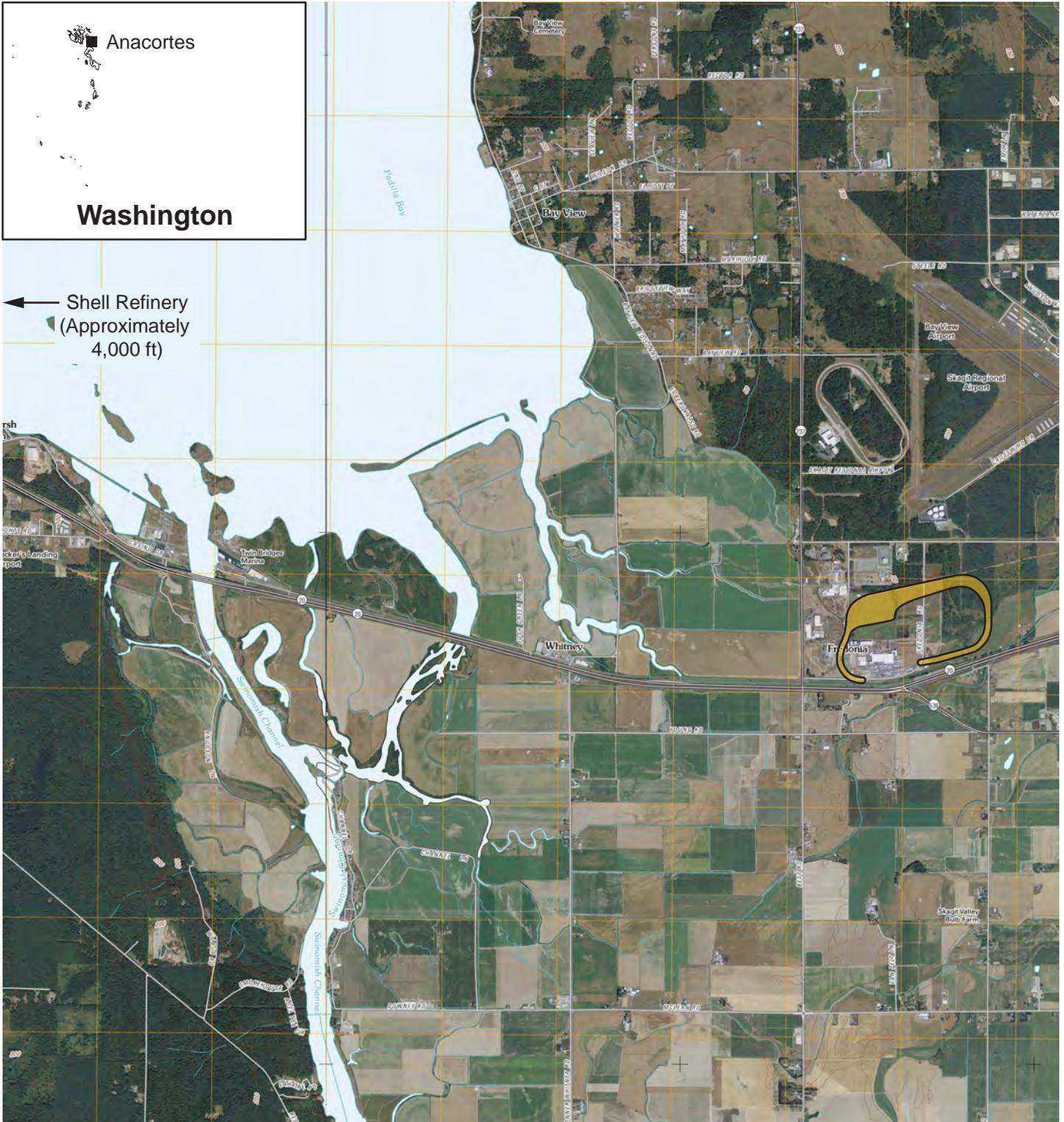
Scale in Feet

Job No. 33764101



Figure 9
Off-Site Location, Area 1

Alternatives Analysis
Crude by Rail East Gate
Shell Puget Sound Refinery



Source: USGS 7.5-minute topographic quadrangle, Anacortes South, Washington, 2011 and La Conner, Washington, 2011

