



Environmental Resources, LLC

P.O. Box 5305, Bozeman, Montana 59717 Phone (406) 582-8491 email: ruwaller@gmail.com

March 6, 2020

Mr. James Bohrman
P.O. Box 414
Ennis, Montana 59729

Subject: Corrective Action Work Plan
Former Bohrman Exxon, Ennis, Montana
DEQ Facility ID No. 28-11350
DEQ Leak No. 348, DEQ Work Plan ID 34030

Dear Mr. Bohrman:

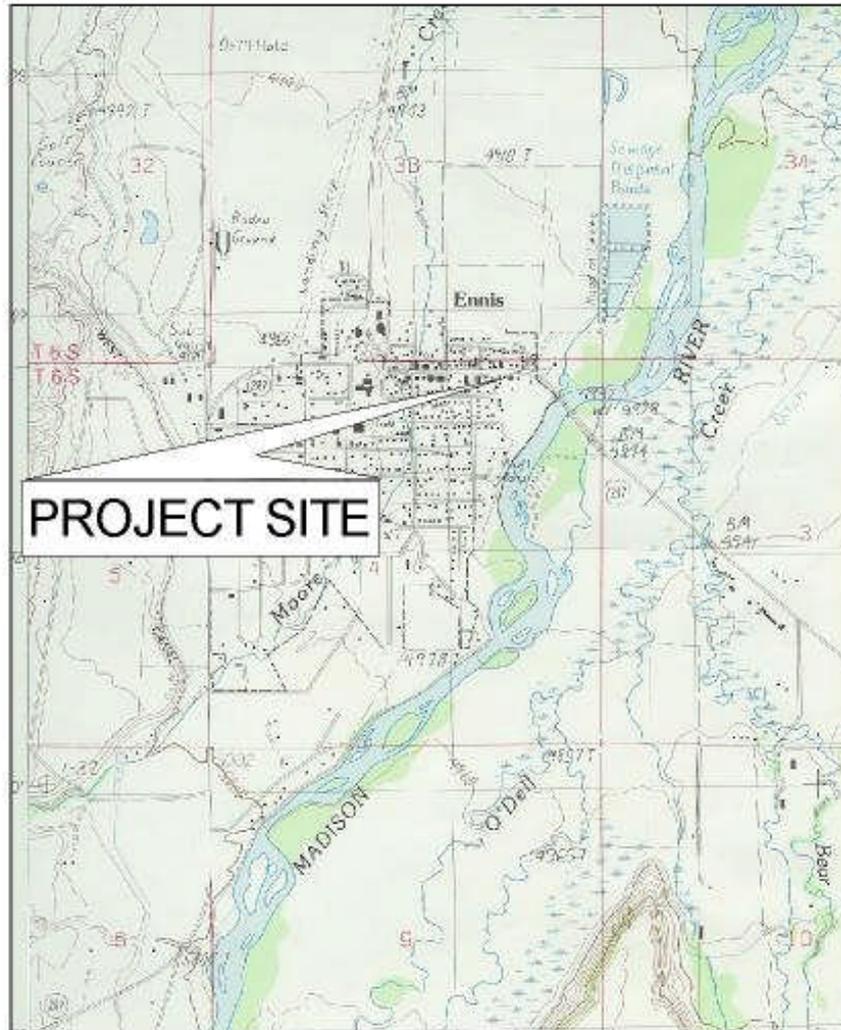
Environmental Resources, LLC is pleased to submit this Corrective Action Work Plan to outline activities associated with additional investigation and monitoring of subsurface petroleum contamination at the above referenced petroleum release site. Submittal of this work plan was requested by the Montana Department of Environmental Quality (DEQ) in a letter dated January 24, 2020.

Site Location

The Bohrman Exxon petroleum release site is located at 319 East Main Street in Ennis, Montana. The site is situated along U.S. Highway 287 in a commercial district inside the city limits of Ennis, Montana as shown on Figure 1.

