*Level 2*

*Preliminary Site Investigation*

**Project Name**

**Key#**

**Hwy**

**Milepost**

**City, County**

**Month, Year**

**Prepared by: Author’s Name**

***Oregon Department of Transportation***

|  |  |
| --- | --- |
| Region 2 Technical Center | 455 Airport Road SE Bldg A |
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**Executive Summary**

ODOT Geo/Hydro HazMat Group performed a Level 2 Preliminary Site Investigation (PSI) for the Project Site \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. ODOT did not encounter any evidence of contamination at the Project Site *or* ODOT HazMat concludes the following:

* Two #####-gallon underground storage tanks (USTs) are located \_\_\_\_\_\_.
* \_\_\_\_\_-contaminated soils are located \_\_\_\_\_\_ at a depth of ## to ## feet bgs.
* Concentrations of \_\_\_\_ in soil located \_\_\_\_\_ exceed applicable DEQ cleanup levels.
* \_\_\_\_\_\_-contaminated groundwater is located \_\_\_\_\_\_ at a depth of ## to ## feet bgs.
* Laboratory analysis detected \_\_\_ and \_\_\_ in groundwater samples at concentrations exceeding applicable DEQ cleanup levels.
* The previous Corridor Study identified materials that will require special handling if disposed of during construction, including treated timbers, PCB light ballasts, ......

Based on the results of this assessment, ODOT HazMat recommends the following actions:

* A licensed tank service provider should remove the USTs during construction.
* Special provisions are required to ensure appropriate management of contaminated soil and groundwater during construction.
* ODOT should notify DEQ of the contamination that exceeds applicable cleanup levels and ensure that DEQ understands the limits to the Agency’s cleanup liability based on our eminent domain authority in acquiring the property.
* ODOT should consider withholding $##,### from the purchase price of the property to pay for the contaminated media management required during construction (not to pay for Site cleanup since that responsibility should remain with the previous owner).
* Special provisions are required to ensure appropriate management of mercury vapor lamps, light ballasts that could contain PCBs, transformers that could contain PCBs, asbestos containing materials, lead-based paint, that require special handling and disposal.
* Other recommendations.

If the scope of the Project changes to include additional excavation or right of way acquisition, please contact the Region HazMat Coordinator.

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# Introduction

The Oregon Department of Transportation (ODOT) Region # Geo/Hydro HazMat Group has conducted a Level 2 Preliminary Site Investigation (PSI) for the Project:

**Project Name**

**Project Location**

**Key#: \_\_\_\_\_**

This PSI is intended to confirm the presence or absence of potential contamination identified in the HazMat Corridor Study for this Project. The presence of contamination could affect worker safety, property value, and construction costs.

## Site Description

The Project Corridor consists of approximately \_\_\_-miles of highway, located in \_\_\_\_\_\_, Oregon, as indicated on Figure 1. Proposed Project Corridor activities include:

* Acquisition of approximately 20 feet of right-of-way on the north side of the highway
* Acquisition of Joe’s gas station
* replacement of \_\_\_\_ utility lines to a depth of approximately ## feet below ground surface (bgs)
* Excavation for \_\_\_\_\_
* etc.

## Previous Assessments

In month, year, ODOT conducted a Hazardous Materials Corridor Study of the Project Corridor to identify potential sources of contamination that could impact the Project. [ODOT also conducted additional research that included a review of Oregon Department of Environmental Quality (DEQ) files and/or review of municipal permits for select adjacent listed sites.] Findings of the Corridor Study [and the additional research] indicated the following areas of concern:

* A LUST site abuts the corridor at the intersection of \_\_\_\_ street
* A former dry cleaners located on the north side of the Corridor at MP \_\_\_
* etc.

Therefore, the HazMat Group recommended collecting subsurface samples at these locations to confirm the presence of contamination and develop associated project cost estimates.

# Preliminary Site Assessment Activities

## Scope of Work

ODOT HazMat prepared a Work Plan dated \_\_\_\_\_\_\_\_ for the PSI activities, which included a geophysical survey, ## soil boring locations, ## monitoring wells, ## surface soil samples, etc. Appendix A contains the Work Plan which ODOT modified in the field because\_\_\_\_\_\_\_ *or* ODOT did not modify in the field. Based on this Work Plan ODOT HazMat conducted PSI assessment activities at the following locations:

* Northeast of the intersection of Main St and Hwy 100
* Adjacent to Joes Gas Station at 123 Main St
* etc.

ODOT prepared a site-specific Health and Safety (HASP) plan, a copy of which is available upon request. ODOT requested utility line making through Oregon's Call-Before-You-Dig program [and met with \_\_\_\_\_\_\_ of \_\_\_\_\_ utility] prior to drilling.

