

# Remedial Investigation Work Plan 34851

**MDT Miles City Maintenance Facility**

**3<sup>rd</sup> St & Orr St**

**Miles City, MT 59301**

**Facility ID 09-09677, Release 1472, Work Plan 34851**

**Prepared for:**

**MDT Environmental Services**

**P.O. Box 201001**

**Helena, MT 59620-1001**

**Prepared by:**

**West Central Environmental Consultants, Inc.**

**1030 South Ave. W.**

**Missoula, MT 59801**

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**WCEC Project No. 24-15598-70**

# WCEC

West Central Environmental Consultants, Inc.

Nationwide Services

[www.wcec.com](http://www.wcec.com)

Environmental



Emergency Response



Industrial Services

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MDT Miles City Maintenance Facility Tank and Release History

## Estimated Costs – Remedial Investigation Work Plan 34851

## **1.0 Introduction**

The scope of work (SOW) detailed in this Remedial Investigation Work Plan includes soil boring investigation and monitoring well installation at the MDT Miles City Maintenance facility (Facility ID 09-09677, Release 1472) in Miles City, Montana. West Central Environmental Consultants (WCEC) was retained by the Montana Department of Transportation (MDT) to complete remedial actions at the facility as requested by the Montana Department of Environmental Quality (DEQ). The intent of the proposed soil and groundwater investigation is to collect sufficient data to evaluate Release 1472 for closure.

### **1.1 Site Location & Background**

The MDT Miles City Maintenance facility is located on the western edge of town. It is bordered by a residential area to the east and south and is sparsely developed to the north and west. A railroad spur line borders the site to the north and east. The Yellowstone River is located approximately 2,500 feet northwest of the site (flowing easterly) and the Tongue River is located 2,000 feet west of the site (flowing northerly). The site is located on alluvial deposits, underlain by 17 feet of sand gravel underlain by interbedded shale and siltstone. Past investigations have determined that groundwater is shallow in the northern end of the facility at depths between 4-6 feet below ground surface (bgs).

The MDT maintenance facility has been located on the property since 1938. The MDT Miles City facility has operated several generations of USTs, all of which have been removed. The facility has one closed Petroleum Release (RID 424) and one closed Water Quality Act Site (FID 645). Petroleum Release 1472 remains open. A brief summary of each site is as follows:

Four USTs were removed in 1993. One UST was removed in 1990. One UST was removed in 2004. The USTs were located in the southeast portion of the property. Several were along the eastern property boundary. During the various removals, only one petroleum release was reported when they removed a 300-gallon found tank. Closure samples were 125 and 3,300 ppm Total Petroleum Hydrocarbons (TPH). 165 cubic yards (cy) of soil were excavated and landfarmed to the north of town by the airport. One confirmation sample was collected at 10.5 feet bgs with a TPH result of 85 ppm. The site was closed on November 29, 1990.

Sometime between 1938 and 1950 an open-air equipment cleaning and wash rack was constructed at the Miles City yard. The discharge effluent from cleaning was directed into a subject drainage basin located in the northeast portion of the yard. In 1950, a building was constructed over the cleaning and wash rack, but the discharge was directed to the drainage basin. In 1960 a division soils lab building was constructed; this drain was also directed to the drainage basin until 1990. The wash water deposited into the basin had residual levels of chlorinated compounds, oils, and greases and possibly motor oils and fuels. It was also

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reported that floor drain sludge was deposited in the basin. The basin is the source of the Water Quality Act Site 645.

In November 1995, approximately 694 cy of impacted soils were excavated from the location of the catch basin. In June 1999, an additional 850 cy of impacted soil were excavated from the basin. Four monitoring wells were installed along the northern portion of the maintenance yard. Based on the analytical results from the four monitoring wells, the site was closed by DEQ.

Petroleum Release 1472 was reported in July 1992 when soil staining was observed by MSE during their site investigation of and assessment of the wash basin. The soil staining was the result of MDT utilizing used oil to lubricate the sander chains and bins. During the process excess used oil was allowed to infiltrate the soil. MSE had submitted a work plan to DEQ to dig out the surface-stained area. MSE did not conduct the work. There is a 30-day report that indicates that MDT personnel excavated 12-18 inches of surface contamination in an area with dimensions of 50 x 30 feet, or approximately 100 cy of material. No confirmation samples were collected.

