

July 10, 2024

Mr. Christopher Herman
Environmental Project Officer
Petroleum Tank Cleanup Section
Montana Department of Environmental Quality
P.O. Box 200901
Helena MT 59620-0901

RE: Additional Corrective Action Work Plan for Petroleum Release at the Former Bob's Tire Service, 501 South Ellery Avenue, Fairview, Richland County, Montana Facility ID #42-04828, TID #27229, Release #3053, Work Plan ID #34882

Owner/ Responsible Party:	Richland County 2140 West Holly Street Sidney, MT 59270	Consultant/ Work Plan Preparer:	Pioneer Technical Services, Inc. Robyn R. Sargent, CHMM 2310 Broadwater Ave, Suite 1 Billings, MT 59102 rsargent@pioneer-technical.com
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Dear Mr. Herman:

On behalf of Richland County, Pioneer Technical Services, Inc. prepared the following Corrective Action Work Plan and cost estimate for performing corrective action work at the former Bob's Tire Service in Fairview, Montana. As requested in correspondence dated May 31, 2024, from the Montana Department of Environmental Quality, our scope of work and associated proposed costs are outlined in the attached work plan.

If you have any questions concerning this project or the proposed scope of work, please contact me at (406) 206-7066 or rsargent@pioneer-technical.com.

Sincerely,

Pioneer Technical Services, Inc.



Robyn R. Sargent, CHMM
Principal Scientist

Attachment 1: Figures
Attachment 2: Cost Estimate

cc: Mr. Josh Johnson, Richland County Public Works, 2140 West Holly Street, Sidney, MT 59270

EXECUTIVE SUMMARY

The purpose of this document is to provide a Corrective Action Work Plan (work plan) for the former Bob's Tire Service (Facility ID #42-04828) facility (Site), as requested in electronic correspondence from the Montana Department of Environmental Quality (DEQ) dated May 31, 2024. The purpose of the proposed work activities is to fully investigate the petroleum source within the saturated zone associated with petroleum Release #3053 to the extent practicable, evaluate the potential for vapor intrusion, propose additional remediation work, if needed, and determine a pathway to resolve Release #3053.

Despite past remedial actions, residual petroleum impacts from former Site use remain at the facility, mainly near and below the capillary fringe of the groundwater. These impacted zones contain subsurface soil with residual petroleum impacts above respective DEQ risk-based screening levels (RBSLs) on Site and on the adjoining property to the east. The petroleum-impacted soil may be actively contributing dissolved-phase petroleum hydrocarbons to the Site's groundwater and may be preventing closure of Release #3053.

Discussions between the DEQ, Richland County (responsible party), and Pioneer defined the scope of this work plan, which includes the installation of additional groundwater monitoring wells, repair of existing monitoring wells as needed, evaluation of the potential for petroleum vapor intrusion (PVI), and semi-annual groundwater monitoring.

The DEQ outlined these recommendations in the work plan request letter dated May 31, 2024. These recommended actions are included in this work plan, which involves completing an assessment of all monitoring wells associated with the release to determine if repairs, replacement, or abandonment is necessary and completing the required maintenance, the installation of groundwater monitoring wells to fill in data gaps within the well network, conducting a desktop PVI evaluation for on-Site and adjacent utility corridors, conducting two semi-annual groundwater monitoring events, and preparing a Remedial Investigation (RI) Report appended with a Release Closure Plan (RCP) upon completion of all activities. These activities are detailed in the following work plan.

1 FACILITY SUMMARY AND CURRENT CONDITIONS

Site Description

The former Bob's Tire Service facility is located at 501 South Ellery Avenue in Fairview, Montana. The Site is in a predominantly commercial area. The Site is on a level rectangular shaped parcel with an elevation of approximately 1,912 feet above mean sea level (amsl). The Site is bordered by West Fifth Street to the north, across from which is a bar/restaurant; South Ellery Avenue to the east, across from which is a casino and liquor store; a retail store to the south; and a storage area to the west. This area of Fairview is served by public utility city services (e.g., potable water and sanitary and storm sewer systems). The location of the Site is shown on the Location and Vicinity Map (Figure 1) and Site Map (Figure 2) in Attachment 1.

