Resource Technologies, Inc.

1050 East Main Street Suite 4, Bozeman, MT 59715
Internet: mail@rtimt.com • Voice: (406) 585-8005 • Telefax: (406) 585-0069

August 30, 2019

Mr. Allen Schiff
MDEQ-PTCS
P. O. Box 200901
Helena, MT 59620-0901

Subject: Abbreviated Corrective Action Plan and Budget for Soil Excavation and Disposal; Rapley Property; 205 31st Avenue South; Great Falls, Montana; Facility ID #07-04772: Release #4325; Workplan #33900.

Responsible Party: Mr. Richard Teesdale
205 31st Avenue South
Great Falls, MT 59401
(406) 899-8588

Dear Mr. Schiff:

On behalf of Mr. Richard Teesdale, Resource Technologies, Inc. (RTI), is submitting the following workplan for excavation and disposal of gasoline impacted soils from Rapley property located at 205 31st Avenue South in Great Falls, Montana. This workplan was prepared pursuant to the Montana Department of Environmental Quality - Petroleum Tank Cleanup Section (MDEQ-PTCS) letter to Mr. Richard Teesdale dated July 12, 2019.

SCOPE OF WORK

The goal of proposed corrective actions at the site is to excavate and dispose of hydrocarbon impacted soils between ground surface and a depth of approximately 15 feet in the UST basin and dispenser area where sidesloping of a previous remedial excavation resulted in an estimated 800 to 1200 yards of gasoline impacted soil left in place. Specific work tasks associated with excavation activities include:

- Excavate up to 1,500 yards of impacted soil and transport to Shumaker commercial landfarm for disposal,
- Excavate and stockpile up to 1,200 yards of clean overburden to be replaced as fill,
- Collect up to 20 confirmation soil samples at limit of excavation, and 2 waste characterization samples and submit for volatile petroleum hydrocarbons (VPH) and 1,2 dichloroethane (EPA Method 8260) analyses,

- Place amendment in excavation floor to address residual contamination remaining below floor of excavation and top of deeper aquifer,
- Backfill excavation with 6-inch pit run and excavated clean overburden and compact,
- Restore grass surface and gravel driveways (see budget for dimensions),
- Validate analytical data using DEQ Data Validation Standard Form;
- Report findings in Abbreviated Soil Excavation and Disposal Report (AR-04).

Rationale for Corrective Action

Review of post excavation soil sampling data from soil excavation completed in 2010 indicates that a substantial mass of impacted soil was left in place, presumably to maintain a 1:1 sidewall slope. This conclusion is based on the confirmation soil-sample figure (Figure 4) from the 2010 soil excavation report prepared by AMEC Geomatrix. Sidewall samples collected at depths of 7-8 feet exhibited benzene concentrations ranging from 3.8 milligrams per kilogram (mg/kg) at the southwest end of the excavation to 12.3 mg/kg near the northeast corner of the excavation.

As discussed in the June 2019 Groundwater Sampling Report, there are two distinct aquifers underlying the site with a large downward gradient between the two. Conclusions regarding the two aquifers are based on data from nested monitoring wells MW-2Rs (shallow) and MW-2Rd (deep). Since 2011, the difference in groundwater elevation measured between these two wells has ranged from approximately 10 feet to greater than 18 feet with the deeper well exhibiting the lower groundwater elevation.

Review of historic borehole logs and soil field screening data for boreholes advanced within the impacted area before excavation (SB-3, SB-12 [MW-12] and SB-13 [MW-13]) indicate increasing VOC concentrations in soil with depth that peak at depths of 8 to 12 feet below ground surface (bgs). VOC concentrations appear to decrease substantially over the next 3 to 5 feet before beginning to increase again. At SB-3, PID readings peak at a concentration of 1,727 parts per million (ppm) at a depth of 8-10 feet then decrease to a concentration of 69 ppm at 12-14 feet before increasing to a peak of 2009 ppm at 24-26 feet. PID readings at SB-3 decreased to 48 ppm at a depth of 30-32 feet. At boreholes SB-12 and SB-13, PID readings peak at concentrations of 1695 and 1646 parts per million (ppm) at a depth of 10-12 feet then decrease to a concentrations of 133 ppm and 27.5 ppm at depths of 13-14 feet before increasing to concentrations of 447 ppm and 176 ppm at depths of 13-16 feet. Boreholes SB-12 and SB-13 did not penetrate deep enough to determine the magnitude and depth of the second peak. These data demonstrate that both aquifers have been impacted by releases at the site.