Legend

 Approximate Rail Alignment



Figure 10
Off-Site Location, Area 2

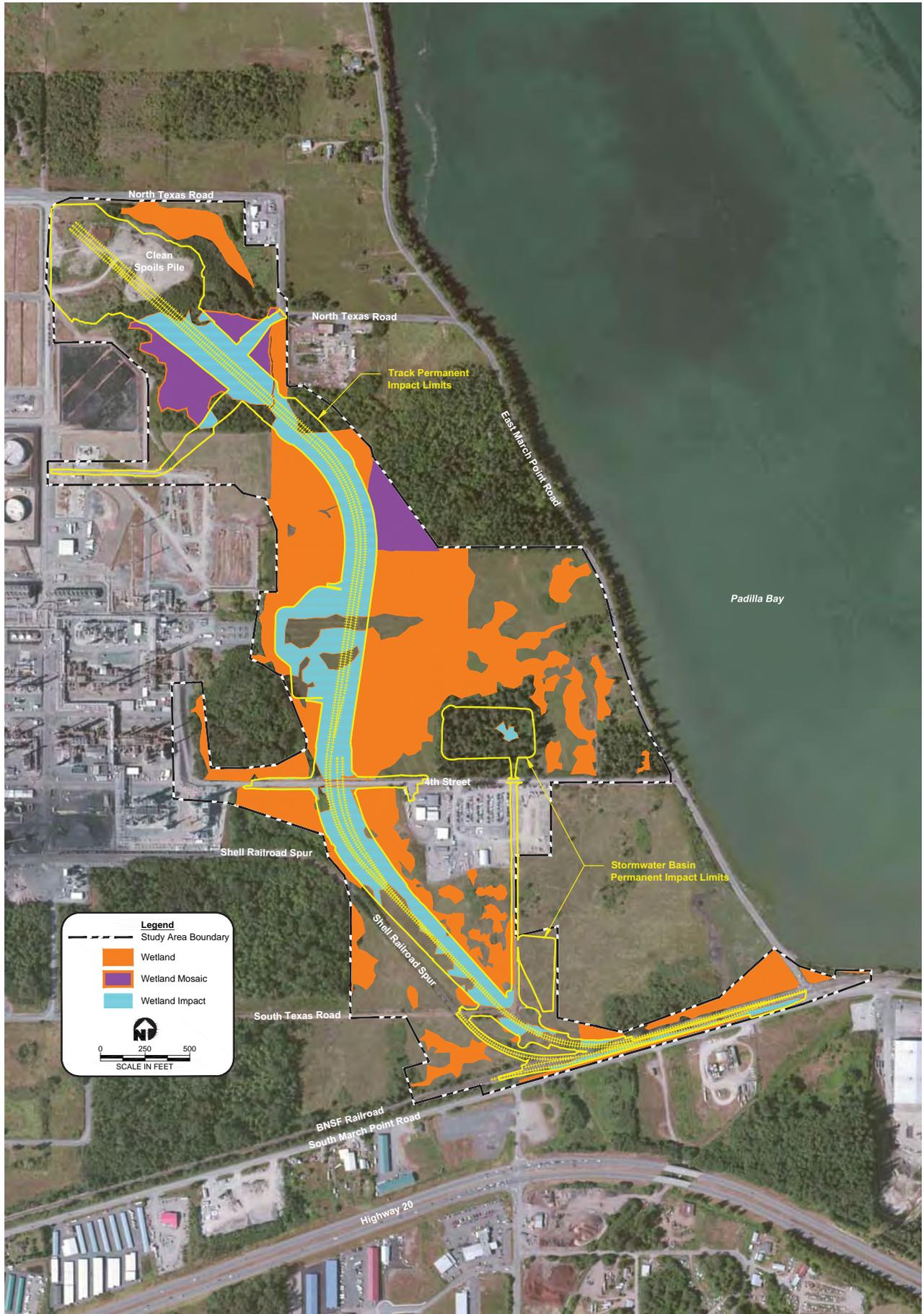


Figure 11
Site 1 Two-Track Configuration

Alternative Analysis Report
 Crude by Rail East Gate
 Shell Puget Sound Refinery

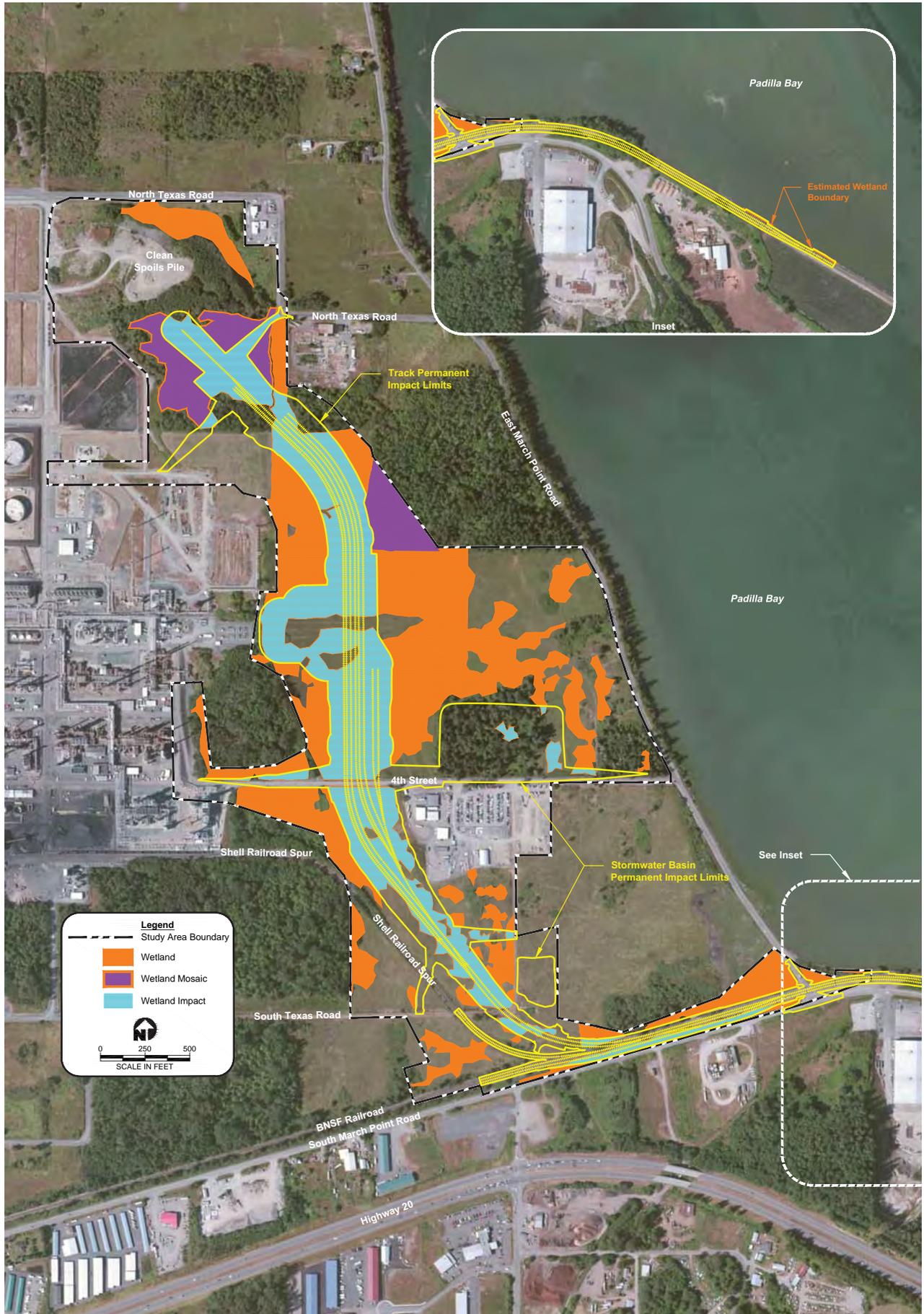


Figure 12
Site 1 Four-Track Configuration

Alternative Analysis Report
 Crude by Rail East Gate
 Shell Puget Sound Refinery

ATTACHMENT 1
AGRICULTURAL REZONING REQUESTS

Agricultural Rezoning Requests

Applicant	Request Number	Acres	Rezoning Request	County Recommendation
M/T Enterprises Bob Mason	CPA05-01	11.2	Agriculture-NRL (Ag-NRL) to Rural Reserve (RRv)	Denial - primarily farming area and presence of prime farmland soils.
Bryan VanBeek	CPA05-02	97.0	Agriculture-NRL (Ag-NRL) to Rural Reserve (RRv)	Denial - inconsistent with GMA provisions and Ag-NRL Comprehensive Plan policy provisions.
Larry Gadbois	CPA05-04	NA	Agriculture-NRL (Ag-NRL) to Rural Reserve (RRv)	Denial - property meets Ag-NRL designation criteria and unclear why requesting rezoning.
Alvin & Betty Richardson	CPA05-05	NA	Agriculture-NRL (Ag-NRL) to Rural Reserve (RRv)	Denial - property meets Ag-NRL designation criteria and fails to meet RRv designation criteria.
Shawn & Courtney Campbell	CPA05-06	3.0	Agriculture-NRL (Ag-NRL) to Rural Intermediate (RI)	Denial - property likely to create new peninsula of RI in Ag-NRL zone.
Chuck Patterson	CPA05-07	13.0	Agriculture-NRL (Ag-NRL) to Natural Resource Industrial (NRI)	Denial - inconsistent with Comprehensive Plan policy 4A-17.7.
Dallas Wylie	CPA05-08	10.0	Agriculture-NRL (Ag-NRL) to Rural Freeway Service (RFS)	Denial - no justification given for de- designation of Ag-NRL and inconsistent with Comprehensive Plan policy 4A-12.7.
Wesley Reidel	CPA05-39	2.0	Agriculture-NRL (Ag-NRL) to Rural Business (RB)	Denial - business of year-around market exists through a special use permit that does not create grounds for commercial zoning designation.
