Hazardous Materials Discipline Report

Prepared for:

Washington State Department of Transportation

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## Acronyms and Abbreviations

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<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology</td>
<td>Washington State Department of Ecology</td>
</tr>
<tr>
<td>EDR</td>
<td>Environmental Data Resources, Inc.</td>
</tr>
<tr>
<td>FHWA</td>
<td>Federal Highway Administration</td>
</tr>
<tr>
<td>GSA Alternative</td>
<td>Grade-Separated Option A Alternative</td>
</tr>
<tr>
<td>MTCA</td>
<td>Model Toxics Control Act</td>
</tr>
<tr>
<td>PAHs</td>
<td>Polycyclic aromatic hydrocarbons</td>
</tr>
<tr>
<td>PGSB Alternative</td>
<td>Partial Grade-Separated Option B Alternative</td>
</tr>
<tr>
<td>SR</td>
<td>State Route</td>
</tr>
<tr>
<td>VOCs</td>
<td>Volatile organic compounds</td>
</tr>
<tr>
<td>WAC</td>
<td>Washington Administrative Code</td>
</tr>
<tr>
<td>WSDOT</td>
<td>Washington State Department of Transportation</td>
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</table>
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1.0 INTRODUCTION

The Industrial Way / Oregon Way Intersection Project is located in the industrial area of Longview, Washington at the intersection of Industrial Way (State Route (SR) 432), Oregon Way, and SR 433. This intersection provides a critical connection of two Highways of Statewide Significance that support significant passenger and freight movement. The purpose of the project is to develop an affordable long-term solution that:

- Maintains or improves emergency response
- Improves travel reliability for all vehicles
- Accommodates current and future freight truck and passenger vehicle movement through the intersection and across the region and states.

The purpose of this report is to:

- Identify properties in and around the project area where current or past land use may have resulted in hazardous materials related contamination
- Assess the likelihood that hazardous materials related contamination may be encountered or disturbed during construction of the project.

2.0 DESCRIPTION OF ALTERNATIVES

Three alternatives are being evaluated to address the project’s purpose and need. Each alternative is described briefly below.

2.1 No Build Alternative

Under the No Build Alternative, no major changes would be made to the roadway network with the exception of signal timing revisions implemented at the intersection of Industrial Way and Oregon Way. The No Build Alternative also assumes that other nearby transportation-related improvements and developments identified in the City of Longview’s Comprehensive Plan and Zoning Code, Cowlitz-Wahkiakum Council of Government’s travel demand model, the Port of Longview’s Barlow Point Master Plan, and the Millennium Bulk Terminals – Longview Project Environmental Impact Statement would be constructed. Thus, future (2040) conditions associated with the No Build Alternative would include:

- **Vehicular traffic growth:** Vehicle traffic (passenger and freight truck) is anticipated to increase approximately one to two percent annually due to regional growth based on projected population and land use changes. This increase translates to an overall growth in traffic demand (volume on most major arterials in the area) of approximately 40 to 50 percent by 2040 compared to existing conditions (2015).

- **Increased rail service on the Reynolds Lead:** The Reynolds Lead crosses Industrial Way west of the intersection and Oregon Way north of the intersection (Crossings A and B in Figure 1). Both crossings are at-grade. Rail service on the Reynolds Lead is expected to increase from up to four trains per day (two inbound, two outbound) under existing conditions to up to 20 trains per day (10 inbound, 10 outbound) prior to 2040 based on other private and public development proposals (Table 1). The types of trains operating on the Reynolds Lead are also anticipated to change over time. Currently, industry trains operate on the Reynolds Lead (4 trains per day),
whereas by 2040 rail service would include 4 industry trains per day and 16 unit trains per day. An industry train, or manifest train, comprises rail cars that haul various commodities and have different origins and destinations. For this project, typical industry trains are assumed to be 2,000 feet or less in length. A unit train comprises rail cars that haul the same commodity and have a single origin and destination. For this project, typical unit trains are assumed to be 6,800 to 8,000 feet in length.

- **No change to rail service on the Port Lead:** The Port Lead crosses Industrial Way at-grade and east of the intersection (Crossing C in Figure 1). Rail traffic on the Port Lead is anticipated to remain at current levels with up to six industry trains per week (three inbound, three outbound) through 2040 (Table 1).

- **Extension of the Industrial Rail Corridor (IRC) and new rail service:** The Port of Longview plans to extend the IRC to provide rail service west of the existing IRC terminus to the Port’s Barlow Point property. This extension would create a new at-grade roadway/railroad crossing on State Route (SR) 433 south of Industrial Way although the exact location of the crossing has not been determined (Table 1; Crossing D in Figure 1). The IRC extension is assumed to connect to the Reynolds Lead west of the intersection. Rail service is anticipated to involve up to eight unit trains per day (four inbound, four outbound) by 2040.

### Table 1. Existing and Future Frequency of Rail Service

<table>
<thead>
<tr>
<th>Rail Facility</th>
<th>Expected Frequency of Trains</th>
<th>Year of Project Opening (2020)</th>
<th>Future Conditions (2040)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reynolds Lead</td>
<td>4 industry trains per day</td>
<td>8 trains per day (4 industry and 4 unit trains)</td>
<td>20 trains per day (4 industry and 16 unit trains)</td>
</tr>
<tr>
<td>Port Lead</td>
<td>6 industry trains per week</td>
<td>6 industry trains per week</td>
<td>6 industry trains per week</td>
</tr>
<tr>
<td>IRC Extension</td>
<td>Not in service</td>
<td>Not in service</td>
<td>8 unit trains per day</td>
</tr>
</tbody>
</table>

Note: The future increases in rail service are based on other private and public development proposals that are independent of the Industrial Way/Oregon Way Intersection Project.
2.2 Grade-Separated Option A (GSA) Alternative

The GSA Alternative would include all changes in the future conditions as described for the No Build Alternative. In addition, a fully elevated signalized intersection would be constructed southwest of the existing intersection as shown in Figure 2. Under the GSA Alternative, the Reynolds Lead rail line would be realigned to pass under the new elevated intersection. All turning and through movements for the Industrial Way/Oregon Way intersection would be accommodated on the elevated intersection that would cross over the Reynolds Lead (Figure 2, Detail 1). A new surface roundabout at the Oregon Way/Alabama Street intersection (Figure 2, Detail 2) would allow through and turning movements in all directions. In addition, a new one-way surface road for houses facing onto the west side of Oregon Way and properties on the east side of Oregon Way south of Alabama Street would be constructed and provide local access. This surface road would loop under the elevated structure and connect back to Oregon Way on the east side of the new roundabout. On-street parking along the west side of Oregon Way would be eliminated south of Alabama Street; on the east side of Oregon Way on-street parking would be eliminated approximately 90 feet south of Alaska Street to Industrial Way. Existing driveways within 130 feet of the new roundabout would be closed or relocated.
A new local surface road would provide a northbound to eastbound connection from East Port Way to Columbia Boulevard. This surface road would serve businesses located on the north side of Industrial Way and would pass under the east leg of the elevated intersection to provide access to the properties on the south side of Industrial Way west of Columbia Boulevard (Figure 2, Detail 3). Driveways along Industrial Way between Columbia Boulevard and Oregon Way would be changed to right-in/right-out only.

West Port Way and East Port Way would be reconstructed to provide a one-way loop road with access to the Port of Longview and businesses south of the Industrial Way/Oregon Way intersection. Access to the Weyerhaeuser industrial complex would be consolidated and reconfigured: the existing access on West Port Way (Gate 3) would be converted to an emergency-only access gate; the existing access on Industrial Way just west of Oregon Way (Gate 4) would be permanently closed; and, a new gate would provide access from the north end of West Port Way, which would consolidate all traffic that currently uses Gate 3 and Gate 4. On-street parking along East Port Way would be eliminated to accommodate the shared-use path.

