CENWS-OD-RG
REFERENCE: NWS-2011-325, BNSF Railways.
MEMORANDUM FOR RECORD

SUBJECT: Alternatives Analyses Criteria

BACKGROUND: BNSF Railways Inc. (BNSF) owns and operates the Cherry Point Subdivision Mainline, commonly known as the Custer Spur, providing service for Whatcom County's Cherry Point Industrial Urban Growth Area. The existing spur facilities include a single 8.0 mile long track running from the Bellingham Subdivision Mainline near Custer east, then south to the Intalco Aluminum Plant near Ferndale. The spur features two sets of siding tracks, the Intalco Yard at the north end and the Elliott Yard just east of the proposed Gateway Pacific Terminal property (MP 6). The Intalco yard currently has two 1.0 mile long siding tracks; the Elliott Yard has six 0.45 mile long siding tracks.

The original 2011 proposal by BNSF was to upgrade the existing Custer Spur extending from the Bellingham Subdivision mainline down into the Cherry Point Industrial Urban Growth Area to support increased traffic. The proposed work involved installation of additional receiving/departure (R&D) tracks at the Intalco Yard, installation of a new main line from the Custer Wye about 6 miles in length to the proposed Gateway Pacific Terminal (GPT) project connection point; improvements to the Elliot Yard; and installation of new terminal lead connecting tracks at the Elliott Yard to support rail connectivity to the proposed GPT project. The upgrades to the existing rail spur were proposed to service multiple existing industrial users in the Cherry Point area as well as the GPT project. The Corps considered BNSF's proposed project "connected" to the GPT proposed project because the GPT project could proceed without the BNSF project.

On 19 March 2014, BNSF submitted an application for work at the Intalco Yard based on the immediate need for improved facilities to handle new traffic to and from existing businesses, particularly the BP Cherry Point Refinery and Phillips 66 Refinery (Corps reference number NWS-2014-285). This work would include extension of the existing siding track along the south side of the Intalco Yard, an action previously proposed under the 2011 project. On 5 September 2014, the Corps determined that this portion of the original project, aimed exclusively at providing service to existing customers, was independent from the rail facilities proposed for the GPT project and could be authorized separately.

The current proposed BNSF project subject to this memorandum includes the addition of a second 5.45 mile long mainline track along the Custer Spur from the Bellingham Subdivision mainline down to the GPT site; the addition of two new terminal leads to the proposed GPT property within and along the north side of Elliott Yard; relocation of the existing Intalco switching track along the north side of Intalco Yard; adding a new Intalco switching track along the north side of Intalco Yard to connect existing tracks to the proposed GPT spur line; and the addition of two 8,500 foot long R&D tracks on the south side of the existing Intalco Yard and along a portion of the Custer Spur. Per BNSF, these facilities would serve the GPT only.

A. Basic and Overall Project Purpose:
The original 2011 basic purpose of the project was rail freight transportation. The original overall purpose of the project was to expand rail freight capacity of BNSF's Custer Spur for the Cherry Point Industrial Urban Growth Area, including the proposed Gateway Pacific Terminal.

The basic purpose of the project is unchanged. The revised overall purpose of the project is to provide rail service to the proposed Gateway Pacific Terminal (GPT).

B. The Corps has determined the following project criteria are appropriate for selecting alternatives to consider for NEPA/Section 404(b)(1) Guidelines evaluation:

1. Location - The applicant has stated that the proposed rail facilities to serve the GPT need to be constructed in the existing Custer Spur right-of-way. The revised project no longer involves modifications to existing tracks used for non-GPT customers. Construction of a new mainline and R & D tracks to service the GPT facility is not dependent on providing service to other Custer Spur rail service customers. I have reviewed the proposal and the geographic setting and determined that potential routes between the main Bellingham Subdivision line and the Custer Spur exist outside of the existing right-of-way.

Accepted criteria - The project corridor for the new track and sidings must be reasonably located to connect the GPT facility to the existing Bellingham Subdivision mainline.

2. Availability – The land needed for a new spur line to the GPT site and associated receiving and departure (R&D) tracks must be reasonably and practicably available to the applicant. While there is no set standard or measurement for right of way width, the right-of-way must be sufficient for rail operation standards and safety requirements. The typical BNSF right-of-way along the existing Custer Spur corridor for a single track is 120 feet wide, expanding out to 200 feet wide at the Intalco Yard and 245 feet wide at the Elliott Yard.

Accepted criteria - Land for the project corridor for the new track and sidings must be reasonably available to the applicant.

2. Capacity of rail facilities – The applicant has stated that the rail facilities to serve traffic to and from the proposed GPT must be capable of handling up to 9 full unit trains a day at 8,500 feet long (maximum). Based on the industry capacity standard for hopper style railcars used to carry dry bulk goods, the number of trains and unit train length is consistent with the requirements for providing conveyance of dry bulk goods to the GPT at full operation (54 million metric tons per year).