Site Geology

Site geology is characterized by fine- to coarse-grained alluvium deposited by the Madison River. Shallow groundwater occurs at approximately 5-6 feet below ground surface and is inferred to flow north-northeasterly toward the Madison River, situated approximately 1500 feet east of the site.



SCALE: 1" = 2000'



ENVIRONMENTAL RESOURCES
Consulting Geologists and Environmental Scientists

BOHRMAN EXXON
ENNIS, MONTANA
SITE INVESTIGATION
FIGURE 1, REGIONAL SITE LOCATION MAP

Scope of Work

Proposed tasks to be performed within the scope of this work plan include the following:

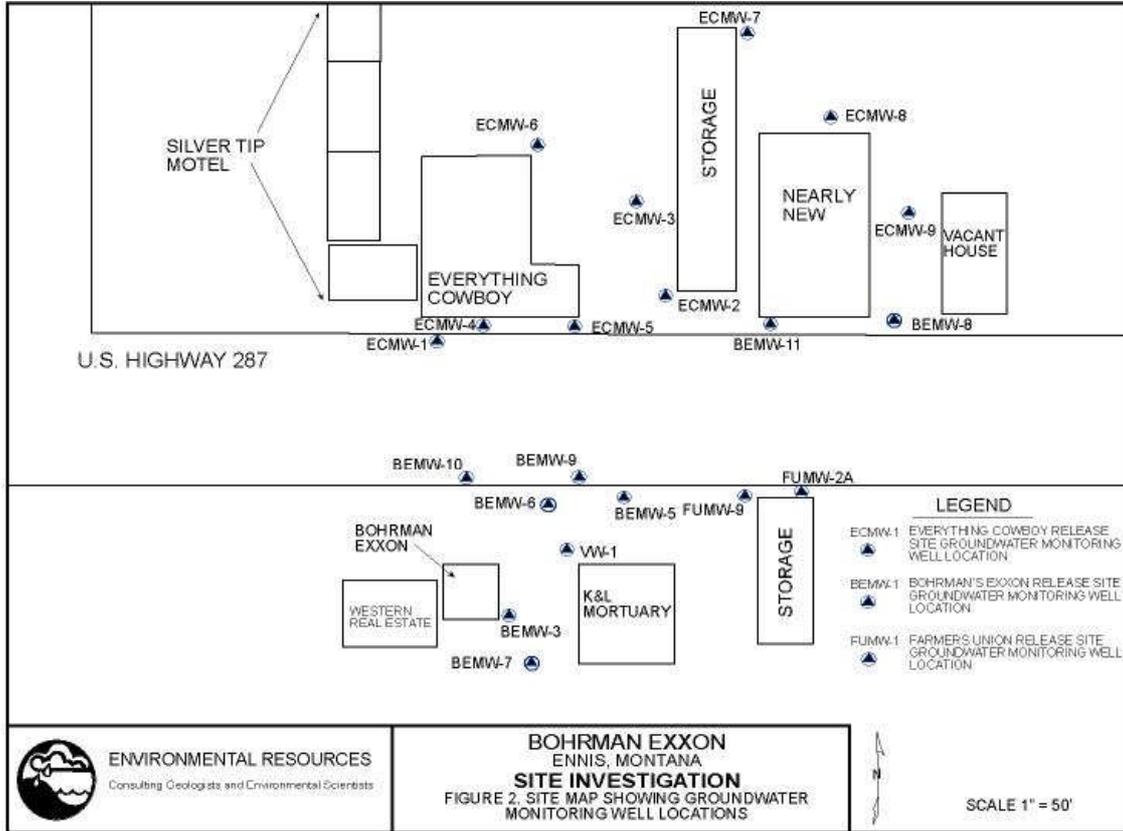
- 1) Conduct one round of groundwater monitoring prior to activation and operation of the air injection system.
- 2) Activate and operate the remediation system.
- 3) Monitor groundwater quality in conjunction with operation of the remediation system. Analyze all groundwater samples in accordance with Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases. Also analyze samples for lead scavengers.
- 4) Validate all laboratory data.
- 5) Prepare a Release Closure Plan (RCP).
- 6) Prepare a Standardized Generic Applications Report (AR-07).