One at-grade roadway/railroad crossing of the Port Lead rail line would exist for the new surface roadway that connects East Port Way to Columbia Boulevard. The GSA Alternative would accommodate the planned extension of the Port of Longview’s IRC under a bridge structure for SR 433, but this extension would likely result in a second at-grade roadway/railroad crossing with East Port Way.

The GSA Alternative would include the following bicycle and pedestrian network improvements, all of which would be compliant with the standards of the United States Access Board Revised Draft Guidelines Accessible Public Rights-of-Way (2005) to meet the Americans with Disabilities Act (ADA):

- A new shared-use path along East Port Way that runs north-south, crosses under the east leg of the elevated intersection, runs east-west and crosses under the north leg of the elevated intersection, and connects to the Highlands Trail on the west side of Oregon Way
- Reuse or reconstruction of the existing Oregon Way sidewalk (west side) on the one-way surface roadway that runs along the west side of Oregon Way from Highlands Trail to the Oregon Way/Alabama Way roundabout
- New sidewalk on the new surface roadway that runs along the east side of Oregon Way from the new shared-use path to the Oregon Way/Alabama Way roundabout
- Reuse or reconstruction of the existing Industrial Way sidewalk (north side) on the north side of the new surface road along Industrial Way from the shared-use path to Columbia Boulevard
- New sidewalk on south side of Industrial Way from the point where Industrial Way touches down on the surface to Columbia Boulevard.
Figure 2. GSA Alternative

1. Fully elevated signalized intersection
2. New roundabout at Oregon Way/Alabama Street intersection
3. East leg of intersection, including Industrial Way/Columbia Blvd intersection and local access roads
4. New one-way local access road providing access to residences on Orange Way
5. Reynolds Lead realigned under new elevated intersection
6. Surface roadway/rail crossing
7. One-way local access road providing access to properties south of Industrial Way
8. New access to Weyerhaeuser replacing closed access on Industrial Way
9. New shared-use path providing connectivity between residential and industrial employment areas
10. Water treatment ponds and staging area
11. Future planned extension of the Port of Longview’s Industrial Rail Corridor Line
12. Future surface roadway/rail crossing

This graphic is conceptual in nature and subject to change.
Figure 3. PGSB Alternative

- New elevated roadway intersection and surface roadway roundabout
- Oregon Way/Alabama Street intersection revised to right-in/right-out only
- East leg of intersection, including a new signal on Industrial Way
- New one-way local access road providing access to residences on Oregon Way
- 14th Ave improved to local road standards
- Surface roadway/rail crossing of existing rail lines
- One-way local access road providing access to properties south of Industrial Way
- New access to Weyerhaeuser replacing closed access on Industrial Way
- New shared-use path providing connectivity between residential and industrial employment areas
- Water treatment ponds and staging area
- Future planned extension of the Port of Longview’s Industrial Rail Corridor Line
- Future surface roadway/rail crossing

This graphic is conceptual in nature and subject to change.
2.3 Partial Grade-Separated Option B (PGSB) Alternative

The PGSB Alternative would include all changes in the future conditions as described for the No Build Alternative. In addition, a new grade-separated intersection would be constructed with some movements elevated and other movements retained on the surface as shown in Figure 3. A new elevated signalized intersection would be constructed southwest of the existing intersection. The new elevated intersection would accommodate all northbound and southbound turning and through movements, as well as all eastbound and westbound turning movements. All westbound and eastbound through movements on Industrial Way would occur at the new surface roundabout that would be constructed where the existing intersection is located. This surface roundabout would also provide northbound and eastbound/westbound circulation from the south side of the intersection. Southbound movements would have to use the elevated intersection to access the Port of Longview and other locations south of the Industrial Way/Oregon Way intersection (Figure 3, Detail 1). Emergency service providers would be able to use the elevated structure for westbound and eastbound through movements if needed to quickly navigate through the intersection (for example, during train crossings).

The elevated north leg of the new intersection would touch down on to the surface just north of the intersection of Oregon Way and Alabama Street, limiting turning movements along the surface roadway and at the intersection with Alabama Street to right-in/right-out only (Figure 3, Detail 2). On-street parking along the west side of Oregon Way would be eliminated south of Alabama Street; on the east side of Oregon Way on-street parking would be eliminated approximately 90 feet south of Alaska Street to Industrial Way. To improve circulation for properties located on Alabama Street east of Oregon Way, the PGSB Alternative would include improvements to 14th Avenue between Alabama Street and Beech Street, which would allow for one northbound and one southbound travel lane.

A new two-phase signal on Industrial Way east of the intersection with Oregon Way would accommodate the merge of eastbound surface traffic on Industrial Way with eastbound traffic coming off the elevated intersection, and across westbound traffic on Industrial Way (Figure 3, Detail 3). Driveways along Industrial Way between Columbia Boulevard and Oregon Way would be changed to right-in/right-out only.

Similar to the GSA Alternative, West Port Way and East Port Way would be reconfigured to provide a one-way loop road and the access locations to the Weyerhaeuser industrial complex would be consolidated and reconfigured. On-street parking along East Port Way would be eliminated to accommodate the shared-use path.

No rail lines would be realigned under this alternative. At-grade roadway/railroad crossings of the Reynolds Lead and the Port Lead would be located on the surface roadway segments of Oregon Way and Industrial Way. The PGSB Alternative would accommodate the planned extension of the Port of Longview’s IRC under a bridge structure for SR 433. This rail extension would likely create an additional at-grade roadway/railroad crossing with the northbound surface roadway connection from East Port Way to eastbound Industrial Way.

The PGSB Alternative would include the following ADA-compliant bicycle and pedestrian network improvements:

- A new shared-use path along East Port Way that runs north-south, crosses at the new surface roundabout with a crosswalk, connecting to the Highlands Trail on the west side of Oregon Way
2.4 Project Construction

Both the GSA Alternative and the PGSB Alternative would involve the construction of an elevated intersection, new surface roadways, a new roundabout, and new ramps to connect to SR 433. Table 2 provides a summary and comparison of key construction activities required for the two build alternatives, which are further described below.

Table 2. Summary of Construction Activities

<table>
<thead>
<tr>
<th></th>
<th>GSA Alternative</th>
<th>PGSB Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Duration</td>
<td>5 years</td>
<td>3.5 years</td>
</tr>
<tr>
<td>Detours and/or Temporary Roads</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Closure of Oregon Way</td>
<td>Up to 1.5 years</td>
<td>No closure</td>
</tr>
<tr>
<td>Realignment of Reynolds Lead</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Utility Relocations</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Realigned Access Points/Driveways</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
| Property Acquisitions | 15 full acquisitions  
26 partial acquisitions | 12 full acquisitions  
21 partial acquisitions |
| Easements | 59 temporary easements  
2 permanent easements | 71 temporary easements  
2 permanent easements |

2.4.1 Construction Duration and Phasing

The GSA Alternative would be constructed in four phases spread over 5 years. The PGSB Alternative would be constructed in three phases spread over 3.5 years.

2.4.2 Construction Approach

GSA Alternative

Constructing the elevated intersection would require a combination of embankment, retaining walls, and bridges to raise the structure and to accommodate the surface roadway network. Early activities
would include utility relocations, constructing several of the features on the perimeter of the intersection, establishing temporary roads, and realigning access points/driveways. Once these elements are in place, construction of the elevated features would be undertaken, which would involve rerouting traffic to temporary roads or using detour routes. The final stages of construction would include finishing all the connecting ramps and remaining surface roads.

The GSA Alternative would also require relocating a segment of the Reynolds Lead, which would involve constructing the new alignment while rail service continues to use the existing track. Upon completion, rail service would start using the realigned track and the existing track would be removed.