The groundwater monitoring well network, installed in 1999, consists of two monitoring wells located on the Site property: BMW-1 and BMW-2. Two monitoring wells were located adjacent to the Site property; BMW-3 is located immediately to the east on the adjacent casino and liquor store property, and BMW-4 is located on the southern boundary of the eastern adjoining casino and liquor store.

Site and Release Background Information

The Site is currently a vacant lot covered with gravel after the removal of the service station building, underground storage tanks (USTs), and canopy. During tank removal at the Site on November 4, 1996, potential petroleum impacts were identified near the hoists and USTs and associated piping. The probable cause of the release was listed as tank overfill at the gasoline USTs and waste oil disposal tank. Prior to tank removal, the Site contained one 2,000-gallon gasoline UST, one 1,200-gallon gasoline UST, one 300-gallon waste oil aboveground storage tank (AST), and two hydraulic lifts with an estimated hydraulic oil capacity of 150 gallons each (DEQ, 1996). On November 8, 1999, four monitoring wells (BMW-1, BMW-2, BMW-3, and BMW-4) were advanced as part of a RI at the Site. Monitoring well BMW-1 and BMW-3 soil samples, taken at or near the water table, exhibited benzene concentrations of 0.39 milligrams per kilogram (mg/kg) and 0.33 mg/kg, respectively, both of which exceed the current Montana DEQ RBSL of 0.07 mg/kg. Monitoring well BMW-1 also exhibited several other volatile petroleum hydrocarbon (VPH) constituents exceeding current soil RBSLs. Groundwater samples from BMW-1 and BMW-3 exhibited several VPH constituents exceeding modern DEQ RBSLs. The upgradient monitoring well BMW-2, did not exhibit any VPH constituents above DEQ RBSLs (Richland County, 2000). The locations of the former operations are shown and labeled on the Site Map (Figure 2 in Attachment 1).

Based on available information, approximately 19 groundwater monitoring events have occurred at the Site since construction of the monitoring wells. Prior to the most recent monitoring events completed in 2022 and 2023, the monitoring wells had not been sampled since 2016, when only BMW-1 and BMW-2 were sampled. Monitoring well BMW-1 still had VPH constituent values exceeding RBSLs, while upgradient monitoring well BMW-2 did not (Richland County, 2016).

On February 4, 2022, DEQ requested a work plan (Work Plan #34492) be drafted to determine the current Site conditions. Pioneer submitted a work plan on March 4, 2022, which included two rounds of groundwater monitoring at the Site. The work plan was approved on March 14, 2022, and the Petroleum Tank Release Compensation Board obligated funds on August 16, 2022.

In accordance with Work Plan #34492, Pioneer assessed the condition of and developed the existing monitoring wells and performed groundwater monitoring events in November 2022 and May 2023. The results of the well assessment and groundwater monitoring are as follows:

- Monitoring well BMW-4 could not be located and is presumed to have been destroyed.
- Monitoring wells BMW-2 and BMW-3 were in good condition and need no repairs. While the riser pipe and flush mount need repaired on monitoring well BMW-1.
- Groundwater was approximately 14 feet below ground surface (bgs) during the November sampling event and approximately 17 feet bgs during the May sampling event.
- For the November 2022 and May 2023 sampling events, no 1,2-dibromoethane (EDB) or 1,2-dichloroethane (DCA) concentrations were detected in the groundwater above laboratory reporting limits from any of the wells sampled.
- The upgradient well BMW-2 did not have any VPH constituents detected above reporting limits and did not have any extractable petroleum hydrocarbon (EPH) constituents above RBSLs for both the spring and fall monitoring events.
- Monitoring well BMW-1 (source area well) contained VPH constituents above respective RBSLs for both the spring and fall sampling events. Constituents C9 to C10 aromatics, C5 to C8 aliphatics, and C9 to C12 aliphatics exceeded RBSLs for both sampling events with maximum values of 2,340 micrograms per liter ($\mu\text{g/L}$) (RBSL is 1,100 $\mu\text{g/L}$), 2,690 $\mu\text{g/L}$ (RBSL is 650 $\mu\text{g/L}$), and 5,050 $\mu\text{g/L}$ (RBSL is 1,400 $\mu\text{g/L}$), respectively. Additionally, ethylbenzene was present above the RBSL (700 $\mu\text{g/L}$) in BMW-1 for the spring sampling event with a value of 755 $\mu\text{g/L}$.
- Monitoring well BMW-3 (downgradient well) exceeded RBSLs for VPH constituents C9 to C10 aromatics (1,180 $\mu\text{g/L}$) and C9 to C12 aliphatics (2,290 $\mu\text{g/L}$) during the spring sampling event. All VPH constituents were below RBSLs for BMW-3 during the fall sampling event.
- For both sampling events, BMW-1 and BMW-3 exceeded the EPH screening level (1,000 $\mu\text{g/L}$) with maximum values of 5,090 $\mu\text{g/L}$ and 3,250 $\mu\text{g/L}$ for each well. No EPH constituents exceeded RBSLs after fractionation.

