



Environmental Resources

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

April 29, 2019

Mr. Tanner Trower
Pro Co-op
P.O. Box 847
Scobey, Montana 59263

Subject: Corrective Action Work Plan
Pro Co-op, Richland, Montana
DEQ Facility ID No. 53-00078
DEQ Release No. 3837, Work Plan ID 33794

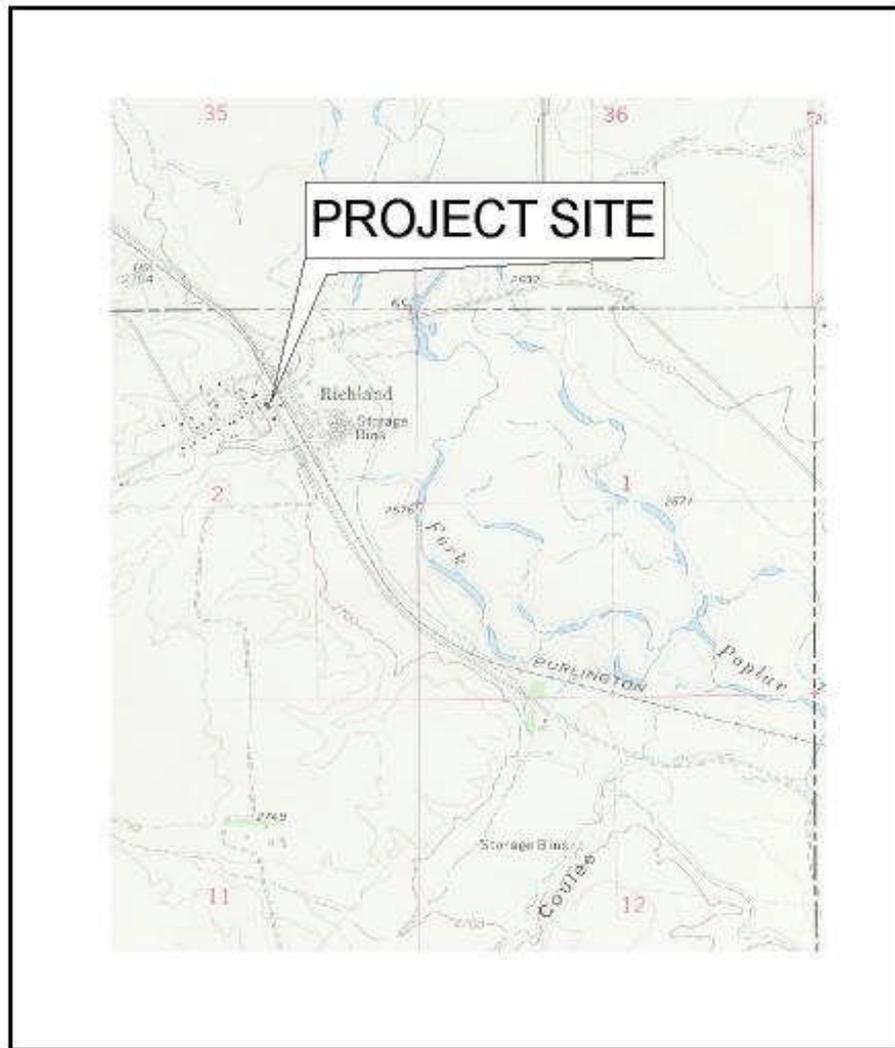
Dear Mr. Trower:

Environmental Resources is pleased to submit this Corrective Action Work Plan to outline activities associated with additional subsurface investigation and remediation pilot testing 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 March 12, 2019.

Site Location

The Pro Co-op petroleum release site is located within the city limits of Richland, Montana as shown on Figure 1. The project site is situated in the northwest quarter of Section 2, Township 35 North, Range 43 East.

The project site has historically been used as an automobile refueling facility operated as part of an agricultural supply store and mechanic shop and a petroleum release was discovered on November 10, 1999. DEQ had previously requested removal of up to 500 cubic yards of petroleum contaminated soil from beneath the former product dispenser. However, removal of the petroleum contaminated soil was determined to be cost prohibitive. In situ remediation utilizing SVE/AI was chosen as an alternative. However, difficulties encountered during remediation well installation prevented implementation of the remediation scheme. The following sections outline the methods that will be used to conduct a pilot test to determine if an alternative remedial technique will be effective.