J.C. & Colene Dellinger	CPA05-76	NA	Agriculture-NRL (Ag-NRL) to Burlington UGA	Denial - no supporting land capacity analysis and not supported by city.
Lyle & Irene Fox	CPA05-77	13.6	Agriculture-NRL (Ag-NRL) to Burlington UGA	Denial - inconsistent with GMA provisions and Ag-NRL Comprehensive Plan policy provisions.
Wesley Reidel	CPA05-78	NA	Agriculture-NRL (Ag-NRL) to Burlington UGA	Denial - no supporting land capacity analysis and not supported by city.
Peter & Bonnie Wolters	CPA05-79	NA	Agriculture-NRL (Ag-NRL) to Burlington UGA	Denial - no supporting land capacity analysis and not supported by city.
Wally & Suoma Eckberg	CPA05-80	15.5	Agriculture-NRL (Ag-NRL) to Burlington UGA	Denial - inconsistent with GMA provisions and Ag-NRL Comprehensive Plan policy provisions.
John DeVlieger	CPA05-81	34.0	Agriculture-NRL (Ag-NRL) to Mount Vernon UGA	Denial - inconsistent with GMA provisions and Ag-NRL Comprehensive Plan policy provisions.
Nancy Sundquist Euken	CPA05-84	12.0	Agriculture-NRL (Ag-NRL) to Mount Vernon UGA	Denial - inconsistent with GMA provisions and Ag-NRL Comprehensive Plan policy provisions.
Don Thornlow	CPA05-85	NA	Agriculture-NRL (Ag-NRL) to Mount Vernon UGA	Denial - inconsistent with GMA provisions and Ag-NRL Comprehensive Plan policy provisions.
David & Sandra Walde	CPA05-86	0.5	Agriculture-NRL (Ag-NRL) to Mount Vernon UGA	Denial - inconsistent with GMA provisions and Ag-NRL Comprehensive Plan policy provisions.
Gloria Carbert,	CPA05-87	4.9	Agriculture-NRL (Ag-NRL)	Denial - inconsistent with GMA

Applicant	Request Number	Acres	Rezoning Request	County Recommendation
Patricia Dikson, & Jerry Kopp			to Mount Vernon UGA	provisions but may be reasonable to change designation to Rural Reserve consistent with adjacent property.
Mount Vernon School District	CPA05-88	10.0	Agriculture-NRL (Ag-NRL) to Mount Vernon UGA	Denial - inconsistent with GMA provisions and Ag-NRL Comprehensive Plan policy provisions.
