1800 River Drive North
Great Falls, MT 59401

406.761.3010
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2025 RELEASE CLOSURE WORKPLAN

FORMER SINCLAIR RETAIL 25008

1301 10TH AVENUE SOUTH, GREAT FALLS, MONTANA

FACILITY ID 07-01873, RELEASE 4361

RESPONSIBLE PARTY

Big Sky Taco Vendors, Inc.
P.O. Box 2661
Great Falls, MT 59403-2661
(406) 868-8255
Wayne Thares

ENGINEER

TD&H Engineering
1800 River Drive North
Great Falls, MT 59401
(406) 761-3010
Engineer: Peter Klevberg, PE

JOB NO. 13-253

SEPTEMBER 2025

1800 River Drive North
Great Falls, MT 59401

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September 19, 2025

Ms. Rachel Mindt, Project Manager
Department of Environmental Quality
Petroleum Technical Section
P.O. Box 200901
Helena, MT 59620-0901

Responsible Party: Wayne Thares
Big Sky Taco Vendors, Inc.
P.O. Box 2661
Great Falls, MT 59403-2661

Contact Person: Peter Klevberg, P.E.
TD&H Engineering
1800 River Drive North
Great Falls, MT 59401

RE: GROUND WATER MONITORING WORK PLAN RESUBMITTAL AND RELEASE CLOSURE PLAN

FORMER SINCLAIR RETAIL 25008
1301 10TH AVENUE SOUTH, GREAT FALLS, MONTANA
FACILITY ID 07-01873, RELEASE 4361, TREADS 18414, WORK PLAN 35071
TD&H ENGINEERING JOB NO. 13-253

Dear Ms. Mindt,

This work plan reflects our telephone discussions with former Department of Environmental Quality (DEQ) employee Daphne Ryan, following her review of the *Post-ORC-Injection Ground Water Monitoring Report,* dated February 2025. After discussing remedial progress with Ms. Ryan, we decided to proceed with the agreed-upon approach to perform active well monitoring until two consecutive annual sampling events showed contamination levels lower than the maximum contaminant limit (MCL) to indicate site release closure criteria compliant with the Release Closure Plan attached.

1.1 INTRODUCTION

The Ground Water Monitoring Work Plan presented proposes continued monitoring of wells TH-5 and TH-6b across 13th Street South from the Taco John's property located at 1301 10th Avenue South in Great Falls, Montana. The property is a former Sinclair gas station which contained a leaking underground storage tank. Previous monitoring events and change in personnel form the background for the request by the Department of Environmental Quality (DEQ) for this work plan.

In 2008, Big Sky Taco Vendors, Inc. retained Thomas, Dean, and Hoskins (TD&H) to perform various tasks involved in redeveloping the site as a Taco John's Restaurant. Tasks included source removal, monitoring well repair and replacement, installing a vapor extraction system in the building and monitoring building vapor, and ground water monitoring. Through 2022, natural attenuation was the passive remedial approach. In 2022, oxygen release compound (ORC) was injected into the soil across 13th Street South from the Taco John's facility. Ground water monitoring was performed on an annual basis.

1.2 SCOPE AND SCHEDULE

The scope of services is in response to the "Additional Ground Water Monitoring Work Plan Required for Petroleum Release at the Former Sinclair Retail 25008, 1301 10th Avenue South, Great Falls, Montana; Facility ID 07-01873, Release 4361, Work Plan 34223," from Ms. Rachel Mindt of the DEQ, dated August 20, 2025. The site location is indicated on **Figure 1**. Surface contours are presented in **Figures 2 and 3**.

Tasks previously listed in the Corrective Action Plan (CAP) Work Plan which have been carried out by TD&H personnel to date, include:

- Task 1 - Preparing the *Corrective Action Plan and Work Plan*, which was completed on January 28, 2021.

- Task 2 - Order utility locate of off-site underground utilities under and across 13th Street South and obtain access agreements with the property owner across 13th Street South from the Taco John's property.

- Task 3 – Perform subsurface drilling and injection of oxygen release compound (ORC) on the west side of 13th Street South, across from the Taco John's property, to aid in biodegradation of the petroleum constituents and shorten the time for site closure. Drilling and ORC injection occurred in December 2022.

- Task 4 – Ground water monitoring in accordance with low-flow methods described in the *Corrective Action Plan* (CAP) dated January 24, 2017, and the Additional *Corrective Action and Work Plan* (ACAWP) dated February 8, 2019, will be performed. Sampling of Monitoring Wells TH-5, TH-6a, and TH-6b occurred June 2023 after ORC injection. Water samples were analyzed for VPH, as required by the Montana Tier 1 Risk Based Corrective Action Guidance for Petroleum Releases. Samples were also analyzed for intrinsic biodegradation indicators (IBIs) consisting of manganese, ferrous iron, nitrates/nitrites, sulfites, and methane. Temperature, pH, oxygen reduction potential, dissolved oxygen, and specific conductivity were determined from the forementioned three monitoring wells. The static water levels were measured for all monitoring wells.

  Static water levels of all monitoring wells were measured in 2024.

- Task 5 - Completing a Standardized Ground Water Monitoring Report (MR-01) with the required supporting maps, data, and appendices after the second round of

monitoring events. This report included tables with cumulative ground water analytical data, laboratory reports, and site maps illustrating locations of all monitoring wells. The rate at which natural attenuation is occurring is relatively slow but increases in dissolved oxygen (DO) and oxidation-reduction potential (ORP) as well as a decrease in methane suggest the addition of the ORC has increased aerobic activity in the wells across 13th Street, cross and down-gradient from the release site (i.e. TH-5 and TH-6B). Results to date are attached in Tables 1, 2, and 3.

Tasks proposed with this Ground Water Monitoring Work Plan are as follows:

- Task 1 – Continued ground water monitoring of wells TH-5 and TH-6b until two consecutive annual sampling events result in benzene levels and C5-C8 aliphatic levels below the risk-based screening levels (RBSL). Well TH-6b has already shown two consecutive sampling events with benzene and C5-C8 aliphatics below the RBSLs, but continued monitoring was agreed upon to document continued decrease in concentrations. Continued gauging of all wells will occur during monitoring events, until site closure is approved.

- Task 2 – Prepare a Release Closure Plan as requested by the DEQ upon approval of this report. Results of the two most recent sampling events indicate that concentrations of benzene are below the MCL on all wells sampled. C9-C12 aliphatics in the cross-gradient well, TH-5, across 13th Street South from the site appear to have increased from 2020 to 2023. C5-C8 aliphatics are still above the MCL. The resulting concentrations are relatively low in comparison to initial levels but may warrant further monitoring.