System Startup/Monitoring

The air injection system will be started and operated to concentrate air injection into the subsurface along the northern edge of the project site. Data collection will occur at startup, at one hour intervals for eight hours and at 24 hours following startup. Additional data will be collected from the remediation system and surrounding monitoring wells quarterly during the one year period of operation. Positive pressure and dissolved oxygen measurements will be obtained from monitoring wells MW-6, MW-9 and MW-10 at startup, at one hour intervals during an initial eight hour operation cycle, at 24 hours following startup, monthly for one quarter of operation and quarterly thereafter.

Groundwater Sample Collection and Analysis

Groundwater monitoring will occur at system startup in May 2020 with groundwater sample collection from monitoring wells MW-5, MW-6, MW-9, MW-10 and MW-11 as shown on Figure 2. Additional groundwater monitoring will be conducted on a quarterly basis for one year. All of the well covers will be opened and the locking caps removed at least 30 minutes prior to obtaining static water level measurements. Static water levels will be measured from a reference point on top of the north side of each well casing using a Keck ET-89 electronic water level indicator. The water level indicator will be decontaminated prior to each measurement by scrubbing the indicator tip in an *Alconox*® wash solution, rinsing with a 10% methanol solution and triple rinsing with distilled water.



Following measurement of the static water levels, sample collection will commence by purging each well using a low flow sampling pump. Indicator parameters ORP, pH, specific conductance, temperature and dissolved oxygen will be measured during sample purging. Samples will be collected when the measured indicator parameters stabilize. Each sample will be decanted into the appropriate laboratory provided sample containers, preserved and placed on ice while awaiting delivery to the analytical laboratory. All of the groundwater samples will be analyzed for Volatile Petroleum Hydrocarbons (VPH) and for lead scavengers at an approved analytical laboratory. If lead scavengers are not detected during the initial monitoring event then future groundwater sample analyses will not include lead scavengers.

Reporting

A Standardized Generic Application Report (Report_AR-07) will be prepared that will summarize the results of system operation and monitoring. A Release Closure Plan (RCP) will be prepared and appended to the report. Data validation forms will also be appended to the AR-07 report.

Investigative Methods

Methods practiced during this investigation will follow generally accepted practices of similar consulting firms in the same geographical area. Quality Assurance/ Quality Control methods will be employed throughout all phases of this investigation to ensure meaningful and reproducible results and data.

Health and Safety

Health and safety issues will be addressed throughout this investigation to prevent exposure of site workers and other onsite personnel to potentially hazardous situations and chemical compounds. Several physical hazards will inherently be present throughout the field investigation while heavy equipment is being utilized for soil borings and monitoring well installation. Site specific health and safety precautions and information will be contained in a Health and Safety Plan which will remain onsite during all field activities.

Investigation Derived Waste

Drill cuttings, excess sample materials, drilling fluids, and water removed from a well during installation, development, and aquifer testing and all other investigation derived wastes will be disposed of according to all applicable local, state and federal laws and regulations governing the disposition of investigation derived wastes. Investigation derived wastes may consist of the following materials:

Corrective Action Work Plan
Bohrman Exxon
Facility ID No. 28-11350
March 6, 2020
Page 6

- Drill cuttings
- Purge water from monitor well sampling
- Used soil and groundwater sampling materials
- Excess sample material (soil and water)

Project Costs

Groundwater monitoring costs are summarized on the attached Unit Cost Worksheet. Costs associated with operation of the SVE/ AS system are summarized below.