Town of La Conner	CPA05-93	14.0	Agriculture-NRL (Ag-NRL) to La Conner UGA	Approval - re-designation would recognize existing urban public facilities and stormwater management facilities operated by the town. Situation different from inclusion in UGA of undeveloped land.
Thomas Hsueh	PL06-0689	212.0	Agriculture-NRL (Ag-NRL) to Rural Marine Industrial (RMI)	Denial for Docket - Proposed to construct a 15-slip luxury yacht marina, a boat channel and lock system, and associated boat maintenance, painting, dry dock and storage facilities. The remaining portion of the property was proposed to be a wildlife sanctuary.
Janell A. Studebaker	PL06-0711	< 1.0	Agriculture-NRL (Ag-NRL) to Rural Intermediate (RI)	Denial for Docket - Proposed to construct an additional residential unit on a vacant parcel within a fully developed subdivision.
James Ritchie	PL11-0239	5.5	Agriculture-NRL (Ag-NRL) to Rural Reserve (RRv)	Approval - Proposed to construct a single family home in the Skagit Beach community plat. Applicant claimed property unsuitable for agricultural use due to small size, irregular shape, and poor soils. County recommended RRv rezone because of the lack of prime soils, the absence of ongoing agricultural activities, and critical area constraints that would limit new agricultural activity.
Triton-America LLC	PL11-0249	47	Agriculture-NRL (Ag-NRL) to Natural Resource Industrial (NRI)	Denial for Docket - Proposed to build a large 90,000 to 150,000 square foot building for fabrication of marine vessels and associated parts and other energy and aviation related fabrication and manufacturing work. Applicant claimed site could not be farmed due to salt water intrusion. County recommended use would be best suited on an industrial urban site.

Source: Skagit County 2014.

ATTACHMENT 2

MOUNT VERNON SCHOOL DISTRICT REZONE DECISION

ORDINANCE NO. _____

An Ordinance to Partially Repeal and Readopt Ordinance O20050001 Pursuant to Western Washington Growth Management Hearings Board (WWGMHB) Final Decision and Order, Case No. 05-2-0012.