1.3 GROUND WATER MONITORING METHODS

Ground water monitoring and sampling methods for this project have and will continue to follow the Groundwater Sampling Guidance document published by the Montana Department of Environmental Quality (DEQ)[1] as closely as possible. Water samples shall be collected using a submersible pump and sent on ice under chain-of-custody protocol to Energy Laboratories (Energy) in Helena, Montana, for analysis of volatile petroleum hydrocarbons (VPH), volatile organic compounds (VOCs), and the intrinsic biodegradation indicators (IBIs) manganese, ferrous iron, nitrates + nitrites, sulfides, and methane.

In addition to the Montana DEQ guidelines, TD&H SOP 801 shall be utilized for sampling equipment decontamination procedures, TD&H SOP 810 shall be utilized for ground water monitoring and sampling, and TD&H SOP 880 shall be utilized for packing and shipping of samples to the laboratory. Copies of these SOPs were provided in the *2016 Ground Water Monitoring Report* (TD&H, 2016).

2.0 BUDGET

[1] Montana DEQ, 2018. *Groundwater Sampling Guidance*. Retrieved from https://deq.mt.gov/Portals/112/Land/StateSuperFund/Documents/GWSamplingGuidance-FINAL.pdf?ver=2018-03-07-094754-297

A cost estimate has been prepared for the tasks delineated in this Ground Water Monitoring Work Plan. The cost estimate covers a single sampling event and reporting of results. A copy of the estimated costs per sampling event for the continued monitoring of wells TH-5 and TH-6b is attached.

Work at this facility will continue in July of 2026 upon written approval received from the DEQ and the Montana Petroleum Tank Release Compensation Board (PTRCB). If you have any questions, please contact us at (406) 761-3010.

Sincerely,

Prepared by: **Ashley Warner**
Environmental Scientist
TD&H ENGINEERING

Reviewed by: **Peter Klevberg,** *PE*
Project Manager
TD&H ENGINEERING

CC: MONTANA TACO VENDORS
ATTN: MR. WAYNE THARES,
PO BOX 2661
GREAT FALLS, MT 59403

ATTACHMENTS:

FIGURE 1	SITE LOCATION MAP
FIGURE 2	PHREATIC SURFACE CONTOURS (2019)
FIGURE 3	PHREATIC SURFACE CONTOURS (2020)
TABLE 1	GROUND WATER SAMPLING RESULTS
TABLE 2	INTRINSIC BIODEGRADATION INDICATORS
TABLE 3	GROUND WATER ELEVATIONS
BUDGET	
RELEASE CLOSURE PLAN	

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ATTACHMENTS

FIGURE 1: SITE LOCATION MAP

TACO JOHN'S
GREAT FALLS, MONTANA

LOCATION MAP

TD&H

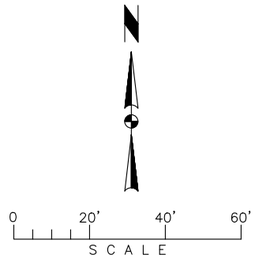
THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS—BOZEMAN—KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

DRAWN BY:	MWC	DATE:	05.18.09
DESIGNED BY:	PJK	JOB NO.	T08-018
QUALITY CHECK:		CAD NO.	FIG1

FIGURE 1

J:\2008\T08-018\LANDDEVG018\DWG\FIG1.dwg, 5/19/2009 3:17:40 PM, MWC

FIGURE 2: PHREATIC SURFACE CONTOURS (2019)



HORIZONTAL COORDINATES ARE MONTANA STATE PLANE, ZONE 2500, INTERNATIONAL FEET. TO CONVERT TO GROUND COORDINATES, DIVIDE BY THE COMBINED SCALE FACTOR OF 0.9992682302, ABOUT AN ORIGIN OF (0,0).

VERTICAL DATUM IS NAVD88, U.S. SURVEY FEET.

BENCHMARK:
TOP OPERATING NUT ON FIRE HYDRANT.
NW CORNER 10TH AVE SO. & 13TH ST SO.
ELEVATION = 3401.68' (NAVD88)

GROUND WATER MONITORING

PHREATIC SURFACE CONTOURS

JUNE 13, 2019

REVISION | DATE | REV

TD&H Engineering
tdhengineering.com
GREAT FALLS-BOZEMAN-KALISPELL-SHELBY
LEWISTON
WATFORD CITY
MONTANA
WASHINGTON
IDAHO
NORTH DAKOTA

