ENVIRONMENTAL

February 27, 2020

Mr. Ryan Lammers
Assistant General Manager
CHS Big Sky
PO Box 990
Havre, Montana 59501
Transmitted Via E-mail To: ryan.lammers@chsinc.com

Subject: Corrective Action Plan and Cost Estimate for 2020 Remedial Action
Former Farmers Union Oil, 135 1st Street, Chinook, Montana
MDEQ Facility ID 03-10274; Release 2559; WP ID 34001
CTA Project No. VG11005.5

Dear Mr. Lammers:

CTA Environmental (CTA) is pleased to present this Corrective Action Plan (CAP) for remedial investigation of the petroleum release associated with the Former Farmers Union Oil (hereafter, "the site") located at 135 1st Street in Chinook, Montana (Figure 1, Attachment A).

CTA has prepared this CAP on behalf of CHS Big Sky in response to a January 9, 2020, *Additional Corrective Action and Work Plan Required* letter issued by the Montana Department of Environmental Quality (DEQ) Petroleum Tank Cleanup Section (PTCS) for the petroleum release at the site. DEQ authorized a revised submission deadline for the CAP to be submitted by February 28, 2020.

SCOPE OF WORK

This scope of work has been prepared to meet the requirements of DEQ as established in their CAP request letter. In order to accomplish this, CTA's scope of work will include the following seven tasks: 1) CAP Preparation; 2) Project Management; 3) Monitoring Well Assessment; 4) Semi-Annual Groundwater Monitoring; 5) Vapor Intrusion Assessment; 6) Release Closure Plan (RCP) Preparation; and, 7) Report Preparation. CTA's proposed methods for these tasks are described below.

Task 1 – CAP Preparation

CTA's CAP and cost estimate (Attachment B) have been created to satisfy the requirements stipulated in DEQ's CAP AC-07 format and the specific requirements listed in the CAP request

letter. CAP preparation included estimating costs to implement each task, updating the site figures, and preparing this document.

Task 2 – Project Management

Project management activities include correspondence with you, PTCS staff, and Petroleum Tank Release Compensation Board (PTRCB) staff regarding the scope of work and project costs. Project administration activities will also include coordinating site access, scheduling field personnel and activities, and procuring sampling equipment and supplies as necessary to complete the scope of work.

CTA's estimate of expected project management effort is reflective of the anticipated effort for the scope of work, based on our professional experience and project-specific parameters.

Task 3 –Monitoring Well Assessment

DEQ's CAP request letter asked for a site visit to assess the status of monitoring wells associated with the release. CTA personnel will inspect and assess the viability of the 19 monitoring wells on site. This will include measuring the total depth of each monitoring well, measuring the depth to water (DTW) in each monitoring well, comparing the field information to known well construction information, and determining if the wells are suitable for collecting representative groundwater samples. CTA will contact DEQ to discuss the findings of the well assessment. If any wells are found to be damaged, additional work will be coordinated with DEQ and the PTRCB prior to completing groundwater monitoring.

Task 4 – Semi-Annual Groundwater Monitoring

Groundwater monitoring will be conducted over two consecutive, semi-annual monitoring events, which will be scheduled to coincide with inferred low and high groundwater conditions. For the purpose of this CAP, we anticipate the events will be conducted in June and October 2020.

Prior to collection of groundwater samples for each event, an electronic probe will be used to measure DTW in all existing monitoring wells associated with the site, relative to the established measuring points. DTW measurements will be used to determine groundwater elevations, inferred flow direction and gradient across the site, and approximate sample depths for wells to be sampled. CTA will also collect two duplicate samples each monitoring event to comply with DEQs data validation requirements.

Dissolved oxygen (DO) will be measured prior to evacuation of the sampled wells, using an electronic, down-hole meter. Other field intrinsic biological indicators (IBIs) will be monitored during low-flow evacuation using a peristaltic pump; open, flow-through monitoring cell; and, electronic meters. Field IBI parameters measured in the flow-through cell will include oxidation/reduction potential (ORP), potential of hydrogen (pH), specific conductance (SC), turbidity, and temperature.