In the vicinity of the intersection, traffic on Oregon Way would be detoured for 1 to 1.5 years to other routes, such as utilizing Tennant Way to 3rd Avenue to Industrial Way. Local access to properties on Oregon Way would be provided during construction, although no on-street parking would be available. No additional right-of-way would need to be acquired for this detour.

The GSA Alternative would acquire property from approximately 41 parcels of which 15 parcels may be fully acquired and 26 parcels may be partially acquired. In the case of partial acquisitions, a portion of the property would be acquired and the remainder would be retained by the current owner. In addition, new and expanded easements would be needed from railroad parcels and approximately 59 temporary easements would be needed during project construction.

**PGSB Alternative**

The PGSB Alternative would follow the general sequence of construction activities similar to the GSA Alternative. However, travel on Oregon Way would be retained and reduced to one lane in each direction for most of the construction duration. No realignment of the Reynolds Lead would occur.

The PGSB Alternative would require property acquisition from approximately 33 parcels of which 12 parcels may be fully acquired and 21 may be partially acquired. Expanded easements would be obtained from the railroad parcels and approximately 71 temporary easements would be needed during project construction.

**2.4.3 Construction Details**

Both alternatives would require bridges with foundations, walls with foundations, embankments, new surface roadways, general clearing and grubbing including tree removal, and utility relocations. The foundations for the piers would be either drilled shafts or driven piles with piles driven to between 100 and 150 feet below ground surface. The area of disturbance would be approximately 51 acres under the GSA Alternative or 50 acres under the PGSB Alternative.

**3.0 METHODOLOGY**

Methodology is described in the Hazardous Materials Impact Assessment Methodology Memorandum, which is included as Attachment A. The methodology presented below is similar to a Phase I Environmental Site Assessment per ASTM 1527-13. The following sections present additional details for methods performed to complete this assessment along with results of research efforts performed.

**3.1 Policies and Regulations**

Federal, state, and local policies and regulations that may be applicable to hazardous materials that are discussed in this report include:
Federal regulations:
- Comprehensive Environmental Response, Compensation, and Liability Act
- Superfund Amendments and Reauthorization Act
- Resource Conservation and Recovery Act
- Toxic Substances Control Act
- Occupational Safety and Health Act
- Clean Air Act
- Clean Water Act
- National Environmental Policy Act
- Federal Highway Administration (FHWA) Supplemental Hazardous Waste Guidance
- FHWA Hazardous Wastes in Highway Rights-of-Way

Washington State regulations:
- Model Toxics Control Act Cleanup Regulation (MTCA)
- Dangerous Waste Regulations
- Solid Waste Regulations
- Washington Administrative Code (WAC) State Environmental Policy Act, WAC 197-11
- Water Pollution Control Act
- Washington Industrial Safety and Health Act
- Washington State Department of Transportation (WSDOT) Environmental Procedures Manual Chapter 447, Hazardous Materials
- WSDOT Guidance and Standard Methodology for WSDOT Hazardous Materials Discipline Reports
- WSDOT Right Size your Hazardous Materials Discipline Report

3.2 Records Review and Site Survey

A records review and site survey were performed to describe current and past land uses that may have contributed to the presence of hazardous materials within the study area, as shown in Figure 4. The complete area for the records review included the study area and areas within 1 mile of the study area.

3.2.1 Geologic and Groundwater Review

A review of geologic and groundwater conditions was performed through the City of Longview’s Wellhead Protection Program, Washington State Department of Ecology (Ecology) well logs, a preliminary geotechnical engineering report (WSDOT 2007), and a database of known groundwater contamination sites within the study area. A summary of the physical conditions in the study area is provided in Section 4.0.
3.2.2 Government Environmental Records Review

A review of available government environmental records was conducted to identify potential contaminant sources within 1 mile of the study area. This review focused on properties with prior environmental enforcement records; properties with past or present underground storage tanks; and properties that generate, transport, and store hazardous materials. Database records were provided by Environmental Data Resources, Inc. (EDR). The database search was performed for listed sites located within 1 mile of the study area, in accordance with American Society of Testing and Materials E1527-13 standards. EDR database search results are provided in Attachment B. A review of site-specific electronic files maintained by Ecology was performed as part of this assessment.

Based on the EDR search results (EDR 2016a), the following Ecology databases were the primary focus for hazardous materials that may pose a threat to the project. These databases provide details on properties that store large quantities of contaminants or sites with known contamination: Confirmed and Suspected Contaminated Sites List, Hazardous Sites List, Underground Storage Tanks (UST), Leaking Underground Storage Tanks, Independent Cleanup Reports, and Voluntary Cleanup Program (VCP).

3.2.3 Historical Records Review

Historical maps, including historical aerial photographs, USGS Topographic Maps, and Sanborn Fire Insurance Maps, were reviewed for indications of past occupants, businesses, or land uses in the study area that may have affected the soil or groundwater within the proposed project limits. The study area north of Industrial Way has remained much the same since the 1950s with single- and multi-family residences west of Oregon Way and commercial land uses to the east. Around the mid-1960s, substantial commercial and industrial development occurred south of Industrial Way with historical mapping sources showing that land uses in the study area from the 1970s were similar to current land uses. A summary of the historical records review dating back to 1951 is provided in Attachment C of this report.

3.2.4 Site Reconnaissance

A reconnaissance-level site visit was conducted on December 3, 2015 and January 6-7, 2016 within and immediately adjacent to the study area. Site observations were limited to areas readily available from properties that have given rights of entry and from public access corridors. The site visit focused on identifying current land uses within the study area that are likely to use, treat, store, or dispose of hazardous materials, and to locate database listings of concern and database listings that were not clearly located by EDR. Any property-specific field investigations were not performed as part of this assessment.

3.3 Site Screening

A list of potential sites of concern were developed based on the records reviews and site survey performed. The following screening criteria was used to efficiently review the large number of listed sites included in the EDR Report (EDR 2016a):

- Most sites located greater than 1/4 mile from the proposed study area were eliminated due to the large number of database listings located with 1/4 mile that include a high concentration of sites with the same or similar contaminants used within the study area. If contaminants from more distant sites migrated into the study area it is unlikely that they could be differentiated from contaminants from sites located closer to the project.
Following site screening, all remaining sites were assigned a ranking of low, moderate, or high for the potential risk to the proposed project area.

3.3.1 Low Risk Sites

Low risk sites are sites where the hazardous materials concern is related to historical activities, but any contamination has been remediated or the likelihood that contamination would impact construction of the project through cost increases or construction delays is low.

3.3.2 Moderate Risk Sites

Moderate risk sites are sites where past or present land uses have used or stored hazardous materials; sites contaminated by known adjacent contamination sources that would be acquired for construction of the project; land use information available is not sufficient to determine the likely presence of hazardous materials that could impact project construction; and sites where project improvements would require excavation at the site.

3.3.3 High Risk Sites

High risk sites are sites where contamination is correlated to known past or present land uses, contamination would likely impact construction of the project, and contamination would require extensive remediation for project construction to occur. High risk sites typically pose a substantial threat to soil, groundwater, or sediment contamination at the project. Generally, high risk sites are also those sites where contamination is known to exist, and sites where all or a portion of the site (where contamination is known) would be acquired as part of the project.

4.0 AFFECTED ENVIRONMENT

4.1 Physical Environment

The project is located between the Coastal Range and the Cascade Range near the confluence of the Columbia, Cowlitz, and Coweeman Rivers. The surface topography of this region consists of low lying floodplain terraces adjacent to the rivers, with rolling hills immediately adjacent to the terraces. The floodplain terraces typically range in elevation from 5 to 20 feet above sea level, and the adjacent hills climb to elevations over 1,000 feet above sea level (WSDOT 2007). The area within the study area is generally flat with an elevation of 10 feet above sea level.