DRAWN BY:	CDF
DESIGNED BY:	PJK
QUALITY CHECK:	
DATE:	9/25/20
JOB NO.	13-253
FIELDBOOK	929

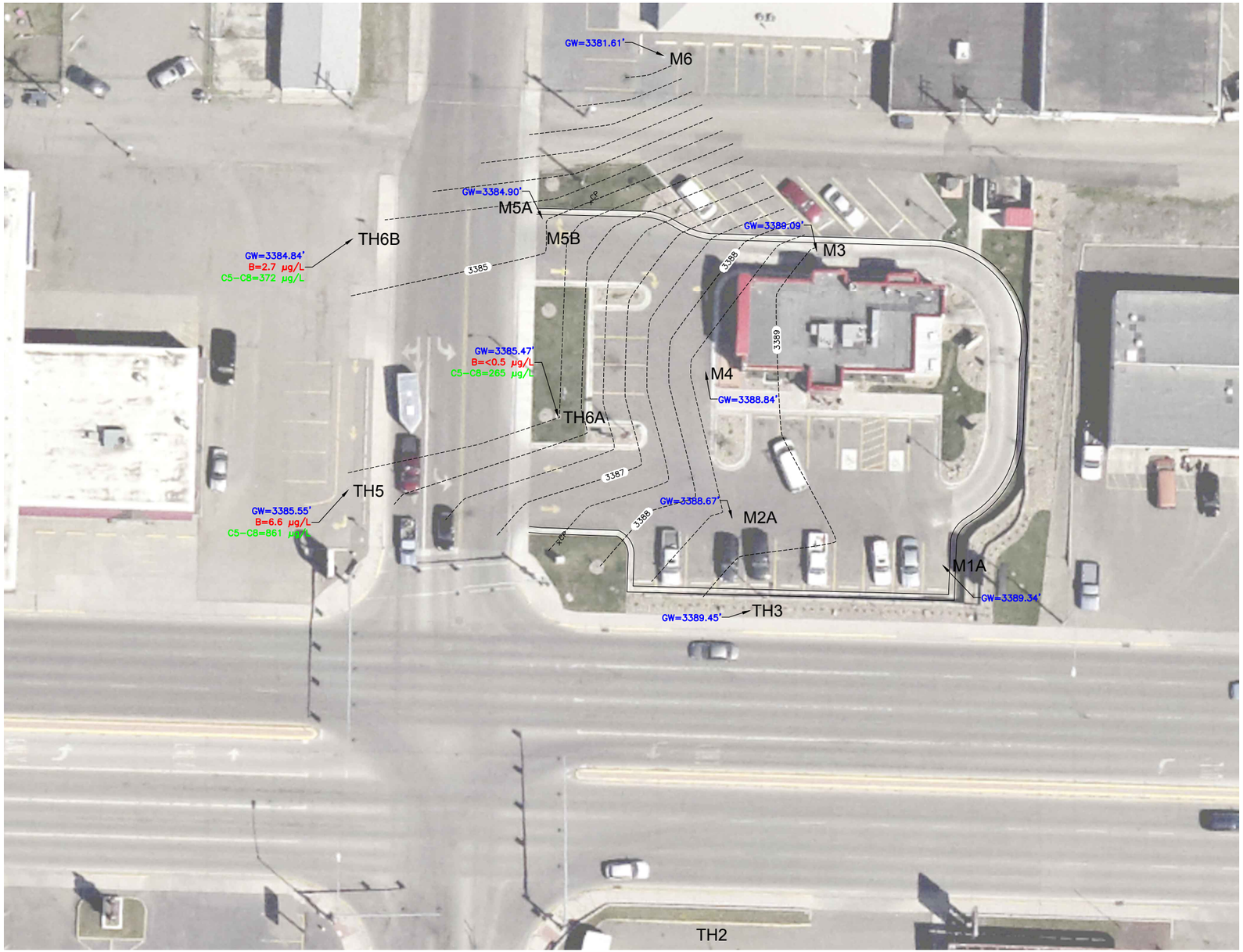
MONTANA TACO VENDORS, INC.
GREAT FALLS, MONTANA

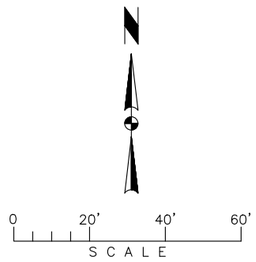
PHREATIC SURFACE CONTOURS
MONITOR WELLS 6/13/19

13-253 GW 2019.DWG
Figure 2

J:\2013\13-253 Taco Johns\CADD\CIVIL\2019&2020 Figures\13-253 GW 2019.dwg, 9/28/2020 10:01:10 AM, CDF

FIGURE 3: PHREATIC SURFACE CONTOURS (2020)





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BENCHMARK:
TOP OPERATING NUT ON FIRE HYDRANT.
NW CORNER 10TH AVE SO. & 13TH ST SO.
ELEVATION = 3401.68' (NAVD88)

GROUND WATER MONITORING

PHREATIC SURFACE CONTOURS

JUNE 10, 2020

REV	DATE	REVISION

TD&H Engineering
tdhengineering.com
GREAT FALLS-BOZEMAN-KALISPELL-SHELBY
LEWISTON
WATFORD CITY
MONTANA
WASHINGTON
IDAHO
NORTH DAKOTA

DRAWN BY:	CDF
DESIGNED BY:	PJK
QUALITY CHECK:	
DATE:	9/25/20
JOB NO.	13-253
FIELDBOOK	929

MONTANA TACO VENDORS, INC.
GREAT FALLS, MONTANA

PHREATIC SURFACE CONTOURS
MONITOR WELLS 6/10/20

13-253 GW 2020.DWG

Figure 3

J:\2013\13-253 Taco Johns\CADD\CIVIL\2019&2020 Figures\13-253 GW 2020.dwg, 9/29/2020 10:01:17 AM, CDF

TABLE 1: GROUND WATER SAMPLING RESULTS

Table 1
Taco John's
Ground Water Sampling Results

		Analytes (micrograms per liter)																	
		1,2-Dibromoethane (EDB)	1,2 Dichloroethane (DCA)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	C9-C10 Aromatic	C5-C8 Aliphatics	C9-C12 Aliphatics	Total Purgeable Hydrocarbons	Total Petroleum Hydrocarbons	EPH Screen	C9-C18 Aliphatics	C19-C36 Aliphatics	C11-C22 Aromatics	Total Extractable Hydrocarbons
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	MCL:	0.017	4	30	5	1,000	700	10,000	100	980	700	3,000			1,000	3,000	100,000	1,100	
Well ID	Date																		
Well TH1	3/22/2001			<1	**14**	44	29	29	6	560	290	210		1,500					
	10/1/2013	<1.010	<0.50	<1.0	<0.50	<0.50	<0.50	<1.5	<5	<20	<20	<20		<20					
Well TH2	3/22/2001			<20	**34**	14	110	170	<20	850	530	320		2,300					
	10/1/2013	<0.0099	0.87	8.9	**5.1**	0.63	15.2	5.8	<5	<20	<20	<20		<20					
Well TH3	3/22/2001			<2	**28**	14	150	120	19	940	**890**	220		2,500					
	4/13/2005			<1.0	**12**	2	38	7.9	2.7	240	339	190		722	590				
	8/4/2006			<1.0	2.2	<0.50		1	<1.0	64	86	29		165	580				
	8/4/2006 (dup)			<1.0	**5.2**	<0.50	4	<0.50	1	59	79	25		152	310				
	1/3/2007				1.6		2.8	2.2		80	95	77		232	410				
	10/1/2013	<0.0098	<0.50	20.5	2.5	2.3	4.5	3.0	<5	73.4	187	30		326					
	3/27/2014	<0.0096	<0.50	8.9	1.1	1.9	2.6	1.6	<5	47.4	103	28		199					
	3/24/2016	ND	ND	ND	0.91	ND	3.9	ND	ND	52.2	143	36.9	243						
	6/15/2016	ND	ND	ND	**6.6**	4.2	21.5	10.0	ND	161	405	89.0	670						
	6/29/2017	ND	ND	ND	2.3	1.7	6.3	2.9	ND	75	170	25.4	284						
	6/20/2018	ND	ND	ND	1.1	ND	3.1	ND	ND	47	164	34.4	250						
Well TH4	3/22/2001			<5	**120**	16	**730**	240	71	**1,900**	**1,900**	430		5,400					
	4/25/2005			<3.0	**55**	0.92	8.2	4.4	0.8	162	570	147		848	**1,700**	<320	<320	<320	620
	8/4/2006			<1.0	<0.50	<1.0	1.7	1.3	1.4	112	177	67		306	740	<320	<320	<320	<320
	1/3/2007				1.2		6	4		117	251	85		407	480				
Well TH5	3/22/2001			<5	**40**	10	110	23	27	410	**5,900**	1,200		11,000					
	10/1/2013	<0.0098	<0.50	**94.6**	**5.1**	9.4	4.3	2.1	<5	227	574	120		1,040					
	3/27/2014	<0.0098	<0.50	**163.0**	**11.4**	20.7	19.3	12.5	<5	646	**1,010**	228		2,500					
	3/24/2016	ND	0.5	ND	**7.1**	7.2	7.0	4.8	ND	309	**841**	233	1,430						
	6/16/2016	ND	ND	10.5	**10.5**	22.2	14.3	6.6	ND	526	**1,270**	259	2,000						
	6/29/2017	ND	ND	5.0	**6.0**	6.4	ND	ND	ND	303	599	128	1,050						
	6/21/2018	ND	ND	3.3	**7.4**	ND	ND	6.3	ND	359	**1,080**	258	1,720						
	6/13/2019	ND	ND	6.1	**9.2**	ND	ND	ND	ND	487	**1,110**	208	1,840						