SCALE: 1" = 2000'



ENVIRONMENTAL RESOURCE
MANAGEMENT, INC.
Consulting Geologists and Environmental Scientists

PRO CO-OP
RICHLAND, MONTANA
SITE INVESTIGATION
FIGURE 1, REGIONAL SITE LOCATION MAP

Site Geology

Site geology is characterized by coarse-grained alluvial gravels and glacial till deposited on the Late Cretaceous Bearpaw Shale. Groundwater occurs at approximately 11-12 feet below ground surface within alluvium beneath the glacial till.

Scope of Work

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

1. Install up to six soil borings to more adequately define the extent and magnitude of soil and groundwater contamination. Collect soil samples and analyze samples for Volatile Petroleum Hydrocarbons (VPH).
2. Complete up to four of the soil borings as groundwater monitoring wells.
3. Collect groundwater samples from all new and existing groundwater monitoring wells and analyze samples for VPH and Intrinsic Biodegradation Indicators (IBIs).
4. Sample all groundwater supply wells within 250 feet of the release site and analyze samples for Volatile Organic Compounds (VOCs) using EPA Method 524.2.
5. Install one four-inch diameter injection well to be used for pilot testing.
6. Conduct a pilot test to determine if In Situ Chemical Oxidation (ISCO) is a viable remedial alternative for use at the project site.
7. Validate all lab data using DEQ's Data Validation Summary Form.
8. Prepare a Release Closure Plan (RCP).
9. Prepare and submit a Standardized Abbreviated Generic Applications Report (AR-07).

Soil Boring and Groundwater Monitoring Well Installation

Six soil borings will be advanced at the locations shown on Figure 2. Soil borings will be advanced to 20 feet below ground surface. Four of the soil borings will be completed as groundwater monitoring wells with two-inch diameter Schedule 40 PVC flush threaded well casing with 15 feet of 0.020" slotted well screen and five feet of blank casing. The annulus around the well screens will be filled with 10-20 mesh Colorado silica from total depth to approximately one foot above the top of the screened interval and bentonite chips will be used to fill the remaining annulus to ground surface. Each well will be completed with a bolt-down steel manhole cover and fitted with a locking compression plug.