4.1.1 Geology

WSDOT’s Preliminary Geotechnical Engineering Recommendations report (2007) describes the geology of the study area as follows:

“The project is located within the Portland Basin physiographic region of Washington. Structurally, the Portland Basin is located in the northern half of the Columbia River Basin. From Vancouver, both upstream and downstream on the Columbia River, at the edges of the basin, there are exposures of the Columbia River basalt. Within the basin itself, the basalts lie more than 1,000 feet below the surface. At some time following the Miocene the basalts down dropped [sank], filling with sediments of the ancestral Columbia River. Named the Troutdale Formation, these deposits can be divided into two
general parts: a lower gravel section containing pebbles and cobbles and an upper section containing sands. Lacustrine deposits often overlay the Troutdale Formation in this area. The Lacustrine deposits are typically comprised of silts, clays, fine sands and peat. It is unclear whether or not the Troutdale Formation and lacustrine deposits extend as far north as Longview. It is possible that these units are not present in this area. These deposits are believed to have occurred in lake-bed and slack-water environments caused by catastrophic floods that were periodically released by the breaching of an ice dam on glacial Lake Missoula 12,800 to 14,700 years ago.... The project vicinity is primarily underlain by alluvium deposited over bedrock, which is (for the most part) consistent with the geologic history of the Portland Basin... The alluvium generally consists of silt, sand, and gravel deposited in streambeds and fans, and the bedrock generally consists of thin layers of sandstone and siltstone over basalt... Fill material was also placed during the original construction of roadway and railways in the area."

### 4.1.2 Hydrogeology

Based upon information contained in existing well logs and boring logs within and near the study area, the regional groundwater table is located at approximately 10 feet below ground surface (WSDOT 2007). However, in many locations the soils within 10 feet of the ground surface were found to be wet when boring holes were drilled for previous investigations. Groundwater monitoring wells installed in 1995 along East Port Way and Panel Way within the study area have screened intervals for groundwater sample collection between 8 feet and 22 feet below ground surface (Ecology 2015a).

Regionally, groundwater is used to provide the City of Longview with potable water from the Mint Farm Industrial Park wellfield site, approximately 2 miles northwest of the study area (Kennedy/Jenks Consultants 2012). Two distinct groundwater systems are present at the wellfield site – a shallow system and a deep system with a confining layer of silt and clay about 200 feet thick between the two systems. The Mint Farm wellfield extracts drinking water from the deep system.

Ecology has identified six known or suspected contaminated sites within a quarter mile of the study area (Ecology 2015b). Three of the six sites have confirmed groundwater contamination above cleanup levels, primarily for petroleum hydrocarbons. The three sites are:

- Chevron USA Longview, FSID# 1101
- West Coast Oil UST 10597, FSID# 54248966
- Nelson Petroleum, FSID# 18842464

### 4.2 Land Use

Current land uses in the study area reflect the industrial nature of Longview’s frontage along the Columbia River with a number of large import and export facilities. The predominant land uses are industrial and commercial uses south of the Industrial Way/Oregon Way intersection and residential and commercial uses north of the intersection. Railroad tracks parallel Industrial Way and the local drainage ditch (CDID Ditch No. 3) running east-west through the study area with an additional set of railroad tracks used by the Port of Longview located south and east of the study area.
4.3 Sites of Concern

Fifteen sites of concern were identified within or near the study area as mapped in Figure 4 and listed in Table 3.

Figure 4. Hazardous Material Sites of Concern within the Study Area

SITES OF CONCERN

1. U-Haul Center of Longview
2. American Transmission
3. Longview City Shop
4. Vehicle Maintenance and Storage
5. Welding Supply Center
6. City of Longview
7. Railroad Right-of-Way
8. West Coast Oil
9. Nelson Petroleum
10. Longview Operations
11. Weyerhaeuser
12. Mallard Investment
13. Industrial Way Food (Chevron)
14. Stevedoring Services
15. Longview Storage

LEGEND

- Study Area
- CDID Ditch
- Railroad
- Site of Concern
- Low Risk
- Moderate Risk
<table>
<thead>
<tr>
<th>Site Number</th>
<th>Site Name (Current Business Name)</th>
<th>Site Address</th>
<th>Hazardous Material(s)</th>
<th>Risk</th>
<th>Risk Category Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>U-Haul Center of Longview</td>
<td>364 Oregon Way</td>
<td>Petroleum, Compressed Gas</td>
<td>Moderate</td>
<td>Clean-up for this site has started but has not been completed. Confirmed releases to soil and groundwater.</td>
</tr>
<tr>
<td>2</td>
<td>American Transmission (A+ Transmission Specialists)</td>
<td>340 Oregon Way</td>
<td>Petroleum, VOCs, Solvents</td>
<td>Moderate</td>
<td>This site is awaiting cleanup. Confirmed releases to soil and suspected releases to groundwater.</td>
</tr>
<tr>
<td>3</td>
<td>Longview City Shop</td>
<td>254 Oregon Way</td>
<td>Petroleum, Solvents, PAHs</td>
<td>Low</td>
<td>Clean-up completed – no further action</td>
</tr>
<tr>
<td>4</td>
<td>Vehicle Maintenance and Storage</td>
<td>206 Oregon Way</td>
<td>Petroleum, Solvents, PAHs</td>
<td>Low</td>
<td>Clean-up completed – no further action</td>
</tr>
<tr>
<td>5</td>
<td>Welding Supply Center</td>
<td>148 Oregon Way</td>
<td>Petroleum, Metals, Solvents</td>
<td>Low</td>
<td>No documented releases</td>
</tr>
<tr>
<td>6</td>
<td>City of Longview (fuel pumps)</td>
<td>1451 Alabama Street</td>
<td>Petroleum, Compressed Gas</td>
<td>Low</td>
<td>Clean-up completed – no further action</td>
</tr>
<tr>
<td>7</td>
<td>Railroad Right-of-Ways</td>
<td>South of CDID Ditch No. 3</td>
<td>Creosote</td>
<td>Low</td>
<td>No documented releases</td>
</tr>
<tr>
<td>8</td>
<td>West Coast Oil (Pacific Rim Espresso)</td>
<td>95 Oregon Way</td>
<td>Petroleum</td>
<td>Moderate</td>
<td>Clean-up for this site has started but has not been completed. Confirmed releases to soil and groundwater.</td>
</tr>
<tr>
<td>9</td>
<td>Nelson Petroleum (Subway and Starbucks)</td>
<td>94 Oregon Way</td>
<td>Petroleum</td>
<td>Low</td>
<td>No further action</td>
</tr>
<tr>
<td>10</td>
<td>Longview Operations (Longview Utilities Maintenance)</td>
<td>1460 Industrial Way</td>
<td>Petroleum, Solvents</td>
<td>Low</td>
<td>No further action</td>
</tr>
<tr>
<td>11</td>
<td>Weyerhaeuser</td>
<td>3401 Industrial Way</td>
<td>Petroleum, Solvents</td>
<td>Moderate</td>
<td>Clean-up for this site has started but has not been completed. Confirmed releases to soil and groundwater.</td>
</tr>
<tr>
<td>12</td>
<td>Mallard Investment</td>
<td>1611 Industrial Way</td>
<td>Petroleum</td>
<td>Moderate</td>
<td>This site is awaiting cleanup. Suspected releases to soil and suspected releases to groundwater.</td>
</tr>
<tr>
<td>Site Number</td>
<td>Site Name (Current Business Name)</td>
<td>Site Address</td>
<td>Hazardous Material(s)</td>
<td>Risk</td>
<td>Risk Category Rationale</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------</td>
<td>------------------</td>
<td>-----------------------</td>
<td>-------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>13</td>
<td>Industrial Way Food (Chevron)</td>
<td>1161 Industrial Way</td>
<td>Petroleum</td>
<td>Moderate</td>
<td>Clean-up for this site has started but has not been completed. Confirmed releases to soil and groundwater.</td>
</tr>
<tr>
<td>14</td>
<td>Stevedoring Services (SSA Marine)</td>
<td>70 Port Way</td>
<td>Petroleum</td>
<td>Low</td>
<td>No documented releases</td>
</tr>
<tr>
<td>15</td>
<td>Longview Storage (Wilcox &amp; Flegel)</td>
<td>110 Panel Way</td>
<td>Petroleum, Solvents</td>
<td>Low</td>
<td>Non-generator of hazardous waste</td>
</tr>
</tbody>
</table>

Source: EDR 2016a
4.4 Complexity of Hazardous Materials Cleanup

The Guidance & Standard Methodology for WSDOT Hazardous Material Discipline Reports (June 2009) recommends discussing whether the complexity of mitigation on a site would be straightforward or complicated. These terms are defined by WSDOT as:

- **Straightforward**: Sites determined to be straightforward are typically small to medium in size and the potential contaminants are not extremely toxic or difficult to treat. Examples of straightforward sites are gas stations, auto repair shops, most USTs, ASTs, buildings with asbestos or materials that contain lead-based paint.