Based on the findings and conclusions of this report, Pioneer recommended continued semi-annual monitoring of the existing monitoring wells to monitor the natural attenuation of VPH constituents in BMW-1 and BMW-3. Pioneer also recommended repairing monitoring well BMW-1 (Pioneer, 2023).

2 OBJECTIVES OF CORRECTIVE ACTION WORK PLAN

The primary objective of the work plan is to define the extent and magnitude of the soil and groundwater contamination downgradient and cross gradient of the release.

3 PROPOSED SCOPE OF SERVICES

In summary, this work plan involves completing an assessment of all monitoring wells associated with the release to determine if repairs, replacement, or abandonment is necessary and completing the required maintenance, the installation of groundwater monitoring wells to fill in data gaps within the well network, conducting a desktop PVI evaluation for on-Site and adjacent utility corridors, conducting two semi-annual groundwater monitoring events, and preparing a RI Report appended with a RCP upon completion of all activities. These activities are detailed in the following work plan.

Specifically, this work plan proposes the following actions to achieve these goals:

- Completing an assessment of all monitoring wells associated with the release to determine if repairs, replacement, or abandonment is necessary and complete the required maintenance.
- Installing additional groundwater monitoring wells to further expand the well network and perform semi-annual groundwater monitoring.
- Preparing a desktop PVI study next to the former on-Site building and on-Site and adjacent utility corridors.
- Validating all laboratory analytical data using DEQ's Data Validation Summary Form.
- Discussing work plan tasks and results with DEQ's project manager; any modifications required to complete the work plan objectives will be submitted and agreed upon.
- Updating the RCP and discussing the results with DEQ's project manager.
- Submitting a RI Report that details the results of the cleanup.
- Work plan and reports will be submitted electronically following the Petroleum Tank Cleanup Section submittal requirements.

These investigation activities will be provided to delineate the magnitude and extent of the release in order to resolve Release #3053. As requested by the DEQ, Pioneer proposes the following scope of work:

- Task 1: Project Management, Permitting and Planning.
- Task 2: Well Assessment and Repair.
- Task 3: Groundwater Monitoring Well Installation.
- Task 4: Semi-Annual Groundwater Monitoring.
- Task 5: Perform PVI Study.
- Task 6: Reporting.

The following sections describe each task for the proposed work along with Pioneer’s cost estimate and proposed schedule.

3.1 Task 1 – Project Management and Planning

Task 1 Project Management and Planning work will include:

- Preparing a work plan and cost estimate.
- Landfill soil disposal acceptance and coordination.
- Subcontractor oversight.
- Coordinate utility locates.
- Project scheduling.
- Preparing a Health and Safety Plan.
- Coordinating with subcontractors, owners, and regulators.
- Site work preparation.

Pioneer will notify 811 for utility locates prior to drilling activities. Pioneer field personnel will document the locations of marked underground and aboveground utilities on the figures provided with the final report.

3.2 Task 2 – Well Assessment and Repair

Under this task, Pioneer will assess all three existing monitoring wells (BMW-1, BMW-2, and BMW-3) for necessary repairs, review potential frost heave damage, and determine redevelopment requirements prior to proceeding with Task 3. At this time, it is Pioneer’s understanding that only BMW-1 requires repair, including the removal and replacement of the flush-mount well casing. A Pioneer licensed water well driller will oversee the repair of BMW-1 during the groundwater monitoring well installation activities discussed in the subsequent section. If any additional monitoring wells require repairs due to frost heave or other damage, we will discuss the work with the DEQ project manager before contracting out any additional monitoring well repair and/or installation work.