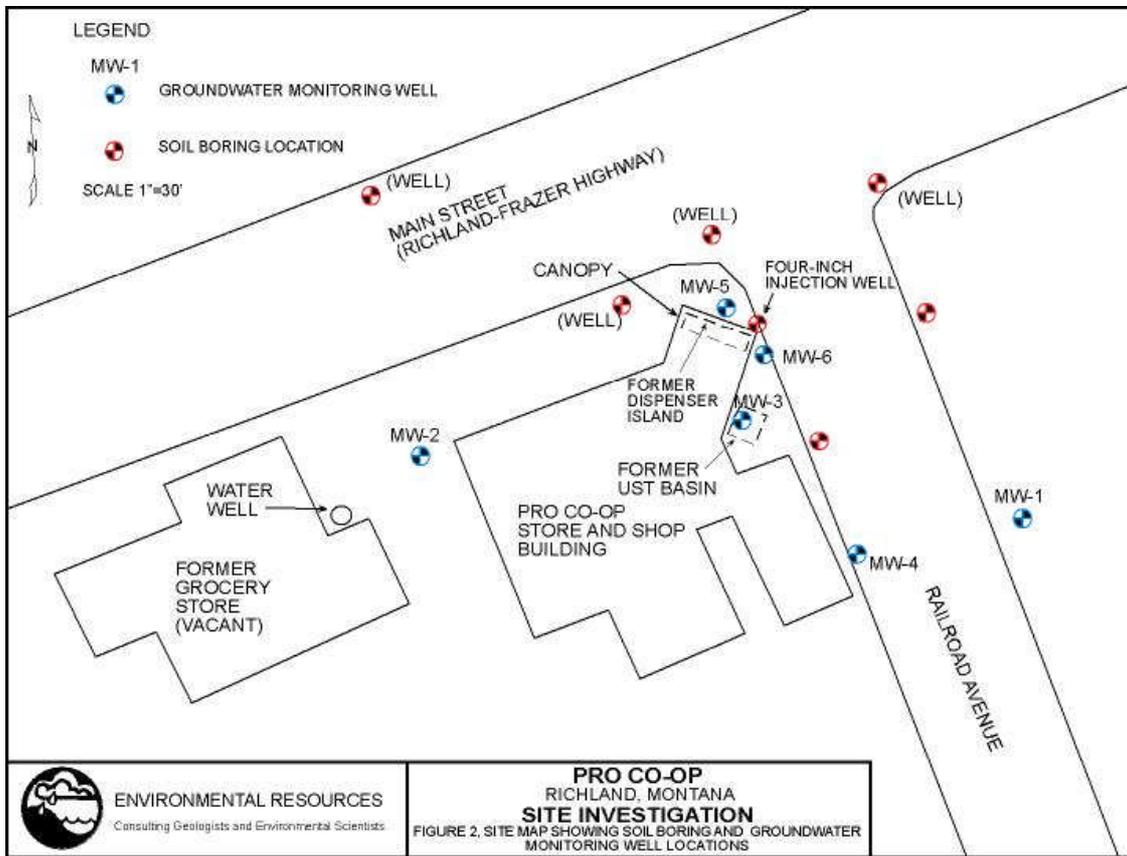
A lithologic log will be completed for each boring. All drilling logs will be completed in the field as the boring is drilled. All borings will be completed in accordance with all applicable local, state and federal laws, rules and administrative requirements.

Material Sampling

Drill cuttings will be logged for lithology, texture, color, moisture and volatile petroleum content. All soil samples will be visually classified for texture using the Unified Soil Classification System (USCS) according to ASTM-D-2488. Soil samples from two foot intervals and from obvious areas of petroleum discoloration will be analyzed for volatile petroleum hydrocarbons using a Photovac 2020 photo ionization detector (PID) with a standard heated jar headspace method. Laboratory soil samples will be retained from the interval that exhibits the highest headspace reading and/or from the air-water interface in each boring. Up to two soil samples will be retained from each boring for VPH analysis at an approved laboratory.

Groundwater Monitoring

Groundwater samples will be collected from all of the newly installed and existing groundwater monitoring wells. Prior to sample collection, data will be collected from all onsite monitoring wells and recorded in a field notebook. All of the well covers will be opened and the locking compression caps will be removed upon arrival at the project site. The wells will be allowed to equilibrate to the atmosphere for at least 30 minutes prior to measuring static water levels. Following the equilibration period, a thoroughly decontaminated electronic water level indicator will be used to measure the static water level in each well casing. The water level indicator tip will be scrubbed in an Alconox or similar wash solution and triple



rinsed with de-ionized water prior to and following each measurement. All of the depth to water measurements will be collected from a reference point used to determine the casing elevation for each well.

Following collection of all of the static water level measurements, groundwater sample purging will commence using a low flow sampling pump. Purge water from each monitoring well will be constantly monitored for oxidation-reduction potential (ORP), pH, conductivity, temperature and dissolved oxygen content using Hanna Instruments field meters or equivalent. Groundwater sample collection will begin when the all or the majority of the indicator parameter values stabilize. Each groundwater sample will be decanted into appropriate sample containers, preserved where necessary and placed on ice while awaiting shipment to the analytical laboratory. Sample shipment will occur through Fed Ex originating from the Bozeman, Montana. All of the collected groundwater samples will be analyzed for VPH and for IBIs at Alpine Analytical in Helena, Montana.

Groundwater Supply Well Sampling

Groundwater samples will be collected from four groundwater supply wells situated within 250 feet of the project site. All of the samples will be analyzed for VOCs using EPA Method 524.2 at Alpine Analytical in Helena, MT.

