

# Anchor Point Industrial Site

## Feasibility Study



*Prepared for:*



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## **ACKNOWLEDGEMENTS**

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Additional funds were provided by Winters Anchor Point, LLC., owners of the Anchor Point industrial site evaluated in this study.

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# ACRONYMS

APE	Area of Potential Effects
BGS	Below Ground Surface
BNSF	BNSF Railway
BO	Biological Opinion
CWA	Clean Water Act
CORPS/USACE	U.S. Army Corps of Engineers
CUP	Conditional Use Permit
DAHP	Washington State Department of Archaeology and Historic Preservation
DNR	Washington State Department of Natural Resources
DOE/ECOLOGY	Washington State Department of Ecology
EDC	Economic Development Council
EDR	Environmental Data Resources, Inc.
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
HPA	Hydraulic Project Approval
JARPA	Joint Aquatic Resource Permits Application
KMC	Kelso Municipal Code
LOP	Letter of Permissions
NOAA	National Oceanic and Aeronautic Administration
NEPA	National Environmental Protection Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWP	Nationwide Permit
PCF	Pounds per cubic feet

RGP	Regional General Permit
SEPA	State Environmental Policy Act
UPRR	Union Pacific Railroad
USFW	U.S. Fish and Wildlife Service
WDFW	Washington State Department of Fish and Wildlife
WISAARD	Washington Information System for Architectural and Archaeological Records Data
WSDOT	Washington State Department of Transportation

# EXECUTIVE SUMMARY

The following executive summary is an overview of the research completed for the Anchor Point Industrial Site, including project approach, substantive findings and conclusions. This narrative is intended to quickly give the reader an understanding of the study. Technical readers will find a comprehensive narrative following this summary and detailed technical subject narrative contained in the appendices of this report.

## 1) Background

### **Study Limits:**

The study evaluates the Anchor Point property which is approximately 600-acres, located at the southern limits of the City of Kelso, within Cowlitz County, Washington. The property is bounded by the Cowlitz River to the northwest and Carrolls Channel to the south, and the BNSF Railway rail mainline to the north and east. The subject property is located west of Interstate-5 and south of State Route-432.

### **Study Purpose:**

The City of Kelso (CITY) has secured a grant from the Washington State Community Economic Revitalization Board (CERB) to perform a conceptual site access/development evaluation and economic impact study for the Anchor Point property.

This study is being performed in order to increase the marketability of the Anchor Point site to encourage its development and enable the site to be an economic driver for the City of Kelso, Cowlitz County, and the surrounding area. The site has great potential, but does face challenges because some of the adjacent transportation opportunities (railway, highway, and rivers) that make the project so potentially valuable also serve as barriers to easy access to the site.

The primary element limiting the development of the property thus far is that the only current vehicular access to the site is via the existing "Owl Creek Driveway". This access drive is currently serving a high volume of sand and gravel truck traffic exporting material from the site to supply aggregate and fill materials to major construction projects. In its current configuration, this driveway is limited in both vertical clearance, width, and seasonal flooding. This study aims to identify/analyze various access improvements to remedy this situation, as well as to identify potential uses for the site and their respective economic impacts. Improvements to the existing Owl Creek Driveway have been evaluated in this study. Due to the higher level of design requirements necessitated by a public road classification, we feel that it will be more cost effective to design and build the Owl Creek site access as a private driveway rather than a public roadway.

The CERB Grant report is intended to be completed in three parts:

**Part I - Site Investigation and Conceptual Design:** This task analyzes conceptual designs, permitting requirements and planning-level costs for vehicular access, freight rail access, and utility extension to the site.

**Part II – Economic Impact Assessment:** This task identifies potential economic impacts associated with several industrial development scenarios at the Anchor Point industrial site.

**Part III – Marine Study:** A marine study is being performed by others and will be made available to interested candidate tenants by the Owner and the City Manager.

**Project Partners:**

The City of Kelso (City) has commissioned the feasibility study in partnership with the Anchor Point property owners (Owner), to be referenced as Winters Anchor Point, LLC. Cowlitz County has served as a resource to the project partners. The City is interested in the development of the property as an economic driver for the local economy.

**2) Work Completed to Date:**

The following work has been completed or is substantively complete to date:

**Part I - Site Investigation and Conceptual Design:**

- Desktop review of archaeological and historical significance
- Desktop review of existing geotechnical conditions
- Desktop review for critical areas and environmental concerns
- Desktop review of site boundary survey and topographic aerial photos of project limits
- Conceptual design of six vehicular access design alternatives
- Conceptual level cost estimates of vehicular access design alternatives
- Conceptual design of two rail access design alternatives
- Conceptual level evaluation of utility connection design and costs

**Part II – Economic Impact Assessment:**

- Evaluation of three potential industrial developments at Anchor Point property
- Assessment of economic impacts for each of three potential development scenarios
- Assessment of economic impact for all three potential development scenarios combined
- Desktop review of industrial land inventory within City of Kelso
- Desktop review of economic activity in Cowlitz County
- Evaluation of supply chain opportunities in Cowlitz County
- Marketing framework recommendations for Anchor Point site

**3) Conceptual Design Substantive Findings**

The conceptual level designs identified in this study were developed such that they fit within site constraints, minimize environmental impacts, meet approving-authority design requirements, and minimize construction costs. The following list of findings from the work completed to date that had a significant impact on the development of the alternatives for the project includes:

- Providing vehicular access that is located above the FEMA FIRM Map AE-Zone elevation of 21.0' will allow for reliable and uninterrupted site access during flooding events.

- Geometry of the vehicular access routes must accommodate the turning radii of emergency vehicles and delivery vehicles as large as an AASHTO WB-67 semi-truck.
- Vertical alignment of the bridges must meet the BNSF/UPRR vertical clearance requirements
- Poor subsurface conditions and bearing capacity will control the type of bridge design options
- Vehicle access routes utilized elevated structures in areas of existing wetlands to avoid significant mitigation ratios.
- Rail access must meet BNSF/UPRR minimum horizontal radius curvature.

#### 4) Summary

##### **Part I - Site Investigation and Conceptual Design:**

The purpose of Part I of this study was to investigate the Anchor Point site; perform conceptual level designs for vehicular/freight rail access and utility extensions; evaluate permitting requirements; and prepare planning-level costs for the conceptual level designs.

The Anchor Point site is developable, and has a range of access and utility service connection design options. The project team evaluated six vehicular access design concepts and two rail access design concepts. Two design strategies were developed to extend utilities from surrounding utility providers into the site, and were sized to accommodate a heavy industrial site usage.

Rail connection to the BNSF Railway mainline is possible, and the most desirable geometric layout is the south-facing connection, Option 1. Total conceptual level rail constructions costs for an onsite loop track and Option 1 connection to BNSF main line is approximately \$26M.

Vehicular access can be accomplished in multiple locations. Option 1A (at-grade roadway through the BNSF maintenance yard) is the least expensive option with a conceptual construction cost of \$3M, and with only minor wetland impacts. It also appears that this roadway corridor would be located above the 100-year floodplain elevation, providing for reliable year-round access to the site. The at-grade facility would be interrupted by train movements, which would be an uncontrollable variable for the site owner. However, this option is only possible if the site owner is able to negotiate an easement across the BNSF maintenance yard. That arrangement would most likely be dependent upon the level of revenue generated by the railroad company serving the new terminal operations. If that cooperation cannot be accomplished, the site owner will need to evaluate the remaining five access design options to determine if the construction cost and wetland impacts are outweighed by the benefit of having a year-round uninterrupted access route into the site. A construction phase access or emergency-based access agreement may be possible with proper railroad approvals and cross service agreements.

Construction access for equipment and facility equipment installation will need to be considered in addition to the vehicle access route. Large equipment will most likely arrive on barge via the Columbia River.

Utility improvements will vary depending on the ultimate site user and their facility needs. Connections to nearby domestic water, sanitary sewer, power (20MW substation), natural gas, and

phone/communications can be made by either connecting to the site via Utility Corridor Option A or B. Utility Corridor Option A is \$5.8M and Utility Corridor Option B ranges from \$5.2M to \$6.4M, depending on Vehicle Access route chosen. If the site user will need to increase the power substation from 20MW to 30 MW, an additional \$15M should be added to the utility cost. Construction of a Ranney water system is not included in the Utility Corridor Option A/B costs, and would be an additional \$4M to \$8M, depending on number/depth of wells, plus an additional \$500,000 to \$1M for pumps, piping, etc.

The presence of wetlands on the site will affect the design for site improvements, vehicular access, rail connection, and utility connections. Wetland buffers will be required, which could be in the range of 260-feet based on the Category I wetlands present on the site. Wetland mitigation will be necessary for any impacts as well. The existing wetland areas may be sufficient as “preservation” areas to compensate for any impacts to wetlands that result from the design and construction activities.

## **Part II – Economic Impact Assessment**

At nearly 600-acres, the Anchor Point site is the largest industrially zoned property within Kelso city limits. Based on the research performed in Part I, the acreage of developable land will be reduced by approximately 305 acres of wetlands as well as wetland buffers in the range of 260-feet. Compared to the other 25 industrial properties available for development or redevelopment within the City of Kelso, the Anchor Point site is significantly larger in size.

Three industrial development scenarios were evaluated:

- Scenario A: Two grain (or dry bulk agricultural-related products) terminals on 75-acres with access to marine shipping facilities
- Scenario B: Two energy related companies on 75-acres with access to marine shipping facilities
- Scenario C: One large-scale metal fabrication company located on 150 upland acres

If project developers are able to secure access to offsite, but nearby, marine terminal services, Scenarios A (“Grain”) and B (“Energy”) would afford unique development opportunities since there are very few marine terminal-served sites available in the region. These two scenarios would provide significant fiscal impacts for the State and local jurisdictions alike.

The Energy Scenario would appear to generate the highest tax revenue for the State and local jurisdictions, but comes with considerably fewer jobs than Scenario C (“Fabrication”). On the other hand, if local officials place a premium on high wage jobs, then the Energy scenario could be a very appealing option.

From a jobs-creation perspective, the Fabrication scenario is by far and away the top alternative. However, recruiting and siting a large manufacturer at Anchor Point could be more challenging than recruiting an energy company or grain silo, given the relatively broader cross section of similar

properties in the region. Given the sheer volume of projected jobs, the Fabrication scenario also suggests a need for close coordination with Workforce Development Authority, Housing Authority and other partners to ensure ample work force capacity and readiness.

From a development perspective, the three uses represent a nearly \$2 billion investment, with the Energy scenario accounting for nearly half that total. While the upfront costs of the Energy scenario is higher, so too are the projected business and tax revenues.

There are many more possible development scenarios than those described above, but these three scenarios will provide potential site owners with a basis of comparison. Other site development scenarios not included in the study analysis could include a combined terminal with two or three major tenants that require rail access, natural gas pipeline access for manufacturing of petroleum related products (i.e. methanol or liquid/dry bulk forms of urea) and would benefit from marine access for shipping facilities.

Developing a marketing approach to highlight the Anchor Point property to potential users could benefit from a public/private partnership and will help stimulate industry-based economic development. A marketing approach could include the following actions:

- Action 1: Identify preferred supply chain opportunities;
- Action 2: Enlist the assistance of the Southwest Washington Workforce Development Council;
- Action 3: Pre-permit the Anchor Point property through a Planned Action EIS;
- Action 4: Establish formal partnerships between the City of Kelso, Cowlitz EDC, Cowlitz County and both the Port of Longview and the Combined Southwest Washington Ports;
- Action 5: Create an economic development presence on the City of Kelso's website;

***End of Executive Summary***

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# **Anchor Point Industrial Site**

## **Feasibility Study**

### **Part I – Site Investigation and Conceptual Design**

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# PART I – SITE INVESTIGATION AND CONCEPTUAL DESIGN

## 1. Background

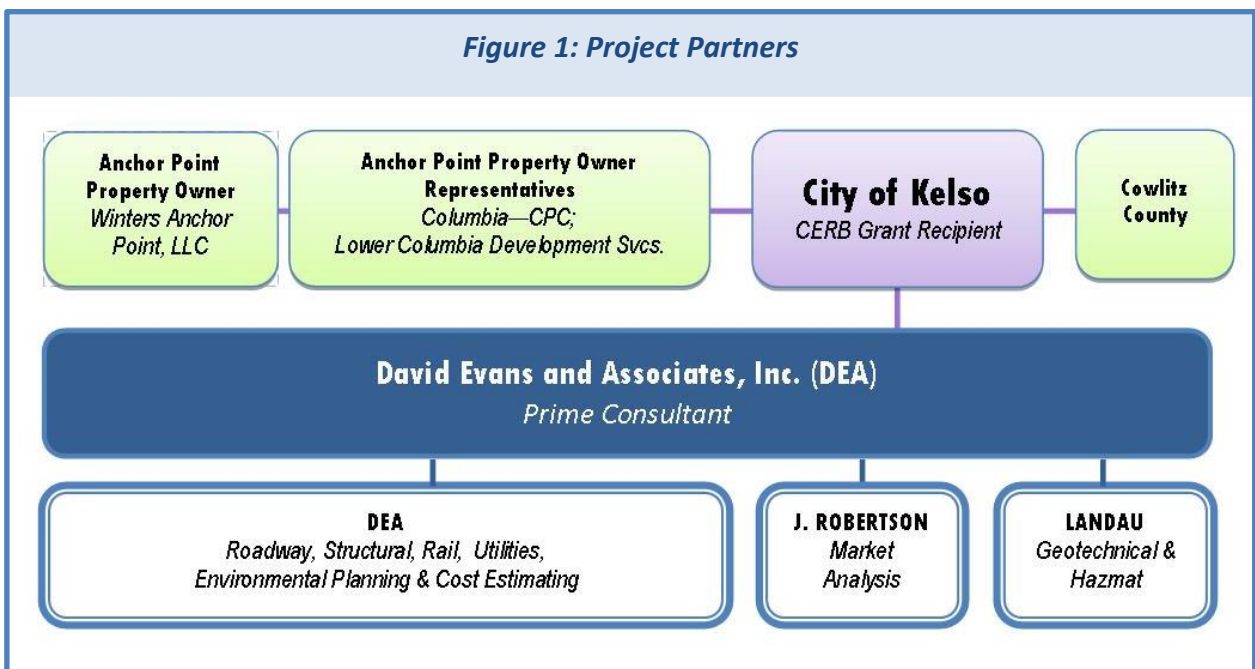
### 1.1. Purpose of Study

The City of Kelso (CITY) has secured a grant from the Washington State Community Economic Revitalization Board (CERB) to perform a conceptual site access/development evaluation and economic impact study for a 600-acre property known as the “Anchor Point” property.

This study is being performed in order to increase the marketability of the Anchor Point site to encourage its development and to enable the site to be an economic driver for the City of Kelso, Cowlitz County, and the surrounding area. The site has great potential, but may face challenges because some of the adjacent transportation opportunities (railway, highway, and rivers) that make the project so potentially valuable also may serve as barriers to easy access to the site.

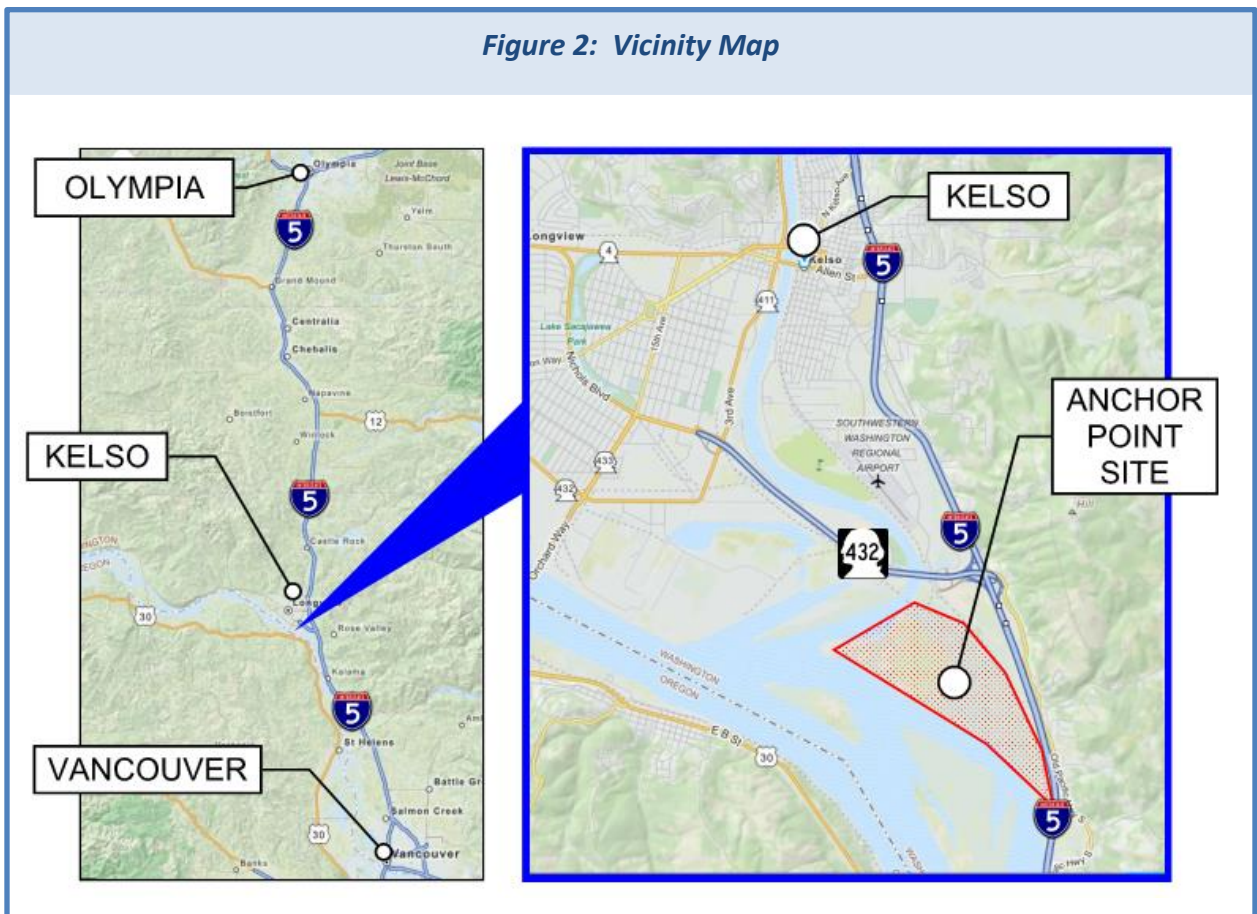
### 1.2. Project Partners

The City of Kelso has commissioned the feasibility study in partnership with the Anchor Point property owners, Winters Anchor Point, LLC. (PROPERTY OWNER). The CERB grant has been augmented with funds from the Owners, to hire a consultant team led by David Evans and Associates, Inc. (DEA) to perform the Anchor Point Feasibility Study. The DEA team worked closely with the City, the property owner’s representative, Columbia – CPC Inc., Lower Columbia Development Services, and Cowlitz County to develop this study. The team partners and their roles are described in **Figure 1**.



### 1.3. Site Description

**Location:** The Anchor Point Industrial Site (SITE) is located at the southern limits of the City of Kelso, Cowlitz County, Washington (see **Figure 2**). The site is constrained by geographical barriers including two rivers: Cowlitz River to the northwest and Carrolls Channel of the Columbia River to the south, and the BNSF Railway rail main line to the north and east of the Site. The subject property is located west of Interstate-5 and south of SR-432. These “barriers” are also a key reason this site has such opportunities as they provide access to highway, rail, and marine transportation.



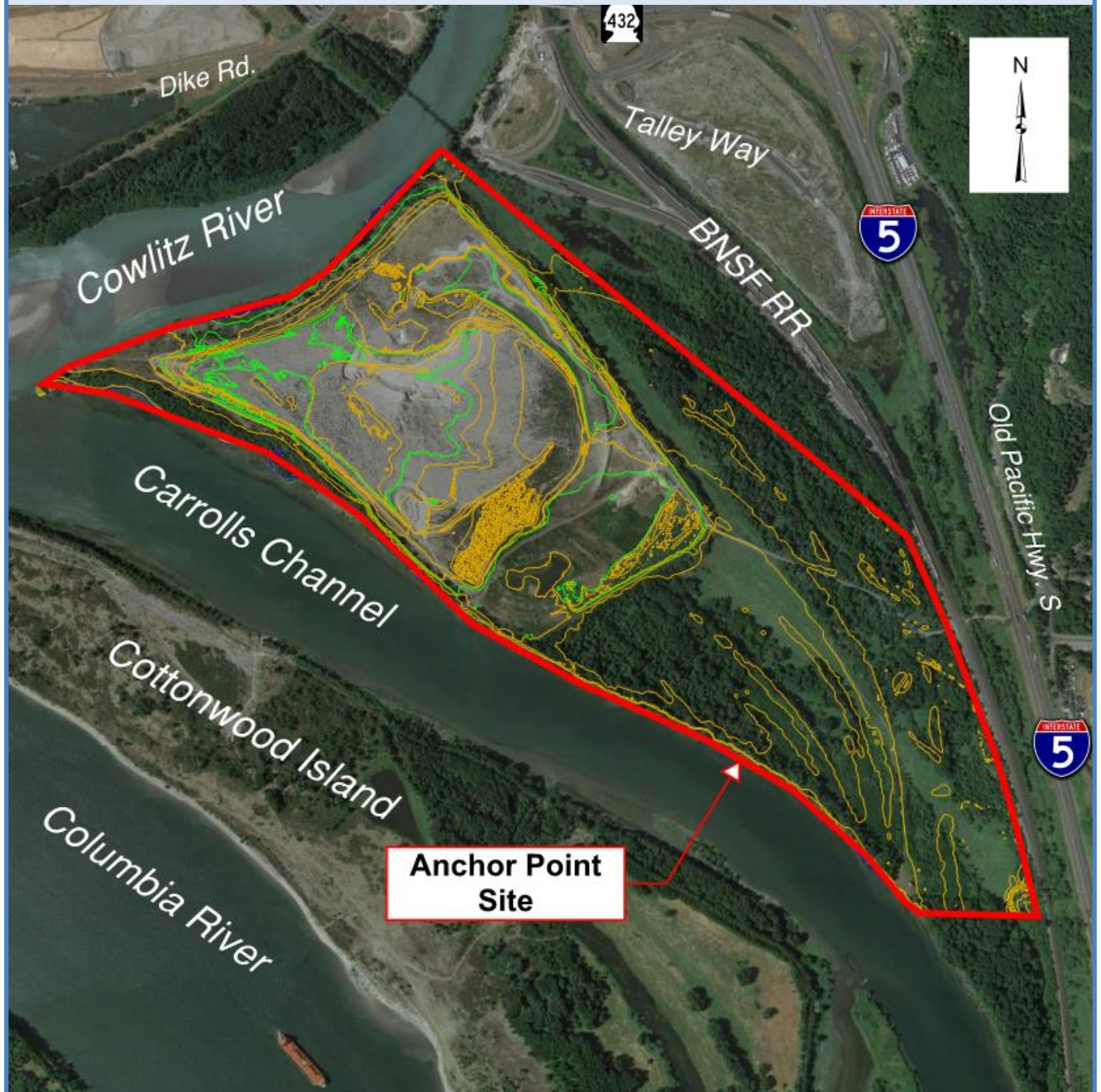
**Land Cover and Topography:** The site is approximately 600-acres and is generally flat with stockpiled sand at varying elevations, and existing ground contours ranging in elevation from 15-ft. to 60-ft., as shown in **Figure 3**. Approximately 295-acres of upland exist on the property and are located in the northern portion of the site. These uplands have been cleared and filled, and are above and outside of the AE-flood zone as indicated on the FEMA flood map (see **Figure 11**). The southern portion of the site contains approximately 305-acres of wetlands, as shown in **Figure 8**.

**Site Historical Use:** Modern use of the site was initiated shortly after the 1980 eruption of Mount St. Helens when the site was used as an emergency location to dispose of dredge material from the Cowlitz River. This dredged material consists of Mt. St. Helens ash, and riverbed sediment, mostly sand. After the initial use related to the Mount St. Helens eruption, the site continued to be used as a disposal site for sand dredged from the Cowlitz River. The placement of this sand is what created



the upland areas on the site that exists today. Currently, a sand trucking operation exists at the site, whereby sand is exported off site by truck and trailers and sold for various construction uses.

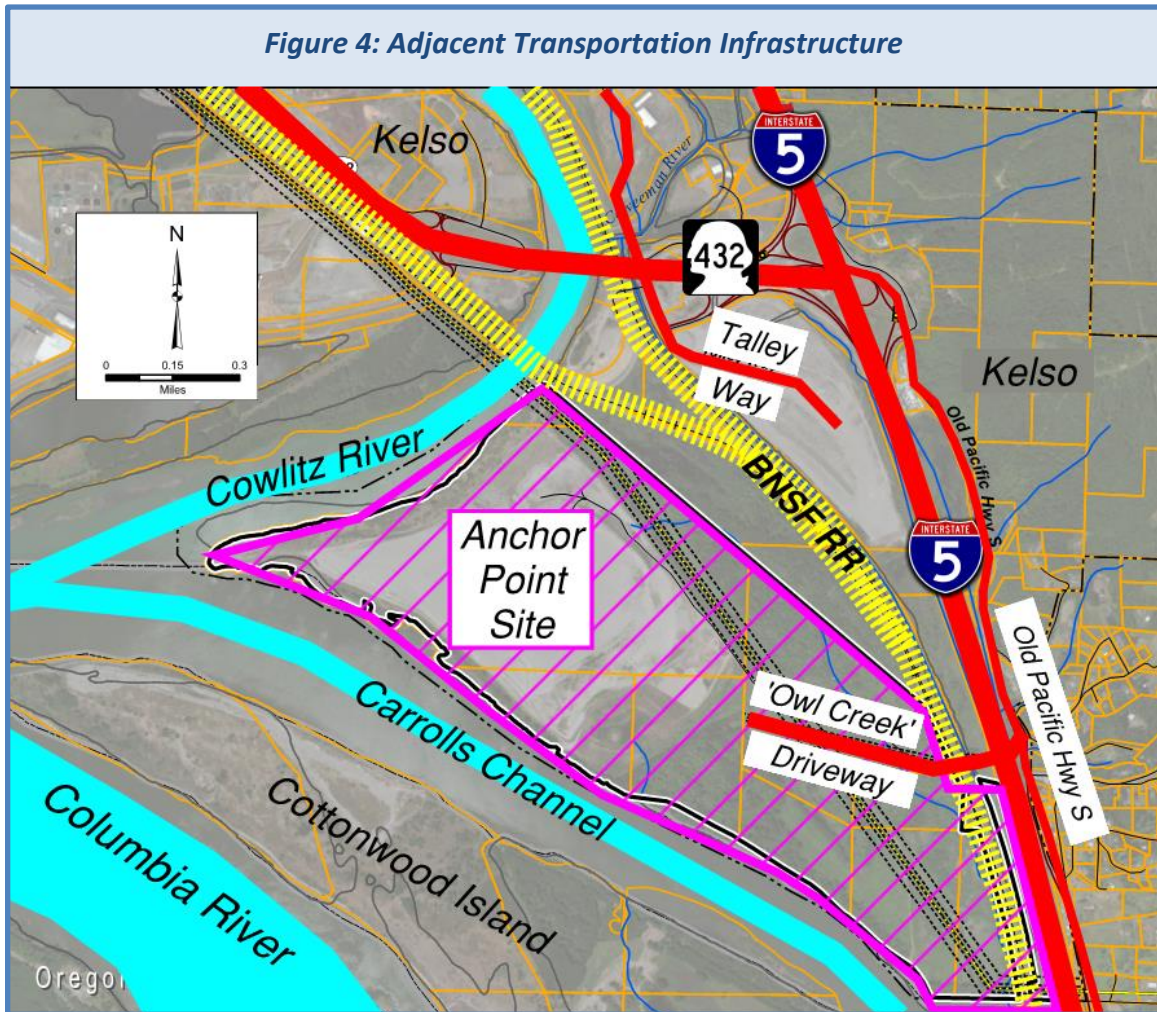
**Figure 3: Existing Site Conditions and Contours**





#### 1.4. Adjacent Transportation Infrastructure

The Anchor Point Site is located in close proximity to several modes of transportation, including roadway, marine, and rail. The scope of this study includes investigating possible site access for rail and vehicular traffic; marine traffic connectivity is being investigated separately by the Site Owners.



**Existing Marine Access:** The Anchor Point site is bordered by the Cowlitz River to the north, and Carrolls Channel of the Columbia River on the west. Currently there are no marine terminals serving the site from these two water bodies. The Columbia River is located west of the site on the far side of Cottonwood Island, as shown in **Figure 4**. Future connectivity of the Anchor Point Industrial Site to any of these water bodies is not included in this study and will be evaluated by the property owners. The Cowlitz River is too shallow to provide marine access to the site, except for perhaps temporary construction access via barge. Carrolls Channel is also quite shallow (with depths of approximately 20 feet). The Owner’s separate Marine Study identifies marine access opportunities for the site.

**Existing Vehicular Access:** The Site is located west of Interstate-5 (I-5), and the nearest interchange is State Route 432 (SR-432), located approximately one half mile northeast of the Site. Existing vehicular access is located near the southern end of the Site, and is referred to as “Owl Creek”

driveway. This at-grade driveway is named due to its proximity to Owl Creek on the southern edge of the driveway. This gravel drive is approximately 20-ft. wide and enters the site from Old Pacific Highway, crosses under two bridges carrying the northbound and southbound lanes of I-5 (see **Figure 6**), and then crosses under a railroad bridge carrying the BNSF Rail Mainline (see **Figure 5**). The gravel drive continues into the Site in a northwesterly direction and passes through low lying areas, surrounded by wetlands. **The existing horizontal clearance between the existing columns for the BNSF structure of approximately 16.5 feet is the driveway's horizontal constriction point, reducing the the driveway to essentially one lane at this location.** This driveway currently serves the truck and trailers that export the stockpiled dredged materials from the site.

**Figure 5: Owl Creek Underpass at BNSF Rail Line**



**BNSF Mainline Bridge (photo looking west)**

Existing Vertical Clearance under bridge = 12'0"

Existing Horizontal Clearance under bridge:

- 16'6" between timber cribbing;
- 22'6" between steel C-channel bracing;

**Figure 6: Owl Creek Driveway Undercrossing at Interstate-5**



**I-5 Southbound Lanes (photo looking east)**

Existing Vertical Clearance under bridges = 12'6"

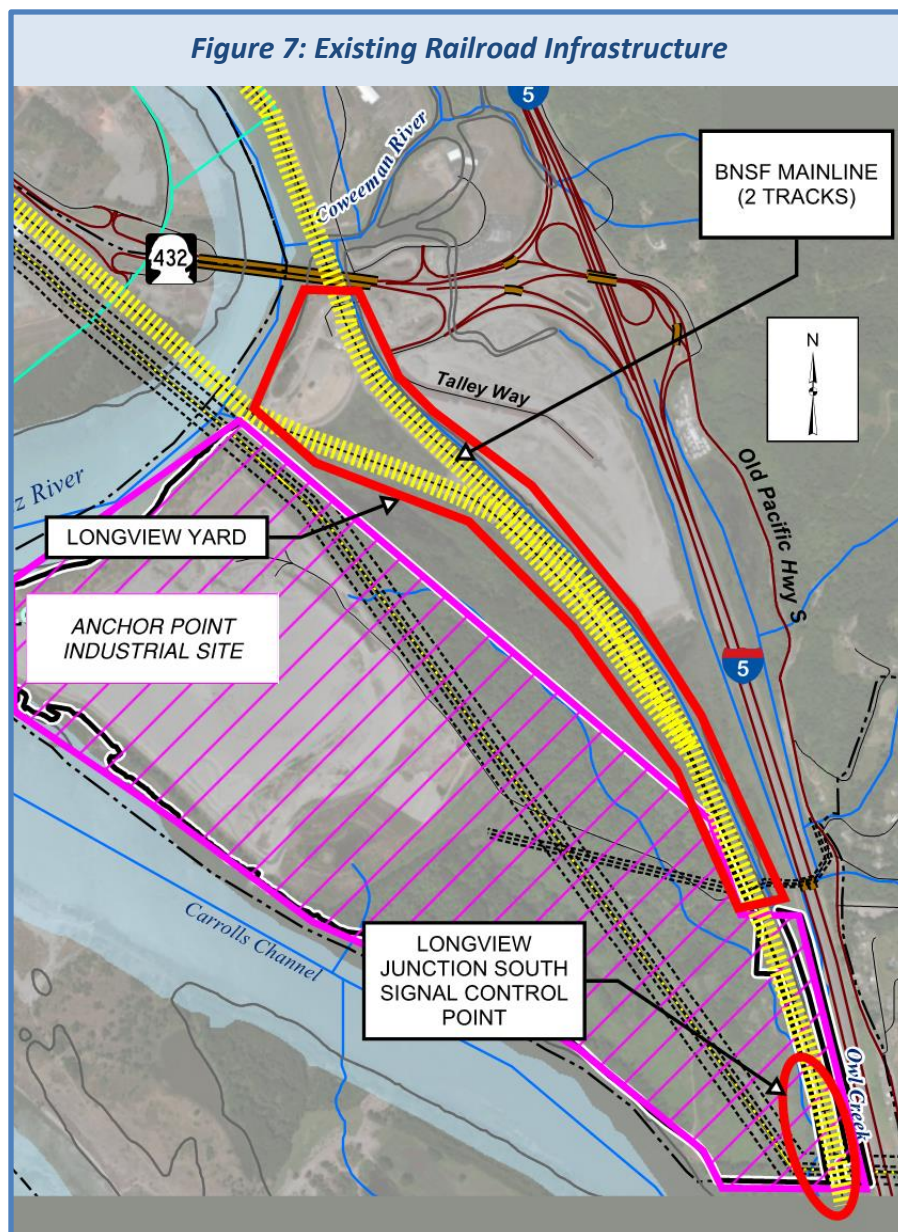
Existing Horizontal Clearance under bridges:

- Approx. 27'



**Existing Rail Access:** Currently, there is no existing rail access to the site. However, the BNSF Railway owns and operates a two-track main line adjacent to the site that runs between Tacoma and Vancouver, Washington. The rail line is primarily used by BNSF and Union Pacific Railroad (UPRR) freight trains but it also hosts a significant number of Amtrak passenger trains. The main line has an operational capacity of about 60 trains per day and is generally at a usage of 50 trains per day. However, there are plans to increase the number of passenger trains each day from 10 to 18 in the next few years and BNSF is currently building a third main track through the area to accommodate the increase in passenger trains.

As shown in **Figure 7**, there is a location on the main line, just southeast of the Anchor Point site, called Longview Junction South that is a signal control point with crossovers that allow trains to move between the two mainline tracks. It is also the south entrance to the Longview Yard, which is operated jointly by BNSF and Union Pacific.



Longview Switching Company operates out of this yard to transfer rail cars to and from various industrial customers along the Columbia River such as the Ports of Longview and Kalama, as well as businesses located along the Columbia River in the SR-432 industrial corridor in Longview. The rail yard has 12 switching tracks, two south-facing lead tracks used for switching, and a single bypass track along the west side of the yard. The yard is unique as it is Y-shaped so that the western six yard tracks and the bypass track only access the BNSF main line at the south end of the yard.

## 1.5. Geotechnical Considerations

### 1.5.1. Site Conditions

To gain an understanding of the subsurface site conditions, we reviewed published geologic maps, subsurface boring logs available from nearby development projects, boring logs available from Washington State Department of Transportation (WSDOT) and the Department of Ecology, and our in-house files. In general, the subsurface conditions at the site consists of modified land overlying thick deposits of highly compressible, alluvial soil that is subject to liquefaction as the result of a significant seismic event. The modified land derives from dredged material from the nearby Columbia River. The alluvium thickness at the proposed roadway access locations is expected to extend in excess of 150-ft below ground surface (BGS). At the existing Owl Creek driveway undercrossings at I-5 and BNSF rail line, the alluvium thickness is likely 100-ft. or less, underlain by bedrock.

### 1.5.2. Geotechnical Design Considerations

Based on our review and experience, and discussions with the design team, we developed a list of fundamental geotechnical design considerations for the project:

Liquefaction-induced settlement could total about one foot at ground surface as the result of an American Society of State Highway and Transportation Officials (AASHTO) design-level earthquake (design earthquake). Assume liquefaction extends down 80-ft. BGS.

Bridge foundations for the proposed roadway access options will likely consist of drilled shafts or driven piles. Most heavy industrial developments in the area use 150-ft. depth friction piles to support infrastructure. We recommend that a minimum embedment depth of 150-ft. BGS be used for preliminary cost considerations. This would typically be the depth required to overcome seismic down-drag loads when using WSDOT and AASHTO design procedures. Typical ultimate, un-factored design values are:

**Table 1: Bridge Foundation Design Values**

Foundation Type	Unit Skin Friction	Unit End Bearing
Driven Piles:	0.75 ksf	100 ksf
Drilled Shafts:	0.5 ksf	50 ksf

For seismic design of foundations, assume the upper 80-ft. of pile/shaft has no skin friction capacity and add a down-drag load as identified in **Table 2**.

**Table 2: Bridge Foundation Seismic Down-drag Values**

Depth Below Ground Surface	Down-drag Load
0-ft. to 10-ft.	0.75 ksf x Pile Area
10-ft. – 80-ft.	0.15 ksf x Pile Area

There is a risk for lateral spreading as the result of a design earthquake. This risk is likely greatest within about 100-ft. of the shoreline. If ground improvement is not used, it is anticipated that 8-ft. to 10-ft. diameter drilled shafts would be required to resist lateral spreading loads and prevent bridge collapse. Lateral spreading loads can be considered as:

**Table 3: Bridge Foundation Lateral Spreading Loads**

Depth Below Ground Surface	Down-drag Load
0-ft. to 10-ft.	275 pcf
10-ft. to 30-ft.	18 x 'H' pcf ('H'=depth below ground)

Mitigating for lateral spreading with ground improvement might be more cost effective than designing large diameter shafts. For cost estimates, assume lateral spreading can be mitigated around bridge abutments by installing stone columns or compaction grout using a 20 percent replacement ratio to a depth of 50-ft. BGS. Assume the improvement area is a 30-ft. to 40-ft. circumference around the abutment.

Bridge approach structures, roadway embankments, and any other site improvements not supported on deep foundations will settle under static loading. Settlement could be 3 to 12 inches, depending on the weight of the structure or embankment. Embankment fills for bridge approach structures will need to be overbuilt and could require up to about one year of settling before final grading and paving. Preloading/soil surcharging will also likely be required for any non-critical infrastructure (critical infrastructure would go on piles) that is supported on shallow foundations. Settlement magnitude could be reduced to a few inches or less with a duration of about one to two months with significant ground improvement.

New site utilities, buildings, tanks, and industrial equipment located on this site will generally have the same design considerations as the bridge foundations. Static settlement, seismic settlement, and lateral spreading will all be design considerations.

## 2. Permitting Future Site Uses

### 2.1. General Permitting Discussion

Development of the Anchor Point Industrial Site will require environmental permit approvals that will vary depending on the type of site use, site access impacts, physical limits of ground disturbance, and site impacts. The environmental permit approval process will need to address city, county, state and federal regulations. Following is a summary of likely permits and technical documents that would be necessary for an industrial site development at Anchor Point, the types of activity that would trigger the associated permit/approval, typical steps to gain permit approval, as well as estimated approval time. Approval times shown do not include the time to actually prepare the permit packages.

**Table 4: Possible Environmental Permits Summary**

<b>FEDERAL</b>	<i>Agency/ Regulation:</i>  <b>DAHP - NHPA Section 106</b>	<b>Permit/ Document:</b>	Consultation; APE map; cultural study
		<b>Trigger:</b>	ground disturbance; Marine Terminal
		<b>Application/Product:</b>	APE, Survey Report
		<b>Steps:</b>	APE, DAHP concurrence on APE, Cultural Resource Discipline Report, DAHP concurrence on DR.
		<b>Time:</b>	Depends on resources found; 3-6 months
<b>FEDERAL</b>	<i>Agency/ Regulation:</i>  <b>USFWS/ NMFS ESA Section 7</b>	<b>Permit/ Document:</b>	Concurrence; informal or formal consultation (BO)
		<b>Trigger:</b>	ground disturbance Federal nexus; e.g., Corps permit; Marine Terminal
		<b>Application/Product:</b>	JARPA
		<b>Steps:</b>	APE, DAHP concurrence on APE, Cultural Resource Discipline Report, DAHP concurrence on DR. consultation with USFWS/NMFS, prepare BA, USFWS/NMFS concurrence on determination of effect
		<b>Time:</b>	6 months
<b>FEDERAL</b>	<i>Agency/ Regulation:</i>  <b>NEPA</b>	<b>Permit/ Document:</b>	Joint NEPA/SEPA EIS
		<b>Trigger:</b>	404 permit
		<b>Application/Product:</b>	EIS
		<b>Steps:</b>	coordinate with County for joint document
		<b>Time:</b>	18 months
		<b>Permit/ Document:</b>	NEPA EA
		<b>Trigger:</b>	404 permit
		<b>Application/Product:</b>	EA/404(b)(1) alternatives analysis
		<b>Steps:</b>	Internal Corps process
		<b>Time:</b>	12 months

<b>FEDERAL</b>	<i>Agency/ Regulation:</i>	<b>Permit/ Document:</b>	Standard Individual Permit - Section 404 of Clean Water Act (CWA)
	<b>USACE - Section 404 CWA</b>	<b>Trigger:</b>	in-water work
		<b>Application/Product:</b>	JARPA, plus photographs of the project area, a vicinity map, and detailed drawings that clearly show the project and its location in relation to wetlands, creeks, rivers, and other water bodies in the vicinity of the project area. Refer to the sample drawings and checklist on the Corps' Seattle District website
		<b>Steps:</b>	Pre-application meeting, submit JARPA, amend with data, USFWS/NMFS consult by Corps/review BA, notice of completeness, public notice, comment periods
		<b>Time:</b>	120 days to review a complete app + prep time = 12-18 months
<b>FEDERAL</b>	<i>Agency/ Regulation:</i>	<b>Permit/ Document:</b>	Regional General Permit (RGP), Nationwide Permit (NWP), Individual Permit, or Letter of Permissions (LOP)
	<b>USACE - Section 10 Rivers &amp; Harbors</b>	<b>Trigger:</b>	possible work in or over navigable rivers; Marine Terminal Development
		<b>Application/Product:</b>	JARPA
		<b>Steps:</b>	JARPA, public notice, review, needs SEPA determination and 404 public notice/letter of authorization before certified
		<b>Time:</b>	18 months
<b>FEDERAL</b>	<i>Agency/ Regulation:</i>	<b>Permit/ Document:</b>	Bridge Permit
	<b>US Coast Guard</b>	<b>Trigger:</b>	Construct a new bridge or reconstruct/modify an existing bridge across the navigable waters of the United States
		<b>Application/Product:</b>	USCG Bridge Permit Application
		<b>Steps:</b>	Submit bridge plans with Bridge Permit application; USCG Review; Revise plans
		<b>Time:</b>	Minimum of 6 months, but most likely will be at least a year



<b>STATE</b>	Agency/ Regulation:  <b>Ecology - 401 Certification</b>	<b>Permit/ Document:</b>	401 Certification
		<b>Trigger:</b>	404 permit, in-water work
		<b>Application/Product:</b>	JARPA
		<b>Steps:</b>	JARPA, public notice, review, needs SEPA determination and 404 public notice/letter of authorization before certified.
		<b>Time:</b>	12 months
<b>STATE</b>	Agency/ Regulation:  <b>WDFW - HPA</b>	<b>Permit/ Document:</b>	HPA
		<b>Trigger:</b>	changes to bed, flow, or bank of waters of U.S.
		<b>Application/Product:</b>	JARPA + SEPA determination
		<b>Steps:</b>	Submit JARPA; coordinate with WDFW if concerns/questions
		<b>Time:</b>	45 days after complete application
<b>STATE</b>	Agency/ Regulation:  <b>Ecology - NPDES</b>	<b>Permit/ Document:</b>	NPDES
		<b>Trigger:</b>	Stormwater discharge
		<b>Application/Product:</b>	NPDES application, including Notice of Intent (NOI), SWPPP, and TESC
		<b>Steps:</b>	Prepare SWPPP and TESC; Submit NOI to local newspapers; Ecology issues NPDES
		<b>Time:</b>	30 day review time after NOI
<b>STATE</b>	Agency/ Regulation:  <b>DNR - Aquatic Lands Lease</b>	<b>Permit/ Document:</b>	JARPA
		<b>Trigger:</b>	In-water work
		<b>Application/Product:</b>	JARPA
		<b>Steps:</b>	Submit JARPA to DNR; respond to questions and comments
		<b>Time:</b>	3 to 12 months
<b>STATE</b>	Agency/ Regulation:  <b>WSDOT</b>	<b>Permit/ Document:</b>	Developer Services Review
		<b>Trigger:</b>	Modification to WSDOT facility (Vehicle Access Option 4 undercrossing may require seismic upgrade of Interstate-5 structures)
		<b>Application/Product:</b>	Approved construction plans for WSDOT facility
		<b>Steps:</b>	Submit application and plans; WSDOT review; revise and resubmit plans to WSDOT until approved;
		<b>Time:</b>	12 to 18 months



<b>LOCAL</b>	Agency/ Regulation:  <b>City of Kelso - SEPA (lead)</b>	<b>Permit/ Document:</b>	SEPA Checklist
		<b>Trigger:</b>	Clearing/grading permit
		<b>Application/Product:</b>	SEPA Checklist/determination
		<b>Steps:</b>	coordinate with County for joint document
		<b>Time:</b>	18 months
		<b>Permit/ Document:</b>	SEPA EIS
		<b>Trigger:</b>	Clearing/grading permit
		<b>Application/Product:</b>	EIS/Record of Decision
	<b>Steps:</b>	If local agency and others determine that project has significant environmental impacts could lead to EIS process	
	<b>Time:</b>	18 months	
<b>LOCAL</b>	Agency/ Regulation:  <b>City of Kelso – Shoreline CUP</b>	<b>Permit/ Document:</b>	Shoreline Conditional Use Permit
		<b>Trigger:</b>	Clearing/Grading Permit
		<b>Application/Product:</b>	Master Land Use – Type III (KMC Title 18B)
		<b>Steps:</b>	Public Notice; Open Record Hearing; Hearing Examiner Decision; Appeal Superior Court
		<b>Time:</b>	6 months
<b>LOCAL</b>	Agency/ Regulation:  <b>City of Kelso – Shoreline SDP</b>	<b>Permit/ Document:</b>	Shoreline Substantial Development Permit
		<b>Trigger:</b>	Clearing/Grading Permit; Marine Terminal Development
		<b>Application/Product:</b>	Master Land Use – Type II (KMC Title 18B)
		<b>Steps:</b>	Public Notice; Administrative Official Decision; Appeal Hearing Examiner
		<b>Time:</b>	6 months
<b>LOCAL</b>	Agency/ Regulation:  <b>City of Kelso – Shoreline Variance</b>	<b>Permit/ Document:</b>	<b>Shoreline Variance/Exception/ Revision</b>
		<b>Trigger:</b>	Clearing/Grading Permit;
		<b>Application/Product:</b>	Master Land Use – Type III (KMC Title 18B)
		<b>Steps:</b>	Public Notice; Open Record Hearing; Hearing Examiner Decision; Appeal Superior Court
		<b>Time:</b>	6 months
<b>LOCAL</b>	Agency/ Regulation:  <b>Cowlitz County</b>	<b>Permit/ Document:</b>	Various
		<b>Trigger:</b>	Only if work occurs on ancillary properties located outside of the City of Kelso limits

<b>PRIVATE</b>	<i>Agency/ Regulation:</i>	<b>Permit/ Document:</b>	Industrial Track Agreement (ITA), Lease of Land for Construction/Rehabilitation of Track (CL), and Contractor’s Right of Entry Agreement (CROE)	
	<b>BNSF</b>		<b>Trigger:</b>	Temporary and permanent improvements within BNSF maintenance yard or over/under main rail line
		<b>Steps:</b>		
		<ol style="list-style-type: none"> <li>1. Review BNSF agreements and associated insurance requirements necessary to establish rail service</li> <li>2. Engage engineering professional or third-party firm to design track in accordance with BNSF guidelines</li> <li>3. Communicate expectations for project completion and movement of first shipment</li> <li>4. BNSF coordinates an on-site meeting to review the track design and BNSF service to the site</li> <li>5. BNSF reviews track design for compliance with BNSF industry track guidelines</li> <li>6. BNSF reviews track design and communicates a service plan for the site</li> <li>7. BNSF provides cost estimate if BNSF track or signal construction is required</li> <li>8. Sign agreement(s), as applicable</li> <li>9. Submit all necessary insurance certificates and requirements</li> <li>10. Hire a construction contractor who is familiar with BNSF requirements</li> <li>11. Issue payment for BNSF track or signal construction, as applicable</li> <li>12. Visit <a href="http://www.bnsf.com">www.bnsf.com</a> to verify that you are registered with BNSF as a customer</li> <li>13. BNSF orders and installs main line switch (approximately 120 day timeframe from full execution of all agreements)</li> </ol>		
		<b>Time:</b>	6 to 24 Months	

## **2.2. Hazardous Materials**

### **2.2.1. Research Methodology**

Landau Associates conducted a “desktop” review of regulatory and historical information for the project area to identify the potential presence of hazardous materials contamination or environmental conditions of potential concern. We subcontracted with Environmental Data Resources Inc. (EDR) to conduct a search of publicly available federal, state, and local agency environmental databases for information regarding sites within the project area, and provide a regulatory database report. EDR also provided historical aerial photographs (for the years 1951, 1970, 1991, 1994, 2005, 2006, 2011, and 2012) and topographic maps (for the years 1919, 1943, 1953, 1970, and 1990). EDR searched for Sanborn Fire Insurance Maps, but the project area is unmapped. These photographs and maps have not been included in the report but can be obtained from the City.