A second separate main line is needed to prevent GPT related rail traffic from impeding rail traffic to and from existing facilities on the existing mainline. Traffic on the existing mainline has recently increased. Two of the refineries in the Cherry Point Industrial area have recently completed construction of facilities to receive crude oil by rail car. These facilities have been designed accommodate one unit length train every two days. These unit trains would be

comprised of 100 to 115 rail cars powered by three or four train engines. The combination of increased traffic for existing customers and the proposed 9 trains a day for GPT would exceed the capacity of the existing mainline to efficiently move rail traffic.

Each R&D track needs be long enough to provide a holding area for a full length train to avoid blockage of the mainline. The applicant has stated that a minimum of two R&D tracks are needed to stage incoming and outgoing GPT trains to prevent traffic problems on the new mainline. The length of the R&D tracks needs to be suitable to hold one unit train each.

Switching tracks are used for putting cars in a specific order, placing cars for loading or retrieving empties, or for adding or removing cars from a train at an intermediate point. Switching tracks at the Intalco Yard need to be sufficient to handle switching needs for rail car connection and handling.

Terminal leads are switches from a main line to a customer's tracks. Terminal leads off the Elliott Yard need to be sufficient to handle switching of full unit length trains onto and off of the new mainline.

Accepted criteria - Rail facilities must be capable of handling up to 9 full unit trains a day at 8,500 feet long (maximum length).

3. Stream crossings – The applicant has stated that stream crossings (bridges and culverts) need to meet engineering requirements for Cooper E-80 live loads with diesel impacts. Cooper E-80 live load is the term used to define the train loading for railroad bridge design. It is the current industry-standard design loading and consists of axle weights and spacings that represent two locomotives and a stringer of rail cars, with a maximum axle weight of 80,000 pounds. Diesel impact is a multiplier used in bridge design to increase the train load to account for dynamic effects. I have reviewed the information in Chapter 1, Part 3 (Natural Waterways) and Part 4 (Culverts) of the American Railway Engineering and Maintenance-Way Association (AREMA) document titled, "2013 Manual for Railway Engineering" and determined that the standards are applicable for the design of stream crossings.

Accepted criteria - meet American Railway Engineering and Maintenance-Way Association (AREMA) engineering requirements for Cooper E-80 live loads with diesel impacts.

4. Road crossings - The applicant has stated that road crossings need to meet the engineering requirements for at-grade crossings found in the 2013 AREMA manual cited above. In addition, crossings need to meet the regulatory standards for at grade crossings developed by the Federal Railroad Administration (FRA) at 49 CFR Part II. At grade crossings are the only feasible method of road crossing; underpasses and overpasses are not feasible based on the logistics, rail and vehicular traffic management, and costs. I have reviewed the information in Chapter 5, Section 8 (Highway/Railway Grade Crossings) of the AREMA manual and FAA regulations at 49 CFR Chapter II Part 213 (Track Safety Standards) and Part 243 (Grade Crossing Safety), and determined that both are applicable to the designs for at-grade crossings.

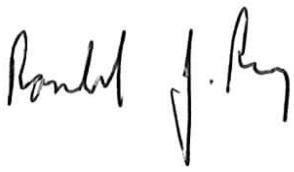
Accepted criteria - meet AREMA engineering standards for at-grade crossings and comply with FRA at-grade crossing regulations.

5. Track configuration (bend radii, distance between tracks, access roads, etc.) - The applicant has stated that track configurations need to meet the engineering requirements found in the 2013 AREMA manual. I have reviewed the information in Chapter 5, Sections 3 (Curves) of the AREMA manual and found that it is applicable to the applicant's designs. The BNSF document titled, "*Design Guidelines for Industrial Track Projects*," revisions dated 2011, calls for compliance with WA State clearance requirements. These requirements are listed in Chapter 480-60-060 of the Washington Annotated Code (WAC) for Railroad Companies - Clearances. The WAC states that the minimum distance between the centerlines of parallel standard gauge railroad tracks must be 14 feet. Track clearances between main and subsidiary tracks must be 15 feet and clearance between parallel ladder tracks or ladder tracks and other tracks must be 20 feet. At road crossings the set-back distance for storing rail cars on multiple adjacent tracks (track centers less than 25') is 250 feet from the edge of roadway. For single tracks, the setback distance is a minimum of 150 feet from the edge of roadway. These standards are applicable to track configuration designs.

Accepted criteria - meet AREMA engineering standards and WA State regulatory requirements for track configuration.

6. Grade - The applicant has stated that the grade of the proposed tracks cannot exceed 1.5% and cite AREMA engineering standards. According to the applicant, the 1.5 % grade maximum an established standard based on rail operations and engineering experience. It has been set by the rail industry to either avoid or minimize loss of traction (slippage) between the steel to steel interface of railroad's steel wheels and the rails, minimize the horsepower required to climb a grade and the braking effort to control a train coming down a grade.

Accepted Criteria - I have reviewed rail industry standards information for track grades (form on-line sources) and determined that there is a range of between 1% and 2% grade based on the rail company, type of track (mainline versus siding), and the country in which they operate. The 1.5% grade proposed by the applicant is acceptable to ensure safe rail operations.



_____ 5 September 2014

Randel Perry Date
Project Manager