Table 1
Taco John's
Ground Water Sampling Results

		Analytes (micrograms per liter)																	
		1,2-Dibromoethane (EDB)	1,2 Dichloroethane (DCA)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	C9-C10 Aromatic	C5-C8 Aliphatics	C9-C12 Aliphatics	Total Purgeable Hydrocarbons	Total Petroleum Hydrocarbons	EPH Screen	C9-C18 Aliphatics	C19-C36 Aliphatics	C11-C22 Aromatics	Total Extractable Hydrocarbons
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	MCL:	0.017	4	30	5	1,000	700	10,000	100	980	700	3,000			1,000	3,000	100,000	1,100	
Well ID	Date																		
	6/16/2020	ND	ND	4.0	**6.6**	ND	ND	ND	ND	349	**861**	140	1,410						
	6/29/2023	ND	ND	ND	2.1	7.4	13.0	6.2	4	345	**874**	648	1,510						
Well TH6a	3/22/2001			<2	<1	<1	<1	<3	<2	<60	<240	<100		<500					
	*4/26/2005			<1.0	<0.50	<1.0	<0.50	0	<1.0	<20	129	<20		132	<340				
	1/3/2007				1.5		0.75	0.85		25	130	25		163	320	320			
	9/30/2013	<0.0099	0.75	**52.7**	1.8	4.4	2.1	<1.5	<5	23	340	21.9		432					
	3/27/2014	<0.0098	0.87	<3.0	<0.50	<0.50	<0.50	<1.0	<5	<20	108	<20		102					
	3/23/2016	ND	0.70	ND	0.64	1.2	ND	ND	ND	56.8	159	ND	227						
	6/16/2016	ND	ND	ND	3.8	7.3	2.2	ND	ND	65.2	342	40.7	439						
	6/28/2017	ND	ND	ND	2.9	ND	ND	ND	ND	51.4	233	29.7	309						
	6/20/2018	ND	ND	ND	3.5	ND	ND	ND	ND	80.9	477	62.0	590						
	6/13/2019	ND	ND	ND	1.9	ND	ND	ND	ND	65.0	304	37.3	387						
	6/16/2020	ND	ND	ND	ND	ND	ND	ND	ND	33.8	265	30.0	311						
	6/29/2023	ND	ND	ND	2.8	1.9	1.6	1	0.8	42.0	254	98.0	338						
Well TH6b	3/22/2001			<2	**7**	9	8	10	4	580	**2,500**	300		3,200					
	10/1/2013	<0.0099	<0.50	**130**	4	4.3	<0.50	3.8	<5	179	**657**	77.0		1,040					
	3/27/2014	<0.0098	<0.50	20	0.9	1.3	0.92	<1.5	<5	58	428	110.0		615					
	3/23/2016	ND	ND	ND	ND	ND	ND	ND	ND	46.4	176	40.7	265						
	6/16/2016	ND	ND	10.9	3.9	10.8	ND	ND	ND	138	**892**	109.0	1,050						
	6/28/2017	ND	ND	5.5	**5.1**	4.3	5	2	ND	155	**662**	67.4	877						
	6/21/2018	**1**	ND	7.9	4.0	ND	ND	ND	ND	133	**861**	103.0	1,040						
	6/13/2019	ND	ND	ND	**6.9**	ND	ND	ND	ND	390	**830**	195.0	1,440						
	6/16/2020	ND	ND	ND	2.7	ND	ND	ND	ND	89	372	38.6	494						
	6/29/2023	ND	ND	ND	1.0	3.1	1.0	1.2	0.7	81	459	152.0	592						
Well M1	4/13/2005			<1.0	3.9	<0.50	6	2.7	1.7	138	261	68		432	550				
	8/4/2006			<1.0	<0.50	<0.50	<0.50	<0.50	<1.1	<20	64	<20		67	320				
Well M1a	1/3/2007			<1.0	<0.50	<0.50	<0.50	0.79	<1.0	<20	34	<20		48					