## **2.0 Scope of Work**

### **2.1 Required Scope of Work**

The scope of work requested by DEQ and MDT consists of:

- Utilizing a direct push drill, advance 8 borings within the areas defined by past reports to have surface staining, even if historical surface staining is not evident today. Advance each boring to 10 feet bgs.
- If contamination is observed, continue to advance borings as necessary to define the vertical extent of contamination.
- Screen all boring cores and measure for heated headspace concentrations utilizing a photoionization detector (PID).
- If contamination is noted during the boring core, collect a soil sample from the interval exhibiting the highest headspace readings and/or the groundwater interface. Analyze soil samples for Volatile Petroleum Hydrocarbons (VPH), Extractable Petroleum Hydrocarbons (EPH), RCRA Metals including Zinc, and EPA method 8260B. If EPH screen concentrations are above 200 ppm TEH, run EPH Fractionation including PAHs 8270C or 8270D.
- Install four two-inch diameter monitoring wells, two within each staining area. Well construction shall consist of 2-inch Sch. 40 PVC riser and 0.010 slot PVC screen. Screen each monitoring well from approximately 4 to 10 feet bgs followed with solid riser extending from 4 feet bgs to near ground surface. Fill the well annulus with 10/20 silica sand pack from the bottom of the boring to 1 foot above the screened interval, with the remainder of the boring annulus consisting of a bentonite seal. Complete monitoring wells with 8-inch flush mount monuments set in concrete.
- Prepacked 2-inch monitoring wells are acceptable, with a screened interval from 4-10 feet bgs.
- Install monitoring wells in areas where contamination was observed. If no contamination was observed, install monitoring wells so that a groundwater gradient may be triangulated to determine flow direction. Plot a potentiometric map based on static water elevations.

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- Submit a soil sample exhibiting the highest PID detection for analysis, along with a soil sample from the soil/groundwater interface. If no PID detections are noted, only submit one soil sample from the soil/groundwater interface.
- Properly develop the newly installed monitoring wells and survey the top of casing elevations according to DEQ requirements.
- Contractor will obtain utility locates as necessary to complete the work.
- Abandon each soil boring by filling it with bentonite from the base of the boring. If the boring was placed on pervious surfacing, fill the last two feet before ground surface with naturally occurring soils.
- Properly dispose of all generated drill cuttings.
- Collect groundwater samples from the four monitoring wells. Groundwater monitoring will include field parameters temperature, pH, specific conductivity, conductivity, dissolved oxygen (DO), DO%, and ORP.
- Analyze groundwater samples for VPH, EPH, and EPA method 8260B. If EPH screen concentrations are above 1,000 ppb TEH, run EPH Fractionation including PAHs 8270C or 8270D.
- Laboratory fees will be invoiced directly to MDT.
- Upon award of Proposal, submit a remedial investigation work plan (WP). Submit the WP following the Montana Remedial Investigation Guidance for Petroleum Releases to DEQ for review and approval. WP must be submitted by March 31, 2024.
- Complete fieldwork by July 31, 2024.
- Submit Draft Report by September 30, 2024.
- After receipt of Draft Report, MDT will submit comments within one week. After receiving and incorporating comments from MDT, submit the final Project Reports within two weeks of receipt of comments. The last possible deadline for the final report will be October 31, 2024. Reports may be submitted electronically in a .pdf format.
- Deadlines may be adjusted if delays are encountered obtaining the requisite approval from DEQ.

## 2.2 Soil Boring Investigation

WCEC will supervise the advancement of eight (8) soil borings to quantify residual soil concentrations in the former oil stain areas related to Release 1472. The approximate locations for the boreholes are shown on Figure 2. Prior to initiating any field activities, WCEC will coordinate a public underground utility locate for the proposed drilling areas. Actual borehole locations may be adjusted in the field in consultation with MDT and DEQ depending on the presence of underground utilities, overhead obstructions, and/or the results of field screening for hydrocarbon impacts at individual locations.

The target depth for the soil boreholes is 10 feet bgs. Continuous soil cores will be retrieved from the boreholes using 2.25-inch dual tube soil sampling equipment. WCEC personnel will field screen soils using a Rae Systems MiniRae™ 3000 photoionization detector (PID), as well as visual and olfactory evidence to determine which horizons may be impacted. The PID will be calibrated daily using fresh air and span gas calibration points. Isobutylene span gas at a concentration of 100 parts per million (ppm) will be used in the calibration procedure. Soil lithology, PID data, and hydrocarbon screening observations will be recorded in the field. If contamination is observed, soil boreholes will continue to be advanced vertically as necessary to define the extent of contamination.