New, disposable tubing will be submerged approximately into the upper third of the water column for each monitored well. The flow rate of the pump will be set between 200 to 500 milliliters per min (ml/min), as verified at each well using a graduated vessel and a time piece, and the effluent will be set to flow into the bottom of the open monitoring cell and allowed to overflow the open top. Field IBI parameters will be observed and recorded in approximate five-minute intervals, and low-flow evacuation will continue until DO, pH, SC, ORP, and turbidity readings stabilize. Stabilized readings will include changes of no more than 0.1 standard unit (su) for pH and no more than 10 percent (%) for DO and turbidity, no more than 10 millivolts (mv) for ORP, and no more than 3 % for SC , as stipulated in DEQ's March 2018 *Groundwater Sampling Guidance*.

All re-usable down-hole equipment will be cleaned with a residue-free detergent solution scrub, a 10 % methanol solution rinse, and a distilled water rinse prior to use in each well. All electronic meters will be field calibrated in accordance with the respective manufacturer recommendations. Unused water evacuated from each well will be surface applied proximate to the well of origin. Care will be taken to apply evacuation water to paved surfaces, away from drain inlets, where feasible.

Laboratory samples will be collected after confirming IBI parameters have stabilized. In order to prevent cross-contamination from well to well, approximately one foot will be cut from the end of the sample effluent tubing (i.e. removing the portion in contact with the flow-through monitoring cell) before containerizing the samples. Laboratory samples will be containerized and preserved in accordance with requirements for the respective analytical methods, using sample vessels and preservatives provided by the analytical laboratory. Field filtering will be conducted as appropriate, on a per-analyte/sample basis. The samples will be placed in a cooler with ice as quickly as practicable following collection. The samples will be packed in coolers with ice and shipped to the laboratory using chain-of-custody protocol. CTA will request standard analytical turnaround time.

CTA will request the laboratory analyze submitted water samples for dissolved petroleum parameters stipulated by the DEQ, including Volatile Petroleum Hydrocarbons (VPH) and Extractable Petroleum Hydrocarbons (EPH) screen using the May 2018 *Montana Risk-Based Corrective Action Guidance (RBCA) for Petroleum Releases*. Analysis of select IBI parameters will also be requested for the submitted water samples. IBIs to be analyzed will include alkalinity (Method A2320B), dissolved methane (Method SW8015M), total and dissolved iron and manganese (Methods E200.7/.8), sulfates (Method E300.0), sulfides (Method A4500-SF), nitrate + nitrite nitrogen (Method E353.2), and Total Organic Carbon (MethodA5310C). Samples will also be collected from each of the wells listed above for analysis of lead scavenger 1,2-dichloroethane (DCA) in accordance with Environmental Protection Agency (EPA) Method 8260.

CTA will also request analysis of the following additional anions: carbonate (CO3), bicarbonate (HCO3), and chloride (Cl-). As well as the following cations: calcium (Ca2-), total magnesium (Mg2+), sodium (Na+), and potassium (K+). DEQ also requested the analysis of RCRA metals.

See Table below for what wells will be monitored and for what analyses:

Well	DTW	VPH	EPH	DCA	Lab IBIs	Anions & Cations	RCRA Metals
MW-2	X	X	X	X			X
MW-3	X						
MW-4R	X						
MW-5R	X	X	X	X			
MW-6R	X			X	X	X	
TP-7	X	X	X	X			X
MW-8	X				X	X	
MW-9	X			X	X	X	
MW-10	X	X	X	X	X	X	X
MW-12	X	X	X	X	X	X	X
MW-14	X	X	X	X	X	X	
MW-15	X				X	X	
MW-20	X						
MW-21	X						
MW-22	X	X	X	X	X	X	
MW-23	X	X	X	X	X	X	X
MW-24	X						
CMW-2	X	X	X	X			
CMW-13	X	X	X	X			

As you can see, monitoring wells MW-20, MW-21, and MW-24 will not be sampled. It is already known that high concentrations of contaminants are present in this area, and given the close proximity of these wells to one another, additional laboratory data is not needed at this time. Also, all monitoring wells less than 2" diameter will not be sampled for laboratory IBIs or anions and cations. From our experience, these small water wells do not provide accurate water chemistry data. They are better utilized as a snapshot to confirm if contamination is present or not.