## Field Activities

\_\_\_\_\_ of ODOT Region ## HazMat oversaw PSI assessment activities and collected samples between Date and Date.

### Surface Soil Samples

ODOT HazMat collected ## surface soil samples in the area located \_\_\_\_\_\_\_\_\_\_\_ at approximately ## feet bgs, as indicated on Figure 2. Field staff collected the soil samples using a decontaminated steel shovel/bucket auger, and screened them using a PID and the sheen method. Soil samples were collected in laboratory-prepared containers, labeled, placed in a cooler with ice and transported under chain-of-custody protocol to North Creek Analytical (NCA) in Beaverton, Oregon for analysis.

### Soil Borings

\_\_\_\_\_\_ advanced ## probe holes with a push probe sampling system and collected soil samples continuously in ##-foot long, disposable acetate liners. *Or* \_\_\_\_\_\_ advanced ## borings with a hollow-stem auger sampling system and collected soil samples continuously/every ## feet with a split spoon sampler. Figure 2 indicates the boring/probe hole locations. ODOT HazMat screened the soil samples using a PID and the sheen method to select soil samples for laboratory analysis. Soil samples were collected in laboratory-prepared containers, labeled, placed in a cooler with ice and transported under chain-of-custody protocol to NCA for analysis. Appendix C contains boring logs, including geologic descriptions and field screening results.

## Laboratory Analytical Methods

On Date ODOT submitted ## soil samples to NCA for the following analyses:

* Petroleum hydrocarbon identification by NWTPH-HCID
* Gasoline range hydrocarbon quantification by NWTPH-Gx (if detected by NWTPH-HCID)
* Diesel range hydrocarbon quantification by NWTPH-Dx (if detected by NWTPH-HCID)
* Volatile organic compounds (VOCs) by EPA Method 8260B (if gasoline range hydrocarbons detected)
* Polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270SIM (if diesel range hydrocarbons detected)
* Total metals by EPA RCRA-8 methods (if \_\_\_\_\_\_ detected)
* etc.

On Date ODOT submitted ## surface soil samples to NCA for the following analyses:

* Diesel range hydrocarbon quantification by NWTPH-Dx
* Polychlorinated Biphenyls (PCBs) by EPA Method
* Total metals by EPA RCRA-8 methods (if \_\_\_\_\_\_ detected)
* etc.

On Date ODOT submitted ## groundwater samples to NCA for the following analyses:

* Volatile organic compounds (VOCs) by EPA Method 8260B
* Polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270SIM
* Dissolved metals by EPA RCRA-8 methods
* etc.

In addition, ODOT collected the following QC samples which were submitted for all analyses identified above for that media:

* Duplicate soil sample from boring \_\_\_\_\_ at ## feet bgs.
* Duplicate groundwater sample from monitoring well \_\_\_\_
* Equipment blank sample from split spoon/probe sleeve/bailer/pump after collecting a sample from \_\_\_\_\_
* A trip blank provided by NCA (analyzed for VOCs only)

# Results

## Geology and Hydrogeology

Based on the probe hole/boring/test pit logs, soils at the disposal site consist of ## to ## feet of \_\_\_\_\_\_\_\_ overlying \_\_\_\_\_ which extended to at least ## feet bgs. ODOT field personnel observed staining/petroleum odors/elevated PID readings at approximately ## to ## feet bgs. The probe holes/borings/test pits did not encounter bedrock and, therefore, bedrock is more than ## feet bgs *or* The probe holes/borings/test pits encountered refusal at ## to ## feet bgs and that is the likely depth to bedrock. Based on groundwater measurements on Date, depth to groundwater ranged from ## to ##\_ feet bgs *or* The probe holes/borings/test pits did not encounter groundwater, therefore, groundwater is likely greater than ## feet bgs. Based on the level survey and depth to groundwater measurements in each monitoring well, groundwater appears to flow towards the \_\_\_\_\_\_, as indicated in Figure 3.

## Geophysical Survey Results

The geophysical surveys indicated the presence of a possible underground storage tank (UST) located \_\_\_\_\_\_\_ [or other information], as noted on the sketch map included with the geophysical survey notes in Appendix B.

## Analytical Data

Where appropriate, analytical results presented in the following sections are compared to appropriate risk levels and regulatory limits for the contaminants and media of concern.

### Soil

Laboratory analyses detected \_\_\_\_ and \_\_\_\_ at concentrations exceeding the laboratory method detection limit in soil samples \_\_\_, \_\_\_ and \_\_\_, located on the \_\_\_\_\_ portion of the Site. Chemical name was detected at concentrations exceeding the DEQ name of cleanup standard in soil samples \_\_\_, \_\_\_ and \_\_\_. Tables \_\_\_ and \_\_\_ summarize the target compounds detected in soil samples and Appendix D contains the laboratory analytical data packages.