Remediation Pilot Testing

Remediation pilot testing will be conducted to determine if ISCO using RegenOx manufactured by Regenesis could be used to reduce petroleum hydrocarbon concentrations in soil and groundwater beneath the project site. Regenesis provided a design and cost estimate for providing RegenOx product that consists of injecting RegenOx in a two part mixture into one injection well four times over a four to eight week time frame. A copy of the proposal is attached.

Prior to oxidant procurement, a hydraulic pump test will be conducted to determine if the aquifer will accept the proposed volume of fluid injection. A positive displacement pump fitted with a pressure gauge and flowmeter will be used to inject clean non-chlorinated well water into the injection well. Injection pressure and flow rate will be monitored and used to determine the capacity of the injection well and aquifer response. If the injection rate is acceptable, the RegenOx product will be ordered and the pilot test will proceed.

To facilitate injection of the oxidant, one four-inch diameter injection well will be installed equidistant between groundwater monitoring wells MW-5 and MW-6 which are situated near the former dispenser island. The injection well will be

installed to a depth of ten feet below ground surface and will be completed with five feet of 0.020" slotted Schedule 4 PVC well screen and five feet of blank casing. The annulus around the well screen will be filled with 10-20 mesh Colorado silica from total depth to approximately one foot above the top of the screened interval and bentonite chips will be used to fill the remaining annulus to ground surface. The injection well will be completed with a bolt-down steel manhole cover and fitted with a locking compression plug.

Per the Regeneration design for the pilot test, the RegenOx product will be injected in four applications one to two weeks apart. RegenOx consists of two parts, part A is the oxidant and part B is the activator. During each application, 40 pounds of part B will be mixed with 40 gallons of water and injected into the well followed by a 20 gallon water flush. Then, 70 pounds of part A will be mixed with 201 gallons of water and injected followed with a 20 gallon water flush.

Groundwater samples will be collected from all of the site monitoring wells sixty days after the last injection. Groundwater samples will be analyzed for VPH at Alpine Analytical in Helena, Montana.

Reporting

A Standardized Generic Application Report (Report_AR-07) will be prepared that will summarize the results of the additional soil boring and groundwater monitoring well installations and the implementation and results of the pilot testing. The report will include conclusions and recommendations for future work. A Release Closure Plan will be prepared and 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.

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.

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.

Project Costs

Costs associated with implementation of this work plan are outlined below. Groundwater monitoring costs are summarized on the attached Unit Cost Worksheet.

Task 1- Well Installation

Project Management	4.0 hrs @ \$134.75/hr	\$539.00
Drill logging, six soil borings, four monitoring wells, one injection well		35.0 hrs @ \$118.50/hr
	4147.50	
PID rental	1 week @ \$296/week	360.00
Mobilization to Richland from Bozeman, round trip	15.0 hrs @ \$118.50/hr	1777.50
Mileage, 4WD field pickup	850 miles @ \$0.59/mile	501.50
Mobilization from Richland to Glasgow round trip, 4 round trips (this mob is necessary as there is no lodging in Richland)	8.0 hrs @ \$118.50/hr	948.00
Mileage, 4WD field pickup	4 trips @ 130 miles ea. @ \$0.59/mile	306.80
Per Diem	5 days @ \$23/day	115.00
Lodging	5 nights @ \$110/night	550.00
Lab analyses	12 VPH soil @ \$135 ea.	1620.00
Drilling services	Haztech Drilling bid	9739.00
<u>Task 1-Subtotal</u>		\$20,604.30

Task 2-ISCO Pilot Testing

Project Management	4.0 hrs @ \$134.75/hr	\$539.00
Prep for site work and demob	6.0 hrs @ \$118.50/hr	711.00
Conduct RegenOx injection, four injections over 4-8 weeks	32.0 hrs @ \$118.50/hr	3792.00
Mobilization to Richland from Bozeman, 4 round trips	60.0 hrs @ \$118.50/hr	7110.00
Mileage, 4WD field pickup	3400 miles @ \$0.59/mile	2006.00
Mobilization from Richland to Glasgow round trip, 4 round trips (this mob is necessary as there is no lodging in Richland)	8.0 hrs @ \$118.50/hr	948.00
Mileage, 4WD field pickup	4 trips @ 130 miles ea. @ \$0.59/mile	306.80
Per Diem	8 days @ \$23/day	184.00
Lodging	8 nights @ \$110/night	880.00
Mixing tank and injection pump assembly		1200.00
RegenOx product with estimated shipping		1700.00
<u>Task 2 Subtotal</u>		\$19,430.80