Task 5 – Vapor Intrusion Assessment

As requested by DEQ, CTA will complete a vapor intrusion (VI) assessment in accordance with the April 2011, *Montana Vapor Intrusion Guide*. If DEQ makes changes to their guide prior to completing the work, CTA will coordinate any necessary changes to the assessment with DEQ and PTRCB prior to implementation. The VI assessment will be performed at the Main Building on site (see Figure 2, Attachment A). The VI assessment will be conducted during the winter months if feasible, DEQ typically considers winter conditions to be worst case.

VI is the migration of volatile chemicals from the subsurface into structures or buildings. The Montana guidance addresses VI at residential and nonresidential settings potentially impacted with volatile and semi-volatile compounds (including solvents and petroleum hydrocarbons) and other volatile contaminants. Prior to starting the VI assessment, CTA will provide the property owners an *Indoor Air Building Survey and Sampling Form* and will discuss potential background

sources of vapors. The form also covers building characteristics, potential indoor air contaminant sources, and miscellaneous items such as “do you dry clean clothes or smoke?” The chemical inventory should document all chemical items in the sampling level of the building (at a minimum).

Sub Slab Vapor Samples

CTA will complete sub-slab soil vapor sampling to help characterize the vapor contamination in soil directly beneath the structure. This consists of drilling an approximately one-inch diameter hole in the slab using an electric hammer drill. The sub-slab sampling probe will consist of inert materials, such as decontaminated stainless steel, brass fittings, and/or Teflon® tubing. The annular space around the probe tip will be filled with 10/20 silica sand.

Once the temporary probe is installed, bentonite will be used to fill the borehole annular space between the probe tubing and sub-slab gravel from the top of the probe tip to the base of the concrete foundation. The bentonite will be hydrated to insure a proper seal. The probe tubing will then be tightly sealed to the foundation slab with a quick-setting contaminant-free Portland cement. CTA will allow a minimum of 30 minutes for the grout to cure before testing the integrity of the seal.

The concrete should be allowed to set for a minimum of 30 minutes following probe installation prior to collecting a vapor sample. It is necessary to purge three volumes of soil vapor, calculated by the tubing volume and the volume of sand in the annular space around the probe tip prior to sample collection at a rate no greater than 0.2 liter per minute (lpm). The sub-slab port should be designed so that a sample container can be hooked up through simple quick connect or thread connections. CTA plans on installing three sub-slab sampling points in the building.

Helium gas will be used as a tracer to determine whether the sub-slab sample probe seal is adequate. A temporary shroud will be placed around the sample probe, and helium gas will be expelled from the pressurized container into the shroud until the helium concentration within the shroud is at least 20 percent (%), as determined using an electronic, direct-read helium meter fitted with an internal sampling pump. The sample probe will then be “purged” by evacuating a volume at least equivalent to three times the volume of the probe and connected sample tubing. Following completion of purging, the helium meter will be connected to the sample tubing; if the concentration of helium from the sample probe exceeds 10% of the concentration within the shroud, the sample probe must be re-sealed and retested prior to sampling. Once the integrity of the sub-slab probe seal has been verified as described above, CTA will cap the line until the time of sample collection.

CTA will use an evacuated one-Liter Summa canister to collect the sub-slab vapor samples. The canisters will be provided by the laboratory, along with a flow controller equipped with an in-line particulate filter and a vacuum gauge. The flow controller will be pre-calibrated by the laboratory for the desired flow rate for the duration of five minutes for sample collection. The sampling flow rate will ideally be less than 0.2 lpm. CTA will order five canisters to account for the three sampling points, one duplicate, and one spare in case of vacuum issues.

