

## 4.10 HAZARDOUS MATERIALS

Hazardous materials are those items or agents that can potentially cause harm to humans, animals or the environment. For a construction project, these materials may already be present at a project site in the form of contaminated groundwater or soil. Hazardous materials could also be present in structures such as buildings that might be demolished as part of a construction project. When performing construction where potentially hazardous materials are present, there is a risk of spreading the contamination if proper construction procedures are not followed. Assessment of the potential for contaminants to be present is necessary to ensure that proper measures are taken during construction to prevent further contamination, and that contaminated materials are properly handled and disposed of.

Environmental conditions in the study area were assessed to evaluate the potential for contamination to be present. Both existing and potential locations where hazardous materials are and/or may be present were identified and evaluated to assess their potential impact on construction of the Build Alternative. The potential of the Build Alternative and associated construction activities to impact the environment were also evaluated. A total of 46 sites of concern that have or may have soil and/or groundwater contamination were identified within a one-mile radius of the Build Alternative footprint. These sites were screened and ranked based on the potential risk to the Build Alternative associated with hazardous materials.

### 4.10.1 What Methods, Assumptions and Resources Were Considered in the Evaluation of Hazardous Materials?

#### *How Was the Study Area Defined?*

The study area for hazardous materials was defined following the standards identified in Chapter 447 (Section 447.04) of the WSDOT *Environmental*

*Procedures Manual*. The area studied for hazardous materials analysis included the Build Alternative footprint and areas within one mile of the footprint. Sites identified beyond the one-mile radius of the Build Alternative footprint were considered unlikely to have an impact. The general vicinity of the study area is shown in Figure 4.10-1.

**NOTE TO READER:** *This EA provides a tiered environmental review. Chapter 4 evaluates the project specific environmental impacts associated with construction of the North Study Area Build Alternative (See Section 3.4 for description). Chapter 5 provides a corridor level discussion of the South Study Area (See Section 3.5). Specific project footprint improvements are not currently defined for the South Study Area.*



Build Alternative Footprint  
 Figure Callouts  
*Refer to the figures listed for detailed information on hazardous materials sites*

- INTERCHANGES**
- 118 Center Drive interchange
  - 119 Steilacoom-DuPont Road interchange
  - 120 Main Gate interchange
  - 122 Berkeley Street interchange
  - 123 Thorne Lane interchange
  - 124 Gravelly Lake Drive interchange

**Figure 4.10-1**  
 Hazardous Materials Discipline – Key Map

## How Are Hazardous Materials Regulated?

The federal, state, and local policies and regulations that apply to hazardous materials include:

- ◆ Federal Regulations
  - Comprehensive Environmental Response, Compensation, and Liability Act.
  - Superfund Amendments and Reauthorization Act.
  - Resource Conservation and Recovery Act (RCRA).
  - Toxic Substances Control Act.
  - Occupational Safety and Health Act.
  - Clean Air Act.
  - Clean Water Act.
  - NEPA.
- ◆ Washington State Regulations
  - Model Toxics Control Act Cleanup Regulation (MTCA) (Revised 2007).
  - Dangerous Waste Regulations.
  - Solid Waste Regulations.
  - Washington State Environmental Policy Act (SEPA).
  - Water Pollution Control Act.
  - Washington Industrial Safety and Health Act.
  - WSDOT Environmental Procedures Manual M31-11 (April 2007).

## How Was the Assessment Performed?

The assessment was completed using the methods identified in ASTM International (ASTM) 1527-13, which included conducting the following:

- ◆ Completing a windshield survey of the study area.
- ◆ Review of applicable federal and state regulatory databases.
- ◆ Review of historical use records (aerial photographs, current and historic county assessor records, Kroll and Metsker Maps, and current topographic maps) and where applicable.
- ◆ Review of available DOE environmental files.
- ◆ Review of available JBLM and Camp Murray environmental documentation and files.

### WINDSHIELD SURVEY

A windshield survey was performed in August 2015, to identify existing land uses in the study area that are likely to involve the use, treatment, storage, and disposal of hazardous materials, and to verify the location of sites associated with the regulatory review, where possible.

### REGULATORY REVIEW

Federal and state databases were researched to identify properties with records of environmental enforcement; past or present underground storage tanks (USTs); and the generation, transportation, and storage of hazardous materials.