Based on these results the \_\_\_\_\_ soil contamination appears to be limited to the \_\_\_\_\_ area. Such contaminated soil will require special handling, if excavated during construction. Concentrations exceeding applicable cleanup levels are limited to the \_\_\_\_\_\_ area. DEQ will likely require the responsible party to conduct further investigation and/or remediation of these soils. *Other pertinent information....*

### Groundwater

Laboratory analyses detected \_\_\_\_ and \_\_\_\_ at concentrations exceeding the laboratory method detection limit in monitoring wells \_\_\_, \_\_\_ and \_\_\_, located on the \_\_\_\_\_ portion of the Site. Chemical name was detected at concentrations exceeding the DEQ name of cleanup standard in groundwater samples \_\_\_, \_\_\_ and \_\_\_. Tables \_\_\_ and \_\_\_ summarize the target compounds detected in groundwater samples and Appendix D contains the laboratory analytical data packages.

Based on these results the \_\_\_\_\_ groundwater contamination appears to be limited to the \_\_\_\_\_ area. Such contaminated groundwater will require special handling, if encountered during construction. Concentrations exceeding applicable cleanup levels are limited to the \_\_\_\_\_\_ area. DEQ will likely require the responsible party to conduct further investigation and/or remediation of this groundwater. *Other pertinent information....*

### Quality Assurance/Quality Control (“QA/QC”) Analytical Results

ODOT submitted trip blank, equipment blank, and duplicate samples to NCA for analysis and NCA analyzed internal laboratory QA/QC samples. QA/QC samples were analyzed for the same parameters as the environmental samples collected at the Project Site.

The laboratory did not detect any analytes in the equipment blank or trip blank samples *or* detected \_\_\_\_\_ in the \_\_\_\_\_ blank indicating that concentrations of this analyte in the environmental samples are suspect. The analyte concentrations detected in duplicate sample were/were not within 20 percent of that detected in the original sample Sample ID. All laboratory QA/QC methods were within specified limits *or* The surrogate recoveries for \_\_\_\_\_\_\_\_\_\_\_ detected in sample \_\_\_\_\_, exceeded the QC limits; therefore, the concentrations of \_\_\_\_\_ may over-estimate the real sample concentrations. Based on these results, the laboratory analytical data are suitable for the purposes of site assessment and risk characterization, with the exception of \_\_\_\_\_\_.

## Investigation Derived Waste Management

Investigation derived wastes for this PSI include soil cuttings and purged groundwater. These materials were stored in labeled drums at the point of generation. Based on lab analysis of soil and water samples, the soil cuttings, and the purged groundwater were transported to \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_ for disposal on date.

# Conclusions

ODOT has completed a PSI in accordance with AASHTO Guidelines and ASTM E 1903-00 for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Project Corridor. Based on the sampling and analytical results set forth in this report, ODOT did not encounter any evidence of contamination within the Project Corridor that would impact proposed project activities *or* ODOT HazMat concludes the following:

* Two USTs are located \_\_\_\_\_\_. These USTs should be removed by a licensed tank provider during construction.
* Petroleum/solvent/other-contaminated soils are located \_\_\_\_\_\_ at a depth of ## to ## feet bgs. The likely source for this contamination is \_\_\_\_\_\_\_\_. ODOT requires special provisions for construction work that will disturb soil in this area that should include worker safety, soil management and disposal requirements. Other recommendations like disposal at a landfill, incineration, asphalt batching, ROW negotiations, avoidance, encapsulation, SWLA, etc.
* Concentrations of \_\_\_\_ in soil located \_\_\_\_\_ exceed applicable DEQ cleanup levels. The likely source of this contamination is \_\_\_\_\_\_\_. ODOT should notify DEQ of these findings. Other recommendations regarding withholding $$ from ROW purchases, documenting eminent domain authority to avoid liability, etc.
* Petroleum/solvent/other-contaminated groundwater is located \_\_\_\_\_\_ at a depth of ## to ## feet bgs. The likely source for this contamination is \_\_\_\_\_\_\_\_. ODOT requires special provisions for construction work that will encounter groundwater in this area that should include worker safety, water treatment, permitting and disposal requirements Other recommendations like, pump and treat, ROW negotiations, avoidance, engineering utility lines to prevent migration, etc.
* Laboratory analysis detected \_\_\_ and \_\_\_ in groundwater samples collected \_\_\_\_ at concentrations exceeding applicable DEQ cleanup levels. The likely source of this contamination is \_\_\_\_\_\_\_. ODOT should notify DEQ of these findings. Other recommendations regarding withholding $$ from ROW purchases, documenting eminent domain authority to avoid liability, etc.
* In addition, the HazMat Corridor Study identified mercury vapor lamps, light ballasts that could contain PCBs, transformers that could contain PCBs, asbestos containing materials, lead-based paint, and other wastes that will require special contract provisions to ensure appropriate management during construction.