Prior to sampling, CTA will record the identification number for each canister and flow controller, as well as the initial canister pressure reported on the vacuum gauge. Tubing will then be connected from the sub-slab vapor sampling probe to the flow controller. The valve will be fully opened and the time will be recorded. Sampling will stop and the valve will be closed after five minutes.

The canisters and equipment will be properly sealed, packaged, and returned to the analytical laboratory using chain-of-custody protocol. CTA will request the laboratory analyze the samples for petroleum hydrocarbon constituents using gas chromatography/mass spectrometry (GC/MS) in accordance with the 1999 Environmental Protection Agency (EPA) TO-15 Method for Volatile Organic Compounds (VOCs). CTA will also collect one duplicate sample for data validation. Spare canisters will not be analyzed.

Indoor and Ambient Air Samples

CTA will also conduct indoor and ambient air samples with the use of Suma canisters: two samples in the building (one in store and one in offices), one ambient air sample, one duplicate sample, and one spare for a total of five canisters. The Suma canisters will be placed approximately three to five feet above the floor to be in the assumed breathing zone. The canisters will be fitted with flow regulators calibrated by the laboratory to provide a nominal 24-hour sampling period. The outdoor ambient air sample will be placed in the prevailing upwind direction.

CTA will document the initial pressure readings for each canister immediately prior to initiation of sampling. Initial, individual canister vacuum pressures must be within the range of -25 inches to -30 inches of mercury (-25” to -30” Hg); if outside this range, the canisters are not suitable for use. Canister vacuum pressures will be observed throughout the sampling period; individual canisters will be sealed when the remaining vacuum pressure for the canister is observed to be between approximately -2” to -5” Hg. Sample identifications, initial / final vacuum readings, and start / stop times for each sample will be recorded on field forms and laboratory documentation.

Following completion of air sampling, the vacuum canisters will be properly sealed, packaged, and returned to the analytical laboratory using chain-of-custody protocol. CTA will request the laboratory analyze the natural and duplicate samples for petroleum hydrocarbon constituents using GC/MS in accordance with the 1999 EPA TO-15 Method for VOCs. Note that the laboratory may analyze some samples using the Standard TO-15 Method instead of the TO-15 SIM Method, depending on the anticipated analyte concentrations (e.g. sub-slab samples are typically analyzed using the Standard TO-15 Method, whereas occupied spaces are likely to be analyzed using the TO-15 SIM Method). CTA will also collect one duplicate sample for data validation. Spare canisters will not be analyzed.

Task 6 – Release Closure Plan Preparation

Following completion of all field tasks and receipt of final analytical data, CTA will prepare a Release Closure Plan (RCP) using DEQ’s RCP template. Preparation of the RCP will include a thorough project review, including project- and site-specific parameters, as well as available

current and historical project data. Results of the review will be discussed with DEQ prior to finalizing the RCP.

Task 7 – Report Preparation

Upon completion of Tasks 3 through 6 above, CTA will prepare a summary report which will comply with DEQ's AR-07 ("Generic Applications") report format. The report will include a discussion of CTA's methods and findings for the scope of work included in this CAP. Tabular presentation of field and laboratory data for the groundwater monitoring events and the vapor intrusion investigation will be provided. Diagrams illustrating site features, the former locations of UST components, groundwater elevations and inferred flow directions, and select groundwater data will be completed.

The RCP will be appended to and discussed within the report, including CTA's recommendations for bringing the site to closure as quickly as feasible. CTA will also compete DEQs data validation summary form for each of the four monitoring events.

SCHEDULE

CTA will initiate this scope of work following our receipt of your authorization to proceed, and following our receipt of DEQ-PTCS approval of this CAP and notice of PTRCB's approval and subsequent obligation of funding for the associated cost estimate. The actual project schedule will be contingent on various conditions which are indeterminable at the time of preparation of this CAP, including but not limited to approval from all listed parties, weather, and availability of CTA personnel and subcontractors. CTA will coordinate with CHS Big Sky and the DEQ as appropriate. CTA will make reasonable attempts to complete the vapor investigation during the winter months, as recommended by DEQ, pending receipt of necessary approvals.