Table 1
Taco John's
Ground Water Sampling Results

		Analytes (micrograms per liter)																	
		1,2-Dibromoethane (EDB)	1,2 Dichloroethane (DCA)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	C9-C10 Aromatic	C5-C8 Aliphatics	C9-C12 Aliphatics	Total Purgeable Hydrocarbons	Total Petroleum Hydrocarbons	EPH Screen	C9-C18 Aliphatics	C19-C36 Aliphatics	C11-C22 Aromatics	Total Extractable Hydrocarbons
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	MCL:	0.017	4	30	5	1,000	700	10,000	100	980	700	3,000			1,000	3,000	100,000	1,100	
Well ID	Date																		
	9/30/2013	<0.0099	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<5	<20	<20	<20		<20					
	3/26/2014	<0.0098	<0.50	<3.0	<0.50	<0.50	<0.50	<1.50	<5	<20	<20	<20		<20					
	3/24/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	6/15/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
	6/28/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
	6/20/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Well M2	4/13/2005			<1.0	1.8	11	10	34	1.5	118	75	56		260	<330				
	8/4/2006			<1.0	**7.1**	<0.50	1.6	0.77	1.2	179	168	65		354	**2,100**	<300	<300	<300	1,200
	1/3/2007			<1.0	4.8		0.6	0.95		110	86	46		207	**1,600**		170		800
Well M2a	9/30/2013	<0.0098	<0.50	<1.0	<0.50	<0.50	3.0	5.8	<5	<20	<20	<20		25					
	3/27/2014	<0.0098	<0.50	**70.5**	4.4	1.2	89.6	30.6	16.2	324.0	217.0	37.3		819					
	3/23/2016	ND	ND	ND	1.6	ND	ND	ND	ND	80.6	158	27.9	272						
	6/15/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	33.4	ND	49						
	6/28/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	6/20/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	42.5	ND	48						
Well M3	4/13/2005			<6.0	**33**	0.77	84	9.7	15	858	**807**	565		2,040	**2,100**	<340	260	180	1,000
	8/4/2006			<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<20	49	27		74	400				
	1/3/2007				**12**	0.48	18	2.3	3.8	237	429	237		808	**1,100**				
	1/3/2007 (dup)				11	<0.50	19	2	4	247	327	191		688	**1,000**				
	9/30/2013	<0.0099	<0.50	**53.9**	1.2	3.3	<0.50	<1.5	<5.0	80.7	366	48.9		551					
	3/26/2014	<0.0096	<0.50	**38.8**	1.7	4.1	5.7	3	<5.0	139.0	419	60.1		673					
	3/23/2016	ND	ND	ND	ND	3	1.3	ND	ND	79.2	385	29.2	488						
	6/15/2016	ND	ND	ND	1.0	ND	ND	ND	ND	76.1	328	46.0	425						
	6/29/2017	ND	ND	ND	ND	ND	ND	ND	ND	61.2	218	39.9	317						
	6/20/2018	ND	ND	ND	ND	ND	ND	ND	ND	35.5	316	45.1	374						
Well M4	4/25/2005			<6.0	**12**	<0.50	24	6.8	1.3	428	**1,060**	286		1,610	**1,800**	<370	<370	<370	850
	4/25/2006 (dup)			<5.0	**12**	0.47	34	8.7	0.87	444	**1,020**	306		1,630					

Table 1
Taco John's
Ground Water Sampling Results

		Analytes (micrograms per liter)																	
		1,2-Dibromoethane (EDB)	1,2 Dichloroethane (DCA)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	C9-C10 Aromatic	C5-C8 Aliphatics	C9-C12 Aliphatics	Total Purgeable Hydrocarbons	Total Petroleum Hydrocarbons	EPH Screen	C9-C18 Aliphatics	C19-C36 Aliphatics	C11-C22 Aromatics	Total Extractable Hydrocarbons
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	MCL:	0.017	4	30	5	1,000	700	10,000	100	980	700	3,000			1,000	3,000	100,000	1,100	
Well ID	Date																		
	8/4/2006			<6.0	**79**	0.86	26	3.5	3.7	424	**1,080**	258		1,600	810	<300	<300	<300	750
	1/3/2007				**9**	1.3	6.6	3.8		232	**1,080**	232		1,420	**1,300**		170	160	800
	10/1/2013	<0.0099	<0.50	8.0	3.1	6.2	5.6	<1.5	<5	168	505	81		783					
	3/26/2014	<0.0097	<0.50	9.4	2.7	1.9	4.7	5	<5	132	406	73		643					
	3/23/2016	ND	ND	ND	3.4	4.6	4.4	2.3	ND	97.8	407	56.6	573						
	6/16/2016	ND	ND	ND	3.9	2.1	3.8	2.2	ND	77	237	73.5	377						
	6/29/2017	ND	ND	ND	1.0	ND	ND	ND	ND	29	131	35.3	196						
	6/20/2018	ND	ND	ND	ND	ND	ND	ND	ND	20	198	48.8	257						
Well M5	8/4/2006			<1.0	<0.50	<0.50	<0.50	<0.50	<1.0	<20	<20	<20		<20					
	1/3/2007			<1.0	<0.50	<0.50	<0.50	<0.50		<20	<20	<20		<20					
Well M5a	9/30/2013	<0.0099	<0.50	**107**	1.7	<0.50	16.2	9.5	<5	356	**1,140**	216		1,850					
	3/26/2014	<0.0097	<0.50	20	1.0	<0.50	15.9	15.1	<5	228	**884**	332		1,520					
	3/24/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	6/16/2016	ND	ND	ND	0.59	ND	9.4	3.8	ND	97.5	514	144	710						
	6/29/2017	ND	ND	ND	1.00	ND	ND	ND	ND	82.5	368	122	574						
	6/20/2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	302	137	473						
Well M5b	9/30/2013	<0.0097	<0.50	<1.0	<0.50	<0.50	<0.50	<1.5	<5	<20	<20	<20		<20					
	3/24/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	6/15/2016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
	6/29/2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
	6/21/2018																		
Well M6	9/22/2006			<1.5	1.7	1.1	11	28	2.1	268	**938**	375		1,430	**1,300**	<300	<300	<300	650
	1/3/2007				1.6		2.9	18	0.99	219	**813**	429		1,300	**1,700**	230	260	160	
	9/30/2013	<0.0098	<0.50	**33**	<0.50	<0.50	10.2	1.9	<5	56.5	532	117		744					
	3/26/2014	<0.0099	<0.50	21.3	<0.50	10.9	12.7	8.7	<5	154.0	586	100		896					
	3/23/2016	ND	0.59	ND	ND	8.0	7.0	4.4	ND	72.0	552	107	737						
	6/15/2016	ND	ND	ND	ND	ND	5.9	2.7	ND	44.9	307	73.7	401						

Table 1
Taco John's
Ground Water Sampling Results

		Analytes (micrograms per liter)																	
		1,2-Dibromoethane (EDB)	1,2 Dichloroethane (DCA)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	C9-C10 Aromatic	C5-C8 Aliphatics	C9-C12 Aliphatics	Total Purgeable Hydrocarbons	Total Petroleum Hydrocarbons	EPH Screen	C9-C18 Aliphatics	C19-C36 Aliphatics	C11-C22 Aromatics	Total Extractable Hydrocarbons
	Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	MCL:	0.017	4	30	5	1,000	700	10,000	100	980	700	3,000			1,000	3,000	100,000	1,100	
Well ID	Date																		
	6/28/2017	ND	ND	ND	ND	ND	9.0	3.6	ND	74.6	500	173.0	755						
	6/21/2018	ND	ND	ND	ND	ND	ND	4.7	ND	87.9	576	171.0	835						
*Bailed TH6a dry after one well volume, allowed well to recharge overnight and collected sample following day																			
Blank	4/25/2005			<1.0	<0.50	<0.50	<0.50	<0.50	<20	<20	<20	<20		<300					
				<1.0	<0.50	<0.50	<0.50	<0.50	<20	<20	<20	<20		<300					
	1/3/2007			<1.0	<0.50	<0.50	<0.50	<0.50	<20	<20	<20	<20		<300					
	6/21/2018			<1.0	<0.50	<0.50	<0.50	<0.50	<20	<20	54.2	<20	46	<300					