3.3 Task 3 – Groundwater Monitoring Well Installation

The work plan includes drilling and installing two soil borings at the Site and two soil borings on the adjoining property to the east and constructing the soil borings into permanent groundwater monitoring wells. One of the borings will be placed in the vicinity of the former UST basin and one will be placed south of the former UST basin and dispenser island. The remaining two borings will be placed to the east and south of the existing monitoring well located on the property adjoining to the east. The Site Map (Figure 2 in Attachment 1) shows the location of the proposed soil borings.

The anticipated total depth of the monitoring wells is 20 feet bgs. This is based on groundwater measured at 14 to 16 feet bgs at the Site. We will advance the soil borings using Pioneer's direct-push Geoprobe® drill rig and associated equipment to conduct the soil investigation. Using a direct-push drill rig will minimize Site disturbance, minimize the amount of investigation derived waste (cuttings), and allow access for drilling near and around the new Site building and appurtenances during this portion of the investigation.

Final boring locations will be determined in the field after consulting the Montana DEQ project manager and will be based on accessibility, underground utilities, the presence of unforeseen impedances, or other factors.

For the groundwater monitoring well installation phase, the team will use the Geoprobe® drill rig to construct the monitoring wells. The monitoring wells will be constructed with 1.5-inch-diameter, schedule 40 polyvinyl chloride (PVC) pipe. All well screens and piping will be delivered to the Site factory wrapped. Each well will be constructed using a prepack well screen consisting of 0.010-inch, factory-slotted PVC screen covered with a 65-mesh stainless steel screen and filled with 20/40 mesh silica sand. The wells will be screened from 10 to 20 feet bgs. The remainder of the borehole will be completed with PVC riser pipe to grade. The annular space between the prepack well screen and the borehole will have 0.10- to 0.20-inch sand completion to one foot above the screen, and the remaining annular space between the well casing and the borehole will have a bentonite seal. The wells will be secured with flush mount bolt-down covers set in concrete. The newly constructed wells will be developed after construction. Each well will be considered developed once clear of sediment or after being pumped with a submersible pump or surface pump for one hour.

Following well installation and development, the existing wells and the new wells will be surveyed by a licensed surveyor, and the top of casings will be determined to be within 0.01 feet of mean sea level. The survey crew will also survey nearby structures, utilities, Site features, and appurtenances.

A Pioneer engineer or geologist will supervise drilling operations and be present to collect, screen, and log soil types. Soil samples will be collected at continuous intervals, and personnel will log the soil type and consistencies and document any visible signs of petroleum impacts. Standard headspace readings will be collected using a photoionization detector (PID) meter. A portion of each soil sample will be placed into an airtight container, labeled, and allowed sufficient time for the hydrocarbons, if present, to volatilize. After the equilibration period, each sample will be scanned with a PID meter by inserting the sampling probe into the headspace of the container. The PID readings from each soil sample collected from each borehole will be reviewed and recorded. The sample with the highest reading or with other signs indicating petroleum impacts will be selected for laboratory analysis. The samples collected closest to the water table at the time of drilling and the base of the boring will also be submitted for analysis. A maximum of three soil samples from each monitoring well boring and a maximum of two duplicate samples will be submitted for laboratory analysis for a total of 14 submitted soil samples. The selected samples will be placed into a laboratory-supplied container, labeled, stored

on ice, and submitted to Energy Laboratories, Inc. (Energy) in Billings, Montana, for VPH, EPH screen analyses, and lead scavengers DCA and EDB. If the EPH screen result for soil is greater than 200 mg/kg, the sample will be submitted for EPH fractionation analysis without polycyclic aromatic hydrocarbons (PAHs). For this work plan, we are assuming that half of the samples will require EPH fractionation. Chain of custody documentation will accompany the samples.

3.4 Task 4 – Semi-Annual Groundwater Monitoring

This work plan proposes performing two semi-annual groundwater monitoring events. The first event will be conducted after the installation of the new monitoring wells. The second event will be conducted six months later. During each semi-annual event, Pioneer will collect groundwater samples from the existing and newly installed monitoring wells. For each event, we will gauge and purge the wells and collect groundwater samples. We will attempt to complete the sample events in conjunction with the typically high and low groundwater conditions.

