

**Guidance and Standard Methodology for**

# **WSDOT Hazardous Materials Discipline Reports**

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**Washington Department of Transportation  
Environmental Services Office  
Hazardous Materials & Solid Waste Program**





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# 1. INTRODUCTION

This Guidance document describes how to complete Hazardous Material Discipline Reports for WSDOT projects in a two-step standardized process. This standardized process will limit redundancy, reduce the level of effort to compose the report, assist in right sizing the discipline report and produce more consistent results.

Hazardous Material Discipline Reports are broad in scope and identify sites of concern, particularly those located along a right-of-way, that have documented or potential contamination based on current or historical practices. **The purpose** of the Hazardous Materials Discipline Report is to identify and evaluate known or potentially contaminated sites that may 1) affect the environment, 2) create significant construction impacts, and/or 3) incur cleanup liability to the department. **The objective** of the Discipline Report is to conduct an appropriate level of documentation and analysis necessary to allow WSDOT staff to make informed decisions regarding the selection of alternatives, or mitigation measures and/or the necessity of initiating early coordination with relevant regulatory agencies. The Hazardous Materials Discipline Report is also intended for use during construction. **The level of detail** necessary for the Discipline Report is based on the complexity and size of the project, severity of potential contaminants, and any other specific project needs.

## ***Background***

Discipline Reports are a type of environmental documentation that is prepared to satisfy National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) requirements for a project. The intent of NEPA is to ensure that the environmental costs and benefits<sup>1</sup> are considered. The necessary level of NEPA/SEPA documentation<sup>2</sup> is evaluated during the project-scoping phase. The Environmental Review Summary (ERS) and Environmental Classification Summary (ECS) forms are completed by the Regional Environmental Offices during project scoping. Guidance for completing the Hazardous Materials section of ERS/ECS forms is contained on the internal WSDOT website:

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<sup>1</sup> Encountering hazardous materials in transportation projects usually has a positive impact on the environment. For example, excavation removes contamination while paving activities prevents or reduces contaminant migration by preventing the infiltration of stormwater. WRONG FOOT NOTE NUMBER

<sup>2</sup> As stated in 40 CFR 1502.2, "Impacts shall be discussed in proportion to their significance" and that "in a finding of no significant impact, there should be only enough discussion to show why more study is not warranted."

Even if a discipline report is not required as part of NEPA or SEPA, conducting hazardous material investigations allows WSDOT to make good business decisions when managing project dollars. Hazardous materials can have significant cost impacts during construction and potential long-term liability for management and/or cleanup of contaminated properties. A complete study of hazardous material impacts and alternatives should be completed during the project design and environmental review phase. The findings will allow transportation staff to make informed decisions before the agency commits significant resources.

## **2. REPORT PROCESS AND FORMAT**

A Hazardous Materials Discipline Report should be completed in two steps. The first step evaluates the affected environment (i.e., existing conditions), standard impacts, and standard mitigation measures. The second step evaluates project-specific impacts and mitigation measures and determines appropriate cost estimates. The decision to move forward to the second step is based on the results of the first step and project-specific circumstances. See [Exhibit 447-1](#) in the WSDOT Environmental Procedure Manual for a flow chart of the two-step process.

Hazardous Materials Discipline reports should follow the general format outlined below. Abbreviations and Glossary, Applicable Federal and State Regulations, and Standard Impacts & Mitigation Measures that can be implemented into a Hazardous Materials Discipline report are included in Appendices A, B, and C of this guidance, respectively. A checklist of items to include in the Hazardous Materials Discipline Report is contained Chapter [447](#) in the WSDOT EPM.

### **Hazardous Materials Discipline Report Outline:**

Title Page

Table of Contents

Executive Summary

- Identify the project
- Identify the purpose and objectives of the Hazardous Materials Discipline Report
- Summarize
  - Potentially affected environment
  - Project-specific environmental impacts

- Project-specific acquisition impacts
- Project-specific construction impacts

## Acronyms, Abbreviations, and Glossary

### 1. Introduction

1.1 Project Description (include excavation and acquisition plans)

1.2 Discipline Study Overview (purpose, objective and report layout)

1.3 Regulatory Considerations (reference appendix)

1.4 Methodology

- Geologic Review
- Regulatory Database and Historical Review
- Screening and Ranking Criteria
- Agency Website and File Review
- Deviations from WSDOT Standards

### 2. Affected Environment (Existing Conditions)

2.1 Physical Environment of the Study Area

2.2 Historical Land Use of the Study Area

2.3 Summary Results of Study Area

2.4 Site-Specific Summary of Sites of Concern Table (See Section 5)

### 3. Potential Impacts (If project-specific impacts are not identified, state as such - see Section 7.)

3.1 Standard Hazardous Materials Potential Impacts  
(Summary paragraph, actual impacts in appendix of report)

3.2 Project-Specific Environmental Impacts

- Direct Impacts
- Operational Impacts (Secondary)
- Cumulative Impacts

3.3 Project-Specific Property Acquisition Impacts

3.4 Project-Specific Construction Impacts

### 4. Mitigation Measures (If project-specific mitigation measures are not identified, state as such - see Section 7)

4.1 Standard Hazardous Materials Mitigation Measures  
(Summary paragraph, actual mitigation measures in appendix of report)

4.2 Project-Specific Environmental Mitigation Measures

- Direct Mitigation Measures
- Operational Mitigation Measures (Secondary)
- Cumulative Mitigation Measures

4.3 Project-Specific Property Acquisition Mitigation Measures

4.4 Project-Specific Construction Mitigation Measures

4.5 Preliminary Estimates of Proposed Project Related Mitigation Measures

5. Recommendations and Cost Estimates (See Section 7)
6. References
7. Appendices
  - Site Maps & Figures
  - Applicable State and Federal Laws and Regulations
  - Standard Impacts and Mitigation Measures
  - Regulatory Database Report (Attached as a electronic device, not a bulky hardcopy)
  - Historical Resources
  - Copies of Ecology File Review (if useful for individual sites)
  - Photographs (optional)

### **3. REPORT SIZING**

The investigation for the Discipline Report should be “right sized” to fit each project. The discipline report must be thorough enough to provide the data necessary to recognize and assess the impact of the project. The size of the document is dependent on the level of research and the type of impacts and mitigation measures (standard or project-specific) to the project.

#### ***Research Sizing***

The level of historical and regulatory research necessary for the project is typically dependent on the size of the project and the number of sites of concern that may affect the project. For example, a 10-mile-long highway improvement project may not warrant reviewing city directories and historical tax assessor records, but a compact 5-acre roadway/ferry terminal project may warrant the types of detailed research typically performed for a Phase I environmental site assessment (ESA). However, the 10-mile-long project may have 10 or 100 initial sites of concern<sup>3</sup> listed by Ecology. The project with 100 sites of concern will likely be more costly because the history of the site will need to be reviewed.

#### ***Impact and Mitigation Measure Sizing***

The type of impacts and mitigation measures will also influence the size of the Hazardous Materials Discipline Report. As noted above the Hazardous Materials Discipline Report should be completed in two steps. The first step evaluates the affected environment (i.e., existing conditions), standard impacts, and mitigation measures. The second step evaluates project-specific impacts and mitigation measures and the appropriate cost estimates. If project-specific

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<sup>3</sup> Initial sites of concern are those listed in regulatory database (i.e., Ecology’s Facility Site Atlas). Research is necessary on the initial sites to eliminate them as sites of concern to the project.

impacts and mitigation measures are evaluated for the project, the report size will increase. See Section 6 of this guidance for additional information on standard versus project-specific impacts and mitigation measures.

The scope of work should include a contingency or separate task for the second step of the project. An example of scope of work language for a Hazardous Materials Discipline Report is contained on the WSDOT website:

<http://www.wsdot.wa.gov/NR/rdonlyres/A05B97D6-A89B-4413-8A8A-9BD7C6CA03C4/0/DisciplineRptScopeWork.pdf>

For additional guidance on the level of documentation appropriate for a project, contact your WSDOT Hazardous Materials Specialist.

Discipline Reports are prepared early in the project development phase, when many elements of a project are subject to change, such as design and acquisition plans, and funding priorities. Thus, Discipline Reports older than two years should be re-examined to determine whether revisions are necessary prior to any major action, such as approval of the design summary, Plans, Specifications and Estimates (PS&E), or right-of-way purchase. In addition, revisions or updates are required if project changes (e.g., new alignments, acquisition areas or excavation work) arise that were not previously addressed in the original document. Revisions may be incorporated as an addendum to the original report.

## **4. INTRODUCTION**

The Introduction Section of the report describes the transportation project, purpose of the discipline report, regulatory considerations and the general methodology. The description of the transportation project is typically provided by the project office. The purpose of the discipline report is previously stated in this guidance and in section 447.05 of the EPM. Regulatory considerations should be a brief description with reference to the regulations included in the appendix. The general methodology section is described in the Section 5 of this guidance.

## **5. METHODOLOGY: RESEARCH, SCREENING AND RISK**

This section explains the standard process for evaluating the study area to identify known or potentially contaminated sites that may 1) affect the environment during construction, 2) create

significant construction impacts, and 3) incur cleanup liability to the department. The Methodology section of the Discipline Report will explain the research, screening and risk criteria. The sites of concern identified during the research are included in the Affected Environment section of the Discipline Report. Any additions, deviations from these standard requirements or significant data gaps should be explained in the report.

The environmental professional conducting a Hazardous Materials Discipline Report must identify the specific footprint or study area boundaries<sup>4</sup> established by the project office in order to appropriately research, screen and evaluate risks. Study areas may be defined by any number of methods, from similar land uses, to project segments, to alignments. Where possible, these study areas should match or easily transpose into project areas developed for the EIS or EA.

## **Research**

The research of a Hazardous Materials Discipline Report is similar to the American Society for Testing and Materials (ASTM) 1527 standard for conducting a Phase I Environmental Site Assessment (ESA). Similar to a Phase I, the investigation includes regulatory and historical use information to identify environmental conditions. Assessing environmental conditions helps evaluate the potential for contamination to exist on a property and prompts additional research to determine whether there is a concern with respect to construction activities and/or cleanup liability associated with acquisition.

Collection of information from the following sources is required, unless specified otherwise:

- [Geologic Map Review](#)
- [Regulatory Records<sup>5</sup>](#)
- [Historical Record Sources](#)
- [Windshield Surveys](#)
- [Agency Website Review](#)
- [Agency File Review](#)

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<sup>4</sup> Instead of a project footprint, some WSDOT projects establish a “Study Area” [or an Area of Potential Effect (APE)] for preparing an environmental impact statement (EIS) or environmental assessment (EA). An EIS/EA must cover a wide range of disciplines that typically results in a defined study area that is larger than the actual project design footprint. Project footprints and study areas are smaller than the defined regulatory record search radius standards in ASTM 1527 (Section 8.2.1) that WSDOT requires for Hazardous Materials Discipline Reports (e.g., 1-mile search radius for Superfund sites). The environmental professional preparing a Hazardous Materials Discipline Report must get clarification from the project office about the specific, defined boundaries for the project.

### **Geologic Map Review**

A review of the subsurface conditions in the surrounding area should be completed as part of the Discipline Report process. The purpose of the review is to evaluate the geologic characteristics and groundwater flow direction and assess potential migration of known or suspected contaminants that may affect the project. Existing groundwater information can be obtained from Ecology File Review research (conducted during Screening and Validation as noted below), geologic and groundwater reports for the area or the WSDOT Project's Water Quality, Groundwater, Shoreline and/or Floodplain Discipline Reports.

### **Regulatory Database Records**

The U.S. Environmental Protection Agency (USEPA) and the Washington State Department of Ecology (Ecology) are responsible for regulating the generation, use, transport, and disposal of hazardous materials and waste in the state of Washington. These agencies maintain databases of known and suspected contaminated sites and businesses, and industries that use, store, or generate hazardous materials. The objective of this regulatory review is to identify and document known releases of hazardous wastes into the environment and to identify those businesses and industries that generate, store, or transport regulated hazardous materials where potential releases could occur. Information contained in the databases typically include the name and address of the site, the type of media affected (soils, groundwater, air, or surface water), the confirmed or suspected contaminant(s), and the status of remediation, if applicable.