- **Complicated**: Sites determined to be complicated consist of sites with widespread contamination or potential contaminants are difficult to treat. Complicated sites typically involve additional research, investigation, and possibly regulatory involvement. Examples of complicated sites are dry cleaners, wood treating operations, metal plating facilities, or other operations that use or used large amounts of hazardous materials.

For the sites that would be fully acquired, WSDOT may be liable under the Model Toxics Control Act for cleanup of contamination generated on these sites, including remediation of nearby properties where contamination has migrated from the acquired sites. Because soil and groundwater on the parcels to be acquired are known to be contaminated with petroleum, benzene, and solvents; and previous site investigations suggest that contamination may extend off-site; remediation for these properties is considered complicated.

5.0 ENVIRONMENTAL CONSEQUENCES

5.1 No Build Alternative

5.1.1 Direct Effects

No project-related construction activities would be associated with the No Build Alternative. This alternative would not directly affect known and suspected hazardous waste contamination sites. No handling and disposal of contaminated soil, groundwater, and/or demolition/renovation debris would be necessary. There would be no property acquisition; therefore, no increased risk to WSDOT as a result of buying contaminated properties would occur. The No Build Alternative would not expose construction workers, nearby residents, and ecological receptors to contamination, and contaminants would not have further potential of release into the environment by construction disturbance and material/waste transport. Other direct effects could include potential herbicide use as part of the ongoing vegetation management program and potential catastrophic spills of hazardous materials resulting from vehicle accidents.

The No Build Alternative would not recognize the benefits to the environment that would result from either GSA or PGSB Alternatives including water quality improvements from stormwater treatment and the accelerated clean-up of hazardous waste sites.

5.1.2 Indirect Effects

The No Build Alternative would not remediate any existing contaminants, so residents and businesses in the study area would not benefit from potential remediation of existing contamination under this alternative.
5.2 Grade-Separated Option A (GSA)

Potential hazardous material effects related to construction of the project are those conditions or actions that result in an adverse effect to human health and the environment. A potential beneficial effect of the project could result from the removal of hazardous materials that may exist on the site, which in turn would reduce future adverse effects to human health and the environment.

As listed in Table 4 and shown in Figure 5, 11 sites of concern would be directly impacted by either being fully or partially acquired or requiring temporary and permanent easements for the GSA Alternative. These parcels would be subject to further investigations during the design phase to determine the extent of contamination relative to the construction footprint. Because soil and groundwater on these parcels are known to be contaminated with petroleum, benzene, and solvents; and previous site investigations suggest that contamination may extend off-site; remediation for the properties that would be acquired under the GSA Alternative is considered complicated, as defined in Section 4.4.

### Table 4. Sites of Concern Directly Impacted by the GSA Alternative

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Site Name (Current Business Name)</th>
<th>Site Address</th>
<th>Risk</th>
<th>Type of Acquisition or Easement¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Longview City Shop (254 Oregon Way)</td>
<td>Low</td>
<td>Partial Acquisition, Temporary Easement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Vehicle Maintenance and Storage (206 Oregon Way)</td>
<td>Low</td>
<td>Full Acquisition</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Welding Supply Center (148 Oregon Way)</td>
<td>Low</td>
<td>Full Acquisition</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Railroad Right-of-Way (South of CDID Ditch No. 3)</td>
<td>Low</td>
<td>Partial Acquisition, Temporary Easement</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>West Coast Oil (Pacific Rim Espresso) (95 Oregon Way)</td>
<td>Moderate</td>
<td>Full Acquisition</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Nelson Petroleum (Subway and Starbucks) (94 Oregon Way)</td>
<td>Low</td>
<td>Full Acquisition</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Longview Operations (Longview Utilities Maintenance)</td>
<td>Low</td>
<td>Partial Acquisition</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Weyerhaeuser (3401 Industrial Way)</td>
<td>Moderate</td>
<td>Partial Acquisition, Temporary Easement</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Mallard Investment (1611 Industrial Way)</td>
<td>Moderate</td>
<td>Full Acquisition</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Industrial Way Food (Chevron) (1161 Industrial Way)</td>
<td>Moderate</td>
<td>Temporary Easement</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Stevedoring Services (SSA Marine) (70 Port Way)</td>
<td>Low</td>
<td>Partial Acquisition, Temporary Easement</td>
<td></td>
</tr>
</tbody>
</table>

¹ Some sites of concern are composed of multiple parcels. If all parcels would be fully acquired, a full acquisition is listed; otherwise the site is listed as only partially acquired although it may contain some individual parcels that would be fully acquired.
5.2.1 Effects during Construction

Soil

Soil removal would be required for bridge foundations, wall foundations, traffic signal, sign, and light pole foundations, culvert installation, roadway construction, general clearing and grubbing, and utility relocations that would be associated with the construction of the GSA Alternative, as described in Section 2.4.3. Given the commercial and industrial land uses within and adjacent to the construction footprint, soil removed for some excavations may be contaminated.

Groundwater

Groundwater dewatering could be necessary for the excavations deeper than 8 feet, likely for drilled shafts or driven piles as described in Section 2.4.3. Given the presence of groundwater monitoring wells within the study area and the documentation of groundwater contamination within and near the study area, groundwater extracted for some excavations may be contaminated. The groundwater contamination could extend beyond the limits of the parcels that were the original source of contamination and into the construction footprint. Excavations needed for construction of the GSA Alternative would not be anticipated to penetrate into the deep system used to supply drinking water.

Building Demolition

Unidentified contamination resulting from storage tanks, asbestos containing material, lead based paint, mercury from electrical components and mineral insulating oil from transformers, could be encountered during building demolition and utility replacement and relocation for construction of the GSA Alternative.
Health and Safety Concerns

Workers constructing the GSA Alternative would be at risk from exposure to hazardous materials and waste encountered or generated during construction because of the duration of potential exposure and proximity to areas where such materials may be encountered or used. The primary means of exposure would be inhalation of dusts or vapors containing hazardous substances generated during excavation in areas with contaminated soil and groundwater.

Encountering unanticipated contamination could expose workers to potentially toxic concentrations and could create other hazardous situations, such as explosive environments. Air quality could be affected, with associated health concerns as a result of disturbing volatile substances during construction.

Minor spills of materials used in construction, such as fuels, lubricants, and hydraulic fluids, could occur during construction operations. Exposure to such accidental releases could damage skin, eyes, lungs, and other organs. Unless a spill is a major event, it would be unlikely to present a significant risk to human health.

5.2.2 Direct Effects

Effects of hazardous materials from normal operations of the improved roadways under the GSA Alternative would be primarily associated with contaminants in stormwater runoff, such as petroleum-based fuel and lubricants, compounds from tires, and automobile engine coolants such as ethylene glycol. Stormwater runoff from the existing roadways is not contained or treated. Under the GSA Alternative, benefits to water quality would result because stormwater and water quality treatment facilities would be designed to collect and retain pollutants from traffic operations.