Prior to groundwater sample collection, we will gauge each of the seven monitoring wells for the presence of light non-aqueous phase liquid (LNAPL). Each well will be gauged using an electronic interface probe capable of detecting water or LNAPL hydrocarbons to within 0.01 feet. If the well does not contain LNAPL, the team will collect groundwater samples. If LNAPL is detected, the team will not collect any samples, will note the conditions in a logbook, and notify the DEQ project manager.

The groundwater samples will be collected according to low-flow sample techniques. To ensure representative groundwater samples are collected, we will monitor the water quality parameters for the following intrinsic bioremediation indicators (IBIs) and allow them to stabilize during the purging process prior to sample collection: temperature (plus or minus 3%), pH (plus or minus 0.1), dissolved oxygen (plus or minus 10%), specific conductivity (plus or minus 3%), oxidation reduction potential (plus or minus 10 millivolts), and turbidity (plus or minus 10%). To complete groundwater sampling according to DEQ's low-flow sampling guidance, the wells will be gauged at each field parameter monitoring interval with a water level meter to ensure that excessive drawdown (plus or minus 0.3 feet) does not occur prior to sampling.

We will collect the groundwater samples with a peristaltic pump and disposable tubing and transfer the samples to the appropriate laboratory containers. New, decontaminated containers will be supplied by the laboratory prior to sample collection. Groundwater samples from all seven monitoring wells (including four new monitoring wells) will be submitted for laboratory analysis of VPH, EPH screen, lead scavengers DCA and EDB, and IBIs, including methane, alkalinity (carbonate [CO₃], calcium carbonate [CaCO₃], and bicarbonate [HCO₃]), dissolved metals iron and manganese, pH, dissolved inorganic carbon, sulfate (SO₄), and nutrients (nitrite, nitrate, nitrite plus nitrate). We are assuming that half of the EPH samples will require EPH fractionation without PAHs.

Analysis of groundwater samples will be in accordance with DEQ's *Risk-Based Corrective Action (RBCA) Guidance for Petroleum Releases* (DEQ, 2018 and DEQ, 2020). We will collect

one field duplicate during each sample event. Each sample container will be preserved as directed by the laboratory, labeled, and packaged on ice. The samples will be delivered to Energy. Chain of custody documentation will accompany the samples.

Purge water generated during the sampling activities will be infiltrated into the grassy areas available at the Site in accordance with Montana DEQ standards.

3.5 Task 5 – Perform Petroleum Vapor Intrusion Study

Pioneer personnel will complete a desktop evaluation of the potential for PVI in the vicinity of the former on-Site building and adjacent utility corridors using the new soil data, historical data (cumulative soil analytical data), current and past groundwater monitoring analytical data, and sample location and depth data according to Section 2.4 of DEQ’s Vapor Intrusion Guidance (DEQ, 2021a).

3.6 Task 6 – Reporting

Pioneer will prepare and submit an Interim Data Submittal according to DEQ’s 2021 Montana Groundwater Monitoring Work Plan and Report Guidance for Petroleum Releases following the installation of the new monitoring wells and the first monitoring event. Following the second round of groundwater sampling, we will analyze the results and compile and submit a RI Report, prepared according to DEQ’s Montana Report Guidance for Petroleum Releases (DEQ, 2021), that will include the following:

- Updated Site maps illustrating the locations of the new and existing monitoring wells, underground utilities, and surface features.
- Tables summarizing locations/depths of field data, and laboratory analytical data for the new monitoring wells and the first and second round of groundwater monitoring.
- Laboratory analytical reports for groundwater samples.
- Logs, field data sheets, and related field data.
- Laboratory data validation.
- Recommendations relevant for further investigation or remedial action.
- An updated RCP.

4 COST ESTIMATE

A detailed cost estimate to perform this scope of work is presented on the worksheet in Attachment 2.

5 SCHEDULES

Pioneer proposes to perform and complete the groundwater monitoring well repairs (Task 2), groundwater monitoring well installation (Task 3), and first round of groundwater sampling (Task 4) during the fall of 2024. The second groundwater sampling event will be completed six

months following the initial investigation, along with the PVI evaluation (Task 5) on the Site. The RI report will be completed and submitted within 45 days of receipt of all laboratory analytical reports for groundwater samples. The full duration of the project is approximately 12 months, and the final report will be issued sometime in the summer of 2025.