TABLE 2: INTRINSIC BIODEGREDATION INDICATORS

Table 2
Taco John's
Intrinsic Biodegration Indicators (IBIs)

		Analytes - micrograms per liter (µg/L)					Measured Field Parameters					
		Manganese	Ferrous Iron	Nitrates + Nitrites	Sulfates	Methane	Field Date	Temperature (°C)	pH (s.u.)	Specific Conductivity (µS)	Dissolved Oxygen (mg/L)	ORP Value (mV)
	Units	µg/L	µg/L	µg/L	µg/L	µg/L						
	HHS:											
Well ID	Date RBSL:											
Well TH3	6/15/2016	1,280	ND	44	329,000	119	10/1/2013	12.7	7.30	2,560		
	6/29/2017	1,150	1,600	20	374,000	564	3/24/2016	9.9	7.20	1,772	1.84	179
	6/20/2018	1,370	430	110	415,000	247	6/15/2016	13.0	7.00	1,681	0.97	177
Well TH5	6/15/2016	371	ND	ND	121,000	89.6	10/1/2013	12.2	7.30	2,450		
	6/29/2017	347	7,300	15	96,800	79.3	3/24/2016	11.9	7.18	1,444	1.36	173
	6/21/2018	333	2,400	11	109,000	84	6/16/2016	13.6	7.17	1,375	0.72	168
	6/13/2019	394	2,500	ND	96,800	11	6/13/2019	12.6	7.62	1,758	6.00	-87
	6/16/2020	470	17,200	ND	102,000	92.8	6/10/2020	12.3	7.48	1,956	2.14	-152.8
	6/29/2023	177	1,100	240	571,000	28	6/29/2023	13.5	8.06	2,158	3.30	79.2
Well TH6a	6/16/2016	917	ND	ND	319,000	1,180	9/30/2013	11.3	6.98	2,410		
	6/29/2017	851	3,800	44	244,000	2,150	3/23/2016	13.0	6.98	1,298	7.09	188
	6/20/2018	1,040	5,200	ND	209,000	1,810	6/16/2016	12.8	6.75	1,411	0.53	187
	6/13/2019	798	3,300	ND	262,000	839	6/13/2019	13.2	7.39	2,106	5.20	-57
	6/16/2020	957	2,000	ND	235,000	484	6/10/2020	12.2	7.05	1,989	2.63	-87.6
	6/29/2023	830	5,300	ND	294,000	700	6/29/2023	16.9	6.82	2,025	2.16	70.0
Well TH6b	6/16/2016	1,770	ND	1,300	174,000	65.3	10/1/2013	13.1	7.40	2,660		
	6/28/2017	916	48	600	70,400	116	3/23/2016	13.0	7.04	1,925	1.48	182
	6/21/2018	445	150	970	90,100	168	6/16/2016	13.9	7.04	1,687	2.22	176
	6/13/2019	434	ND	700	107,000	227	6/13/2019	14.1	7.45	2,058	27.10	202
	6/16/2020	595	130	1,200	57,300	109	6/10/2020	13.2	7.37	2,287	2.77	-40.4
	6/29/2023	304	ND	2,670	446,000	160	6/29/2023	14.8	7.69	2,342	4.70	94.0
Well M1a	6/15/2016	2,140	ND	8,200	113,000	ND	9/30/2013	13.9	6.92	1648		
	6/28/2017	6,190	90	9,000	123,000	ND	3/24/2016	10	6.8	1256	2.41	195
	6/20/2018	1,530	ND	11,400	110,000	ND	6/15/2016	12.7	6.55	1242	1.55	197
Well M2a	6/15/2016	1,740	ND	320	283,000	ND	9/30/2013	13.8	6.44	1,448		
	6/29/2017	2,040	390	320	329,000	61.1	3/23/2016	11.9	6.56	1,794	7.81	214
	6/20/2018	2,050	660	250	347,000	66.5	6/16/2016	12.7	6.60	1,277	1.95	199
Well M3	6/15/2016	2,140	ND	19	257,000	70.5	9/30/2013	16.0	6.95	1,829		
	6/29/2017	2,540	2,600	95	308,000	126	3/23/2016	11.9	7.20	1,338	2.47	170
	6/20/2018	2,020	1,400	52	196,000	117	6/15/2016	15.0	6.98	1,374	1.04	171
Well M4	6/16/2016	3,050	ND	ND	425,000	73.8	10/1/2013	15.4	7.14	1,598		
	6/29/2017	3,310	9,200	20	598,000	47	3/23/2016	11.5	7.17	1,361	3.46	175
	6/20/2018	2,010	12,600	30	361,000	86	6/16/2016	13.6	6.68	1,432	1.10	194
Well M5a	6/16/2016	1,170	ND	ND	246,000	454	9/30/2013	12.8	7.20	1,675		
	6/29/2017	1,300	13,900	22	235,000	816	3/24/2016	12.9	7.18	933	0.90	170
	6/20/2018	1,230	13,900	10	193,000	34.5	6/16/2016	13.4	6.99	1,297	1.08	181
Well M5b	6/15/2016	561	ND	250	4,360,000	ND	9/30/2013	14.5	7.20	4		
	6/29/2017	1,680	3,400	ND	2,780,000	ND	3/23/2016	9.6	6.95	6,496	0.65	177
	6/21/2018			23			6/15/2016	14.8	6.81	6,841	1.52	188
Well M6	6/15/2016	290	ND	ND	183,000	263	9/30/2013	13.8	7.13	1,761		
	6/28/2017	404	15,000	86	214,000	204	3/23/2016	13.3	6.93	1,305	1.14	194
	6/21/2018	1,610	20,600	ND	184,000	52.6	6/15/2016	14.4	6.80	1,275	2.48	185