<u>TASK</u>	<u>UNIT COST</u>	<u>COST</u>
<u>Task 1-Remediation System Startup and Monitoring</u>		
Project management	4.0 hrs @ \$135/hr	\$540.00
Prepare AC-07 CAP	7.0 hrs @ \$135/hr	938.00
Mobilization, RT from Bozeman	2.0 hrs @ \$120/hr	240.00
Mileage, 4WD field pickup	120 miles @ \$0.61/mile	73.20
System startup/monitoring	8.0 hrs @ \$120/hr	960.00
Per Diem	1 day @ \$30.50/day	30.50
PID rental	1 day @ \$90/day	90.00
Dissolved oxygen meter rental	1 day @ \$96/day	96.00
Magnehelic gauge rental	1 day @ \$48/day	48.00
Air velocity meter rental	1 day @ \$48/day	48.00
Electrical services	estimated	2500.00
	<u>Subtotal</u>	<u>\$5563.70</u>

<u>Task 2-24 Hour Follow-up and Remediation System Startup and Monitoring</u>		
Mobilization, RT from Bozeman	2.0 hrs @ \$120/hr	\$240.00
Mileage, 4WD field pickup	120 miles @ \$0.61/mile	73.20
System monitoring	2.0 hrs @ \$120/hr	240.00
Groundwater sample collection	5 samples @ \$200 ea.	1000.00
Laboratory analyses	5 VPH water @ \$135 ea.	675.00
Laboratory analyses	5 lead scavenger water @ \$250 ea.	1250.00
Sample shipping	estimated	120.00
Per Diem	1 day @ \$30.50/day	30.50
PID rental	1 day @ \$90/day	90.00
Dissolved oxygen meter rental	1 day @ \$96/day	96.00
Magnehelic gauge rental	1 day @ \$48/day	48.00
Air velocity meter rental	1 day @ \$48/day	48.00
	<u>Subtotal</u>	<u>\$3910.70</u>

Additional monitoring will be performed concurrently with a quarterly groundwater monitoring event:

Project management	1.0 hr @ \$135/hr	\$135.00
Mobilization, RT from Bozeman	2.0 hrs @ \$120/hr	240.00
Mileage, 4WD field pickup	120 miles @ \$0.61/mile	73.20
System monitoring, Scientist I	2.0 hrs @ \$120/hr	240.00
Groundwater sample collection	5 samples @ \$200 ea.	1000.00
Laboratory analyses	5 VPH water @ \$135 ea.	675.00
Laboratory analyses	5 lead scavenger water @ \$250 ea.	1250.00
Sample shipping	estimated	120.00
PID rental	1 day @ \$90/day	90.00
Dissolved oxygen meter rental	1 day @ \$96/day	96.00
Magnehelic gauge rental	1 day @ \$48/day	48.00
Air velocity meter rental	1 day @ \$48/day	48.00
	<u>Subtotal</u>	<u>\$4015.20 per event, three events total</u>
		<u>\$12,045.60</u>

Corrective Action Work Plan
Bohrman Exxon
Facility ID No. 28-11350
March 6, 2020
Page 8

Task 3-Reporting

Standardized Generic Applications		
Report (AR-07)	32.0 hrs @ \$135/hr	\$4320.00
Release Closure Plan	8.0 hrs @ \$135/hr	\$1080.00
Data validation, four monitoring events	8.0 hrs @ \$135/hr	1080.00
	<u>Subtotal</u>	<u>\$6480.00</u>
<u>TOTAL ESTIMATED COST</u>		<u>\$28,000.00</u>

Corrective Action Work Plan
Bohrman Exxon
Facility ID No. 28-11350
March 6, 2020
Page 9

Limitations

This work was performed in accordance with generally accepted practices of other consulting firms conducting similar studies. Environmental Resources, LLC observed that degree of care and skill generally exercised by other consultants under similar conditions. Our findings and conclusions must not be considered as scientific certainties, but as opinions based upon our professional judgment based upon the data gathered during the course of this investigation. Other than this, no warranty is implied or intended.

Submitted by
Environmental Resources, LLC

Robert H. Waller
Project Geologist

cc: PTRCB
DEQ-PTCS