### **2.2.2. Database Report Review**

The Study Area is listed in a Washington State Department of Ecology database for water quality for a sand and gravel mining operation, and has an active National Pollutant Discharge Elimination System (NPDES) permit for storm water. The operation is named **JL Storedahl & Sons - Owl Creek Pit** and is located at 3100 Old Pacific Highway South.

The available information regarding the project area and adjacent and proximate sites does not indicate the potential for adverse impact to soil and groundwater beneath the project area. Therefore, the regulatory database review did not identify any known or potentially contaminated sites that may affect the project area.

Other properties outside of the Study Area and reported within the EDR database search were reviewed, but based on their regulatory status and/or their distance and location relative to the project area, are not considered to represent an environmental concern for the project area.

### **2.2.3. Aerial Photograph Review**

The aerial photograph review shows that the site was undeveloped prior to sometime between 1970 and 1991, based on review of the 1991 photo which shows the northern portion of the site as cleared of vegetation. A small, rectangular building is visible adjacent to the Columbia River beginning in 2005. Excavation activities have occurred over much of the project area since at least 2005 and have continued through the present; trailers or stored materials likely associated with these activities have been present where access roads cross the eastern portion of the project area since 2011. Collections of pertinent aerial photographs have been included in **Appendix D**.

**⇒ The aerial photograph review did not identify any evidence of conditions of potential environmental concern for the study area.**

### **2.2.4. Topographic Map Review**

Overall, the topographic map review shows no history of structures on the project area. Wetlands and streams have been present and changed location and shape on the project area over time. Railroad tracks have been present to the east of the project area since at least

1919. Transmission power lines have crossed the project area from the southeast to northwest since at least 1943.

⇒ **The topographic review did not identify any evidence of conditions of potential environmental concern for the project area.**

### 2.2.5. Hazardous Materials Summary

The review of available regulatory and historical information identified no known or potentially contaminated sites that may affect the project area or evidence of conditions of potential environmental concern for the project area.

⇒ **As an additional tactic to promote development of the site, a Phase 1 Site Assessment could be initiated at this time by the property owner. This would be relatively inexpensive and could possibly enhance the marketability of the site by potentially eliminating purchaser concerns about on-site contamination.**

## 2.3. Wetlands/Habitat

The property owner has contracted with Ecological Land Services (ELS) to perform a wetland reconnaissance of the property. This work was very preliminary and included a visual onsite field review in April, 2015 and use of GPS equipment to provide preliminary limits of uplands and wetlands on the site (see **Figure 8**). According to the wetland survey, there are approximately 305 acres of wetlands and 2.1 acres of ponds on the site.

⇒ **A formal wetland delineation analysis will be required if development interests are executed.**



DEA has contacted Washington State Department of Ecology (ECOLOGY) to informally discuss the wetlands present on the site, and likely mitigation that will be necessary as a result of site development and access improvements. Based on information received from Rebecca Rothwell, Wetlands/Shorelands Specialist with the Ecology, SW Regional Office on June 22, 2015, DEA provides the following notes relative to wetlands on the project site:

- Wetlands on the site are recognized as high quality and regionally important, likely being rated as Category I or II
- Within the Kelso City limits, Category I or II wetlands being affected by high intensity land uses will have between **120 and 300 foot buffers** depending on the quality of the habitat in the wetlands. Based on a hypothetical rating of a large Category I wetland on the site, DEA has calculated a habitat rating that results in a **260 foot buffer**, which is assumed to be required all the way around the wetland.
- Wetlands on the site appear to be hydrologically connected to the river and each other, including wetlands on either side of the BNSF railroad tracks
- Ecology and the Corps will require the applicant to demonstrate avoidance and minimization of wetland impacts to the greatest extent practicable, by minimizing the development footprint
- Once impacts are demonstrated to be minimized, Ecology would be open to using preservation as a mitigation tactic, given the regional importance of the wetlands on the site. However, they prefer it be used in combination with other techniques such as creation, restoration and enhancement to avoid net loss of wetlands. Preservation ratios would likely start at 30:1, based on our phone conversation with Ecology. This is consistent with Ecology's Wetland Mitigation in Washington State guidance document which states "ratios for preservation as the sole means of mitigation generally start at 20:1".

Coweeman Mitigation Bank may have mitigation credits available in late 2015/early 2016 (waiting on confirmation from Habitat Bank - Woodward brothers)

A recent delineation report rating wetlands for the "Winter's Property" on the southern portion of the Anchor Point site was performed by Shannon and Wilson Inc. to support BNSF improvements (see **Figure 9** for relation of Winter's property to Anchor Point site). Based on their December 4, 2014 site visit, two Category I wetlands were delineated as Wetland "K" and "L" (see **Figure 10**).

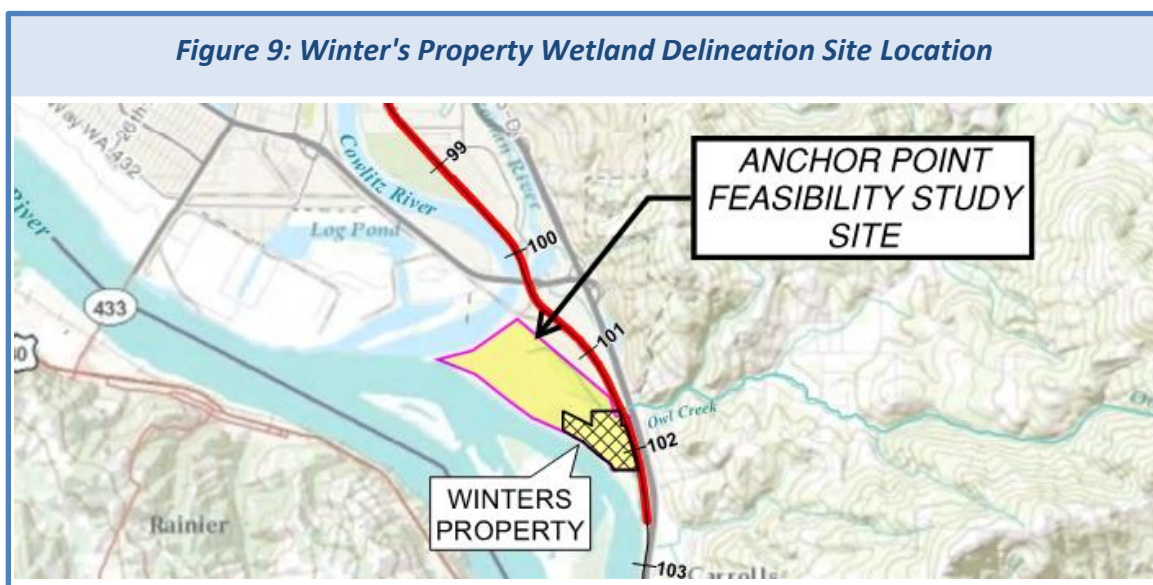
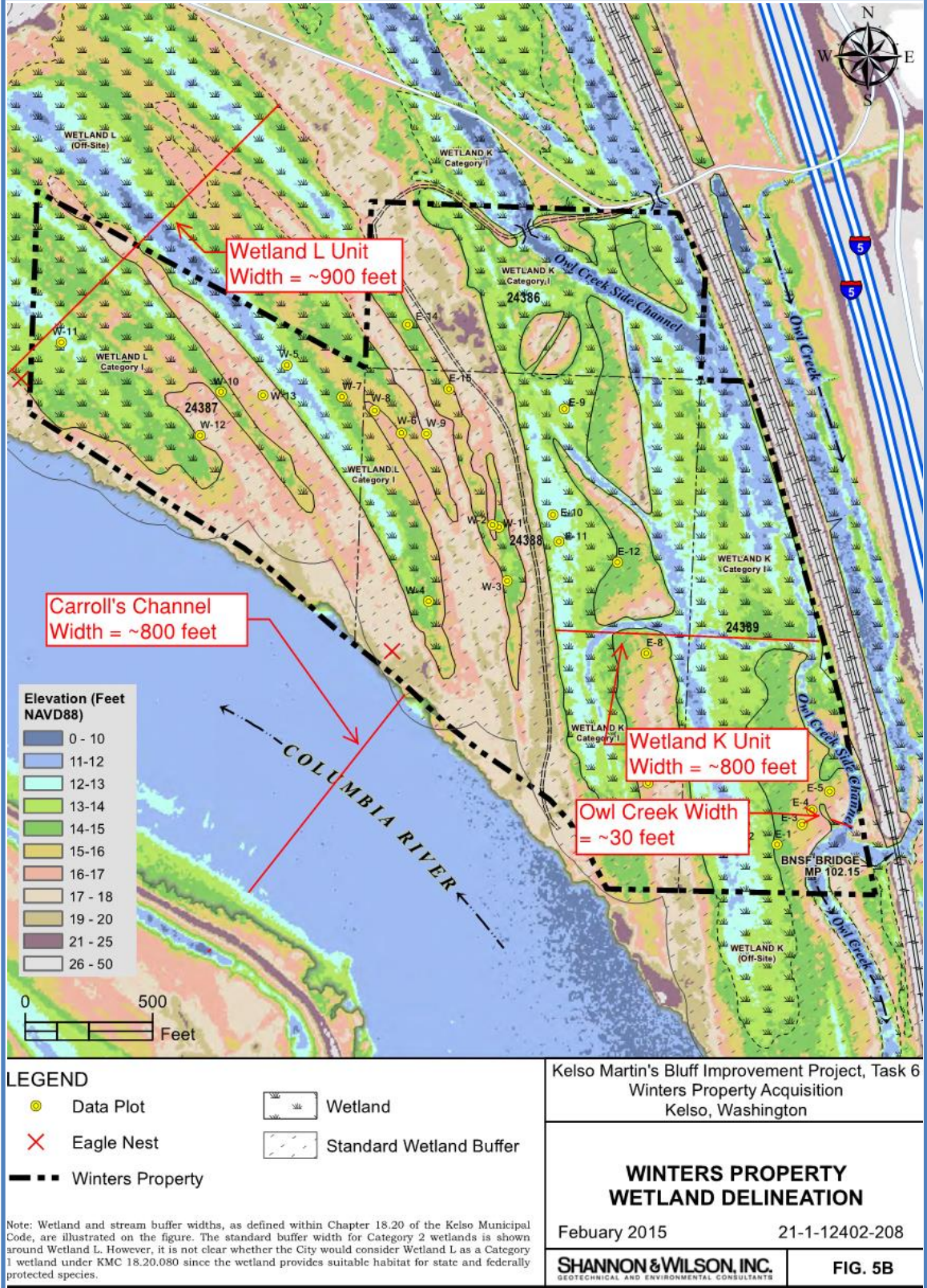




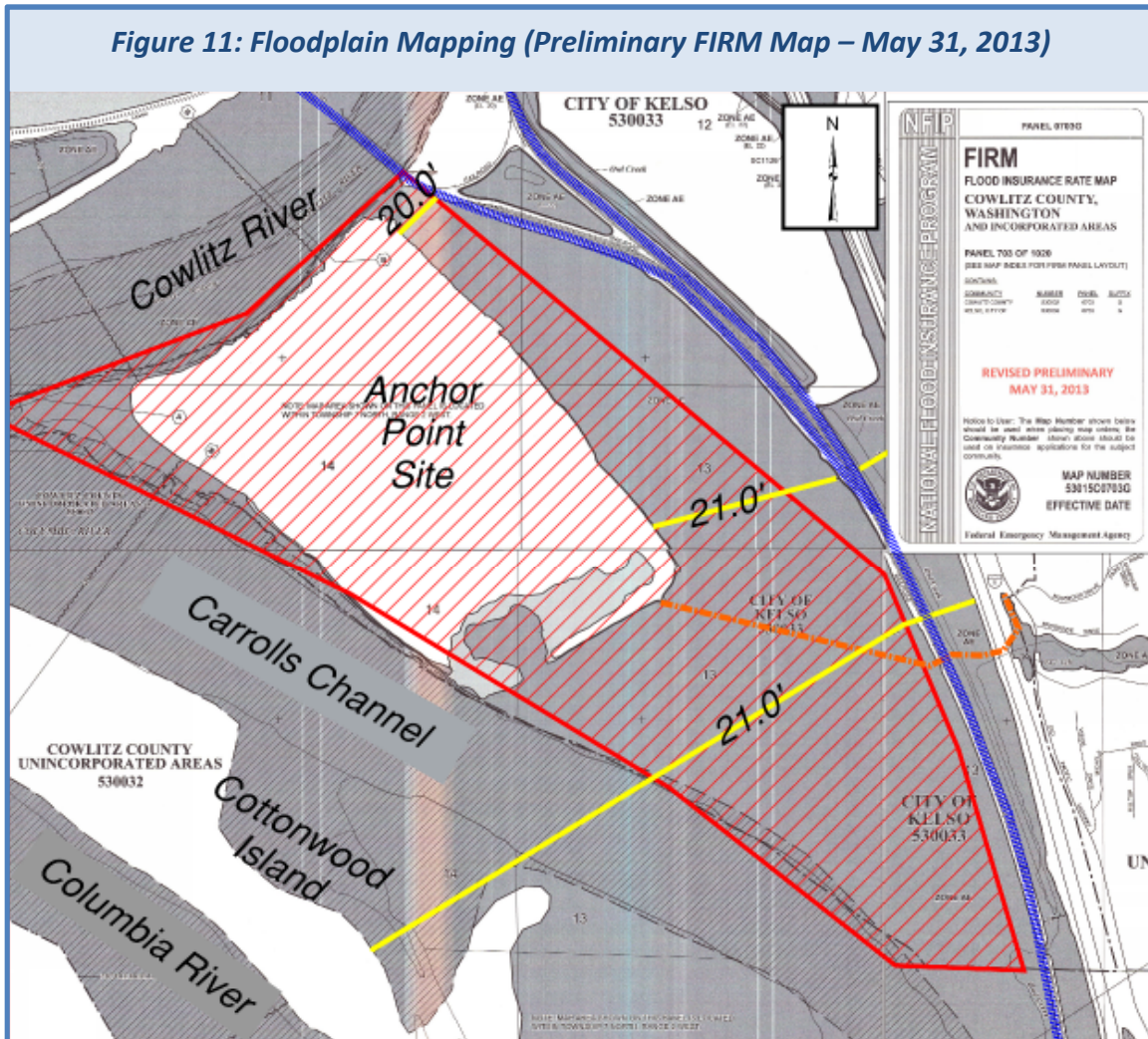
Figure 10: Winter's Property Wetland Delineation Map





## 2.4. Floodplains

Preliminary Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for the site area were issued May 31, 2013, and are expected to be adopted by City of Kelso in early 2016. This preliminary FIRM indicates that a portion of the site will remain within Zone AE (see **Figure 11**). Zone AE areas have a high flood risk. Flood insurance is mandatory and local floodplain development codes apply. These properties have a one-percent (1%) annual chance of flooding and a 26-percent chance of flooding over the life of a 30-year mortgage. As shown in **Figure 11**, the base flood elevations within the site have been determined to be approximately 21-feet.

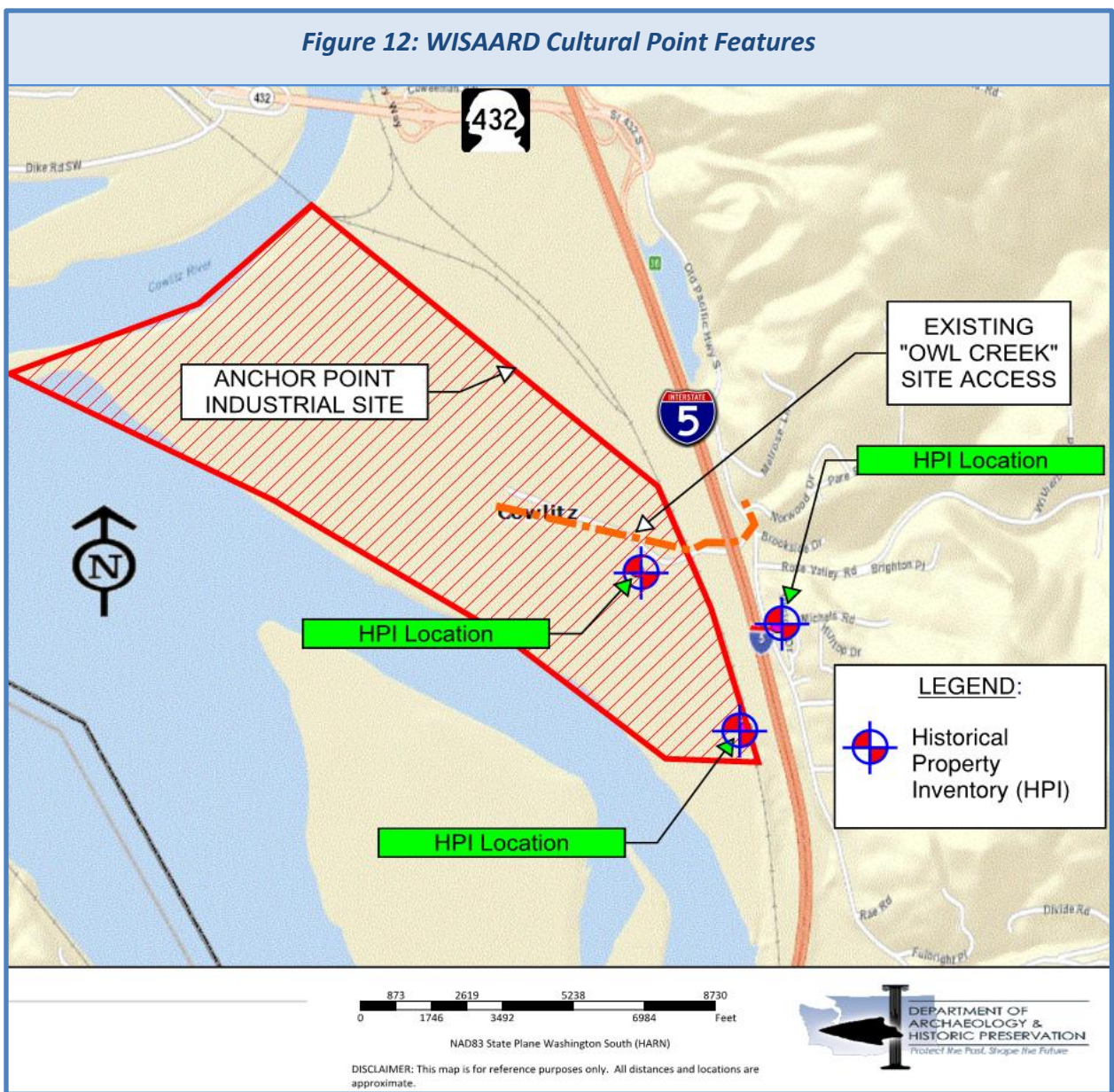


City of Kelso building and permitting guidelines will require that future site developments construct building pads above the base flood elevation of 21-feet.

## 2.5. Cultural Resources

Review of the Washington Information System for Architectural and Archaeological Records Data (WISAARD) resulted in identification of three cultural point features in the general Study Area, as shown in **Figure 12** below. Review of these reports indicate:

- A log bridge built circa 1850's is present under the existing access drive near Owl Creek. A Phase II cultural assessment is recommended if this area will be impacted by future construction, to further evaluate National Register significance.
- A residence on Vision Drive was constructed in the 1930's but appears to be low risk of being eligible on the National Register of Historic Places.
- The BNSF rail siding was constructed approximately between 1907 and 1914, but no historic buildings or structures related to the railroad are located within the project limits.





Other confidential features could be present but are not available on this public database. Given the amount of ground disturbance likely anticipated for an industrial development on this site, as well as access from existing surrounding from this project, and assuming a federal nexus, the project will need to adhere to the Section 106 process of the National Historic Preservation Act (NHPA).

Steps of this process will include:

- Define the Area of Potential Effect (APE) and coordinate with State Historic Preservation Office (SHPO);
- Hire a consultant to inventory all historic and archaeological resources within the APE;
- Determine eligibility of identified resources for listing on the National Register of Historic Places;
- Make a determination of effect;
- Obtain final concurrence or denial from SHPO

## 2.6. Endangered Species Act (ESA)

The proposed project will likely require a Section 404 permit from the U.S. Army Corps of Engineers (Corps) as a result of wetland impacts. This federal permit would trigger the need for the lead federal agency (Corps) to insure that the project has adhered to Section 7 of the Endangered Species Act (ESA).

Formal consultation with the consulting federal agencies, U.S. Fish and Wildlife Service (USFW) and NOAA Fisheries, is likely required as a result of the following possible site development activities:

- impacts to high quality wetlands that may support listed salmonid species,
- access drive improvements could potentially impact the adjacent Owl Creek, which supports up to four separate listed salmon species,
- access alternative that crosses the Cowlitz River mainstem (which is a major spawning area for listed eulachon forage fish),

**Table 5: ESA Listed Species Present near Study Area**

Listed Species	Federal Consulting Agency
Lower Columbia River Chinook salmon	NOAA Fisheries
Lower Columbia River chum salmon	NOAA Fisheries
Lower Columbia River coho salmon	NOAA Fisheries
Lower Columbia River steelhead trout	NOAA Fisheries
Bull trout	USFW
Eulachon	NOAA Fisheries
Columbian White-tailed Deer	USFW
Marbled murrelet	USFW

### 3. Future Rail Access Options

#### 3.1. Site Rail Considerations

The site is large enough to accommodate four loaded and two empty 110-car, grain shuttle trains on at least one loop track that will allow for unit trains of over 8,000 feet long to serve the future industrial facility. This is important as Class 1 railroads such as BNSF Railway and Union Pacific Railroad (UPRR) are more likely to serve facilities configured to use unit trains and the per car shipping rates for cars moved by unit train is usually much lower than for traditional car-load service.

Access to the main line is also an important consideration. The connection to the BNSF main line, ideally, would provide a way to have trains access the site directly from both the north and south. Based on other projects, BNSF has expressed a preference for this dual access as they have excess east-west capacity on their Stampede Pass route that is best used by empty unit trains. The BNSF Columbia Gorge route has much milder grades and they prefer to reserve excess capacity for loaded trains, when possible.

Further, it is very time-consuming to try to have a unit train change direction without a loop track. The crew walking 7,000 to 8,000 feet from one end of the train to the other and then resetting the controls to allow the pusher locomotive to control the other locomotives on the opposite end would take more than one hour. BNSF likely would not allow this to occur on the main line.

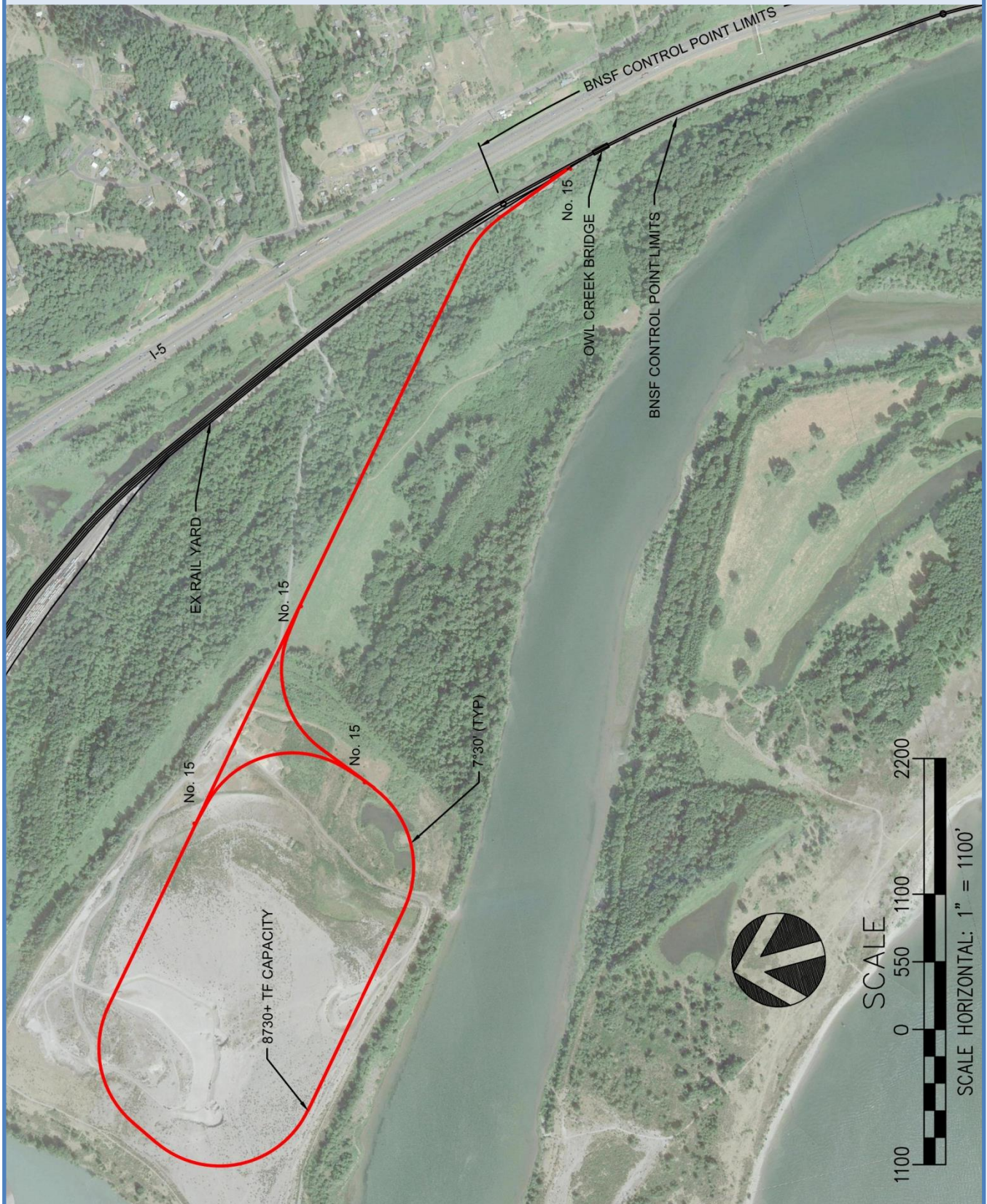
Union Pacific, by comparison, moves unit trains to and from the site vicinity via Portland. Once in Portland, the unit trains can then go east via the Columbia Gorge or south over Willamette Pass in southern Oregon. Therefore, UPRR would only require a site connection facing south.

BNSF's apparent preference for dual access could be tempered if the facilities on the site were to require cars over about 20 feet high, such as intermodal cars with double stacked containers or cars equipped with auto racks. These cars would require clearances currently too high to be routed over Stampede Pass due to tunnel restrictions. Unit trains with higher cars would likely be routed via the Gorge Route if they were moved by BNSF.

#### 3.2. Rail Connection Option 1

Access to the BNSF main line is possible at Longview Junction South control point. A south-facing connection can easily be made, as shown in the conceptual plan titled Option 1 (see **Figure 13**). This option would impact site wetlands. This option allows for unit train access utilizing the typically required turnout size (No. 15 frog angle) and broad enough horizontal curves (7.5 degrees per 100-foot chord) for unit train operations. This option would also be accessible to both BNSF and UPRR, allowing the facility operator the flexibility to choose which railroad company would serve the facility. However, unit trains would not be able to enter or leave the site from the north. This is not a fatal flaw as described above, but could impact how BNSF views serving the site or what products a facility operator would consider shipping to and from the site.

Figure 13: Future Rail Connection Option 1





### 3.3. Rail Connection Option 2

To try to accommodate the desire for a north-facing connection, a number of railway configurations were examined. The most feasible configuration is shown in the conceptual plan titled Option 2 (see **Figure 14**). The tightest horizontal curvature allowed for unit trains in the past (9.5 degrees per 100-foot chord) were used to connect to the BNSF main line within the existing Longview Junction South control point while trying to avoid placing fill material in Carrolls Channel, part of the Columbia River. This resulted in a northern leg that connects to the southern end of the existing yard arrival and departure (A&D) tracks, as **Figure 14** illustrates.

Since a train headed to the north must reach the main line tracks without reversing direction, a connection north of the Longview Junction South control point is required. The switch lead tracks for the yard would have to be modified to allow trains leaving the facility to reach the two eastern-most A&D tracks. This would result in some impacts to BNSF and UPRR switching operations, while UPRR would not directly benefit from the north-facing connection. While it is possible that use of these marginal curves and smaller turnouts, such as a No. 11 frog angle shown (see **Figure 14**) is physically possible, this does not meet current design standards for unit trains for BNSF, who would be the only operator to use it.

Due to these significant compromises to establish a north-facing connection, revenue benefits to both railroads would have to significantly outweigh the compromises in order to get both UPRR and BNSF to agree to Option 2 rail configuration.

### 3.4. Rail Costs

Conceptual level costs have been developed for the onsite loop track plus the two options to connect the onsite loop track to the BNSF main line tracks (see **Appendix C**).

As noted in **Appendix C**, the onsite loop track conceptual level estimate is \$10M and includes grading work, track installation, and a short-span bridge to provide access to center of the loop.

Rail Connection Option 1 conceptual construction cost is \$16M and includes approximately 5,000 linear feet of new track, grading, signal modifications and several small diameter culverts to maintain site storm water runoff.

Rail Connection Option 2 conceptual construction cost is \$25M and includes approximately 7,000 linear feet of new track, grading, signal modifications and several small diameter culverts to maintain site storm water runoff.

Total conceptual level rail constructions costs will range from \$26M (Loop track plus Option 1 connection) to \$35M (Loop track plus Option 2 connection). Railroad flagging and easement costs have not been included in these values and will be an additional cost.

Figure 14: Future Rail Connection Option 2

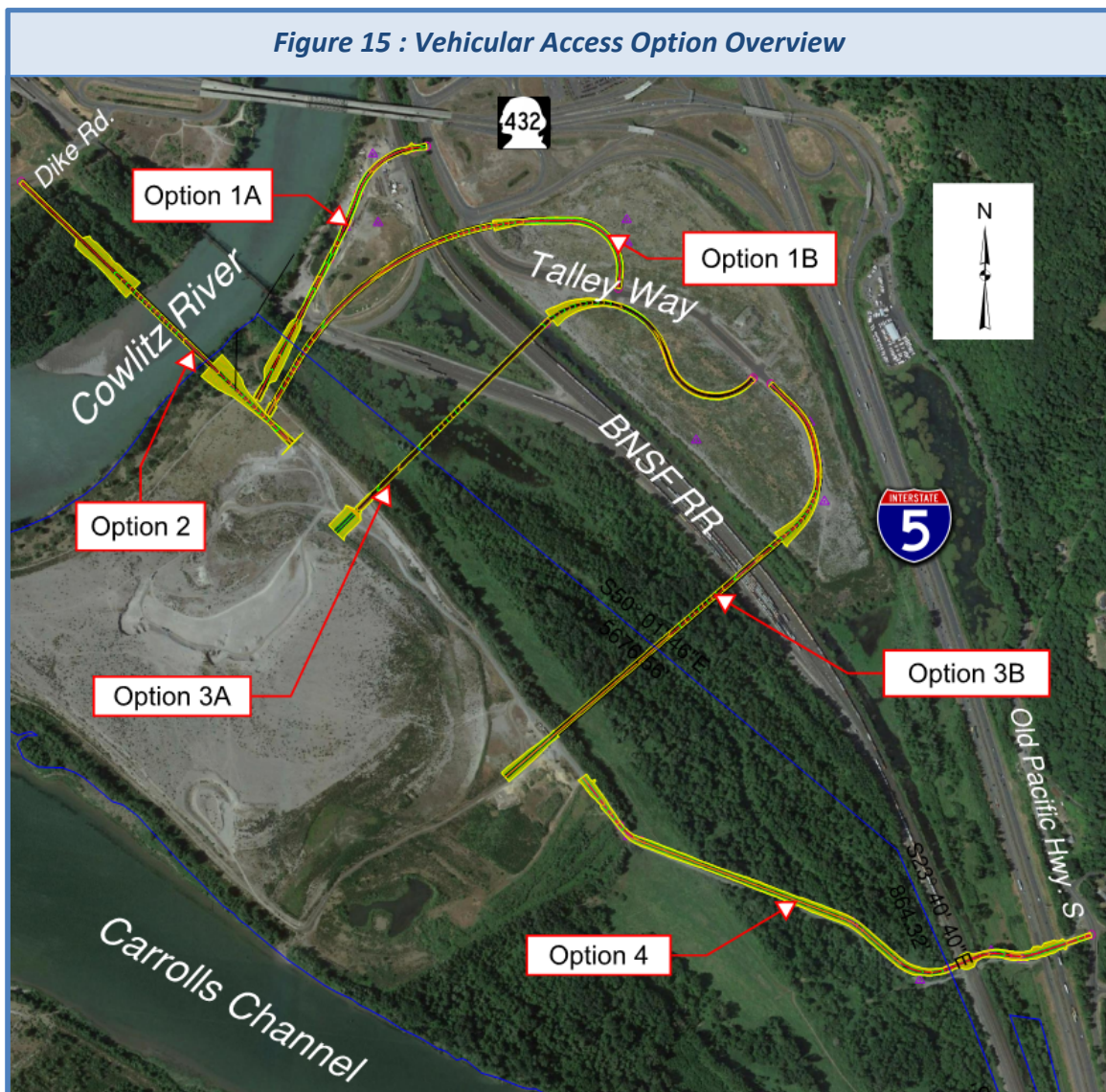




## 4. Future Vehicle Access Options

The scope of this study includes developing alternatives for connecting the Anchor Point site to the surrounding roadway infrastructure and evaluating preliminary construction costs for each alternative. A future industrial facility will require vehicular access for various uses including employees, supply deliveries, and emergency vehicles to name a few. As an industrial site, the facility will most likely not be generating high volumes of public traffic; therefore, the future access route could be developed as a private driveway, which typically has less restrictive design standards than a public roadway. DEA has developed six access alternatives that are shown in **Figure 15** and listed below:

- Option 1A utilizes an existing at-grade crossing at the BNSF Longview Yard,
- Options 1B, 3A and 3B include grade-separated structures over the existing BNSF railway as well as the proposed Martins Bluff to Kelso third rail project,
- Option 2 incorporates a new bridge over the Cowlitz River, and
- Option 4 improves the existing driveway that crosses under the BNSF rail and Interstate-5 near Owl Creek



These access alternatives all have differing levels of impacts to the environment, degrees of construction difficulty, permitting requirements, and agreements required with affected stakeholders/property owners such as BNSF, WSDOT and Segale's development, Kelso Village, located immediately east of the BNSF rail yard. The intent of this study is to identify the pros and cons of each alternative, so that prospective site owners can select an access solution that best suits their needs.

#### **4.1. Design Considerations**

Following is a discussion of the design elements considered while developing the vehicle access alternatives.

##### **Design Vehicles**

Vehicles with longer wheel bases, such as semi-trucks/trailers and fire trucks, require a large turning radius at roadway curves and right hand turns at intersections. Vehicle turning templates for these design vehicles were evaluated using AutoTURN software to identify minimum lane widths at horizontal curves, and curb return radii at intersections.

##### **Horizontal Curve Radius**

Horizontal curve radius design is controlled by the vehicle design speed and superelevation rate (i.e. cross slope of the roadway) of the roadway facility. In an effort to minimize impacts to surrounding properties and wetlands, the goal is to reduce the horizontal curve radii as much as possible which can be accomplished by reducing the design speed.

The proposed roadway approaches and bridge overpass for the grade-separated alternatives have been designed for a 20 MPH posting. The horizontal curve radii will need to meet the guidelines of the AASHTO *Policy on Geometric Design of Highways and Streets*.

##### **Cross Section Design**

The total width of the roadway approaches and bridge overpass will depend on the dimensions of the individual components such as retaining walls/traffic barriers, sidewalk(s), travel lanes, and shoulders. Travel lanes are a minimum of 12-ft. wide.

An industrial site user will likely not generate significant pedestrian and bicycle volumes to the site, nor are these users prevalent in the surrounding industrial properties. For this reason, sidewalks and bike lanes have not been included in the majority of the access alternatives.

##### **Vertical Design**

The critical factors controlling the vertical profile of the roadway approach and bridge overpasses include vertical clearances over Talley Way travel lanes and BNSF Railroad, as described in the option summaries provided in section 4.2 of the report.

The vertical touch-down point of the roadway approaches were determined by setting the bridge girder elevations to meet the Talley Way and BNSF Railroad vertical clearance elevations, then transitioning down to existing ground with a target longitudinal slope of 5%. Vertical curves

for the profile were developed according to the AASHTO *Policy on Geometric Design of Highways and Streets*.

### **Bridge Design**

The vehicle access bridges selected for the study are intended to work with the other project requirements while also minimizing costs of the bridge structures. In order to minimize impacts to the wetlands, we have identified a substructure design that will include installation of bridge foundation columns that will connect to single shafts for all bents in the wetland areas. There are no footings assumed in the wetland areas; hence, the only permanent impacts are the plan areas of the drilled shafts.

Bridge span lengths were chosen with the main focus to minimize impacts to the wetlands, while also providing cost efficient bridge structures in the poor soil and high seismic location. The bridges were assumed to utilize standard construction techniques and WSDOT standard girders. When necessary, span lengths exceeded 200 feet (over the Cowlitz River and at the BNSF main rail line locations) and we still utilized standard WSDOT post-tensioned, spliced girders. In addition, Access Option 1B has a bridge span length that exceeds 300 feet (over the maintenance rail yard). This bridge utilizes typical cast-in-place post-tensioned segmental concrete box girder spans. This type of structure is constructed using the balanced cantilever technique and has worked well over a number of rail lines and rail yards across the country (see **Figure 16** for photo of typical installation).

**Figure 16: Segmental Concrete Box Girder Bridge Example**



### **Public vs. Private Access**

Design criteria for a private driveway access will be controlled by the site use, the type/size of vehicles (i.e. lane width, overhead clearances, turning radius) that will need to access the site, as well as City of Kelso site development guidelines such as emergency vehicle access standards. Private roads may not need sidewalks, if the site is a low-pedestrian generating use.

A public roadway will need to meet the City of Kelso design guidelines for public facilities which will control the travel lane width, pavement section thickness, horizontal and vertical curve design. A public facility constructed by the Owner would be turned back over the City of Kelso and maintained by the City.