An environmental database research service, Environmental Data Resources, Inc. (EDR), collected information for listed sites located within the study area, in accordance with the ASTM International

search radius guidance. The environmental database information was collected in August 2015.

### HISTORICAL RECORDS REVIEW

A land use profile was developed for the study area based on a review of historic records. Historical records reviewed include the following sources:

- Historical aerial photographs (1941, 1957, 1968, 1974, 1981, 1990, 1994, 2005, 2006, 2009, 2011, and 2014).
- Kroll maps (1924).
- Metsker maps (1924, 1930, 1936, 1941, 1951, and 1965).
- Pierce County Public Works Atlas (1988).
- Pierce County assessor records, current and historic.
- Current topographic maps.

### WASHINGTON STATE DEPARTMENT OF ECOLOGY (DOE) FILE REVIEW

Selected records from sites identified by the EDR search to be within 1/8 mile of the Build Alternative footprint and listed on either National Priority List (NPL) database or the state Confirmed and Suspected Contaminated Sites List (CSCSL) database were reviewed for additional information. These records were requested and obtained from DOE's Southwest Regional Office in Olympia, Washington, in October 2015. This additional information was collected because environmental conditions at sites within 1/8 mile are more likely to result in possible impacts to the study area than those located at a greater distance. Files were reviewed for types of contaminants, site cleanup status, and pertinent soil and groundwater sampling data.

## 4.10.2 What Existing Hazardous Materials Are in the Study Area?

### Site Screening

Based on the historical records and regulatory database review findings, a list of potential sites of concern was compiled. Several potential sites of concern were deemed unlikely to have an effect on the Build Alternative based on the following screening criteria:

- Sites listed only on the RCRA, Facility Index System/Facility Registry System (FINDS), Facility Site Identification System (ALLSITE), and National Pollutant Discharge Elimination System (NPDES) databases were eliminated. Inclusion on these databases indicates that a site uses or generates regulated materials as part of their business practice, but gives no indication of a hazardous materials release.
- Sites listed only on spills reported to the Spills Prevention, Preparedness, and Response Division (SPILLS) database were eliminated. Inclusion on this list indicates that a one-time spill has occurred. These sites are not included on other lists that indicate soil and/or groundwater contamination is present.
- Sites listed only on the UST database and located a sufficient distance (greater than 1/4 mile or approximately 600 feet from the Build Alternative footprint) away from areas of interest were eliminated.
- Sites located greater than 1/4 mile from the Build Alternative footprint were eliminated due to the low likelihood of contamination migrating from this distance to the Build Alternative footprint in concentrations exceeding cleanup levels.

## Site Ranking

A total of 46 sites of concern that have or may have soil and/or groundwater contamination were identified within the study area. Of the 46 sites, two are on the NPL. The 46 sites were screened and ranked based on their potential risk to the Build Alternative associated with hazardous materials. The screening and ranking was conducted in general accordance with WSDOT *Guidance and Standard Methodology for WSDOT Hazardous Material Discipline Reports* (June 2009a). Figure 4.10-2 through Figure 4.10-3 shows the location of each of the 46 identified sites.

The sites were ranked as having either low, moderate, or high risk potential to the Build Alternative:

- ◆ A low risk site is a site where a potential concern exists due to current or historical activities, but the likelihood for the site to impact the Build Alternative is low due to its distance/location from the Build Alternative footprint.
- ◆ A moderate risk site is a site where a potential concern exists because of current or historical activities, and disposal of excavated soil or groundwater is considered relatively complicated due to the type of contaminants likely to be encountered.
- ◆ High risk sites are sites where contamination is known and extensive, and/or site contamination may likely impact the Build Alternative. In general, high risk sites are properties that possess a potential for substantial soil, groundwater, or sediment contamination, or the information necessary to predict remedial costs is lacking.

Thirty-two of the sites were ranked as having a low risk to the Build Alternative, 12 were ranked with a moderate risk and two were ranked with a high risk. Documented groundwater contamination is present

at a number of sites within the study area. Of particular concern, is the JBLM Pump-and-Treat system. Contamination associated with this site appears to have migrated under the Build Alternative footprint between mileposts 120.6 and 123.5, and is likely present in groundwater at the Berkeley Street interchange. Based on the relatively shallow depth of the groundwater in this area, there is a potential that groundwater may be encountered during construction of the Build Alternative.