6 REFERENCES

- DEQ, 1996. Underground Storage Tank 30-Day Release Report. Underground Storage Tank Program Department of Environmental Quality. December 02, 1996.
- DEQ, 2018. Montana Risk-Based Corrective Action Guidance for Petroleum Releases. Montana Department of Environmental Quality. May 2018.
- DEQ, 2020. Risk-Based Corrective Action (RBCA) Risk-Based Screening Level (RBSL) Changes Memorandum dated 7/15/2020 from Kathryn Morris. Available at Montana Department of Environmental Quality website: [https://deq.mt.gov/Portals/112/Land/LUST/Documents/TechGuidDocs/RBCA%202020%20Interim%20Update_Naphthalene Memorandum.pdf](https://deq.mt.gov/Portals/112/Land/LUST/Documents/TechGuidDocs/RBCA%202020%20Interim%20Update_Naphthalene_Memorandum.pdf).
- DEQ, 2021a. Montana Vapor Intrusion Guide. Montana Department of Environmental Quality. September 2021. Available at [MontanaVI_Guide_FINAL.pdf \(mt.gov\)](#).
- DEQ, 2021b. Montana Groundwater Monitoring Work Plan and Report Guidance for Petroleum Releases. Montana Department of Environmental Quality, Waste Management and Remediation Division Petroleum Tank Cleanup Section. March 2021.
- Pioneer, 2023. Groundwater Monitoring Report Former Bob's Tire Service 501 South Ellery Avenue, Fairview, Richland County, Montana, Facility ID #42-04828, Release #3053 WP ID #34492. August 14, 2023.
- Richland County, 2000. Memo: Bob's Tire, Fairview – Facility ID # 42-04828, District Sanitarian Richland and McCone County Health Department. February 4, 2000.
- Richland County, 2016. Memo: Bob's Tire, Fairview, MT; Facility ID # 42-04828, Release #3053, Richland County Public Works. June 27, 2016.

Attachment 1

Figures

Figure 1. Location and Vicinity Map
Figure 2. Site Map



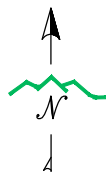
**PROJECT
LOCATION**



SITE VICINITY MAP

DEQ FACILITY ID: 42-04828
 RELEASE NUMBER: 3053
 WORK PLAN NUMBER: 34882

FORMER BOB'S TIRE SERVICE FACILITY
 501 SOUTH ELLERY AVENUE
 FAIRVIEW, MT



DISPLAYED AS:
 COORD SYS/ZONE: NAD83, NAVD88
 DATUM: MSP
 UNITS: INT. FEET
 SOURCE: BING

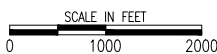


FIGURE 1



LOCATION AND
 SITE VICINITY MAP
 FORMER BOB'S TIRE
 SERVICE FACILITY

DATE: JULY 2024



LEGEND:

- MONITORING WELL
- PROPOSED MONITORING WELL
- DESTROYED MONITORING WELL

DEQ FACILITY ID: 42-04828
 RELEASE NUMBER: 3053
 WORK PLAN NUMBER: 34882

DISPLAYED AS:

COORD SYS/ZONE: NAD83, NAVD88
 DATUM: MSP
 UNITS: INT. FEET
 SOURCE: BING

SCALE IN FEET

FIGURE 2

SITE MAP
 FORMER BOB'S TIRE
 SERVICE FACILITY

PIONEER
 TECHNICAL SERVICES, INC.
 2310 BROADWATER AVE, SUITE 1
 BILLINGS, MT 59102
 (406) 545-4805

DATE: JULY 2024

Attachment 2 Cost Estimate



Petroleum Tank Release Compensation Board

STATE OF MONTANA

P.O. Box 200902 • Helena, MT 59620-0902 • (406) 444-9710

7/28/2022

Groundwater Monitoring and Sampling Summary Sheet

[Cost Estimate Expl.](#)

[Work Plan Tasks](#)

[Unit Cost Worksheet](#)

[Help](#)