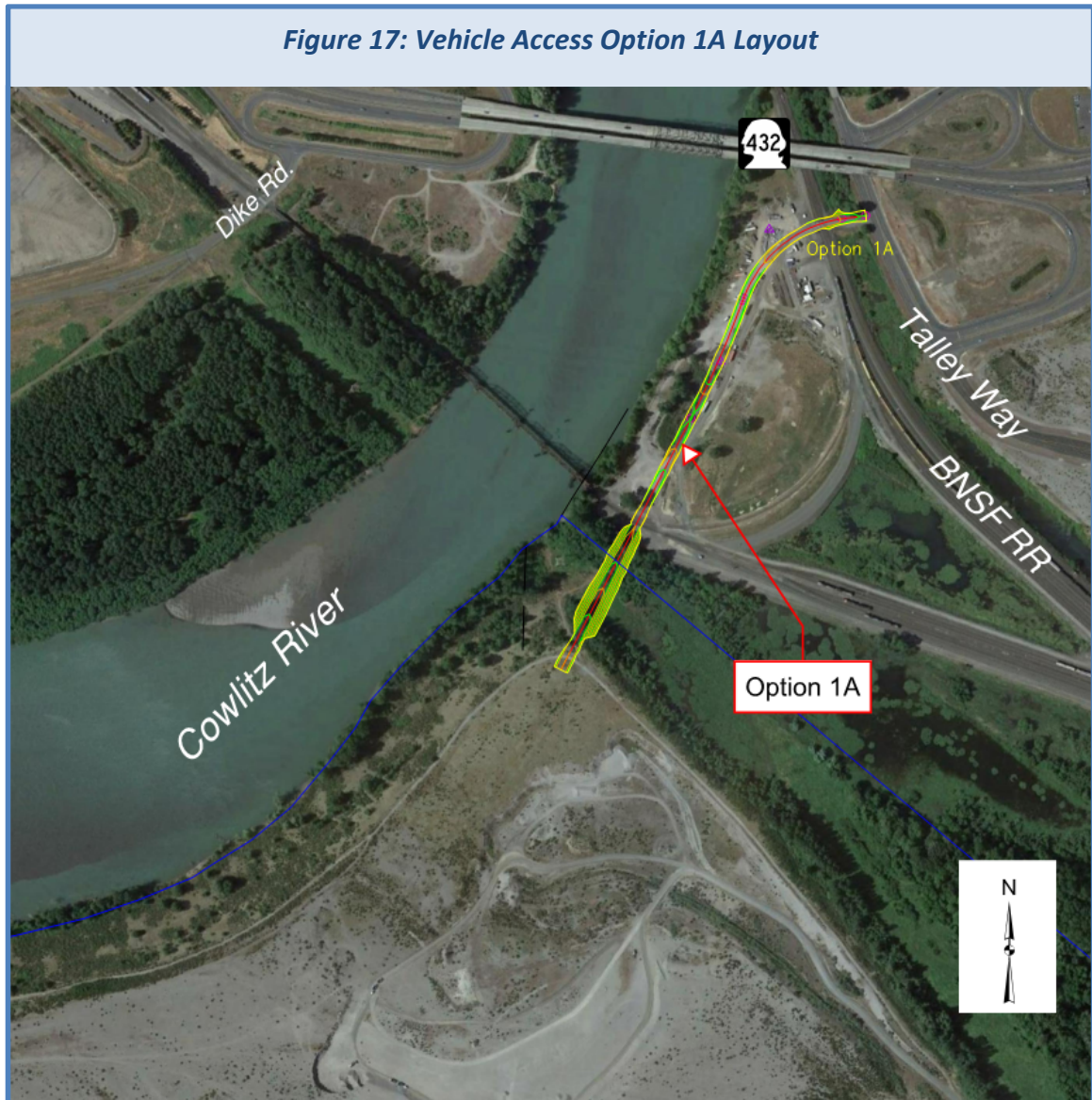
***⇒ Due to the higher level of design requirements necessitated by a public road classification, we feel that it will be more cost effective to design and build the site access as a private driveway rather than a public roadway.***



## 4.2. Vehicle Access Alternatives Description

### 4.2.1. Option 1A – At-grade crossing through BNSF Maintenance Yard

Option 1A utilizes an existing at-grade crossing through the BNSF Longview maintenance yard, as shown in **Figure 17**. The two-lane roadway begins at Talley Way, crosses the BNSF main line tracks at-grade, enters the BNSF maintenance yard running parallel to the Cowlitz River, crosses a secondary set of tracks at-grade that extend across the Cowlitz River, and enters the Anchor Point site in the northeast corner.



This option will require the purchase of property or an easement from BNSF through their Longview Maintenance Yard. At the time of this study, neither the City nor the site owners have approached BNSF to discuss the feasibility of such an easement.

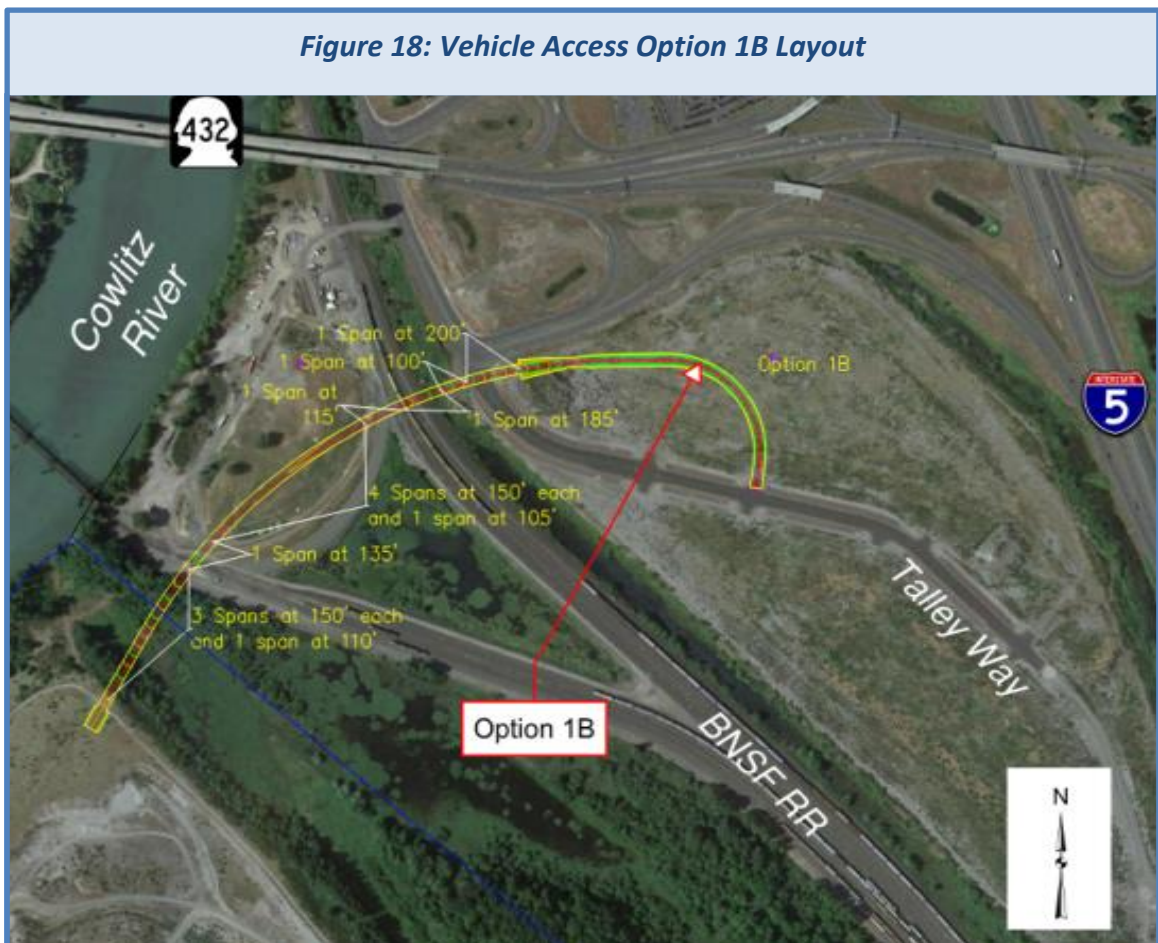
For estimating purposes, the following design criteria were used:

Table 6: Option 1A Design Criteria

<b>Design Vehicle:</b>	WB-67 (Truck-Tractor with a 53' trailer)
<b>Roadway Cross Section:</b>	12' lanes, 2' shoulders, 2:1 cut/fill slopes
<b>maximum profile grade</b>	5%
<b>Posted speed</b>	20 mph (30 mph design speed)
<b>Pedestrian facilities:</b>	none
<b>Environmental Impacts:</b>	Minor wetland impacts resulting from roadway fill
<b>Roadway/Bridge Construction Cost:</b>	\$3M

#### 4.2.2. Option 1B – Elevated Railroad Crossing

Option 1B is an elevated crossing departing Talley Way to the north, circling back around and overcrossing Talley Way and the BNSF railway, and then touching down into the eastern limits of the site. This access route is a series of concrete girder bridges with fill approaches at the eastern and western limits, as shown in **Figure 18**.



Following is a summary of the design criteria, anticipated environmental impacts, and construction costs for this elevated access route.

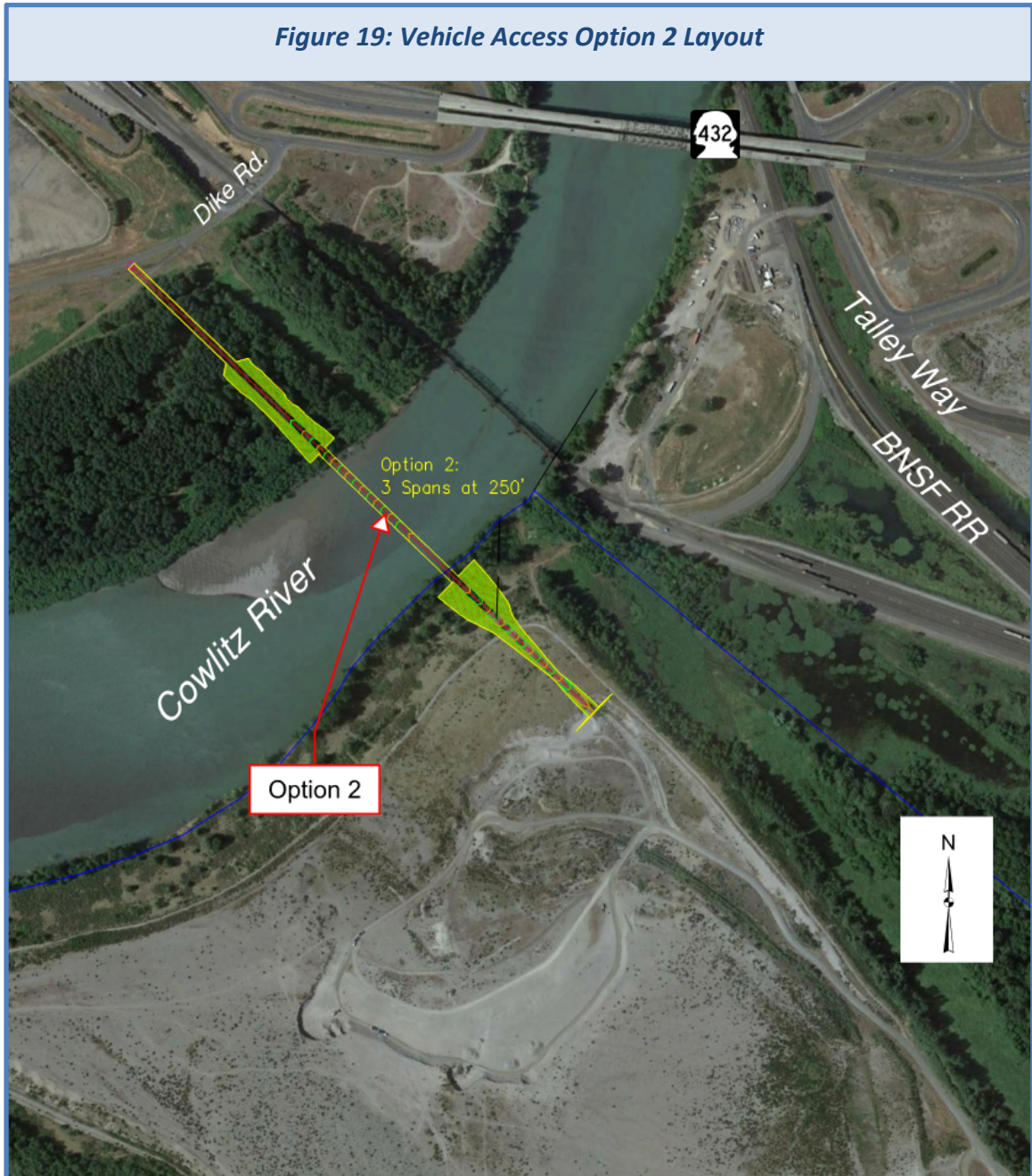
*Table 7: Option 1B Design Elements*

<b>Elevated Structures:</b>	<b>Bridge Length</b>	<b>Facility Crossing:</b>	<b>Vertical Clearance from Facility to Bottom of Bridge Girders</b>
	200-ft.	Talley Way	16-ft
	100-ft.	wetlands adjacent to Talley Way	N/A
	300-ft.	BNSF main line double-tracks	23.5-ft.
	705-ft.	BNSF Longview Maintenance Yard	23.5-ft.
	135-ft.	secondary railway extending across Cowlitz River	23.5-ft.
	610-ft.	wetlands	N/A
<b>Design Vehicle:</b>	WB-67 (Truck-Tractor with a 53' trailer)		
<b>Roadway Cross Section:</b>	12' lanes, 3' shoulders, 2:1 cut/fill slopes		
<b>Maximum profile grade:</b>	5%		
<b>Posted speed:</b>	20 mph (30 mph design speed)		
<b>Pedestrian facilities:</b>	6-ft. sidewalk on one side of bridge		
<b>Environmental Impacts:</b>	Minor wetland impacts resulting from bridge foundation footprints		
<b>Roadway/Bridge Construction Cost:</b>	\$42M		



#### 4.2.3. Option 2 – New Bridge over Cowlitz River

Option 2 includes a new bridge over the Cowlitz River that connects to Dike Road and the northern portion of the Anchor Point site. The new bridge has been located at an elevation of 67-feet over the channel (the same elevation of the SR 432 bridges just to the north, as taken from Google Earth) and includes three equal spans of approximately 250-feet each (see **Figure 19**).



Following is a summary of the design criteria, anticipated environmental impacts, and construction costs for this elevated access route.

*Table 8: Option 2 Design Elements*

<b>Elevated Structures:</b>	<b>Bridge Length</b>	<b>Facility Crossing:</b>	<b>Vertical Clearance from Facility to Bottom of Bridge Girders</b>
	750-ft.	Cowlitz River	67-ft (same elevation of the SR 432 bridges just to the north, as taken from Google Earth)
<b>Design Vehicle:</b>	WB-67 (Truck-Tractor with a 53' trailer)		
<b>Roadway Cross Section:</b>	12' lanes, 3' shoulders, 2:1 cut/fill slopes		
<b>Maximum profile grade:</b>	5%		
<b>Posted speed:</b>	20 mph (30 mph design speed)		
<b>Pedestrian facilities:</b>	6-ft. sidewalk on one side of bridge		
<b>Environmental Impacts:</b>	Medium wetland impacts resulting from bridge foundation footprints and approach embankment on north side of Cowlitz River		
<b>Construction Cost:</b>	\$74M		



#### 4.2.4. Option 3A – Elevated Railroad and Wetland Crossing Across Wye in Tracks

Option 3A departs near the terminus of the Talley Way extension and has a reverse set of curves to rise up to cross over the wetlands adjacent to Talley Way, the BNSF tracks, and the secondary railway extending across the Cowlitz River. This design alignment remains elevated as it crosses the onsite wetlands and then touches down to existing ground in the middle of the site. This access route is a series of pre-stressed concrete spans and post-tensioned precast or cast-in-place long-span bridges with fill approaches at the eastern and western limits, as shown in Figure 20.



Following is a summary of the design criteria, anticipated environmental impacts, and construction costs for this elevated access route.

*Table 9: Option 3A Design Elements*

<b>Elevated Structures:</b>	<b>Bridge Length</b>	<b>Facility Crossing:</b>	<b>Vertical Clearance from Facility to Bottom of Bridge Girders</b>
	125-ft.	wetlands adjacent to Talley Way	N/A
	225-ft.	BNSF main line double-tracks	23.5-ft
	200-ft.	Wetlands in wye of tracks	N/A.
	200-ft.	secondary railway extending across Cowlitz River	23.5-ft.
	1025-ft.	Wetlands	N/A
<b>Design Vehicle:</b>	WB-67 (Truck-Tractor with a 53' trailer)		
<b>Roadway Cross Section:</b>	12' lanes, 3' shoulders, 2:1 cut/fill slopes		
<b>Maximum profile grade:</b>	5%		
<b>Posted speed:</b>	20 mph (30 mph design speed)		
<b>Pedestrian facilities:</b>	6-ft. sidewalk on one side of bridge		
<b>Environmental Impacts:</b>	Minor wetland impacts resulting from bridge foundation footprints		
<b>Roadway/Bridge Construction Cost:</b>	\$55M		



#### 4.2.5. Option 3B – Elevated Railroad and Wetland Crossing

Option 3 departs at the terminus of the Talley Way extension, crosses over the wetlands adjacent to Talley Way and the BNSF tracks, rises up over the BNSF tracks, comes down but remains elevated above the wetlands, and enters the Anchor Point site in the eastern corner. This access route is a series of pre-stressed concrete spans and post-tensioned precast or cast-in-place long-span bridges with fill approaches at the eastern and western limits, as shown in Figure 21.





Following is a summary of the design criteria, anticipated environmental impacts, and construction costs for this elevated access route.

*Table 10: Option 3B Design Elements*

<b>Elevated Structures:</b>	<b>Bridge Length</b>	<b>Facility Crossing:</b>	<b>Vertical Clearance from Facility to Bottom of Bridge Girders</b>
	150-ft.	wetlands adjacent to Talley Way	N/A
	325-ft.	BNSF main line double-tracks	23.5-ft
	1575-ft.	Wetlands	N/A
<b>Design Vehicle:</b>	WB-67 (Truck-Tractor with a 53' trailer)		
<b>Roadway Cross Section:</b>	12' lanes, 3' shoulders, 2:1 cut/fill slopes		
<b>Maximum profile grade:</b>	5%		
<b>Posted speed:</b>	20 mph (30 mph design speed)		
<b>Pedestrian facilities:</b>	6-ft. sidewalk on one side of bridge		
<b>Environmental Impacts:</b>	Minor wetland impacts resulting from bridge foundation footprints		
<b>Roadway/Bridge Construction Cost:</b>	\$42M		

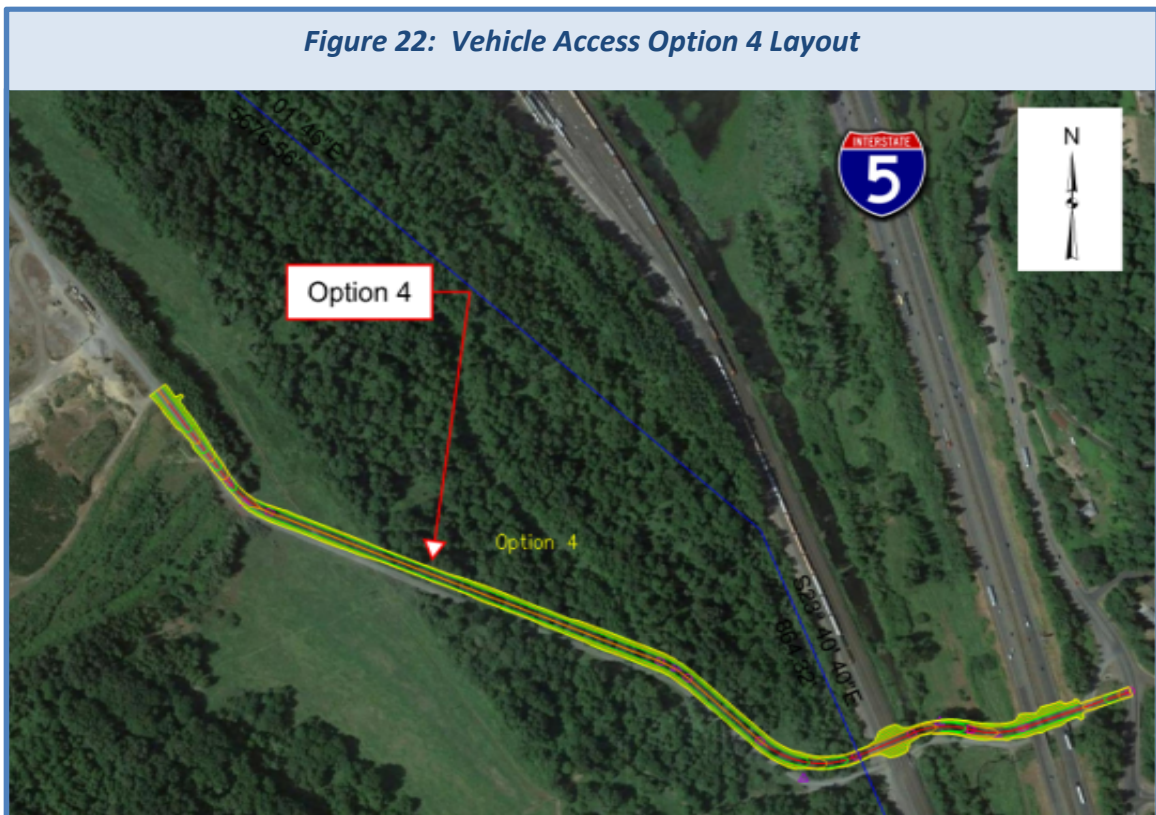
#### 4.2.6. Option 4 – Upgrade Existing Owl Creek Access

Option 4 upgrades the existing Owl Creek entrance to the Anchor Point property and assumes this will be a private driveway. The roadway surface will dip down to achieve 15 feet of vertical clearance at the existing I-5 and BNSF bridges. The roadway surface then rises up to an elevation of 22.0 feet (1 foot above the 100-year flood elevation of 21-feet) until it enters the east corner of the property.

The portion of the lowered grade roadway where the alignment crosses under the I-5 and BNSF bridges will contain a box structure/tunnel to seal water out to elevation 22.0 feet. A u-shaped structure/tub will be used beyond the limits of the existing I-5 and BNSF structures to seal water out to elevation 22.0 feet. The portion of the access road that crosses under the bridges will be alternating one-way signalized traffic, due to lane width limitations at the existing structures. Performing any sort of excavation under the existing Interstate-5 bridges creates the possibility of having to construct seismic upgrades to the existing bridges, if it is determined that lowering the roadway and any associated u-shaped structure alters the reactions of the piles supporting the structures. See **Appendix E** for typical cross sections of the u-shaped structure and fill condition.

New culverts would most likely need to be installed under the access road to hydraulically connect the wetlands on either side of the access road. This access route is a series of box and u-shaped structures below the 100-year flood plain with one foot of freeboard and embankment in the wetlands, as shown in **Figure 22**. A stormwater runoff collection and pumping system would be required to keep these box and u-shaped structures from flooding.

To construct a public roadway facility at this location, a full two-lane roadway would need to be constructed near the existing I-5 and BNSF bridges, which would result in significant impacts to those existing bridges.



Following is a summary of the design criteria, anticipated environmental impacts, and construction costs for this elevated access route.

*Table 11: Option 4 Design Elements*

<b>Box and U-Shaped Structures:</b>	<b>Bridge Length</b>	<b>Facility Crossing:</b>	<b>Vertical Clearance from Facility to Bottom of Bridge Girders</b>
	1360-ft.	From Old 99 to Grade Above 22'	15'
<b>Design Vehicle:</b>	WB-67 (Truck-Tractor with a 53' trailer)		
<b>Roadway Cross Section:</b>	12' lanes, 3' shoulders, 2:1 cut/fill slopes		
<b>Maximum profile grade:</b>	5%		
<b>Posted speed:</b>	20 mph (30 mph design speed)		
<b>Pedestrian facilities:</b>	None		
<b>Environmental Impacts:</b>	Significant wetland impacts from roadway widening and raising roadway surface above floodplain while in very close proximity to Owl Creek		
<b>Roadway/Bridge Construction Cost:</b>	\$28M		

### 4.3. Vehicle Access Alternatives Summary

As detailed below in **Table 12** vehicle access Option 1A appears to be the preferred option, due to the lowest construction cost and only minor anticipated wetland impacts. However, this option does rely on the site owner and BNSF entering into an easement agreement to allow the at-grade roadway corridor to pass through their maintenance yard, which is potentially disruptive to their rail operations.

*Table 12: Vehicle Access Options Summary*

<b>Vehicle Access Option</b>	<b>Roadway/Bridge Construction Cost</b>	<b>Wetland Impact Overview</b>
<b>1A</b>	<b>\$3M</b>	<b>Minor</b>
1B	\$42M	Minor
2	\$74M	Medium
3A	\$55M	Minor
3B	\$42M	Minor
4	\$28M	Significant

## 5. Utilities

### 5.1. General Utility Discussion

Several utilities will need to be brought to the site including sewer, water, power, natural gas, and CATV/Phone. This study presents several options for utility locations and size, based on proposed access routes to the site, location of existing utilities, and an expected range of low and high use utility requirements for the site.

Utility Service Corridor Option A consists of directional drilling utilities underneath the BNSF yard, assuming this easement would be granted by BNSF. This option could be selected regardless of which vehicle access alternative was selected for development.

For vehicle access alternatives 1A, 1B, 3A, and 3B, Utility Option B consists of running utilities along the vehicle access alignments, in which the utilities would be installed in trenches in areas of roadway fill and then attached to the bridge spans.

All access alternatives and associated utility routes connect to existing utilities within the adjacent Segale development, Kelso Village, located east of the site. As of date of this report, this right-of-way and utilities have not been turned over to the City of Kelso; this will need to occur before access and utilities can be extended from this location.

See **Figure 23** through **Figure 28** for Utility Service Corridor locations for each of the vehicle access options.

### 5.2. Water

Domestic and Fire water routes are shown for Options A and B, associated with each of the proposed access alternatives. Option A consists of directional drilling an 8-inch water main underneath the east end of the BNSF yard, and connection to the City of Kelso existing 12-inch water main located within Talley Way. This option would result in a dead-end system onsite. Option B consists of routing the 8-inch water main along the proposed access alignment where portions of the water main would be placed underground and others would be attached to the bridge spans. The proposed 8-inch water main would connect to the City of Kelso existing 12-inch water main located within Talley Way. This option would result in a dead-end system onsite.

Pumping water out of the Cowlitz River for fire protection could be evaluated as an additional water source for the site. The costs and configurations for this type of system was not part of this study.

The City of Kelso water system is not currently sized for high industrial water demand over 3,800 gallons per minute (gpm), and an alternate water source would be needed for this. High demand water sources can potentially come from an on-site Ranney type system that collects ground water that is hydraulically connected to the Cowlitz River. Based on conversations with Layne Construction and Drilling Company, to produce 20 million gallons per day (mgd) there are several options for the Ranney system including multiple collector wells completed in the alluvial deposits along the Cowlitz River or a single collector well completed in the deeper alluvial deposits associated with the Columbia River valley which intersect the Cowlitz River valley alluvium in this area. If a single deeper collector well can develop the required 20 mgd, it will likely cost \$4-4.5

million for the below grade well. If multiple collector wells in the shallower Cowlitz River alluvium are required, this could cost between \$6-8 million depending on depths and number of wells required. The completion of the well will require pumps, piping, electrical controls, etc. which could cost from \$500,000 for the shallower wells to \$1 million for a single deeper well (20 mgd). If the well is completed with a pump house building, that will be an additional cost.

Additional onsite water treatment may be required for removal of minerals, calcium, magnesium, arsenic, etc. with this type of system. The costs and configurations for an onsite water system was not part of this study and will be determined based on the future facility that will occupy the site.

General permitting requirements for a Ranney system would include obtaining a water right through the Washington State Department of Ecology; obtaining a Group-A Water system approval from Washington Department of Health (if the system will be used by 25 people or more for drinking purposes) as well as construction permits.

### **5.3. Sanitary Sewer**

Sewer routes are shown for Options A and B, associated with each of the proposed access alternatives. A gravity sewer does not appear to be feasible for either Option A or B and a pump station and sewer force main would need to be located onsite. A septic system may be able to be used for a low domestic use configuration.

Option A consists of directional drilling an 8-inch sewer force main underneath the east end of the BNSF yard, and connecting to the existing 12-inch sewer main located within Talley Way.

Option B consists of routing the 8-inch sewer force main along the proposed access alignment where portions of the force main would be placed underground and others would be attached to the bridge spans. The proposed force main would connect to the existing 12-inch sewer main located within Talley Way.

### **5.4. Power**

A low and high power requirement of 20 megawatt (MW) and 300 MW were explored for this site, both of which would entail construction of an onsite substation.

For 20 MW, the substation would be fed via overhead lines off of the BPA transmission line and then back to the BPA line, the point of connection can be anywhere along the eastern property line as needed for site planning/critical areas. Estimated footprint for substation is 200 ft. wide by 200 ft. long. Construction timeline is approximately 1-year. Permitting timeline is approximately 6-months to 1-year and may be able to be a joint submittal with the site design.

A 300 MW substation would require construction of a 230kV overhead line extending to the BPA Longview substation, which is approximately 6-miles northwest of the site and located along SR 432 and the Columbia River. The costs for constructing this length of overhead line was not part of this study and are to be determined based on the future facility that will occupy the site.

### **5.5. Natural Gas**

Natural gas routes are shown for Options A and B, associated with each of the proposed access alternatives.

Option A consists of directional drilling an 8-inch gas main underneath the east end of the BNSF yard, and connecting to the existing 12-inch gas main located within the Segale property.

Option B consists of routing the 8-inch gas main along the proposed access alignment where portions of the gas main would be placed both underground and others would be attached to the bridge spans. The point of connection is the same as Option A, and is east of the gate controller with heads east approximately 2-miles and connecting to the Williams pipeline.

The existing Cascade natural gas system is not currently sized to provide large volumes of gas to the site. The existing system may only be sufficient to provide a low volume of gas needed for typical commercial use, not high use industrial. The proposed 8-inch gas main extension is not based on any capacity needs for the site, as the needed capacity and pressure will ultimately determine what this line size will need to be.

However, a high volume gas line may be able to be extended directly from the Williams pipeline and extended approximately two miles to the site. The proposed improvements and associated costs for a high capacity gas line was not part of this study and is to be determined, based on the needed volume and pressure for the future facility that will occupy the site. Williams desires to enter into a non-disclosure agreement (NDA) prior to analyzing these costs further. The Owner’s consultants will have confidential information related to this prospective utility development.

## 5.6. CATV/Phone

CATV/Phone can be extended to the site via access alternative Options A and B. Comcast has existing service near the intersection of Old Pacific Highway and Brookside Drive or Talley Way. The cost of extending service can only be estimated by the cable company once a physical address and construction project is underway. An estimated construction cost was provided by a representative from Comcast Business Services and can be found in the cost estimate.

## 5.7. Utility Access Summary and Costs

The conceptual level cost evaluation for sanitary sewer, water main, gas main, communication, and power are detailed below in **Table 13** for both the Utility Corridor Route A and B. For both utility corridors, two total costs are shown: the lower value includes a 20MW power substation and the higher value includes a 30MW substation. For all vehicle access alternatives (except for Vehicle Access Option 1A) Utility Service Corridor Option A would be preferred due to the lower costs and shorter distance associated with boring directly under the BNSF yard.

**Table 13: Utility Service Corridor Cost Summary**

Vehicle Access Option	Utility Corridor Route A		Utility Corridor Route B	
	20 MW Power Substation	30 MW Power Substation	20 MW Power Substation	30 MW Power Substation
1A	<b>\$5.8M</b>	<b>\$21.3M</b>	<b>\$5.2M</b>	<b>\$20.6M</b>
1B			\$6.5M	\$22.0M
2			-	-
3A			\$6.3M	\$21.8M
3B			\$6.4M	\$21.9M
4			-	-