The standard regulatory databases and minimum search radius are described in Table 1. This is consistent with section 8.2.1 of the ASTM standards for Phase I ESAs. Reviewing additional record sources (federal, state, tribal and local) beyond the standard list is encouraged, but not required. Results of all sites identified in the regulatory database search reports should be saved on an electronic device and attached as an appendix to the report. The preference is to avoid bulky reports, to reduce unnecessary printing costs, and to save file space.

**Table 1: ASTM 1527 Standard Environmental Record Sources**

<b>Record Source Abbreviation <sup>a</sup></b>	<b>Agency</b>	<b>Search Radius</b>	<b>Description</b>
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)	USEPA	½ mile	The CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies, and private persons and lists sites that are either proposed for or on the National Priorities List.
National Priorities List (NPL)	USEPA	1 mile	The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund program.
CERCLIS NFRAP	USEPA	½ mile	The CERCLIS-NFRAP contains data on CERCLIS sites that have been listed for no further remedial action is planned.
Resource Conservation and Recovery Act (RCRA)	USEPA	1 mile	The RCRA database includes selective information on large and small quantity (RCRA SQG and RCRA LQG) generators of hazardous waste as well as treatment, storage, and disposal (TSD) facilities as defined by the Resource Conservation and Recovery Act. If a site is identified as a RCRA generator, it does not mean that a release of hazardous materials has occurred at the site; however, the presence of these materials at a site increases the potential that a release could occur.
RCRA non-CORRACTS TSD (Transporter, Storage and Disposal)/RCRA-TSDF (RCRA-Treat, Store and Dispose)	USEPA	½ mile	RCRA non-CORRACTS TSD database identifies sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by RCRA.
RCRA Corrective Action Report (CORRACTS)	USEPA	1 mile	The CORRACTS database identifies hazardous waste handlers with RCRA corrective action activity.
US Institutional/Engineering Controls (US INST CONTROL or US ENG CONTROLS)	USEPA	Property only	The US INST CONTROL or US ENG CONTROLS is listing of sites with institutional or engineering controls in place.
Emergency Response Notification System (ERNS)	U.S. EPA	Property only	The ERNS records and stores information on reported releases of oil and hazardous substances.
Confirmed and Suspected Contaminated Sites List (CSCSL)/State Hazardous Waste Site (SHWS) <sup>a</sup>	Ecology	½ mile	The CSCSL/SHWS is a listing of the State Hazardous Waste Sites, which is Washington's equivalent to the federal CERCLIS list. The sites have known or suspected contamination. The type of media affected and type of contaminant are typically listed in the database.
Landfill & Solid Waste Facilities (State Landfill) <sup>a</sup>	Ecology	½ mile	The state landfill records contain an inventory of solid waste disposal facilities or landfills in Washington. These may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.
Underground Storage Tank(UST) Database <sup>a</sup>	Ecology	Property & adjoining properties	USTs are regulated by Subtitle I of RCRA and most must be registered with Ecology. The UST database contains information on the site location, number of tanks present, materials stored, dates of installation and removal, and other pertinent information for registered USTs. Sites identified in this database include only those registered with Ecology as containing regulated substances. This database does not include underground residential heating fuel tanks or tanks used for farm applications.

**Table 1: ASTM 1527 Standard Environmental Record Sources (Continued)**

<b>Record Source Abbreviation <sup>a</sup></b>	<b>Agency</b>	<b>Search Radius</b>	<b>Description</b>
Leaking Underground Storage Tank (LUST) Site List <sup>a</sup>	Ecology	½ mile	The LUST list contains an inventory of reported leaking UST incidents. The LUST list may also identify the type of material released and the affected media (e.g., air, soil, or water).
Washington Independent Cleanup Report (WA ICR) Voluntary Cleanup Program Sites (VCP) <sup>a</sup>	Ecology	½ mile	The WA ICR lists sites that have submitted independent remedial action reports to Ecology. The VCP database includes sites that have entered into the state Voluntary Cleanup Program or its predecessor Independent Remedial Action Program.
Brownfield sites <sup>a</sup>	Ecology	½ mile	A listing of Brownfield sites included in the CSCSL/SHWS. Brownfield sites are abandoned, idle or underused commercial or industrial properties, where the expansion or redevelopment is hindered by real or perceived contamination.

<sup>a</sup> Equivalent tribal sources should also be reviewed.

### **Historical Record Sources**

The purpose of reviewing historical records is to identify historical land uses that involve operations, processes, or activities likely to generate or store hazardous materials. The following sources, as available, should be reviewed to determine historical use.

- **Aerial Photographs**, beginning at the earliest photograph available. The review should include aerial photographs taken at approximately 10-year intervals. If the specific use of property has substantial changes, it is recommended that aerial photographs at 2- to 5-year intervals be reviewed, if available.
- **Fire Insurance Maps**, beginning at the earliest map available and reviewing subsequent maps published at approximately 10-year intervals, as available.
- **United States Geological Survey (USGS) Topographic Maps**, beginning at the earliest map available and reviewing subsequent maps published at approximately 10-year intervals, as available.
- **Online County Assessor Data**, to identify zoning, parcel numbers, address, property reports, building records (e.g., heat source, year building was built), land title records, and/or relevant permit applications.
- **Previous investigations** performed by WSDOT should also be reviewed, including Cultural Resources Discipline Report and Water Quality Discipline Reports for the project, Phase I/II ESAs, and UST Closure reports as available.

Previous investigations are kept on file with the appropriate Regional Environmental Office, and/or the Headquarters' Hazardous Materials and Solid Waste Program.

A review of additional records assists in identifying historical land uses but, are not required. Additional sources include:

- Historical Tax Assessor Records
- Local Street Directories
- Local Historical Libraries
- Local Planning Department
- Local Fire Department Record Review
- Health Department Record Review
- Interview with Owners and Tenants
- Local or Regional Pollution Control Agency

### **Windshield Surveys**

A windshield survey is required to physically observe properties within the project boundaries and the surrounding area. A windshield survey is similar to a “site reconnaissance,” except access to properties are typically restricted and observations of site features and exterior conditions are performed from public right-of-ways (i.e., no right-of-entry) to:

- Field verify the locations (addresses) and general status of sites identified through GIS mapping systems and Regulatory Database Records within the study area.
- Identify and map additional sites that may pose a risk to the Study Area not previously identified in the research (see Table 1 for examples).
- Observe any evidence of recognized hazardous environmental conditions on sites of concern, specifically:
  - A property's current or past apparent use;
  - The presence of, or evidence suggesting the presence of, aboveground storage tanks (ASTs), USTs, aboveground or buried pipelines, and stored hazardous material containers; and

- General site conditions indicative of hazardous materials contamination, such as the presence of abandoned vehicles and machinery, garbage, unprotected hazardous material containers, discarded chemical containers, stained soil, and distressed vegetation.
- Identify the location of Sensitive Receptors (such as hospitals, schools, water bodies, drinking water wells, etc.) that might be adversely affected if project activities release hazardous materials in the project area.

**Table 2: Examples of Land Uses Likely to Generate Hazardous Materials**

Analytical laboratory operations
Battery manufacturing, rebuilding, or recycling
Building and excavation of structures and roads
Building and repair of boats
Chemical and petroleum product storage facilities (both aboveground and underground tanks and flammable storage rooms)
Chemical manufacture, formulation, or processing
Chemical treatment of lawns, gardens, yards, or provision of other landscape and tree services
Cosmetic manufacturing or processing
Drum, barrel, and tank reconditioning
Dry cleaning and laundry services
Electroplating and other metal manufacturing and fabricating operations
Fueling, repair, and maintenance of motor vehicles (automobiles, aircraft, trucks, construction equipment, RVs)
Home, garden, pool, or agricultural supply manufacturing
Landfills
Leasing or renting of vehicles, maintaining fleet operations, renting equipment
Manufacture, formulation, or processing of pesticides or agricultural products or chemicals
Manufacture, refinishing, or stripping of furniture or wood products
Metal finishing, refinishing, and etching (auto body, printed circuit board manufacturing, jewelry fabrication)
Metal galvanizing
Nursery and greenhouse operations
Operation or repair of printing and reproduction equipment
Paint formulation and mixing
Photographic processing and printing
Pressure treating or preserving wood products
Product distribution, consolidation, and shipping operations
Production and repair of shoes, including hide tanning for leather
Provision of home, industrial, or commercial pest control
Recycling facilities
Schools, auditoriums, hotels, and other facilities with large heating requirements
Scrap metal and junk yard operations
Solvent recycling
Textile manufacturing (including fabric dyeing and finishing)
Warehouse operations
Waste or spent product incineration

### **Agency Review**

Reviewing regulatory agency websites and files is a part of the research conducted for Discipline Reports. However, this work is completed after the Screening process (see next section below). Website and file reviews are limited to a small subset of sites that warrant further investigation (i.e., sites that may have a high or moderate impact). The type of documentation that should be obtained from agency files is described below in the “Agency Website and File Review” section.

### ***Screening***

A large project located in a historically industrial or commercial area can typically have a hundreds of sites that need to be evaluated. The initial screening process narrows the long list to a subset of sites that warrant further investigation. Sites are screened based on the judgment of an Environmental Professional and the following criteria:

- Groundwater flow direction;
- Type of construction planned in the area (excavation, drilling, etc.);
- Impacted media on the site of concern (soil, groundwater, surface water); and
- Chemicals of concern on the site of concern (e.g., petroleum products, solvents).

Each site should be analyzed individually. The Discipline Report must document additional criteria used to automatically eliminate sites from further review.

After screening, a preliminary list of sites of concern that have the potential to impact the environment, project construction and WSDOT’s liability is completed and a risk analysis is applied to the sites of concern.

### ***Risk Analysis***

Each site on the preliminary list of sites of concern is analyzed for risk to the environment, the construction project and WSDOT’s cleanup liability<sup>5</sup>. The risk analysis prioritizes sites to determine the need for avoidance and mitigation, while taking associated costs and liability into consideration. Where possible, the consultant should

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<sup>5</sup> Environmental Regulations assign cleanup liability to past and present owners, operators and generators. Thus, when assessing risk to cleanup liability, the report should address site-specific concerns regarding both property acquisition and hazardous materials potentially generated during construction.

assign risk levels based on planned acquisition and excavation work as provided by the WSDOT Project office.

To assign a level of risk, the probable extent of contamination related to planned project work (e.g., excavation or acquisition) must be assessed to evaluate the likelihood that the site will impact the project. The site should be ranked as potentially a “low impact,” “moderate impact” or “high impact” site. The risk evaluation should also assess the level of complexity mitigation measures will have to the project for each site. At the discretion of the environmental professional, the risk rankings discussed below may be modified or further refined if appropriate for the project. Justification for changes or modifications should be documented in the Discipline Report.

- **Type of Impact:**

- **Low Impact:** This risk level identifies sites where a potential concern exists because of historical activities, but either the likelihood for the site to impact the project is low or the contamination was previously remediated.
- **Moderate Impact:** This risk level identifies sites where concern exists because of historical activities, and/or the site may likely impact the study area but sufficient evidence is not available.
- **High Impact:** This risk level identifies sites if a known concern exists because of historical activities, contamination is known and extensive, and/or the site will likely impact the project. In general, high impact sites are properties that possess a potential for substantial soil, groundwater, or sediment contamination, or the information necessary to predict remedial costs is lacking. The site may be contaminated over a large area by a single contaminant or over a smaller area by multiple contaminants. Potentially, high impact sites typically are large, have large volumes of contaminated materials, or have a long history of industrial or commercial use.

- **Complexity of Impact**

- **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 will 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.

### ***Agency Website and File Review***

A website and file review should be performed to obtain additional site specific information on moderate or high risk sites. Website and file reviews are typically necessary for moderate and high risk sites that:

- Have insufficient information,
- Are listed on a state or federal cleanup database (e.g., SWHS, LUST, NPL, etc.) that are located immediately adjacent or hydraulically upgradient to the project, or
- Are locations where ground disturbance or acquisition is planned.

A website review should be completed online for each moderate and high risk site. The website review can provide additional information not available in the regulatory database search, such as summary information on a site of concern. The website review may provide sufficient information to eliminate site as a site of concern or not necessitate completing the agency file review.