Soil samples will be collected from the worst-case interval exhibiting the highest PID readings and/or the groundwater interface. Soil samples will be processed using WCEC standard sampling procedures, and in accordance with the MTDEQ requirements. Soil samples will be packed on ice and submitted under chain of custody to Energy Laboratories (Energy) in Billings, Montana. Energy will be instructed to analyze the samples for VPH and EPH screen using the Massachusetts Method, as required by the MTDEQ in the *Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases* [MTDEQ, 2018b]. Total Extractable Hydrocarbon (TEH) fractions with PAHs (8270C/D) analysis will be conducted if the EPH screen of 200 mg/kg is exceeded. Soil samples will also be analyzed for VOCs (8260B) and RCRA metals including zinc (6020 and 7473).

At the completion of borehole investigation activities, all borings will be plugged with bentonite and the surface reclaimed to pre-drilling conditions (i.e., gravel, asphalt, etc.). WCEC will survey the boreholes using a Trimble Geo7X centimeter GPS.

## 2.3 Monitoring Well Installation

Following the soil boring investigation, in consultation with MDT, WCEC will select up to four (4) locations for monitoring well installation, with two (2) wells sited in each of the oil stain areas related to Release 1472. WCEC's Montana Licensed Monitoring Well Constructor will direct and supervise all monitoring well

installation activities. The groundwater monitoring wells will be advanced using 4.25-inch ID hollow-stem auger tooling with well construction consisting of 2-inch Sch. 40 PVC riser and 0.010 slot PVC screen. Each monitoring well will be screened from approximately 4 to 10 feet bgs with solid riser extending from 4 feet bgs to near ground surface. The well annulus will be filled with 10/20 silica sand pack from the bottom of the boring to 1 foot above the screened interval, with the remainder of the boring annulus consisting of a bentonite seal. Surface completions will consist of 8-inch flush mount monuments set in concrete. Copies of the monitoring well installation logs will be submitted to MBMG.

Impacted soil cuttings from the monitoring well borings will be containerized in 55-gallon steel drums for transport from the site and disposal at the Billings Regional Landfill. Soil cuttings that do not exhibit petroleum impacts based on field screening will be thin spread on site.

Following installation, WCEC personnel will develop the new monitoring wells using the surge and purge technique with a downhole 12-volt electric pump. Purge water generated during well development will be disposed of in accordance with the MTDEQ Purge Water Disposal Flowchart.

The horizontal locations and top of casing elevations for the new monitoring wells will be surveyed according to MTDEQ requirements. WCEC will obtain horizontal coordinates for the monitoring wells using a Trimble Geo7X centimeter GPS. A survey of the vertical well casing elevations will be completed to Fourth Order accuracy using a Nikon Ax-2s auto-level transit with a measurement precision of 0.01 feet. Vertical elevations will be correlated to the North American Vertical Datum of 1988 (NAVD 88) using an onsite elevation control point.

## **2.4 Groundwater Monitoring**

Groundwater sampling of the newly installed monitoring wells will be performed following installation, development, and stabilization (24 hours post-development). Depth to water measurements will be recorded from all the site wells during the groundwater monitoring event to provide an accurate potentiometric surface plot, flow direction, and gradient.

Well sampling will be conducted according to WCEC Standard Operating Procedures (SOPs) and MTDEQ Guidance for low-flow sampling using a peristaltic pump for purging and sample collection. Groundwater quality parameter data (conductivity, pH, salinity, dissolved oxygen, temperature, turbidity, and ORP) will be acquired during well purging using a flow through cell attached to the peristaltic pump. Purge water will be handled according to the MTDEQ Purge Water Disposal Flowchart.

Groundwater sample collection will be completed following stabilization of groundwater quality parameters. Groundwater quality parameter, purge, and stabilization data for each well are recorded in the field using



WCEC's Well Sampling Form. If present, any accumulations of free product (FP) in the monitoring wells will be noted and FP thicknesses will be recorded. Groundwater samples will not be collected from any wells that contain a measurable thickness of FP.

Groundwater samples will be preserved with hydrochloric acid, packed on ice, and delivered to Energy in Billings, Montana under chain of custody. All groundwater samples collected will be submitted for analysis of VPH, EPH, and VOCs (8260B). TEH fractions with PAHs (8270C/D) analysis will be conducted if the EPH screen exceeds 1,000 µg/L.