## Sites of Concern

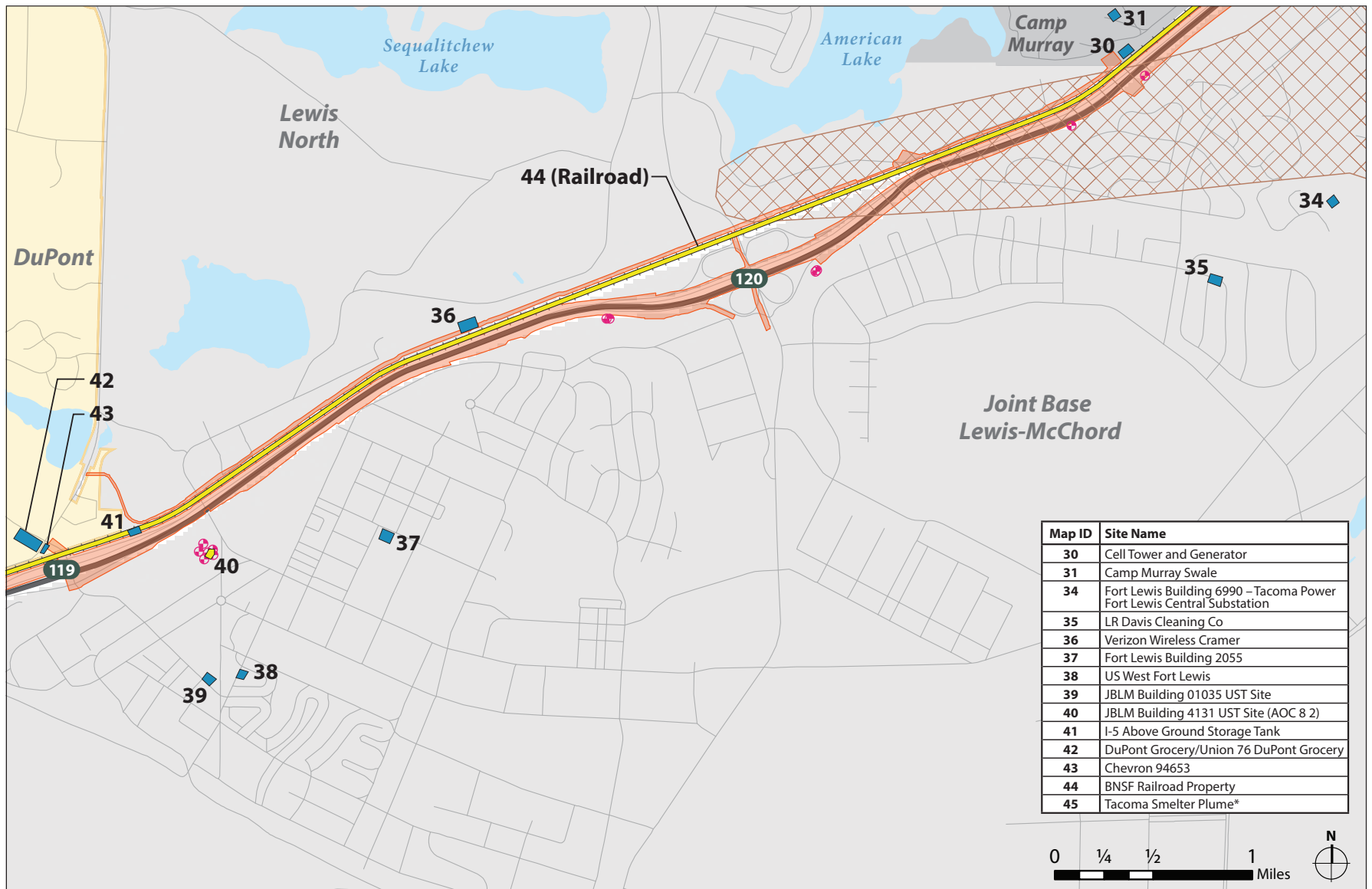
A complete list of the 46 sites of concern is included in the *Hazardous Materials Analysis Report* (see Appendix B for access information). The high risk sites included:

### THE AMERICAN LAKE GARDENS/AREA D SITE (SITE #4 ON FIGURE 4.10-3)

Listed on the NPL database. In 1984, halogenated organics including Trichloroethylene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE) were discovered in groundwater resource protection wells installed in the American Lake Gardens Tract. The U.S. EPA concluded that the groundwater contamination most likely originated from Area D located in the south western portion of JBLM. From the mid-1940s to the early 1970s, Area D was the location of several waste disposal sites (former landfills 5, 7, and 39) in various stages of operation. Currently, the Whispering Fir Golf Course overlays these former disposal sites.