The agency file review should be completed after the website review on moderate and high risks site. A review of agency records should include documentation of the following items, as available:

- Brief summary of recent sampling activities and results;
- Recorded depths to groundwater;

- Soil types and geology of the site<sup>6</sup>;
- Details and/or conditions of a No Further Action (NFA) determination;
- Details regarding USTs such as year of installation, number of years of operation, year of removal, number and size of tanks, type of product stored; and
- Copies of maps or drawings that illustrate locations of ASTs/USTs and associated piping, former building structures, contaminant plumes, areas of excavation for removal or cleanup activities, or other drawings that identify sources contamination within project excavation areas or acquisition properties.

These details obtained from the file review should be documented in the Affected Environment (Existing Conditions) section of the report and used to provide site-specific information in the Site Summary Table as discussed in Section 5 below.

At this point in the process, the preliminary list discussed above is a final validated list of sites. This final validated list should be presented in a Site Summary Table. The Site Summary Table is included in the Affected Environment (Existing Conditions) section of the Discipline Report. The table should not include sites that were eliminated from further consideration and will not impact the environment, the construction project or WSDOT's cleanup liability.

## **6. AFFECTED ENVIRONMENT (EXISTING CONDITIONS): SITE SUMMARY**

This section describes the Affected Environment (Existing Conditions) of the report. The information provided in the Affected Environment (Existing Conditions) was determined in the Methodology section described above. The Affected Environment section of the discipline report includes a general summary of the area, a description of the geology and groundwater flow direction, and a table listing the ranked sites of concern. This section should also include the number of sites eliminated during the site screening process.

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<sup>6</sup> The soil type and geology of the site (a.k.a. physical setting) influences the fate and transport of hazardous materials released to the environment. In general, the physical environment controls the behavior and movement of contamination through environmental media (soil and groundwater). This includes: 1) mobility of chemicals, 2) rate of degradation for chemicals in the environment, and 3) preferred pathways for contaminants to transport away from the point of release. If site-specific soil type and geology are not available in regulatory files, general area information may be found in the Project's Soils and Geology Discipline Report.

A description for each site identified during the research phase that poses a risk (impact) to the environment, construction project or WSDOT's liability is included in the Site Summary Table. This assessment should also take into consideration planned acquisition areas (e.g., purchasing property strips or total parcels) and construction activities (e.g., cut and fill lines and approximate excavation depths). An example format of a Site Summary Table is provided in Appendix D.

The Site Summary Table should document the following as available:

- Site Name, Map ID, Database Listing, Proximity (distance and gradient) to the project area;
- Planned construction activities at the site (excavation , acquisition, etc.);
- Current/past land use at the site;
- Listing on regulatory database;
- Potential Contaminants of Concern;
- Impacted Media (soil, groundwater, or sediments);
- Potential distribution of contaminants based on existing physical environment (e.g., topography, groundwater depth, distance and gradient to project) and documented details obtained through Ecology website and file review;
- Evaluation of risk with specific concern stated; and
- Recommendations for further investigation.

## **7. IMPACTS & MITIGATION**

A preliminary evaluation for the type of impacts to the project is completed in the first step during the development of the Discipline Report (See Section 2). If project-specific impacts are not established a report including a summary of the affected environment, standard impacts and mitigation (in appendix of report) and recommendations for further investigation and associated costs is developed. The second step evaluates project-specific impacts and mitigation measures and the appropriate cost estimates. The decision to move forward to the second step is based on the results of the first step and project-specific circumstances. In the second step, a report including a summary of the affected environment, project-specific impacts and mitigation measures with associated costs (standard impacts and mitigation in Appendix C) and recommendations for further investigations and associated cost is developed.

The report should include three separate discussions for each alternative design in the Impacts and Mitigation Measures sections:

- 1) Environment/Sensitive Receptors Impacts and Mitigation Measures
  - Direct
  - Indirect (Operational)
  - Cumulative
- 2) Construction Impacts and Mitigation Measures
- 3) Agency Liability Impacts and Mitigation Measures

The intention of completing the impacts and mitigation sections in the above format is to 1) fulfill NEPA requirements, 2) provide construction-related impacts and mitigation to the project office and 3) provide acquisition liability impacts and mitigation measures to the WSDOT real estate office. The decision to vary from the above format should be made in coordination with the WSDOT Hazardous Materials Program. Examples of project-specific impacts are shown in Table 3.

**Table 3: Examples of Project-Specific and Standard Impacts**

Project-Specific Impacts			Standard Impacts		
Environmental Impacts					
Direct	Indirect	Cumulative	Direct	Indirect	Cumulative
Construction of unlined stormwater pond planned near site with known contamination - potential to spread contamination	Increased maintenance operations with use of hazardous materials (e.g., painting maintenance)	Usually positive impact	Spills of hazardous materials during construction	Spills by traveling public on roadway	Usually positive impact
Construction Impacts					
Potential alteration of contaminated groundwater plume(s) and generation of contaminated water during dewatering activities			Unknown USTs encountered during construction		
Agency Liability Impacts					
Acquiring known contaminated properties with extensive halogenated volatile organic carbon (HVOC) contamination			Acquiring properties with limited known petroleum contamination		

### ***Standard Impacts and Mitigation Measures***

Standard impacts and mitigation measures that routinely apply to hazardous materials in WSDOT construction projects are attached in a table in an appendix of the report. Standard impacts and mitigation measures typically apply to low or moderate risk sites with straightforward mitigation measures that can be reasonably predicted based on experience. Standard impacts and mitigation measures are contained in Appendix C of

this guidance. Discipline Report writers should select only the appropriate standard impacts and mitigations measures and tailor them for the project. The standard impacts and mitigation measures should also be updated as necessary. A short summary of the impacts and mitigation measures should also be included in body of the report.

### ***Project-Specific Impacts and Mitigation Measures***

The body of the report in the Impacts and Mitigation sections should focus solely on project-specific issues that are pertinent to the site of concern. When discussing the impacts and mitigation measures, the Environmental Professional should provide in depth assessment and potential mitigation options to avoid and/or minimize each identified impact. This requires some knowledge and consideration of the project construction lanes, designs and techniques. Although detailed design plans are not always available at this early stage of project development, it is important that the WSDOT project office provide considerable information about the need for bridge work, pier construction, cut and fill lines, realignments, and property acquisition needs.

## **8. RECOMMENDATIONS & COST ESTIMATES**

This section of the report should include the following:

- A summary of the recommendations for additional investigations and the associated estimated costs. For example, when additional investigation (e.g., sampling through a Phase II) is necessary, the report should identify each property and the reason why it warrants additional investigation either prior to either construction or acquisition. The regulatory file review conducted for the report can provide sufficient data (for listed sites) to evaluate the necessary level of effort and estimated costs to conduct a Phase II investigation. In general, sampling is necessary only for sites that may require acquisition,<sup>7</sup> or involve

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<sup>7</sup> Sampling is typically not necessary for minor amounts of temporary or permanent strips of right-of-way or where there is sufficient, documentation already provided in Ecology or USEPA files.

**Environmental Impacts and Mitigation Measures:** The project may have a direct or indirect environmental impact to sensitive receptors (public, waterways, wildlife, etc.), which is generally discussed as a standard impact in Appendix C of this guidance. Cumulative environmental impacts of construction are typically positive because excavation and paving activities remove contamination or prevent pre-existing contamination from migrating. However, when site-specific conditions and planned construction activities pose a potential environmental impact, consideration should be given to migration pathways, impacts to water, worker safety and public health. Mitigation measures must address each identified impact, with a focus on ensuring that construction activities do not cause, contribute to or spread contamination.

**Construction Impacts and Mitigation Measures:** Preexisting contamination is a negative impact to the construction schedule and budget, and can cause significant project delays and cost overruns if not identified early and if management plans are not developed and implemented appropriately. Consideration should be given to site-specific regulations, especially complicated contaminant remediation, location of stormwater facilities, local requirements, disposal facility requirements (such as sampling requirements or prior Ecology "Contained out" policy letter for PCE waste) and property deed restrictions imposing certain limitations of activities.

**Agency Liability and Mitigation Measures:** Hazardous materials can have significant cost impacts and potential long-term liability for management and/or cleanup of contaminated properties. The majority of the agency liability impacts are characterized as standard impacts. Project-specific impacts and mitigation measures should apply to extensive contamination and complicated remediation. The report should also recommend whether additional investigation should comply with "all appropriate inquiry" provisions to satisfy one of the requirements to qualify for one of CERCLA's legal defenses against liability.

excavation activities below the road base where contaminants are not reasonably predictable and/or considered a high risk.

- The estimated costs to implement the recommended project-specific mitigation measures, if necessary. For example, if recommending on-site treatment, the report should provide details regarding time constraints, permit requirements, and general estimated costs for laboratories, equipment, and/or disposal.

A cost estimate allows WSDOT staff to consider the options, and the environmental costs and benefits of proposed actions before making a decision to commit resources. The cost estimate provides the project office the appropriate information to complete a cost/benefit analysis. The cost/benefit analysis helps to prioritize sites for avoidance, remediation, and scheduling needs relative to the project's schedule and budget. It can also demonstrate the cost-effectiveness of forgoing additional research or discovery, thereby potentially saving time and money.

## ***Appendix A - Abbreviations, Acronyms and Glossary***

## ***Abbreviations, Acronyms and Glossary***

ACM	asbestos-containing material
AKART	all known, available, and reasonable methods of prevention, control and treatment
APE	area of potential effect
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
BGS	below ground surface
BMP	best management practice
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC § 9601 et seq.
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System: See description below for Ecology’s Federal (a.k.a.: Superfund) Cleanup Site (FCS) and National Priority List (NPL).
CFR	Code of Federal Regulations
CPLAN	Oil Facility Contingency Plan: Oil handling facilities that are required to file oil spill contingency plans. An oil handling facility can be classified as a structure, equipment, pipeline, or device located on or near navigable waters of the state that transfers oil in bulk to or from a tank vessel or pipeline and is used for producing, storing, handling, transferring, processing, or transporting oil in bulk.
CSCSL	Washington State Confirmed and Suspected Contaminated Sites List
DEIS	draft environmental impact statement
DOH	Washington State Department of Health
Ecology	Washington State Department of Ecology
EDR	Environmental Data Resources, Inc.
EIS	environmental impact statement
EPM	Environmental Procedures Manual
ESA	Environmental Site Assessment
FCS	Federal Cleanup Site (Superfund): A federal cleanup site listed in CERCLIS where Ecology has been or is currently involved with the cleanup process or has knowledge of the site from another process.
FEIS	final environmental impact statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FUDS	Formerly Used Defense Sites: The Department of Defense (DoD) is responsible for cleaning up properties that were formerly owned, leased possessed, or operated by DoD. The Army is the executive agent for the program and the U.S. Army Corps of Engineers is the organization that manages and executes the program. Information about the origin and extent of contamination, land transfer issues, past and present property ownership, and program policies must be evaluated before DoD considers a

	property eligible for Defense Environment Restoration Account (DERA) funding under the FUDS program.
GIS	geographical information system
GMA	Growth Management Act
HSL	Washington State Hazardous Sites List
HWG	Hazardous Waste Generator: Facilities that generate regulated amounts of hazardous waste, > 220 pounds per month.
HWOther	Hazardous Waste Other: Ecology's term for facilities that are required to have a RCRA Site ID# but who do not generate and/or manage hazardous waste (XQG generator status). This includes transporters, used oil recycler's, and dangerous waste fuel marketers and burners.
HWP	Hazardous Waste Planning Facility: Ecology identified site who must prepare Pollution Prevention Plans under Chapter 173-307 WAC. These facilities report under Section 313 of the Emergency Planning/Community Right-To-Know Act (EPCRA), or generate more than 2,640 pounds of hazardous waste per year.
HWTRNSFR	Hazardous Waste Transfer Facility: A HWTRNSFR is identified by Ecology as a site that is owned, leased, or operated by a transporter of regulated hazardous waste shipments, where any of the following occurs: 1) receipt of wastes from another transporter, 2) transfer of wastes from one transport vehicle to another, 3) transfer of waste from one container to another, and 4) storage of waste within a vehicle or on property for 10 days or less. Examples of transfer facilities include a parking lot, warehouse, truck terminal, barge or steamship loading and unloading facility, or railroad spur loading or unloading facility.
HWTSDF	Hazardous Waste Treatment Storage and Disposal Facility: HWTSDF are facilities that treat, store, or dispose hazardous waste.
ICR	Washington State Independent Cleanup Reports List: An Ecology list of sites performing any remedial action without department oversight or approval and not under an order or decree.
IRAP	Independent Remedial Action Program: Ecology staff who review IRAP reports and provide written determination indicating whether the cleanup meets Model Toxics Control Act (MTCA) standards.
LBP	lead-based paint
LUST	Leaking Underground Storage Tank: An Ecology identified LUST Facility is a UST cleanup site being cleaned up with Ecology oversight or review.
MDNS	Mitigated Determination of Non-Significance (SEPA)
MP	mile post
MTCA	Model Toxics Control Act: MTCA is the state law version of the Federal CERLA/Superfund regulations. MTCA establishes cleanup levels for soil and water that are protective of human health and the environment. MTCA also dictates reporting requirements and establishes joint & several liability for cleanup of contamination.
NEPA	National Environmental Policy Act
NFA	No Further Action
NPDES	National Pollutant Discharge Elimination System