Figure 23: Vehicle Access Option 1A with Utility Corridor Options A & B

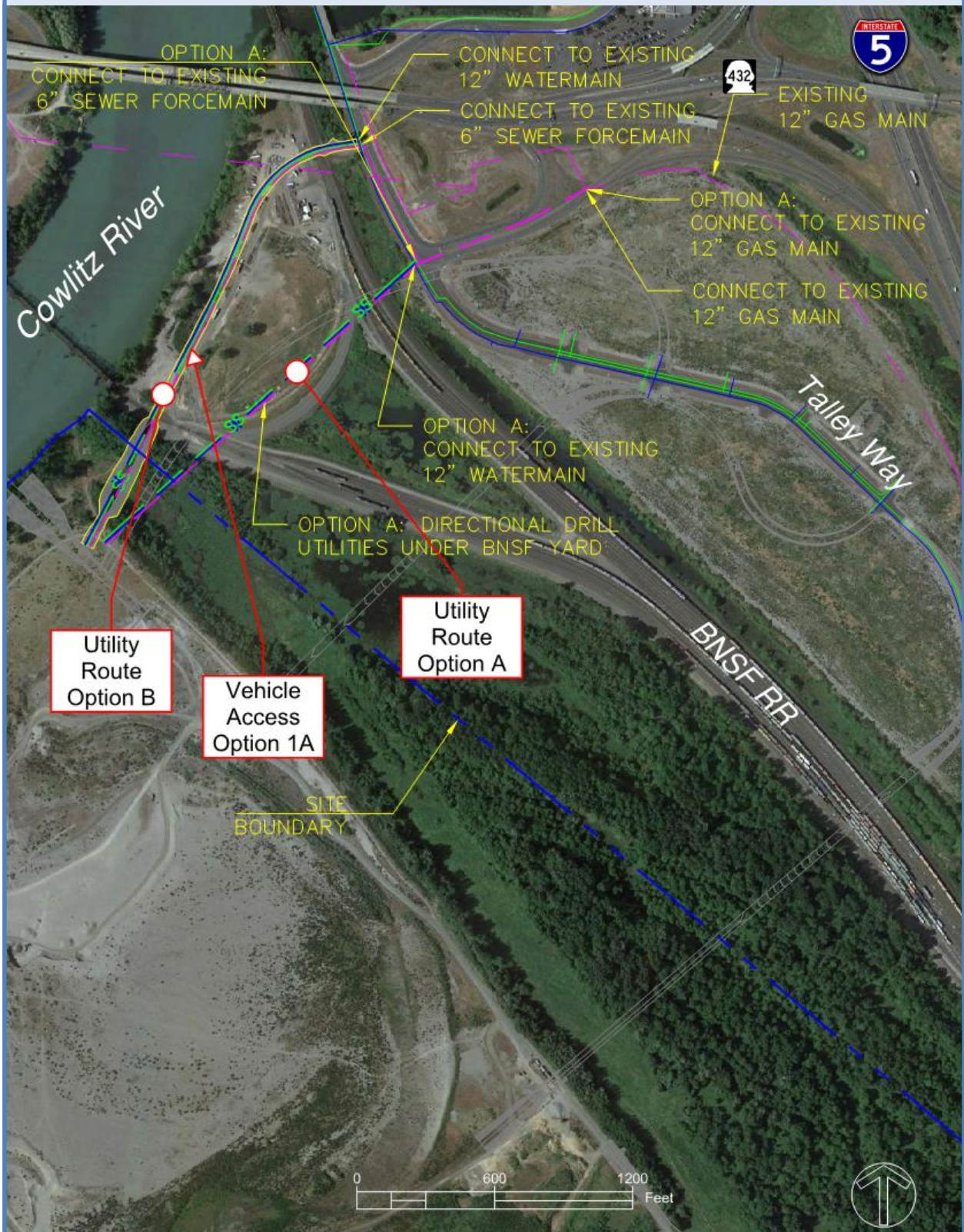




Figure 24: Vehicle Access Option 1B with Utility Corridor Options A & B

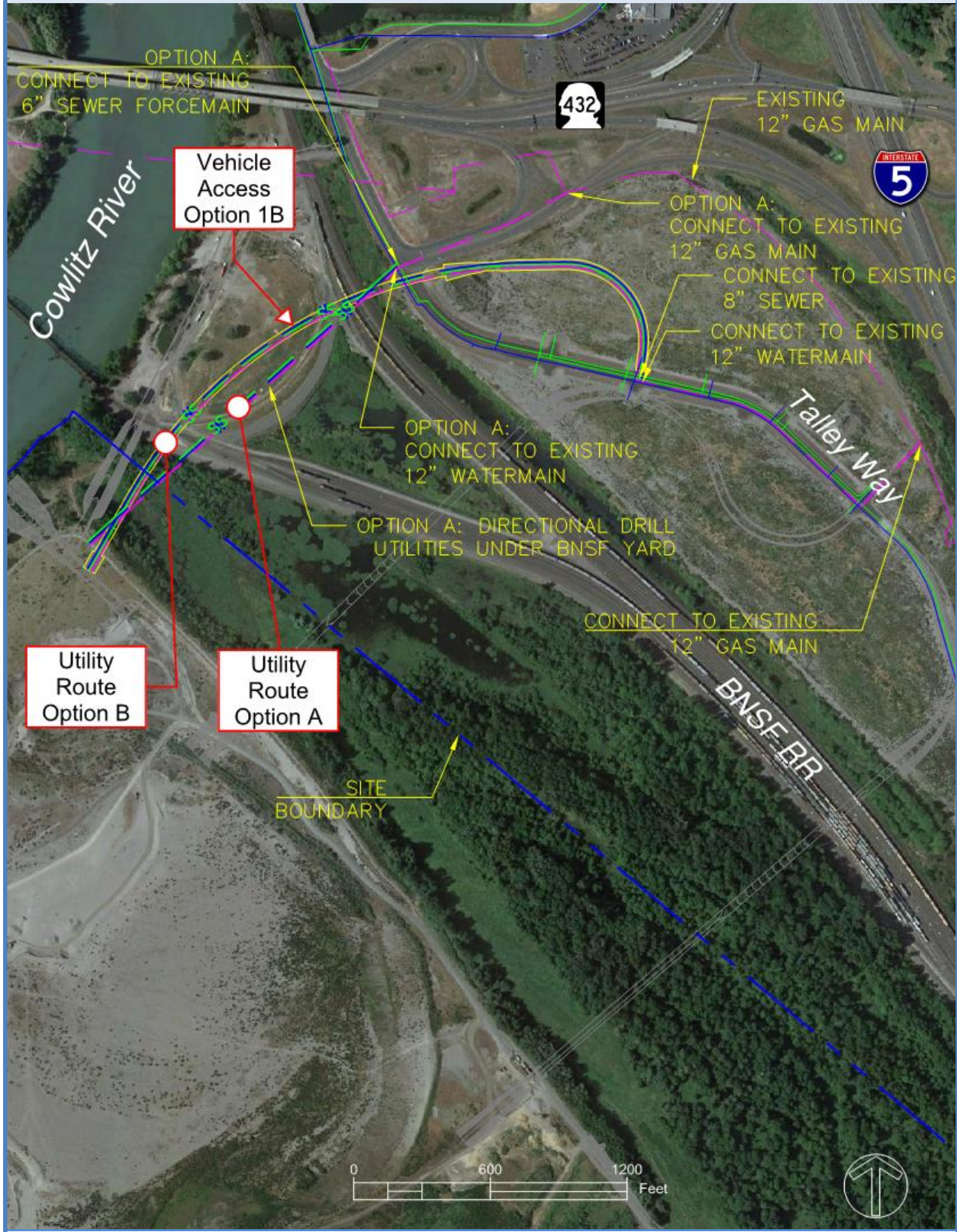




Figure 25: Vehicle Access Option 2 with Utility Corridor Option A

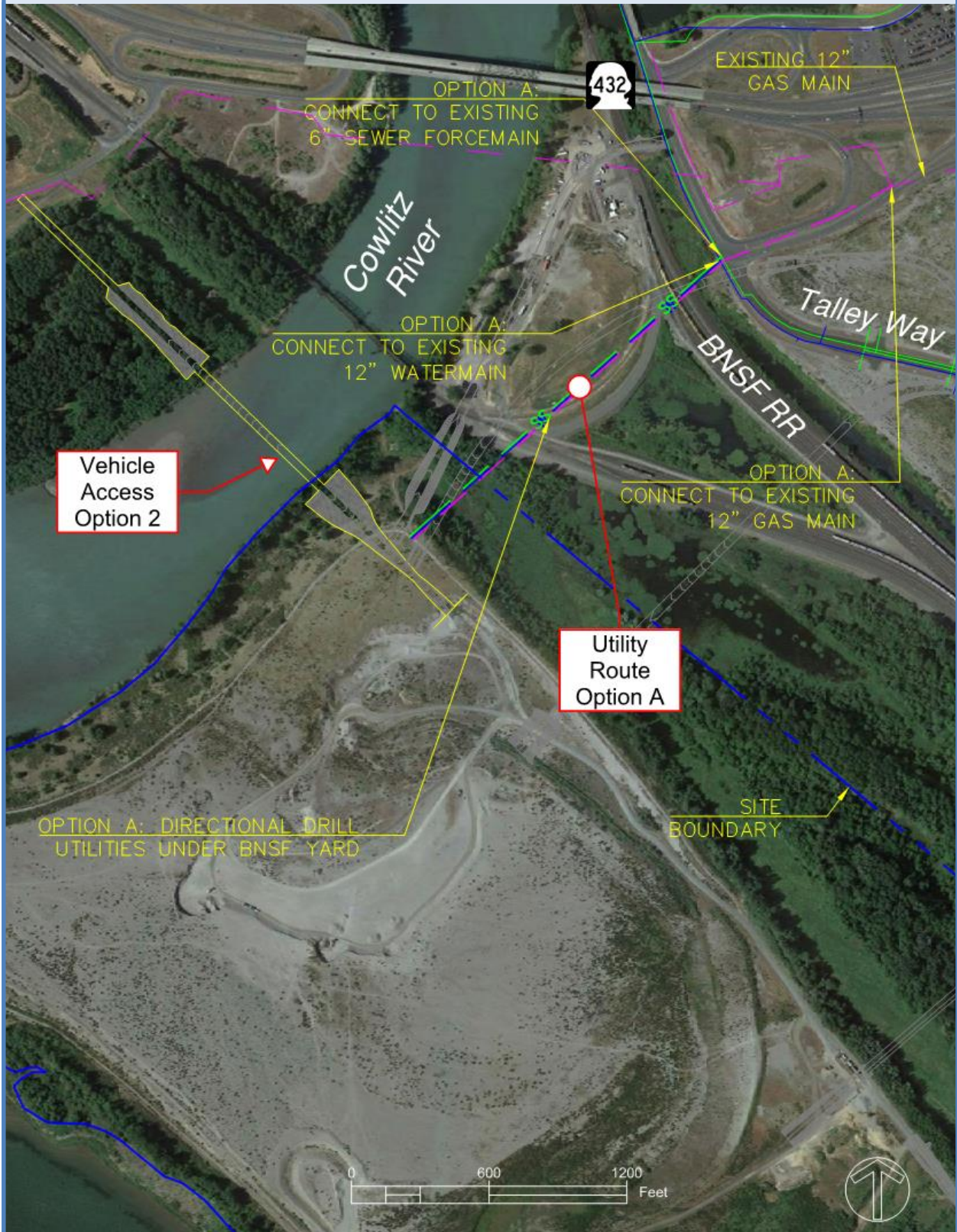




Figure 26: Vehicle Access Option 3A with Utility Corridor Options A & B

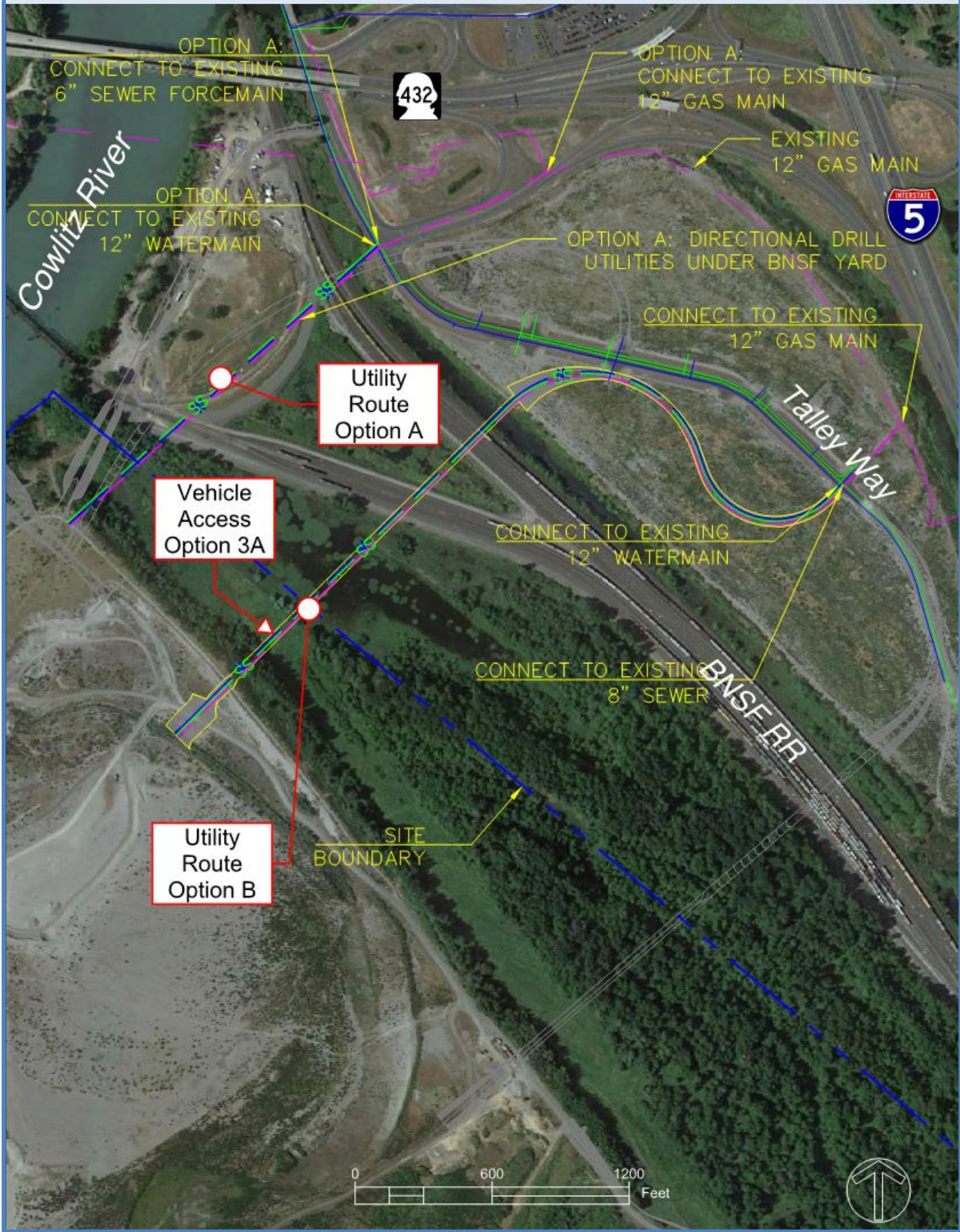




Figure 27: Vehicle Access Option 3B with Utility Corridor Options A & B

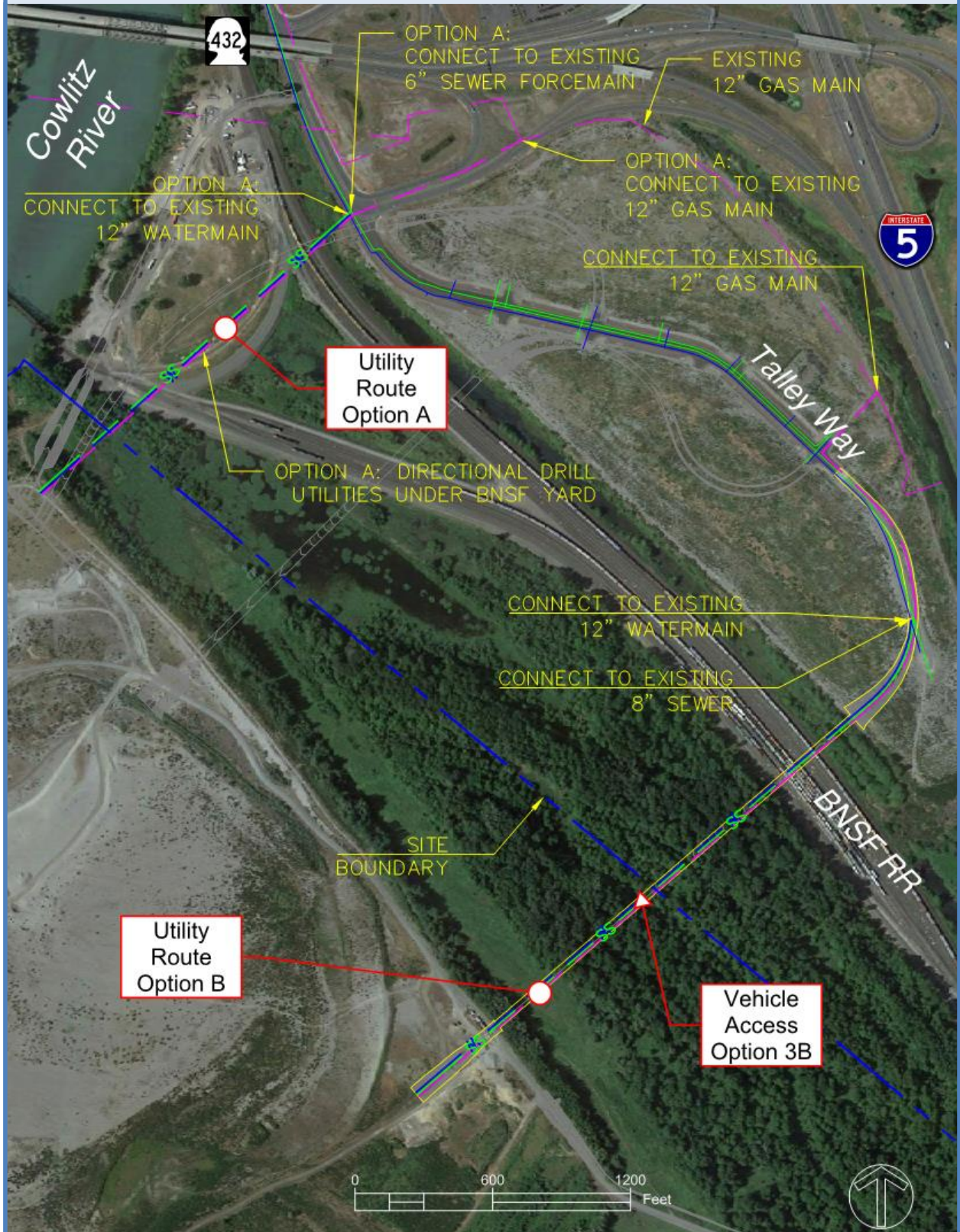
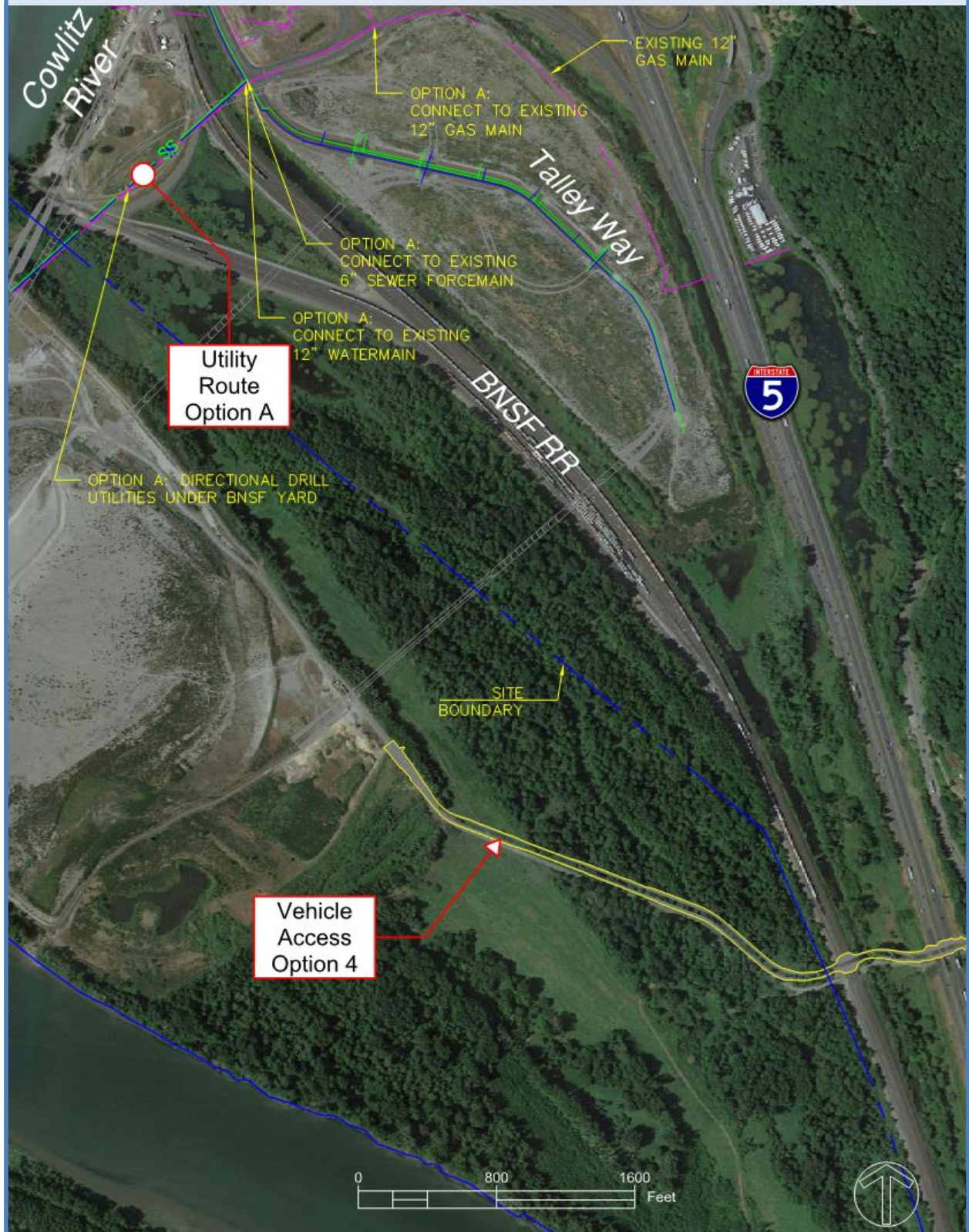




Figure 28: Vehicle Access Option 4 with Utility Corridor Option A





## 6. CONSTRUCTION PHASE SITE ACCESS

Access to the site during construction will also need to be considered for the future development of the site. The permanent vehicle access options that were discussed in Section 2 all have vehicle height and width restrictions, and may not accommodate heavy construction and industrial equipment. This type of equipment may be required to arrive at the site via the Columbia River on barges.

## 7. PART I SUMMARY

The purpose of Part I of this study was to analyze conceptual designs, permitting requirements and planning-level costs for vehicular access, freight rail access, and utility extensions to the Anchor Point site. Based on the information gathered during this study, future development of the Anchor Point site is possible, and has a range of access and utility service connection design options as listed below:

- a. The project team evaluated six vehicular access design concepts and two rail access design concepts. Two design strategies were developed to extend utilities from surrounding utility providers into the site, and were sized to accommodate a heavy industrial site usage.
- b. Rail connection to the BNSF main line is possible, and the most desirable geometric layout is the south-facing only connection, Option 1.
- c. Vehicular access can be accomplished in multiple locations. Option 1A (at-grade roadway through the BNSF maintenance yard) is the least expensive option with a conceptual construction cost of \$3M, and with only minor wetland impacts. It also appears that this roadway corridor would be located above the 100-year floodplain elevation, providing for reliable year-round access to the site. This at-grade access would be interrupted by train movements, which would be an uncontrollable variable for the site owner. However, this option is only possible if the site owner is able to negotiate an easement across the BNSF maintenance yard. If that cannot be accomplished, the site owner will need to evaluate the remaining five access design options to determine if the construction cost and wetland impacts are outweighed by the benefit of having a year-round uninterrupted access route into the site. The existing Owl-Creek private driveway can continue to operate in its current limited capacity, which includes constrained horizontal and vertical clearances, one lane operation, and is prone to flooding.
- d. Construction access for equipment and facility equipment installation will need to be considered in addition to the vehicle access route. Large, over-sized equipment may likely arrive on barge via the Columbia River.
- e. Utility improvements will vary depending on the ultimate site user and their facility needs. Connections to nearby domestic water, sanitary sewer, power (20MW substation), natural gas, and phone/communications can be made by either connecting to the site via Utility Corridor Option A or B. Utility Corridor Option A is \$5.8M and Utility Corridor Option B ranges from \$5.2M to \$6.4M, depending on Vehicle Access route chosen. If the site user will need to increase the power substation from 20MW to 30 MW, an additional \$15M should be added to the utility cost. Construction of a Ranney water system is not included in the Utility Corridor Option A/B costs, and would be an additional \$4M to \$8M, depending on number/depth of wells, plus an additional \$500,000 to \$1M for pumps, piping, etc.

- f. Future building finish floor elevations will need to be constructed above the floodplain elevation of 21.0-feet.
- g. Available upland acreage for site development will be governed by wetland and wetland buffer boundaries. The presence of wetlands will also affect the design for vehicular access, rail connection, and utility connections. Wetland buffers will be required, which could be in the range of 260-feet based on the Category I wetlands present on the site. Wetland mitigation will be necessary for any impacts as well. Costs for wetland mitigation are not known at this time.

***End of Part I Report***

# **Anchor Point Industrial Site**

## Feasibility Study

### Part II – Economic Impact Assessment

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# PART II – ECONOMIC STUDY

## 1. Economic Impact Assessment

### 1.1. Introduction

This economic impact summary report, prepared by J Robertson and Company with research and analysis support supplied by E.D. Hovee & Co., summarizes potential economic impacts associated with several development scenarios at the Anchor Point industrial site located in within Kelso city limits, in Cowlitz County, Washington. The summary report is part of a broader Anchor Point master planning effort funded through a Washington State Community and Economic Revitalization Board (CERB) grant and led by David Evans and Associates (DEA). Key project partners include the City of Kelso (CERB grant recipient) and the site owner, Winters Anchor Point LLC.

The Anchor Point parcel is approximately 600-acres, located at the southern limits of the City of Kelso. Access to the property is tightly constrained by geographical barriers including two rivers: Cowlitz River to the northwest and Carroll’s Channel to the south, and the BNSF rail main line to the north and east. In total, approximately 300 acres of the property are considered developable, but this value will depend on future delineations of wetland boundaries and width of wetland buffers. The property is zoned industrial and provides extensive natural buffering surrounding the developable areas. The I-5 corridor location provides direct access to the Interstate, the BNSF main line, and the deep water navigation channel of the Columbia River.

The site is uniquely positioned for direct rail main line access, service from both the BNSF and Union Pacific Railroads, and unit train arrivals and departures. The Longview Rail Yard is also adjacent to the site, with direct rail access. All rail operations on the site would stop short of the congested City of Longview rail yards and industries, supporting reduced rail impacts within the City, which has 13 at-grade crossings. It is estimated the upland site can accommodate a loop track with 170 interior acres, with sufficient capacity to chamber multiple unit trains at one time.

### 1.2. Development Scenarios

Project partners have not identified a specific future use for the Anchor Point site, but believe the highest and best use would be a multi-purpose rail and marine served industrial site, combining direct access to the BNSF main line and the Columbia River deep-water channel. Earlier in the planning process, project partners supplied the consultant team a “position paper” outlining a general vision for the property, and offering peer development examples that might provide proxy information consistent with desired outcomes at Anchor Point. The partners, based on additional external studies, have asked the consultant team to assume deep draft marine and rail access will exist for the purposes of scenario building.

Based on that input, the consultant team proposed and confirmed a multi-use development scenario, including:

- Scenario A: Two grain (or dry bulk agricultural-related products) terminals on 75 acres with access to marine shipping facilities

- Scenario B: Two energy-related/manufacturing companies on 75 acres with access to marine shipping facilities
- Scenario C: One large-scale metal fabrication company located on 150 upland acres

Projected impacts are outlined in the following section.

## 1.3. Findings

### 1.3.1. Assessed Impacts

The following provides an assessment of potential economic impacts for each of the three development scenarios, as well as a collective “summary impact” estimating total economic and fiscal impacts if all three development scenarios were to be constructed and operated on the Anchor Point site. Individual assessments were developed in the event that one or more of the envisioned uses is not pursued or found to be unachievable. Assessed economic impacts include:

- Capital Investment Potential
- Economic Impacts of Construction
  - Output
  - Employment
  - Payroll
  - Annual Average Wage
- Economic Impacts of On-Going Operations
  - Output
  - Employment
  - Payroll
  - Annual Average Wage
- Direct Fiscal Impacts of Construction
  - Sales Tax
  - Business & Occupation Tax
  - Total One-Time Tax Revenue
- Direct Fiscal Effects of On-Going Operations
  - Annual Business Revenue
  - Property Tax
  - Sales Tax
  - Business & Occupation (B&O) or Natural Gas Tax
  - Total Annual Tax Revenue

### 1.3.2. Development Scenarios

This section includes summary findings for each of the three development options, followed by a summary for the combined development scenario. All scenarios are illustrative in nature, based on peer development examples. Please review the Notes and Caveats provided in the appendix for additional qualifying and interpretive information. Additional detailed tax revenue projections are provided by major jurisdiction at the conclusion of the report.

**Scenario-A: Grain Terminals**

Assumptions: Two grain terminals will occupy 75 of 300 developable acres on waterfront. Deep draft and rail access are available. Economic impacts based on EGT Grain model in Longview. Partial sales tax credit assumed for grain handling facilities. No grain terminal annual business revenue supplied.

**Table 1: Scenario A (Grain Terminal) Economic Impact Summary**

<b>Capital Investment Potential (with Construction)</b>		
Investment per Acre	\$6,000,000	Estimated in 2015 dollars
Estimated Site Total	\$450,000,000	Excludes land cost
<b>Economic Impacts of Construction (One-Time)</b>		
<b>Output</b>		Estimated in 2015 dollars
Direct	\$450,000,000	
Indirect & Induced	\$238,500,000	
Total Output	\$688,500,000	
<i>Economic Multiplier</i>	<i>1.53</i>	
<b>Employment</b>		
Direct	405	
Indirect & Induced	315	
Total Employment	720	
<i>Economic Multiplier</i>	<i>1.78</i>	
<b>Payroll</b>		
Direct	\$25,520,000	
Indirect & Induced	\$9,190,000	
Total	\$34,710,000	
<i>Economic Multiplier</i>	<i>1.36</i>	
<b>Average Wage (Annualized)</b>		
Direct	\$63,000	
Indirect & Induced	\$29,200	
All Jobs	\$48,200	
<b>Economic Impacts of On-Going Operations (Annually @ Stabilized Operations)</b>		
<b>Output</b>		Estimated in 2015 dollars
Direct	\$15,855,000	
Indirect & Induced	\$7,455,000	
Total Output	\$23,310,000	

<i>Economic Multiplier</i>	<i>1.47</i>	
<b>Economic Impacts of On-Going Operations (Annually @ Stabilized Operations) – Continued</b>		
<b>Employment</b>		
Direct	105	
Indirect & Induced	60	
Total Employment	165	
<i>Economic Multiplier</i>	<i>1.57</i>	
<b>Payroll</b>		
Direct	\$9,660,000	
Indirect & Induced	\$2,800,000	
Total	\$12,460,000	
<i>Economic Multiplier</i>	<i>1.29</i>	
<b>Average Wage (Annualized)</b>		
Direct	\$92,000	
Indirect & Induced	\$46,700	
All Jobs	\$75,500	
<b>Direct Fiscal Impacts of Construction (One-Time Revenues)</b>		
<b>Sales Tax</b>		Estimated in 2015 \$
Tax Rate	8.00%	Combined rate for Kelso
Estimated Sales Tax	\$27,970,000	Direct project effects only
<b>Business &amp; Occupation (B&amp;O) Tax</b>		
Tax Rate	0.00584	Combined Kelso/State rate
Estimated B&O Tax	\$2,630,000	
<b>Total One-Time Tax Revenue</b>		Direct effects only
State of Washington	\$24,910,000	
Kelso/Local Jurisdictions	\$5,690,000	
Total Revenue	\$30,600,000	
<b>Direct Fiscal Effects of On-Going Operations (Annually @ Stabilized Operations)</b>		
<b>Property Tax</b>		
Tax Rate (per \$1,000 TAV)	\$14.12319	Combined rate for Kelso
Estimated Property Tax	\$6,360,000	Direct project effects only
<b>Sales Tax</b>		
Tax Rate	8.00%	Combined rate for Kelso

Estimated Sales Tax	\$370,000	Direct project effects only
<b>Business &amp; Occupation (B&amp;O) or Natural Gas Tax</b>		
Tax Rate	0.00584	Combined Kelso/State rate
Estimated B&O/Gas Tax	NA	Excludes grain terminal
<b>Total Annual Tax Revenue</b>		
State of Washington	\$1,330,000	Direct project effects only
Kelso/Local Jurisdictions	\$5,400,000	Direct project effects only
Total Revenue	\$6,730,000	Excludes multiplier impact

**Scenario-B: Energy Companies**

Assumptions: Two energy companies will occupy 75 of 300 developable acres on waterfront. Deep draft and rail access are available. Economic impacts based on Kalama Energy model in Longview. Estimate does not include WA State greenhouse gas mitigation fees.

**Table 2: Scenario B (Energy) Economic Impact Summary**

<b>Capital Investment Potential (with Construction)</b>		
Investment per Acre	\$13,500,000	Estimated in 2015 dollars
Estimated Site Total	\$1,012,500,000	Excludes land cost
<b>Economic Impacts of Construction (One-Time)</b>		
<b>Output</b>		Estimated in 2015 dollars
Direct	\$1,012,500,000	
Indirect & Induced	\$536,630,000	
Total Output	\$1,549,130,000	
<i>Economic Multiplier</i>	<i>1.53</i>	
<b>Employment</b>		
Direct	330	
Indirect & Induced	255	
Total Employment	585	
<i>Economic Multiplier</i>	<i>1.78</i>	
<b>Payroll</b>		
Direct	\$62,370,000	
Indirect & Induced	\$22,450,000	
Total	\$84,820,000	
<i>Economic Multiplier</i>	<i>1.36</i>	



<b>Average Wage (Annualized)</b>		
Direct	\$189,000	
Indirect & Induced	\$88,000	
All Jobs	\$145,000	
<b>Economic Impacts of On-Going Operations (Annually @ Stabilized Operations)</b>		
<b>Output</b>		Estimated in 2015 dollars
Direct	\$226,800,000	
Indirect & Induced	\$40,820,000	
Total Output	\$267,620,000	
<i>Economic Multiplier</i>	<i>1.18</i>	
<b>Employment</b>		
Direct	60	
Indirect & Induced	50	
Total Employment	110	
<i>Economic Multiplier</i>	<i>1.85</i>	
<b>Economic Impacts of On-Going Operations (Annually @ Stabilized Operations) – Continued</b>		
<b>Payroll</b>		
Direct	\$8,760,000	
Indirect & Induced	\$2,280,000	
Total	\$11,040,000	
<i>Economic Multiplier</i>	<i>1.26</i>	
<b>Average Wage (Annualized)</b>		
Direct	\$146,000	
Indirect & Induced	\$45,600	
All Jobs	\$100,400	
<b>Direct Fiscal Impacts of Construction (One-Time Revenues)</b>		
<b>Sales Tax</b>		Estimated in 2015 \$
Tax Rate	8.00%	Combined rate for Kelso
Estimated Sales Tax	\$54,630,000	Direct project effects only
<b>Business &amp; Occupation (B&amp;O) Tax</b>		
Tax Rate	0.00584	Combined Kelso/State rate
Estimated B&O Tax	\$5,140,000	
<b>Total One-Time Tax Revenue</b>		Direct effects only

State of Washington	\$48,650,000	
Kelso/Local Jurisdictions	\$11,120,000	
Total Revenue	\$59,770,000	
<b>Direct Fiscal Effects of On-Going Operations (Annually @ Stabilized Operations)</b>		
<b>Annual Business Revenue</b>		
\$226,800,000		
<b>Property Tax</b>		
Tax Rate (per \$1,000 TAV)	\$14.12319	Combined rate for Kelso
Estimated Property Tax	\$14,300,000	Direct project effects only
<b>Sales Tax</b>		
Tax Rate	8.00%	Combined rate for Kelso
Estimated Sales Tax	\$1,860,000	Direct project effects only
<b>Business &amp; Occupation (B&amp;O) or Natural Gas Tax</b>		
Tax Rate	3.852%	Combined Kelso/State rate
Estimated B&O/Gas Tax	\$5,500,000	Excludes grain terminal
<b>Total Annual Tax Revenue</b>		
State of Washington	\$9,320,000	Direct project effects only
Kelso/Local Jurisdictions	\$12,340,000	Direct project effects only
Total Revenue	\$21,660,000	Excludes multiplier impact

**Scenario-C: Metal Fabricator**

Assumptions: One large metal fabrication development will occupy 150 of the 300 developable acres on the upland portion of the site. Barge and rail access are available. Economic impacts based on Columbian Business Center model in Vancouver, Washington. Same scale could be achieved with multiple fabrication users on same site.

***Table 3: Scenario C (Fabrication) Economic Impact Summary***

<b>Capital Investment Potential (with Construction)</b>		
Investment per Acre	\$3,500,000	Estimated in 2015 dollars
Estimated Site Total	\$525,000,000	Excludes land cost
<b>Economic Impacts of Construction (One-Time)</b>		
<b>Output</b>		Estimated in 2015 dollars
Direct	\$525,000,000	
Indirect & Induced	\$231,000,000	

Total Output	\$756,000,000	
<i>Economic Multiplier</i>	1.44	
<b>Employment</b>		
Direct	3,090	
Indirect & Induced	1,825	
Total Employment	4,915	
<i>Economic Multiplier</i>	1.59	
<b>Payroll</b>		
Direct	\$253,380,000	
Indirect & Induced	\$65,880,000	
Total	\$319,260,000	
<i>Economic Multiplier</i>	1.26	
<b>Average Wage (Annualized)</b>		
Direct	\$82,000	
Indirect & Induced	\$36,100	
All Jobs	\$65,000	
<b>Economic Impacts of On-Going Operations (Annually @ Stabilized Operations)</b>		
<b>Output</b>		Estimated in 2015 dollars
Direct	\$305,730,000	
Indirect & Induced	\$140,640,000	
Total Output	\$446,370,000	
<i>Economic Multiplier</i>	1.46	
<b>Employment</b>		
Direct	1,290	
Indirect & Induced	980	
Total Employment	2,270	
<i>Economic Multiplier</i>	1.76	
<b>Economic Impacts of On-Going Operations (Annually @ Stabilized Operations) – Continued</b>		
<b>Payroll</b>		
Direct	\$104,490,000	
Indirect & Induced	\$60,600,000	
Total	\$165,090,000	
<i>Economic Multiplier</i>	1.58	

<b>Average Wage (Annualized)</b>		
Direct	\$81,000	
Indirect & Induced	\$61,800	
All Jobs	\$72,700	
<b>Direct Fiscal Impacts of Construction (One-Time Revenues)</b>		
<b>Sales Tax</b>		Estimated in 2015 \$
Tax Rate	8.00%	Combined rate for Kelso
Estimated Sales Tax	\$33,800,000	Direct project effects only
<b>Business &amp; Occupation (B&amp;O) Tax</b>		
Tax Rate	0.00584	Combined Kelso/State rate
Estimated B&O Tax	\$2,700,000	
<b>Total One-Time Tax Revenue</b>		Direct effects only
State of Washington	\$29,700,000	
Kelso/Local Jurisdictions	\$6,800,000	
Total Revenue	\$36,500,000	
<b>Direct Fiscal Effects of On-Going Operations (Annually @ Stabilized Operations)</b>		
<b>Annual Business Revenue</b>		
\$305,730,000		No grain terminal estimate
<b>Property Tax</b>		
Tax Rate (per \$1,000 TAV)	\$14.12319	Combined rate for Kelso
Estimated Property Tax	\$6,300,000	Direct project effects only
<b>Sales Tax</b>		
Tax Rate	8.00%	Combined rate for Kelso
Estimated Sales Tax	\$2,090,000	Direct project effects only
<b>Business &amp; Occupation (B&amp;O) or Natural Gas Tax</b>		
Tax Rate	0.00584	Combined Kelso/State rate
Estimated B&O/Gas Tax	\$1,210,000	Excludes grain terminal
<b>Total Annual Tax Revenue</b>		
State of Washington	\$3,720,000	Direct project effects only
Kelso/Local Jurisdictions	\$5,880,000	Direct project effects only
Total Revenue	\$9,600,000	Excludes multiplier impact

**All three Scenarios: Combined Impact**

The potential combined impact of all three future uses is shown in the far-right column below.

**Table 4: Combined Scenarios Economic Impact Summary**

<b>Impact Variable</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
<b>Capital Investment Potential (with Construction)</b>				
Investment per Acre	\$6,000,000	\$13,500,000	\$3,500,000	\$6,625,000
Estimated Site Total	\$450,000,000	\$1,012,500,000	\$525,000,000	\$1,987,500,000
<b>Economic Impacts of Construction (One-Time)</b>				
<b>Output</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
Direct	\$450,000,000	\$1,012,500,000	\$525,000,000	\$1,987,500,000
Indirect & Induced	\$238,500,000	\$536,630,000	\$231,000,000	\$1,006,130,000
Total Output	\$688,500,000	\$1,549,130,000	\$756,000,000	\$2,993,630,000
<i>Economic Multiplier</i>	<i>1.53</i>	<i>1.53</i>	<i>1.44</i>	<i>1.51</i>
<b>Employment</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
Direct	405	330	3,090	3,825
Indirect & Induced	315	255	1,825	2,395
Total Employment	720	585	4,915	6,220
<i>Economic Multiplier</i>	<i>1.78</i>	<i>1.78</i>	<i>1.59</i>	<i>1.63</i>
<b>Payroll</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
Direct	\$25,520,000	\$62,370,000	\$253,380,000	\$341,270,000
Indirect & Induced	\$9,190,000	\$22,450,000	\$65,880,000	\$97,520,000
Total	\$34,710,000	\$84,820,000	\$319,260,000	\$438,790,000
<i>Economic Multiplier</i>	<i>1.36</i>	<i>1.36</i>	<i>1.26</i>	<i>1.29</i>
<b>Average Wage (Annualized)</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
Direct	\$63,000	\$189,000	\$82,000	\$89,200
Indirect & Induced	\$29,200	\$88,000	\$36,100	\$40,700
All Jobs	\$48,200	\$145,000	\$65,000	\$70,500
<b>Economic Impacts of On-Going Operations (Annually @ Stabilized Operations)</b>				
<b>Output</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
Direct	\$15,855,000	\$226,800,000	\$305,730,000	\$548,385,000
Indirect & Induced	\$7,455,000	\$40,820,000	\$140,640,000	\$188,915,000
Total Output	\$23,310,000	\$267,620,000	\$446,370,000	\$737,300,000



Economic Multiplier	1.47	1.18	1.46	1.34
<b>Employment</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
Direct	105	60	1,290	1,455
Indirect & Induced	60	50	980	1,090
Total Employment	165	110	2,270	2,545
Economic Multiplier	1.57	1.85	1.76	1.75
<b>Payroll</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
Direct	\$9,660,000	\$8,760,000	\$104,490,000	\$122,910,000
Indirect & Induced	\$2,800,000	\$2,280,000	\$60,600,000	\$65,680,000
Total	\$12,460,000	\$11,040,000	\$165,090,000	\$188,590,000
Economic Multiplier	1.29	1.26	1.58	1.53
<b>Average Wage (Annualized)</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
Direct	\$92,000	\$146,000	\$81,000	\$84,500
Indirect & Induced	\$46,700	\$45,600	\$61,800	\$60,300
All Jobs	\$75,500	\$100,400	\$72,700	\$74,100
<b>Direct Fiscal Impacts of Construction (One-Time Revenues)</b>				
<b>Sales Tax</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
Tax Rate	8.00%	8.00%	8.00%	8.00%
Estimated Sales Tax	\$27,970,000	\$54,630,000	\$33,800,000	\$116,400,000
<b>Business &amp; Occupation Tax</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
Tax Rate	0.00584	0.00584	0.00584	0.00584
Estimated B&O Tax	\$2,630,000	\$5,140,000	\$2,700,000	\$10,470,000
<b>Total One-Time Tax Revenue</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
State of Washington	\$24,910,000	\$48,650,000	\$29,700,000	\$103,260,000
Kelso/Local Jurisdictions	\$5,690,000	\$11,120,000	\$6,800,000	\$23,610,000
Total Revenue	\$30,600,000	\$59,770,000	\$36,500,000	\$126,870,000
<b>Direct Fiscal Effects of On-Going Operations (Annually @ Stabilized Operations)</b>				
	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
<b>Annual Business Revenue</b>	NA	\$226,800,000	\$305,730,000	

<b>Property Tax</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
Tax Rate (per \$1,000 TAV)	\$14.12319	\$14.12319	\$14.12319	
Estimated Property Tax	\$6,360,000	\$14,300,000	\$6,300,000	\$26,960,000
<b>Sales Tax</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
Tax Rate	8.00%	8.00%	8.00%	
Estimated Sales Tax	\$370,000	\$1,860,000	\$2,090,000	\$4,320,000
<b>Business &amp; Occupation (B&amp;O) or Natural Gas Tax</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
Tax Rate	0.00584	3.852%	0.00584	
Estimated B&O/Gas Tax	NA	\$5,500,000	\$1,210,000	\$6,710,000
<b>Total Annual Tax Revenue</b>	<b>Grain</b>	<b>Energy</b>	<b>Fabrication</b>	<b>Build-Out Total</b>
State of Washington	\$1,330,000	\$9,320,000	\$3,720,000	\$14,370,000
Kelso/Local Jurisdictions	\$5,400,000	\$12,340,000	\$5,880,000	\$23,620,000
<b>Total Revenue</b>	<b>\$6,730,000</b>	<b>\$21,660,000</b>	<b>\$9,600,000</b>	<b>\$37,990,000</b>

### 1.3.3. Tax Revenue by Jurisdiction

The following provides a detailed breakdown of tax revenue impacts for individual jurisdictions assuming all three development options are realized. City of Kelso tax rates have been included in **Appendix G**. Impacts are provided for both the construction and ongoing operational phase (one-time, annualized and cumulative).

**Table 5: Tax Revenues**

<b>Tax Revenues from Construction &amp; Operations (@ Full Site Build-Out)</b>			
<b>Tax &amp; Jurisdiction</b>	<b>Applicable Tax Rate</b>	<b>Construction (One-Time)</b>	<b>Operations (Annualized)</b>
<b>Sales Tax</b>			
	% of Sales		
Kelso Basic	0.50%	\$7,275,000	\$270,000
Kelso Optional	0.50%	\$7,275,000	\$270,000
Transit	0.30%	\$4,365,000	\$162,000
Criminal Justice	0.10%	\$1,455,000	\$54,000
Mental Health	0.10%	\$1,455,000	\$54,000
State of Washington	6.50%	\$94,575,000	\$3,510,000
<b>Total Sales Tax</b>	<b>8.00%</b>	<b>\$116,400,000</b>	<b>\$4,320,000</b>
<b>Property Tax</b>			
	\$ / \$1,000 TAV		
STATE SCHOOLS	\$2.28240	\$0	\$4,356,900
CURRENT EXPENSE	\$2.10418	\$0	\$4,016,700
STATE VETERANS RELIEF	\$0.01125	\$0	\$21,500
HUMAN SERVICES MENTAL HEALTH	\$0.02501	\$0	\$47,700
CITY OF KELSO	\$2.04674	\$0	\$3,907,100
KELSO SCHOOL DISTRICT #458	\$5.61860	\$0	\$10,725,400
PORT OF LONGVIEW	\$0.45000	\$0	\$859,000
KELSO/LONGVIEW FIRE DIST #2	\$1.50000	\$0	\$2,863,400
ROSE VALLEY CEMETERY DIST #6	\$0.08501	\$0	\$162,300
<b>Total Property Tax Rate</b>	<b>\$14.12319</b>	<b>\$0</b>	<b>\$26,960,000</b>
<b>B&amp;O Tax Rate (Fab Only)</b>			
	% of taxable gross		
City of Kelso	0.001	\$1,792,800	\$207,200
State of Washington	0.00484	\$8,677,200	\$1,002,800
<b>Total B&amp;O Tax</b>	<b>0.00584</b>	<b>\$10,470,000</b>	<b>\$1,210,000</b>
<b>Natural Gas Usage Tax Rate (Energy Only)</b>			
State of Washington	3.8520%	\$0	\$5,500,000
<b>TOTAL TAXES - ALL JURISDICTIONS</b>		<b>\$126,870,000</b>	<b>\$37,990,000</b>

## 1.4. Conclusions and Considerations

The following observations are offered for project team consideration in evaluating options and next steps. It is important to note that all conclusions are subject to one's perspective and objectives.

- If project developers are able to secure access to offsite, but nearby, marine terminal services, both the "Energy Company" and "Grain Terminal" options would afford unique development opportunities (very few marine terminal-served sites available in region), with significant fiscal impacts for the State and local jurisdictions alike.
- The "Energy" scenario would appear to generate the highest tax revenue for the State and local jurisdictions, but comes with considerably fewer jobs than the "Fabrication" scenario. On the other hand, if local officials place a premium on high wage jobs, the "Energy" scenario could be a very appealing option.
- From a jobs created perspective, the "Fabrication" scenario is by far and away the top alternative. However, recruiting and siting a large manufacturer at Anchor Point could be more challenging than recruiting an energy company or grain silo given the relatively broader cross section of similar properties in the region. Given the sheer volume of projected jobs, the "Fabrication" scenario also suggests a need for close coordination with Workforce Development Authority, Housing Authority and other partners to ensure ample capacity and readiness.
- From a development perspective, the three uses represent a nearly \$2 billion investment, with the "Energy" scenario accounting for nearly half that total. While the upfront costs are higher, so too are projected business and tax revenues.
- It should be noted that Business and Occupation taxes generated during construction, while significant for every scenario, will not be realized by the City of Kelso if the contractor selected to develop the site is not registered in the City of Kelso.

## 2. Industrial Land Inventory

### 2.1. Introduction

As part of the Anchor Point Site Feasibility Study, the consultant team was asked to develop an inventory of existing vacant Kelso industrial properties.

The consultant team has identified 25 vacant or re-developable industrially-zoned sites within the City of Kelso (CITY) limits, as listed in **Table 6** and shown in aerial view in **Figure 1** through **Figure 4**. This includes one 100+ acre property located at the base of the Southwest Regional Airport, and 24 smaller properties clustered on both sides of 13<sup>th</sup> Avenue and Talley Way. Only 10 of the 25 identified parcels are larger than 2 acres (market value) and just four are larger than 5 acres. There is a combined 158.4 acres of market value industrial properties available for development or redevelopment in Kelso (excluding Anchor Point). The Anchor Point site (see **Figure 5**), at approximately 600 acres - about half of which are considered wetlands and undevelopable - far exceeds the combined total acreage of all other Kelso industrial properties.



While Kelso's industrial sites are predominately smaller in size, many are located adjacent to one another and could be assembled by the City or a private sector partner to become a more viable option for a larger-scale manufacturing, wholesale or logistics end user.

**Table 6: Industrial Lands Inventory**

Map No	Parcel No	Account No	Owner Name	Assessed Land Value	Market Value Acres	GIS Acres	Cost Per Acre
1	22064	R036439	Dominic Marin	\$10,160	0.0	0.2	\$65,022.26
2	22063	R036438	Dominic Marin	\$10,260	0.0	0.1	\$70,594.66
3	23582	R038084	James and Penelope Monroe	\$117,610	0.0	1.0	\$117,609.55
4	235770100	R038075	Steven Coulter	\$32,740	0.0	0.3	\$95,843.25
5	243530100	R039154	Jeanette Kirk	\$508,240	5.5	5.5	\$92,914.08
6	243530203	R090703	Michael Cowan	\$106,290	1.2	1.2	\$87,122.95
7	243530202	R090702	Northwest Timber Development Inc	\$132,860	1.2	1.2	\$108,901.64
8	243530201	R090701	Rick Hart	\$115,440	1.1	1.1	\$108,905.66
9	243530200	R039155	Rick Hart	\$115,440	1.1	1.1	\$108,905.66
10	2356401	R038057	Cascade Natural Gas Corporation	\$71,870	0.0	0.8	\$95,826.36
11	235690100	R038065	City of Kelso	\$478,280	0.0	5.0	\$95,787.73
12	243470400	R039143	Process Products NW Profit Sharing	\$164,660	1.4	1.4	\$117,614.29
13	24355	R039159	Pacific Tech Development LLC	\$391,220	4.0	3.7	\$98,792.93
14	243470701	R039147	CDID #3	\$1,070	0.4	0.3	\$3,057.14
15	24347	R039136	Foster Poultry Farms	\$372,600	3.6	3.6	\$102,362.64
16	243470600	R039145	Watkins Tractor and Supply Co.	\$272,160	2.8	2.8	\$95,830.99
17	243470500	R039144	Watkins Tractor and Supply Co.	\$195,750	2.0	2.0	\$95,955.88
18	243490100	R039150	Boatman Family	\$415,910	4.3	4.3	\$95,831.80

			Properties LLC				
19	24356	R039162	CDID #3	\$26,410	8.7	8.7	\$3,049.65
20	243650100	R051728	Olson Properties LLC	\$248,290	2.3	2.3	\$108,899.12
21	24367	R039182	PUD #1	\$148,540	0.0	1.6	\$95,367.03
22	24368	R039183	1801 Baker Way LLC	\$185,130	0.0	1.7	\$109,107.96
23	24352	R039152	CDID #3	\$3,140	1.0	1.0	\$3,048.54
24	2408715	R038781	Crown 8 LLC	\$288,910	3.2	3.2	\$89,445.82
25	2408727	R038795	City of Kelso	\$10,852,820	114.6	8.3	\$94,685.22