Appendix E contains draft special provisions for the issues identified above. If the scope of work for construction changes, additional HazMat assessment and/or special provisions may be required. Please contact Region ## HazMat at (5##) ###-#### for help.

# Limitations

The HazMat Group conducted the work for this PSI report according to generally accepted environmental procedures as outlined in the American Association of State Highway and Transportation Officials (AASHTO) “Hazardous Waste Guide for Project Development” (1990) and the American Society for Testing and Materials (ASTM) “Standard Guide for Environmental Site Assessments: Phase II Environmental Site Assessment Process (ASTM E1903-00). This assessment is for internal ODOT use only and may not be relied upon by any other entity without the written permission of an authorized ODOT representative. This PSI is based on the ASTM and AASHTO standards; however, no environmental site assessment can eliminate all uncertainty. Any environmental sample (i.e. soil and groundwater samples) collected for analysis may or may not be representative of general Project Site conditions. The observations, findings, and conclusions in this PSI report are based solely on the Project Site conditions at the time of assessment and do not imply a warrantee or guarantee for the Project Site. Nothing in this PSI report constitutes a legal opinion or service and should not be relied on as such. ODOT is not responsible for the accuracy of information provided by third parties, which may be contained in this PSI report.

# Signatures of Environmental Professionals

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ prepared this PSI Report

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_

Signature Date

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ conducted a technical review of this PSI Report

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_

Signature Date

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ conducted a corporate review of this PSI Report

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_

Signature Date

Oregon Registered Professional Geologist stamp:

***Figures***

Figure 1 Project Site Location

Figure 2 Sample Locations

Figure 3 Groundwater Contour Map

***Tables***

***Table 1 Soil Analytical Results***

***Table 2 Groundwater Analytical Results***

***Table 3 Groundwater Elevation Measurements***

**Table 1**

**Soil Analytical Results**

**Project Name, Location**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **NWTPH-HCID** | **Gx** | **Dx** |  | **VOC** | **(EPA 82** | **60B)** |  | **RCRA** | **PAH** | **(EPA**  | **8270)** |
| **Boring****ID#** | **Depth** | **Gas** | **Diesel** | **Oil** | **Gas** | **Diesel** | **Oil** | **Benzene** | **Toluene** | **Ethyl benzene** | **Xylenes** | **MTBE** | **Total Lead** | **Naphthalene** | **Other** | **Other** |
|  | feet | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | mg/kg | ug/kg | ug/kg | ug/kg |
|  |  | ND<20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **Soil Matrix Level ##** |  |  |  |  |  |  |  |  |  |  |  |  |
| **DEQ RBCA Standards** |  |  |  |  |  |  |  |  |  |  |  |  |

ND<20 Compound not detected above laboratory detection limit of 20.0 mg/kg

NA Sample Not Analyzed for that parameter

Analytes not listed in the table were not detected above the laboratory detection limit

DEQ RBCA The most conservative Risk-Based Corrective Action standards likely applicable to the Project Site

**Table 2**

**Groundwater Analytical Results**

**Project Name, Location**

**Sampling Date**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | **VOC** | **(EPA 82** | **60)** |  |  |  |  |  | **PAH** | **(EPA 82** | **70)** |  |
| **Well ID#** | **Benzene** | **Toluene** | **Ethyl benzene** | **Xylenes** | **MTBE** | **EDB** | **EDC** | **Other** | **Other** | **Anthracene** | **Fluorene** | **Naphthalene** | **Other** | **Dissolved Lead** |
|  | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | ug/kg | mg/kg |
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| **DEQ RBCA** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

ND<20 Compound not detected above laboratory detection limit of 20.0 mg/kg

NA Sample Not Analyzed for that parameter

Analytes not listed in the table were not detected above the laboratory detection limit

DEQ RBCA The most conservative Risk-Based Corrective Action standards likely applicable to the Project Site

**Table 3**

**Groundwater Elevation Measurements**

**Project Name, Location**

|  |  |  |  |
| --- | --- | --- | --- |
| **Well #** | **Top of Casing Elevation** | **Depth to Water** | **Water Elevation** |
|  | **(feet msl)** | **(feet)** | **(feet msl)** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Appendix A**

**Work Plan**

**Appendix B**

**Geophysical Survey Report**

**Appendix C**

**Boring Logs**

**Appendix D**

**Laboratory Analytical Data**

**Appendix F**

**Draft Special Provisions**

**Appendix F**

**Supporting Documentation**