TABLE 3: GROUND WATER ELEVATIONS

Table 3 Taco John's Ground Water Elevations				
Well ID	**Measuring Point (ft)**	**Date**	**Depth to GW (ft)**	**GW Elevation (ft)**
Well TH1	3407.33	4/25/2005	12.75	3394.58
		8/4/2006	12.10	3395.23
		1/3/2007	12.74	3394.59
		10/1/2013	15.46	3391.87
Well TH2	3404.4	4/25/2005	13.22	3391.18
		1/3/2007	13.10	3391.30
		10/1/2013	13.22	3391.18
Well TH3	3403.4	4/25/2005	14.04	3389.36
		8/4/2006	13.70	3389.70
		1/3/2007	14.22	3389.18
		10/1/2013	14.13	3389.27
		3/27/2014	14.33	3389.07
		3/24/2016	5.05	3398.35
		6/15/2016	5.50	3397.90
		6/20/2018	13.46	3389.94
		6/10/2020	13.95	3389.45
Well TH4	3396.34	4/25/2005	10.27	3386.07
		8/4/2006	9.78	3386.56
		1/3/2007	10.34	3386.00
Well TH5	3397.05	4/25/2005	13.04	3384.01
		8/4/2006	12.39	3384.66
		1/3/2007	10.95	3386.10
		10/1/2013	9.80	3387.25
		3/27/2014	12.04	3385.01
		3/24/2016	6.81	3390.24
		6/16/2016	7.96	3389.09
		6/21/2018	9.64	3387.41
		6/13/2019	10.66	3386.39
		6/10/2020	11.5	3385.55
		6/29/2023	8.84	3388.21
		6/19/2024	10.07	3386.98
Well TH6a	3397.72	4/25/2005	13.25	3384.47
		1/3/2007	12.56	3385.16
		9/30/2013	10.87	3386.85
		3/27/2014	13.16	3384.56
		3/23/2016	5.00	3392.72
		6/16/2016	4.11	3393.61
		6/20/2018	10.51	3387.21
		6/13/2019	11.27	3386.45
		6/10/2020	12.25	3385.47

Table 3				
		6/29/2023	9.61	3388.11
		6/19/2024	10.61	3387.11
Well TH6b	3394.34	4/25/2005	10.80	3383.54
		8/4/2006	9.95	3384.39
		1/3/2007	8.61	3385.73
		10/1/2013	7.38	3386.96
		3/27/2014	9.87	3384.47
		3/23/2016	9.94	3384.40
		6/16/2016	10.67	3383.67
		6/21/2018	7.38	3386.96
		6/13/2019	8.35	3385.99
		6/10/2020	9.5	3384.84
		6/29/2023	6.67	3387.67
		6/19/2024	8.13	3386.21
Well M1	3400.74	4/25/2005	14.18	3386.56
		8/4/2006	14.00	3386.74
		1/3/2007	14.41	3386.33
Well M1a	3400.02	9/30/2013	10.66	3389.36
		3/26/2014	10.91	3389.11
		3/24/2016	4.96	3395.06
		6/15/2016	5.49	3394.53
		6/20/2018	10.31	3389.71
		6/10/2020	10.68	3389.34
		6/29/2023	10.84	3389.18
		6/19/2024	10.9	3389.12
Well M2	3399.72	4/25/2005	14.28	3385.44
		8/4/2006	13.73	3385.99
		1/3/2007	13.80	3385.92
Well M2a	3398.87	9/30/2013	9.80	3389.07
		3/27/2014	10.38	3388.49
		3/23/2016	9.89	3388.98
		6/16/2016	8.14	3390.73
		6/20/2018	10.66	3388.21
		6/10/2020	10.2	3388.67
		6/29/2023	9.95	3388.92
		6/19/2024	10.51	3388.36
Well M3	3398.07	4/25/2005	11.43	3386.64
		8/4/2006	11.33	3386.74
		1/3/2007	14.22	3383.85
		9/30/2013	9.67	3388.40
		3/26/2014	9.97	3388.10
		3/23/2016	10.89	3387.18
		6/15/2016	11.66	3386.41
		6/20/2018	9.56	3388.51

Table 3				
		6/10/2020	8.98	3389.09
		6/29/2023	9.61	3388.46
		6/19/2024	9.75	3388.32
Well M4	3397.64	4/25/2005	11.95	3385.69
		8/4/2006	11.50	3386.14
		1/3/2007	12.19	3385.45
		10/1/2013	8.93	3388.71
		3/26/2014	9.07	3388.57
		3/23/2016	9.64	3388.00
		6/16/2016	5.37	3392.27
		6/20/2018	8.64	3389.00
		6/10/2020	8.8	3388.84
		6/29/2023	8.8	3388.84
		6/19/2024	6.48	3391.16
Well M5	3392.25	8/4/2006	7.70	3384.55
		1/3/2007	2.55	3389.70
Well M5a	3395.22	9/30/2013	8.22	3387.00
		3/27/2014	10.72	3384.50
		3/24/2016	9.60	3385.62
		6/16/2016	6.43	3388.79
		6/20/2018	8.23	3386.99
		6/10/2020	10.32	3384.90
		6/29/2023	7.59	3387.63
		6/19/2024	8.95	3386.27
Well M5b	3395.19	9/30/2013	9.21	3385.98
		3/23/2016	7.93	3387.26
		6/15/2016	3.37	3391.82
		6/21/2018	0	3395.19
		6/10/2020	1.06	3394.13
		6/29/2023	0.84	3394.35
		6/19/2024	2.26	3392.93
Well M6	3396.26	8/4/2006	9.02	3387.24
		1/3/2007	10.82	3385.44
		9/30/2013	9.40	3386.86
		3/26/2014	11.90	3384.36
		3/23/2016	10.21	3386.05
		6/15/2016	11.10	3385.16
		6/21/2018	9.34	3386.92