WHEREAS, Ordinance No. 020050001 adopted on December 20, 2004, approved several amendments to the Skagit County Comprehensive Plan as part of its annual amendment cycle. One of the amendments removed 10 acres of property, P29230, owned by the Mount Vernon School District, from the Agriculture-Natural Resources Land designation and redesignated it as Urban Growth Area (UGA) for the City of Mount Vernon; and

WHEREAS, Ordinance No. 020050007 adopted on April 12, 2005, zoned P29230 as City of Mount Vernon UGA Urban Development District subject to the zoning requirements of the Mount Vernon Commercial/Limited Industrial (C-L) zone; and

WHEREAS, the UGA designation was challenged as not complying with the requirements of the Growth Management Act (GMA) in Western Washington Growth Management Hearings Board (WWGMHB) Case No. 05-2-0012; and

WHEREAS, the WWGMHB Final Decision and Order, issued on September 21, 2005, found that the decision to de-designate P29230 does not comply with Skagit County Comprehensive Plan Policies SCC 14.18.020(5)(d), RCW 36.70A.170, and RCW 36.70A.020(2) and (8); and

WHEREAS, the Skagit County Planning Commission conducted a public hearing on this matter on February 21, 2006, and adopted a recorded motion recommending that the Board of County Commissioners remove this property from the Mount Vernon UGA and restore its agricultural designation.

NOW, THEREFORE BE IT ORDAINED, that the Board of County Commissioners repeals the UGA designation on the Mount Vernon School District property, P29230, at the south end of Cleveland Street, west of Burlington Northern Railroad at the southerly limit of the City of Mount Vernon as currently shown on the Skagit County Comprehensive Plan/Zoning Map (Attachment 1), and redesignates the property to Agriculture-Natural Resource Land, consistent with its prior designation and that of surrounding properties.

BE IT FURTHER ORDAINED that this action is not intended to affect any legally vested rights which may be established on the property.

CC: Code Publishing

IN TESTIMONY WHEREOF, we hereunto set our hands and affix the official seal of our office.

Passed this 10th day of April, 2006.

**BOARD OF COUNTY COMMISSIONERS
SKAGIT COUNTY, WASHINGTON**

Kenneth A. Dahlstedt
Kenneth A. Dahlstedt, Chairman

Ted W Anderson
Ted Anderson, Commissioner

Don Munks
Don Munks, Commissioner

ATTEST:

JoAnne Giesbrecht
JoAnne Giesbrecht, Clerk of the Board

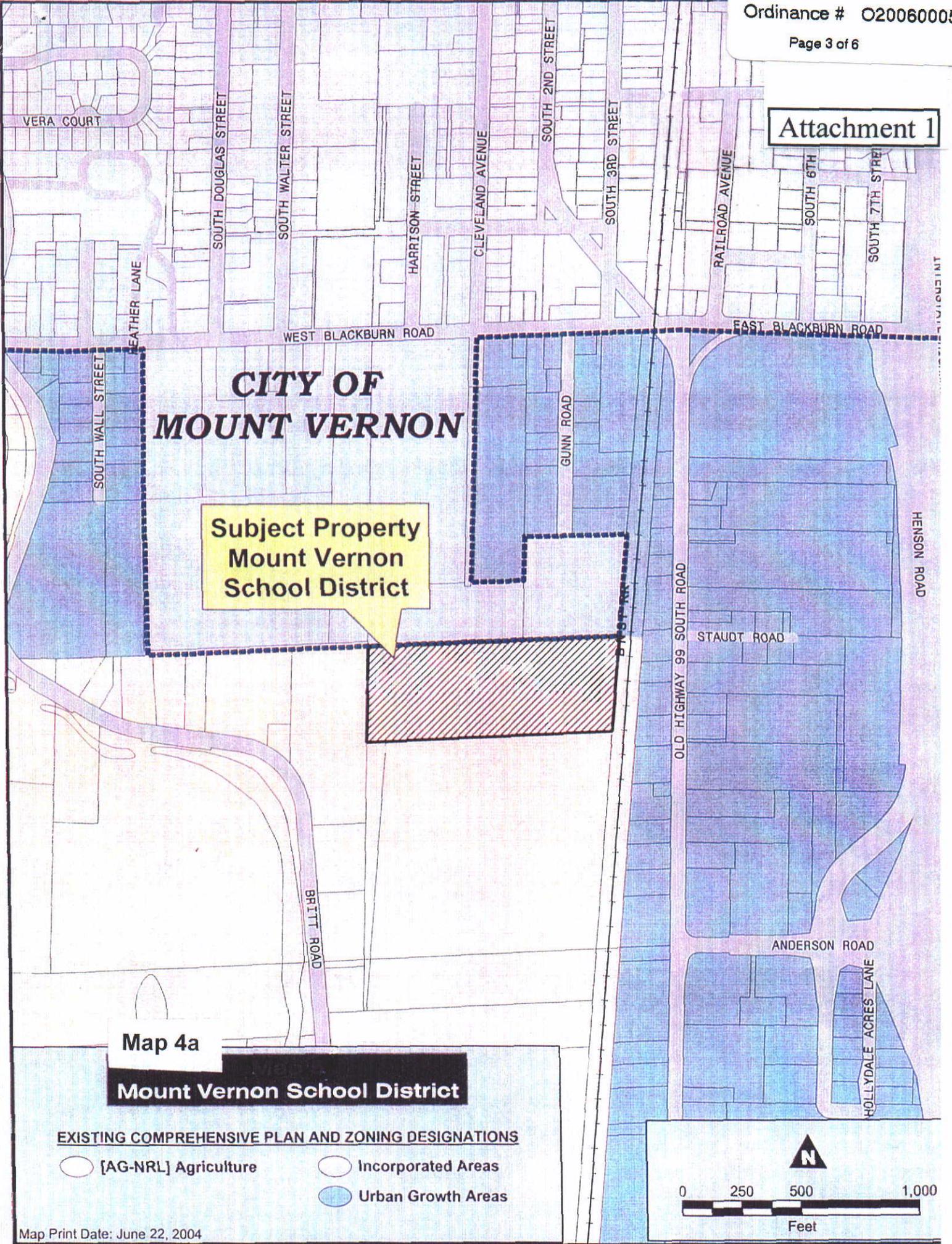
APPROVED AS TO FORM:

A. O. Denny
A. O. Denny
Skagit County Prosecutor's Office

APPROVED AS TO CONTENT:

Kirk Johnson
Kirk Johnson, Senior Planner

Attachment 1



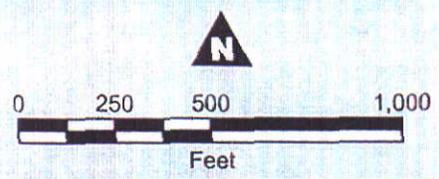
CITY OF MOUNT VERNON

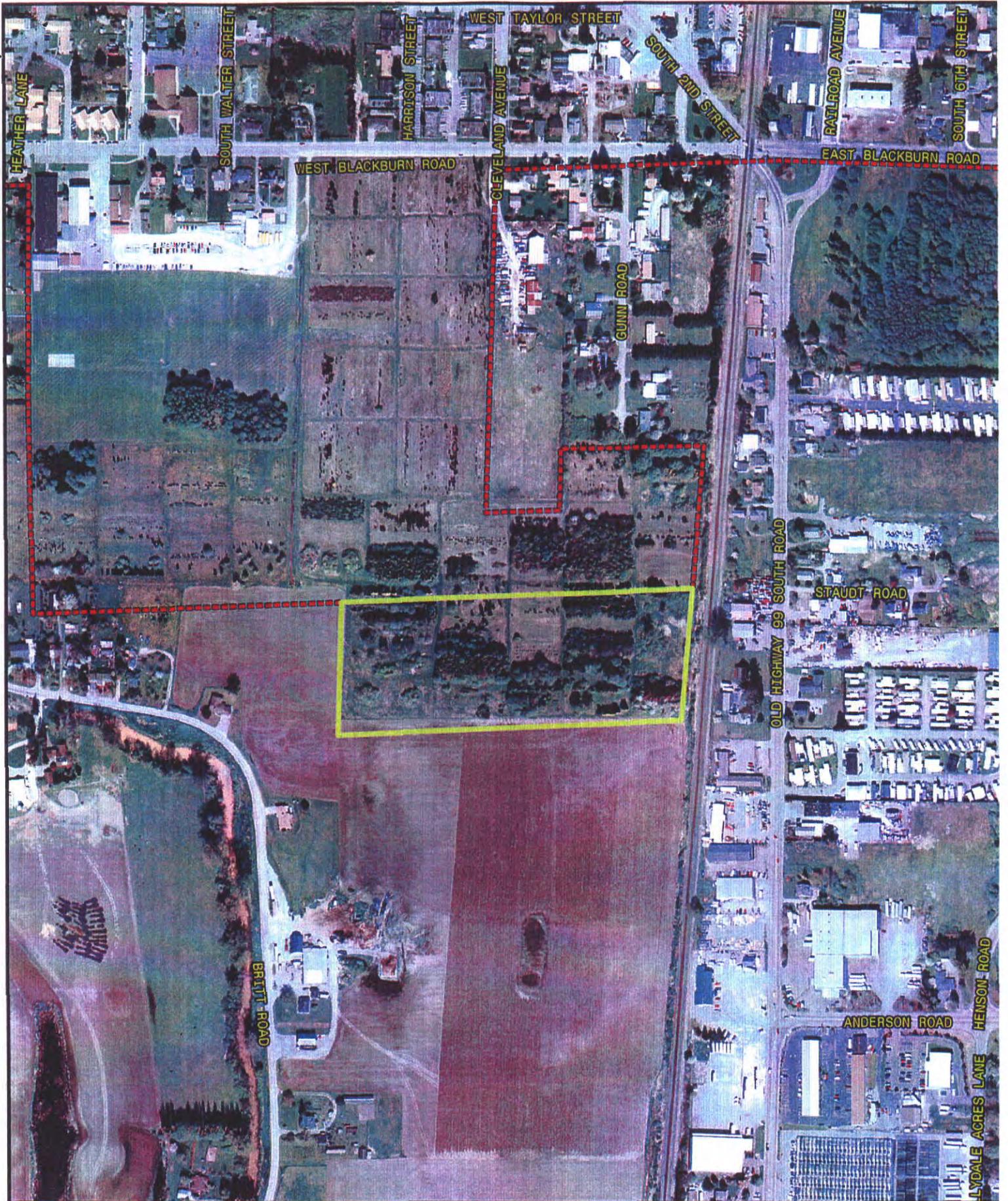
Subject Property
Mount Vernon
School District