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Task 3-Reporting

Standardized Generic Applications		
Corrective Action Plan (CAP_AC-07)	11.0 hrs @ \$134.75/hr	\$1482.25
Standardized Generic Applications		
Report (AR-07)	32.0 hrs @ \$134.75/hr	\$4312.00
Release Closure Plan	8.0 hrs @ \$134.75/hr	1078.00
<u>Task 4 Subtotal</u>		\$6872.25

Total Estimated Project Cost **\$46,907.35**

Please Note: This is an estimate only. This project will be billed at actual cost of time and materials and costs may vary from this estimate significantly depending upon site conditions. Some items may be omitted from this estimate or added if necessary to complete this project. Every attempt has been made to assure adequacy of this estimate for budgeting purposes. Significant deviations and/or changes in scope of work or costs associated with this Corrective Action Work Plan will be discussed with the project client, DEQ and with MPTRCF prior to implementation if possible and as necessary to ensure eligibility of costs for reimbursement.

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Limitations

This work was performed in accordance with generally accepted practices of other consulting firms conducting similar studies. Environmental Resources 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

Robert H. Waller
Project Geologist

cc: DEQ-PTCS
MPTRCB
attachments: Unit Cost Worksheet, Drill bids, Regenesis estimate

**GROUNDWATER MONITORING AND SAMPLING
UNIT COST WORKSHEET**

Montana Department of Environmental Quality

Contractor Information

Company Name: Environmental Resources
Address: P.O. Box 5305
City, State, Zip: Bozeman, MT 59717
Phone: 406.582.8491
Cost Estimator: Bob Waller

Project Information

Site Name: Pro Co-op Facility ID # 53-00078
Address: P.O. Box 167 Release # 3837
City: Richland

Monitoring Well Details

Total Number of Wells at Site 10
Number of Wells to be monitored _____
Number of Wells to be monitored/sampled 10
Well Casing Diameter (inches) 2"
Average Depth to Groundwater (ft) 12'
Average Depth of Wells (ft) 20'

Monitoring/Sampling Interval

Estimated Start Date: 8/17
 Quarterly (# of events 4)
 Semi-annual (# of events _____)
 Annual (# of events _____)
Other (please specify) _____

Well Purging Method

Hand bailing
 Peristaltic Pump
 Submersible Pump
 Micropurge

Task	Unit Cost	Number of Units	Total Cost
<u>Project Management</u>	\$118.50/hr	6	\$711.00
<u>Mobilization/Demobilization⁽¹⁾</u>			
Mobilization/Demobilization	\$2.54/mile	2940	\$7467.60
<u>Field Work</u>			
Water Level Measurements ⁽²⁾ (unsampled wells only)	/well		\$
Well Monitoring/Purging/Sampling ⁽³⁾	\$186/well	20	\$3720.00
Other Service - hydraulic test	\$106/hr	8	\$848.00
Other Service - water well sampling	\$44.50/well	4	\$178.00
<u>Report Preparation⁽⁴⁾</u>			
Quarterly/Semi-annual	\$/report		\$
Annual	\$/report		\$
Other (please specify) _____	\$/report		\$
Subtotal Project Expense			\$12,924.60

The costs below are estimates, not bids. Lodging and laboratory analysis will be paid at actual cost when documented by receipts/invoices.

