
Corrective Action Plan Vapor Point Installation, & VI Sampling

**MDT Maintenance Yard
85 5th Ave E N
Kalispell, MT 59901
Facility ID# 15-08733, Release# 3130, WPID 34992**

Prepared for:

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1.0 Introduction

This corrective action plan for the Montana Department of Transportation Maintenance Yard in Kalispell, Flathead County, Montana (Facility ID 15-08733, Release 3130) was created by West Central Environmental Consultants (WCEC) in response to the Montana Department of Environmental Quality (MTDEQ) work plan request letter dated January 13, 2025. The site currently has two monitoring wells and two soil vapor points located outside of the structure. A map detailing the location of current structures, monitoring wells and vapor points is included as Figure 2.

1.1 Site Location

The MDT Maintenance Yard facility is located at 85 5th Ave E N, Kalispell, MT 59901. A site location map is included as Figure 1 and a site details map is included as Figure 2. The Public Land Survey System (PLSS) description for the site is NW/4, SW/4 of Section 8, T28N, R21W. The approximate geographic coordinates are N 48.20224°, W 114.30677°. Township, range, and section information was obtained using the United States Geological Survey (USGS) Kalispell, Montana 1:24,000 Quadrangle.

1.2 Geologic/ Hydrogeologic Setting

The subject property is located in the central part of the Flathead Valley, a northwest trending intermontane basin forming the southern extension of the Rocky Mountain Trench. The area is geologically mapped as Quaternary glacial lake deposits [Konizeski et al., 1968 and Smith, 2000]. These deposits consist of thin, interbedded fine sandy silt, clayey silt, and interbedded fine sand lenses. The sand layers are typically saturated and contain the perched aquifer beneath the site. The perched aquifer does not yield sufficient water for domestic, or irrigation needs due to the limited thickness and areal extent of the saturated lenses and the low hydraulic conductivity of the fine-grained sediments.

A deep confined aquifer, consisting of Pleistocene-age sand and gravel deposits, provides the Kalispell area with a drinking water supply. The wells are typically completed several hundred feet deep while the piezometric surface of the encountered deep confined aquifer is generally less than 100 ft bgs. The deep aquifer is flowing in a south-southeasterly direction beneath the site [LaFave, 2000].

2.0 Scope of Work

2.1 Required Scope of Work

The Scope of Work requested by the MTDEQ consists of:

- Complete a phased vapor intrusion investigation. The initial phase should include sub-slab vapor sampling according to the Montana Vapor Intrusion Guide found online under the Guidance dropdown at the Petroleum Tank Cleanup Section (PTCS). Subsequent phases, if necessary, may include coordinated sub-slab and indoor air samples.
- Analyze vapor samples for petroleum constituents by the TO-15 and APH methods according to the Montana Vapor Intrusion Guide.
- Validate all laboratory analytical data using DEQ's Data Validation Summary Form (DVSF)
- Discuss ongoing WP tasks and results with DEQ's project manager; submit written agreed-upon WP modifications as required to complete the WP objectives.
- Prepare and submit a Remedial Investigation Report detailing the results of the investigation. The Report is expected to include all the discussion, tables, figures, and appendices outlined in the Remedial Investigation Report format found online under the Guidance dropdown at the PTCS webpage.
- Use standardized DEQ WP and Report formats found online under the Forms dropdown at the PTCS webpage.
- Submit WP and Reports electronically following the PTCS submittal requirements found under the Guidance dropdown at the PTCS webpage.

2.2 Vapor Point Installation

WCEC will install two sub-slab vapor sampling points in the maintenance building. One sample will be located east of vapor point VP-2 approximately 20 feet inside the western wall of the structure. The second vapor point will be located immediately south (down gradient) of the former UST basin at the facility. The approximate location of these planned sub-slab vapor points is depicted in Figure 3. These locations may be adjusted to place the vapor points in locations that avoid internal infrastructure inside the building and at locations to ensure that they are not damaged during normal operation at the maintenance facility.