Other direct effects could include potential pesticide use as part of a vegetation management program and potential catastrophic spills of hazardous materials resulting from vehicle accidents.

5.2.3 Indirect Effects

Indirect effects are associated with a project and occur later in time or farther removed in distance; but they are still reasonably foreseeable (e.g., induced land development from highway projects). Indirect effects of hazardous materials under the GSA Alternative could include:

- Contamination may be discovered and addressed by the project that otherwise would have remained in place or potentially migrated.
- Contamination may be cleaned up sooner than it would otherwise remediated to accommodate project construction.
- Contamination may be prevented by removing potential hazardous material release sources, such as USTs, before a release occurs.
- Contaminated materials may be uncovered, allowing more direct exposure to the public.
- Contamination may be spread as a result of constructing the GSA Alternative (for example, relocating or constructing a new utility corridor to accommodate roadway improvements could provide a new conduit for contamination to spread through).
5.3 Partial-Grade-Separated Option B (PGSB)

As listed in Table 5 and shown in some sites of concern are composed of multiple parcels. If all parcels would be fully acquired, a full acquisition is listed; otherwise the site is listed as only partially acquired although it may contain some individual parcels that would be fully acquired.

Figure 6, there are eleven sites of concern that would be directly impacted by either being fully or partially acquired or requiring temporary and permanent easements for the PGSB Alternative. These parcels would be subject to further investigations during the design phase in order to determine the extent of contamination relative to the construction footprint. Because soil and groundwater on the parcels to be acquired are known to be contaminated with petroleum, benzene, and solvents; and previous site investigations suggest that contamination may extend off-site; remediation for the properties that would be acquired under the PGSB Alternative is considered complicated, as defined in Section 4.4.

Table 5. Sites of Concern Directly Impacted by the PGSB Alternative

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Site Name (Current Business Name)</th>
<th>Site Address</th>
<th>Risk</th>
<th>Type of Acquisition or Easement¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Longview City Shop</td>
<td>254 Oregon Way</td>
<td>Low</td>
<td>Temporary Easement</td>
</tr>
<tr>
<td>4</td>
<td>Vehicle Maintenance and Storage</td>
<td>206 Oregon Way</td>
<td>Low</td>
<td>Full Acquisition</td>
</tr>
<tr>
<td>5</td>
<td>Welding Supply Center</td>
<td>148 Oregon Way</td>
<td>Low</td>
<td>Full Acquisition</td>
</tr>
<tr>
<td>6</td>
<td>City of Longview (fuel pumps)</td>
<td>1451 Alabama Street</td>
<td>Low</td>
<td>Temporary Easement</td>
</tr>
<tr>
<td>7</td>
<td>Railroad Right-of-Way</td>
<td>South of CDID Ditch No. 3</td>
<td>Low</td>
<td>Permanent Easement, Temporary Easement</td>
</tr>
<tr>
<td>8</td>
<td>West Coast Oil (Pacific Rim Espresso)</td>
<td>95 Oregon Way</td>
<td>Moderate</td>
<td>Partial Acquisition, Temporary Easement</td>
</tr>
<tr>
<td>9</td>
<td>Nelson Petroleum (Subway and Starbucks)</td>
<td>94 Oregon Way</td>
<td>Low</td>
<td>Temporary Easement</td>
</tr>
<tr>
<td>10</td>
<td>Longview Operations (Longview Utilities Maintenance)</td>
<td>1460 Industrial Way</td>
<td>Low</td>
<td>Temporary Easement</td>
</tr>
<tr>
<td>11</td>
<td>Weyerhaeuser</td>
<td>3401 Industrial Way</td>
<td>Moderate</td>
<td>Partial Acquisition, Temporary Easement</td>
</tr>
<tr>
<td>12</td>
<td>Mallard Investment</td>
<td>1611 Industrial Way</td>
<td>Moderate</td>
<td>Full Acquisition</td>
</tr>
<tr>
<td>14</td>
<td>Stevedoring Services (SSA Marine)</td>
<td>70 Port Way</td>
<td>Low</td>
<td>Partial Acquisition, Temporary Easement</td>
</tr>
</tbody>
</table>

¹ Some sites of concern are composed of multiple parcels. If all parcels would be fully acquired, a full acquisition is listed; otherwise the site is listed as only partially acquired although it may contain some individual parcels that would be fully acquired.
5.3.1 Effects during Construction

Effects during construction of the PGSB Alternative would be the same as those described under the GSA Alternative in Section 5.2.1.

5.3.2 Direct Effects

Direct effects associated with the PGSB Alternative would be the same as those described under the GSA Alternative in Section 5.2.2.

5.3.3 Indirect Effects

Indirect effects associated with the PGSB Alternative would be the same as those described under the GSA Alternative in Section 5.2.3.

5.4 Recommendations for Further Investigations

Further investigation is recommended for this project. It is recommended that Ecology files be reviewed for the moderate risk sites that are listed on the state hazardous materials databases to evaluate whether contamination has migrated into the construction footprint. Based on the file review findings, some moderate risk sites could potentially be downgraded to low risk sites.

A limited Phase II environmental site assessment is also recommended after the Ecology file review and reassessment of moderate risk sites have been conducted. The Phase II assessment would include soil and groundwater sampling on the moderate risk sites of concern that would be acquired for the project. On the moderate risk sites where only a strip of land would be acquired (partial acquisitions), sampling should be conducted at regular intervals where excavation is proposed. Sampling should be conducted
to the maximum depth of excavation for the proposed structure(s). At the moderate risk sites that WSDOT plans to fully acquire, soil and groundwater sampling should be conducted on- and off-site to determine the concentrations and extents of contamination on these sites and to determine whether contamination has migrated to adjacent properties. Based on this knowledge, WSDOT may be able to negotiate cleanup responsibilities and costs with the existing owners prior to property purchase.

6.0 MEASURES TO AVOID OR MINIMIZE PROJECT EFFECTS

6.1 Avoidance of Contamination

Potentially significant impacts have been considered and this report documents conditions that may present a significant unavoidable adverse impact that cannot be reasonably mitigated for or avoided through project design. The contractor would handle and manage issues such as contaminated soil or water, underground storage tanks, asbestos-containing materials, lead-based paint, building demolition debris, or spills during construction. WSDOT communicates this information in the construction contract through the use of standard specifications, a general special provision, or a project-specific special provision.

Although many of the known and potentially contaminated sites that could affect the project have been identified, the possibility of encountering unknown contamination cannot be reasonably mitigated for or avoided through project design. The WSDOT Construction Manual and WSDOT Environmental Manual provide guidelines for addressing discoveries of unanticipated contamination.

The following measures could be taken to avoid and minimize temporary effects to or from hazardous materials:

- Evaluate structures to be demolished for the presence of hazardous materials.
- Conduct site assessments to evaluate soil and groundwater conditions near the hazardous materials associated with structures to be demolished and in areas proposed for excavations.
- Use the results of the soil and groundwater sampling to develop project specific provisions for storage and disposal of contaminated material during construction.
- Remove and dispose of hazardous materials, and remediate contaminated soil and groundwater through a construction contract requirement special provision in accordance with applicable regulations.
- Evaluate soil conditions near the construction area as grading activities occur. If hazardous materials are encountered, remove and assess soil and groundwater conditions through a construction contract requirement special provision.
- Coordinate with utilities to remove and relocate transformers along the alignment per WSDOT Standard Specifications Page 1-68 section 1-07.17(1) and as included in contract plans or placed into a construction contract requirement special provision.
- Conduct a Phase II environmental site assessment of all properties where a full or partial acquisition or temporary easement is planned to accurately assess the potential for existing environmental contaminants on each property.
6.2 Construction Planning

The following measures could be taken during construction planning and design to avoid and minimize temporary effects to or from hazardous materials:

- Develop construction plans that specify procedures, including best management practices, to be employed for construction of the project. The plans would include direction for spill prevention, control, and countermeasure plans, temporary erosion and sedimentation control plans, and plans for handling and disposal of known and unanticipated contamination.