## **2.5 Report Preparation**

At the conclusion of the soil and groundwater investigation activities, WCEC will prepare and submit a Remedial Investigation (RI) Report detailing the results of the soil borings, monitoring well installation, and groundwater monitoring. Laboratory analytical data will be validated using the MTDEQ Data Validation Summary Form (DVSF) with a completed DVSF appended to each laboratory analytical report. The report will include the content, figures, cumulative data tables for soil and groundwater, and appendices outlined in the Remedial Investigation Report format guidance. A thorough discussion regarding the soil and groundwater data with recommendations for further corrective actions or evaluation for closure will also be presented in the RI Report.

### 3.0 Estimated Costs & Project Timeline

The field work activities outlined in this work plan are anticipated to be completed prior to July 31, 2024, pending review and approval from the DEQ and MDT. The attached *Estimated Costs – Remedial Investigation Work Plan 34851* spreadsheet details anticipated project costs to complete the DEQ required scope of work.

#### 3.1 Planned Workflow & Cost Explanations

WCEC will complete the scope of work included in this work plan during one individual field event with completion and reporting milestones as follows:

**Field Event – Planned completion by July 31, 2024:** Utility locate, soil boring and groundwater monitoring well installation, well development, site mapping / surveying, groundwater monitoring and sampling.

**Draft RI Report – Planned completion by September 30, 2024:** Draft report submittal to MDT for review and comments.

**Final RI Report – Planned submittal by October 31, 2024:** Final report submittal to MDT/DEQ.

The deadlines listed above may be adjusted if delays are encountered obtaining the requisite approval from DEQ.

## 4.0 References

**Montana Department of Environmental Quality.** (MTDEQ, 2018a). *Groundwater Sampling Guidance*. March 6, 2018.

**Montana Department of Environmental Quality.** (MTDEQ, 2018b). *Montana Risk-Based Corrective Action Guidance for Petroleum Releases*. May 2018.