<u>Per Diem</u> (specify number of individuals __1__)			
Per Diem: Motel	\$110/person per day	6	\$660.00
Per Diem: Food	\$23.00/person per day	6	\$138.00
<u>Laboratory Analysis⁽⁵⁾</u>			
Volatile Petroleum Hydrocarbons (VPH)	\$135/sample	20	\$2700.00
Extractable Petroleum Hydrocarbons (EPH) EPH "screen"	\$70/sample		\$
EPH "fractions"	/sample		\$
BTEX/MTBE/Naphthalene only-method:	/sample		\$
Polyaromatic Hydrocarbons (PAHs)	/sample		\$
PTRCB sampling fee ⁽⁶⁾	\$/sample		\$
Other (please specify) _IBIs_____	\$120/sample	20	\$2400.00
Other (please specify) _shipping_____	\$18/sample	20	\$360.00
TOTAL PROJECT EXPENSE			\$19,182.60
Estimated Project Expense per event (total project cost / # of events)			\$9591.30

**HAZ
 TECH** Drilling, Inc.



**P.O. Box 30622
 2910 Hannon Road, Suite #6
 Billings, MT 59107
 Phone: 406-896-1164 or 800-359-
 1502 Fax: 406-896-1462**

Proposal

TO: Environmental Resource Management, Inc.
 ATN Bob Waller
 P.O. Box 5305
 Bozeman, MT 59717
 Ph-406-582-8491-Cell

DATE: 4/10/20

PROJECT: Pro Co-Op
 Richland, MT

Description:

6 borings to 20' with 4 of the borings finished as wells. The wells will have 15' of .020 screen and flush mount covers. 1-4" injection well to 10' with 5' of .020 screen and a flush mount cover.

TERMS: Net 30
 Days

UNITS EST.	UNIT PRICE	AMOUNT EST.
*****	*****	*****

Mob/ Demob, Per Mile	780	\$3.25	\$2,535.00
Support Truck, Per Day	4	\$125.00	\$500.00
Perdiem, Per Crew Day	4	\$46.00	\$184.00
Lodging, Per Night, Estimated	3	\$200.00	\$600.00
Auger Drilling, Per Ft	130	\$19.50	\$2,535.00
2" Well Installation, Per Ft	80	\$29.50	\$2,360.00
4" Well Installation, Per Ft	10	\$47.50	\$475.00
8" X 12" Flush Mount Vaults, Each	4	\$100.00	\$400.00
12" X 12" Flush Mount Vaults, Each	1	\$150.00	\$150.00
Standby, Per Hr	0	\$175.00	\$0.00

ESTIMATED TOTAL: \$9,739.00

Notes:

- 1) Client is responsible to clear location of utilities.
- 2) Client is responsible for disposal of drill cuttings.
- 3) Client will be invoiced only the amounts used.

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4) We assume that site is accessible by truck mount drill rig.

Proposal By:

Paul Bray

**Petroleum Tank Release Compensation Board
 Soil Boring/Monitoring Well Installation Unit Cost Worksheet**

Contractor Information

Company Name: Boland Drilling
 Address: 4701 N Star Blvd
 City, State, Zip: Great Falls, MT 59405
 Cost Estimator: Chris Boland
 Signature: *Chris Boland*

Phone: 406-761-1063
 4/12/2019

Project Information and Specifications

Richland

Facility ID #
 Release #
 WP ID #

Type of Drilling Equipment

Hollow-Stem Augers x
 Air Rotary
 Direct Push
 Other (please specify)

Soil Boring

Number of Borings
 Boring Diameter (inches)
 Depth (per boring - ft)

Surface: Concrete Asphalt Barren
 Soil Disposal: Onsite Stockpile Drums
 Abandonment: Bentonite Soil Cuttings

Soil Sampling

Continuous Soil Sampling
 Interval Soil Sampling (specify interval)
 No Sampling

Monitoring Well Specifications

Number of Wells
 Surface: Concrete Asphalt Barren
 Depth (per well)
 Estimated Depth to Groundwater (ft)
 Boring Diameter (inches)
 Casing Diameter and type (inches)
 Surface Completion: Flush Mount Aboveground

Cost Estimate Explanation:

- (1) **Mobilization/Demobilization:** Includes all costs and mileage to transport equipment, materials, and personnel to and from the site location. More than one mobilization event of either the drilling rig or support vehicle will require justification and pre-approval by the DEQ-PRS and Board staffs. This item should be estimated on a per mile unit rate.
- (2) **Soil Boring Installation:** Includes all costs (labor, equipment, and materials) to drill, collect soil samples and abandon soil borings, as well as decontaminate equipment. Drilling costs should be estimated using a per foot unit rate. Unit cost should include handling of contaminated soil by stockpiling or placing in drums. Assume level "C" personal protective equipment.
- (3) **Monitoring Well Installation:** Includes all costs (labor, equipment, and materials) to drill, collect soil samples, and complete monitoring well to specifications and according to Montana Well Drillers Board rules, as well as decontaminate equipment. Drilling costs should be estimated using a per foot unit rate. Unit cost should include handling of contaminated soil by stockpiling or placing in drums. Assume level "C" personal protective equipment.
- (4) **Drilling Standby:** Drilling standby should be estimated on an hourly basis. Prior approval and justification for accumulating standby time is needed prior to billing.
- (5) **Well Development:** Includes all costs (labor, equipment, and materials) to develop monitoring wells. This task should be estimated using a per well unit rate.
- (6) **Monitoring Well Abandonment:** Includes all costs (labor, equipment, and materials) to properly abandon a well location according to the Montana Well Drillers Board rules. Abandonment costs should be estimated using a per well unit rate.

Soil Boring/Monitoring Well Installation Unit Cost Worksheet

TASK	UNIT COST	NUMBER OF UNITS	TOTAL COST
Mobilization/Demobilization (1)			
Mobilization/Demobilization: Drilling Rig	\$ 2.00 /mile	660	\$ 1,320.00
Mobilization/Demobilization: Support Vehicle	\$ 1.50 /mile	660	\$ 990.00
Soil Boring Installation (2)			
Drilling (0'-50' range per boring)	\$ 34.00 /foot	130	\$ 4,420.00
Drilling (50'-100' range per boring)	/foot		\$ -
Other (please specify) _____			\$ -
Monitoring Well Installation (3)			
Drilling (0'-50' range per well)	\$ 32.00 /foot	90	\$ 2,880.00
Drilling (50'-100' range per well)	/foot		\$ -
Other (please specify) _____			\$ -
Drilling Standby (4)			
-prior approval needed	\$ 125.00 /hour		\$ -
Well Development (5)			
Well Development	\$ 150.00 /hour		\$ -
Monitoring Well Abandonment (6)			
Abandonment	\$ 350.00 /well		\$ -
Lodging may only be paid at actual costs when documented by receipts.			
Per Diem			
Lodging: number of individuals =	2	\$ 100.00 /person per day	3 \$ 600.00
Food: number of individuals =	2	\$ 23.00 /person per day	3 \$ 138.00
(Breakfast 5.00, Lunch 6.00, Dinner 12.00)			

TOTAL PROJECT EXPENSE \$ 10,348.00

D.O.T. Drums \$95.00 6 \$ 570.00

Additional Conditions/Comments/Costs:

Drill 6 soil borings to 20' each and construct 4 monitor wells 2" diameter. Drill 1 boring to 10' and construct 1 injection well 4" diameter.
 Transport and dispose of cuttings after receiving Non - Hazardous Waste Manifest from landfill - \$700.00

If you require assistance, call 406-841-5090.

Submit completed form to:

Petroleum Tank Release Compensation Board PO Box 200902, Helena MT 59620-0902



Remedial Cost Proposal

To: Bob Waller w/ ERM Date: April 23, 2019
ruwaller@gmail.com Proposal No. BRG63818
From: Brittain Griffiths
bgriffiths@regenesisc.com 916.587.3098

Subject: **Preliminary Design and Cost Estimate**

Site: *Richland Gas
Richland, MT*

Location: Vadose soil, dissolved plume

Applicable Product(s) [Link\(s\) to View/Download Product Information](#)

RegenOx® [RegenOx](#)

REGENESIS is pleased to present you with this design and cost estimate for the proposed treatment at your site utilizing the remediation technologies presented above. Included within this document you will find the following attachments supporting the proposed approach:

- Map Depicting Treatment Area
- Remedial Design and Cost Estimate
- Product Technical Sheet(s)

Remedial Approach

Per our conversation this proposal has been designed for four applications of RegenOx to be injected into a single well. The applications should take place one to two weeks apart. RegenOx consists of two parts. Part A is the oxidant and Part B is the activator. The Part B should be mixed with water and injected prior to the Part A. The attached spreadsheet shows the amount of water to be added to both parts A&B per application.