Map 4a
Mount Vernon School District

EXISTING COMPREHENSIVE PLAN AND ZONING DESIGNATIONS

- [AG-NRL] Agriculture
- Incorporated Areas
- Urban Growth Areas





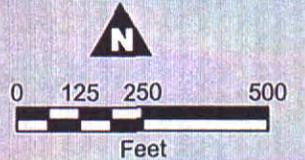
SKAGIT COUNTY
Ordinance # O20060005

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Map Print Date: June 22, 2004

Map 4b

Mount Vernon School Dist



**SKAGIT COUNTY PLANNING COMMISSION
RECORDED MOTION
REGARDING COMPLIANCE MEASURE IN WESTERN WASHINGTON GROWTH
MANAGEMENT HEARINGS BOARD (WWGMHB) CASE NO. 05-2-0012
2003 COMPREHENSIVE PLAN AMENDMENT FOR MOUNT VERNON SCHOOL DISTRICT**

WHEREAS, Ordinance No. 020050001 adopted on January 24, 2005, approved six amendments to the Skagit County Comprehensive Plan as part of its annual amendment cycle. Two of the amendments were found to be non-compliant with the Growth Management Act in Western Washington Growth Management Hearings Board (WWGMHB) Case No. 05-2-0012. One of the amendments removed 10 acres of property, P29230, owned by the Mount Vernon School District, from the Agriculture-Natural Resources Land designation and re-designated it as Urban Growth Area (UGA) for the City of Mount Vernon; and

WHEREAS, Ordinance No. 020050007 adopted on April 12, 2005, zoned P29230 as City of Mount Vernon UGA Urban Development District subject to the zoning requirements of the Mount Vernon Commercial/Limited Industrial (C-L) zone, and;

WHEREAS, the UGA designation was challenged as not complying with the requirements of the Growth Management Act (GMA); and

WHEREAS, the WWGMHB Final Decision and Order, issued on September 21, 2005, found that the decision to de-designate P29230 does not comply with Skagit County Comprehensive Plan Policies SCC 14.18.020(5)(d), RCW 36.70A.170, and RCW 36.70A.020(2) and (8); and

WHEREAS, on December 22, 2005, January 5, February 2 and 9, 2006, the Department published a public hearing notice for compliance measures for the WWGMHB order on the 2003 CPA proposals

WHEREAS, in an order dated February 17, 2006; the WWGMHB extended the compliance deadline in this matter to September 18, 2006 and

WHEREAS, the Mount Vernon School District notified Skagit County Planning and Development Services and the WWGMHB that it does not wish to pursue this matter; and

WHEREAS, on February 21, 2006, based on the information provided by the Department, the Planning Commission voted on this proposal and directed that a Recorded Motion on the 2003 CPAs be forwarded to the BCC, containing these findings and recommendation:

Based on the above findings, and on the record in this matter, the Planning Commission recommends restoring the Agriculture-Natural Resources Land designation to P29230.