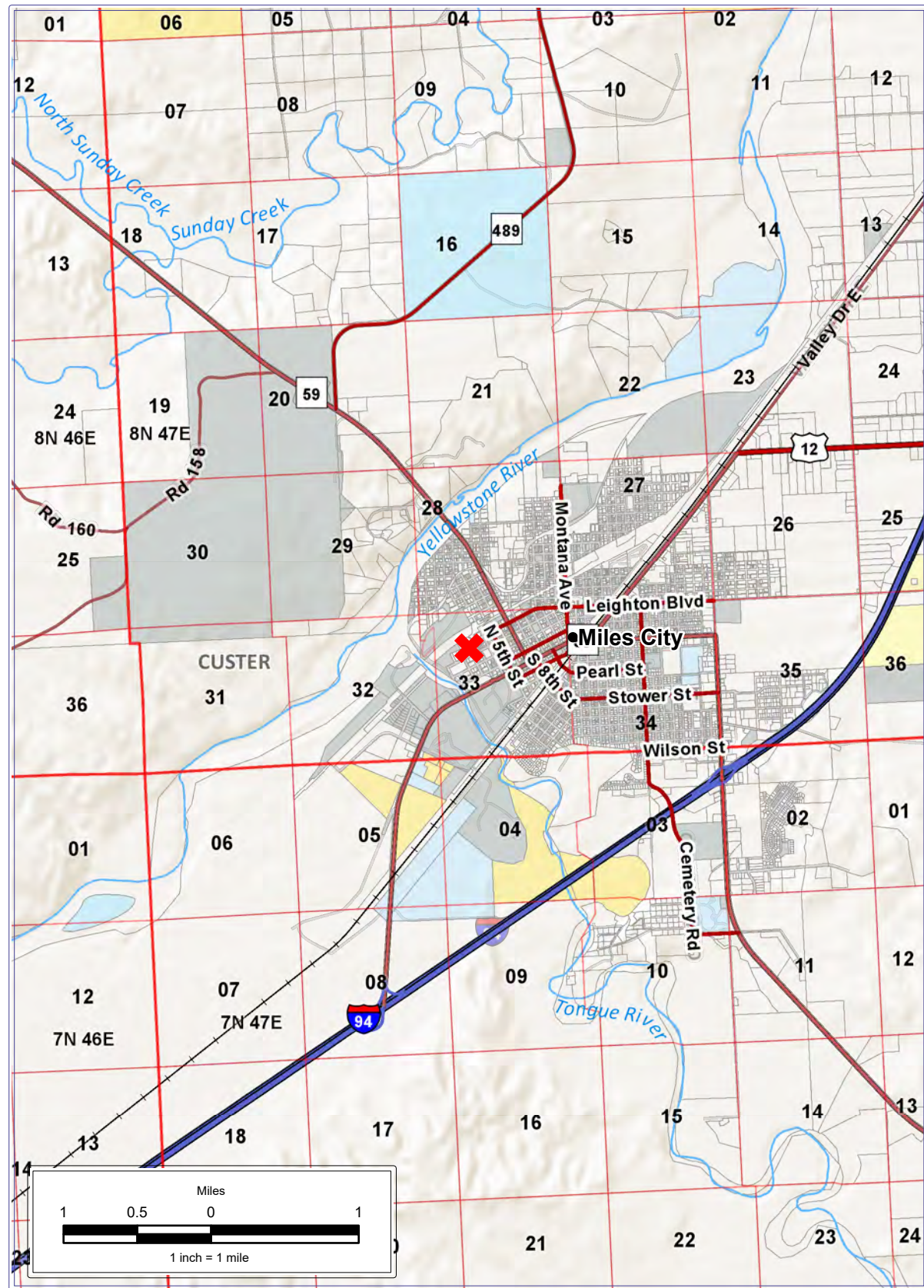
## **Figures**

Figure 1: Site Location

Figure 2: Site Details

MDT Miles City Maintenance Facility Tank and Release History





✗ Site Location



## Site Location

MDT Miles City Maintenance Facility  
N 3rd St & Orr St  
Miles City, MT

DRAWN BY: MM  
DATE: 03/12/24  
SCALE: 1:12,000

**WCEC**  
ENVIRONMENTAL CONSULTANTS

PROJECT NUMBER: 24-15598-70

IMAGE SOURCE: ESRI BASEMAPS

**FIGURE 1**





LEGEND

 Facility Boundary

 Proposed Borehole

80 40 0 1 in = 80 ft 80



MDT Miles City Maintenance Facility  
N 3rd St & Orr St  
Miles City, MT

Site Details

JOB NO.: 24-15598-70 DATE: 03/12/24 DRAWN BY: MM IMAGE DATE: 07/19/23

**WCEC**  
ENVIRONMENTAL CONSULTANTS

FIGURE 2





## MDT Miles City Maintenance Facility Tank and Release History

There were two Petroleum Releases and one WQA site. General areas for releases are as follows:

**Petroleum RID424** They removed the 300-gallon found tank. Closure samples were 125 and 3,300 ppm TPH. 165 cubic yards of soil were excavated and landfarmed to the north of town by the airport. One confirmation sample collected at 10.5 feet bgs at TPH 85 ppm. The site was closed by DEQ on November 29, 1990.

**Pit** **Excavation**

**WQA:** Seepage pit where used oil and solvents were disposed. There were two excavations. 695 cy of material was excavated in November 1995 in an excavation measured 75'x55'x10' deep & 850 cy of soil was excavated in June 2, 1999 in an excavation approximately 75'x50'x8-13' deep.

**+** Approximate location of four former MWs installed in 1996. After clean samples (8260 short list and EPH screen), WQA site resolved.

**■** Approximate location of USTs at the site that have been removed. Majority removed from 1990-1993, last UST removed in 2004. The UST in the center of the yard had vapor wells that measured high vapors. A MDU line was discovered to be leaking and was fixed. Vapors persisted, but tank closure samples upon tank removal were clean.

**■** Petroleum RID 1472. MDT washed chains with used oil and stored out of use USTs in the area. Surface Soil Staining evident, so release called in. MSE had an 1993 approved work plan to dig out surface contamination soil which identified a second stained area just to the east. No report of cleanup has been found, and Charlie Pederson can't remember digging it out. MW1 installed in the area in 1996, which would have been post excavation if it was completed.

MW-1 ND for DRO and BTEXN in 2/15/96, ND for 8260 on 3/13/96. ND for DRO, TEH, and 5030 on 5/28/98.

Petroleum release is still open. 30Day said MDT dug out 100 cy in 1992 (No MSE involvement). No closure samples.

**⊗** Approximate location of future borings.