NPL	Federal National Priorities List (Superfund list): The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program.
NTU	nephelometric turbidity units
O&M	operation and maintenance
OHW	ordinary high water
ORA	Office of Regulatory Assistance: An ORA Project: is a permitting project in Washington State that is being tracked by the Office of Regulator Assistance for the purpose of facilitating the permitting process for both the citizen and state agency involved.
PCS	Permit Compliance System: PCS is a federal database that houses information regarding facilities holding National Pollutant Discharge Elimination System (NPDES) permits for waste water.
PCS	Petroleum-Contaminated Soil
PGIS	pollutant-generating impervious surfaces
PSCAA	Puget Sound Clean Air Agency
RCRA	Resource Conservation and Recovery Act, 42 USC §§ 6901-9651
RCRIS	RCRA Information System: A database that includes registered large, medium and small generators of hazardous waste. See description for Ecology's Hazardous Waste Generators (HWG).
ROD	Record of Decision
ROW	right-of-way
SCS	State Cleanup Site: An Ecology site being cleaned up under state regulations. Regulations include Model Toxics Control Act or its predecessors.
SDWA	Safe Drinking Water Act
SEDIMENT	Sediments: An Ecology identified sediment site is a location of interest at which sediment chemical and/or biological data has been obtained and evaluated for potential impacts to human health or the environment. Sediment sites may exist beneath or be associated with freshwater, marine and estuarine bodies of water. Sediment sites may or may not be linked to a known land-based facility.
SEPA	State Environmental Policy Act
SPCC	Spill Prevention, Control, and Countermeasures (plan) as required by WSDOT Standard Specifications Section 1-07.15(1)
SSP	stormwater site plan
SWD	State Waste Discharge
SWF	Solid Waste Facility: Facilities that perform energy recovery and incineration, limited purpose landfills and inert landfills. Additional facilities for the handling of waste requiring a permit include: composting facilities, land application sites, intermediate solid waste handling facilities (transfer stations, bailing and compaction sites, and drop boxes), piles for treatment and storage, surface impoundments and tanks, waste tire storage facilities and moderate risk waste facilities.
TAC	toxic air contaminant
TDA	threshold discharge area

TESC	temporary erosion and sediment control
TIER2	Emergency & Hazardous Chemical Inventory Report: Ecology list of businesses that store 10,000 pounds or more of a hazardous chemical or 500 pounds or less, depending on the chemical, of an extremely hazardous chemical on site at any one time must report annually. Reports are sent to the State Emergency Response Commission [represented by Ecology] Local Emergency Planning Committees, and local fire departments for emergency planning. [product, not waste]
TMDL	total maximum daily load
TOC	total organic carbon
TPH	total petroleum hydrocarbons
TRI	Toxics Release Inventory: TRI is an EPA database that identifies facilities in specific industries that manufacture, process or use more than the threshold amount of one or more of 600 listed toxic chemicals. Most threshold amounts are 10,000 or 25,000 pounds per year. Some chemicals have much lower thresholds.
TSP	total suspended particulates
TSS	total suspended solids
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank: Any one or combination of tanks (including connecting underground pipes) that is used to contain regulated substances and has a tank volume of ten percent or more beneath the surface of the ground. This term does not include any of the exempt UST systems specified in WAC 173-360-110(2) or any piping connected thereto. See WAC 173-360.
VOC	volatile organic compounds
VOLCLNST	Voluntary Cleanup Site: Also listed as VCP, for sites listed under Ecology's Voluntary Cleanup Program. For a fee, Ecology staff will review an independent cleanup report(s) and provide a written decision about the adequacy of the cleanup actions taken and described in the report.
WAC	Washington Administrative Code
WDFW	Washington State Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation

## ***Appendix B – Applicable Federal and State Regulations***

## ***Applicable Federal and State Regulations***

Numerous federal, state, and local regulations and policies govern decisions concerning hazardous materials issues. A standard list of federal and state regulations that apply to majority of WSDOT projects is provided below. This is not an all-inclusive list of regulations, and further evaluation of applicable local regulations must be conducted for each project.

### **FEDERAL REGULATIONS**

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Federal law and regulations relating to hazardous materials and wastes that affect the project include the following:

#### **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and All Appropriate Inquiries (AAI) (40 CFR Part 312)**

Section 101(35)(B)(ii) and (iii) of CERCLA and the Superfund Amendments and Reauthorization Act (SARA) define liability for hazardous waste contamination and require liable parties to take responsibility for cleanup. 40 CFR Part 312, Standards and Practices for All Appropriate Inquiries, establishes specific regulatory requirements and standards for conducting AAI provisions necessary to qualify for certain landowner liability protections under CERCLA. The purpose of Hazardous Materials Discipline Reports is, in part, to address liability issues relating to identification of, and acquisition of previously contaminated property.

#### **Resource Conservation and Recovery Act (RCRA)**

RCRA provides requirements for handling, transportation, treatment, storage, and disposal of hazardous materials and wastes. It includes provisions for identifying and classifying hazardous materials and wastes, and through the Hazardous and Solid Waste Amendments (HSWA), creates treatment standards for specific wastes. HSWA also establishes requirements for ownership, operation, maintenance, and closure of underground storage tanks. Any removal, treatment, or transportation of contaminated soils as part of the proposed project would need to be conducted in compliance with RCRA.

#### **Occupational Safety and Health Act (OSHA)**

OSHA establishes requirements for site safety procedures, worker training, and worker safety and health standards for employees engaged in work related to hazardous materials. All work relating to the handling of, and potential exposure to, hazardous substances by workers while conducting activities associated with the project must be in compliance with the relevant sections of OSHA.

#### **Clean Water Act (CWA)**

The Clean Water Act (CWA) provides for comprehensive federal regulation of all sources of water pollution. Pollution of state waters is controlled by two administrative regulations that implement Chapter 90.48 RCW, Water Pollution Control Act; Chapter 173-201A WAC, Water Quality Standards for Surface Waters of the State of Washington; and Chapter 173-200 WAC, Water Quality Standards for Groundwater of the State of Washington.

Chapter 173-201 WAC indicates that toxic substances above natural background levels will not be introduced into waters of the state if the substance will (1) singularly or cumulatively adversely affect characteristic water uses, (2) cause acute or chronic toxicity to the most sensitive biota dependent on the water, or (3) adversely affect public health. Ecology would employ or require chemical toxicity testing and biological assessments as appropriate to evaluate

compliance with the above-mentioned requirements. WAC 173-201A-160 lists the primary means for controlling municipal, commercial, and industrial waste discharges through the issuance of waste disposal permits.

Several permit programs have been established to address the potential of construction projects that may introduce hazardous substances to surface waters, including wetlands. The State Water Discharge Permit (WAC 173-216) program includes a variety of exemptions, most of which relate to discharges that are permitted under a National Pollution Discharge Elimination System (NPDES) permit or are otherwise authorized by a publicly owned treatment works (POTW) with an authorized pretreatment program. This regulation may apply to stormwater detention basins planned for the project if the water were to contain unacceptable concentrations of polluting materials. The NPDES General Stormwater Permit for Construction Activities requires the development and implementation of a Stormwater Pollution Prevention Plan.

### **National Environmental Policy Act (NEPA)**

NEPA requires that all actions sponsored, funded, permitted, or approved by federal agencies undergo planning to ensure that environmental considerations are given due weight in project decision-making. If the proposed project is partially funded by the Federal Highway Administration, NEPA compliance is likely to be required. One of the major elements addressed in a NEPA assessment is environmental health. Assessment of impacts associated with hazardous materials and waste is a component of the environmental health evaluation.

### **Endangered Species Act (ESA)**

ESA regulates a wide range of activities affecting plants and animals designated as “endangered” or “threatened”. The ESA states that it is unlawful to “take” any animal listed as an endangered species. ESA lists “Endangered” animals or plants that are in danger of being extinct. ESA broadly defines a “take” to include, “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect,” or an attempt to engage in such conduct. Chinook salmon, bull trout and the bald eagle are listed as threatened under the Federal Endangered Species Act and live within the Green/Duwamish Watershed and Central Puget Sound Watershed. These watersheds extend from the Cascade Mountains to Puget Sound. In Federal Way, roughly the area north of S. 300<sup>th</sup> Street and east of Pacific Highway drains into the Green River. Steel Lake, Easter Lake, Redondo Creek and Cold Creek drain directly to Puget Sound. The southern part of the city is in the Puyallup River Watershed. In Federal Way, the Hylebos Creek Watershed is the major drainage system within the Puyallup River Watershed. Salmon habitat restoration activities are currently underway in Federal Way.

### **National Emission Standards for Hazardous Air Pollutants (NESHAP) (Code of Federal Regulations, Title 40, Volume 5, Parts 61 to 71)**

The Environmental Protection Agency’s rules concerning the removal and disposal of asbestos-containing materials (ACM) were issued under NESHAP. NESHAP requires a thorough inspection for friable and nonfriable ACM within a structure prior to demolition activities. An accredited inspector as required by the Asbestos Hazard Emergency Response Act (AHERA) must conduct all inspections. The NESHAP regulation also includes specific notification, work practice, packaging, labeling, and disposal requirements.

The Puget Sound Clean Air Agency (PSCAA) requires that a notice of intent be submitted prior to beginning any work on an asbestos demolition. The only exception is asbestos projects involving less than 48 square feet and the removal of nonfriable asbestos containing roofing

material. An AHERA building inspector or competent person must make the determination if it is nonfriable material. There is a notification waiting period and fee that will need to be considered prior to planning any abatement work. Asbestos removed from buildings prior to demolition must be disposed in a landfill permitted to receive ACM.

## **STATE REGULATIONS**

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Washington State implements many of the federal statutes pertaining to hazardous materials and wastes along with its own, often more stringent, laws and regulations. These requirements, listed below, take precedence over all other laws for governing business and operations within the state.

### **Model Toxics Control Act (MTCA) Regulations (Chapter 173-340 WAC)**

Chapter 173-340 Washington Administrative Code (WAC) implements MTCA, Revised Code of Washington (RCW) 70.105D. Several administrative rules include strict requirements for site discovery and reporting, site assessments, and hazardous site listing. This regulation defines standard methods used to assess whether a site is contaminated or clean. An overview of the cleanup standards is detailed in WAC 173-340-700 and groundwater and soil cleanup standards are listed in WAC 173-340-720 and WAC 173-340-740, respectively. WAC 173-340-450 sets forth the requirements for addressing underground storage tanks (USTs).

MTCA will apply to any site identified with environmental contamination that may pose a threat to human health and/or the environment during this project. MTCA establishes the acceptable cleanup limits for contaminated media. Cleanups of contaminated sites are likely to be accomplished as independent actions, with technical review provided by Ecology on an as-needed basis as provided for under MTCA.