The design recommends 440 lbs of RegenOx (Part A = 280 lbs and Part B = 160 lbs). At a unit cost of \$2.94/lb the total RegenOx price is \$1,293.60 plus shipping and applicable sales tax.

Assumptions

In generating this design proposal REGENESIS relied upon professional judgment and site specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to affect remediation of the site. The attached design summary tables specify the assumptions used in preparation of this technical design. We request that these modeling input assumptions be verified by your firm.

REGENESIS developed this Scope of Work in reliance upon the data and professional judgments provided by those whom completed the earlier environmental site assessment(s). The fees and charges associated with the Scope of Work were generated through REGENESIS' proprietary formulas and thus may not conform to billing guidelines, constraints or other limits on fees. REGENESIS does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where REGENESIS may serve as a supplier or subcontractor to an entity which seeks reimbursement from the Government for all or part of the services performed or products provided by REGENESIS, it is the sole responsibility of the entity seeking reimbursement to ensure the Scope of Work and associated charges are in compliance with and acceptable to the Government prior to submission. When serving as a supplier or subcontractor to an entity which seeks reimbursement from the Government, REGENESIS does not knowingly present or cause to be presented any claim for payment to the Government.

Closing

Please feel free to contact me if you need additional information or have any questions regarding our evaluation and/or this correspondence (contact info listed above). Thank you for considering REGENESIS as part of your remedial solution for this project.



RegenOx® Application Design Summary		
Richland Gas		
Vadose soil, dissolved plume		Field Mixing Ratios
Application Method	Injection Wells	Apply B, then A to each well per below.
Spacing Within Rows (ft)	10	Part B per well per app (lbs)
Spacing Between Rows (ft)	10	40
Injection Wells (per app.)	1	Part B mix water per well per app (gal)
		55
Top Application Depth (ft bgs)	5	Flush with water (2 gals x ft of screen)
Bottom Application Depth (ft bgs)	10	Part A per well per app (lbs)
Total RegenOx to be Applied (lbs)	440	70
RegenOx Part A (lbs)	280	Part A mix water per well per app (gal)
Number of Part A Applications	4	201
RegenOx Part B (lbs)	160	Flush with water (2 gals x ft of screen)
Number of Part B Applications	4	Total volume per well per app (gal)
Volume Water (gals)	1,026	274
Total Solution Volume (gals)	1,056	
<i>Per Application Totals</i>		
<i>Total RegenOx per App (lbs)</i>	110	<i>Volume per vertical ft (gals)</i>
<i>RegenOx Part A Per App (lbs)</i>	70	55
<i>RegenOx Part B Per App (lbs)</i>	40	
<i>Water per App (gals)</i>	256	
<i>Injection Volume per App (gals)</i>	264	
Technical Notes/Discussion		
The applications should occur one to two weeks apart.		
Assumptions/Qualifications		
<p>In generating this preliminary estimate, Regenesi s relied upon professional judgment and site specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to affect remediation of the site.</p> <p>REGENESIS developed this Scope of Work in reliance upon the data and professional judgments provided by those whom completed the earlier environmental site assessment(s). The fees and charges associated with the Scope of Work were generated through REGENESIS' proprietary formulas and thus may not conform to billing guidelines, constraints or other limits on fees. REGENESIS does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where REGENESIS may serve as a supplier or subcontractor to an entity which seeks reimbursement from the Government for all or part of the services performed or products provided by REGENESIS, it is the sole responsibility of the entity seeking reimbursement to ensure the Scope of Work and associated charges are in compliance with and acceptable to the Government prior to submission. When serving as a supplier or subcontractor to an entity which seeks reimbursement from the Government, REGENESIS does not knowingly present or cause to be presented any claim for payment to the Government.</p>		