The nested monitoring wells installed in the center of the previous excavation completed in 2010 have both exhibited strongly decreasing contaminant trends since completion of the excavation such that only the 1,2 DCA concentrations exceeded the groundwater RBSL. The 1,2 DCA concentration reported for well MW-2Rd during the March 2019 sampling event fell below the groundwater RBSL.

Well MW-13R that is located within the area of soil impacts, but outside the area that was excavated to 15 feet, has continued to exhibit elevated contaminant concentrations. Since 2013, benzene concentrations have decreased by approximately one third but still remain above 1,000 micrograms per liter (µg/l); ethylbenzene concentrations have remained nearly unchanged; and naphthalene and 1,2 DCA concentrations have decreased by approximately one fourth. TPH concentrations have not clearly decreased since 2013.

A SVE system was installed within the former excavation in 2013. Results of soil vapor extraction pilot testing completed in 2013 and documented in the *Abbreviated Corrective Action Report, Vapor Mitigation and Groundwater Monitoring* (Newfields, February 2014), indicate that a minimal mass of petroleum vapors was recovered via SVE laterals installed over impacted soil in the excavation area. During a three-month pilot test, the highest PID reading measured in SVE exhaust was 33 ppm. At the end of the three month pilot test, VOC concentrations in SVE exhaust had fallen to 2.1 ppm as measured with a PID.

On the basis of the data described above, RTI has determined that soil excavation will be effective and will result in reaching conditions in both aquifers that will allow site closure within 5 to 10 years, and possibly sooner. SVE and monitored natural attenuation have been shown not to be viable options for mitigating remaining vadose-zone soil impacts and associated groundwater impacts.

Soil Excavation

Proposed excavation activities are to remove and stockpile clean fill that was emplaced over the impacted soil and excavate impacted material to a maximum depth of 15 feet. The proposed excavation area is shown in Figure 1. To the extent possible, fill over the portion of the previous excavation that extended to 15 feet will be left in place.

One confirmation soil sample will be collected for each 25 by 25 foot area of floor (every 625 square feet) and one confirmation soil sample will be collected for each 25 feet of excavation sidewall. Where impacted material is left in place, worst-case soil samples will be collected. Soil samples will be submitted to Energy laboratories of Billings for VPH and 1, 2 dichloroethane analyses.

Ammendment consisting of oxygen releasing compound (ORC) will be mixed with the lower two feet of backfill to accelerate attenuation of hydrocarbon impacts lying below the 15 foot depth. RTI recommends 2,100 pounds of Regenesis ORC Advanced to treat a three foot thickness of soil over a 4,500 square foot area.

The excavation will be backfilled with clean stockpiled overburden expected to consist of backfill of the former excavation, and clean fill hauled in from off-site. Fill will be emplaced in approximate 2-foot lifts and will be compacted. Gravel driveway and lawn areas will be restored. RTI estimates 1,500 square feet of gravel driveway will be disrupted and 3,000 square feet of lawn will be disrupted.

SCHEDULE AND BUDGET

RTI anticipates that the excavation project will commence in mid February to mid March 2020 prior to spring runoff when groundwater elevations should be at a seasonal low.

RTI requested bids for excavation services from Boland Construction of Great Falls, Shumaker Construction and Excavation of Great Falls, Youdarian Construction of Stanford. Boland Construction declined to provide a bid. Project budget and subcontractor bids are attached. Shumaker Construction and Excavation was chosen as the low bidder. Although the Shumaker bid is higher than the Youdarian Construction bid, the Shumaker bid includes landfarm disposal fees whereas the Youdarian Construction bid does not.