FEE

CTA's fee for completing the scope of work described in this CAP will be assessed in accordance with the attached Cost Estimate. Our estimated total fee for completing the scope of work detailed in this CAP is approximately **$44,330.** Services provided will be invoiced using rates approved by the PTRCB for the current billing period.

Actual costs may vary somewhat, depending on a variety of factors, including but not limited to unforeseen delays or other necessary but unexpected changes to the scope of work. CTA will coordinate changes to the scope of work, if necessary, with CHS Big Sky, the DEQ, and PTRCB staff prior to implementing the changes.

The release at the Farmers Union Oil Company petroleum release site in Chinook is eligible for PTRCB reimbursement of eligible costs. The PTRCB "co-pay" for the release (i.e. 50% of the first $35,000 in eligible costs) has been met, and CTA is a designated representative with the PTRCB for this release. Under this arrangement, our invoices will be submitted directly to the PTRCB along with the appropriate reimbursement applications and documentation.

Please note that the PTRCB staff occasionally determines some costs incurred during completion of DEQ-required tasks to be ineligible for reimbursement. Such determinations are often beyond CTA's control or ability to predict. In the event PTRCB staff determines CTA's costs to complete the scope of work as ineligible, CHS Big Sky may be responsible for payment of the ineligible costs. We will coordinate with CHS Big Sky in the event of such determinations.

LIMITATIONS

The scope of work included in this CAP has been prepared for CHS Big Sky, with an emphasis on the DEQ requested tasks, and includes only those services described above. This CAP does not include any remedial or disposal services, or costs for such services, beyond those listed specifically in the scope of work.

CTA cannot and does not warrant that the scope of services described in this CAP will be adequate to identify all potential environmental conditions or latent conditions at the site. Our scope of work will be performed with a standard of care meeting or exceeding that of other environmental consultants performing similar work in the area.

ACCEPTANCE

You verbally authorized CTA to prepare this CAP during correspondence on January 10, 2020. A complete copy of this CAP will be submitted on your behalf to Mr. Donnie McCurry with the DEQ PTCS. After his review and approval, and once the PTRCB has approved our proposed costs and obligated funding, CTA will contact you to finalize our work agreement (see the enclosed *Work Order VG11005.5*) before proceeding to complete Tasks 2 through 7 of the scope of work presented herein.

Please contact Scott Vosen in our Great Falls office (406.452.3321) if you have any questions or concerns regarding this project. We appreciate your business and look forward to continuing to work with you on this project.

Respectfully Submitted:

Ross Remsen
Environmental Engineer
RossRemsen@cushingterrell.com

Scott Vosen
Project Manager
ScottVosen@cushingterrell.com

Attachments: A – Figures
B – Cost Estimate

Enclosure: Work Order VG11005.5, with Terms and Conditions

cc (w/ Attachments Only): Mr. Donnie McCurry, Montana DEQ PTCS, P.O. Box 200901, Helena, MT 59620. Transmitted via email to dmccurry@mt.gov.