A remedial investigation/feasibility study (RI/FS) conducted in the early 1990s determined that groundwater contamination would require treatment to remediate the impacted groundwater. Groundwater remediation goals were established for TCE, cis-1,2-DCE, 1,1-dichloroethane, and vinyl chloride. In 1994, operation of a groundwater pump-and-treat system began in Area D and has been operating since (Tetra Tech EC, Inc., 2015). Operation of the pump-





Map ID	Site Name
30	Cell Tower and Generator
31	Camp Murray Swale
34	Fort Lewis Building 6990 – Tacoma Power Fort Lewis Central Substation
35	LR Davis Cleaning Co
36	Verizon Wireless Cramer
37	Fort Lewis Building 2055
38	US West Fort Lewis
39	JBLM Building 01035 UST Site
40	JBLM Building 4131 UST Site (AOC 8 2)
41	I-5 Above Ground Storage Tank
42	DuPont Grocery/Union 76 DuPont Grocery
43	Chevron 94653
44	BNSF Railroad Property
45	Tacoma Smelter Plume*

- Sea Level Aquifer TCE Plume
- Vicinity Monitoring Wells
- Build Alternative Footprint

**HAZARDOUS MATERIAL SITES BY RISK**

- High
- Moderate
- Low

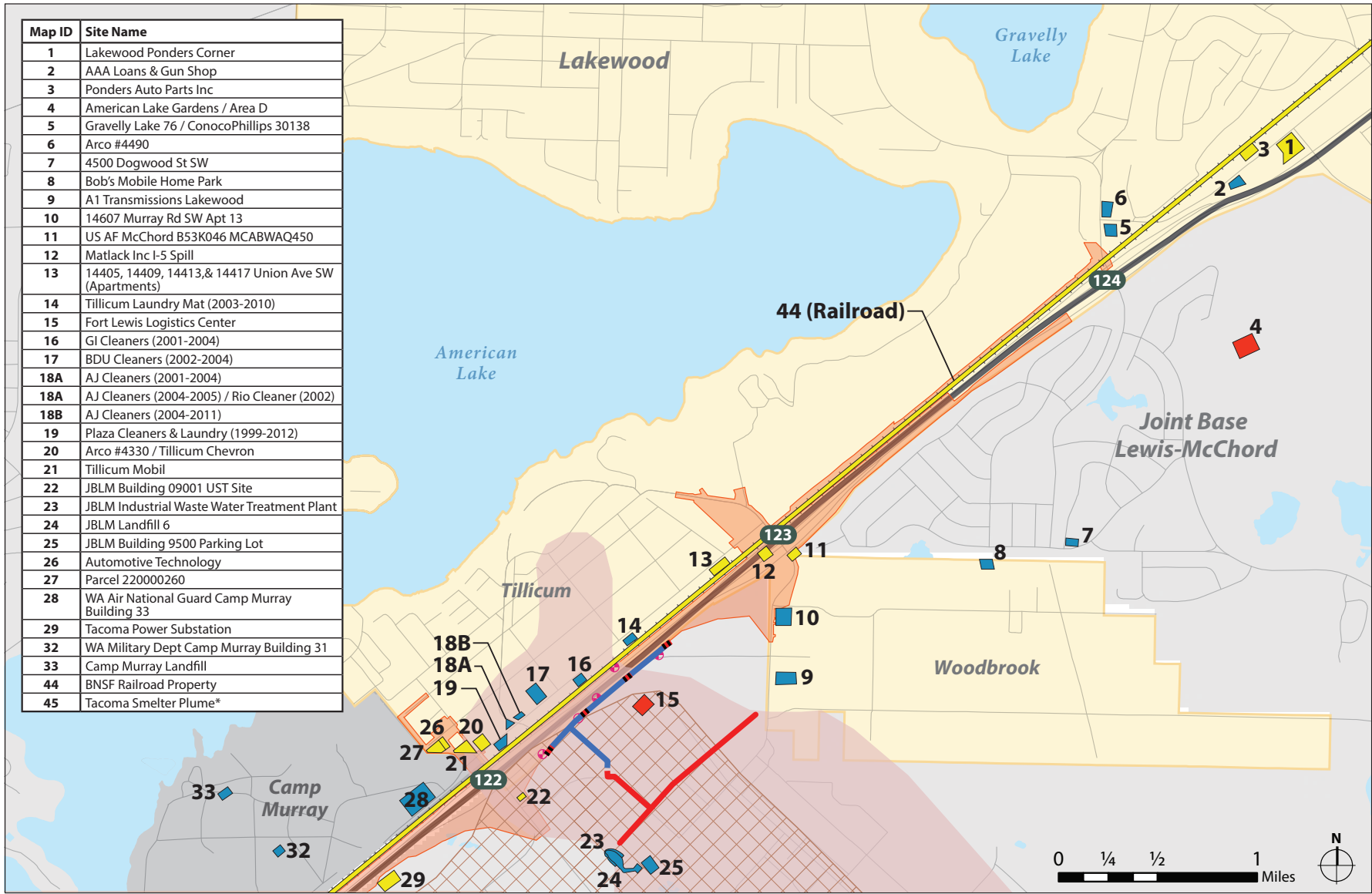
\*Tacoma Smelter Plume Not Shown

**INTERCHANGES**

- Main Gate interchange
- Steilacoom-DuPont interchange



**Figure 4.10-2**  
Hazardous Material Sites – A



Map ID	Site Name
1	Lakewood Ponders Corner
2	AAA Loans & Gun Shop
3	Ponders Auto Parts Inc
4	American Lake Gardens / Area D
5	Gravelly Lake 76 / ConocoPhillips 30138
6	Arco #4490
7	4500 Dogwood St SW
8	Bob's Mobile Home Park
9	A1 Transmissions Lakewood
10	14607 Murray Rd SW Apt 13
11	US AF McChord B53K046 MCABWAQ450
12	Matlack Inc I-5 Spill