### **Dangerous Waste Regulations (Chapter 173-303 WAC).**

Chapter 173-303 WAC implements RCRA and the Hazardous Waste Management Act, RCW 70-105. This provides for waste identification procedures unique to Washington State. Waste designation procedures are the most likely portion of this regulation that would affect the project. Detailed requirements for forms and rules related to manifesting and transporting of hazardous waste are included. As stated above, any handling, treatment, or transport of hazardous waste associated with the project would be required to be in compliance with RCRA and also with Washington's Dangerous Waste Regulations and Hazardous Waste Management Act. Contaminated materials generated during construction, including soil, water, and debris, would need to be properly designated before disposal. WAC 173-303-070 through 173-303-110 includes the specific regulations that identify dangerous waste characteristics and criteria. In addition, wastes generated by the contractor during construction would need to be properly designated. The requirements for generators of dangerous waste are included in WAC 173-303-170 through 173-303-230. A transporter of dangerous waste must comply with the procedures listed in WAC 173-303-240 through 173-303-250.

WAC 173-303-145 lists the reporting requirements for spills and discharges into the environment, except when otherwise permitted under state or federal law. This section of the WAC applies "when any dangerous waste or hazardous substance is intentionally or accidentally spilled or discharged into the environment such that human health or the environment is threatened, regardless of the quantity of dangerous waste or hazardous substance." This portion of the regulation also details the required procedures for notification and mitigation should a spill occur on site.

### **Solid (Non-Dangerous) Waste Disposal (RCW 70.95, Chapter 173-304 WAC)**

Under the State Solid Waste Management Act, RCW 70.95 states that primary responsibility for managing solid waste is assigned to local government. The state, however, is responsible for assuring the establishment of effective local programs throughout the state.

The local jurisdiction's Health Department regulates the handling and disposal of solid waste. Identifying the appropriate waste disposal facility is the most likely the portion of local solid waste regulation that could impact the project. The local Health Department evaluate whether a waste material is acceptable at one or more of the public and private solid waste facilities in the county. In some cases, testing may be required prior to disposal. Even waste that is being shipped to a disposal facility out of the county, and soil treatment facilities, falls under the jurisdiction of the local Health Department.

WAC 173-304 lists the Minimum Functional Standards for Solid Waste Handling. WAC 173-304-200 designates the on-site containerized storage, collection, and transportation standards for solid waste. The regulations apply to all persons storing containerized solid waste that is generated on-site. Revisions are anticipated for Chapter 173-304 WAC, and the final revised rules should be reviewed prior to the commencement of construction. The updated solid waste rule is likely to include new provisions for demolitions and inert waste streams.

### **Water Pollution Control Act**

RCW 90.48 implements two administrative regulations that control pollution in state waters. Water Quality Standards for Surface Waters of the State of Washington, Chapter 173-201A WAC, establishes standards for toxic substances, conventional parameters (i.e., pH, dissolved oxygen, temperature), and aesthetic values for marine and fresh surface waters. Water Quality Standards for Groundwater of the State of Washington contain similar regulations for groundwater, with special emphasis on radionuclides and carcinogens, due to potability issues. Any construction or operational activities associated with the project must comply with Washington's water quality standards. Wastewater Discharges to Surface Waters, Chapter 173-220 WAC regulates discharges to surface water from construction projects. Under this program, it is unlawful to discharge polluting matter to surface waters without a National Pollutant Discharge Elimination System (NPDES) permit. A general NPDES permit for construction would be required for the project. Wastewater Discharges to the Ground, Chapter 173-216 WAC, regulates discharge of stormwater to detention basins if this water contains unacceptable concentrations of polluting matter. The proposed project would likely be exempt from the requirements of this regulation if an NPDES Stormwater Permit for construction is acquired. This should be verified during the permitting process conducted for this project.

### **Water Quality Standards for Surface Waters (Chapter 173-201A WAC)**

WAC 173-201A-040 is the section of the Water Quality Standards that specifically deals with toxic substances within surface waters of the state. The WAC indicates that toxic substances, above natural background levels, shall not be introduced into waters of the state if: 1) The substance will singularly or cumulatively adversely affect characteristic water uses, 2) Cause acute or chronic toxicity to the most sensitive biota dependent on the water, or 3) Adversely affect public health. The Department of Ecology shall employ or require chemical toxicity testing and biological assessments as appropriate to evaluate compliance with the above-mentioned requirements. WAC 173-201A-160 lists the primary means for controlling municipal, commercial, and industrial waste discharges through the issuance of waste disposal permits.

### **Wastewater Discharges to Ground (Chapter 173-216 WAC)**

The State Water Discharge Permit program includes a variety of exemptions, most of which relate to discharges that are permitted under an National Pollution Discharge Elimination System (NPDES) permit or are otherwise authorized by a publicly owned treatment works (POTW) with an authorized pretreatment program. This regulation may apply to stormwater detention basins planned on the project if the water contains unacceptable concentrations of polluting materials.

### **Underground Utilities (RCW 19.122)**

There are multiple operating utilities that exist within the project footprint. RCW 19.122 states that an excavator shall provide notice of the scheduled commencement of excavation to all owners of underground facilities through a one-number locator service. The RCW also states that all owners of underground facilities within a one-number locator service shall subscribe to the service. Notice needs to be communicated to the locator service no less than 2 days and no more than 10 days prior to the commencement of excavation activities. If the excavator discovers utilities that were not identified or damages a utility, the excavator will stop work and notify the locator service and the owner of the utility service if possible. If the damage causes an emergency situation, the excavator shall also alert the appropriate public health agencies and take all steps necessary to ensure public safety. A failure to notify the locator service of damage to a hazardous liquid or gas pipeline is subject to a civil penalty of not more than ten thousand dollars for each violation. Any excavator who willfully or maliciously damages a field-marked underground facility shall be liable for triple the costs incurred in repairing or relocating the facility.

### **Underground Storage Tank Statute and Regulations (RCW 90-76, Chapter 173-360 WAC)**

The purpose of RCW 90-76 and the Chapter 173-360 WAC regulations is to address the serious threat posed to human health and the environment by leaking underground storage tank systems (LUSTS) containing petroleum and other regulated substances. The regulations describe the enforcement, notification, and reporting requirements for LUSTS. The regulations also detail the performance standards and operating and closure requirements.

### **Washington Industrial Safety and Health Act (WISHA)**

Occupational Health Standards Chapter 296-62 WAC implements the RCW 49-17 . RCW 49-17 also implements Safety Standards for Construction Work, Chapter 296-155 WAC, which contains the Safety Standards for Asbestos and Encapsulation Chapter 296-65 WAC. These safety requirements apply to all construction activities, and the regulations are enforced by the Washington State Department of Labor and Industries (L&I).

The standards include rules covering operations at known hazardous waste sites and initial investigations conducted at sites before the presence or absence of hazardous substances has been determined. Also included are rules on site assessment and control, training, protective equipment, and emergency response. Chapter 296-155 WAC requires employers to inform their workers of the potentially hazardous conditions of the workplace. When WSDOT informs the Contractor of these conditions, the Contractor is required to train the workers to recognize hazardous conditions in the workplace and train them how to respond to and report such conditions. It is important the WSDOT inform the Contractor though the Contract and/or Special Provisions so that the Contractor is aware and responsible to prepare its employees to appropriately and safely handle encounters of hazardous materials with minimal delays.

The safety requirements also provide specific procedures for work with asbestos-containing materials (ACM) and lead-based paint (LBP). L&I regulate asbestos and LBP removal and encapsulation (WAC296-62 Part I-1 and 296-155). All contractors must be certified in asbestos and LBP removal, and their supervisors and laborers must be trained. For asbestos, L&I and the Puget Sound Clean Air Agency (PSCAA) must be notified of any asbestos removal. Fees also must be paid, calculated on the linear or square amount of material removed. ACM and LBP must be disposed of in a specially permitted landfill. This includes disposable clothing, respirator filters, and equipment, as well as the ACM and LBP itself. The use of landfills results in an irreversible and irretrievable commitment of landfill space. Liability for asbestos and LBP disposal remains with WSDOT indefinitely.

### **Hazardous Waste Operations and Treatment, Storage, and Disposal Facilities (Chapter 296-62 WAC Part P, RCW 49-17)**

Chapter 296-62 WAC Part P includes all of the required procedures for work involving hazardous materials. Due to the possible impacts indicated above for specific sites, there are sections of Chapter 296-62 WAC that are of key importance for this project.

Chapter 296-62 WAC Part P also details the requirements for handling drums and containers. Unlabeled drums and containers must be considered to contain hazardous waste and handled accordingly until the contents are positively identified and labeled. Drums and containers that cannot be moved without rupture, leakage, or spillage must be emptied into a sound container. Personal protective equipment selection protocol is outlined in WAC 296-62-30605. The training requirements for site personnel are included within multiple sections of Part P depending upon the designation of the contamination on-site.

### **Safety Standards for Construction Work - Lead (Chapter 296-155 WAC)**

Chapter 296-166 WAC indicates that workers may not be exposed to lead at concentrations greater than fifty micrograms per cubic meter of air ( $50\mu\text{g}/\text{m}^3$ ) averaged over an 8-hour period. Chapter 296-166 WAC also outlines the personal protective equipment that shall be given to employees as well as medical surveillance procedures that are to be implemented for exposed personnel.

### **General Occupational Health Standards – Asbestos (Chapter 296-62 WAC Part I-1)**

Chapter 296-62 WAC requires that prior to commencement of work an owner must conduct a good faith inspection to determine whether materials to be worked on or removed contain asbestos. An accredited inspector must conduct the good faith inspection. Chapter 296-62 WAC Part I-1 requires that an employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter (0.1f/cc) of air as an eight-hour time-weighted average. Besides the permissible exposure limit, the regulation also requires appropriate respiratory protection as well as exposure assessment and monitoring.

## ***Appendix C –Standard Impacts and Mitigation Measures***

## **Table of Standard Impacts & Mitigation Measures**

The impacts and mitigation measures in the following table address typical impacts that WSDOT may encounter on construction projects. The typical impacts apply to sites of concern identified during the discipline report process. Sites of concern are rated based on relative risk to impact the project (low, moderate, or high) and the level of complexity to manage the site (straightforward or complicated). Standard impacts and mitigation measures typically apply to sites with low or moderate risk that are straightforward to manage.

Generally, sites ranked with low or moderate risk and straightforward complexity are situations that can be reasonably predicted based on experience and where mitigation measures can effectively control and/or minimize the impact based on best professional and engineering judgment. Mitigation measures are actions taken prior to and during construction to avoid or reduce the hazardous material impact. Mitigation measures prevent or reduce environmental impacts, minimize construction costs, and avoid or reduce WSDOT's future long-term cleanup costs associated with managing, remediation, and monitoring work.

The table is organized by Environmental (Direct, Indirect, Cumulative), Construction and Liability impacts and mitigation measures. Discipline report writers should select only the appropriate standard impacts and mitigation measures and tailor them for the project. The standard impacts and mitigation measures should also be updated as necessary.