Motion for approval: Bill Schmidt

Seconded by: Jan Ellingson

<u>Vote:</u>	<u>Support</u>	<u>Oppose</u>	<u>Absent</u>
Dave Hughes, Chairman	X		
Jan Ellingson, Vice Chairman	X		
Carol Ehlers	X		
Jerry Jewett	X		
Bobbi Krebs-McMullen			X
William Stiles III			X
Bill Schmidt	X		
Herb Goldston			X
	<hr/> 5	<hr/> 0	<hr/> 3

Now, Therefore, on February 21, 2006, the Skagit County Planning Commission voted, as recorded above, to forward to the Skagit County Board of County Commissioners the foregoing findings and recommendations regarding compliance measures in WWGMHB case no. 05-2-0012

SKAGIT COUNTY PLANNING COMMISSION

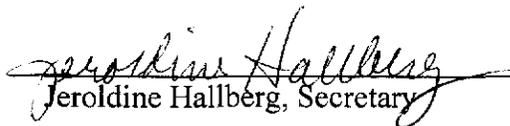
SKAGIT COUNTY WASHINGTON



Dave Hughes, Chairman

4/3/06

Date



Jeroldine Hallberg, Secretary

4/3/06

Date

ATTACHMENT 3

EMAIL FROM SKAGIT COUNTY PLANNING & DEVELOPMENT SERVICES

Walker, Jeff

From: LeahForbes <leahf@co.skagit.wa.us>
Sent: Wednesday, October 30, 2013 11:47 AM
To: Walker, Jeff
Subject: RE: Shell Crude by Rail East Gate: Off-site Alternative

Hi Jeff,

You are correct that Skagit County policies and regulations are written to provide significant protection to existing and ongoing commercial agriculture – especially on lands designated Agriculture-Natural Resource Land (Ag-NRL). The Growth Management Act and Skagit County Comprehensive Plan establish strict limitations on conversion of land designated Ag-NRL to other uses.

For example, in recent years, both the City of Mount Vernon and the City of Burlington requested rezones to accommodate placement of new schools. The County initially approved Mount Vernon's request but that decision was challenged to the Western Washington Growth Management Hearings Board. The rezone was found to be non-compliant and the County restored the area to the Ag-NRL designation (Ordinance # O20060005).

The City of Burlington requested an area approximately 29 acres be rezoned from Ag-NRL to UGA. Based on County policies, regulations and previous decisions from the Growth Management Hearings Board, the County Planning Commission recommended denial of that request. That denial was upheld by the Board of County Commissioners. (O20070009)

Other recent requests to rezone land designated Ag-NRL may have been approved but those were small acreages that have been mapped incorrectly and have been shown to be inconsistent with the Ag-NRL designation criteria in the Skagit County Comprehensive Plan Natural Resource Land Element (Chapter 4). For land to be removed from the Ag-NRL designation, it must be shown to be inconsistent with the Ag-NRL designation criteria in the Skagit County Comprehensive Plan Natural Resource Land Element (Chapter 4). Since the land available along the existing BNSF rail and the Kinder Morgan pipeline is currently in a commercial agricultural use, it is safe to assume that it meets the designation criteria and therefore it is highly unlikely that a rezone request would be approved for placement of a rail loop.

I hope this information helps to clarify the County's position on conversion of land designated Ag-NRL to other uses. Please let me know if you have any questions.

Leah Forbes, AICP
Senior Planner
Skagit County Planning & Development Services
360-336-9410 ext 5659
www.skagitcounty.net

"Helping You Plan & Build Better Communities"

From: Walker, Jeff [<mailto:jeff.walker@urs.com>]
Sent: Tuesday, October 29, 2013 3:53 PM
To: LeahForbes
Subject: Shell Crude by Rail East Gate: Off-site Alternative

Hi Leah

We are writing the 404(b)(1) Alternatives Analysis for the Shell Crude by Rail East Gate project. This report describes the alternatives that were considered for the project and the process by which alternatives were eliminated. We are currently writing the discussion for off-site alternatives.

Shell investigated off-site alternatives that were adjacent to the BNSF rail and the Kinder Morgan pipeline. Proximity to these features are essential for an alternative to be practicable. The land along the existing BNSF rail that is close enough to the refinery is designated as either Agriculture-Natural Resource Land (Ag-NRL) or Bayview Ridge-Heavy Industrial (BR-HI). There is no large enough area in the BR-HI zoned area for a rail unloading facility. Therefore, an off-site alternative would need to be located in an area that is currently zoned Ag-NRL. A rail facility is not an allowed use in the Ag-NRL zone, so this alternative would require a rezone.

Shell found a willing landowner and then investigated the possibility of a rezone both by checking the Skagit County code and discussing with County decision-makers. During these investigations, Shell found that Skagit County rules governing agricultural lands are protective. County decision-makers indicated that a rezone of agricultural land for the purposes of building a rail facility would likely fail. It is our understanding that all requests for rezones of agricultural lands in the last 10 years have failed, with the exception of lands immediately adjacent to the Mount Vernon and Burlington city limits.

Could you confirm that our understanding is correct and provide any additional guidance you might have.

Jeff Walker, PWS
Botanist and Wetland Scientist
jeff.walker@urs.com

URS Corporation
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Seattle, Washington 98101
206-438-2351

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