13	14405, 14409, 14413, & 14417 Union Ave SW (Apartments)
14	Tillicum Laundry Mat (2003-2010)
15	Fort Lewis Logistics Center
16	GI Cleaners (2001-2004)
17	BDU Cleaners (2002-2004)
18A	AJ Cleaners (2001-2004)
18A	AJ Cleaners (2004-2005) / Rio Cleaner (2002)
18B	AJ Cleaners (2004-2011)
19	Plaza Cleaners & Laundry (1999-2012)
20	Arco #4330 / Tillicum Chevron
21	Tillicum Mobil
22	JBLM Building 09001 UST Site
23	JBLM Industrial Waste Water Treatment Plant
24	JBLM Landfill 6
25	JBLM Building 9500 Parking Lot
26	Automotive Technology
27	Parcel 220000260
28	WA Air National Guard Camp Murray Building 33
29	Tacoma Power Substation
32	WA Military Dept Camp Murray Building 31
33	Camp Murray Landfill
44	BNSF Railroad Property
45	Tacoma Smelter Plume*

**Figure 4.10-3**  
Hazardous Material Sites – B

- Sea Level Aquifer TCE Plume
- Upper Vashon Aquifer TCE Plume
- Vicinity Monitoring Wells
- Build Alternative Footprint
- JBLM PUMP-AND-TREAT SYSTEM**
- Effluent Pipeline
- Infiltration Gallery
- Influent Pipeline
- HAZARDOUS MATERIAL SITES BY RISK**
- High
- Moderate
- Low
- \*Tacoma Smelter Plume Not Shown*

- INTERCHANGES**
- Berkeley Street interchange
- Thorne Lane interchange
- Gravelly Lake Drive interchange

and-treat system has resulted in containment of the TCE plume to beneath the Whispering Firs Golf Course, which lies east of the Build Alternative footprint.

This site is considered a high risk to the Build Alternative because construction of the Build Alternative would occur on the western side of I-5 adjacent to the Tacoma County and Golf Club and likely includes some soil disturbance.