Table # Standard Hazardous Materials Impacts & Mitigation Measures			
Impact Type	Impact	Mitigation Measure	Impacted Site Identification
Environmental Impacts	<b>Environmental Impacts</b> are impacts that the project causes to the environment or sensitive receptors.		
Direct Impacts to the Environment	<b>Direct Environmental Impacts<sup>1</sup></b> are impacts that a project causes that occur at the same time and place. Direct Impacts from construction activities are typically short term and temporary in nature		
Spills	<p>Accidental hazardous materials spills may occur due to construction activities. Construction sites involve various activities, equipment, and materials that can result in a release of hazardous materials into the environment. Traffic detours and lane closures can increase the risk of accidents that cause spills of hazardous materials or substances into the environment.</p> <p>Hazardous materials have the highest adverse affect on waters of the state (creeks, lakes, streams, wetlands, groundwater, stormwater catch basins, wellhead protection systems, etc.). Releases of relatively small amounts of chemicals to the ground may result in rapid migration to the water table. Hazardous materials also have the potential to harm endangered species or their habitat or to harm humans, such as children, the elderly, or the sick, who are sensitive to chemicals. Particulates of lead-based paint (LBP), asbestos-containing material (ACM), or spores of <i>Histoplasma capsulatum</i> can migrate off-site in dust particles. The contaminated dust can expose the surrounding populace to these materials.</p>	<p><u>A Spill Prevention, Containment, and Countermeasures (SPCC) Plan</u> is required for all WSDOT construction projects per Standard Specifications Section 1-07.15. Prior to beginning construction, the Contractor is required to prepare a project-specific plan to be used throughout the duration of the project. The plan must be updated to reflect actual site conditions and practices. Preventing a spill is the primary goal; however, the Contractor is expected to be prepared to minimize the impacts of a spill through immediate and appropriate response actions. The current Standard Specifications Section 1-07.15 and SPCC plan guidance are available to Contractors at: <a href="http://www.wsdot.wa.gov/Environment/HazMat/SpillPrevention.htm">http://www.wsdot.wa.gov/Environment/HazMat/SpillPrevention.htm</a></p> <p>In most cases, spills can be controlled and mitigated with the SPCC plan and normal erosion/runoff controls at the construction site. Care should be taken to prevent dust from traveling off-site by maintaining a water truck on-site to wet down areas around structures that may contain LBP, ACM, or fungal spores. All suspected LBP, ACM, and fungal-containing materials will be placed in appropriate containment as soon as it is removed from structures in order to decrease the possibility of exposure to the general public.</p>	
In-situ Soil and Groundwater Contamination	<p>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. Contaminated water may also result from clean water coming into contact with contaminated stockpiled soil. The risk of encountering contaminated soil and groundwater is higher in areas that have a long and varied history of industrial and commercial land use, and especially near properties with underground storage tanks (USTs). Contamination not managed properly in accordance with existing regulations could potentially affect human health and ecological receptors.</p>	<p><u>Hazardous materials investigations</u> that identify known or suspected contaminated sites can allow WSDOT staff to make informed decisions regarding planning, acquisition, design, and/or construction options. Hazardous materials investigations are conducted early in the environmental planning, design, and acquisition phase. The reports often indicate the type and severity of contaminants in the area. These environmental reports are maintained in the Regional Environmental Office's project file.</p> <p><u>Alternative construction design or techniques</u> are used to avoid contaminated areas or minimize quantity of material generated. For example, different footing designs can lessen the area and depth of excavation to minimize the quantity of wasted soil generated. Another example is using driven piles where concrete is tremied into place to limit the volume of dewatering.</p> <p><u>WSDOT Standard Specifications</u> Section 1-07.5 requires the Contractor to comply with Environmental Regulations and current federal and state laws and regulations.</p> <p><u>General Special Provisions and Special Provisions</u> (GSPs and SPs) can be added to the construction contract when site-specific circumstances warrant special measures that can be contractually enforced. GSPs are used when the contamination is predicted but not known. SPs are project-specific and used for known contamination. GSPs and SPs can inform the Contractor of known or potential contaminants and the investigative reports that are available for the Contractor's review. Once informed, the Contractor is responsible for safely and responsibly managing contamination in accordance with all federal, state, and local laws.</p> <p><u>WSDOT Manuals</u> provide policy and procedures for hazardous materials encountered during construction. The <i>Environmental Procedures Manual</i> (31-11), Chapter 620.08 provides policy and procedures for identifying, handling, and disposing of hazardous materials encountered during construction. The <i>Construction Manual</i> (M41-01), Section 1-2.2K provides WSDOT staff guidance and procedures to ensure environmental compliance during construction. These publications are available at <a href="http://www.wsdot.wa.gov/fasc/EngineeringPublications/library.htm">http://www.wsdot.wa.gov/fasc/EngineeringPublications/library.htm</a>.</p> <p><u>Proper planning and training</u> should be conducted for projects likely to encounter contamination. Planning should address the project-specific needs (e.g., limited space constraints preventing ability to stockpile contaminated soil or store several Baker tanks) to identify specific techniques and training requirements needed to effectively manage the hazardous materials generated during construction. Training should include key construction staff and project inspectors to recognize hazardous materials and understand appropriate protocols for safely isolating, containing, characterizing, and properly disposing of hazardous materials, and for securing disposal documentation.</p> <p><u>WSDOT Hazardous Materials and Solid Waste Program</u> staff is available to provide construction support by giving guidance and recommendations for general hazardous materials management procedures.</p> <p><u>WSDOT On-call environmental consultants</u> are available to provide hazardous materials management support. For projects that expect to encounter</p>	

<sup>1</sup> See 40 CFR 1508.8(a) (NEPA implementing regulations)

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			contaminants, it is recommended that a contract with an environmental consultant be established prior to the start of construction.
	<b>Indirect Impacts to the Environment</b>	<b>Indirect Impacts<sup>2</sup></b> (also known as secondary & operational impacts), are impacts caused by a project that occur later in time or further removed in distance, but are still reasonably foreseeable. Indirect impacts caused by a project usually include changes in land use, water quality, social issues, and population density.	
	<b>Traffic Flow</b>	Vehicle accident spills and long-term ongoing vehicular use and road maintenance may contaminate adjacent soils and surface water. Hazardous materials associated with accident spills, vehicular use, and roadway maintenance typically include petroleum products and metals. Improved traffic flow from the project will reduce vehicle accidents, traffic, and the amount of hazardous materials leaked from vehicles while in traffic and spilled during vehicle accidents.  Alternatively, improved roadways may increase traffic volume, creating the potential for increased vehicular accidents that over time may result in the accumulation of contaminants in the soil, sediment, surface water, and/or groundwater.	Post-construction operation is generally expected to improve potential environmental impacts with increased traffic flow and safety. WSDOT will notify Washington State Department of Ecology (Ecology) and Washington State Patrol in the event of an accidental spill during the operational phase. Ecology serves as the state's Incident Command for emergency spills and, as such, responds to spills within highway rights-of-way.
	<b>Maintenance</b>	Additional operational impacts may include herbicides used as part of WSDOT's roadside vegetation management program and minerals associated with deicing activities.	Chemicals used to maintain existing roadways and vegetation are applied in accordance with manufacturers' specifications, in a manner that designed to minimize harm to the environment.
	<b>Cumulative Impacts to the Environment</b>	<b>Cumulative Impacts<sup>3</sup></b> are impacts to the environment that result from incremental impacts of a project when added to other past, present, and reasonably foreseeable future actions, regardless of who undertakes those actions. "Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" and eventually lead to a measurable environmental change.	
	<b>In-situ Soil and Groundwater Contamination</b>	Transportation projects typically have a positive impact on the environment because the project work typically removes and properly disposes of USTs, contaminated soil, and contaminated groundwater. This eliminates potential contaminant sources and removes contamination that might otherwise have remained in the environment and continued to migrate.  Paving work can cap contamination and prevent the spread of contaminants through infiltrating stormwater.	As contaminated media are uncovered and cleaned up during project construction, there is an improvement in environmental quality and an increase in economic development. This leads to the overall beneficial cumulative effect to the area.
	<b>Stormwater</b>	Impacts of hazardous materials and waste from normal operations would primarily be associated with runoff of contaminants entrained in stormwater. Contaminants likely to be in stormwater runoff include petroleum products, metals, and automobile engine coolants such as ethylene glycol.	Mechanisms should be in place that would allow for the detention of contaminants within the surface runoff from impervious surfaces. Stormwater and water quality treatment facilities should be designed to collect and retain pollutants from traffic operations and improve water quality. These issues are addressed in more specific detail within the Water Resources Discipline Study because operational impacts related to hazardous waste and water are primarily associated with stormwater quality.
<b>Construction Impacts</b>		<b>Construction Impacts</b> are direct impacts to the project including construction delays and increased costs	
	<b>General</b>	Construction delays and increased costs often result from unexpected encounters of contamination. Delays are typically caused by segregating and containing contaminants, coordinating sample collection, waiting for laboratory results, identifying a permitted disposal facility, completing the disposal facility's waste profile sheet, and coordinating haul and disposal. Increased costs result from payments to the Contractor during delay, payments to a qualified professional to obtain and analyze samples, laboratory charges, and expensive disposal fees.  The subcategories below discuss the following specific types of construction impacts along with associated regulations.  <ul style="list-style-type: none"> <li>▪ Contaminated Soil and Water</li> <li>▪ Underground Storage Tanks (USTs)</li> <li>▪ Spills</li> <li>▪ Demolition</li> <li>▪ Worker Safety &amp; Public Health</li> </ul>	These mitigation measures apply to all the general impacts during construction. Additional mitigation measures apply to each subset of impacts.  <u>Hazardous materials investigations</u> that identify known or suspected contaminated sites can allow WSDOT staff to determine how to avoid or minimize potential construction impacts. Hazardous materials investigations are conducted early in the environmental planning, design, and acquisition phase. Investigation reports allow WSDOT staff to make informed decisions regarding planning, acquisition, design, and/or construction options. The reports often indicate the type and severity of contaminants in the area. Even if contamination is not identified prior to construction, hazardous materials investigations are still an important resource during construction when contamination is unexpectedly encountered, because WSDOT staff know the historical land use of the site. These environmental reports are maintained in the Regional Environmental Office's project file. Hazardous materials investigations and environmental reports include, but are not limited to:  <ul style="list-style-type: none"> <li>▪ Hazardous Material Discipline Reports (Historical &amp; record investigation for project corridors)</li> <li>▪ Site Reconnaissance / Windshield Surveys</li> <li>▪ Phase I Environmental Site Assessment (Historical &amp; record Investigation for a site)</li> <li>▪ Phase II Environmental Site Assessment (Sampling)</li> <li>▪ Phase III Environmental Site Assessment (a.k.a. Remedial Investigation / Feasibility Study. Evaluates cleanup options &amp; costs)</li> <li>▪ UST and/or aboveground storage tank (AST) Closure Reports</li> <li>▪ ACM/LBP Surveys</li> </ul> <u>Alternative construction design or techniques</u> are used to avoid contaminated areas or minimize quantity of material generated. For example, different footing designs can lessen the area and depth of excavation to minimize the quantity of wasted soil generated. Another example is using driven piles where concrete is tremied into place to limit the volume of dewatering.

<sup>2</sup> See 40 CFR 1508.8(b) (NEPA implementing regulations)

<sup>3</sup> See 40 CFR 1508.7 (NEPA implementing regulations)