Figure 1: Industrial Properties 1-12, 15-17





Figure 2: Industrial Properties 13, 14 and 19

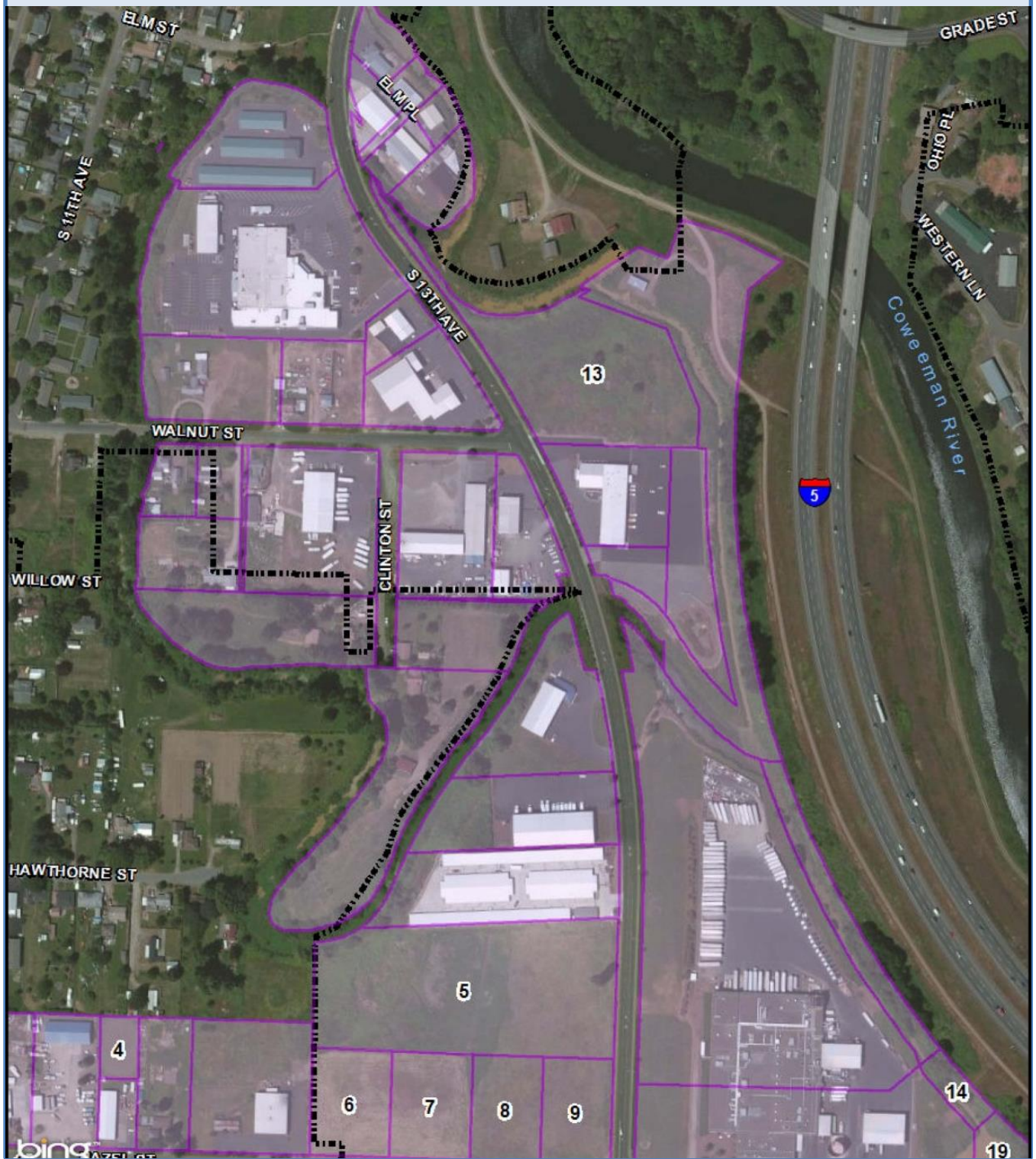




Figure 3: Industrial Properties 15-24





Figure 4: Industrial Property 25

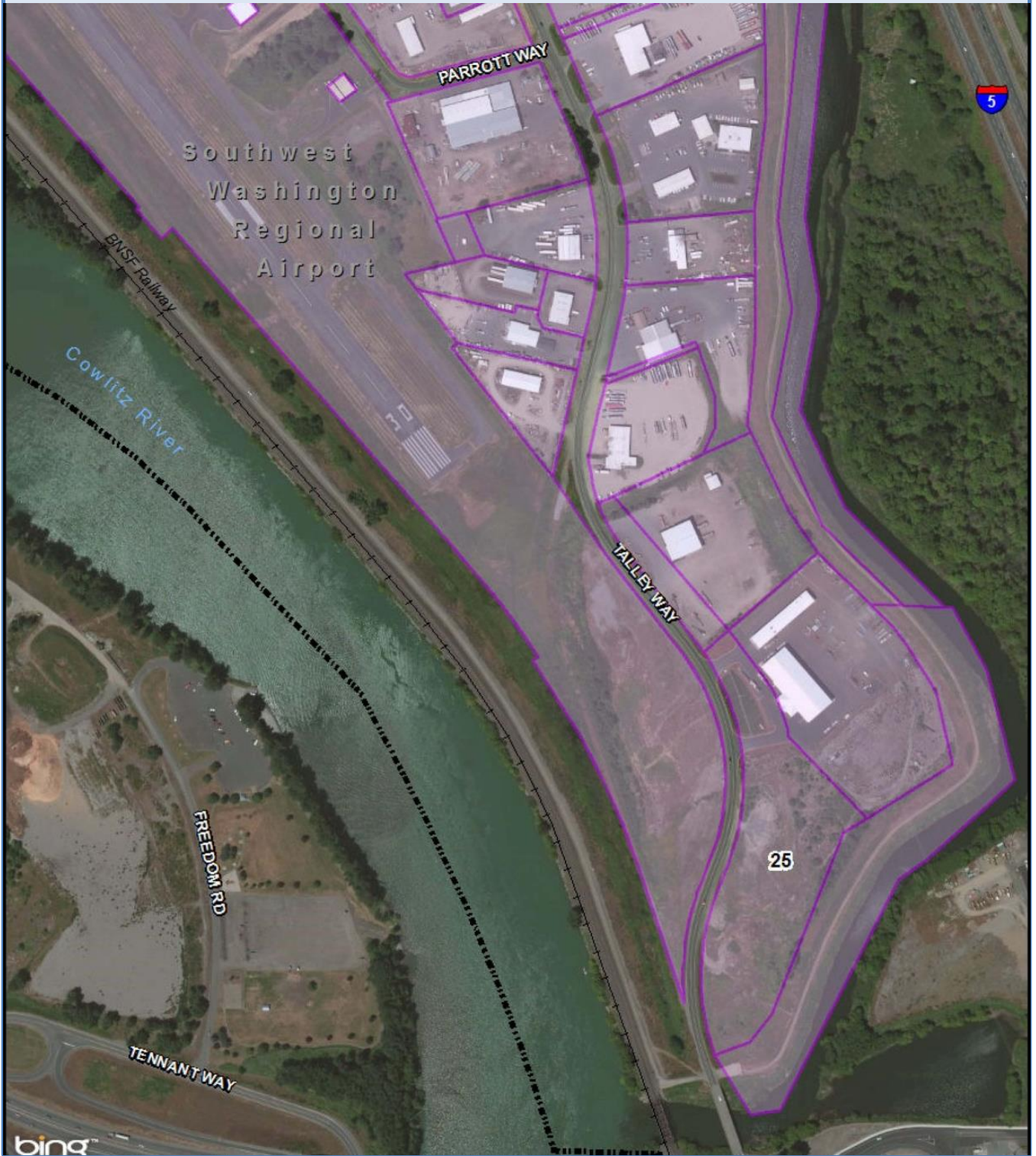
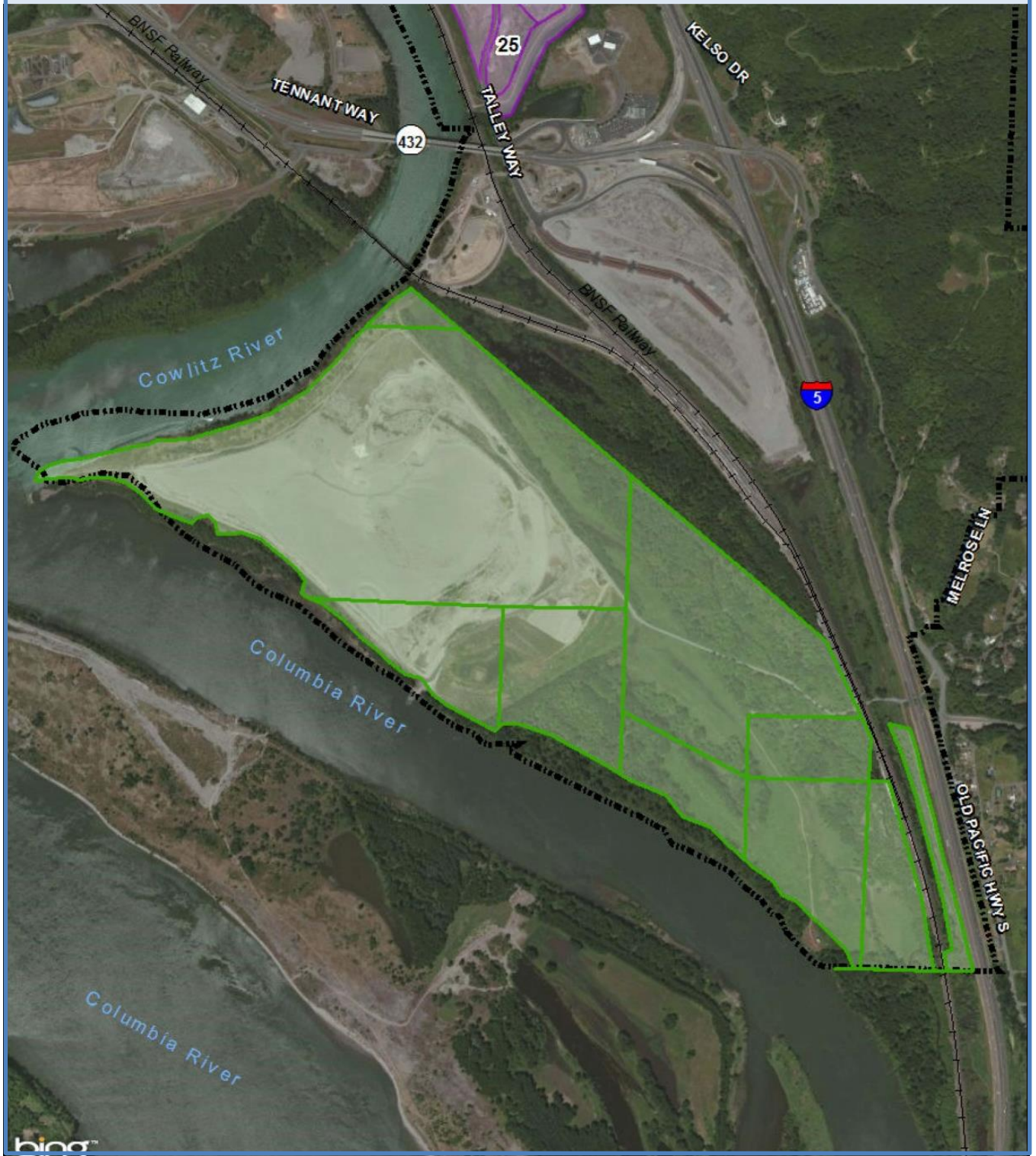




Figure 5: Anchor Point Property

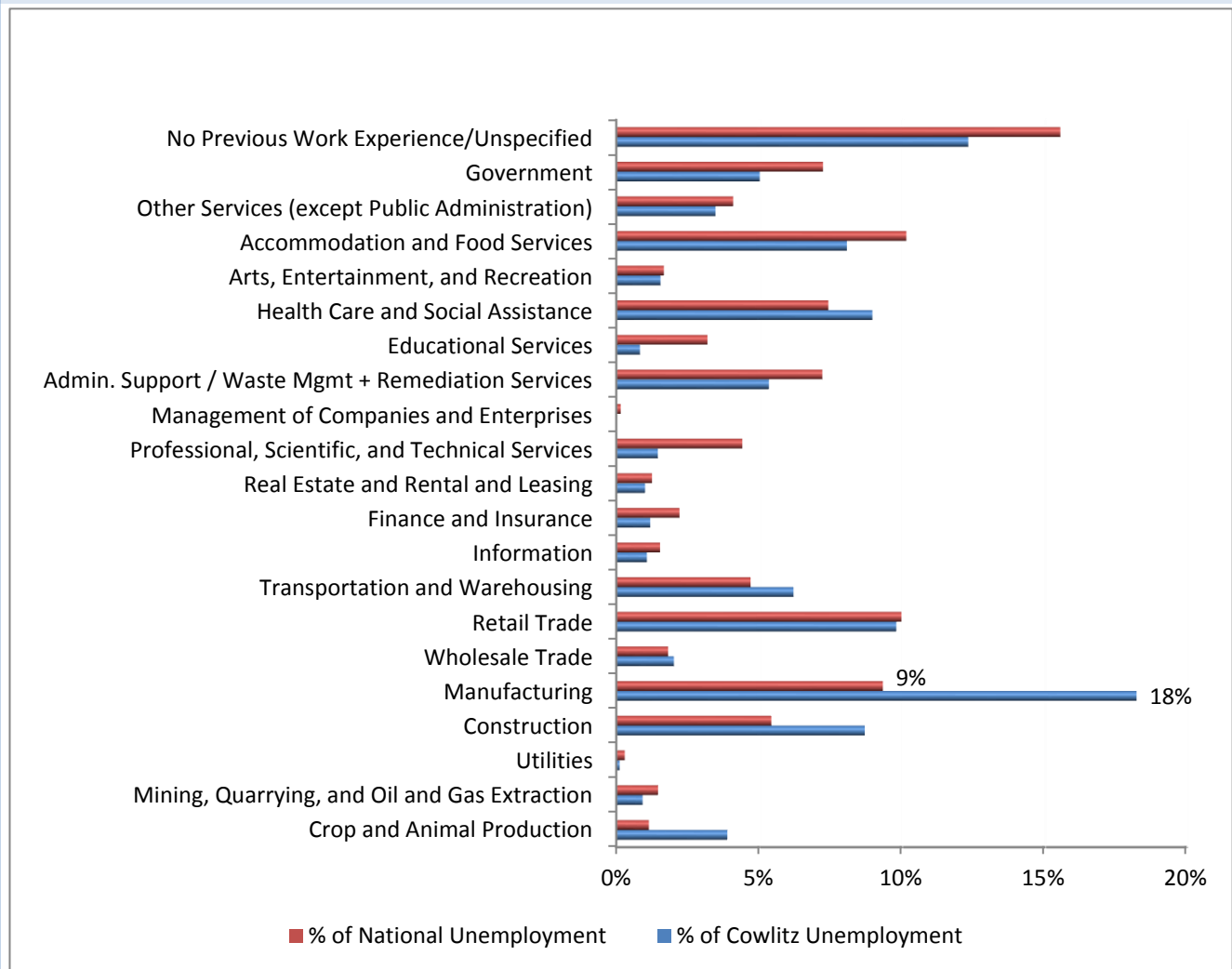


## 2.2. Economic Activity Snapshot

### 2.2.1. Unemployment by Sector

As of July 2015, there were an estimated 3,376 unemployed individuals in Cowlitz County. However, as shown in **Figure 7**, a closer look inside the numbers reveals the concentration of unemployed varies among industry sectors. In Cowlitz County, the greatest percentage and number of unemployed workers were most recently employed in the manufacturing sector – nearly one-fifth of all unemployed workers. At 18%, unemployment in manufacturing occupations within Cowlitz County is essentially double the national average (see **Figure 6**). Recruitment or expansion of manufacturing operations in Cowlitz County would not only increase economic activity and local revenues, but also stem the tide of high sector unemployment.

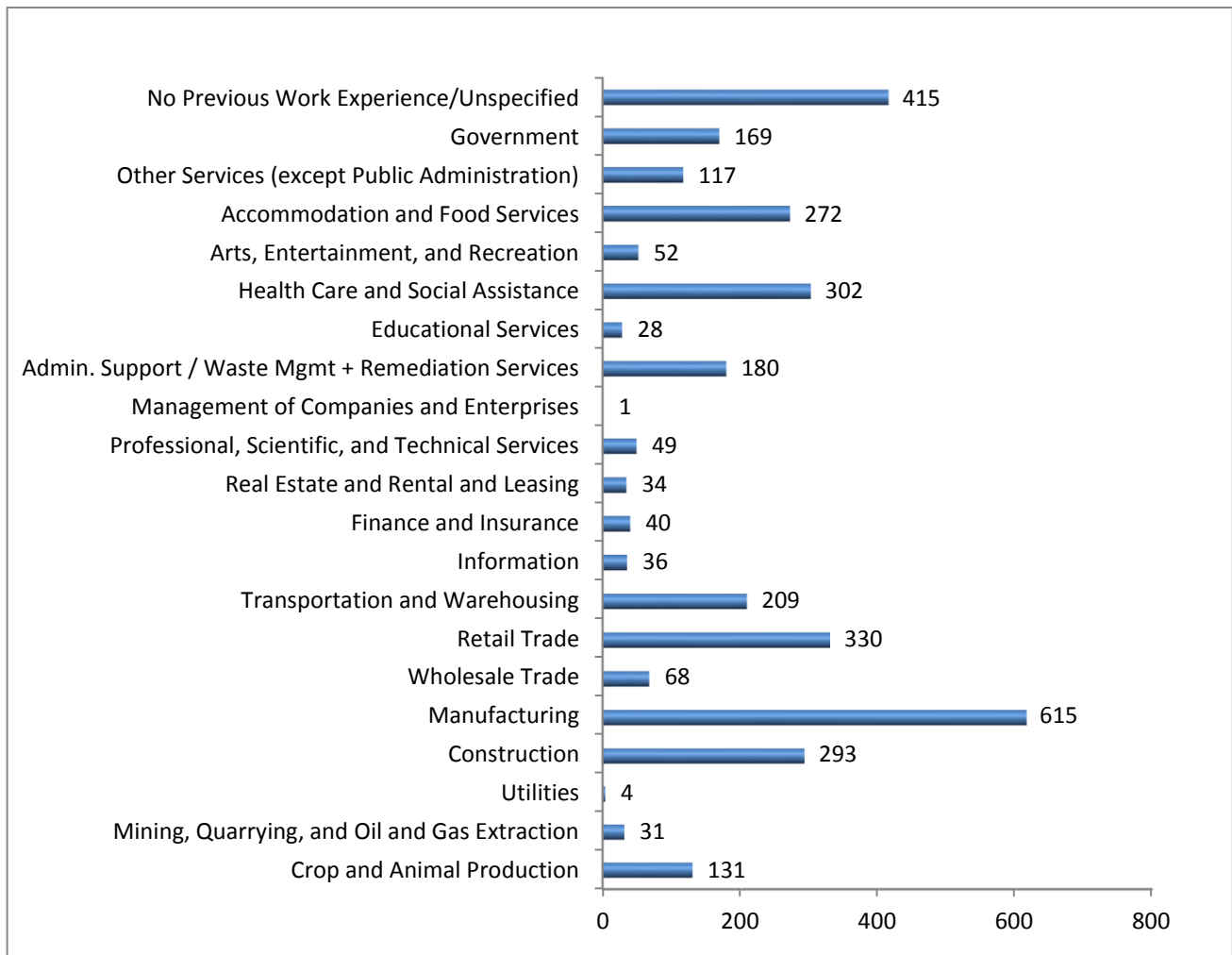
**Figure 6: Unemployment by Sector, July 2015: Cowlitz County vs. National Average**



Source: Washington State Employment Security Department, Labor Market and Economic Analysis Branch



**Figure 7: Cowlitz County Unemployment by the Numbers, July 2015**



Source: Washington State Employment Security Department, Labor Market and Economic Analysis Branch

### 2.2.2. Target Industries

The following provides an overview of the strongest performing industry clusters within Cowlitz County. Target industries are identified by looking at the overall production (number of jobs, jobs growth, and proportion of gross regional product it represents) relative to other industries in the same geographic delineation. In Cowlitz County, the average industry score is 24. The industries listed below all scored above the average Cowlitz County score. The maximum score for any particular industry is 100. Not all sub-industries within a particular industry cluster score above average, but are included here regardless based on the potential for supply chain growth. Government, education and retail sectors are excluded.

**Table 7: Target Industry Clusters in Cowlitz County**

NAICS	INDUSTRY	JOBS	SCORE
<b>Paper and Packaging: 86</b>			
322121	Paper (except Newsprint) Mills	1,183	100
322122	Newsprint Mills	279	68
322130	Paperboard Mills	760	82
322219	Other Paperboard Container Manufacturing	113	30
322299	All Other Converted Paper Product Manufacturing	25	22
<b>Local Community and Civic Organizations: 61</b>			
624110	Child and Youth Services	49	16
624120	Services for the Elderly and Persons with Disabilities	1,138	94
624190	Other Individual and Family Services	61	11
624221	Temporary Shelters	29	4
813110	Religious Organizations	296	3
813319	Other Social Advocacy Organizations	73	5
813410	Civic and Social Organizations	122	10
813930	Labor Unions and Similar Labor Organizations	45	9
<b>Upstream Chemical Products: 51</b>			
325110	Petrochemical Manufacturing	170	59
325180	Other Basic Inorganic Chemical Manufacturing	95	37
<b>Wood Products: 37</b>			
321113	Sawmills	838	37
321999	All Other Miscellaneous Wood Product Manufacturing	12	11
<b>Upstream Metal Manufacturing: 32</b>			
331221	Rolled Steel Shape Manufacturing	89	32
<b>Livestock Processing: 32</b>			
311611	Animal (except Poultry) Slaughtering	123	14
311615	Poultry Processing	817	35
<b>Forestry: 31</b>			
113110	Timber Tract Operations	54	43
113310	Logging	582	32
115310	Support Activities for Forestry	100	19
<b>Nonmetal Mining: 29</b>			
212312	Crushed and Broken Limestone Mining and Quarrying	79	25
212321	Construction Sand and Gravel Mining	72	33
<b>Local Utilities: 29</b>			
221122	Electric Power Distribution	70	41
517110	Wired Telecommunications Carriers	73	24
517911	Telecommunications Resellers	31	22
562910	Remediation Services	31	21
NAICS	INDUSTRY	JOBS	SCORE

<b>Construction Products and Services: 28</b>			
<b>237130</b>	Power and Communication Line and Related Structures Construction	71	28
<b>237990</b>	Other Heavy and Civil Engineering Construction	26	22
<b>327420</b>	Gypsum Product Manufacturing	71	31
<b>Production Technology and Heavy Machinery: 28</b>			
<b>332911</b>	Industrial Valve Manufacturing	67	24
<b>333120</b>	Construction Machinery Manufacturing	68	20
<b>333243</b>	Sawmill, Woodworking, and Paper Machinery Manufacturing	150	38
<b>333613</b>	Mechanical Power Transmission Equipment Manufacturing	67	26
<b>333924</b>	Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	52	20
<b>339991</b>	Gasket, Packing, and Sealing Device Manufacturing	21	20
<b>Lighting and Electrical Equipment: 28</b>			
<b>335122</b>	Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	138	28
<b>Food Processing and Manufacturing: 28</b>			
<b>311111</b>	Dog and Cat Food Manufacturing	36	19
<b>424510</b>	Grain and Field Bean Merchant Wholesalers	121	30
<b>Distribution and Electronic Commerce: 26</b>			
<b>423420</b>	Office Equipment Merchant Wholesalers	43	16
<b>423510</b>	Metal Service Centers and Other Metal Merchant Wholesalers	173	30
<b>423610</b>	Electrical Apparatus and Equipment, Wiring Supplies, and Related Merchant Wholesalers	36	22
<b>423810</b>	Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers	129	26
<b>423820</b>	Farm and Garden Machinery and Equipment Merchant Wholesalers	30	18
<b>423830</b>	Industrial Machinery and Equipment Merchant Wholesalers	65	22
<b>423840</b>	Industrial Supplies Merchant Wholesalers	48	26
<b>423850</b>	Service Establishment Equipment and Supplies Merchant Wholesalers	26	17
<b>423940</b>	Jewelry, Watch, Precious Stone, and Precious Metal Merchant Wholesalers	47	16
<b>424690</b>	Other Chemical and Allied Products Merchant Wholesalers	31	21
<b>424710</b>	Petroleum Bulk Stations and Terminals	13	25
<b>424720</b>	Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)	68	25
<b>424910</b>	Farm Supplies Merchant Wholesalers	145	20
<b>424930</b>	Flower, Nursery Stock, and Florists' Supplies Merchant Wholesalers	12	9
<b>425120</b>	Wholesale Trade Agents and Brokers	192	38
<b>454111</b>	Electronic Shopping	21	12
<b>493110</b>	General Warehousing and Storage	16	17
<b>493120</b>	Refrigerated Warehousing and Storage	116	27
<b>493130</b>	Farm Product Warehousing and Storage	101	38
<b>532412</b>	Construction, Mining, and Forestry Machinery and Equip. Rental and Leasing	14	17
<b>Metalworking Technology: 26</b>			
<b>332812</b>	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	28	16
<b>333511</b>	Industrial Mold Manufacturing	145	28

### 2.2.3. Gross Regional Product

Another way to look at the relative presence of a particular industry is by viewing its particular share of the Gross Regional Product (GRP). GRP is derived by adding earnings, property income and taxes and then deducting any government subsidies. For the most recent output year recorded, 2013, Cowlitz County had a total GRP of approximately \$4 billion. The table below shows key private sector industries and their relative share of the overall GRP. Although the milling industry is considered to be in decline, it remains a mainstay of the Cowlitz County economy, along with logging and other resource-based industries. Hospitals and health care in general are becoming an increasingly important component of all local economies as the baby boomers continue to age and health care reform expands service to a broader segment of the population.

**Table 8: Gross Regional Product for Select Industries, 2013**

NAICS	Industry	Earnings	Property Income	Taxes	Subsidies	GRP
322121	Paper (except Newsprint) Mills	\$168,519,237	\$180,203,462	\$18,301,144	\$0	\$367,023,843
322130	Paperboard Mills	\$52,007,805	\$87,891,241	\$2,709,741	\$0	\$142,608,787
622110	General Medical, Surgical Hospitals	\$125,932,320	\$10,633,167	\$3,373,456	(\$1,313,051)	\$138,625,892
322122	Newsprint Mills	\$47,959,122	\$50,117,462	\$5,089,840	\$0	\$103,166,424
238290	Other Building Equipment Contractors	\$64,220,736	\$21,853,422	\$1,289,032	\$0	\$87,363,190
321113	Sawmills	\$54,220,800	\$19,249,868	\$1,539,460	\$0	\$75,010,128
113310	Logging	\$49,485,811	\$10,839,154	\$6,649,104	\$0	\$66,974,069
488320	Marine Cargo Handling	\$30,179,864	\$8,440,567	\$1,208,210	\$0	\$39,828,641
311615	Poultry Processing	\$32,063,903	\$5,126,911	\$843,502	\$0	\$38,034,316
221122	Electric Power Distribution	\$9,040,441	\$16,397,012	\$8,920,640	\$0	\$34,358,093
325180	Other Basic Inorganic Chemical Man.	\$9,599,490	\$22,432,895	\$2,064,400	(\$6,187)	\$34,090,597
425120	Wholesale Trade Agents and Brokers	\$16,246,816	\$9,445,779	\$8,048,854	\$0	\$33,741,449
336413	Other Aircraft Parts, Equipment Man.	\$16,089,278	\$16,732,786	\$887,058	\$0	\$33,709,122

Source: Washington State Employment Security Department, Labor Market and Economic Analysis Branch



#### 2.2.4. Top Industry Exports

Cowlitz County industries exported just over \$6 billion in goods and services in 2013. Exporting is simply another way to say “importing cast.” The core industries below represent a strong framework to build on, and natural recruitment tool for overlapping supply-chain businesses.

<i>Table 9: Key Industry Top Exporters, 2013</i>		
<b>NAICS</b>	<b>Industry</b>	<b>Exports</b>
322121	Paper (except Newsprint) Mills	\$1,100,939,316
322130	Paperboard Mills	\$434,978,468
322122	Newsprint Mills	\$316,827,160
321113	Sawmills	\$210,351,650
311615	Poultry Processing	\$189,762,525
325110	Petrochemical Manufacturing	\$186,690,310
211111	Crude Petroleum and Natural Gas Extraction	\$169,607,945
238290	Other Building Equipment Contractors	\$151,497,161
325199	All Other Basic Organic Chemical Manufacturing	\$86,284,145
113310	Logging	\$78,352,388
488320	Marine Cargo Handling	\$76,919,821
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	\$73,674,882
331110	Iron and Steel Mills and Ferroalloy Manufacturing	\$52,390,665
333243	Sawmill, Woodworking, and Paper Machinery Manufacturing	\$50,774,392
325180	Other Basic Inorganic Chemical Manufacturing	\$47,538,262
331221	Rolled Steel Shape Manufacturing	\$46,155,207
<i>Source: Washington State Employment Security Department, Labor Market and Economic Analysis Branch</i>		

### 2.2.5. Industry Demand

In 2013, Cowlitz industries required \$8.3 billion in economic activity (goods and services) to generate the sales and export values noted in **Table 9** above. Approximately \$2.2 billion of that activity was purchased or transacted in Cowlitz County. The remainder was imported from other locations. **Table 10** below shows the amount of in-region vs. out-of-region spending activity by key industries. Local partners may wish to further explore where supply-chain spending is occurring out of region and identify specific import substitution strategies (through recruitment or expansion) for select industries.

NAICS	Industry	Total Requirements	Satisfied In Region	Satisfied Outside Region
551114	Corporate, Subsidiary, and Regional Managing Offices	\$187,156,074	\$1,458,554	\$185,697,520
221210	Natural Gas Distribution	\$76,565,346	\$1,875,397	\$74,689,949
425120	Wholesale Trade Agents and Brokers	\$89,577,724	\$18,482,448	\$71,095,276
322110	Pulp Mills	\$44,418,072	\$0	\$44,418,072
325199	All Other Basic Organic Chemical Manufacturing	\$66,071,588	\$25,140,391	\$40,931,196
482110	Rail transportation	\$58,024,836	\$19,958,007	\$38,066,828
541330	Engineering Services	\$42,305,389	\$5,871,355	\$36,434,034
336112	Light Truck and Utility Vehicle Manufacturing	\$35,871,331	\$0	\$35,871,331
211111	Crude Petroleum and Natural Gas Extraction	\$37,055,771	\$1,832,669	\$35,223,102
221122	Electric Power Distribution	\$46,530,271	\$11,881,816	\$34,648,455
331110	Iron and Steel Mills and Ferroalloy Manufacturing	\$42,695,915	\$9,670,254	\$33,025,661
484121	General Freight Trucking, Long-Distance, Truckload	\$44,812,872	\$12,634,534	\$32,178,338
541511	Custom Computer Programming Services	\$32,364,737	\$535,122	\$31,829,615
325180	Other Basic Inorganic Chemical Manufacturing	\$51,802,058	\$20,015,526	\$31,786,532

322211	Corrugated and Solid Fiber Box Manufacturing	\$31,255,942	\$0	\$31,255,942
423430	Computer/Peripheral Equip. and Software Wholesalers	\$30,251,181	\$216,412	\$30,034,769
<i>Source: Washington State Employment Security Department, Labor Market and Economic Analysis Branch</i>				

### 3. Marketing Framework

Based on the fact that the region has a large manufacturing-based workforce, and a high manufacturing unemployment rate, the “best and highest” use of the Anchor Point property is manufacturing, as a stand-alone use or as a component of a broader development scenario. The following recommendations are based on an analysis of the preceding information and in alignment with the City of Kelso’s goal to stimulate industry-based economic development.

**Action 1: Identify preferred supply chain opportunities (City of Kelso)**

The out-of-industry purchases noted in **Table 10** reveals the volume of goods and services local industries are purchasing outside of Kelso. In some cases, there may not be a viable import substitution strategy, for example petroleum production. In other cases, the City may be able to recruit suppliers or help local businesses expand or adapt to produce goods that are purchased elsewhere, for example corrugated and solid fiber box manufacturing, etc. A good first step would be to meet with local industry leaders to identify goods or services they would like to be able to purchase locally, and how they would recommend the City reach out to suppliers. The City can also purchase “drill-down” data to identify the specific goods and services industries are purchasing outside of Kelso.

**Action 2: Enlist the assistance of the Southwest Washington Workforce Development Council (City of Kelso, SWWDC)**

Under new federal legislation, known as the Workforce Innovation and Opportunity Act, State and Regional Workforce partners are directed to create employer- and data-driven workforce development strategies. The City of Kelso might coordinate with the SWWDC to organize and facilitate employer roundtables, particularly in the manufacturing sector, to identify opportunities the City and its partners can help local businesses grow and find or train the employees they need to be successful. In rural communities, employment growth and industry expansion is most commonly driven by existing companies.

**Action 3: Pre-permit the Anchor Point property through a Planned Action EIS (City of Kelso, Private Sector)**

A Planned Action EIS approach will allow the City and its private partners to pre-permit the Anchor Point parcel(s) for a pre-determined use. This will help ensure orderly development and prevent unforeseen permitting and/or development barriers once investors bring capital to the table.

**Action 4: Establish formal partnerships with Cowlitz EDC and Port of Longview (City of Kelso, Cowlitz EDC, Port of Longview)**

City of Kelso industrial development opportunities are not currently well-represented on the Port of Longview and Cowlitz EDC website or ancillary marketing materials. The City might consider establishing a formal economic development partnership with both agencies to define and market local development opportunities, including the Anchor Point property, to Port and EDC contacts. The City might also consider attending association and trade events with partner organizations to build connections with industry leaders, brokers and other potential investors.

**Action 5: Create an economic development presence on City website (City of Kelso)**

Economic development does not currently appear to be a priority on the City's own website. Once the City has established an internal plan for preparing or coordinating with private partners the development of available industrial sites, it might consider developing and posting site profiles, available incentives and other information of interest to brokers and investors (e.g. school performance measures, housing cost advantages, location to major metro areas, transportation options, etc.).

***End of Part II Report***



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## **PART I & II APPENDICES**

**Appendix A: Conceptual Project Construction Costs Summary**

**Appendix B: Conceptual Project Utility Costs Summary**

**Appendix C: Conceptual Project Rail Costs Summary**

**Appendix D: Historical Aerial Photographs**

**Appendix E: Vehicular Access Option 4 Cross Sections**

**Appendix F: Economic Impact Assessment Methodology Notes**

**Appendix G: City of Kelso Tax Rates**

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## **Appendix A**

### **Conceptual Project Construction Costs Summary**



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Anchor Point Feasibility Study  
Conceptual Estimate Summary  
Revised: January 2016



DAVID EVANS  
AND ASSOCIATES INC.

	Alternative 1A				Alternative 1B				Alternative 2			
	Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost		Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost		Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost	
	At grade access through the BNSF maintenance yard											
Construction Bid Elements												
Mobilization			\$ 215,248				\$ 3,525,575					\$ 6,250,976
Preparation	10.00%	\$ 165,575	\$ 49,673	\$ 35,100	\$ 27,000	\$ 8,100	\$ 39,000	\$ 9,000	\$ 30,000	\$ 21,000	\$ 21,000	\$ 91,000
Grading		\$ 722,500	\$ 216,750	\$ 939,250	\$ 3,167,000	\$ 950,100	\$ 4,117,100	\$ 1,237,200	\$ 3,686,300	\$ 1,106,100	\$ 4,792,400	\$ 7,686,250
Drainage		\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
Storm Sewer		\$ 15,000	\$ 4,500	\$ 19,500	\$ 15,000	\$ 4,500	\$ 19,500	\$ 4,500	\$ 15,000	\$ 4,500	\$ 19,500	\$ 19,500
Structures		\$ 0	\$ 0	\$ 0	\$ 23,134,110	\$ 6,940,233	\$ 30,074,343	\$ 8,870,575	\$ 41,944,913	\$ 12,580,808	\$ 54,525,721	\$ 67,525,421
Surfacing		\$ 103,950	\$ 31,185	\$ 135,135	\$ 67,700	\$ 20,310	\$ 88,010	\$ 20,310	\$ 88,010	\$ 26,340	\$ 114,350	\$ 140,660
Hot Mix Asphalt		\$ 256,000	\$ 76,800	\$ 332,800	\$ 168,000	\$ 50,400	\$ 218,400	\$ 50,400	\$ 218,400	\$ 65,280	\$ 283,680	\$ 348,880
Erosion Control and Roadside Restoration		\$ 28,000	\$ 8,400	\$ 36,400	\$ 33,000	\$ 9,900	\$ 42,900	\$ 9,900	\$ 42,900	\$ 12,870	\$ 55,770	\$ 68,640
Traffic		\$ 303,300	\$ 90,990	\$ 394,290	\$ 305,000	\$ 91,500	\$ 396,500	\$ 91,500	\$ 396,500	\$ 118,500	\$ 514,000	\$ 632,500
Other Items		\$ 100,000	\$ 30,000	\$ 130,000	\$ 100,000	\$ 30,000	\$ 130,000	\$ 30,000	\$ 130,000	\$ 30,000	\$ 130,000	\$ 130,000
Landscaping		\$ 100,000	\$ 30,000	\$ 130,000	\$ 100,000	\$ 30,000	\$ 130,000	\$ 30,000	\$ 130,000	\$ 45,000	\$ 150,000	\$ 195,000
<b>Subtotal:</b>		<b>\$1,821,325</b>	<b>\$ 546,398</b>	<b>\$2,367,723</b>	<b>\$29,831,791</b>	<b>\$ 8,949,537</b>	<b>\$38,781,328</b>	<b>\$ 8,949,537</b>	<b>\$47,730,865</b>	<b>\$ 15,867,862</b>	<b>\$63,598,727</b>	<b>\$ 73,606,687</b>
Wash. Sales/Use Tax (Mat. Only)	8.00%	\$ 145,706	\$ 43,712	\$ 189,418	\$ 2,386,543	\$ 715,963	\$ 3,102,506	\$ 715,963	\$ 3,102,506	\$ 1,269,429	\$ 4,371,935	\$ 5,484,441
<b>Construction Bid Elements Total</b>		<b>\$1,967,031</b>	<b>\$ 590,109</b>	<b>\$2,557,140</b>	<b>\$32,218,334</b>	<b>\$ 9,665,500</b>	<b>\$41,883,835</b>	<b>\$ 9,665,500</b>	<b>\$50,543,371</b>	<b>\$ 17,137,291</b>	<b>\$67,680,662</b>	<b>\$ 79,091,128</b>
Placeholder Costs:												
Right-of-Way Acquisition, Damages, & Relocation		\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
Environmental Mitigation		\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
<b>Placeholder Costs Total</b>		<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>
<b>Total Construction Cost</b>		<b>\$ 1,967,031</b>	<b>\$ 590,109</b>	<b>\$ 2,557,140</b>	<b>\$ 32,218,334</b>	<b>\$ 9,665,500</b>	<b>\$ 41,883,835</b>	<b>\$ 9,665,500</b>	<b>\$ 50,543,371</b>	<b>\$ 17,137,291</b>	<b>\$ 67,680,662</b>	<b>\$ 79,091,128</b>
<b>Rounded Cost:</b>			<b>\$ 3M</b>				<b>\$ 42M</b>					<b>\$ 74M</b>

- Notes:
- See utilities estimate for associated costs for sanitary sewer, water main, gas main, power and CATV.
  - No costs associated with engineering, construction administration and other program costs are included in this estimate.

Alternative 3A				Alternative 3B				Alternative 4			
From Talley Way over wetlands and BNSF tracks with pier landing in wyé of tracks				Over wetlands and BNSF tracks from Talley Way extension				Upgrade existing Owl Creek access to accommodate truck and emergency access			
Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost		Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost		Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost	
\$3,590,648	\$ 1,077,194	\$ 4,667,842		\$2,726,496	\$ 817,949	\$ 3,544,445		\$1,807,308	\$ 542,192	\$ 2,349,500	
\$30,000	\$ 9,000	\$ 39,000		\$20,000	\$ 6,000	\$ 26,000		\$50,000	\$ 15,000	\$ 65,000	
\$3,770,000	\$ 1,131,000	\$ 4,901,000		\$3,812,500	\$ 1,143,750	\$ 4,956,250		\$1,157,500	\$ 347,250	\$ 1,504,750	
\$0	\$ -	\$ -		\$0	\$ -	\$ -		\$110,000	\$ 33,000	\$ 143,000	
\$15,000	\$ 4,500	\$ 19,500		\$15,000	\$ 4,500	\$ 19,500		\$15,000	\$ 4,500	\$ 19,500	
\$31,140,650	\$ 9,342,195	\$ 40,482,845		\$22,529,010	\$ 6,758,703	\$ 29,287,713		\$15,579,580	\$ 4,673,874	\$ 20,253,454	
\$103,950	\$ 31,185	\$ 135,135		\$88,700	\$ 26,610	\$ 115,310		\$137,000	\$ 41,100	\$ 178,100	
\$256,000	\$ 76,800	\$ 332,800		\$216,000	\$ 64,800	\$ 280,800		\$360,000	\$ 108,000	\$ 468,000	
\$35,000	\$ 10,500	\$ 45,500		\$28,000	\$ 8,400	\$ 36,400		\$108,000	\$ 32,400	\$ 140,400	
\$305,875	\$ 91,763	\$ 397,638		\$305,750	\$ 91,725	\$ 397,475		\$306,000	\$ 91,800	\$ 397,800	
\$100,000	\$ 30,000	\$ 130,000		\$100,000	\$ 30,000	\$ 130,000		\$100,000	\$ 30,000	\$ 130,000	
\$150,000	\$ 45,000	\$ 195,000		\$150,000	\$ 45,000	\$ 195,000		\$150,000	\$ 45,000	\$ 195,000	
<b>\$39,497,123</b>	<b>\$ 11,849,137</b>	<b>\$51,346,259</b>		<b>\$29,991,456</b>	<b>\$ 8,997,437</b>	<b>\$38,988,893</b>		<b>\$19,880,388</b>	<b>\$ 5,964,116</b>	<b>\$25,844,504</b>	
\$3,159,770	\$ 947,931	\$4,107,701		\$2,399,316	\$ 719,795	\$3,119,111		\$1,590,431	\$ 477,129	\$2,067,560	
<b>\$42,656,892</b>	<b>\$ 12,797,068</b>	<b>\$55,453,960</b>		<b>\$32,390,772</b>	<b>\$ 9,717,232</b>	<b>\$42,108,004</b>		<b>\$21,470,819</b>	<b>\$ 6,441,246</b>	<b>\$27,912,065</b>	
\$0	\$ -	\$ -		\$0	\$ -	\$ -		\$0	\$ -	\$ -	
\$0	\$ -	\$ -		\$0	\$ -	\$ -		\$0	\$ -	\$ -	
<b>\$0</b>	<b>\$ -</b>	<b>\$0</b>		<b>\$0</b>	<b>\$ -</b>	<b>\$0</b>		<b>\$0</b>	<b>\$ -</b>	<b>\$0</b>	
<b>\$ 42,656,892</b>	<b>\$ 12,797,068</b>	<b>\$ 55,453,960</b>		<b>\$ 32,390,772</b>	<b>\$ 9,717,232</b>	<b>\$ 42,108,004</b>		<b>\$ 21,470,819</b>	<b>\$ 6,441,246</b>	<b>\$ 27,912,065</b>	
<b>\$55M</b>				<b>\$42M</b>				<b>\$28M</b>			



**Anchor Point Feasibility Study  
Alternative 1A**

**At grade access through the BNSF maintenance yard**

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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**Preparation**

-	CLEARING AND GRUBBING	ACRE	3	\$10,000	\$27,000
-	STABILIZED CONSTRUCTION ENTRANCE	SY	0	\$590	\$0
-	TEMPORARY CHAIN LINK FENCE	LF	0	\$20	\$0
-	TEMPORARY RAMP	SY	0	\$45	\$0
-	REMOVING EXISTING STRUCTURES	LS	0	\$0	\$0
-	REMOVE CONCRETE SIDEWALK	SY	0	\$25	\$0
-	REMOVE CURB AND GUTTER	LF	0	\$8	\$0
-	REMOVE ASPHALT PAVEMENT	SY	0	\$9	\$0
-					\$0
-					\$0
-					\$0
-					\$0
-					\$0
<b>Total Roadway Costs</b>					<b>\$27,000</b>

**Grading**

-	ROADWAY EXCAVATION INCL. HAUL	CY	1,250.00	\$10	\$12,500
-	TEMP. DETOUR MATERIAL REMOVAL	CY	0	\$10	\$0
-	GRAVEL BORROW INCL. HAUL	TON	35,500	\$20	\$710,000
-	GRAVEL BORROW INCL. HAUL - TEMP. DETOUR	TON	0	\$20	\$0
-					\$0
-					\$0
-					\$0
-					\$0
<b>Total Grading Costs</b>					<b>\$722,500</b>

**Drainage**

-					\$0
-					\$0
-					\$0
-					\$0
<b>Total Drainage Costs</b>					<b>\$0</b>





**Anchor Point Feasibility Study  
Alternative 1A**

**At grade access through the BNSF maintenance yard**

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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**Storm Sewer**

-	CATCH BASIN TYPE 1	EA	0	\$2,000	\$0
-	SOLID WALL PVC STORM SEWER PIPE 12 IN. D	LF	0	\$40	\$0
-	STORMWATER TREATMENT VAULT - (FILTER)	EA	1	\$15,000	\$15,000
-	CRUSHED SURFACING BASE COURSE FOR TR	CY	0	\$30	\$0
-	STRUCTURE EXCAVATION CLASS B INCL. HAUL	CY	0	\$15	\$0
-	SHORING OR EXTRA EXCAVATION CLASS B	SF	0	\$5	\$0
-					\$0
-					\$0
-					\$0

Total Storm Sewer Costs \$15,000

**Sanitary Sewer**

-	MODIFICATIONS TO EXISTING SYSTEM	LS	0	\$200,000	\$0
-					\$0
-					\$0
-					\$0

Total Sanitary Sewer Costs \$0

**Water Main**

-	MODIFICATIONS TO EXISTING SYSTEM	LS	0	\$200,000	\$0
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Total Water Main Costs \$0

**Structures**

**No Bridge Spans for Alternative 1A**

<b>SUPERSTRUCTURE -</b>					
-					
-	CONCRETE - DECK	C.Y.	-	\$700	\$0
-	EPOXY-COATED STEEL REINFORCING BARS	LB.	-	\$1.25	\$0
-	PRESTRESSED CONCRETE GIRDERS	LF	-	\$275	\$0
-	STEEL REINFORCING BARS	LB.	-	\$1.00	\$0
-	PT PRESTRESSING STEEL (INCLUDES ANCHOR	LB.	-	\$6.00	\$0
-	ELASTOMERIC BEARINGS	EACH	-	\$150	\$0
-	ELASTOMERIC GIRDER STOPS	EACH	-	\$100	\$0
-	STRIP SEAL EXPANSION JOINTS	LF	-	\$250	\$0
-	TRAFFIC BARRIER	LF	-	\$90	\$0
<b>TOTAL LUMP SUM COST</b>					<b>\$0</b>



**Anchor Point Feasibility Study  
Alternative 1A**

At grade access through the BNSF maintenance yard

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
	<b>SUBSTRUCTURE -</b>				
-	DRILLED SHAFTS -WEST ABUTMENT	EACH	-	\$184,560	\$0
-	DRILLED SHAFTS - PIER	EACH	-	\$452,250	\$0
-	DRILLED SHAFTS - EAST ABUTMENT	EACH	-	\$302,090	\$0
-	ABUTMENT FOOTINGS	C.Y.	-	\$450	\$0
-	ABUTMENT WALL	C.Y.	-	\$450	\$0
-	ABUTMENT CAP	C.Y.	-	\$450	\$0
-	PIER COLUMN	C.Y.	-	\$550	\$0
-	STEEL REINFORCING BARS	LB.	-	\$1.00	\$0
		TOTAL LUMP SUM COST			<b>\$0</b>
	<b>STRUCTURE EXCAVATION CLASS A INCL. HAUL</b>				
-	INSIDE COFFERDAM - EARTH	C.Y.	-	\$12	\$0
		TOTAL LUMP SUM COST			<b>\$0</b>
	<b>SHORING OR EXTRA EXCAVATION CL. A</b>				
-	SHORING AREAS (IN THE DRY) - 6 FT TO 10 FT	S.F.	-	\$7	\$0
-	SHORING AREAS (IN THE DRY) - 10 FT TO 20 FT	S.F.	-	\$11	\$0
		TOTAL LUMP SUM COST			<b>\$0</b>
	<b>REMOVAL OF STRUCTURE AND OBSTRUCTION</b>				
-	EXISTING BRIDGE/BUILDING FOUNDATION	EACH	-	\$10,000	\$0
		TOTAL LUMP SUM COST			<b>\$0</b>