Each sub-slab port will be installed by drilling a 1" diameter hole through the concrete slab and underlying sub-grade material. This 1" hole will be drilled to a total depth of approximately 6 inches below the bottom of the slab. A second, 2" diameter hole will also be drilled to a depth of 2.5 inches below grade to facilitate installation of a 2" diameter, flush mount, stainless steel cap. This cap provides protection and security for

the VI sampling port. Each sampling point will be constructed in the sub-grade material using a 3" long, semipermeable, vapor sampling implant connected to a ¼" diameter stainless steel tube which brings the port to grade. The annular space surrounding the vapor implant will be filled with 10/20 silica sand to approximately 2" above the top of the implant screen. A hydrated bentonite seal will be placed from the top of the sand pack to the bottom of the concrete slab. Rapid curing hydraulic concrete grout will be used to fill each hole to approximately 1" below grade, allowing for installation of the tamper-proof stainless-steel cap to be completed flush with the concrete floor.

2.3 PVI Sampling

The PVI survey sampling will be conducted following installation of the sub slab vapor sampling points. To verify the integrity of the seal on the soil vapor points, helium gas will be used as a gaseous tracer in accordance with the MVIG. Helium gas will be pumped into a shroud placed around the sub-slab VI sampling point to achieve a minimum concentration of 20% helium gas measured with field instruments. The vapor point will then be purged of a minimum of three times the calculated volume of the tubing and vapor sampling point. Following the purging of air from the sample point, a helium gas measurement will be collected by directly attaching the field instrument to the tubing, to ensure that the tubing shows less than 10% of the helium concentration recorded in the shroud. Following adequate purging and verification of the sub-slab vapor sampling point integrity, a Summa canister will be placed underneath the shroud and connected to the sample train to collect a grab sample. Helium gas concentration in the shroud will be maintained at a minimum of 20% helium through the sample collection process.

The sub-slab vapor samples will be collected in individually certified 6-liter Summa canisters without flow controllers, enabling instantaneous grab sample collection. The sub-slab vapor samples will be shipped under chain of custody to ALS in Simi Valley, CA. ALS will be instructed to analyze the sub-slab vapor samples for VOCs using EPA method TO-15 and APH. ALS will be instructed to analyze for ethylene dibromide and 1,2-dichloroethane, MTBE, Benzene, Toluene, Ethylbenzene, Xylenes, 1,3-Butadiene, Naphthalene, C₅-C₈ Aliphatics, C₉-C₁₂ Aliphatics, and C₉-C₁₀ Aromatics. Additional analysis of PCE and TCE may be requested by MDT to quantify if the release to the northwest at the Former Rygg Ford is an issue at the MDT facility. The samples will also be analyzed for the helium tracer gas to evaluate potential leakage in the sample train during the collection period as part of the data validation process.

2.4 Indoor Air Sampling

No indoor air sampling will be conducted during this initial phase of the vapor intrusion work plan, but if analytical results indicate that it is necessary, indoor air sampling might be included in subsequent phases of the investigation and coordinated with future sub-slab sampling events.

2.5 Reporting

A report detailing all of the actions completed during the PVI investigation will be submitted within 60 days of receipt of the laboratory analytical report. This report will include the following elements:

- A brief site history with a description of the release(s) and discussion of the work conducted during the event.
- The report will detail the vapor point installation, construction, and location of installation. These locations will be detailed on a new site details map.
- The report will detail the results of the sub-slab vapor PVI investigation and include recommendations for additional sampling events if necessary.