#### THE FORT LEWIS LOGISTICS CENTER (LOGISTICS CENTER) SITE (SITE #15 ON FIGURE 4.10-3)

Listed on the NPL database. In 1985, TCE was identified in several monitoring wells beneath Logistics Center. In 1986 a limited Site Investigation was performed and discovered that TCE-impacted water was a potential threat to Lakewood Water District wells located in Tillicum. An additional groundwater investigation concluded that TCE-impacted groundwater detected in the Lakewood Water District wells originated from the Fort Lewis Logistics Center. Remedial Investigation was completed in 1988, and included a study of the groundwater plume off-site.

Based on the results of the investigations, the TCE plume was identified in both the Vashon Aquifer and Sea Level Aquifer (U.S. Army Corps of Engineers [USACE], 2012). The source of the contamination was determined to be the East Gate Disposal Yard (EGDY) Landfill 2, located along the south eastern edge of the Logistics Center. In December of 1989, the Logistics Center was included on the NPL.

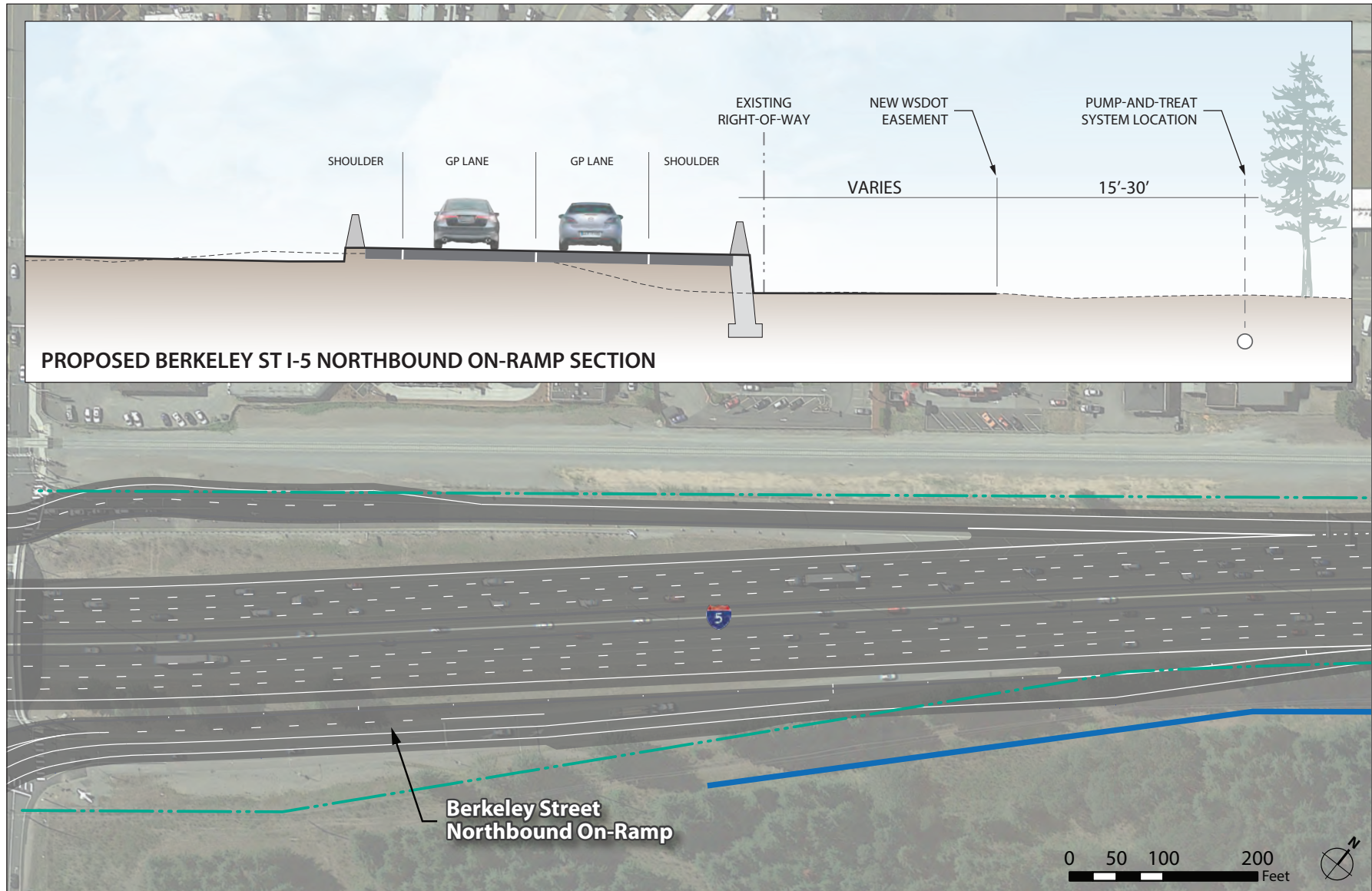
Construction of two pump-and-treat (P&T) systems, the East Gate Disposal Yard system and the JBLM P&T system, began in December 1994. The JBLM P&T system is located east of I-5 in the vicinity of Berkeley Street. After treatment with the JBLM P&T system, the treated water is infiltrated back into the subsurface through a