**Foam Cement Approach Structures for Alternative A**

<b>Foam Cement West Approach Structure</b>					
-					
-	HMA PAVEMENT	TON	-	\$120	\$0
-	CEMENT CONC. SIDEWALK	CY	-	\$250.00	\$0
-	CEMENT CONC. TRAFFIC BARRIER AND MOME	LF	-	\$225	\$0
-	WALL PANELS	SF	-	\$12.00	\$0
-	FOAM CEMENT MATERIAL	CY	-	\$50.00	\$0
-	APPROACH SLAB	SY	-	\$250	\$0
-	GROUND IMPROVEMENT	CY	-	\$75	\$0
-					
-					
		TOTAL LUMP SUM COST			<b>\$0</b>



**Anchor Point Feasibility Study  
Alternative 1A**

**At grade access through the BNSF maintenance yard**

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
	<b>Foam Cement East Approach Structure</b>				
-	HMA PAVEMENT	TON	-	\$120	\$0
-	CEMENT CONC. SIDEWALK	CY	-	\$250.00	\$0
-	CEMENT CONC. TRAFFIC BARRIER AND MOME	LF	-	\$225	\$0
-	WALL PANELS	SF	-	\$12.00	\$0
-	FOAM CEMENT MATERIAL	CY	-	\$50.00	\$0
	APPROACH SLAB	SY	-	\$250	\$0
	GROUND IMPROVEMENT	CY	-	\$75	\$0
			TOTAL LUMP SUM COST		<b>\$0</b>
	<b>STRUCTURE EXCAVATION CLASS A INCL. HAUL</b>				
-	INSIDE COFFERDAM - EARTH	C.Y.	-	\$12	\$0
			TOTAL LUMP SUM COST		<b>\$0</b>
	<b>SHORING OR EXTRA EXCAVATION CL. A</b>				
-	SHORING AREAS (IN THE DRY) - 6 FT TO 10 FT	S.F.	-	\$7	\$0
-	SHORING AREAS (IN THE DRY) - 10 FT TO 20 FT	S.F.	-	\$11	\$0
			TOTAL LUMP SUM COST		<b>\$0</b>
	<b>REMOVAL OF STRUCTURE AND OBSTRUCTION</b>				
-	EXISTING BRIDGE/BUILDING FOUNDATION	EACH	-	\$10,000	\$0
			TOTAL LUMP SUM COST		<b>\$0</b>

	<b>OTHER STRUCTURAL ITEMS</b>				
	CONTAINMENT AND DISPOSAL OF CONTAMINA	TON		\$200	\$0
	CONTAINMENT AND DISPOSAL OF CONTAMINA	GAL		\$1	\$0
	VIBRATION MONITORING	EA		\$100	\$0
			TOTAL LUMP SUM COST		<b>\$0</b>

Total Structures Costs **\$0**

**Surfacing**

-	CRUSHED SURFACING BASE COURSE	TON	5,700.00	\$16	\$91,200
-	CRUSHED SURFACING BASE COURSE - TEMP.	TON	0	\$16	\$0
-	CURSHED SURFACING TOP COURSE	TON	750	\$17	\$12,750

Total Surfacing Costs **\$103,950**



**Anchor Point Feasibility Study  
Alternative 1A**

**At grade access through the BNSF maintenance yard**

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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**Hot Mix Asphalt**

-	HMA CL. 1/2 IN. PG 64-22 - BASE COURSE	TON	0.00	\$80	\$0
-	HMA CL. 1/2 IN. PG 64-22 - WEARING COURSE	TON	3,200	\$80	\$256,000
-	HMA CL. 1/2 IN. PG 64-22 - DETOUR	TON	0	\$80	\$0
-	COMMERCIAL HMA FOR APPROACH	TON	0	\$100	\$0
-					\$0

Total Hot Mix Asphalt Costs \$256,000

**Erosion Control and Roadside Restoration**

-	INLET PROTECTION	EA	0.00	\$150	\$0
-	SILT FENCE	LF	400	\$5	\$2,000
-	HIGH VISIBILITY FENCE	LF	400	\$5	\$2,000
-	EROSION AND WATER POLLUTION CONTROL	LS	1	\$20,000	\$20,000
-	SEEDING, FERTILIZING, AND MULCHING	ACRE	1	\$4,000	\$4,000

Total EC and RR Costs \$28,000

**Traffic**

-	CEMENT CONC. TRAFFIC CURB AND GUTTER	LF	0	\$30	\$0
-	CEMENT CONC. SIDEWALK	SY	0	\$45	\$0
-	TEMPORARY CONCRETE BARRIER	LF	0	\$20	\$0
-	BARRIER DELINEATOR	EA	0	\$30	\$0
-	PAINT LINE	LF	6,600	\$0.50	\$3,300
-	TEMPORARY PAVEMENT MARKING	LF	0	\$0.30	\$0
-	PERMANENT SIGNING	LS	1	\$0	\$0
-	OTHER TEMPORARY TRAFFIC CONTROL	LS	1	\$0	\$0
-	FLAGGERS AND SPOTTERS	HR	0	\$40	\$0
-	CONSTRUCTION SIGNS CLASS A	SF	0	\$30	\$0
-	ILLUMINATION SYSTEM	LS	1	\$300,000	\$300,000
-					\$0

Total Traffic Costs \$303,300

**Other Items**

-	STRUCTURE SURVEYING	LS	1.00	\$50,000	\$50,000
-	ROADWAY SURVEYING	LS	1	\$50,000	\$50,000
-	PORTABLE TEMPORARY TRAFFIC CONTROL SIGNS	LS	1	\$0	\$0
-	PROJECT OFFICE	LS	1	\$0	\$0
-	TEMP. LAYDOWN SITE	LS	1	\$0	\$0
-	MAINLINE ROUNDABOUT	EA	0	\$500,000	\$0
-	MALL PARKING LOT RECONFIGURATIONS	EA	0	\$500,000	\$0
-					\$0

Total Other Items Costs \$100,000

Alternative 1A Grand Total \$1,555,750





**Anchor Point Feasibility Study  
Alternative 1B**

**Flyover Talley Way and BNSF tracks and maintenance yard**

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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**Preparation**

-	CLEARING AND GRUBBING	ACRE	3	\$10,000	\$30,000
-	STABILIZED CONSTRUCTION ENTRANCE	SY	0	\$590	\$0
-	TEMPORARY CHAIN LINK FENCE	LF	0	\$20	\$0
-	TEMPORARY RAMP	SY	0	\$45	\$0
-	REMOVING EXISTING STRUCTURES	LS	0	\$0	\$0
-	REMOVE CONCRETE SIDEWALK	SY	0	\$25	\$0
-	REMOVE CURB AND GUTTER	LF	0	\$8	\$0
-	REMOVE ASPHALT PAVEMENT	SY	0	\$9	\$0

Total Preparation Costs \$30,000

**Grading**

-	ROADWAY EXCAVATION INCL. HAUL	CY	2,700.00	\$10	\$27,000
-	TEMP. DETOUR MATERIAL REMOVAL	CY	0	\$10	\$0
-	GRAVEL BORROW INCL. HAUL	TON	157,000	\$20	\$3,140,000
-	GRAVEL BORROW INCL. HAUL - TEMP. DETOUR	TON	0	\$20	\$0

Total Grading Costs \$3,167,000

**Drainage**

-					\$0
-					\$0

Total Drainage Costs \$0

**Storm Sewer**

-	CATCH BASIN TYPE 1	EA	0	\$2,000	\$0
-	SOLID WALL PVC STORM SEWER PIPE 12 IN. DIA	LF	0	\$40	\$0
-	STORMWATER TREATMENT VAULT - (FILTERRA	EA	1	\$15,000	\$15,000
-	CRUSHED SURFACING BASE COURSE FOR TRE	CY	0	\$30	\$0
-	STRUCTURE EXCAVATION CLASS B INCL. HAUL	CY	0	\$15	\$0
-	SHORING OR ECTRA EXCAVATION CLASS B	SF	0	\$5	\$0

Total Storm Sewer Costs \$15,000

**Sanitary Sewer**

-	MODIFICATIONS TO EXISTING SYSTEM	LS	0	\$200,000	\$0
-					\$0
-					\$0
-					\$0

Total Sanitary Sewer Costs \$0

**Water Main**

-	MODIFICATIONS TO EXISTING SYSTEM	LS	0	\$200,000	\$0
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Total Water Main Costs \$0



Anchor Point Feasibility Study  
Alternative 1B

Flyover Talley Way and BNSF tracks and maintenance yard

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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Structures

**14 Spans Made up of WF83PTG and WF58G Girders for Alternative 1B**

<b>SUPERSTRUCTURE - PRESTRESSED GIRDERS WITH CONCRETE DECK</b>					
-					
-	CONCRETE - DECK	C.Y.	1,852	\$700	\$1,296,296
-	EPOXY-COATED STEEL REINFORCING BARS	LB.	1,111,111	\$1.25	\$1,388,889
-	PRESTRESSED CONCRETE GIRDERS	LF	10,605	\$300	\$3,181,500
	PRESTRESSED CONCRETE GIRDERS	LF	3,395	\$275	\$933,625
-	STEEL REINFORCING BARS	LB.	-	\$1.00	\$0
-	PT PRESTRESSING STEEL (INCLUDES ANCHOR)	LB.	221,082	\$6.00	\$1,326,494
-	ELASTOMERIC BEARINGS	EACH	196	\$150	\$29,400
-	ELASTOMERIC GIRDER STOPS	EACH	392	\$100	\$39,200
-	STRIP SEAL EXPANSION JOINTS	LF	320	\$500	\$160,000
-	TRAFFIC BARRIER	LF	4,000	\$90	\$360,000
			<b>TOTAL LUMP SUM COST</b>		<b>\$8,715,410</b>
<b>SUBSTRUCTURE - 2 CIP ABUTMENTS AND 13 CIP PIER</b>					
-	DRILLED SHAFTS - ABUTMENTS	EACH	4	\$184,560	\$738,240
-	DRILLED SHAFTS - LONG SPAN PIERS	EACH	6	\$452,250	\$2,713,500
-	DRILLED SHAFTS - TYPICAL SPAN PIERS	EACH	20	\$302,090	\$6,041,800
-	ABUTMENT FOOTINGS	C.Y.	178	\$450	\$80,000
-	ABUTMENT WALL	C.Y.	142	\$450	\$64,000
-	ABUTMENT CAP	C.Y.	77	\$450	\$34,711
-	PIER COLUMN	C.Y.	511	\$550	\$280,972
-	PIER CAPS	C.Y.	861	\$550	\$473,733
-	STEEL REINFORCING BARS	LB.	707,730	\$1.00	\$707,730
			<b>TOTAL LUMP SUM COST</b>		<b>\$11,134,690</b>
<b>STRUCTURE EXCAVATION CLASS A INCL. HAUL</b>					
-	INSIDE COFFERDAM - EARTH	C.Y.	373	\$12	\$4,480
			<b>TOTAL LUMP SUM COST</b>		<b>\$4,480</b>
<b>SHORING OR EXTRA EXCAVATION CL. A</b>					
-	SHORING AREAS (IN THE DRY) - 6 FT TO 10 FT	S.F.	2,232	\$7	\$15,624
-	SHORING AREAS (IN THE DRY) - 10 FT TO 20 FT	S.F.	-	\$11	\$0
			<b>TOTAL LUMP SUM COST</b>		<b>\$15,630</b>



**Anchor Point Feasibility Study  
Alternative 1B**

**Flyover Talley Way and BNSF tracks and maintenance yard**

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
	<b>REMOVAL OF STRUCTURE AND OBSTRUCTION</b>				
-	EXISTING BRIDGE/BUILDING FOUNDATION	EACH	-	\$10,000	\$0
		<b>TOTAL LUMP SUM COST</b>			<b>\$0</b>

**Ground Improvement for Approach Fills for Alternative 1B**

<b>Ground Improvements for West Approach</b>					
-					
-	HMA PAVEMENT	TON	-	\$120	\$0
-	CEMENT CONC. SIDEWALK	CY	-	\$250.00	\$0
-	CEMENT CONC. TRAFFIC BARRIER AND MOMEN	LF	-	\$225	\$0
-	WALL PANELS	SF	-	\$12.00	\$0
-	FOAM CEMENT MATERIAL	CY	-	\$50.00	\$0
-	APPROACH SLAB	SY	-	\$250	\$0
-	GROUND IMPROVEMENT	CY	13,889	\$75	\$1,041,667
-					
-					
		<b>TOTAL LUMP SUM COST</b>			<b>\$1,041,670</b>
<b>Ground Improvements for East Approach</b>					
-	HMA PAVEMENT	TON	-	\$120	\$0
-	CEMENT CONC. SIDEWALK	CY	-	\$250.00	\$0
-	CEMENT CONC. TRAFFIC BARRIER AND MOMEN	LF	-	\$225	\$0
-	WALL PANELS	SF	-	\$12.00	\$0
-	FOAM CEMENT MATERIAL	CY	-	\$50.00	\$0
-	APPROACH SLAB	SY	-	\$250	\$0
-	GROUND IMPROVEMENT	CY	29,630	\$75	\$2,222,222
-					
-					
		<b>TOTAL LUMP SUM COST</b>			<b>\$2,222,230</b>
<b>STRUCTURE EXCAVATION CLASS A INCL. HAUL</b>					
-	INSIDE COFFERDAM - EARTH	C.Y.	-	\$12	\$0
-					
		<b>TOTAL LUMP SUM COST</b>			<b>\$0</b>
<b>SHORING OR EXTRA EXCAVATION CL. A</b>					
-	SHORING AREAS (IN THE DRY) - 6 FT TO 10 FT	S.F.	-	\$7	\$0
-	SHORING AREAS (IN THE DRY) - 10 FT TO 20 FT	S.F.	-	\$11	\$0
-					
		<b>TOTAL LUMP SUM COST</b>			<b>\$0</b>



Anchor Point Feasibility Study  
Alternative 1B

Flyover Talley Way and BNSF tracks and maintenance yard

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
	<b>REMOVAL OF STRUCTURE AND OBSTRUCTION</b>				
-	EXISTING BRIDGE/BUILDING FOUNDATION	EACH	-	\$10,000	\$0
		TOTAL LUMP SUM COST			<b>\$0</b>

<b>OTHER STRUCTURAL ITEMS</b>					
	CONTAINMENT AND DISPOSAL OF CONTAMINANT	TON		\$200	\$0
	CONTAINMENT AND DISPOSAL OF CONTAMINANT	GAL		\$1	\$0
	VIBRATION MONITORING	EA		\$100	\$0
		TOTAL LUMP SUM COST			<b>\$0</b>

Total Structures Costs \$23,134,110

**Surfacing**

-	CRUSHED SURFACING BASE COURSE	TON	3,700.00	\$16	\$59,200
-	CRUSHED SURFACING BASE COURSE - TEMP. CUR	TON	0	\$16	\$0
-	CRUSHED SURFACING TOP COURSE	TON	500	\$17	\$8,500

Total Surfacing Costs \$67,700

**Hot Mix Asphalt**

-	HMA CL. 1/2 IN. PG 64-22 - BASE COURSE	TON	0.00	\$80	\$0
-	HMA CL. 1/2 IN. PG 64-22 - WEARING COURSE	TON	2,100.00	\$80	\$168,000
-	HMA CL. 1/2 IN. PG 64-22 - DETOUR	TON	0	\$80	\$0
-	COMMERCIAL HMA FOR APPROACH	TON	0	\$100	\$0

Total Hot Mix Asphalt Costs \$168,000

**Erosion Control and Roadside Restoration**

-	INLET PROTECTION	EA	0.00	\$150	\$0
-	SILT FENCE	LF	500	\$5	\$2,500
-	HIGH VISIBILITY FENCE	LF	500	\$5	\$2,500
-	EROSION AND WATER POLLUTION CONTROL	LS	1	\$20,000	\$20,000
-	SEEDING, FERTILIZING, AND MULCHING	ACRE	2	\$4,000	\$8,000

Total EC and RR Costs \$33,000



**Anchor Point Feasibility Study  
Alternative 1B  
Flyover Talley Way and BNSF tracks and maintenance yard**

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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**Traffic**

-	CEMENT CONC. TRAFFIC CURB AND GUTTER	LF	0	\$30	\$0
-	CEMENT CONC. SIDEWALK	SY	0	\$45	\$0
-	TEMPORARY CONCRETE BARRIER	LF	0	\$20	\$0
-	BARRIER DELINEATOR	EA	0	\$30	\$0
-	PAINT LINE	LF	10,000	\$0.50	\$5,000
-	TEMPORARY PAVEMENT MARKING	LF	0	\$0.30	\$0
-	PERMANENT SIGNING	LS	1	\$0	\$0
-	OTHER TEMPORARY TRAFFIC CONTROL	LS	1	\$0	\$0
-	FLAGGERS AND SPOTTERS	HR	0	\$40	\$0
-	CONSTRUCTION SIGNS CLASS A	SF	0	\$30	\$0
-	ILLUMINATION SYSTEM	LS	1	\$300,000	\$300,000
Total Traffic Costs					\$305,000

**Other Items**

-	STRUCTURE SURVEYING	LS	1.00	\$50,000	\$50,000
-	ROADWAY SURVEYING	LS	1	\$50,000	\$50,000
-	PORTABLE TEMPORARY TRAFFIC CONTROL SIG	LS	1	\$0	\$0
-	PROJECT OFFICE	LS	1	\$0	\$0
-	TEMP. LAYDOWN SITE	LS	1	\$0	\$0
-	MAINLINE ROUNDABOUT	EA	0	\$500,000	\$0
-	BUILDING DEMOLITION	EA		\$20,000	\$0
-	MALL PARKING LOT RECONFIGURATIONS	EA	0	\$500,000	\$0
-					\$0
Total Other Items Costs					\$100,000

Alternative 1B Grand Total                      \$27,019,810





Anchor Point Feasibility Study  
Alternative 2  
Cowlitz River crossing from Dike Rd.

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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**Preparation**

-	CLEARING AND GRUBBING	ACRE	7	\$10,000	\$70,000
-	STABILIZED CONSTRUCTION ENTRANCE	SY	0	\$590	\$0
-	TEMPORARY CHAIN LINK FENCE	LF	0	\$20	\$0
-	TEMPORARY RAMP	SY	0	\$45	\$0
-	REMOVING EXISTING STRUCTURES	LS	0	\$0	\$0
-	REMOVE CONCRETE SIDEWALK	SY	0	\$25	\$0
-	REMOVE CURB AND GUTTER	LF	0	\$8	\$0
-	REMOVE ASPHALT PAVEMENT	SY	0	\$9	\$0

Total Preparation Costs \$70,000

**Grading**

-	ROADWAY EXCAVATION INCL. HAUL	CY	1,250.00	\$10	\$12,500
-	TEMP. DETOUR MATERIAL REMOVAL	CY	0	\$10	\$0
-	GRAVEL BORROW INCL. HAUL	TON	295,000	\$20	\$5,900,000
-	GRAVEL BORROW INCL. HAUL - TEMP. DETOUR	TON	0	\$20	\$0

Total Grading Costs \$5,912,500

**Drainage**

-					\$0
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Total Drainage Costs \$0

**Storm Sewer**

-	CATCH BASIN TYPE 1	EA	0	\$2,000	\$0
-	SOLID WALL PVC STORM SEWER PIPE 12 IN. DIAM.	LF	0	\$40	\$0
-	STORMWATER TREATMENT VAULT - (FILTERRA)	EA	1	\$15,000	\$15,000
-	CRUSHED SURFACING BASE COURSE FOR TRENCH	CY	0	\$30	\$0
-	STRUCTURE EXCAVATION CLASS B INCL. HAUL	CY	0	\$15	\$0
-	SHORING OR EXTRA EXCAVATION CLASS B	SF	0	\$5	\$0

Total Storm Sewer Costs \$15,000

**Sanitary Sewer**

-	MODIFICATIONS TO EXISTING SYSTEM	LS	0	\$200,000	\$0
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Total Sanitary Sewer Costs \$0

**Water Main**

-	MODIFICATIONS TO EXISTING SYSTEM	LS	0	\$200,000	\$0
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Total Water Main Costs \$0



Anchor Point Feasibility Study  
Alternative 2  
Cowlitz River crossing from Dike Rd.

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>Structures</b>					
<b>3 Spans Made up of WF100PTG Girders for Alternative 2</b>					
<b>SUPERSTRUCTURE - PRESTRESSED GIRDERS WITH CONCRETE DECK</b>					
-	CONCRETE - DECK	C.Y.	694	\$700	\$486,111
-	EPOXY-COATED STEEL REINFORCING BARS	LB.	416,666.67	\$1.25	\$520,833
-	PRESTRESSED CONCRETE GIRDERS	LF	5,250	\$400	\$2,100,000
-	STEEL REINFORCING BARS	LB.	-	\$1.00	\$0
-	PT PRESTRESSING STEEL (INCLUDES ANCHORAGES)	LB.	341,880	\$6.00	\$2,051,280
-	ELASTOMERIC BEARINGS	EACH	42	\$150	\$6,300
-	ELASTOMERIC GIRDER STOPS	EACH	84	\$100	\$8,400
-	STRIP SEAL EXPANSION JOINTS	LF	80	\$500	\$40,000
-	TRAFFIC BARRIER	LF	1,500	\$90	\$135,000
TOTAL LUMP SUM COST					<b>\$5,347,930</b>
<b>SUBSTRUCTURE - 2 CIP ABUTMENTS AND 13 CIP PIER</b>					
-	DRILLED SHAFTS - ABUTMENTS	EACH	8	\$184,560	\$1,476,480
-	DRILLED SHAFTS - LONG SPAN PIERS	EACH	4	\$635,060	\$2,540,240
-	DRILLED SHAFTS - TYPICAL SPAN PIERS	EACH	20	\$69,813	\$1,396,263
-	ABUTMENT FOOTINGS	C.Y.	85	\$450	\$38,400
-	ABUTMENT WALL	C.Y.	1,920	\$450	\$864,000
-	ABUTMENT CAP	C.Y.	228	\$450	\$102,667
-	PIER COLUMN	C.Y.	594	\$550	\$326,569
-	PIER CAPS	C.Y.	225	\$550	\$123,852
-	STEEL REINFORCING BARS	LB.	1,220,971	\$1.00	\$1,220,971
TOTAL LUMP SUM COST					<b>\$8,089,450</b>
<b>STRUCTURE EXCAVATION CLASS A INCL. HAUL</b>					
-	INSIDE COFFERDAM - EARTH	C.Y.	971	\$12	\$11,648
TOTAL LUMP SUM COST					<b>\$11,650</b>
<b>SHORING OR EXTRA EXCAVATION CL. A</b>					
-	SHORING AREAS (IN THE DRY) - 6 FT TO 10 FT	S.F.	7,696	\$7	\$53,872
-	SHORING AREAS (IN THE DRY) - 10 FT TO 20 FT	S.F.	-	\$11	\$0
TOTAL LUMP SUM COST					<b>\$53,880</b>
<b>REMOVAL OF STRUCTURE AND OBSTRUCTION</b>					
-	EXISTING BRIDGE/BUILDING FOUNDATION	EACH	-	\$10,000	\$0
TOTAL LUMP SUM COST					<b>\$0</b>



Anchor Point Feasibility Study  
Alternative 2  
Cowlitz River crossing from Dike Rd.

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>Ground Improvement for Approach Fills for Alternative 2</b>					
<b>Ground Improvements for North Approach</b>					
-					
-	HMA PAVEMENT	TON	-	\$120	\$0
-	CEMENT CONC. SIDEWALK	CY	-	\$250.00	\$0
-	CEMENT CONC. TRAFFIC BARRIER AND MOMENT SLAB	LF	-	\$225	\$0
-	WALL PANELS	SF	-	\$12.00	\$0
-	FOAM CEMENT MATERIAL	CY	-	\$50.00	\$0
-	APPROACH SLAB	SY	-	\$250	\$0
-	GROUND IMPROVEMENT	CY	122,222	\$75	\$9,166,667
TOTAL LUMP SUM COST					<b>\$9,166,670</b>
<b>Ground Improvements for South Approach</b>					
-	HMA PAVEMENT	TON	-	\$120	\$0
-	CEMENT CONC. SIDEWALK	CY	-	\$250.00	\$0
-	CEMENT CONC. TRAFFIC BARRIER AND MOMENT SLAB	LF	-	\$225	\$0
-	WALL PANELS	SF	-	\$12.00	\$0
-	FOAM CEMENT MATERIAL	CY	-	\$50.00	\$0
-	APPROACH SLAB	SY	-	\$250	\$0
-	GROUND IMPROVEMENT	CY	247,917	\$75	\$18,593,750
TOTAL LUMP SUM COST					<b>\$18,593,750</b>
<b>STRUCTURE EXCAVATION CLASS A INCL. HAUL</b>					
-	INSIDE COFFERDAM - EARTH	C.Y.	-	\$12	\$0
TOTAL LUMP SUM COST					<b>\$0</b>
<b>SHORING OR EXTRA EXCAVATION CL. A</b>					
-	SHORING AREAS (IN THE DRY) - 6 FT TO 10 FT	S.F.	-	\$7	\$0
-	SHORING AREAS (IN THE DRY) - 10 FT TO 20 FT	S.F.	-	\$11	\$0
TOTAL LUMP SUM COST					<b>\$0</b>
<b>REMOVAL OF STRUCTURE AND OBSTRUCTION</b>					
-	EXISTING BRIDGE/BUILDING FOUNDATION	EACH	-	\$10,000	\$0
TOTAL LUMP SUM COST					<b>\$0</b>





Anchor Point Feasibility Study  
 Alternative 2  
 Cowlitz River crossing from Dike Rd.

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>Other Items</b>					
-	STRUCTURE SURVEYING	LS	1.00	\$50,000	\$50,000
-	ROADWAY SURVEYING	LS	1	\$50,000	\$50,000
-	PORTABLE TEMPORARY TRAFFIC CONTROL SIGNAL	LS	1	\$0	\$0
-	PROJECT OFFICE	LS	1	\$0	\$0
-	TEMP. LAYDOWN SITE	LS	1	\$0	\$0
-	MAINLINE ROUNDABOUT	EA	0	\$500,000	\$0
-	BUILDING DEMOLITION	EA	0	\$20,000	\$0
-	MALL PARKING LOT RECONFIGURATIONS	LS	0	\$500,000	\$0
-					\$0

Total Other Items Costs \$100,000

Alternative 2 - Grand Total \$47,934,430





Anchor Point Feasibility Study  
Alternative 3A

From Talley Way over wetlands and BNSF tracks with pier landing in wye of tracks

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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**Preparation**

-	CLEARING AND GRUBBING	ACRE	3	\$10,000	\$30,000
-	STABILIZED CONSTRUCTION ENTRANCE	SY	0	\$590	\$0
-	TEMPORARY CHAIN LINK FENCE	LF	0	\$20	\$0
-	TEMPORARY RAMP	SY	0	\$45	\$0
-	REMOVING EXISTING STRUCTURES	LS	0	\$0	\$0
-	REMOVE CONCRETE SIDEWALK	SY	0	\$25	\$0
-	REMOVE CURB AND GUTTER	LF	0	\$8	\$0
-	REMOVE ASPHALT PAVEMENT	SY	0	\$9	\$0

Total Preparation Costs \$30,000

**Grading**

-	ROADWAY EXCAVATION INCL. HAUL	CY	17,000.00	\$10	\$170,000
-	TEMP. DETOUR MATERIAL REMOVAL	CY	0	\$10	\$0
-	GRAVEL BORROW INCL. HAUL	TON	180,000	\$20	\$3,600,000
-	GRAVEL BORROW INCL. HAUL - TEMP. DETOUR	TON	0	\$20	\$0

Total Grading Costs \$3,770,000

**Drainage**

-					\$0
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Total Drainage Costs \$0

**Storm Sewer**

-	CATCH BASIN TYPE 1	EA	0	\$2,000	\$0
-	SOLID WALL PVC STORM SEWER PIPE 12 IN. DIAM.	LF	0	\$40	\$0
-	STORMWATER TREATMENT VAULT - (FILTERRA)	EA	1	\$15,000	\$15,000
-	CRUSHED SURFACING BASE COURSE FOR TRENCH	CY	0	\$30	\$0
-	STRUCTURE EXCAVATION CLASS B INCL. HAUL	CY	0	\$15	\$0
-	SHORING OR EXTRA EXCAVATION CLASS B	SF	0	\$5	\$0

Total Storm Sewer Costs \$15,000

**Sanitary Sewer**

-	MODIFICATIONS TO EXISTING SYSTEM	LS	0	\$200,000	\$0
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Total Sanitary Sewer Costs \$0

**Water Main**

-	MODIFICATIONS TO EXISTING SYSTEM	LS	0	\$200,000	\$0
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Total Water Main Costs \$0



Anchor Point Feasibility Study  
Alternative 3A

From Talley Way over wetlands and BNSF tracks with pier landing in wye of tracks

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>Structures</b>					
<b>13 Spans Made up of WF95PTG and WF66G Girders for Alternative 3A</b>					
<b>SUPERSTRUCTURE - PRESTRESSED GIRDERS WITH CONCRETE DECK</b>					
-	CONCRETE - DECK	C.Y.	1,921	\$700	\$1,344,907
-	EPOXY-COATED STEEL REINFORCING BARS	LB.	1,152,778	\$1.25	\$1,440,972
-	PRESTRESSED CONCRETE GIRDERS	LF	6,625	\$315	\$2,086,875
-	PRESTRESSED CONCRETE GIRDERS	LF	3,750	\$300	\$1,125,000
-	STEEL REINFORCING BARS	LB.	-	\$1.00	\$0
-	PT PRESTRESSING STEEL (INCLUDES ANCHORAGES)	LB.	244,200	\$6.00	\$1,465,200
-	ELASTOMERIC BEARINGS	EACH	130	\$150	\$19,500
-	ELASTOMERIC GIRDER STOPS	EACH	260	\$100	\$26,000
-	STRIP SEAL EXPANSION JOINTS	LF	240	\$250	\$60,000
-	TRAFFIC BARRIER	LF	4,150	\$90	\$373,500
TOTAL LUMP SUM COST					<b>\$7,941,960</b>
<b>SUBSTRUCTURE - 2 CIP ABUTMENTS AND 12 CIP PIER</b>					
-	DRILLED SHAFTS - ABUTMENTS	EACH	4	\$184,560	\$738,240
-	DRILLED SHAFTS - LONG SPAN PIERS	EACH	8	\$452,250	\$3,618,000
-	DRILLED SHAFTS - TYPICAL SPAN PIERS	EACH	16	\$302,090	\$4,833,440
-	ABUTMENT FOOTINGS	C.Y.	53	\$450	\$24,000
-	ABUTMENT WALL	C.Y.	171	\$450	\$76,800
-	ABUTMENT CAP	C.Y.	80	\$450	\$35,822
-	PIER COLUMN	C.Y.	428	\$550	\$235,311
-	PIER CAPS	C.Y.	861	\$550	\$473,733
-	STEEL REINFORCING BARS	LB.	637,110	\$1.00	\$637,110
TOTAL LUMP SUM COST					<b>\$10,672,460</b>
<b>STRUCTURE EXCAVATION CLASS A INCL. HAUL</b>					
-	INSIDE COFFERDAM - EARTH	C.Y.	112	\$12	\$1,344
TOTAL LUMP SUM COST					<b>\$1,350</b>
<b>SHORING OR EXTRA EXCAVATION CL. A</b>					
-	SHORING AREAS (IN THE DRY) - 6 FT TO 10 FT	S.F.	2,124	\$7	\$14,868
-	SHORING AREAS (IN THE DRY) - 10 FT TO 20 FT	S.F.	-	\$11	\$0
TOTAL LUMP SUM COST					<b>\$14,870</b>
<b>REMOVAL OF STRUCTURE AND OBSTRUCTION</b>					
-	EXISTING BRIDGE/BUILDING FOUNDATION	EACH	1	\$10,000	\$10,000
TOTAL LUMP SUM COST					<b>\$10,000</b>



Anchor Point Feasibility Study  
Alternative 3A

From Talley Way over wetlands and BNSF tracks with pier landing in wye of tracks

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>Ground Improvement for Approach Fills for Alternative 3A</b>					
<b>Ground Improvements for West Approach</b>					
-	HMA PAVEMENT	TON	-	\$120	\$0
-	CEMENT CONC. SIDEWALK	CY	-	\$250.00	\$0
-	CEMENT CONC. TRAFFIC BARRIER AND MOMENT SLAB	LF	-	\$225	\$0
-	WALL PANELS	SF	-	\$12.00	\$0
-	FOAM CEMENT MATERIAL	CY	-	\$50.00	\$0
-	APPROACH SLAB	SY	-	\$250	\$0
-	GROUND IMPROVEMENT	CY	77,778	\$75	\$5,833,333
TOTAL LUMP SUM COST					<b>\$5,833,340</b>
<b>Ground Improvements for East Approach</b>					
-	HMA PAVEMENT	TON	-	\$120	\$0
-	CEMENT CONC. SIDEWALK	CY	-	\$250.00	\$0
-	CEMENT CONC. TRAFFIC BARRIER AND MOMENT SLAB	LF	-	\$225	\$0
-	WALL PANELS	SF	-	\$12.00	\$0
-	FOAM CEMENT MATERIAL	CY	-	\$50.00	\$0
-	APPROACH SLAB	SY	-	\$250	\$0
-	GROUND IMPROVEMENT	CY	88,889	\$75	\$6,666,667
TOTAL LUMP SUM COST					<b>\$6,666,670</b>
<b>STRUCTURE EXCAVATION CLASS A INCL. HAUL</b>					
-	INSIDE COFFERDAM - EARTH	C.Y.	-	\$12	\$0
TOTAL LUMP SUM COST					<b>\$0</b>
<b>SHORING OR EXTRA EXCAVATION CL. A</b>					
-	SHORING AREAS (IN THE DRY) - 6 FT TO 10 FT	S.F.	-	\$7	\$0
-	SHORING AREAS (IN THE DRY) - 10 FT TO 20 FT	S.F.	-	\$11	\$0
TOTAL LUMP SUM COST					<b>\$0</b>
<b>REMOVAL OF STRUCTURE AND OBSTRUCTION</b>					
-	EXISTING BRIDGE/BUILDING FOUNDATION	EACH	-	\$10,000	\$0
TOTAL LUMP SUM COST					<b>\$0</b>



Anchor Point Feasibility Study  
Alternative 3A

From Talley Way over wetlands and BNSF tracks with pier landing in wye of tracks

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>OTHER STRUCTURAL ITEMS</b>					
	CONTAINMENT AND DISPOSAL OF CONTAMINATED SOILS	TON	-	\$200	\$0
	CONTAINMENT AND DISPOSAL OF CONTAMINATED WATER	GAL	-	\$1	\$0
	VIBRATION MONITORING	EA	-	\$100	\$0
<b>TOTAL LUMP SUM COST</b>					<b>\$0</b>
				Total Structures Costs	\$31,140,650

**Surfacing**

-	CRUSHED SURFACING BASE COURSE	TON	5,700.00	\$16	\$91,200
-	CRUSHED SURFACING BASE COURSE - TEMP. DETOUR	TON	0	\$16	\$0
-	CURSHED SURFACING TOP COURSE	TON	750	\$17	\$12,750
Total Surfacing Costs					\$103,950

**Hot Mix Asphalt**

-	HMA CL. 1/2 IN. PG 64-22 - BASE COURSE	TON	0.00	\$80	\$0
-	HMA CL. 1/2 IN. PG 64-22 - WEARING COURSE	TON	3,200	\$80	\$256,000
-	HMA CL. 1/2 IN. PG 64-22 - DETOUR	TON	0	\$80	\$0
-	COMMERCIAL HMA FOR APPROACH	TON	0	\$100	\$0
Total Hot Mix Asphalt Costs					\$256,000

**Erosion Control and Roadside Restoration**

-	INLET PROTECTION	EA	0.00	\$150	\$0
-	SILT FENCE	LF	1,100	\$5	\$5,500
-	HIGH VISIBILITY FENCE	LF	1,100	\$5	\$5,500
-	EROSION AND WATER POLLUTION CONTROL	LS	1	\$20,000	\$20,000
-	SEEDING, FERTILIZING, AND MULCHING	ACRE	1	\$4,000	\$4,000
Total EC and RR Costs					\$35,000

**Traffic**

-	CEMENT CONC. TRAFFIC CURB AND GUTTER	LF	0	\$30	\$0
-	CEMENT CONC. SIDEWALK	SY	0	\$45	\$0
-	TEMPORARY CONCRETE BARRIER	LF	0	\$20	\$0
-	BARRIER DELINEATOR	EA	0	\$30	\$0
-	PAINT LINE	LF	11,750	\$0.50	\$5,875
-	TEMPORARY PAVEMENT MARKING	LF	0	\$0.30	\$0
-	PERMANENT SIGNING	LS	1	\$0	\$0
-	OTHER TEMPORARY TRAFFIC CONTROL	LS	1	\$0	\$0
-	FLAGGERS AND SPOTTERS	HR	0	\$40	\$0
-	CONSTRUCTION SIGNS CLASS A	SF	0	\$30	\$0
-	ILLUMINATION SYSTEM	LS	1	\$300,000	\$300,000
Total Traffic Costs					\$305,875



Anchor Point Feasibility Study  
Alternative 3A

From Talley Way over wetlands and BNSF tracks with pier landing in wye of tracks

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>Other Items</b>					
-	STRUCTURE SURVEYING	LS	1.00	\$50,000	\$50,000
-	ROADWAY SURVEYING	LS	1	\$50,000	\$50,000
-	PORTABLE TEMPORARY TRAFFIC CONTROL SIGNAL	LS	1	\$0	\$0
-	PROJECT OFFICE	LS	1	\$0	\$0
-	TEMP. LAYDOWN SITE	LS	1	\$0	\$0
-	MAINLINE ROUNDABOUT	EA	0	\$500,000	\$0
-	BUILDING DEMOLITION	EA	0	\$20,000	\$0
-	MALL PARKING LOT RECONFIGURATIONS	LS	0	\$500,000	\$0
-					\$0

Total Other Items Costs \$100,000

Alternative 3A - Grand Total \$35,756,475





Anchor Point Feasibility Study  
Alternative 3B

Over wetlands and BNSF tracks from Talley Way extension

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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**Preparation**

-	CLEARING AND GRUBBING	ACRE	2	\$10,000	\$20,000
-	STABILIZED CONSTRUCTION ENTRANCE	SY	0	\$590	\$0
-	TEMPORARY CHAIN LINK FENCE	LF	0	\$20	\$0
-	TEMPORARY RAMP	SY	0	\$45	\$0
-	REMOVING EXISTING STRUCTURES	LS	0	\$0	\$0
-	REMOVE CONCRETE SIDEWALK	SY	0	\$25	\$0
-	REMOVE CURB AND GUTTER	LF	0	\$8	\$0
-	REMOVE ASPHALT PAVEMENT	SY	0	\$9	\$0

Total Preparation Costs \$20,000

**Grading**

-	ROADWAY EXCAVATION INCL. HAUL	CY	1,250.00	\$10	\$12,500
-	TEMP. DETOUR MATERIAL REMOVAL	CY	0	\$10	\$0
-	GRAVEL BORROW INCL. HAUL	TON	190,000	\$20	\$3,800,000
-	GRAVEL BORROW INCL. HAUL - TEMP. DETOUR	TON	0	\$20	\$0

Total Grading Costs \$3,812,500

**Drainage**

-					\$0
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Total Drainage Costs \$0

**Storm Sewer**

-	CATCH BASIN TYPE 1	EA	0	\$2,000	\$0
-	SOLID WALL PVC STORM SEWER PIPE 12 IN. DIAM.	LF	0	\$40	\$0
-	STORMWATER TREATMENT VAULT - (FILTERRA)	EA	1	\$15,000	\$15,000
-	CRUSHED SURFACING BASE COURSE FOR TRENCH	CY	0	\$30	\$0
-	STRUCTURE EXCAVATION CLASS B INCL. HAUL	CY	0	\$15	\$0
-	SHORING OR EXTRA EXCAVATION CLASS B	SF	0	\$5	\$0

Total Storm Sewer Costs \$15,000

**Sanitary Sewer**

-	MODIFICATIONS TO EXISTING SYSTEM	LS	0	\$200,000	\$0
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Total Sanitary Sewer Costs \$0

**Water Main**

-	MODIFICATIONS TO EXISTING SYSTEM	LS	0	\$200,000	\$0
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Total Water Main Costs \$0



Anchor Point Feasibility Study  
Alternative 3B

Over wetlands and BNSF tracks from Talley Way extension

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>Structures</b>					
<b>13 Spans Made up of Segmental Box Girder Spans and WF66G Girders for Alternative 3A</b>					
<b>SUPERSTRUCTURE - SEGMENTAL GIRDERS AND PRESTRESSED GIRDERS WITH CONCRETE DECK</b>					
-	CONCRETE - DECK	C.Y.	1,227	\$700	\$858,796
-	CONCRETE - SEGMENTAL CONSTRUCTION	C.Y.	2,011	\$850	\$1,709,443
-	EPOXY-COATED STEEL REINFORCING BARS	LB.	1,741,666	\$1.25	\$2,177,082
-	PRESTRESSED CONCRETE GIRDERS	LF	6,625	\$350	\$2,318,750
-	STEEL REINFORCING BARS	LB.	-	\$1.00	\$0
-	PT PRESTRESSING STEEL (INCLUDES ANCHORAGES)	LB.	193,621	\$6.00	\$1,161,726
-	ELASTOMERIC BEARINGS	EACH	130	\$150	\$19,500
-	ELASTOMERIC GIRDER STOPS	EACH	260	\$100	\$26,000
-	STRIP SEAL EXPANSION JOINTS	LF	240	\$250	\$60,000
-	TRAFFIC BARRIER	LF	2,950	\$90	\$265,500
TOTAL LUMP SUM COST					<b>\$8,596,800</b>
<b>SUBSTRUCTURE - 2 CIP ABUTMENTS</b>					
-	DRILLED SHAFTS - ABUTMENTS	EACH	4	\$184,560	\$738,240
-	DRILLED SHAFTS - LONG SPAN PIERS	EACH	6	\$635,060	\$3,810,360
-	DRILLED SHAFTS - TYPICAL SPAN PIERS	EACH	18	\$302,090	\$5,437,620
-	ABUTMENT FOOTINGS	C.Y.	53	\$450	\$24,000
-	ABUTMENT WALL	C.Y.	171	\$450	\$76,800
-	ABUTMENT CAP	C.Y.	96	\$450	\$43,239
-	PIER COLUMN	C.Y.	480	\$450	\$216,194
-	PIER CAPS	C.Y.	870	\$450	\$391,400
-	STEEL REINFORCING BARS	LB.	668,118	\$1.00	\$668,118
TOTAL LUMP SUM COST					<b>\$11,405,980</b>
<b>STRUCTURE EXCAVATION CLASS A INCL. HAUL</b>					
-	INSIDE COFFERDAM - EARTH	C.Y.	112	\$12	\$1,344
TOTAL LUMP SUM COST					<b>\$1,350</b>
<b>SHORING OR EXTRA EXCAVATION CL. A</b>					
-	SHORING AREAS (IN THE DRY) - 6 FT TO 10 FT	S.F.	2,124	\$7	\$14,868
-	SHORING AREAS (IN THE DRY) - 10 FT TO 20 FT	S.F.	-	\$11	\$0
TOTAL LUMP SUM COST					<b>\$14,870</b>
<b>REMOVAL OF STRUCTURE AND OBSTRUCTION</b>					
-	EXISTING BRIDGE/BUILDING FOUNDATION	EACH	1	\$10,000	\$10,000
TOTAL LUMP SUM COST					<b>\$10,000</b>



Anchor Point Feasibility Study  
Alternative 3B

Over wetlands and BNSF tracks from Talley Way extension

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>Foam Cement Approach Structures for Alternate C</b>					
<b>Foam Cement North Approach Structure</b>					
-					
-	HMA PAVEMENT	TON	-	\$120	\$0
-	CEMENT CONC. SIDEWALK	CY	-	\$250.00	\$0
-	CEMENT CONC. TRAFFIC BARRIER AND MOMENT SLAB	LF	-	\$225	\$0
-	WALL PANELS	SF	-	\$12.00	\$0
-	FOAM CEMENT MATERIAL	CY	-	\$50.00	\$0
-	APPROACH SLAB	SY	-	\$250	\$0
-	GROUND IMPROVEMENT	CY	18,519	\$75	\$1,388,889
TOTAL LUMP SUM COST					<b>\$1,388,890</b>
<b>Foam Cement South Approach Structure</b>					
-	HMA PAVEMENT	TON	-	\$120	\$0
-	CEMENT CONC. SIDEWALK	CY	-	\$250.00	\$0
-	CEMENT CONC. TRAFFIC BARRIER AND MOMENT SLAB	LF	-	\$225	\$0
-	WALL PANELS	SF	-	\$12.00	\$0
-	FOAM CEMENT MATERIAL	CY	-	\$50.00	\$0
-	APPROACH SLAB	SY	-	\$250	\$0
-	GROUND IMPROVEMENT	CY	14,815	\$75	\$1,111,111
TOTAL LUMP SUM COST					<b>\$1,111,120</b>
<b>STRUCTURE EXCAVATION CLASS A INCL. HAUL</b>					
-	INSIDE COFFERDAM - EARTH	C.Y.	-	\$12	\$0
TOTAL LUMP SUM COST					<b>\$0</b>
<b>SHORING OR EXTRA EXCAVATION CL. A</b>					
-	SHORING AREAS (IN THE DRY) - 6 FT TO 10 FT	S.F.	-	\$7	\$0
-	SHORING AREAS (IN THE DRY) - 10 FT TO 20 FT	S.F.	-	\$11	\$0
TOTAL LUMP SUM COST					<b>\$0</b>
<b>REMOVAL OF STRUCTURE AND OBSTRUCTION</b>					
-	EXISTING BRIDGE/BUILDING FOUNDATION	EACH	-	\$10,000	\$0
TOTAL LUMP SUM COST					<b>\$0</b>

DAVID EVANS  
AND ASSOCIATES INC.