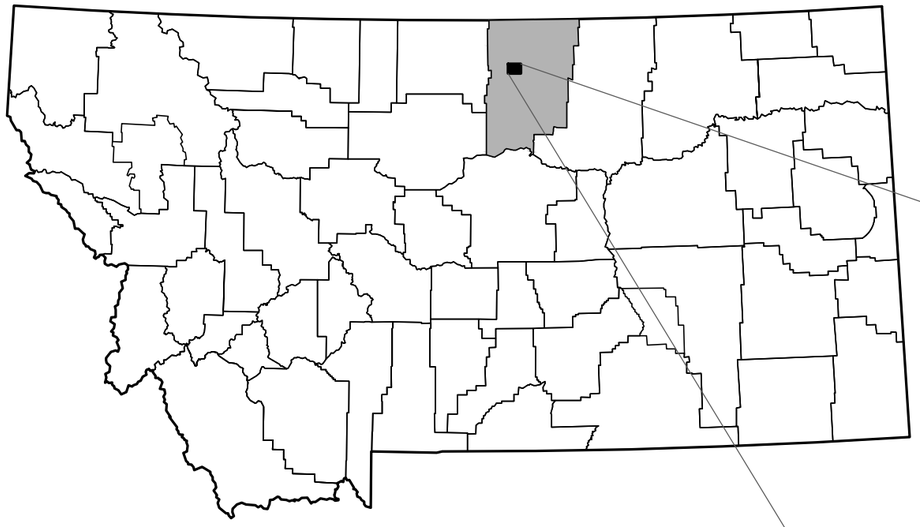
ENVIRONMENTAL

ATTACHMENT A

Figures

CTA
ENVIRONMENTAL
GREAT FALLS, MT
p 406.452.3321
f 406.454.1873

CHINOOK, BLAINE COUNTY, MONTANA



NORTH

1
FIG 1

SITE VICINITY MAP

DEQ FACILITY ID 03-10274; RELEASE 2559; WP ID 10242
135 1ST STREET, CHINOOK, MONTANA
FORMER FARMERS UNION OIL
CORRECTIVE ACTION PLAN
CHS BIG SKY

01.20.2020
VG11005.5

DRAWN BY
DRESCH

CHECKED BY
REMSEN

SITE VICINITY MAP

FIGURE
1

CTA
ENVIRONMENTAL
GREAT FALLS, MT
p 406.452.3321
f 406.454.1873

GTA/FARMERS UNION FEEDS

MW-5
(ABANDONED
ON 9-21-11)

MW-5R

DOTD DOTD DOTD DOTD

1ST STREET (HIGHWAY 2)

MW-14

TP-7

TP-1
(DESTROYED)

MW-12

MW-6R

CMW-13

CMW-2

FENCED
STORAGE
AREA

FARMER'S UNION
OIL COMPANY
MAIN
BUILDING

MW-23

MW-22

FOUNDATION
SLAB

NG

MH

SS

MW-24

MW-21

PUMP
ISLAND

MW-10

MW-20

MW-25/IP-4

MW-9

MW-15

P

MW-2

IP-03

IP-01

IP-02

MW-8

T

PUMP
ISLAND

PP

STORAGE

LPG

BULK
ISLAND
RACK

MW-3

W

MISSOURI STREET SW

SW

MW-4R

FARMERS UNION
OIL COMPANY
NEW BUILDINGS

ASPHALT PARKING AREA

NORTH

1
FIG 2

SITE MAP

0 20' 40' 80'

LEGEND

MW-X — EXISTING MONITORING WELL

IP-XX — IP - INJECTION POINT

ACTIVE UST BASIN

FORMER UST BASIN

DOTD — DEPARTMENT OF TRANSPORTATION DRAIN

SW — STORM SEWER

SS — SEWER

W — WATER LINE

NG — NATURAL GAS LINE

P — ELECTRICAL

T — TELEPHONE LINE

TEMPORARY PIEZOMETER

MH — MANHOLE

NOTE: ALL UTILITIES ARE APPROXIMATE

DEQ FACILITY ID 03-10274; RELEASE 2559; WP ID 10242

135 1ST STREET, CHINOOK, MONTANA

FORMER FARMERS UNION OIL

CORRECTIVE ACTION PLAN

CHS BIG SKY

01.20.2020
VG11005.5

DRAWN BY
DRESCH

CHECKED BY
REMSEN

SITE MAP

FIGURE
2

ENVIRONMENTAL

ATTACHMENT B

Cost Estimate

ADDITIONAL CORRECTIVE ACTION COST ESTIMATE
Former Farmers Union Oil, 135 1st Street, Chinook, Montana
MDEQ Facility ID No. 03-10274; Release No. 2559; WP ID 34001
February 27, 2020

TASK 1 - CAP PREPARATION (AC-07)

LABOR COSTS	UNITS	RATE	COST
Project Engineer, per hour	16	$135.00	$2,160.00
		Task 1 Labor Costs:	$2,160.00
		Total Task 1 Costs:	**$2,160.00**