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			<p><u>WSDOT Standard Specifications</u> Section 1-07.5 requires the Contractor to comply with Environmental Regulations and current rules of resource agencies. The Contractor is required to prevent spreading or contributing to existing contamination and appropriately dispose waste material in a manner consistent with federal, state, and local regulations. Section 1-07.04(2) of the Standard Specifications requires the Contractor to take precautions and perform any necessary work to provide and maintain a safe and healthful worksite in accordance with applicable laws. Sections 1-07.15 and 8.01 require the Contractor to prepare and implement a project-specific Temporary Erosion and Sediment Control Plan, which addresses prevention of wind dispersion of soil and water pollution during construction. Section 1-07.15(1) requires the Contractor to prepare and implement an SPCC Plan, which addresses both spills from hazardous materials use (including petroleum) and specific measures to prevent release or further spreading of materials in areas with identified preexisting contamination.</p> <p><u>GSPs and SPs</u> can be added to the construction contract when site-specific circumstances warrant special measures that can be contractually enforced. GSPs are used when the contamination is predicted but not known. SPs are project-specific and used for known contamination. GSPs and SPs can inform the Contractor of known or potential contaminants and the investigative reports that are available for the Contractor's review. Once informed, the Contractor is responsible for safely and responsibly managing contamination in accordance with all federal, state, and local laws. GSPs and SPs can include specific requirements related to containment, removal, and disposal of hazardous materials, USTs, and contaminated soil and water. GSPs and SPs can also establish certification requirements of personnel, notification procedures, and documentation requirements.</p> <p><u>WSDOT Manuals</u> provide policy and procedures for hazardous materials encountered during construction. The <i>Environmental Procedures Manual</i> (31-11), Chapter 620.08 provides policy and procedures for identifying, handling and disposing of hazardous materials encountered during construction. The <i>Construction Manual</i> (M41-01), Section 1-2.2K provides guidance and procedures to ensure environmental compliance during construction. These publications are contained at <a href="http://www.wsdot.wa.gov/fasc/EngineeringPublications/library.htm">http://www.wsdot.wa.gov/fasc/EngineeringPublications/library.htm</a>.</p> <p><u>Proper planning and training</u> should be conducted for projects likely to encounter contamination. Planning should address the project-specific needs (e.g., limited space constraints preventing ability to stockpile contaminated soil) to identify specific techniques and training requirements needed to effectively manage the hazardous materials generated during construction. Training should include key construction staff and project inspectors to recognize hazardous materials and understand appropriate protocols for safely isolating, containing, characterizing, and properly disposing of hazardous materials, and for securing disposal documentation.</p> <p><u>WSDOT Hazardous Materials and Solid Waste Program</u> staff is available to provide construction support by giving guidance and recommendations for general hazardous materials management procedures. When resources are not available, the WSDOT project office can direct and manage environmental consultants in coordination with regional offices. This enables efficient work with the least amount of impact to construction schedule and budget as possible.</p> <p><u>WSDOT On-call environmental consultants</u> are available to provide hazardous materials management support. Services include, but are not limited to: contaminant screening to identify and segregate potentially contaminated media; sampling; laboratory results QA/QC and interpretation; recommendations for proper management, reuse, or disposal options; preparation of waste profile forms; and assisting with waste manifesting and tracking. A contract with an environmental consultant should be established prior to the start of construction for projects that are expected to encounter contaminants.</p>	
	<p><b>In-situ Soil and Groundwater Contamination</b></p>	<p>Construction delays and increased costs often result from unexpected encounters of contamination in soil and water. Delays related to stockpiling contaminated soil, dewatering contaminated water into storage containers, coordinating sample collection, waiting for laboratory results, identifying a permitted disposal facility, completing the disposal facility's waste profile sheet, and coordinating haul and disposal. Increased costs result from payments to the Contractor during the delay, payments for containment supplies, payments to a qualified professional to obtain and analyze samples, laboratory charges, and expensive disposal fees.</p> <p>Construction (staging) activities may be impacted depending upon the need to alter their proximity due to contaminated media, USTs, etc.</p>	<p><u>Prior to Construction:</u> Hazardous materials investigations conducted early in the project development phase can identify known and potentially contaminated sites within a project corridor. The reports often indicate the type and severity of contaminants in the area. These investigations identify known or suspected contaminated sites and allow WSDOT staff to make informed decisions regarding planning, acquisition, and design and/or construction options. These environmental reports are maintained in the Regional Environmental Office's project file.</p> <p>Mitigation measures for contaminated soil and groundwater include pre-construction planning to define the areas where contamination may be encountered, design changes to minimize contaminated media that must be managed, and implementing practical cleanup alternatives for contaminated soil and groundwater. Mitigation includes incorporating GSPs and project-specific SPs, which makes the Contractor responsible for being prepared to appropriately handle contaminated material with minimal delays.</p> <p><u>Proper planning and training</u> should be conducted for projects likely to encounter contamination. Planning should address the project-specific needs (e.g., limited space constraints preventing ability to stockpile contaminated soil or store several Baker tanks) to identify specific techniques and training requirements needed to effectively manage the hazardous materials generated during construction. Training should include key construction staff and project inspectors to recognize hazardous materials and understand appropriate protocols for safely isolating, containing, characterizing, and properly disposing of hazardous materials, and for securing disposal documentation.</p> <p><u>Contaminated Media Management Plans (CMMPs)</u> are developed when significant amounts of known contaminated soil, groundwater, and sediment requires excavation or dewatering. CMMPs establish specific handling and disposal procedures and chains or responsibility to effectively manage contaminated soil and groundwater as it is encountered in order to minimize schedule delays and excessive costs. A comprehensive CMMP would address field screening methods, notification requirements, soil stockpile management, and sampling and disposal requirements.</p> <p><u>During Construction:</u> For encounters of known or unknown contaminated soil or groundwater, project offices are directed to contact their WSDOT Hazardous Materials Specialist. A WSDOT Hazardous Materials Specialist or other contracted qualified environmental professional will provide the project office direction and technical support. Internal notification to WSDOT Hazardous Materials Specialists also ensures that the appropriate follow-up work (should contamination be left in place) is conducted in accordance with Model Toxics Control Act (MTCA) regulations. WSDOT's policy and procedures for identifying, handling, disposing of, and documenting contamination encountered during construction is contained in EPM Chapter 620.08. Timely, proper management of contaminated media can prevent spreading contaminants to clean soil, surface waters, and the air and can reduce construction delays and cost increases. Alternative construction techniques may need to be employed to minimize earthwork occurring near any of the above-mentioned liability issues. WSDOT and/or its contractors would be responsible for proper management of any</p>	

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	<p><b>USTs</b></p>	<p>USTs may be encountered during excavation activities. USTs may be filled with product and have the potential of creating a spill if the tank is ruptured. USTs in residential areas are likely to contain heating oil, whereas tanks used in commercial/industrial fueling will typically contain automobile fuel and other petroleum products. USTs in the automobile or machine repair business will typically contain petroleum, waste oil, and hydraulic and transmission fluids where commonly associated contaminants include petroleum, heavy oil, metals, and polychlorinated biphenyls (PCBs).</p> <p>Construction delays and increased costs often result from unexpected encounters of USTs. Contaminated soil and/or groundwater associated from USTs can affect project schedules and increase costs.</p>	<p>regulated hazardous wastes.</p> <p>Hazardous materials investigations can identify documented Leaking Underground Storage Tanks (LUSTs), active regulated USTs, or potential historical UST sites. USTs can also be identified through Ecology's Facility Site Atlas (internet mapping system), ground penetrating radar, and old WSDOT right-of-way maps. Early identification of known or potential UST sites allows WSDOT staff to remove tanks, associated piping, and contaminated soil prior to project construction or incorporate GSPs in the construction contract requiring the Contractor to remove USTs during construction in accordance with the regulations.</p> <p>WSDOT would assume cleanup liability for decommissioning and removal of suspected USTs if a UST is encountered during excavation activities. WSDOT may also acquire cleanup liability for any contaminated media resulting from a leaking UST in the right-of-way. WSDOT will follow procedures and regulations for decommissioning USTs as outlined in EPM Chapter 620.08.</p> <p>For unexpected encounters of USTs, project offices will contact their WSDOT Hazardous Materials Specialist and follow internal notification procedures prescribed in the Construction Manual (M41-01.05) Section 1-2.2K(1) for the Environmental Compliance Assurance Procedure (ECAP). A WSDOT Hazardous Materials Specialist or other contracted qualified environmental professional provides the project office direction or oversight to ensure compliance with UST regulations and the appropriate follow-up work in accordance with MTCA regulations.</p>	
	<p><b>Spills</b></p>	<p>Construction delays and increased costs may result in the event of a spill and cleanup work of hazardous materials that are used or generated during construction. Construction vehicles and equipment typically use gasoline, diesel, motor oil, transmission fluid, radiator coolant, brake fluid, and hydraulic oil. New construction work typically uses cement, asphalt, tar, paving oils, tack, and paint.</p>	<p>WSDOT project office will follow the internal notification procedures prescribed in the Construction Manual (M41-01.05) Section 1-2.2K(1) for the ECAP to report spills of hazardous materials. An SPCC Plan is also required for all WSDOT construction projects per Standard Specifications Section 1-07.15. Prior to beginning construction, the Contractor is required to prepare a project/site-specific plan to be used throughout the duration of the project. The plan must be updated to reflect actual site conditions and practices. Preventing a spill is the primary goal; however, the Contractor is expected to be prepared to minimize the impacts of a spill through immediate and appropriate response actions. The required elements of the SPCC plan includes:</p> <ol style="list-style-type: none"> <li>1. Responsible Personnel</li> <li>2. Spill Reporting</li> <li>3. Project and Site Information</li> <li>4. Potential Spill Sources</li> <li>5. Preexisting Contamination</li> <li>6. Spill Prevention and Response Training</li> <li>7. Spill Prevention</li> <li>8. Spill Response</li> <li>9. Project Site Map</li> <li>10. Spill Response Forms</li> </ol>	
	<p><b>Demolition</b></p>	<p>Increased costs and delays may result when demolition requires special handling and disposal of certain equipment, materials, or structures. Special demolition considerations can include:</p> <ol style="list-style-type: none"> <li>a) <b>ACMs</b> are likely to exist in buildings constructed prior to 1985. ACM poses risks to public and worker safety when disturbed for maintenance, renovation, and demolition of structures. If a survey is not completed prior to construction, the project may be delayed.</li> <li>b) <b>LBP</b> is likely to exist in structures built before 1978 and is typically found on steel bridge structures. LBP poses risks to environmental health and worker safety when disturbed for maintenance, renovation, and demolition of structures including bridges and buildings. If a survey is not completed prior to construction, the project may be delayed.</li> <li>c) <b>USTs</b> and associated piping (See sub-category above for specific UST impacts)</li> <li>d) <b>ASTs</b> and other containers (such as drums, cans, and bottles) that store hazardous materials</li> <li>e) <b>Universal Waste</b>, defined in Chapter 173-303 WAC, batteries, lamps, thermostats, and mercury-containing equipment</li> <li>f) <b>Creosote or Arsenic [a.k.a. Chromated Copper Arsenate (CCA)] treated wood</b>, such as railroad ties, telephone poles, and marine pilings</li> <li>g) <b>PCB-containing equipment</b> in aboveground utilities</li> <li>h) <b>Well decommissioning</b>, including groundwater monitoring, extraction, treatment, and supply wells</li> </ol>	<p>Prior to demolition work, hazardous materials surveys with follow-up sampling (where required) should be conducted to identify equipment, materials, and structures that require special handling or disposal. A comprehensive building survey and sampling program helps limit the amount of material required for special removal and disposal. In addition, surveys help avoid the potential for environmental contamination and construction delays and promote worker health and safety. It is recommended that any demolition items (see list "Impact") that may be potential contaminant sources be clearly identified (locations and estimated quantities) and then appropriately handled, segregated, and removed for disposal as required by applicable regulations.</p> <p><b>ACM</b> is often found in commercial and residential buildings constructed prior to 1985. A pre-demolition building survey, conducted by an Asbestos Hazard Emergency Response Act (AHERA)-certified building inspector would verify the presence of ACM and provide locations and estimated quantities requiring special handling and disposal in a report. If ACM is identified, mitigation would consist of removing these materials in compliance with regulations prior to building demolition and disposal in a legally permitted facility (i.e., lined landfill). Regulations include specific notification, work practice, packaging, labeling, and disposal requirements. Chapter 620.08 of the EPM provides additional mitigation measures details.</p> <p><b>LBP</b> poses risks to environmental health and worker safety when disturbed for maintenance, renovation, and demolition of structures including bridges and buildings. Testing and documentation should be completed as early in the project design phase as possible to determine if special procedures and disposal that will result in increased costs will be required for existing LBP. LBP testing, abatement, or related activities in Washington are required to be licensed by the Lead-Based Paint Program located within the Department of Community, Trade and Economic Development (CTED). Performing such activities without LBP certification from CTED is a violation of Chapter 365-230 WAC. Chapter 620.08 of the EPM provides additional mitigation measure details.</p> <p>Standard removal, testing, and disposal protocols of LBP on bridge structures are described WSDOT Standard Specifications Section 6.07.3 and EPM Chapter 6.08. Lead pipe or lead-painted metal can be recycled as scrap metal in accordance with WAC 173-303-071(3)(ff). If the material is not recycled, it must be evaluated to determine whether it requires management and disposal as a dangerous waste (per Chapter 173-303 WAC). Contractors are required to abide by WAC 296-62-07521 for general lead exposure health and safety.</p> <p><b>UST</b> mitigation information is provided above in the "USTs" row of this table. AST mitigation shall generally conform to UST mitigation.</p> <p><b>Universal Waste</b> poses a risk to the worker health, public safety, and the environment if improperly handled and disposed. A pre-demolition building survey should be conducted prior to demolition to identify these regulated materials and ensure that they are properly handled and disposed in accordance with WAC 173-303-573. Additional information is available in the following Ecology Publications, which can be accessed by using the Publication number at: <a href="http://www.ecy.wa.gov/pubs.shtm">http://www.ecy.wa.gov/pubs.shtm</a>:</p> <ul style="list-style-type: none"> <li>• The Universal Waste Rule, Publication 98-407</li> <li>• The Universal Waste Rule for Batteries, Publication 98-407a</li> </ul>	