Monitoring Well Details

7	Total Number of Wells at Site
7	Number of Fluid Level Measurements Only ⁽²⁾
7	Number of Wells to be Monitored/Sampled ⁽⁴⁻¹¹⁾
2	Average Well Casing Diameter (inches)
15	Average Depth to Groundwater (ft)
20	Average Depth of Wells (ft)

Sampling Method

<input checked="" type="checkbox"/>	Low-Flow	
<input checked="" type="checkbox"/>	Low Yield Aquifer	
<input type="checkbox"/>	No Purge	
<input type="checkbox"/>	Other (please specify)	

of Events - Monitoring/Sampling Interval

Estimated Start Date: 9/9/2024

2	Semi-Annual	
	Annual	
	Bi-Annual	
	Other	

Sampling Instrument

<input checked="" type="checkbox"/>	Peristaltic Pump	
<input type="checkbox"/>	Bladder Pump	
<input type="checkbox"/>	Submersible Pump	
<input type="checkbox"/>	Bailer	
<input type="checkbox"/>	Other (please specify)	

2 Total Events

14	< 25 ft total depth
	25 - 50 ft total depth
	50 - 75 ft total depth
	75 - 100 ft total depth

14 Total



Petroleum Tank Release Compensation Board

STATE OF MONTANA

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7/28/2022

Cost Estimate Explanations

Site Information

Work Plan Tasks

Unit Cost Worksheet

Help

Technical Guidance Documents

Groundwater Sampling Guidance

Purge Water Disposal Flowchart

- ⁽¹⁾ Mobilization/Demobilization: Includes all travel time, preparation time, and vehicle use costs (vehicle mileage) to transport equipment, materials, and personnel to and from the site location. More than one mobilization per event will require justification and pre-approval by the DEQ-PTCS and Board staffs. This item should be on a per mile unit rate.
- ⁽²⁾ Fluid Level Measurements: Includes all costs (labor, equipment, materials, and well consumables) to measure fluid depth, collect other groundwater information from well, and decontaminate equipment. The well gauging costs should be on a per well basis and does not include purging and sampling of the well.
- ⁽³⁾ Groundwater Monitoring Preparation/Setup/Cleanup: Includes all on-site labor costs to unload, setup, and calibrate monitoring equipment prior to initiation of groundwater monitoring activities, and all on-site labor costs to load and secure equipment and samples prior to leaving the site.
- ⁽⁴⁾ Groundwater Monitoring - Peristaltic: Includes all costs (labor, equipment, materials, and well consumables) using a peristaltic pump to monitor, purge, sample groundwater, decontaminate equipment, take water level measurements, and handle contaminated purge water (DEQ understands this to mean disposal of groundwater to the ground surface according to the [Disposal of Untreated Purge Water from Monitoring Wells flowchart dated 7/27/2015](#). If purge water must be containerized and/or treated in a different manner, additional scope and budget may be required.) Groundwater sampling to be conducted using a low-flow method. The cost should be on a per well basis.
- ⁽⁵⁾ Groundwater Monitoring - Bladder: Includes all costs (labor, equipment, materials, and well consumables) using a bladder pump to monitor, purge, sample groundwater, decontaminate equipment, take water level measurements, and handle contaminated purge water (DEQ understands this to mean disposal of groundwater to the ground surface according to the [Disposal of Untreated Purge Water from Monitoring Wells flowchart dated 7/27/2015](#). If purge water must be containerized and/or treated in a different manner, additional scope and budget may be required.) Groundwater sampling to be conducted using a low-flow method. The cost should be on a per well basis.
- ⁽⁶⁾ Groundwater Monitoring – No Purge: Includes all costs (labor, equipment, materials, and well consumables) to monitor, sample groundwater, decontaminate equipment, and take water level measurements. The cost should be on a per well basis.
- ⁽⁷⁾ Groundwater Monitoring – Low Yield Modifier: Includes all additional on-site labor costs associated with groundwater well purging, monitoring, and sampling of wells which are low yield / low production. Low yield is defined as a monitoring well that is not capable of adequate groundwater production at the median low-flow purging rate of 200 ml/min without exhibiting drawdown in excess of [DEQ guidelines](#). The cost should be on a per well basis.
- ⁽⁸⁾ Groundwater Monitoring – IBI Modifier: Includes all additional labor costs necessary for collection of groundwater samples for IBI analyses. The cost should be on a per well basis.
- ⁽⁹⁾ Groundwater Monitoring - Filters: Includes the costs (materials) for the use of a filter during collection of groundwater samples for the analysis of dissolved metals. The cost should be presented on a per well basis.