- Develop a site-specific Health and Safety Plan describing monitoring requirements and the use of personal protective equipment.

- Pre-assign a dangerous waste identification number, along with planning for soil handling and disposal to reduce soil handling time, so soils can be loaded onto trucks during initial excavation and hauled to treatment or disposal facilities.

6.3 Disposal Options for Contamination

Contamination may not be avoidable in some areas of the construction footprint where excavations are anticipated. If contamination is encountered during project construction, mitigation measures would be taken to handle the contaminated materials. Possible mitigation measures include:

- Adjust construction methods to minimize the volume of contaminated soil and/or groundwater encountered.

- Properly manage and dispose of contaminated soil and/or groundwater encountered.

If soil contamination is encountered during construction, excavated soil would require stockpiling and testing to determine its regulatory classification and the most cost-effective management strategies. Concentrations of hazardous materials should be evaluated relative to Model Toxics Control Act (MTCA) Method A cleanup standards to assess whether the soils would be of concern. Resource Conservation and Recovery Act (RCRA) Toxicity Characteristic Leaching Procedure in conjunction with MTCA Method A or B cleanup levels could be used to determine disposal strategies where small amounts of contaminated soils are present, where soils need to be removed and disposed of quickly, and where soils can be easily used as subgrade road material. Soils failing the RCRA Toxicity Characteristic Leaching Procedure or exceeding other dangerous waste criteria would need to be handled as Washington State dangerous waste.

Groundwater containing contaminants at concentrations above MTCA Method A cleanup levels would be treated to meet requirements for discharge, depending on the contaminants and their concentrations. Treatment would likely be at an off-site facility.

Petroleum-contaminated soils would be evaluated relative to current MTCA Method A cleanup levels or to Ecology’s risk-based total petroleum hydrocarbon criteria. Where petroleum-contaminated groundwater is generated during construction, containerization and characterization would be required to determine the approach to treatment. Groundwater that does not exceed MTCA Method A cleanup levels and conforms to criteria defined in Washington Administrative Code (WAC) 173-201A, Water Quality Standards for Surface Waters in Washington State may be discharged directly or indirectly to the ground surface or surface water.
6.4 Hazardous Materials Disposal Costs

6.4.1 Soil

The following costs are from WSDOT’s Bid Item Unit Price Tabulation Standard Items for Standard Item 0261 (WSDOT 2017b), Hazardous Material Excavation including Hauling.

- Northwest Region average low bid is $25 per cubic yard
- Olympic Region average low bid is $9 per cubic yard
- Statewide average low bid is $10 per cubic yard

The following costs are for contaminated soil disposal only and do not include the cost of excavation or transportation to the selected disposal/treatment facility.

Petroleum-contaminated Soils

- Thermal Treatment: $30 to $35 per ton
- Landfill Disposal: $25 to $30 per ton

Metals-, VOCs-, Creosote-, and Formaldehyde-contaminated Soil

- Landfill Disposal/Non-Dangerous Waste: $30 per ton
- Landfill Disposal/Dangerous Waste: $200-320 per ton
- Incineration/Dangerous Waste: $600 per ton

6.4.2 Groundwater

Groundwater treatment and/or disposal options for off-site treatment and disposal would fall within the following price range (Emerald Environmental Services 2017):

- Off-site Treatment and Disposal: $0.30 to $2.25 per gallon, depending on the type and level of contaminants present and volume of discharge.
- Vacuum truck service for collection and transport of contaminated groundwater is $125 per hour. Vacuum trucks are typically either 2,000-gallon or 4,500-gallon capacity.

6.5 Operational Mitigation Measures

The proposed stormwater retention/detention and water quality treatment facilities would decrease the potential for contaminants to enter adjoining waterways through stormwater runoff.
7.0 REFERENCES


Attachment A. Hazardous Materials Impact Assessment Methodology Memorandum
Memorandum

To: Joanna Lowrey, PE, WSDOT Kelso Area Engineer
Claude Sakr, Cowlitz County Project Manager

From: Patrick Romero, WSP

Date: April 12, 2017
Updated October 13, 2017

Subject: Impact Assessment Methodology: Hazardous Materials

1. Methodology Introduction

This memorandum presents the methodology used to analyze potential effects of the proposed Industrial Way/Oregon Way Intersection Project on hazardous materials. This analysis is reported in the Hazardous Materials Discipline Report and summarized in the project’s environmental impact statement (EIS).

2. Study Area

The study area for Hazardous Materials is shown in Figure A-1 below. The study area encompasses the area anticipated for direct and indirect impacts to hazardous materials resulting from the project. As part of the collection of data from a commercial database provider to identify federal, state and certain local records of potential contaminant sources in the vicinity of the study area, the standard regulatory records and required search radius is 1 mile out from the edge of the study area.
3. Regulations, Standards, or Guidelines

The federal, state, and local regulations, standards, and guidelines that are applicable to the project's Hazardous Materials Discipline Report are:

- National Environmental Policy Act (NEPA) (1969)
- Federal Highway Administration (FHWA) FHWA's Supplemental Hazardous Waste Guidance (1997)
- Washington Administrative Code (WAC) 1998 State Environmental Policy Act (SEPA) WAC 197-11
- WSDOT Guidance and Standard Methodology for WSDOT Hazardous Materials Discipline Reports (current version as of October 2017)
- WSDOT Right Size your Hazardous Material Discipline Report (September 2016)

The methodology presented below is similar to a Phase I Environmental Site Assessment per ASTM 1527-13; the report format follows the WSDOT guidance for discipline reports.
4. Sources of Existing Data

The site screening review and risk analysis was conducted by performing the following research:

- Reviewing readily available information regarding geologic and groundwater conditions within the study area to assess the potential for known or suspected contaminants to affect the project. This includes City of Longview's Wellhead Protection Program, Washington State Department of Ecology (Ecology) well logs, and Ecology's database information regarding known groundwater contamination sites within the study area.

- Querying a commercial database provider to identify federal, state, and certain local records of potential contaminant sources in the vicinity of the study area. The standard regulatory records and required search radius is in accordance with ASTM E1527-13 standards.

- Reviewing historical record sources for indications of past occupants or businesses in the study area that may have had the potential to affect the soil or groundwater within the project corridor. These records may include historical aerial photographs, Sanborn Fire Insurance Maps, USGS Topographic Maps, County Assessor records, and other relevant sources.

5. Data Gathering or Development

Previous environmental reports of assessment and remediation at properties within the study area can be obtained online, from WSDOT and Cowlitz County, or other project parties including the Department of Ecology through in-person file reviews of known contaminated sites.

Because environmental conditions are currently known to exist that may impact the project, adequate documentation of environmental activities (assessment and remediation, future work plans, etc.) can be readily obtained from state agency websites.

A reconnaissance-level site visit was conducted within and immediately adjacent to the study area. This was limited to features readily observed from properties that have given rights of entry and from public access corridors for properties where rights of entry have not been granted and did not include entering or viewing conditions within buildings. The site visit field-verified the location of properties of concern that were identified from the regulatory database and historical records review. The site visit also includes a visual survey to identify and record land uses likely to generate hazardous materials, such as agriculture or industrial, and the presence of other environmental conditions which have the obvious potential to affect the study area.

6. Analytical Techniques and Models

The discipline report was completed in two steps. The first step evaluates the study area for known or possible hazardous materials contamination (existing conditions), areas of impact and standard mitigation measures to avoid or manage the impacts. The second step evaluates project-specific impacts and mitigation measures and determines appropriate cost estimates.