TASK 2 - PROJECT ADMINISTRATION

LABOR COSTS	UNITS	RATE	COST
Project Manager, per hour	10	$135.00	$1,350.00
		Task 2 Labor Costs:	$1,350.00
		Total Task 2 Costs:	**$1,350.00**

TASK 3 - MONITORING WELL ASSESSMENT

PREP & MOBILIZATION COSTS			
Tech II, per hour (1 hr prep and 4 hr mob)	5	$93.00	$465.00
Mileage, per mile	250	$0.625	$156.25
		Task 3 Prep & Mobilization Costs:	$621.25
LABOR COSTS			
Tech II, per hour	10	$93.00	$930.00
		Task 3 Labor Costs:	$930.00
LODGING & PER DIEM COSTS			
Lodging, per night (estimate)	1	$120.00	$120.00
Meals, per day	1	$30.50	$30.50
Meals, half day (breakfast and lunch)	1	$16.00	$16.00
		Task 3 Lodging & Per Diem Costs:	$166.50
OTHER DIRECT COSTS			
Oil-water interface probe, per day	2	$73.50	$147.00
Digital Camera, per day	2	$18.00	$36.00
Disposable Gloves, per pair	19	$0.85	$16.15
		Task 3 Other Direct Costs:	$199.15
		Total Task 3 Costs:	**$1,916.90**

TASK 4 - GROUNDWATER MONITORING (Semi-annual)

PREP & MOBILIZATION COSTS	UNITS	RATE	COST
Tech II, per hour (1 hr prep and 4 hour mob x 2)	10	$93.00	$930.00
Mileage, per mile	500	$0.625	$312.50
		Task 4 Prep & Mobilization Costs:	$1,242.50
LABOR COSTS			
Grounwater monitoring, per well	28	$200.00	$5,600.00
Water level measurments, per well	10	$44.00	$440.00
		Task 4 Labor Costs:	$6,040.00

Costs in gray shaded areas are only presented for PTRCB consideration in future statistical analyses.

LOW-FLOW PERI-PUMP SYSTEM/LABOR COSTS	UNITS	RATE	COST
Tech II (peri-pump), per hour	22	$93.00	$2,046.00
		Labor Costs:	$2,046.00
LOW-FLOW PERI-PUMP SYSTEM/INSTRUMENT COSTS			
Water Level Meter, per day	3	$46.50	$139.50
Dissolved Oxygen Meter, per day	3	$58.50	$175.50
Oxidation/Reduction Potential Meter, per day	3	$43.50	$130.50
Specific Conductance Meter, per day	3	$54.00	$162.00
Temperature & pH Meter, per day	3	$43.50	$130.50
Peristaltic Pump, per day	3	$66.00	$198.00
		Instrument Costs:	$936.00
LOW-FLOW PERI-PUMP SYSTEM/DIRECT COSTS			
Disposable Gloves, per pair	14	$0.85	$11.90
Disposable Sample Tubing (rigid), per foot	210	$0.40	$84.00
Disposable Sample Tubing (flex), per foot	14	$2.90	$40.60
		Direct Costs:	$136.50
Estimated Per-Well Peristaltic Pump Groundwater Monitoring Costs:			**$222.75**