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			<ul style="list-style-type: none"> <li>• The Universal Waste Rule for Mercury-containing Equipment and Thermostats, Publication 98-407b</li> <li>• The Universal Waste Rule for Lamps, Publication 98-407c</li> </ul> <p><b>Creosote or arsenic treated wood</b> may be reused even if the treated wood is designated as a hazardous/dangerous waste per a Toxics Characteristics Leaching Procedure (TCLP) test (See Chapter 173-303 WAC). However, its reuse must be utilized for its “intended end use” per 40 CFR 261.4(b)(9). This means that treated wood cannot be chipped or shredded for mulch and used in landscaping applications. Ecology encourages reuse of treated wood as a preferred management alternative. If reuse is not feasible, disposal facilities will most likely require sampling (TCLP test for arsenic) of treated wood to determine if it is designated as a Dangerous Waste (per Chapter 173-303 WAC). If not a Dangerous Waste, then the treated wood can be managed as a solid waste (per Chapter 173-304 WAC) and accepted into a Subtitle D landfill or a Waste-to-Energy incinerator (hog fuel). If the wood is designated as a Hazardous/Dangerous Waste, then disposal at a higher cost is required at a Subtitle C facility. Chapter 620.08 of the EPM provides additional mitigation measure details.</p> <p><b>PCB-containing equipment</b>, particularly aboveground utilities, poses a risk to worker health, public safety, and the environment if improperly handled and disposed. A pre-construction survey should be completed to identify equipment of concern. PCB-containing equipment should be disposed of per federal and state regulations.</p> <p><b>Well decommissioning</b> is required when wells are unusable or abandoned, or will be impacted by the project. The wells should be identified during the design phase to determine if project design may affect a well. A licensed well driller is required to install and decommission wells. Licensed drillers complete the required Notice of Intent Forms (application), which allows Ecology to inspect a well as necessary to make sure it is completed or decommissioned according to state regulations. Additional regulatory requirements are available in the EPM Chapter 540.25.</p>	
	<p><b>Worker Safety &amp; Public Health</b></p>	<p><u>Exposure of hazardous materials</u> to construction workers and the public may result during excavation and management of contaminated media (e.g., soil, groundwater, abandoned drums or containers) or from the misuse of hazardous substances used or generated on-site during construction activities. Typical exposures in these situations include ingestion, dermal contact, and/or inhalation. Contaminants including vapors that produce physical symptoms such as dizziness, irritated or burned skin and eyes, long-term serious injury, suffocation, and death may be present in excavations or drums. Minor spills of materials used in construction, such as fuels, lubricants, and hydraulic fluids, typically occur during construction operations. Exposure to such accidental release could damage skin, eyes, lungs, and other organs. Contaminants and vapors that are typical for WSDOT construction sites are primarily petroleum based, where concentrations are expected to be similar to exposures during fueling at public gas stations.</p> <p><u>Worker and public health and safety impacts</u> are also a concern due to the explosion and fire hazards posed by USTs and ASTs, and abandoned drums or containers. USTs/ASTs are an explosion hazard when vapors trapped within the tank reach explosive limits and detonate when ignited by a spark or some other incendiary device like a cigarette. Fire may produce irritating, corrosive, and/or toxic gases.</p> <p><u>Demolition work</u> may release ACM, LBP, and/or bird guano. Inhalation and ingestion of LBP, ACM, and/or bird guano could have a damaging effect on workers’ health. Common short-term symptoms of <b>lead</b> poisoning include abdominal pain, headaches, constipation, and aches in the joints. Exposure to high levels of lead poisoning can result in retardation, convulsions, coma, and death. The risks associated with low levels of contact with <b>asbestos</b> are not well established, so the EPA concludes there is no level of exposure below which the risks of contracting an asbestos-related disease are zero. Exposures to asbestos can result in long-term progressive illnesses including lung cancer, asbestosis, and mesothelioma. Histoplasmosis is an infectious disease caused by inhaling spores of a fungus called Histoplasma capsulatum found in <b>bird guano</b>.</p> <p><u>Construction delays and increased costs</u> may result when the Contractor is unaware of site-specific circumstances that would warrant special employee safety training, certification and/or preparation of a site-specific Worker Health and Safety Plan.</p>	<p><u>Hazardous materials investigations</u> (as described above) identify known or potentially contaminated areas early in project. This allows WSDOT project staff to incorporate a GSP or SPs into the contract to notify the Contractor of site-specific conditions. Copies of hazardous materials investigations are made available to the Contractor. When WSDOT informs the Contractor of these conditions, the Contractor is required to train the workers to recognize hazardous conditions in the work place and train them how to respond to and report such conditions.</p> <p>The Washington State Department of Labor and Industries requires that personnel receive proper training for working with hazardous materials and donning appropriate personal protective equipment. Depending on the nature of any contamination encountered during construction activities, worker safety training (such as 24- or 40-hour HAZWOPER training) may be required of personnel working on the site under Chapter 296-62 WAC. The Contractor must protect workers and the public from potential safety and health impacts. The Occupational Safety and Health Act (OSHA) establishes requirements for site safety procedures, worker training, and worker safety and health standards for employees engaged in work related to or potential exposure to hazardous materials/substances. The WSDOT Standard Specifications (applicable to all projects) Section 1-07.04(2) requires the Contractor to take precautions and perform any necessary work to provide and maintain a safe and healthful worksite in accordance with applicable laws.</p> <p>In addition to health and safety training, workers should be trained in procedures to prevent hazardous materials from migrating off-site and coming into contact with the public. Erosion and dust controls should be maintained on-site at all times during construction, and any materials suspected to contain lead or asbestos should be abated by professionals trained in the removal and disposal of these materials.</p> <p>According to the National Institute for Occupational Safety and Health, before an activity is started that may disturb any material that might be contaminated by Histoplasma capsulatum, workers should be informed in writing of the personal risk factors that increase an individual’s chances of developing histoplasmosis. Such a written communication should include a warning that individuals with weakened immune systems are at greatest risk of developing severe and disseminated histoplasmosis if they become infected. These people should seek advice from their health care provider about whether they should avoid exposure to materials that might be contaminated with Histoplasma capsulatum.</p>	
<p><b>WSDOT Liability</b></p>				

**WSDOT Standard Hazardous Material Impacts and Mitigation Measures – continued**

	<p><b>Acquisition – Cleanup Liability</b></p>	<p>WSDOT can inherit cleanup liability when 1) it acquires a contaminated site, 2) construction activities spread or cause contamination to become worse, or 3) final project construction prevents or obstructs a potentially liable party from conducting remedial activities. RCW 70-105D.040 identifies persons liable for a facility/property as: 1) the current or past facility owner/operator; 2) anyone who arranged for disposal/treatment of hazardous substances at the site; 3) anyone who transported hazardous substances for disposal/treatment at the site, unless it could legally receive the materials at the time of transport; or 4) anyone who sells a hazardous substance with written instructions for its use, where abiding by the instructions resulted in contamination. In situations where there is more than one liable party, each party is jointly and severally liable for costs associated with cleanup of a site and cost to repair damages to natural resources.</p> <p>Cleanup liability can become an expensive immediate or long-term cost. As a property owner, WSDOT would be liable for the cleanup of on-site contaminated soil and groundwater. Liability issues for sites with contamination can also extend beyond the property boundaries if contamination migrated off-site through soils or groundwater. In addition, WSDOT would be responsible for the removal of any stored or abandoned hazardous materials remaining on-site at the time of acquisition. WSDOT would incur the costs for characterization, cleanup, disposal, and potential long-term monitoring.</p> <p>WSDOT generally would not incur liability for groundwater contamination that has migrated into the project footprint as long as the agency does not acquire the source of the contamination. Any contaminated groundwater that has entered into the project footprint may create an impact to construction activities as described in further sections of this discipline study.</p>	<p>Hazardous materials investigations identify known or potentially contaminated sites early, which allow WSDOT project staff to avoid acquiring or excavating in contaminated sites. The preference is to avoid purchasing a contaminated site and avoid cleanup liability. However, there are options <i>prior to acquisition</i> to reduce liability risks when no feasible alternative or design option is available and WSDOT is forced to acquire and/or excavate contaminated property in order to complete a construction project.</p> <p>To manage potential cleanup liability risks, when necessary, WSDOT performs all appropriate inquiry <u>prior to</u> acquisition of and construction on potentially contaminated property. For WSDOT projects, “All appropriate inquiry” includes a site reconnaissance, and/or varied levels of Phase I and II Environmental Site Assessments generally following American Society for Testing and Materials (ASTM) standards 1527, 1528, and 1903. The type and level of environmental investigation is considered on a case-by-case basis in coordination with the WSDOT Hazardous Materials and Solid Waste Program.</p> <p>When USTs or contamination are identified prior to property acquisition, WSDOT should assign fair market property values that consider remediation costs and potential long-term (i.e., on-going monitoring and site management) cleanup costs. To limit potential liability risks prior to acquisition, WSDOT can use performance bonds, indemnifications, and other tools to minimize agency costs and cleanup liability.</p> <p><i>For sites that may be substantially contaminated</i>, WSDOT must clearly demonstrate that “All Appropriate Inquiry” (per 40 CFR Part 312) had been undertaken to discover, investigate, and characterize the hazardous substance and, once discovered, that due care was exercised to prevent the release or spread of contamination. Demonstrating All Appropriate Inquiry per EPA’s final rule establishes that WSDOT met specific regulatory requirements for conducting all appropriate inquiries into the previous ownership, uses, and environmental conditions of a property. This level of investigation should be considered only when WSDOT decides to acquire property that may be substantially contaminated and the responsible party is not performing cleanup or under an Agreed Order. Decisions regarding site cleanup should be made in coordination with the Hazardous Materials Program in order to ensure that the cleanup remedy will be “substantially equivalent of an Ecology conducted cleanup” to secure WSDOT’s ability to recover cleanup costs from solvent companies who are potentially liable.</p> <p>Additional guidance regarding appraisal and acquisition guidance is presented in WSDOT’s <i>Right-of-Way Manual (M26-01)</i>, May 2006, Sections 4-4.4 D &amp; E and 6-5.14. These publications are available at: <a href="http://www.wsdot.wa.gov/fasc/EngineeringPublications/library.htm">http://www.wsdot.wa.gov/fasc/EngineeringPublications/library.htm</a>.</p>	
	<p><b>Spills</b></p>	<p>Hazardous materials spills that impact surface water, groundwater, sediment, or soils located within the project footprint may result in WSDOT and/or the Contractor incurring liability for an appropriate cleanup of the affected area and for environmental damages to state and federal agencies.</p>	<p>WSDOT project office will follow the internal notification procedures prescribed in the Construction Manual (M41-01.05) Section 1-2.2K(1) for the ECAP to report spills of hazardous materials. An SPCC Plan is also required for all WSDOT construction projects per Standard Specifications Section 1-07.15. The SPCC plan describes the process for prevention and response for spills of hazardous materials during construction.</p>	
	<p><b>Disposal</b></p>	<p>As an owner and/or generator, WSDOT could be subsequently liable for the cleanup of contaminated media disposed of at a non-permitted facility.</p>	<p>WSDOT maintains disposal documentation (i.e., lab data, sampling procedures, waste profile sheets, and disposal tickets) proving contaminated waste was properly characterized and disposed at a legally permitted facility. GSPs or project-specific SPs added to the construction contract require the Contractor to provide a copy of the shipping manifest or bill of lading indicating the amount of material hauled to disposal, and bearing the disposal site operator’s confirmation for receipt of the material. Standard Specifications Section 2-03.3(7) requires the Contractor to provide the WSDOT Project Engineer the location of disposal sites and copies of required permits and approvals before any waste is hauled off the project. Additional policy and procedures for identifying, handling, disposing, and documenting contamination encountered during construction is contained in EPM Chapter 620.08.</p>	

***Appendix D –Site Summary Table***

**Site Summary Table of Hazardous Material Sites**

Site No.	Site Name & Address	Site Location Relative to the Project Area	Site Information Sources	Relevant Site Uses(s). Database Listing, Hazardous Materials of Concern, Site Conditions of Concern, and Affected Media and Remediation History	Risk Rating & Rational