The compiled information was reviewed and evaluated using a logical screening methodology to eliminate sites that pose little to no risk and do not warrant further investigation. The remaining
validated sites were evaluated to document those that may affect the environment during construction, create significant construction impacts, and incur cleanup liability.

A risk level was determined to rank the site with respect to 1) the site's likelihood that it will impact the project, and 2) the complexity of that impact (e.g., localized versus widespread soil or groundwater contamination).

6.1. Construction Impacts

The sites of concern identified during the site screening process were evaluated for the type of impact (standard or project-specific) to the environment, construction, or liability. If project-specific construction impacts are present (e.g., generation of contaminated soil or groundwater during construction), potential site-specific mitigation options to avoid and/or minimize each identified impact were presented. This requires consideration of the project construction footprint, maximum excavation depths, designs and techniques. The findings and conclusions were documented and, if warranted, provided recommendations and estimated costs for additional assessment for specific properties that may affect the project. For example, sampling may be recommended where excavation may encounter soil contamination.

Known locations of contaminated soil and groundwater that would be encountered during construction would need to be removed, properly handled, and disposed of prior to or during construction. In addition, procedures would need to be developed in the case unanticipated contamination is encountered during construction.

6.2. Direct Impacts

Portions of acquired properties that have identified contamination but are not within the project's construction footprint, may have un-remediated contamination due to project cost constraints. If WSDOT chooses to retain possession of the entirety of these properties, restrictive covenants regarding redevelopment would likely need to be applied to the entire property. The restrictive covenants would be filed with Ecology. Prior to entering into a restrictive covenant with Ecology, the project should understand that restrictive covenants may interfere with future design and construction elements. The future implications of restrictive covenants may result in the project reconsidering property acquisitions. If WSDOT chooses to dispose of the unused portions of the properties, they would have to be partitioned and sold as contaminated property. This would negatively affect the value of the property and could diminish the likelihood of a sale due to difficulty of potential buyers to obtain financing.

6.3. Indirect Impacts

There would be a net benefit within the study area due to the removal of known and unknown contamination within the project footprint.

7. Summary of Potential Impacts and Mitigation

The following is a brief summary of the types of benefits and adverse impacts that may result from the project. This section also includes mitigation measures that could be considered to reduce or eliminate adverse impacts.
7.1. Potential Benefits

Remediation of contaminated soil could provide a benefit to the community that may not otherwise occur except for this project.

7.2. Potential Adverse Impacts

Known locations of contaminated soil and groundwater and any unidentified contamination that could be encountered during construction would need to be removed, properly handled, and disposed of prior to or during construction.

7.3. Potential Mitigation

Potential site-specific mitigation options to avoid and/or minimize each identified impact and any likely unidentified impacts are presented. This requires some knowledge and consideration of the project construction footprint, maximum depth of excavation, designs and techniques. Much of the mitigation could be in the form of minimizing the project construction footprint, performing soil and groundwater sampling and analysis as necessary, and minimizing the amount of land acquired for the project.

8. Limitations and Constraints

No sampling was conducted as part of the site visit, data gathering, or evaluation of impacts. Private property was only accessed for those properties that have given WSDOT right of entry and no buildings were entered during the site visit.
Attachment B. Environmental Data Resources, Inc. Database Report

EDR Report provided in a separate electronic file.
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Attachment C. Summary of Historic Research
<table>
<thead>
<tr>
<th>Year</th>
<th>General Land Use Description</th>
<th>Type: Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920s</td>
<td>The Historical Topographic Map from 1921 does not include sufficient detail to summarize land use in and around the project. The 1924 and 1927 Sanborn Fire Insurance Maps included residential homes and vacant lots located north of the project, but no details on other land use located near the project.</td>
<td>Aerial Photography: none  Historical Topographic Map: 1921  Sanborn Fire Insurance Maps: 1924, 1927</td>
</tr>
<tr>
<td>1930s</td>
<td>No mapping coverage from the sources reviewed.</td>
<td>Aerial Photography: none  Historical Topographic Map: none  Sanborn Fire Insurance Map: none</td>
</tr>
<tr>
<td>1940s</td>
<td>The 1949 Sanborn Fire Insurance Map included residential homes and vacant lots located north of the project, but no details on other land use located near the project.</td>
<td>Aerial Photography: none  Historical Topographic Map: none  Sanborn Fire Insurance Map: 1949</td>
</tr>
<tr>
<td>1950s</td>
<td>The alignment of Oregon Way and Industrial Way are shown in their current locations with the exception of Industrial Way not extending west of the intersection. Both roadways may have the same width as they do today, but the basic alignment is the same as it is today with the exception noted above. The Highlands Neighborhood to the north appears similar as it does today. Land use east of the project includes more residential development and vacant land where commercial and light industrial land now dominates the area. Land to the west appear vacant without previous use. Land to the south includes less industrial and commercial land as compared to today. Land to the south is labeled as the Port of Longview and U.S. Naval Reserve Training Center for the first time in maps reviewed. A tank farm south of the alignment that is adjacent to railway alignments that appear to be in their current locations. The 1951, 1957, and 1959 Sanborn Fire Insurance Maps included residential homes and vacant lots located north of the project, but no details on other land use located near the project.</td>
<td>Aerial Photography: 1951  Historical Topographic Map: 1953  Sanborn Fire Insurance Maps: 1951, 1957, 1959</td>
</tr>
<tr>
<td>1960s</td>
<td>No mapping coverage from the sources reviewed.</td>
<td>Aerial Photography: none  Historical Topographic Map: none  Sanborn Fire Insurance Map: none</td>
</tr>
<tr>
<td>1970s</td>
<td>The alignments of Oregon Way and Industrial Way are shown in their current locations. Land use in all directions of the project appear mostly the same as current land use with logging operations to the west; residential and commercial land to the north; commercial, light industrial and residential land to the east; and light industrial and industrial land to the south with fuel storage tanks. Railway alignments are also shown at their current locations.</td>
<td>Aerial Photography: 1970  Historical Topographic Map: 1970  Sanborn Fire Insurance Map: none</td>
</tr>
<tr>
<td>1980s</td>
<td>The alignments of Oregon Way and Industrial Way are shown in their current locations. Land use located near the project is similar to the 1970s mapping with some additional in-fill of similar land use in all directions of the project.</td>
<td>Aerial Photography: 1980  Historical Topographic Map: none  Sanborn Fire Insurance Map: none</td>
</tr>
<tr>
<td>Year</td>
<td>General Land Use Description</td>
<td>Type: Dates</td>
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<tr>
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</tr>
<tr>
<td>1990s</td>
<td>The alignments of Oregon Way and Industrial Way are shown in their current locations. Land use located near the project is similar to development patterns shown in the 1970s and 1980s mapping with some additional in-fill of similar land use in all directions of the project.</td>
<td>Aerial Photography: 1990, 1994 Historical Topographic Map: 1995 Sanborn Fire Insurance Map: none</td>
</tr>
<tr>
<td>2000s</td>
<td>The alignments of Oregon Way and Industrial Way are shown in their current locations. Land use located near the project is similar to development patterns shown in the maps from the 1970s, 1980s, and 1990s with some additional in-fill of similar land use in all directions of the project.</td>
<td>Aerial Photography: 2005, 2006, 2009 Historical Topographic Map: none Sanborn Fire Insurance Map: none</td>
</tr>
<tr>
<td>2010s</td>
<td>The alignments of Oregon Way and Industrial Way are shown in their current locations. Land use located near the project is similar to the development patterns shown in maps from the previous four decades with some additional in-fill of similar land use in all directions of the project.</td>
<td>Aerial Photography: 2011, 2012 Historical Topographic Maps: 2013, 2014 Sanborn Fire Insurance Map: none</td>
</tr>
</tbody>
</table>

Source: EDR 2016