system of galleries that are located adjacent to the Build Alternative footprint. In addition, several monitoring wells are located adjacent to the Build Alternative footprint that potentially may be impacted by construction of the Build Alternative. The JBLM P&T system and monitoring wells are shown in Figure 4.10-3. Due to the proximity of the JBLM P&T System to I-5 and the Berkeley Street northbound on ramps, construction of the Build Alternative would require careful attention to the design and construction of improvements in this area. WSDOT has and would continue to coordinate with JBLM public works staff regarding project design in this area. Figure 4.10-4 demonstrates the closest proximity of the JBLM P&T System to the proposed Berkeley Street on ramp improvements.

The TCE-impacted groundwater plume extends from the former Landfill 2 to the south eastern edge of American Lake over two miles away. The width of the impacted groundwater plume is approximately 2,500 feet. Impacted groundwater has been identified in both the upper aquifer (Vashon Aquifer) and the lower aquifer (Sea Level Aquifer). Impacted groundwater has been encountered to a depth of 80 feet below the ground surface (HDR, Inc. {HDR}, 2007).

This site is considered a high risk to the Build Alternative because it is a NPL site and TCE-impacted groundwater extends beneath the Build Alternative footprint. Construction of the Build Alternative is likely to encounter TCE-impacted groundwater at the Berkeley Street interchange, and as far north as I-5 milepost 123.2 (Maple Street in Tillicum) and as far south as I-5 milepost 120.6 (41st Division Drive / Main Gate Exit for JBLM). Figure 4.10-2 and Figure 4.10-3 show the approximate extent of the TCE groundwater plume. If impacted soils or groundwater are encountered during construction, special considerations must be made to ensure that groundwater pathways are not altered or affected.





- JBLM Pump-and-Treat System
- - - Existing Right of Way

**Figure 4.10-4**  
*Proximity of New Berkeley Street  
Northbound On-Ramp to JBLM  
Pump-and-Treat System*

### 4.10.3 What Would Be the Impact of the No Build Alternative?

The Build Alternative would not be constructed under the No Build Alternative; therefore, no effects are expected from the No Build Alternative.

### 4.10.4 What Would Be the Long-Term Impact of the Build Alternative?

Potential long-term and operational effects resulting from the Build Alternative may include:

- ◆ Soil and Groundwater Contamination – Environmental impacts may result if contaminated soils and groundwater are not properly managed and are allowed to spread to clean soil, surface water, and/or groundwater.
- ◆ Contamination Due to Spills – Environmental Impacts may result if spills occur and are not properly managed and are allowed to spread to adjacent surface waters or seep into groundwater.

Soil and/or groundwater contamination is known to be present at several sites in the study area and may be present at a number of other sites adjacent to and potentially within the Build Alternative footprint. Contaminants that may be found in the soil, groundwater and/or in surface waters may include petroleum products, metals, polyaromatic hydrocarbons (PAHs), and solvents including TCE.

As described above, documented groundwater contamination is known to be present and associated with the JBLM Pump-and-Treat system along with a number of other sites within the study area.

These may have the potential to impact the Build Alternative. [Portions of the Project fall within the Tacoma Smelter Plume, increasing the](#)

[potential for encountering arsenic and lead contamination in surface soils.](#)

With the exception of drilled shafts, the majority of excavations associated with the Build Alternative construction are expected to be no greater than ten feet deep. These types of excavations would not be expected to encounter groundwater or affect migration of contaminants.