OTHER DIRECT COSTS			
Disposalbe Filters, each	18	$24.75	$445.50
		Task 4 Other Direct Costs:	$445.50
ANALYTICAL COSTS			
Sampling Fee, per sample	28	$10.00	$280.00
VPH - 2 duplicate samples	22	$120.00	$2,640.00
EPH Screen	20	$75.00	$1,500.00
EPH Screen	20	$150.00	$3,000.00
1,2-DCA (8260 B) - 4 duplicate samples	28	$120.00	$3,360.00
Alkalinity (A2320B)	18	$10.00	$180.00
Dissolved Methane (SW8015M)	18	$50.00	$900.00
Dissolved Fe & Mn (E200.7_8, field filtered)	18	$20.00	$360.00
Total Recoverable Fe & Mn (E200.7_8)	18	$35.00	$630.00
Sulfates (E300.0)	18	$10.00	$180.00
Sulfides (A4500-SF)	18	$40.00	$720.00
Nitrogen, Nitrate + Nitrite (E353.2)	18	$25.00	$450.00
Total Organic Carbon (A5310C)	18	$35.00	$630.00
Total Metals (E200.7_8)	10	$110.00	$1,100.00
Total Mercury (E245.1)	10	$25.00	$250.00
Chloride (E300.0)	18	$10.00	$180.00
Laboratory Disposal Fee, per sample	28	$2.00	$56.00
		Task 4 Analytical Costs:	$16,416.00
LODGING & PER DIEM COSTS (3 days, 2 nights, each event)			
Meals, per day	6	$30.50	$183.00
Lodging, per night (estimate)	4	$120.00	$480.00
		Task 4 Lodging & Per Diem Costs:	$663.00
		Total Task 4 Costs:	**$24,807.00**

TASK 5 - VI ASSESSMENT (2 personnel)

PREP & MOBILIZATION COSTS	UNITS	RATE	COST
Staff Engineer, per hour (1 hr prep and 4 hr mob)	5	$115.00	$575.00
Tech II, per hour	4	$93.00	$372.00
Mileage, per mile	250	$0.625	$156.25
		Task 5 Prep & Mobilization Costs:	$1,103.25
LABOR COSTS			
Staff Engineer, per hour	12	$115.00	$1,380.00
Field Tech II, per hour	12	$93.00	$1,116.00
		Task 5 Labor Costs:	$2,496.00

ANALYTICAL COSTS			
Shipping, estimate	2	$350.00	$700.00
6 L Vacuum Canister & Flow Controller Rental	5	$65.00	$325.00
1 L Vacuum Canister & Flow Controller Rental	5	$45.00	$225.00
VOCs (TO-15 SIM) & APH (MDEP, 2009), per sample	8	$145.00	$1,160.00
Sampling Fee, per sample	8	$10.00	$80.00
		Task 5 Analytical Costs:	$2,490.00
LODGING & PER DIEM COSTS (2 people)			
Meals, per day	2	$30.50	$61.00
Breakfast, per day	2	$7.50	$15.00
Lunch, per day	2	$8.50	$17.00
Lodging, per night (estimate)	2	$120.00	$240.00
		Task 5 Lodging & Per Diem Costs:	$333.00
OTHER DIRECT COSTS			
Helium Detector Rental, estimate	1	$350.00	$350.00
Hammer Drill , per day	2	$50.00	$100.00
Generator 3000 watt, per day	2	$75.00	$150.00
Drill Bit, ea	1	$20.00	$20.00
Helium Bottle/Gas & Regulator	1	$150.00	$150.00
Miscellaneaous Sampling Supplies, estimate	1	$100.00	$100.00
Digital Camera, per day	2	$18.00	$36.00
		Task 5 Other Direct Costs:	$906.00
		Total Task 5 Costs:	**$7,328.25**

TASK 6 - RELEASE CLOSURE PLAN

LABOR COSTS	UNITS	RATE	COST
Project Engineer, per hour	16	$135.00	$2,160.00
		Task 6 Labor Costs:	$2,160.00
		Total Task 6 Costs:	**$2,160.00**

TASK 7 - REPORT PREPARATION (AR-07)

LABOR COSTS	UNITS	RATE	COST
Project Engineer, per hour	24	$135.00	$3,240.00
Drafter CAD, per hour	4	$85.50	$342.00
		Task 7 Labor Costs:	$3,582.00
DATA VALIDATION -4 events			
Project Engineer, per hour	8	$135.00	$1,080.00
		Task 7 Data Validation Costs:	$1,080.00
		Total Task 7 Costs:	**$4,662.00**
		TOTAL ESTIMATED PROJECT COSTS:	**$44,384.15**

This cost estimate was prepared using CTA Environmental, labor and equipment rates approved by the Petroleum Tank Release Compensation Board for 2020. Laboratory analytical rates were provided by Energy Laboratories, Inc., for calendar year 2020.