- ⁽¹⁰⁾ Contaminated Purge Water - Offsite Disposal: Includes the costs (labor, equipment, and materials) for containerizing, handling, shipping, and disposal or treatment of purge water that cannot be disposed of on the ground surface according to the [Disposal of Untreated Purge Water from Monitoring Wells flowchart dated July 27, 2015](#). This cost should be presented on a per work plan basis.
- ⁽¹¹⁾ Duplicate Sample Modifier: Includes the costs (labor and materials) for the collection of a duplicate groundwater sample. The duplicate groundwater sample is to be collected using the same method (e.g., low-flow) and using the same sampling tool as the field groundwater sample. This cost should be on a per duplicate basis.
- ⁽¹²⁾ Laboratory Analysis: Includes all laboratory costs for all wells, for duration of work plan. It is realized that some laboratory analyses will not be conducted for every event and that the well sampling frequency may change.
- ⁽¹³⁾ PTRCB Sampling Fee: Includes all costs related to management of the sample including: sample container, cooler, packing, shipping, handling, sample preservation, and office related handling charges. The Sample is defined as the laboratory ID number on the laboratory invoice. Unusual cost can be reimbursed by presenting clear and convincing evidence to the board staff and receiving approval by the board staff prior to costs being incurred.
- ⁽¹⁴⁾ Groundwater Monitoring Report Preparation – Base Cost: Includes all costs (labor and materials) for preparation of a base-level groundwater monitoring report. The base-level report documents one monitoring event, including monitoring and sampling of up to 10 sampling points (sum of total monitoring wells, tap samples, etc.), cumulative groundwater data tables, updated site figures showing well locations, a groundwater flow map, COC isocontour figures, analytical data, and completed data validation and summary form(s), and report submittal, including all office related costs, per report. ([link to DEQ's reference guide that is currently in progress](#))
- ⁽¹⁵⁾ Groundwater Monitoring Report Preparation – Interim Data Submittal: Includes all costs (labor and materials) for preparation of a base-level groundwater monitoring interim data submittal. The interim data submittal documents one monitoring event, including monitoring and sampling of up to 10 sampling points (sum of total monitoring wells, tap samples, etc.), cumulative groundwater data tables, a groundwater flow map, COC isocontour figures, well purging record, analytical data, and completed data validation and summary form(s), and report submittal, including all office related costs, per report. ([link to DEQ's reference guide that is currently in progress](#))
- ⁽¹⁶⁾ Groundwater Monitoring Report Preparation – IBI Modifier: Includes all costs (labor and materials) for addition of IBI data tables, IBI data evaluation, and IBI data discussion sections to the base-level groundwater monitoring report. The cost should be presented on a per report basis. ([link to DEQ's reference guide that is currently in progress](#))
- ⁽¹⁷⁾ Groundwater Monitoring Report Preparation – Additional Wells Modifier: Includes all costs (labor and materials) for addition of monitoring and sampling data, data evaluation, and discussion sections to the base-level groundwater monitoring report for events including monitoring and sampling of more than 10 sampling points per event (sum of total monitoring wells, tap samples, etc. collected per event). The cost should be presented on a per report basis (only one of this modifier is allowed per report).
- ⁽¹⁸⁾ Release Closure Plan (RCP) Preparation: Includes all costs (labor and materials) for preparation or updating of a DEQ PTCS RCP. The cost should be presented on a per report basis.

Estimated Project Costs

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Assumptions

- 1) Probe rods will be decontaminated between boreholes and wells to prevent cross contamination. Decon water can be discharged to the ground.
- 2) Boreholes will be abandoned by backfilling with granular bentonite.
- 3) Soil types are compatible with direct push probing. Additional time may be needed if tough probing.
- 4) Borehole and well locations are relatively close together and will not require transporting the Geoprobe between locations.
- 5) Soil boring locations are accessible with the track-mounted 7822DT Geoprobe rig.
- 6) Standby time will be \$280 per hour.