This workplan was prepared by:

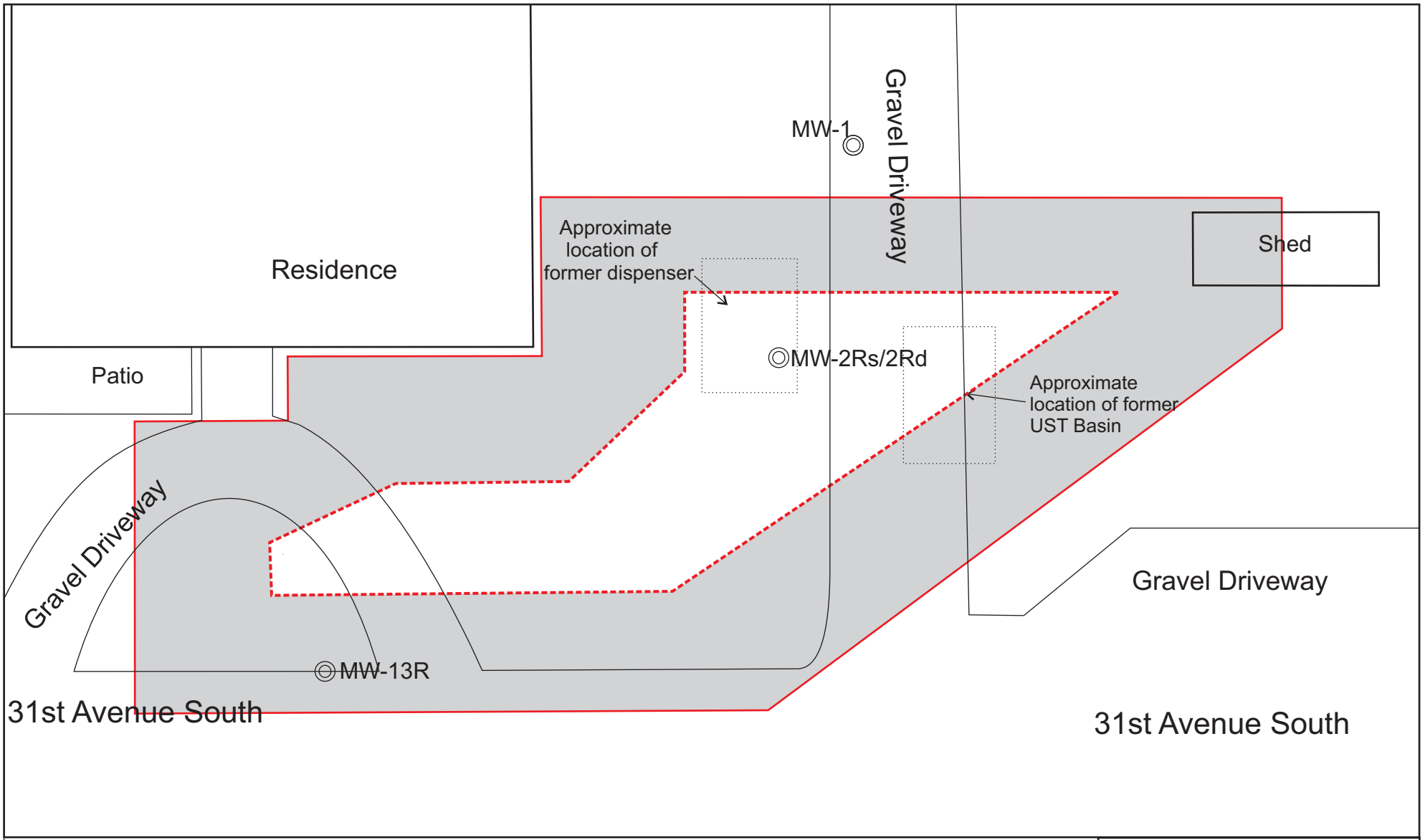
Joe Laudon
Resource Technologies, Inc.
1050 East Main Street Suite 4
Bozeman, MT 59715
(406) 585-8005

Respectfully Submitted,
Resource Technologies, Inc.

Joe Laudon
Hydrogeologist

Attachments

cc: Richard Teesdale



Legend

- Perimeter of Excavation at Ground Surface
- Perimeter of Excavation at Total Depth (15 ft)
- Monitoring Well
- Area of proposed excavation highlighted in grey

N

0 15 ft

SCALE

Figure 1

Site Map and
Previous Excavation Area
Former Rapley Site
205 31st Avenue South
Great Falls, Montana

Resource Technologies Inc.