3.0 Timeline

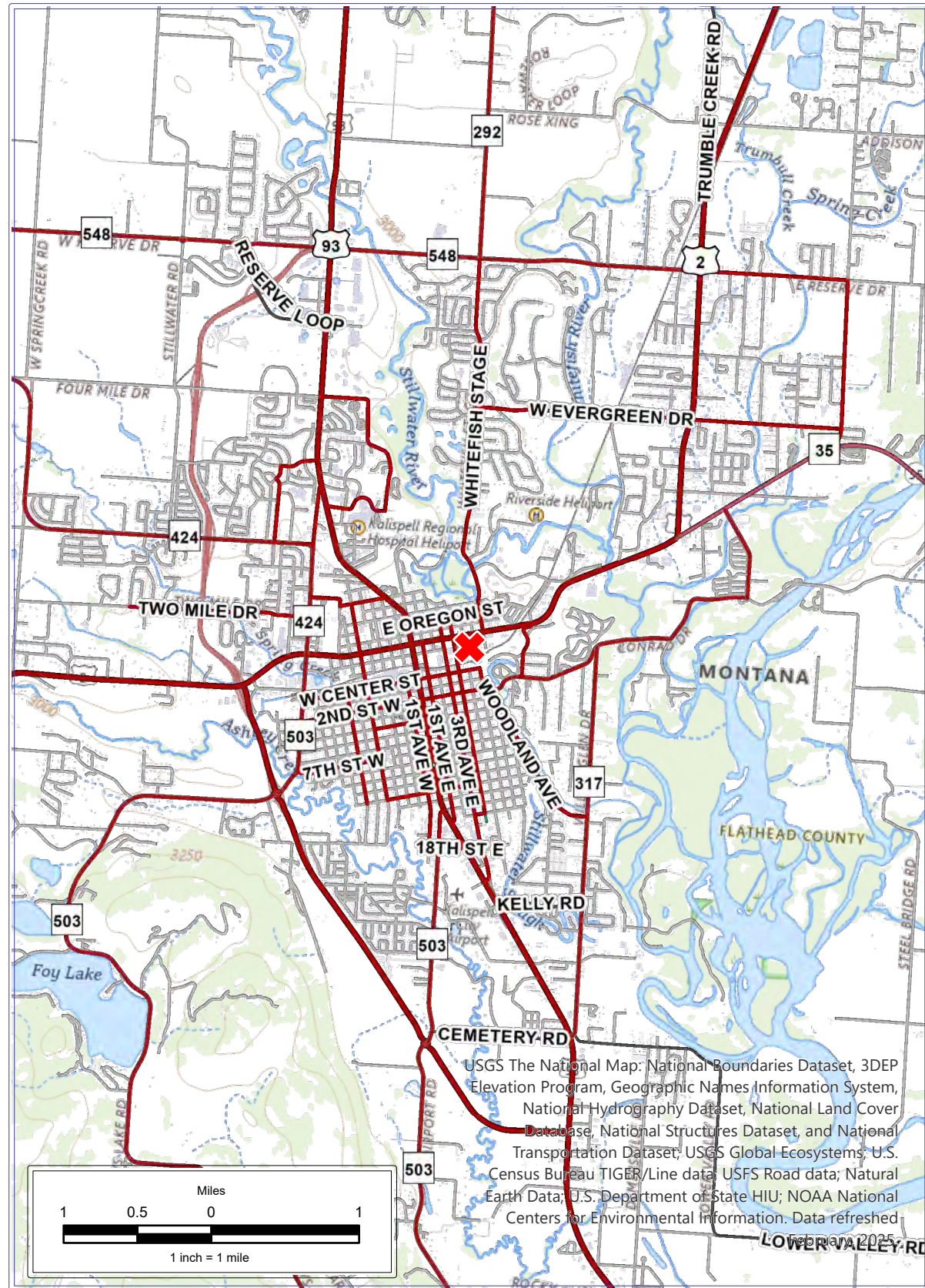
The scope of work outlined in this work plan will be conducted following approval of the Corrective Action Plan by the MTDEQ. It is anticipated that this work will be conducted and completed in March 2025, with an anticipated report completed by April 30, 2025.

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Figure 1: Site Location Map

Figure 2: Site Details Map

Figure 3: Proposed Vapor Point Locations



✗ Site Location



Site Location Maps

MDT Maintenance Yard
85 5th Ave E N
Kalispell, MT 59901

DRAWN BY: TCP

DATE: 03/21/24

SCALE: 1:12,000



FIGURE 1

PROJECT NUMBER: 23-15431-70

IMAGE SOURCE: ESRI BASEMAPS



MDT Maintenance Facility Kalispell

Former Rygg Ford PCE release



VP2

VP1

Kal-10

Kal-11

Legend

-  Monitoring Well
-  Vapor Point

Feet
50 25 0 50
1 in = 100 ft

MDT Maintenance Yard
85 5th Ave E N
Kalispell, MT 59901

Site Details Map



FIGURE 2

JOB NO.: 23-15431-70 DATE: 02/21/2025 DRAWN BY: NO IMAGE SOURCE: ESRI



Approximate Location
of Former USTs




VP2

VP1

Kal-10

Kal-11

Legend

-  Monitoring Well
-  Vapor Point
-  Proposed vapor points

Feet 1 in = 40 ft
 40 20 0 40



MDT Maintenance Yard
 85 5th Ave E N
 Kalispell, MT 59901

**Proposed Vapor
 Point Locations**

JOB NO.: 23-15431-70 DATE: 02/20/25 DRAWN BY: NO IMAGE SOURCE: ESRI



FIGURE 3

Appendix A

Cost Proposal for Vapor Point Installation & Vapor Investigation