### 4.10.5 What Would Be the Short-Term or Construction Impact of the Build Alternative?

Construction impacts resulting from the Build Alternative may include impacts from excavation of contaminated materials and impacts from the demolition of existing structures

#### *Soil Excavation*

Proposed construction activities within the Build Alternative footprint may include cut slopes, retaining walls, over excavation of unsuitable soils, and the installation of stormwater features, utility lines, spread footings, and drilled shafts. Contaminated soil may be encountered during excavation associated with some of these Build Alternative elements.

#### *Hazardous Materials Associated with Buildings*

Based on the design figures of the Build Alternative and review of the Pierce County GIS, it appears likely that the Build Alternative would include acquisition of all or part of ten to 12 parcels to provide the necessary right of way. The Build Alternative may include acquisition of properties where buildings would likely be demolished, which may potentially include single-family residences, apartment buildings, and a former service station. These buildings may contain hazardous building materials, such as asbestos and/or lead-based paint. The

auto service shop also likely uses and stores petroleum products, and possibly cleaning products such as solvents. These materials would need to be identified and disposed of properly prior to building demolition.

#### 4.10.6 How Can Impacts of the Build Alternative Be Minimized or Mitigated?

To reduce the potential for hazardous materials being released to the environment during construction and operation, construction plans can be prepared that would include procedures to help mitigate, avoid, control, and manage hazardous materials where encountered.

These plans can provide Best Management Practices (BMPs) to help prevent or minimize environmental risks and would be employed during construction of the Build Alternative. The plans would include direction for Spill Prevention, Control and Countermeasure (SPCC) plans, Temporary Erosion and Sedimentation Control (TESC) plans, Storm Water Pollution Prevention Plans (SWPPPs), and project-specific hazardous material management plans for handling and disposal of known and unanticipated contamination.

Environmental impacts to the Build Alternative could potentially be associated with unanticipated releases or spills that may occur during and/or are related to construction activities, equipment operation and materials. Prior to the start of construction, a SPCC plan would need to be prepared following requirements outlined in Section #1-07.15(1) of the WSDOT 2016 *Standard Specification for Road, Bridge and Municipal Construction* book (WSDOT, 2016).

Potential hazardous materials associated with construction may include, but are not limited to, diesel, motor oil, gasoline, hydraulic oils, brake, and transmission fluids. Based on WSDOT requirements, the SPCC plan is a living document and must be updated to reflect

any changes in site conditions and construction practices as the Build Alternative proceeds.

Mitigation measures can be implemented during stages of development and construction to help avoid and/or reduce effects associated with environmental concerns, construction issues, and/or potential property acquisition.

[With respect to portions of the project within the Tacoma Smelter Plume, areas of soil disturbance will be analytically screened for arsenic and lead content. Analysis will inform appropriate worker health and safety, and solid waste handling and disposal procedures.](#)

With regard to the JBLM pump-and-treat system located adjacent to the Berkeley Street interchange, WSDOT is committed to coordinating closely with JBLM Public Works.

In addition, WSDOT has compiled a standard impacts and mitigation measures table that addresses typical impacts that may be encountered during construction projects and their associated mitigation measures. If hazardous materials are encountered during construction of the Build Alternative, the effects would be mitigated using measures described in WSDOT's Standard Hazardous Materials Impacts and Mitigation Measures table, which can be found in the publication, *Guidance and Standard Methodology for WSDOT Hazardous Materials Discipline Reports* (WSDOT, June 2009). Procedures described in the table would be implemented to properly handle and dispose of contaminated materials and to implement appropriate BMPs to respond and/or prevent spills that could occur during construction.

#### 4.10.7 Would There Be Any Unavoidable Adverse Impacts from the Build Alternative?

No significant, unavoidable adverse effects are expected to result from the Build Alternative. Soil and/or groundwater contamination may be encountered based on other current and historic land uses adjacent to the Build Alternative footprint and around the interchanges slated for re-construction. TCE, petroleum hydrocarbons and metals including lead-contaminated soil and groundwater have been identified at sites in the study area. However, these issues are not considered a significant, unavoidable adverse effect of the Build Alternative in accordance with WSDOT guidance because they could be avoided by design or mitigated through soil and groundwater remediation efforts.