**Anchor Point Feasibility Study**  
**Alternative 3B**  
**Over wetlands and BNSF tracks from Talley Way extension**

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>OTHER STRUCTURAL ITEMS</b>					
	CONTAINMENT AND DISPOSAL OF CONTAMINATED SOILS	TON	-	\$200	\$0
	CONTAINMENT AND DISPOSAL OF CONTAMINATED WATER	GAL	-	\$1	\$0
	VIBRATION MONITORING	EA	-	\$100	\$0
				TOTAL LUMP SUM COST	<b>\$0</b>

Total Structures Costs \$22,529,010

**Surfacing**

-	CRUSHED SURFACING BASE COURSE	TON	4,800.00	\$16	\$76,800
-	CRUSHED SURFACING BASE COURSE - TEMP. DETOUR	TON	0	\$16	\$0
-	CURSHED SURFACING TOP COURSE	TON	700	\$17	\$11,900

Total Surfacing Costs \$88,700

**Hot Mix Asphalt**

-	HMA CL. 1/2 IN. PG 64-22 - BASE COURSE	TON	0.00	\$80	\$0
-	HMA CL. 1/2 IN. PG 64-22 - WEARING COURSE	TON	2,700	\$80	\$216,000
-	HMA CL. 1/2 IN. PG 64-22 - DETOUR	TON	0	\$80	\$0
-	COMMERCIAL HMA FOR APPROACH	TON	0	\$100	\$0

Total Hot Mix Asphalt Costs \$216,000

**Erosion Control and Roadside Restoration**

-	INLET PROTECTION	EA	0.00	\$150	\$0
-	SILT FENCE	LF	400	\$5	\$2,000
-	HIGH VISIBILITY FENCE	LF	400	\$5	\$2,000
-	EROSION AND WATER POLLUTION CONTROL	LS	1	\$20,000	\$20,000
-	SEEDING, FERTILIZING, AND MULCHING	ACRE	1	\$4,000	\$4,000

Total EC and RR Costs \$28,000

**Traffic**

-	CEMENT CONC. TRAFFIC CURB AND GUTTER	LF	0	\$30	\$0
-	CEMENT CONC. SIDEWALK	SY	0	\$45	\$0
-	TEMPORARY CONCRETE BARRIER	LF	0	\$20	\$0
-	BARRIER DELINEATOR	EA	0	\$30	\$0
-	PAINT LINE	LF	11,500	\$0.50	\$5,750
-	TEMPORARY PAVEMENT MARKING	LF	0	\$0.30	\$0
-	PERMANENT SIGNING	LS	1	\$0	\$0
-	OTHER TEMPORARY TRAFFIC CONTROL	LS	1	\$0	\$0
-	FLAGGERS AND SPOTTERS	HR	0	\$40	\$0
-	CONSTRUCTION SIGNS CLASS A	SF	0	\$30	\$0
-	ILLUMINATION SYSTEM	LS	1	\$300,000	\$300,000

Total Traffic Costs \$305,750



Anchor Point Feasibility Study  
Alternative 3B

Over wetlands and BNSF tracks from Talley Way extension

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>Other Items</b>					
-	STRUCTURE SURVEYING	LS	1.00	\$50,000	\$50,000
-	ROADWAY SURVEYING	LS	1	\$50,000	\$50,000
-	PORTABLE TEMPORARY TRAFFIC CONTROL SIGNAL	LS	1	\$0	\$0
-	PROJECT OFFICE	LS	1	\$0	\$0
-	TEMP. LAYDOWN SITE	LS	1	\$0	\$0
-	MAINLINE ROUNDABOUT	EA	0	\$500,000	\$0
-	BUILDING DEMOLITION	EA	0	\$20,000	\$0
-	MALL PARKING LOT RECONFIGURATIONS	LS	0	\$500,000	\$0
-					\$0

Total Other Items Costs \$100,000

Alternative 3B - Grand Total \$27,114,960





## Anchor Point Feasibility Study

## Alternative 4

## Upgrade existing Owl Creek access to accommodate truck and emergency access

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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**Preparation**

-	CLEARING AND GRUBBING	ACRE	5	\$10,000	\$50,000
-	STABILIZED CONSTRUCTION ENTRANCE	SY	0	\$590	\$0
-	TEMPORARY CHAIN LINK FENCE	LF	0	\$20	\$0
-	TEMPORARY RAMP	SY	0	\$45	\$0
-	REMOVING EXISTING STRUCTURES	LS	0	\$0	\$0
-	REMOVE CONCRETE SIDEWALK	SY	0	\$25	\$0
-	REMOVE CURB AND GUTTER	LF	0	\$8	\$0
-	REMOVE ASPHALT PAVEMENT	SY	0	\$9	\$0
Total Preparation Costs					\$50,000

**Grading**

-	ROADWAY EXCAVATION INCL. HAUL	CY	7,750.00	\$10	\$77,500
-	TEMP. DETOUR MATERIAL REMOVAL	CY	0	\$10	\$0
-	GRAVEL BORROW INCL. HAUL	TON	54,000	\$20	\$1,080,000
-	GRAVEL BORROW INCL. HAUL - TEMP. DETOUR	TON	0	\$20	\$0
Total Grading Costs					\$1,157,500

**Drainage**

	STORMWATER PUMP STATION	LS	100,000.00	\$1	\$100,000
	ROADWAY CULVERTS	LS	10,000.00	\$1	\$10,000
Total Drainage Costs					\$110,000

**Storm Sewer**

-	CATCH BASIN TYPE 1	EA	0	\$2,000	\$0
-	SOLID WALL PVC STORM SEWER PIPE 12 IN. DIAM.	LF	0	\$40	\$0
-	STORMWATER TREATMENT VAULT - (FILTERRA)	EA	1	\$15,000	\$15,000
-	CRUSHED SURFACING BASE COURSE FOR TRENCH	CY	0	\$30	\$0
-	STRUCTURE EXCAVATION CLASS B INCL. HAUL	CY	0	\$15	\$0
-	SHORING OR EXTRA EXCAVATION CLASS B	SF	0	\$5	\$0
Total Storm Sewer Costs					\$15,000

**Sanitary Sewer**

-	MODIFICATIONS TO EXISTING SYSTEM	LS	0	\$200,000	\$0
Total Sanitary Sewer Costs					\$0

**Water Main**

-	MODIFICATIONS TO EXISTING SYSTEM	LS	0	\$200,000	\$0
Total Water Main Costs					\$0



Anchor Point Feasibility Study

Alternative 4

Upgrade existing Owl Creek access to accommodate truck and emergency access

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>Structures</b>					
<b>Tub and Tunnel Structure with Clear Opening of 20 Feet Wide and 15 Feet High</b>					
<b>SUBSTRUCTURE - TUB AND TUNNEL STRUCTURE</b>					
-	PRECAST CULVERT SEGMENTS	LF	150	\$12,711	\$1,906,667
-	PRECAST CULVERT SEGMENTS	LF	100	\$12,711	\$1,271,111
-	TUB FOOTING - WEST	C.Y.	1,329	\$450	\$598,000
-	TUB WALLS - WEST	C.Y.	361	\$450	\$162,500
-	TUB FOOTING - CENTER	C.Y.	3,203	\$450	\$1,441,333
-	TUB WALLS - CENTER	C.Y.	836	\$450	\$376,000
-	TUB FOOTING - EAST	C.Y.	1,457	\$450	\$655,500
-	TUB WALLS - EAST	C.Y.	401	\$450	\$180,500
-	STEEL REINFORCING BARS	LB.	743,111	\$1.00	\$743,111
TOTAL LUMP SUM COST					<b>\$7,334,730</b>
<b>STRUCTURE EXCAVATION CLASS A INCL. HAUL</b>					
-	INSIDE COFFERDAM - EARTH	C.Y.	6,043	\$12	\$72,510
TOTAL LUMP SUM COST					<b>\$72,510</b>
<b>SHORING OR EXTRA EXCAVATION CL. A</b>					
-	SHORING AREAS (IN THE DRY) - 6 FT TO 10 FT	S.F.	7,158	\$7	\$50,103
-	SHORING AREAS (IN THE DRY) - 10 FT TO 20 FT	S.F.	-	\$11	\$0
TOTAL LUMP SUM COST					<b>\$50,110</b>
<b>REMOVAL OF STRUCTURE AND OBSTRUCTION</b>					
-	EXISTING BRIDGE/BUILDING FOUNDATION	EACH	-	\$10,000	\$0
TOTAL LUMP SUM COST					<b>\$0</b>



Anchor Point Feasibility Study  
Alternative 4

Upgrade existing Owl Creek access to accommodate truck and emergency access

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>Foam Cement Approach Structures for Alternate C</b>					
<b>Foam Cement North Approach Structure</b>					
-	HMA PAVEMENT	TON	-	\$120	\$0
-	CEMENT CONC. SIDEWALK	CY	-	\$250.00	\$0
-	CEMENT CONC. TRAFFIC BARRIER AND MOMENT SLAB	LF	-	\$225	\$0
-	WALL PANELS	SF	-	\$12.00	\$0
-	FOAM CEMENT MATERIAL	CY	-	\$50.00	\$0
-	APPROACH SLAB	SY	-	\$250	\$0
-	GROUND IMPROVEMENT	CY	108,296	\$75	\$8,122,222
TOTAL LUMP SUM COST					<b>\$8,122,230</b>
<b>STRUCTURE EXCAVATION CLASS A INCL. HAUL</b>					
-	INSIDE COFFERDAM - EARTH	C.Y.	-	\$12	\$0
TOTAL LUMP SUM COST					<b>\$0</b>
<b>SHORING OR EXTRA EXCAVATION CL. A</b>					
-	SHORING AREAS (IN THE DRY) - 6 FT TO 10 FT	S.F.	-	\$7	\$0
-	SHORING AREAS (IN THE DRY) - 10 FT TO 20 FT	S.F.	-	\$11	\$0
TOTAL LUMP SUM COST					<b>\$0</b>
<b>REMOVAL OF STRUCTURE AND OBSTRUCTION</b>					
-	EXISTING BRIDGE/BUILDING FOUNDATION	EACH	-	\$10,000	\$0
TOTAL LUMP SUM COST					<b>\$0</b>
<b>OTHER STRUCTURAL ITEMS</b>					
	CONTAINMENT AND DISPOSAL OF CONTAMINATED SOILS	TON	-	\$200	\$0
	CONTAINMENT AND DISPOSAL OF CONTAMINATED WATER	GAL	-	\$1	\$0
	VIBRATION MONITORING	EA	-	\$100	\$0
TOTAL LUMP SUM COST					<b>\$0</b>

Total Structures Costs \$15,579,580

**Surfacing**

-	CRUSHED SURFACING BASE COURSE	TON	7,500.00	\$16	\$120,000
-	CRUSHED SURFACING BASE COURSE - TEMP. DETOUR	TON	0	\$16	\$0
-	CURSHED SURFACING TOP COURSE	TON	1,000	\$17	\$17,000

Total Surfacing Costs \$137,000

**Hot Mix Asphalt**

-	HMA CL. 1/2 IN. PG 64-22 - BASE COURSE	TON	0.00	\$80	\$0
-	HMA CL. 1/2 IN. PG 64-22 - WEARING COURSE	TON	4,500	\$80	\$360,000
-	HMA CL. 1/2 IN. PG 64-22 - DETOUR	TON	0	\$80	\$0
-	COMMERCIAL HMA FOR APPROACH	TON	0	\$100	\$0

Total Hot Mix Asphalt Costs \$360,000



Anchor Point Feasibility Study  
Alternative 4

Upgrade existing Owl Creek access to accommodate truck and emergency access

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>Erosion Control and Roadside Restoration</b>					
-	INLET PROTECTION	EA	0.00	\$150	\$0
-	SILT FENCE	LF	8,000	\$5	\$40,000
-	HIGH VISIBILITY FENCE	LF	8,000	\$5	\$40,000
-	EROSION AND WATER POLLUTION CONTROL	LS	1	\$20,000	\$20,000
-	SEEDING, FERTILIZING, AND MULCHING	ACRE	2	\$4,000	\$8,000

Total EC and RR Costs \$108,000

**Traffic**

-	CEMENT CONC. TRAFFIC CURB AND GUTTER	LF	0	\$30	\$0
-	CEMENT CONC. SIDEWALK	SY	0	\$45	\$0
-	TEMPORARY CONCRETE BARRIER	LF	0	\$20	\$0
-	BARRIER DELINEATOR	EA	0	\$30	\$0
-	PAINT LINE	LF	12,000	\$0.50	\$6,000
-	TEMPORARY PAVEMENT MARKING	LF	0	\$0.30	\$0
-	PERMANENT SIGNING	LS	1	\$0	\$0
-	OTHER TEMPORARY TRAFFIC CONTROL	LS	1	\$0	\$0
-	FLAGGERS AND SPOTTERS	HR	0	\$40	\$0
-	CONSTRUCTION SIGNS CLASS A	SF	0	\$30	\$0
-	ILLUMINATION SYSTEM	LS	1	\$300,000	\$300,000

Total Traffic Costs \$306,000

**Other Items**

-	STRUCTURE SURVEYING	LS	1.00	\$50,000	\$50,000
-	ROADWAY SURVEYING	LS	1	\$50,000	\$50,000
-	PORTABLE TEMPORARY TRAFFIC CONTROL SIGNAL	LS	1	\$0	\$0
-	PROJECT OFFICE	LS	1	\$0	\$0
-	TEMP. LAYDOWN SITE	LS	1	\$0	\$0
-	SECANT WALL	LF	0	\$50,000	\$0
-	BUILDING DEMOLITION	EA	0	\$20,000	\$0
-					\$0

Total Other Items Costs \$100,000

Alternative 4 - Grand Total \$17,923,080

**Alternate 1B (Abutments)**

## Abutment Drilled Shaft Cost Breakdown

D= 6.00 ft

L= 150.00 ft

	Description	Unit	Quantity	Unit Cost	Cost
1	Soil Excavation Including Haul	CY	157	\$300.00	\$47,124
2	Furnishing & Placing Temp. Casing	LF	150.00	\$125.00	\$18,750
3	Furnishing Perm. Casing	LF	15	\$150.00	\$2,250
4	Placing Perm. Casing	EA	1	\$2,000.00	\$2,000
5	Casing Shoring	LF	15	\$150.00	\$2,250
6	Conc. Class 4000 P	CY	157	\$250.00	\$39,270
7	St. Reinf. For Shaft (long & trans)	LB	47124	\$1.00	\$47,130
8	CSL Access Tubes	LF	900	\$10.00	\$9,000
9	Removing Obstructions	EST		10.00%	\$16,777
				<b>Total</b>	<b>\$184,560</b>

**Alternate 1B (Long Spans)**

## Intermediate Pier Drilled Shaft Cost Breakdown

D= 10.00 ft

L= 150.00 ft

	Description	Unit	Quantity	Unit Cost	Cost
1	Soil Excavation Including Haul	CY	436	\$300.00	\$130,900
2	Furnishing & Placing Temp. Casing	LF	150.00	\$125.00	\$18,750
3	Furnishing Perm. Casing	LF	15	\$150.00	\$2,250
4	Placing Perm. Casing	EA	1	\$2,000.00	\$2,000
5	Casing Shoring	LF	15	\$150.00	\$2,250
6	Conc. Class 4000 P	CY	436	\$250.00	\$109,083
7	St. Reinf. For Shaft (long & trans)	LB	130900	\$1.00	\$130,900
8	CSL Access Tubes	LF	1500	\$10.00	\$15,000
9	Removing Obstructions	EST		10.00%	\$41,113
				<b>Total</b>	<b>\$452,250</b>

**Alternate 1B (Typical Spans)**

## Intermediate Pier Drilled Shaft Cost Breakdown

D= 8.00 ft

L= 150.00 ft

	Description	Unit	Quantity	Unit Cost	Cost
1	Soil Excavation Including Haul	CY	279	\$300.00	\$83,776
2	Furnishing & Placing Temp. Casing	LF	150.00	\$125.00	\$18,750
3	Furnishing Perm. Casing	LF	15	\$150.00	\$2,250
4	Placing Perm. Casing	EA	1	\$2,000.00	\$2,000
5	Casing Shoring	LF	15	\$150.00	\$2,250
6	Conc. Class 4000 P	CY	279	\$250.00	\$69,813
7	St. Reinf. For Shaft (long & trans)	LB	83776	\$1.00	\$83,780
8	CSL Access Tubes	LF	1200	\$10.00	\$12,000
9	Removing Obstructions	EST		10.00%	\$27,462
				<b>Total</b>	<b>\$302,090</b>



**Alternate 2 (Abutments)**

## Abutment Drilled Shaft Cost Breakdown

D= 6.00 ft

L= 150.00 ft

	Description	Unit	Quantity	Unit Cost	Cost
1	Soil Excavation Including Haul	CY	157	\$300.00	\$47,124
2	Furnishing & Placing Temp. Casing	LF	150.00	\$125.00	\$18,750
3	Furnishing Perm. Casing	LF	15	\$150.00	\$2,250
4	Placing Perm. Casing	EA	1	\$2,000.00	\$2,000
5	Casing Shoring	LF	15	\$150.00	\$2,250
6	Conc. Class 4000 P	CY	157	\$250.00	\$39,270
7	St. Reinf. For Shaft (long & trans)	LB	47124	\$1.00	\$47,130
8	CSL Access Tubes	LF	900	\$10.00	\$9,000
9	Removing Obstructions	EST		10.00%	\$16,777
				<b>Total</b>	<b>\$184,560</b>

**Alternate 2 (Long Spans)**

## Intermediate Pier Drilled Shaft Cost Breakdown

D= 12.00 ft

L= 150.00 ft

	Description	Unit	Quantity	Unit Cost	Cost
1	Soil Excavation Including Haul	CY	628	\$300.00	\$188,496
2	Furnishing & Placing Temp. Casing	LF	150.00	\$125.00	\$18,750
3	Furnishing Perm. Casing	LF	15	\$150.00	\$2,250
4	Placing Perm. Casing	EA	1	\$2,000.00	\$2,000
5	Casing Shoring	LF	15	\$150.00	\$2,250
6	Conc. Class 4000 P	CY	628	\$250.00	\$157,080
7	St. Reinf. For Shaft (long & trans)	LB	188496	\$1.00	\$188,500
8	CSL Access Tubes	LF	1800	\$10.00	\$18,000
9	Removing Obstructions	EST		10.00%	\$57,733
				<b>Total</b>	<b>\$635,060</b>



**Alternate 3A (Abutments)**

Abutment Drilled Shaft Cost Breakdown

D= 6.00 ft  
L= 150.00 ft

	Description	Unit	Quantity	Unit Cost	Cost
1	Soil Excavation Including Haul	CY	157	\$300.00	\$47,124
2	Furnishing & Placing Temp. Casing	LF	150.00	\$125.00	\$18,750
3	Furnishing Perm. Casing	LF	15	\$150.00	\$2,250
4	Placing Perm. Casing	EA	1	\$2,000.00	\$2,000
5	Casing Shoring	LF	15	\$150.00	\$2,250
6	Conc. Class 4000 P	CY	157	\$250.00	\$39,270
7	St. Reinf. For Shaft (long & trans)	LB	47124	\$1.00	\$47,130
8	CSL Access Tubes	LF	900	\$10.00	\$9,000
9	Removing Obstructions	EST		10.00%	\$16,777
				<b>Total</b>	<b>\$184,560</b>

**Alternate 3A (Long Spans)**

Intermediate Pier Drilled Shaft Cost Breakdown

D= 10.00 ft  
L= 150.00 ft

	Description	Unit	Quantity	Unit Cost	Cost
1	Soil Excavation Including Haul	CY	436	\$300.00	\$130,900
2	Furnishing & Placing Temp. Casing	LF	150.00	\$125.00	\$18,750
3	Furnishing Perm. Casing	LF	15	\$150.00	\$2,250
4	Placing Perm. Casing	EA	1	\$2,000.00	\$2,000
5	Casing Shoring	LF	15	\$150.00	\$2,250
6	Conc. Class 4000 P	CY	436	\$250.00	\$109,083
7	St. Reinf. For Shaft (long & trans)	LB	130900	\$1.00	\$130,900
8	CSL Access Tubes	LF	1500	\$10.00	\$15,000
9	Removing Obstructions	EST		10.00%	\$41,113
				<b>Total</b>	<b>\$452,250</b>

**Alternate 3A (Typical Spans)**

Intermediate Pier Drilled Shaft Cost Breakdown

D= 8.00 ft  
L= 150.00 ft

	Description	Unit	Quantity	Unit Cost	Cost
1	Soil Excavation Including Haul	CY	279	\$300.00	\$83,776
2	Furnishing & Placing Temp. Casing	LF	150.00	\$125.00	\$18,750
3	Furnishing Perm. Casing	LF	15	\$150.00	\$2,250
4	Placing Perm. Casing	EA	1	\$2,000.00	\$2,000
5	Casing Shoring	LF	15	\$150.00	\$2,250
6	Conc. Class 4000 P	CY	279	\$250.00	\$69,813
7	St. Reinf. For Shaft (long & trans)	LB	83776	\$1.00	\$83,780
8	CSL Access Tubes	LF	1200	\$10.00	\$12,000
9	Removing Obstructions	EST		10.00%	\$27,462
				<b>Total</b>	<b>\$302,090</b>

**Alternate 3B (Abutments)**

## Abutment Drilled Shaft Cost Breakdown

D= 6.00 ft

L= 150.00 ft

	Description	Unit	Quantity	Unit Cost	Cost
1	Soil Excavation Including Haul	CY	157	\$300.00	\$47,124
2	Furnishing & Placing Temp. Casing	LF	150.00	\$125.00	\$18,750
3	Furnishing Perm. Casing	LF	15	\$150.00	\$2,250
4	Placing Perm. Casing	EA	1	\$2,000.00	\$2,000
5	Casing Shoring	LF	15	\$150.00	\$2,250
6	Conc. Class 4000 P	CY	157	\$250.00	\$39,270
7	St. Reinf. For Shaft (long & trans)	LB	47124	\$1.00	\$47,130
8	CSL Access Tubes	LF	900	\$10.00	\$9,000
9	Removing Obstructions	EST		10.00%	\$16,777
				<b>Total</b>	<b>\$184,560</b>

**Alternate 3B (Long Spans)**

## Intermediate Pier Drilled Shaft Cost Breakdown

D= 12.00 ft

L= 150.00 ft

	Description	Unit	Quantity	Unit Cost	Cost
1	Soil Excavation Including Haul	CY	628	\$300.00	\$188,496
2	Furnishing & Placing Temp. Casing	LF	150.00	\$125.00	\$18,750
3	Furnishing Perm. Casing	LF	15	\$150.00	\$2,250
4	Placing Perm. Casing	EA	1	\$2,000.00	\$2,000
5	Casing Shoring	LF	15	\$150.00	\$2,250
6	Conc. Class 4000 P	CY	628	\$250.00	\$157,080
7	St. Reinf. For Shaft (long & trans)	LB	188496	\$1.00	\$188,500
8	CSL Access Tubes	LF	1800	\$10.00	\$18,000
9	Removing Obstructions	EST		10.00%	\$57,733
				<b>Total</b>	<b>\$635,060</b>

**Alternate 3B (Typical Spans)**

## Intermediate Pier Drilled Shaft Cost Breakdown

D= 8.00 ft

L= 150.00 ft

	Description	Unit	Quantity	Unit Cost	Cost
1	Soil Excavation Including Haul	CY	279	\$300.00	\$83,776
2	Furnishing & Placing Temp. Casing	LF	150.00	\$125.00	\$18,750
3	Furnishing Perm. Casing	LF	15	\$150.00	\$2,250
4	Placing Perm. Casing	EA	1	\$2,000.00	\$2,000
5	Casing Shoring	LF	15	\$150.00	\$2,250
6	Conc. Class 4000 P	CY	279	\$250.00	\$69,813
7	St. Reinf. For Shaft (long & trans)	LB	83776	\$1.00	\$83,780
8	CSL Access Tubes	LF	1200	\$10.00	\$12,000
9	Removing Obstructions	EST		10.00%	\$27,462
				<b>Total</b>	<b>\$302,090</b>

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## **Appendix B**

### **Conceptual Project Utility Costs Summary**



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Anchor Point Feasibility Study  
Conceptual Estimate Summary

Prepared: June 2015



DAVID EVANS  
AND ASSOCIATES, INC.

	Alternative 1A: Option A				Alternative 1A: Option B				Alternative 1B: Option A			
	Boring along access route				Trenching along access route				Boring along access route			
	Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost		Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost		Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost	
<b>Construction Bid Elements</b>												
Mobilization												
Sanitary Sewer												
Water Main												
Gas Main												
CATV												
Power 20 MW Substation												
Power 30 MW Substation												
<b>Subtotal with 20 MW Substation:</b>												
<b>Subtotal with 30 MW Substation:</b>												
Wash. Sales/Use Tax (Mat. Only) w/ 20 MW Substation												
Wash. Sales/Use Tax (Mat. Only) w/ 30 MW Substation												
<b>Construction Bid Elements Total w/ 20 MW Substation</b>												
<b>Construction Bid Elements Total w/ 30 MW Substation</b>												
<b>Placeholder Costs:</b>												
Right-of-Way Acquisition, Damages, & Relocation												
Environmental Mitigation												
<b>Placeholder Costs Total</b>												
<b>Total Construction Cost w/ 20 MW Substation</b>												
<b>Total Construction Cost w/ 30 MW Substation</b>												
<b>Cost Range:</b>												
<b>Cost Range:</b>												

- 1.
- 2.

Notes:

Alternative 1B: Option B				Alternative 2: Option A				Alternative 3B: Option A				Alternative 3B: Option B			
Trenching along access route				Boring along access route				Boring along access route				Trenching along access route			
Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost		Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost		Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost		Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost	
\$193,545	\$ 58,064	\$ 251,609		\$149,200	\$ 44,760	\$ 193,960		\$149,200	\$ 44,760	\$ 193,960		\$189,625	\$ 56,888	\$ 246,513	
\$679,200	\$ 203,760	\$ 882,960		\$588,000	\$ 176,400	\$ 764,400		\$588,000	\$ 176,400	\$ 764,400		\$693,750	\$ 208,125	\$ 901,875	
\$432,000	\$ 129,600	\$ 561,600		\$324,000	\$ 97,200	\$ 421,200		\$324,000	\$ 97,200	\$ 421,200		\$478,750	\$ 143,625	\$ 622,375	
\$774,250	\$ 232,275	\$ 1,006,525		\$530,000	\$ 159,000	\$ 689,000		\$530,000	\$ 159,000	\$ 689,000		\$673,750	\$ 202,125	\$ 875,875	
\$50,000	\$ 15,000	\$ 65,000		\$50,000	\$ 15,000	\$ 65,000		\$50,000	\$ 15,000	\$ 65,000		\$50,000	\$ 15,000	\$ 65,000	
\$2,500,000	\$ 750,000	\$ 3,250,000		\$2,500,000	\$ 750,000	\$ 3,250,000		\$2,500,000	\$ 750,000	\$ 3,250,000		\$2,500,000	\$ 750,000	\$ 3,250,000	
\$13,500,000	\$ 4,050,000	\$ 17,550,000		\$13,500,000	\$ 4,050,000	\$ 17,550,000		\$13,500,000	\$ 4,050,000	\$ 17,550,000		\$13,500,000	\$ 4,050,000	\$ 17,550,000	
\$4,628,995	\$ 1,388,699	\$ 6,017,694		\$4,141,200	\$ 1,242,360	\$ 5,383,560		\$4,141,200	\$ 1,242,360	\$ 5,383,560		\$4,585,875	\$ 1,375,763	\$ 5,961,638	
\$15,628,995	\$ 4,688,699	\$ 20,317,694		\$15,141,200	\$ 4,542,360	\$ 19,683,560		\$15,141,200	\$ 4,542,360	\$ 19,683,560		\$15,585,875	\$ 4,675,763	\$ 20,261,638	
\$370,320	\$ 111,096	\$ 481,415		\$331,296	\$ 99,389	\$ 430,685		\$331,296	\$ 99,389	\$ 430,685		\$366,870	\$ 110,061	\$ 476,931	
\$1,250,320	\$ 375,096	\$ 1,625,415		\$1,211,296	\$ 363,389	\$ 1,574,685		\$1,211,296	\$ 363,389	\$ 1,574,685		\$1,246,870	\$ 374,061	\$ 1,620,931	
\$4,999,315	\$ 1,499,794	\$ 6,499,109		\$4,472,496	\$ 1,341,749	\$ 5,814,245		\$4,472,496	\$ 1,341,749	\$ 5,814,245		\$4,952,745	\$ 1,485,824	\$ 6,438,569	
\$16,879,315	\$ 5,063,794	\$ 21,943,109		\$16,352,496	\$ 4,905,749	\$ 21,258,245		\$16,352,496	\$ 4,905,749	\$ 21,258,245		\$16,832,745	\$ 5,049,824	\$ 21,882,569	
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\$370,320	\$ 111,096	\$ 6,499,109		\$331,296	\$ 99,389	\$ 5,814,245		\$331,296	\$ 99,389	\$ 5,814,245		\$366,870	\$ 110,061	\$ 6,438,569	
\$4,999,315	\$ 1,499,794	\$ 21,943,109		\$4,472,496	\$ 1,341,749	\$ 21,258,245		\$4,472,496	\$ 1,341,749	\$ 21,258,245		\$4,952,745	\$ 1,485,824	\$ 21,882,569	

Alternative 3A: Option A				Alternative 3A: Option B				Alternative 4: Option A			
Boring along access route				Trenching along access route				Boring along access route			
Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost		Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost		Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost	
\$149,200	\$ 44,760	\$ 193,960		\$181,250	\$ 54,375	\$ 235,625		\$149,200	\$ 44,760	\$ 193,960	
\$588,000	\$ 176,400	\$ 764,400		\$667,500	\$ 200,250	\$ 867,750		\$588,000	\$ 176,400	\$ 764,400	
\$324,000	\$ 97,200	\$ 421,200		\$407,500	\$ 122,250	\$ 529,750		\$324,000	\$ 97,200	\$ 421,200	
\$530,000	\$ 159,000	\$ 689,000		\$687,500	\$ 206,250	\$ 893,750		\$530,000	\$ 159,000	\$ 689,000	
\$50,000	\$ 15,000	\$ 65,000		\$50,000	\$ 15,000	\$ 65,000		\$50,000	\$ 15,000	\$ 65,000	
\$2,500,000	\$ 750,000	\$ 3,250,000		\$2,500,000	\$ 750,000	\$ 3,250,000		\$2,500,000	\$ 750,000	\$ 3,250,000	
\$13,500,000	\$ 4,050,000	\$ 17,550,000		\$13,500,000	\$ 4,050,000	\$ 17,550,000		\$13,500,000	\$ 4,050,000	\$ 17,550,000	
\$4,141,200	\$ 1,242,360	\$ 5,383,560		\$4,493,750	\$ 1,348,125	\$ 5,841,875		\$4,141,200	\$ 1,242,360	\$ 5,383,560	
\$15,141,200	\$ 4,542,360	\$ 19,683,560		\$15,493,750	\$ 4,648,125	\$ 20,141,875		\$15,141,200	\$ 4,542,360	\$ 19,683,560	
\$331,296	\$ 99,389	\$ 430,685		\$359,500	\$ 107,850	\$ 467,350		\$331,296	\$ 99,389	\$ 430,685	
\$1,211,296	\$ 363,389	\$ 1,574,685		\$1,239,500	\$ 371,850	\$ 1,611,350		\$1,211,296	\$ 363,389	\$ 1,574,685	
\$4,472,496	\$ 1,341,749	\$ 5,814,245		\$4,853,250	\$ 1,455,975	\$ 6,309,225		\$4,472,496	\$ 1,341,749	\$ 5,814,245	
\$16,352,496	\$ 4,905,749	\$ 21,258,245		\$16,733,250	\$ 5,019,975	\$ 21,753,225		\$16,352,496	\$ 4,905,749	\$ 21,258,245	
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\$0	\$ -	\$ -		\$0	\$ -	\$ -		\$0	\$ -	\$ -	
\$0	\$ -	\$ -		\$0	\$ -	\$ -		\$0	\$ -	\$ -	
\$ 331,296	\$ 99,389	\$ 5,814,245		\$ 359,500	\$ 107,850	\$ 6,309,225		\$ 331,296	\$ 99,389	\$ 5,814,245	
\$ 4,472,496	\$ 1,341,749	\$ 21,258,245		\$ 4,853,250	\$ 1,455,975	\$ 21,753,225		\$ 4,472,496	\$ 1,341,749	\$ 21,258,245	



Anchor Point Feasibility Study  
Alternative 1A

(sleeved/insulated steel pipe supported on roller system with expansion joints)

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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**Sanitary Sewer**

<b>Option A (BORING)</b>					
-	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$100	\$180,000
-	8" FORCEMAIN WITHIN BORING (HDPE)	LF	1,800	\$60	\$108,000
-	PUMP STATION (ASSUMED 200,000 GPD CAPACITY)	EA	1	\$300,000	\$300,000
Total Sanitary Sewer Costs					<b>\$588,000</b>
<b>Option B (ACCESS ALIGNMENT)</b>					
-	8" FORCEMAIN UNDERGROUND PORTION	LF	2,200	\$60	\$132,000
-	8" FORCEMAIN STRAPPED TO BRIDGE	LF	0	\$150	\$0
-	PUMP STATION (ESTIMATED 200,000 GPD)	EA	1	\$300,000	\$300,000
Total Sanitary Sewer Costs					<b>\$432,000</b>

**Water Main**

<b>Option A (BORING)</b>					
-	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$100	\$180,000
-	8" WATERMAIN WITHIN BORING (HDPE)	LF	1,800	\$80	\$144,000
Total Water Main Costs					<b>\$324,000</b>
<b>Option B (ACCESS ALIGNMENT)</b>					
-	8" WATERMAIN UNDERGROUND PORTION MJ (DI)	LF	2,200	\$100	\$220,000
-	8" WATERMAIN STRAPPED TO BRIDGE	LF			
	(sleeved/insulated steel pipe supported on roller system with expansion joints)	LF		\$150	\$0
Total Water Main Costs					<b>\$220,000</b>

**Gas Main (Low Capacity Estimate, High Capacity Estimate is TBD and will require an NDA)**

<b>Option A (BORING)</b>					
-	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$150	\$270,000
-	8" GAS MAIN WITHIN BORING	LF	1,800	\$100	\$180,000
	8" GAS MAIN UNDERGROUND PORTION	LF	800	\$100	\$80,000
Total Gas Main Costs					<b>\$530,000</b>
<b>Option B (ACCESS ALIGNMENT)</b>					
	8" GAS MAIN UNDERGROUND PORTION	LF	3,600	\$100	\$360,000
-	8" GAS MAIN STRAPPED TO BRIDGE	LF			
	(sleeved/insulated steel pipe supported on roller system with expansion joints)	LF	0	\$200	\$0
Total Gas Main Costs					<b>\$360,000</b>

**Power (Same for All Alternatives)**

	20 MW substation (200' x 200' footprint)	LS	1		\$2,500,000
Total 20 MW Substation Costs					<b>\$2,500,000</b>
	300 MW substation (375' x 210' footprint)	LS	1		\$3,500,000
	230 kV overhead lines from 300 MW substation to BPA	LS	1		\$10,000,000
	Longview Substation ~ 6-miles NW of the Site				
Total 300 MW Substation Costs					<b>\$13,500,000</b>

**CATV**

	RUN CATV APPROXIMATELY 3/4 MILE	LS			<b>\$50,000</b>
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**Anchor Point Feasibility Study**  
**Alternative 1B**

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
<b>Sanitary Sewer</b>					
<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$100	\$180,000
-	8" FORCEMAIN WITHIN BORING (HDPE)	LF	1,800	\$60	\$108,000
-	PUMP STATION (ESTIMATED 200,000 GPD)	EA	1	\$300,000	\$300,000
Total Sanitary Sewer Costs					<b>\$588,000</b>
<b>Option B (ACCESS ALIGNMENT)</b>					
-	8" FORCEMAIN UNDERGROUND PORTION	LF	1,320	\$60	\$79,200
-	8" FORCEMAIN STRAPPED TO BRIDGE	LF	2,000	\$150	\$300,000
-	PUMP STATION (ESTIMATED 200,000 GPD)	EA	1	\$300,000	\$300,000
Total Sanitary Sewer Costs					<b>\$679,200</b>
<b>Water Main</b>					
<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$100	\$180,000
-	8" WATERMAIN WITHIN BORING (HDPE)	LF	1,800	\$80	\$144,000
Total Water Main Costs					<b>\$324,000</b>
<b>Option B (ACCESS ALIGNMENT)</b>					
-	8" WATERMAIN UNDERGROUND PORTION MJ (DI)	LF	1,320	\$100	\$132,000
-	8" WATERMAIN STRAPPED TO BRIDGE	LF			
	(sleeved/insulated steel pipe supported on roller system with expansion joints)	LF	2,000	\$150	\$300,000
Total Water Main Costs					<b>\$432,000</b>
<b>Gas Main (LOW CAPACITY)</b>					
<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$150	\$270,000
-	8" GAS MAIN WITHIN BORING	LF	1,800	\$100	\$180,000
	8" GAS MAIN UNDERGROUND PORTION	LF	800	\$100	\$80,000
Total Gas Main Costs					<b>\$530,000</b>
<b>Option B (ACCESS ALIGNMENT)</b>					
	8" GAS MAIN UNDERGROUND PORTION	LF	2,495	\$150	\$374,250
-	8" GAS MAIN STRAPPED TO BRIDGE	LF			
	(sleeved/insulated steel pipe supported on roller system with expansion joints)	LF	2,000	\$200	\$400,000
Total Gas Main Costs					<b>\$774,250</b>
<b>CATV</b>					
	RUN CATV APPROXIMATELY 3/4 MILE	LS			\$50,000

**POWER (SAME FOR ALL ALTERNATIVES, SEE ALTERNATIVE 1A ESTIMATE)**



BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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**Sanitary Sewer**

<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$100	\$180,000
-	8" FORCEMAIN WITHIN BORING (HDPE)	LF	1,800	\$60	\$108,000
-	PUMP STATION (ESTIMATED 200,000 GPD)	EA	1	\$300,000	\$300,000
Total Sanitary Sewer Costs					<b>\$588,000</b>

**Water Main**

<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$100	\$180,000
-	8" WATERMAIN WITHIN BORING (HDPE)	LF	1,800	\$80	\$144,000
Total Water Main Costs					<b>\$324,000</b>

**Gas Main (LOW CAPACITY)**

<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$150	\$270,000
-	8" GAS MAIN WITHIN BORING	LF	1,800	\$100	\$180,000
	8" GAS MAIN UNDERGROUND PORTION	LF	800	\$100	\$80,000
Total Gas Main Costs					<b>\$530,000</b>

**CATV**

RUN CATV APPROXIMATELY 3/4 MILE
---------------------------------

LS

**\$50,000**

**POWER (SAME FOR ALL ALTERNATIVES, SEE ALTERNATIVE 1A ESTIMATE)**



Anchor Point Feasibility Study  
Alternative 3B

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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Sanitary Sewer

<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$100	\$180,000
-	8" FORCEMAIN WITHIN BORING (HDPE)	LF	1,800	\$60	\$108,000
-	PUMP STATION (ESTIMATED 200,000 GPD)	EA	1	\$300,000	\$300,000
Total Sanitary Sewer Costs					<b>\$588,000</b>

**Option B (ACCESS ALIGNMENT)**

-	8" FORCEMAIN UNDERGROUND PORTION	LF	2,125	\$60	\$127,500
-	8" FORCEMAIN STRAPPED TO BRIDGE	LF	1,775	\$150	\$266,250
-	PUMP STATION (ESTIMATED 200,000 GPD)	EA	1	\$300,000	\$300,000
Total Sanitary Sewer Costs					<b>\$693,750</b>

Water Main

<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$100	\$180,000
-	8" WATERMAIN WITHIN BORING (HDPE)	LF	1,800	\$80	\$144,000
Total Water Main Costs					<b>\$324,000</b>

**Option B (ACCESS ALIGNMENT)**

-	8" WATERMAIN UNDERGROUND PORTION MJ (DI)	LF	2,125	\$100	\$212,500
-	8" WATERMAIN STRAPPED TO BRIDGE				
	(sleeved/insulated steel pipe supported on roller system with expansion joints)	LF	1,775	\$150	\$266,250
Total Water Main Costs					<b>\$478,750</b>

Gas Main (LOW CAPACITY)

<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$150	\$270,000
-	8" GAS MAIN WITHIN BORING	LF	1,800	\$100	\$180,000
	8" GAS MAIN UNDERGROUND PORTION	LF	800	\$100	\$80,000
Total Gas Main Costs					<b>\$530,000</b>

**Option B (ACCESS ALIGNMENT)**

	8" GAS MAIN UNDERGROUND PORTION	LF	2,125	\$150	\$318,750
-	8" GAS MAIN STRAPPED TO BRIDGE				
	(sleeved/insulated steel pipe supported on roller system with expansion joints)	LF	1,775	\$200	\$355,000
Total Gas Main Costs					<b>\$673,750</b>

CATV

RUN CATV APPROXIMATELY 3/4 MILE

LS

**\$50,000**

POWER (SAME FOR ALL ALTERNATIVES, SEE ALTERNATIVE 1A ESTIMATE)



Anchor Point Feasibility Study  
Alternative 3A

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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Sanitary Sewer

<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$100	\$180,000
-	8" FORCEMAIN WITHIN BORING (HDPE)	LF	1,800	\$60	\$108,000
-	PUMP STATION (ESTIMATED 200,000 GPD)	EA	1	\$300,000	\$300,000
Total Sanitary Sewer Costs					<b>\$588,000</b>

**Option B (ACCESS ALIGNMENT)**

-	8" FORCEMAIN UNDERGROUND PORTION	LF	1,000	\$60	\$60,000
-	8" FORCEMAIN STRAPPED TO BRIDGE	LF	2,050	\$150	\$307,500
-	PUMP STATION (ESTIMATED 200,000 GPD)	EA	1	\$300,000	\$300,000
Total Sanitary Sewer Costs					<b>\$667,500</b>

Water Main

<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$100	\$180,000
-	8" WATERMAIN WITHIN BORING (HDPE)	LF	1,800	\$80	\$144,000
Total Water Main Costs					<b>\$324,000</b>

**Option B (ACCESS ALIGNMENT)**

-	8" WATERMAIN UNDERGROUND PORTION MJ (DI)	LF	1,000	\$100	\$100,000
-	8" WATERMAIN STRAPPED TO BRIDGE				
	(sleeved/insulated steel pipe supported on roller system with expansion joints)	LF	2,050	\$150	\$307,500
Total Water Main Costs					<b>\$407,500</b>

Gas Main (LOW CAPACITY)

<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$150	\$270,000
-	8" GAS MAIN WITHIN BORING	LF	1,800	\$100	\$180,000
	8" GAS MAIN UNDERGROUND PORTION	LF	800	\$100	\$80,000
Total Gas Main Costs					<b>\$530,000</b>

**Option B (ACCESS ALIGNMENT)**

	8" GAS MAIN UNDERGROUND PORTION	LF	1,850	\$150	\$277,500
-	8" GAS MAIN STRAPPED TO BRIDGE				
	(sleeved/insulated steel pipe supported on roller system with expansion joints)	LF	2,050	\$200	\$410,000
Total Gas Main Costs					<b>\$687,500</b>

CATV

RUN CATV APPROXIMATELY 3/4 MILE
---------------------------------

LS **\$50,000**

POWER (SAME FOR ALL ALTERNATIVES, SEE ALTERNATIVE 1A ESTIMATE)



Anchor Point Feasibility Study  
Alternative 4

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
----------	---------------------------	---------------	---------------	------------	-----------

Sanitary Sewer

<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$100	\$180,000
-	8" FORCEMAIN WITHIN BORING (HDPE)	LF	1,800	\$60	\$108,000
-	PUMP STATION (ESTIMATED 200,000 GPD)	EA	1	\$300,000	\$300,000
Total Sanitary Sewer Costs					<b>\$588,000</b>

Water Main

<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$100	\$180,000
-	8" WATERMAIN WITHIN BORING (HDPE)	LF	1,800	\$80	\$144,000
Total Water Main Costs					<b>\$324,000</b>

Gas Main (LOW CAPACITY)

<b>Option A (BORING)</b>					
	UTILITY CORRIDOR BORING TO SEGALE PROPERTY	LF	1,800	\$150	\$270,000
-	8" GAS MAIN WITHIN BORING	LF	1,800	\$100	\$180,000
	8" GAS MAIN UNDERGROUND PORTION	LF	800	\$100	\$80,000
Total Gas Main Costs					<b>\$530,000</b>

CATV

	RUN CATV APPROXIMATELY 3/4 MILE	LS			<b>\$50,000</b>
--	---------------------------------	----	--	--	-----------------

POWER (SAME FOR ALL ALTERNATIVES, SEE ALTERNATIVE 1A ESTIMATE)



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## **Appendix C**

### **Conceptual Project Rail Costs Summary**

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Anchor Point Feasibility Study  
 Conceptual Rail Estimate Summary

Prepared: July 2015



	Rail Connection Option 1				Rail Connection Option 2				On-site Loop Track			
	Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost		Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost		Cost 2015 Dollars	Allocated Design Contingency 30%	Construction Cost	
			South-facing Access to BNSF main line with maintenance road for crew change.				South and North-facing accesses to BNSF main line with maintenance road for crew change.					On-site single loop with wye-track to access track
<b>Construction Bid Elements</b>												
Mobilization	\$1,049,210	\$ 314,763	\$ 1,363,973		\$1,598,818	\$ 479,645	\$ 2,078,463		\$665,230	\$ 199,569	\$ 864,798	
Preparation	\$253,930	\$ 76,179	\$ 330,109		\$303,058	\$ 90,917	\$ 393,975		\$242,796	\$ 72,839	\$ 315,635	
Grading	\$7,669,444	\$ 2,300,833	\$ 9,970,278		\$10,737,222	\$ 3,221,167	\$ 13,958,389		\$2,009,389	\$ 602,817	\$ 2,612,206	
Track	\$1,253,730	\$ 376,119	\$ 1,629,849		\$2,708,660	\$ 812,598	\$ 3,521,258		\$3,262,350	\$ 978,705	\$ 4,241,055	
Signal Modifications	\$840,000	\$ 252,000	\$ 1,092,000		\$1,680,000	\$ 504,000	\$ 2,184,000		\$0	\$ -	\$ -	
Structures	\$112,992	\$ 33,898	\$ 146,890		\$141,240	\$ 42,372	\$ 183,612		\$698,760	\$ 209,628	\$ 908,388	
Erosion Control and Roadside Restoration	\$152,000	\$ 45,600	\$ 197,600		\$208,000	\$ 62,400	\$ 270,400		\$179,000	\$ 53,700	\$ 232,700	
Other Items	\$110,000	\$ 33,000	\$ 143,000		\$110,000	\$ 33,000	\$ 143,000		\$110,000	\$ 33,000	\$ 143,000	
Landscaping	\$100,000	\$ 30,000	\$ 130,000		\$100,000	\$ 30,000	\$ 130,000		\$150,000	\$ 45,000	\$ 195,000	
<b>Subtotal:</b>	<b>\$11,541,306</b>	<b>\$ 3,462,392</b>	<b>\$15,003,698</b>		<b>\$17,586,998</b>	<b>\$ 5,276,099</b>	<b>\$22,863,098</b>		<b>\$7,317,525</b>	<b>\$ 2,195,257</b>	<b>\$9,512,782</b>	
Wash. Sales/Use Tax (Mat. Only)	\$923,305	\$ 276,991	\$1,200,296	8.00%	\$1,406,960	\$ 422,088	\$1,829,048		\$585,402	\$ 175,621	\$761,023	
<b>Construction Bid Elements Total</b>	<b>\$12,464,611</b>	<b>\$ 3,739,383</b>	<b>\$16,203,994</b>		<b>\$18,993,958</b>	<b>\$ 5,698,187</b>	<b>\$24,692,145</b>		<b>\$7,902,926</b>	<b>\$ 2,370,878</b>	<b>\$10,273,804</b>	
<b>Placeholder Costs:</b>												
Right-of-Way Acquisition, Damages, & Relocation	\$0	\$ -	\$ -		\$0	\$ -	\$ -		\$0	\$ -	\$ -	
Environmental Mitigation	\$101,301	\$ 30,390	\$ 131,691	1.00%	\$155,702	\$ 46,711	\$ 202,412		\$0	\$ -	\$ -	
<b>Placeholder Costs Total</b>	<b>\$101,301</b>	<b>\$ 30,390</b>	<b>\$131,691</b>		<b>\$155,702</b>	<b>\$ 46,711</b>	<b>\$202,412</b>		<b>\$0</b>	<b>\$ -</b>	<b>\$ -</b>	
<b>Total Construction Cost</b>	<b>\$ 12,565,912</b>	<b>\$ 3,769,774</b>	<b>\$ 16,335,685</b>		<b>\$ 19,149,660</b>	<b>\$ 5,744,898</b>	<b>\$24,894,558</b>		<b>\$ 7,902,926</b>	<b>\$ 2,370,878</b>	<b>\$ 10,273,804</b>	
<b>Rounded Cost:</b>			<b>\$16M</b>				<b>\$25M</b>				<b>\$10M</b>	

Notes: 1. No costs associated with engineering, construction administration and other program costs are included in this estimate.