COST ESTIMATE DETAIL

Task	Unit Cost		Number of Units	TotalCost
Project Management				
Work Plan AC-04	$1,045.00	/ea	1	$1,045.00
Project Manager: Coordination/Scheduling/Budget Tracking	$134.75	/hour	16	$2,156.00
			Management Subtotal	**$3,201.00**
Mobilization and Travel				
Prep and Mobilization (2 RT)	$2.76	/mile	780	$2,152.80
Per Diem: Meals	$30.50	/day	10	$305.00
Per Diem: Lodging	$110.00	/night	8	$880.00
			Travel Subtotal	**$3,337.80**
Field Work				
Field Work: Excavation/Restoration Oversight	$118.50	/hr	90	$10,665.00
Field Work: Excavation Contractor (see attached bids*)	$140,161.00	/each	1	$140,161.00
Subcontractor Mark-up	7	%	1	$9,811.27
Photoionization Detector	$15.25	/hour	42	$640.50
ORC Advanced	$10.60	/lb	1800	$19,080.00
			Field Work Subtotal	**$180,357.77**
Laboratory Analysis				
Soil VPH	$120.00	/sample	22	$2,640.00
Soil Lead Scavenger 1,2 DCA Method 8260	$75.00	/sample	22	$1,650.00
Sampling Fee	$10.00	/sample	22	$220.00
Data Validation	$118.50	/hour	6	$711.00
			Laboratory Subtotal	**$5,221.00**
Reporting				
Prepare Standardized Report AR-04	$3,020.00	/ea	1	$3,020.00
			Reporting Subtotal	**$3,020.00**
TOTAL ESTIMATED COSTS				**$195,137.57**

Notes:

* Accepted bid includes landfarm fees.

Subcontractor Bids

Shumaker Trucking and Excavating Contractors, Inc.

P.O. Box 1279
Great Falls, MT 59403-1279

_Ph: (406) 727-3537_ _FAX: (406) 727-9995_

August 15, 2019

Resource Technologies, Inc.
Attn: Joe Laudon
1050 East Main Street, Suite 4
Bozeman, MT 59715

Re: 205 31st Ave. South
Former Rapley Property
Facility ID#07-04772 Release #????
Petroleum Contaminated Soil Removal
Great Falls, MT

Dear Joe:

Per your request and our phone conversations, please consider the following quote for the above referenced work.

1.	Temp Fencing - (1 LS)	$3,500.00
2.	Remove/Replace 1,500 SF of Driveway Gravel - (1 LS)	$1,000.00
3.	Replace 3,000 SF of Sod - ($1.00/SF)	$3,000.00
4.	Remove/Replace 100 LF of Landscape curb - ($25.00/LF)	$2,500.00
5.	Remove/Replace Overburden - (±1,500 cy) x $9.85/cy =	$14,775.00
6.	Excavation/disposal/Backfill - (±1,500 cy) x $74.06/cy =	$111,090.00
7.	Mobilization/Demobilization -	$4,300.00
	Estimated Total	**$140,165.00**

Price Excludes the following:
Sheeting or shoring systems.
Dewatering or water disposal.
Utility repairs or relocations.
SWPP Permit.
Permits or fees.
Engineering, staking and testing.
Soil Testing.

General:
Measurement and payment by truck load measure.
Price contingent upon mutually acceptable start date.
Quote good until August 31, 2019, unless extended by mutual consent.

If you have any questions, or need any additional information, please don't hesitate to give me a call.

Sincerely,

Joe Aline,
Estimator/Project Manager

Rapley Property, Id# 07-04772

Youderian Construction Inc
P.O. Box 400
Stanford, MT 59479

406-490-7708
Tyler@youderianconst.com

8/25/2019
Revison 1

ITEM #	ITEM	QTY	UNIT	$/UNIT	BID TOTAL UNIT $
1	Mobilization				
	TOTAL UNIT COST	1	ls	$ 4,000.00	$ 4,000.00
2	Fencing and Traffic Control				
	TOTAL UNIT COST	1	ls	$ 1,700.00	$ 1,700.00
3	Excavate Clean Overburden				
	TOTAL UNIT COST	1500	CY	$ 6.50	$ 9,750.00
4	Replace Clean Overburden				
	TOTAL UNIT COST	1500	CY	$ 10.00	$ 15,000.00
5	Excavate and Transport Contaminated Soil to Landfarm (269 hastings)				
	TOTAL UNIT COST	1500	cy	$ 18.75	$ 28,125.00
6	Backfill and Compact Excavation with Clean Material (6" lifts)				

	TOTAL UNIT COST	**1500**	**cy**	**$ 48.50**	**$ 72,750.00**

Total $ 131,325.00