Anchor Point Feasibility Study  
Rail Connection Option 1

South-facing Access to BNSF main line with maintenance road for crew change.

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
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**Preparation**

-	CLEARING AND GRUBBING	ACRE	12	\$10,000	\$122,819
-	STABILIZED CONSTRUCTION ENTRANCE	SY	222	\$590	\$131,111
Total Preparation Costs					\$253,930

**Grading**

-	ROADWAY EXCAVATION INCL. HAUL	CY	0.00	\$10	\$0
-	GRAVEL BORROW INCL. HAUL	TON	372,222	\$20	\$7,444,444
-	SUBBALLST	CY	5,000	\$45	\$225,000
Total Grading Costs					\$7,669,444

**Track**

<b>Track Construction</b>					
	New Track	TF	5,000.00	\$195	\$ 975,000
<b>Track/Turnout Removal/Relocation</b>					
	Remove Existing Track	TF	200	\$15	\$ 3,000
<b>Turnouts</b>					
	Split Point Derail	EA	1	\$54,730	\$ 54,730
	#15	EA	1	\$221,000	\$ 221,000
Total Track Costs					\$ 1,253,730

**Signal**

	Per P.O. T.O.	EA	1.00	\$840,000	\$ 840,000
	Per Mile	MI	-	\$1,000,000	\$ -
	Electric Locks	EA	-	\$25,000	\$ -
Total Signal Costs					\$840,000

**Structures**

<b>Bridge Span over Owl Creek</b>					
	Minor Culverts (< 36" Diameter)	LF	428.00	\$264	\$ 112,992
Total Structures Costs					\$ 112,992

**Erosion Control and Roadside Restoration**

-	SILT FENCE	LF	10,000	\$5	\$50,000
-	HIGH VISIBILITY FENCE	LF	10,000	\$5	\$50,000
-	EROSION AND WATER POLLUTION CONTROL	LS	1	\$20,000	\$20,000
-	SEEDING, FERTILIZING, AND MULCHING	ACRE	8	\$4,000	\$32,000
Total EC and RR Costs					\$152,000

**Other Items**

-	STRUCTURE SURVEYING	LS	1.00	\$50,000	\$50,000
-	ROADWAY SURVEYING	LS	1	\$50,000	\$50,000
-	PROJECT OFFICE	LS	1	\$5,000	\$5,000
-	TEMP. LAYDOWN SITE	LS	1	\$5,000	\$5,000
Total Other Items Costs					\$110,000

Option 1 Grand Total                      \$10,392,097





Anchor Point Feasibility Study  
Rail Connection Option 2

South and North-facing accesses to BNSF main line with maintenance road for crew change.

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
----------	---------------------------	---------------	---------------	------------	-----------

**Preparation**

-	CLEARING AND GRUBBING	ACRE	17	\$10,000	\$171,947
-	STABILIZED CONSTRUCTION ENTRANCE	SY	222	\$590	\$131,111
Total Preparation Costs					\$303,058

**Grading**

-	ROADWAY EXCAVATION INCL. HAUL	CY	0.00	\$10	\$0
-	GRAVEL BORROW INCL. HAUL	TON	521,111	\$20	\$10,422,222
-	SUBBALLST	CY	7,000	\$45	\$315,000
Total Grading Costs					\$10,737,222

**Track**

<b>Track Construction</b>					
	New Track	TF	7,000.00	\$195	\$ 1,365,000
<b>Track/Turnout Removal/Relocation</b>					
	Remove Existing Track	TF	400	\$15	\$ 6,000
<b>Turnouts</b>					
	Split Point Derail	EA	2	\$54,730	\$ 109,460
	#11	EA	3	\$188,400	\$ 565,200
	#15	EA	3	\$221,000	\$ 663,000
Total Track Costs					\$ 2,708,660

**Signal**

	Per P.O. T.O.	EA	2.00	\$840,000	\$ 1,680,000
	Per Mile	MI	-	\$1,000,000	\$ -
	Electric Locks	EA	-	\$25,000	\$ -
Total Grading Costs					\$ 1,680,000

**Structures**

<b>Trestle Bridges along Carrolls Channel</b>					
	Minor Culverts (< 36" Diameter)	LF	535.00	\$264	\$ 141,240
Total Structures Costs					\$ 141,240

**Erosion Control and Roadside Restoration**

-	SILT FENCE	LF	14,000	\$5	\$70,000
-	HIGH VISIBILITY FENCE	LF	14,000	\$5	\$70,000
-	EROSION AND WATER POLLUTION CONTROL	LS	1	\$20,000	\$20,000
-	SEEDING, FERTILIZING, AND MULCHING	ACRE	12	\$4,000	\$48,000
Total EC and RR Costs					\$208,000

**Other Items**

-	STRUCTURE SURVEYING	LS	1.00	\$50,000	\$50,000
-	ROADWAY SURVEYING	LS	1	\$50,000	\$50,000
-	PROJECT OFFICE	LS	1	\$5,000	\$5,000
-	TEMP. LAYDOWN SITE	LS	1	\$5,000	\$5,000
-					\$0
Total Other Items Costs					\$110,000

Option 2 Grand Total                      \$15,888,180



Anchor Point Feasibility Study  
On-site Loop Track  
On-site single loop with wye-track to access track

BID ITEM	STANDARD ITEM DESCRIPTION	UNIT OF MEAS.	UNIT QUANTITY	UNIT PRICE	UNIT COST
----------	---------------------------	---------------	---------------	------------	-----------

**Preparation**

-	CLEARING AND GRUBBING	ACRE	11	\$10,000	\$111,685
-	STABILIZED CONSTRUCTION ENTRANCE	SY	222	\$590	\$131,111
Total Preparation Costs					\$242,796

**Grading**

-	ROADWAY EXCAVATION INCL. HAUL	CY	12,000.00	\$10	\$120,000
-	GRAVEL BORROW INCL. HAUL	TON	63,194	\$20	\$1,263,889
-	SUBBALLST	CY	13,900	\$45	\$625,500
Total Grading Costs					\$2,009,389

**Track**

<b>Track Construction</b>					
	New Track	TF	13,330.00	\$195	\$ 2,599,350
<b>Track/Turnout Removal/Relocation</b>					
	Remove Existing Track	TF	-	\$15	\$ -
<b>Turnouts</b>					
	Split Point Derail	EA		\$54,730	\$ -
	#15	EA	3	\$221,000	\$ 663,000
Total Track Costs					\$ 3,262,350

**Signal**

	Per P.O. T.O.	EA	-	\$840,000	\$ -
	Per Mile	MI	-	\$1,000,000	\$ -
	Electric Locks	EA	-	\$25,000	\$ -
Total Storm Sewer Costs					\$0

**Structures****Bridge under Loop to Access Interior**

	45-80' IB (Assumed for access to center of loop)	TF	45.00	\$15,000	\$ 675,000
-	Minor Culverts (< 36" Diameter)	LF	90.00	\$264	\$ 23,760
Total Structures Costs					\$ 698,760

**Erosion Control and Roadside Restoration**

-	SILT FENCE	LF	13,900	\$5	\$69,500
-	HIGH VISIBILITY FENCE	LF	13,900	\$5	\$69,500
-	EROSION AND WATER POLLUTION CONTROL	LS	1	\$20,000	\$20,000
-	SEEDING, FERTILIZING, AND MULCHING	ACRE	5	\$4,000	\$20,000
Total EC and RR Costs					\$179,000

**Other Items**

-	STRUCTURE SURVEYING	LS	1.00	\$50,000	\$50,000
-	ROADWAY SURVEYING	LS	1	\$50,000	\$50,000
-	PROJECT OFFICE	LS	1	\$5,000	\$5,000
-	TEMP. LAYDOWN SITE	LS	1	\$5,000	\$5,000
Total Other Items Costs					\$110,000

Loop - Grand Total \$6,502,295

## Appendix D

# Historical Aerial Photographs

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**Anchor Point Wetlands Site**

Tally Way

Kelso, WA 98626

Inquiry Number: 4329533.2

June 18, 2015

**PARTIAL SAMPLE OF AERIAL  
PHOTOS INLCUDED; CONTACT  
CITY FOR COMPLETE FILE**

**The EDR Aerial Photo Decade Package**



6 Armstrong Road, 4th Floor  
Shelton, Connecticut 06484  
Toll Free: 800.352.0050  
[www.edrnet.com](http://www.edrnet.com)

## EDR Aerial Photo Decade Package

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Please contact EDR at 1-800-352-0050  
with any questions or comments.

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**Date EDR Searched Historical Sources:**

Aerial Photography June 18, 2015

**Target Property:**

Tally Way

Kelso, WA 98626

<u>Year</u>	<u>Scale</u>	<u>Details</u>	<u>Source</u>
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1951	Aerial Photograph. Scale: 1"=750'	Flight Date: July 23, 1951	EDR
1970	Aerial Photograph. Scale: 1"=500'	Flight Date: July 05, 1970	EDR
1970	Aerial Photograph. Scale: 1"=500'	Flight Date: July 05, 1970	EDR
1970	Aerial Photograph. Scale: 1"=500'	Flight Date: July 05, 1970	EDR
1970	Aerial Photograph. Scale: 1"=500'	Flight Date: July 05, 1970	EDR
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1994	Aerial Photograph. Scale: 1"=500'	DOQQ - acquisition dates: May 23, 1994	USGS/DOQQ
1994	Aerial Photograph. Scale: 1"=500'	DOQQ - acquisition dates: May 23, 1994	USGS/DOQQ
1994	Aerial Photograph. Scale: 1"=500'	DOQQ - acquisition dates: May 23, 1994	USGS/DOQQ
1994	Aerial Photograph. Scale: 1"=500'	DOQQ - acquisition dates: May 23, 1994	USGS/DOQQ
1994	Aerial Photograph. Scale: 1"=500'	DOQQ - acquisition dates: May 23, 1994	USGS/DOQQ
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2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	USDA/NAIP

<i>Year</i>	<i>Scale</i>	<i>Details</i>	<i>Source</i>
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2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	USDA/NAIP
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2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	USDA/NAIP
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	USDA/NAIP
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	USDA/NAIP
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	USDA/NAIP
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	USDA/NAIP
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	USDA/NAIP
2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	USDA/NAIP
2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	USDA/NAIP
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2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	USDA/NAIP
2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	USDA/NAIP
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2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	USDA/NAIP
2011	Aerial Photograph. Scale: 1"=500'	Flight Year: 2011	USDA/NAIP
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2012	Aerial Photograph. Scale: 1"=500'	Flight Year: 2012	USDA/NAIP
2012	Aerial Photograph. Scale: 1"=500'	Flight Year: 2012	USDA/NAIP
2012	Aerial Photograph. Scale: 1"=500'	Flight Year: 2012	USDA/NAIP

<i><b>Year</b></i>	<i><b>Scale</b></i>	<i><b>Details</b></i>	<i><b>Source</b></i>
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2012	Aerial Photograph. Scale: 1"=500'	Flight Year: 2012	USDA/NAIP
2012	Aerial Photograph. Scale: 1"=500'	Flight Year: 2012	USDA/NAIP



INQUIRY #: 4329533.2

YEAR: 1951

| = 750'





INQUIRY #: 4329533.2

YEAR: 1951



| = 750'





INQUIRY #: 4329533.2

YEAR: 1970



— = 500'





INQUIRY #: 4329533.2

YEAR: 1970

| = 500'







INQUIRY #: 4329533.2

YEAR: 1970

| = 500'







INQUIRY #: 4329533.2

YEAR: 1970



| = 500'



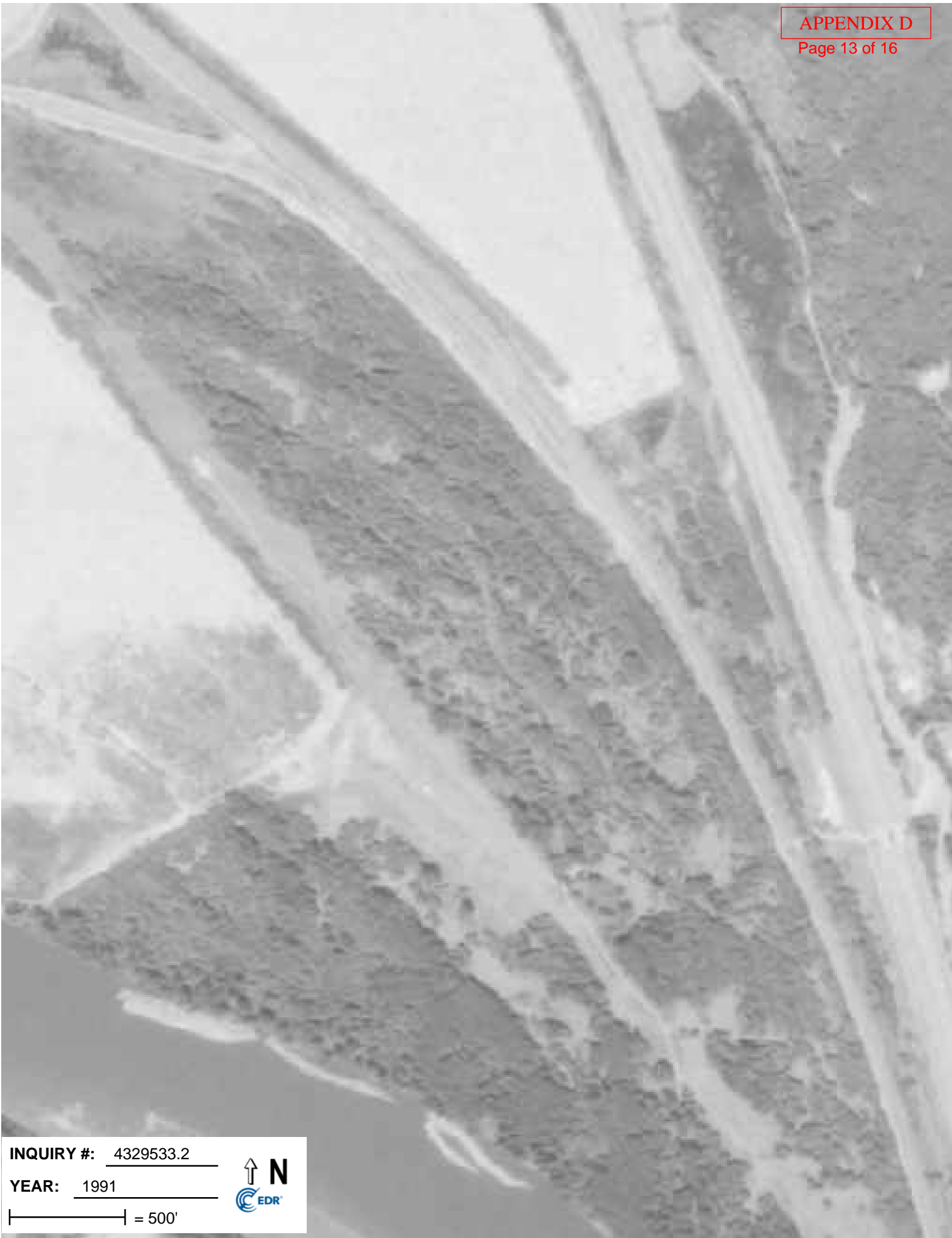


INQUIRY #: 4329533.2

YEAR: 1991

| = 500'





INQUIRY #: 4329533.2

YEAR: 1991

| = 500'





INQUIRY #: 4329533.2

YEAR: 1994

| = 500'







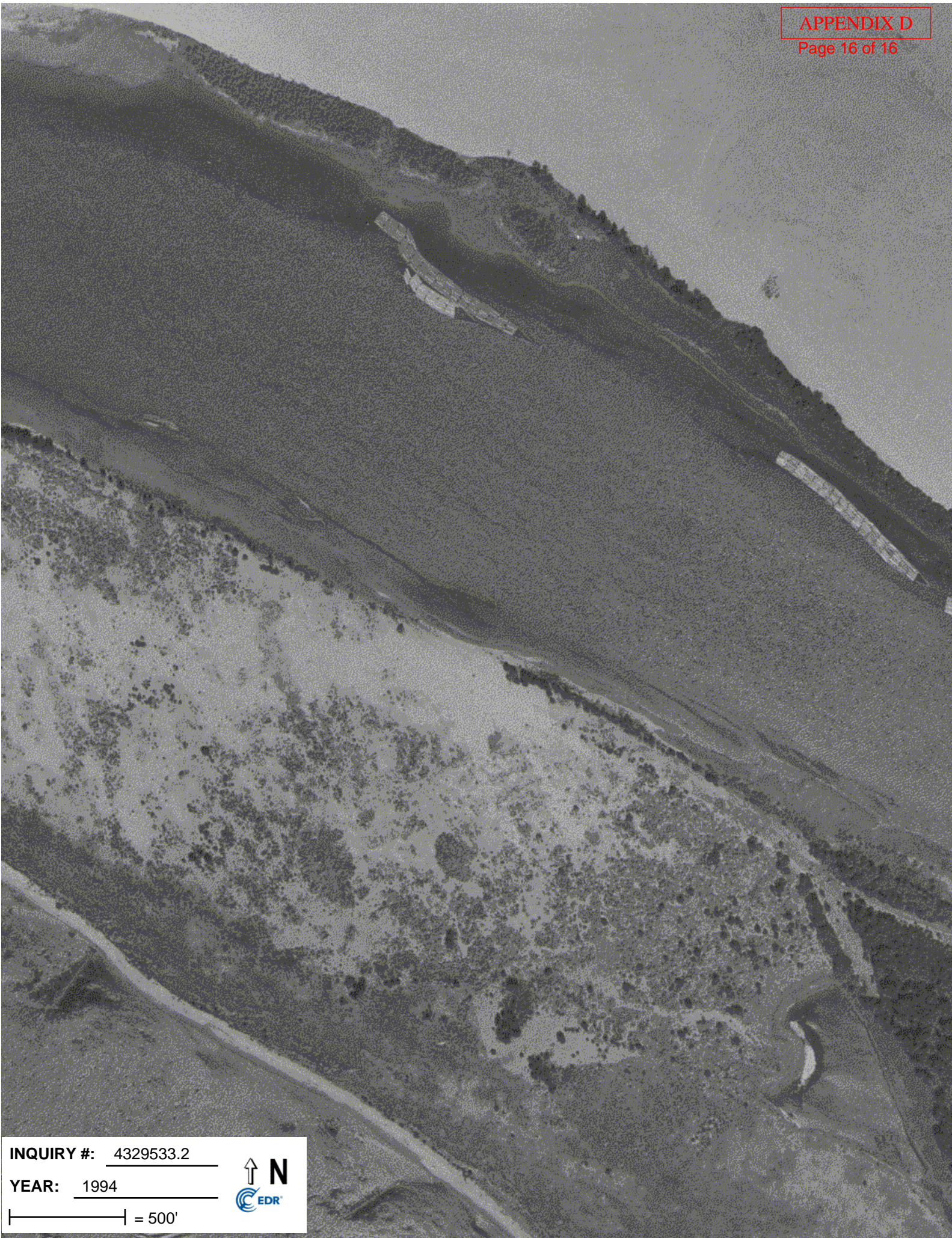
INQUIRY #: 4329533.2

YEAR: 1994

| = 500'







INQUIRY #: 4329533.2

YEAR: 1994



| = 500'

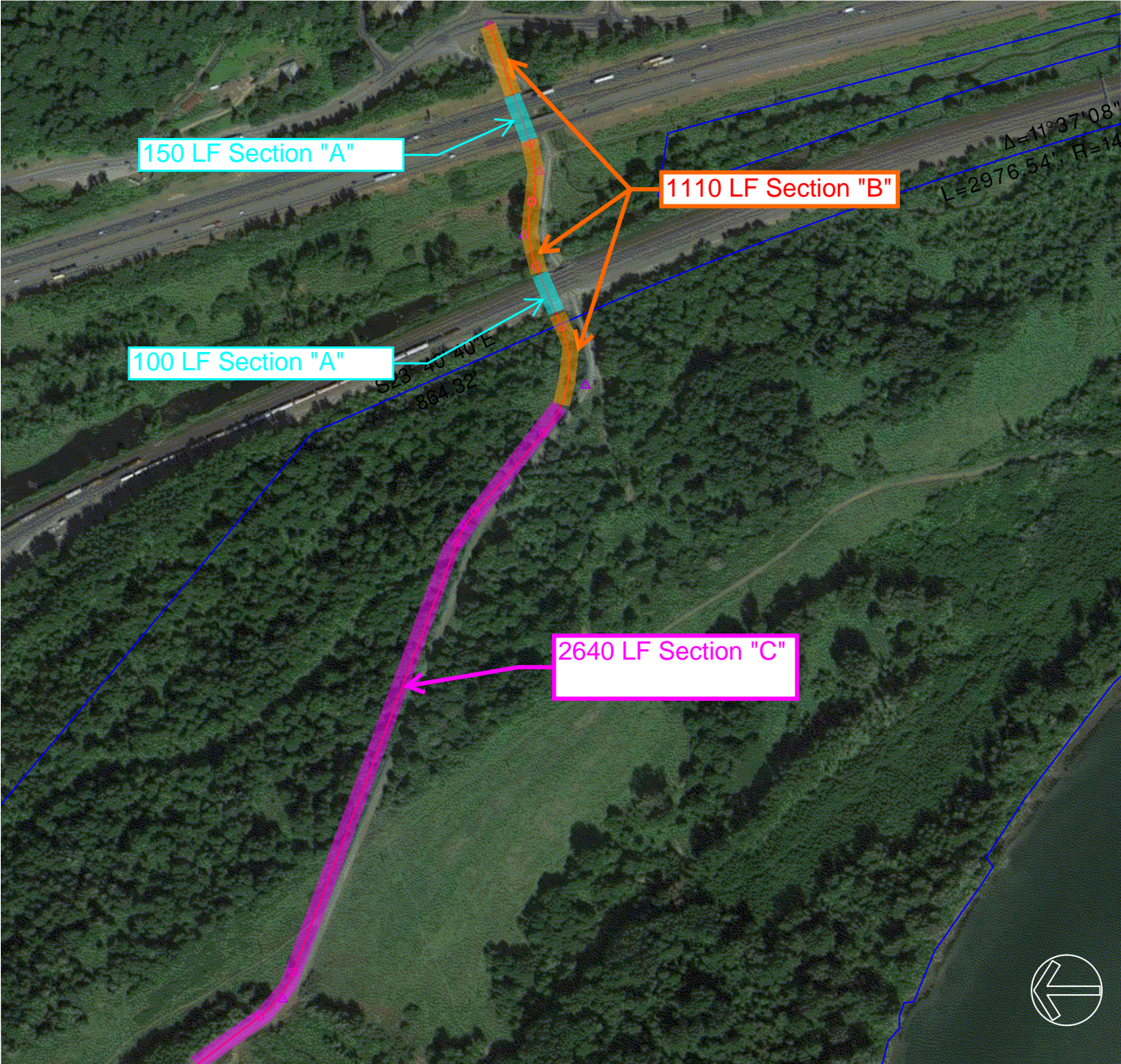


## **Appendix E**

### **Vehicular Access Option 4 Cross Sections**

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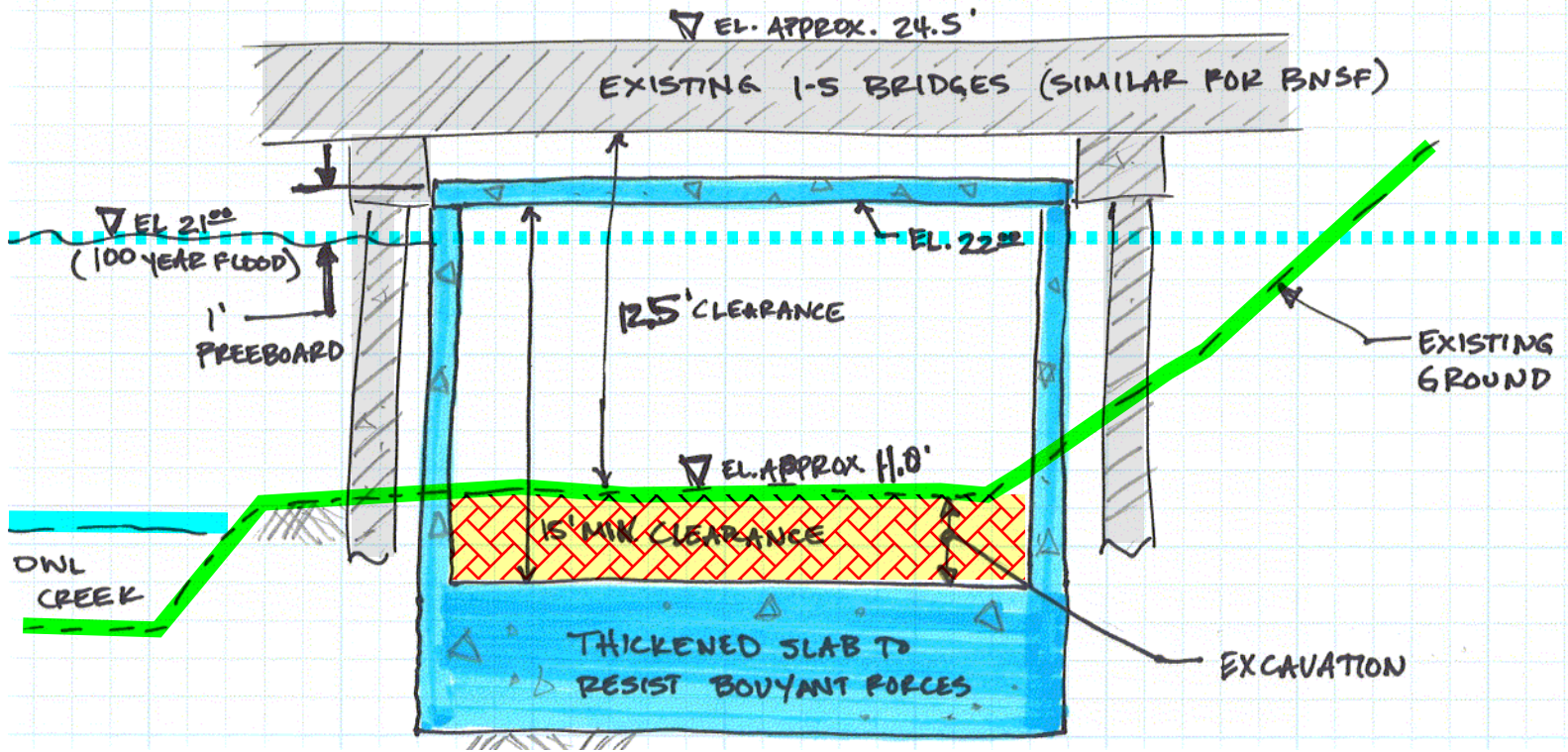
# Vehicular Access Option 4 Cross Sections



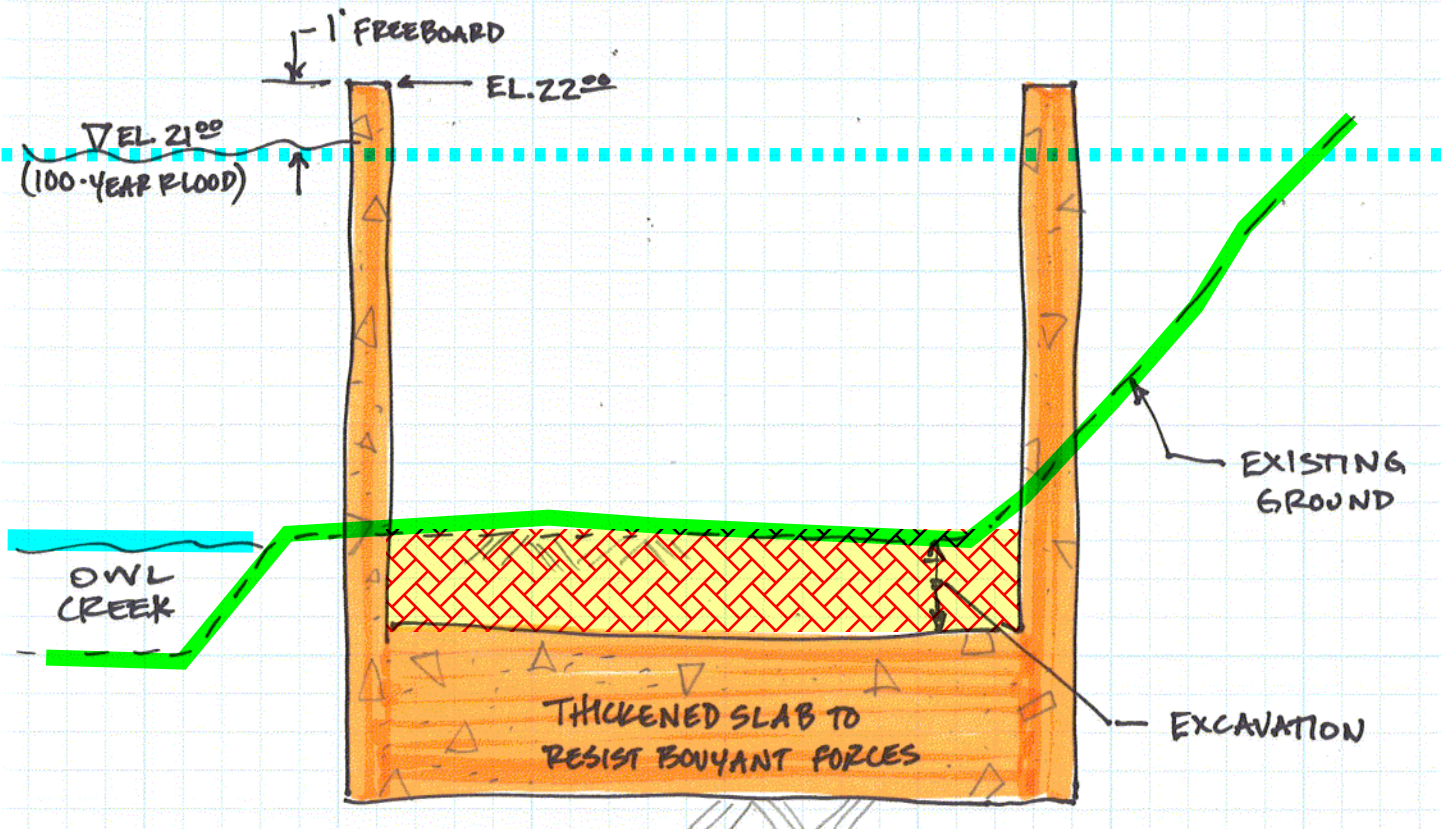
Option 4 Plan View



# Vehicular Access Option 4 Cross Sections

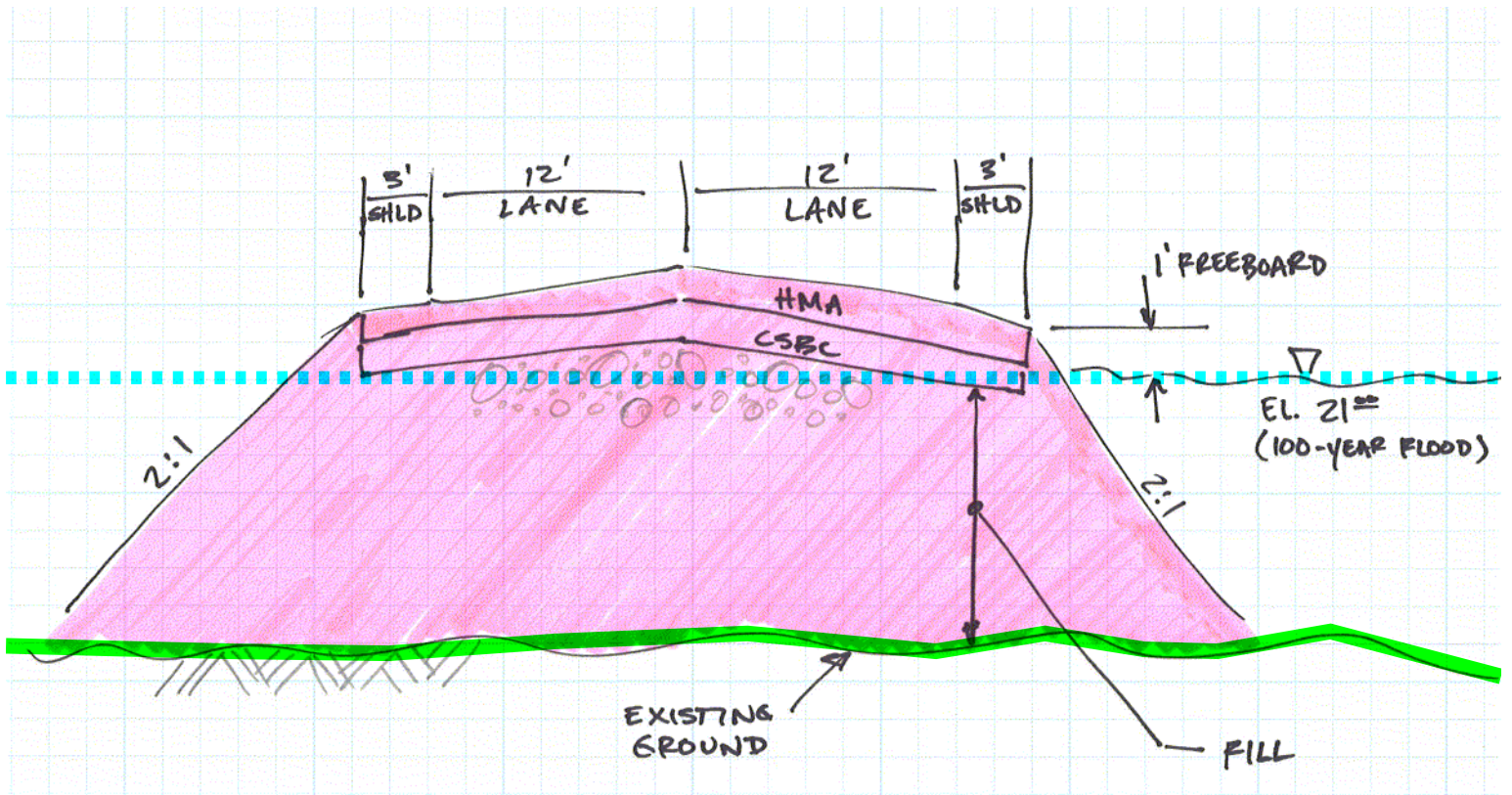


Option 4 - Section "A"



Option 4 - Section "B"

# Vehicular Access Option 4 Cross Sections



Option 4 - Section "C"

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## Appendix E

### **Vehicular Access Option 4 Cross Sections**

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## **Appendix F**

### **Economic Impact Assessment Methodology Notes**

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## Appendix F:

### Economic Impact Assessment Methodology Notes

The following provides an overview of the study methodology and important considerations.

<b>Illustrative Uses</b>	<ul style="list-style-type: none"> <li>• Information drawn from related economic impact studies and/or Anchor Point Position Paper</li> <li>• Estimates of economic impact reflect both users previously profiled plus industry wide averages</li> <li>• Actual results may vary from one firm to another within a particular industry</li> </ul>
<b>Build-Out Conditions</b>	<ul style="list-style-type: none"> <li>• All estimates of economic impact are as of the year of project build-out, estimated in 2015 dollars</li> </ul>
<b>Economic Multipliers</b>	<ul style="list-style-type: none"> <li>• Multipliers are from the nationally recognized IMPLAN economic model for Cowlitz County - calculated for output, employment &amp; payroll</li> <li>• Direct effects are defined as on-site activities including business operations, employee wages and procurement</li> <li>• Indirect effects reflect purchases made by on-site businesses from other businesses in Cowlitz County</li> <li>• Induced effects represent purchases made by on-site employees in Cowlitz County</li> <li>• An economic multiplier is defined as the <i>sum of direct, indirect and induced effects divided by direct effects</i></li> </ul>
<b>Fiscal Impact Estimates</b>	<ul style="list-style-type: none"> <li>• Fiscal impacts are calculated for property tax, sales tax and business and occupation (B&amp;O) or natural gas taxes, as applicable</li> <li>• Estimates are made based on rates in effect for benefitted state and local jurisdictions as of 2015</li> <li>• With each tax category, estimates are adjusted based on typical ratios of taxable to gross valuation, revenue or spending activity</li> <li>• Fiscal impacts are estimated only for direct on-site business operations plus direct employee expenditures</li> <li>• Indirect and induced tax effects are more variable and not estimated with this analysis</li> </ul>
<b>Added Caveats</b>	<ul style="list-style-type: none"> <li>• Prior case studies utilized are from 3-4 years back, investment amounts are adjusted by CPI to 2015 dollars</li> <li>• All estimates of economic impact are rounded</li> <li>• Information is not readily available for gross revenues with grain terminals, so no estimate of B&amp;O tax is made</li> <li>• Other notes and comments are as per the impact estimate worksheet</li> </ul>

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## **Appendix G**

### **City of Kelso Tax Rates**



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## Appendix G: City of Kelso Tax Rates

The following rates were identified and applied in the development of applicable tax and revenue forecasts.

Tax & Jurisdiction	Rate	Comments
<b>Sales Tax</b>	% of Sales	Effective October 1, 2015
Kelso Basic	0.50%	
Kelso Optional	0.50%	
Transit	0.30%	
Criminal Justice	0.10%	
Mental Health	0.10%	
State of Washington	6.50%	
Total Sales Tax Rate	8.00%	
<b>Property Tax</b>	\$ / \$1,000 TAV	Tax year 2015 for parcel 24100
STATE SCHOOLS	\$2.28240	
CURRENT EXPENSE	\$2.10418	
STATE VETERANS RELIEF	\$0.01125	
HUMAN SERVICES MENTAL HEALTH	\$0.02501	
CITY OF KELSO	\$2.04674	
KELSO SCHOOL DISTRICT #458	\$5.61860	
PORT OF LONGVIEW	\$0.45000	
KELSO/LONGVIEW FIRE DIST #2	\$1.50000	
ROSE VALLEY CEMETERY DIST #6	\$0.08501	
Total Property Tax Rate	\$14.12319	
<b>B&amp;O Tax Rate</b>	% of taxable gross	
<b>City of Kelso</b>		
Mfg, retail, whsle, retail	0.001	
Services	0.002	
<b>State of Washington</b>		
Retail	0.00471	May apply to general contractor
Wholesaling	0.00484	Includes specialty construction/contractor
Manufacturing	0.00484	
Services	0.015	
<b>Natural Gas Usage Tax Rate</b>		
State of Washington	3.8520%	

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