BUDGET

TD&H ENVIRONMENTAL CONSULTING COST ESTIMATE PER SAMPLING EVENT

Client: Big Sky Taco Vendors, Inc. / PTRCB			**Project:**	Taco John's (TD&H: 13-253)	
Work Plan: 34223			**Date:**	September 19, 2025	
Facility ID No.: 07-01873 **Release No.:** 4361					
				Unit Cost	Total
TASK 1 - ADMINISTRATION/PROJECT MANAGEMENT PER EVENT					
Sr. Engineer/Scientist (Klevberg)	hours	4	$	198.00	$ 792.00
Technician II/Scientist (Warner/League)	hours	16	$	92.00	$ 1,472.00
Clerical	hours	2	$	77.00	$ 154.00
ADMINISTRATION AND PROJECT MANAGEMENT SUBTOTAL PER SAMPLING EVENT					$ 2,418.00
TASK 2 - GROUND WATER MONITORING PER EVENT					
Static Water Level Measurements (only wells not sampled)	each	19	$	55.00	$ 1,045.00
Ground Water Monitoring (includes water level measurement)	each	2	$	400.00	$ 800.00
Instrument and Sample Shipping	each	1	$	400.00	$ 400.00
Laboratory Fee	each	2	$	110.00	$ 220.00
GROUND WATER MONITORING SUBTOTAL PER SAMPLING EVENT					$ 2,465.00
TASKS 3 - REPORTING (ONE MONITORING REPORT)					
Sr. Engineer/Scientist (Klevberg)	hours	4	$	198.00	$ 792.00
Environmental Engineer (McGee)	hours	2	$	198.00	$ 396.00
Technician II/Scientist (Warner)	hours	24	$	92.00	$ 2,208.00
Drafting	hours	2	$	92.00	$ 184.00
Clerical	hours	2	$	77.00	$ 154.00
REPORTING SUBTOTAL PER MONITORING REPORT					$ 3,734.00
TOTAL COST PER SAMPLING EVENT					***$ 8,617.00***

RELEASE CLOSURE PLAN

MT DEQ Petroleum Tank Cleanup Section -- Release Closure Plan

(7 Mar 2018)

for the Investigation, Cleanup, Monitoring & Closure of Petroleum Releases

Part 1: Site Summary & Remedial Investigation (RI) Results

reference: MT DEQ Remedial Investigation (RI) Guidance for Petroleum Releases

Consultant:	TD&H Engineering, Inc.	Date:	1/10/2025	DEQ PM:	Allen Schiff
Facility Name / Address:	Former Sinclair Retail, 1301 10th Ave. South, Great Falls, MT 59405				
Facility ID:	07-01873	**Release:**	4361	WP ID:	10983

Site Information	Release Cause, Source(s) & Petroleum Types:	Two leak events from USTs when Sinclair owned the gas station, waste oil and gasoline
	other releases onsite and nearby:	Various releases from other sources along 10th Avenue South in Great Falls
	Site Use(s) -- Former, Current & Planned:	Gas Station since the 1947 until 2002, 2008 to present site used as a Taco John's restaurant.
	Surface Conditions & Access:	10th Avenue South - paved, present day restaurant - paved with some landscape-covered areas
	former Petroleum Tank Systems:	
	current Petroleum Tank Systems:	None
	Other:	Off-site diesel most likely migrating to the site from up-gradient sources.
Subsurface	Stratigraphic sequence - layers & thicknesses:	West Side, off site borings: asphalt to 0.3 ft., road base to 0.4 ft., sandy lean Clay to 2.5 ft., silty Sand to 4.0 ft., sandy lean Clay to bottom (18.5 - 19.5).
	Stratigraphic Continuity - Lateral Variation(s):	
	Groundwater Depth & Flow Direction(s):	Most recent groundwater depths 11 to 14 ft, flow to the northwest
	Aquifer(s) unconfined, confined, perched:	Unconfined
	Receptor Depth/Location (basements, utilities):	Restaurant basement - ~10 ft, utilities along 9th South Alley - Est. 8 ft.
	Other:	Roadbed along 13th Street South adjacent to site - 3-4 ft., Buried utilities along 9th Alley South
Extent & Magnitude	Petroleum Types, Age & NAPL Mobility:	*Used motor oil - 26-73 years, NAPA mobility = N.A. , gasoline - 76 years, NAPA mobility = N.A.*
	Surface Soil Impacts (0 to 2 ft bgs):	None on site, unknown under 13th Street South
	Vadose-Zone Soil Impacts:	None on site, unknown under 13th Street South
	Smear-Zone Soil Impacts:	Possible
	Groundwater Impacts:	Current groundwater samples are below HHS and RBSL for wells on site. One off site well shows contamination.
	Surface Water Impacts:	None
	Petroleum Vapor Impacts:	Petroleum vapor constituents measured under basement slab, basement, and main floor - below OSHA PELs. Vapor extraction system in restaurant.
	Other:	
Reports	RI and Monitoring Reports & Dates:	Phase II RI - 7/17/14, 2016 GWM Report - Sept. 2016, 2018 GWM Report - Aug. 2018, 2020 GWM Report - Sept. 2020, 2025 GWM Report - Jan. 2025
	Pilot Tests & Results:	N/A
	Results from Cleanup(s):	After removal of contaminated soil in 1994, 2004, and 2009, natural attenuation allowed all on-site wells to test below RBSLs
	Other:	One off-site well west of the site continues to test above RBSLs
What currently prevents Release Closure?		GW from one cross-gradient, off-site well, located to the west across 13th Street South remains above RBSLs.
additional information required for PMZ Closure:		
Information & Data Gaps:		The source for the contamination in the GW in these two wells has not been completely determined.
Recommendations and comments:		Contamination may exist under 13th Street South. Investigation into this area may be required.

MT DEQ Petroleum Tank Cleanup Section -- Release Closure Plan (7 Mar 2018)

for the Investigation, Cleanup, Monitoring & Closure of Petroleum Releases

Part 2: Conceptual Site Model (CSM) - Evaluation of Exposure Pathways

reference: MT DEQ Risked-Based Corrective Action (RBCA) Guidance for Petroleum Releases

Consultant:	TD&H Engineering		Date: 1/10/2025	DEQ PM: Allen Schief	
Facility Name:	Former Sinclair Retail, 1301 10th Ave. South, Great Falls, MT 59405				
Facility ID:	07-01873	Release:	4361	WP ID:	10983

Required: Complete Description of the Source(s) of Petroleum Release

Petroleum Source(s)	Affected Medium	Exposure Medium / Point	Exposure Route	Receptor	Complete Description for All Receptors: Describe why a Receptor is not threatened or impacted; and Describe proposed Investigation, Cleanup, and/or Monitoring Methods for each threatened or impacted Receptor.
→	Surface Soil (0 - 2 ft bgs)	→ Soil	→ Ingestion Dermal	→ Resident and/or Worker	Impacted soil has been removed, and all areas paved or landscaped. Therefore, contact with soil is limited and would not lead to exposure.
		→ Soil	→ Leaching	→ Groundwater	GW has been impacted by contaminated soil from this depth. Removal of this layer has occurred. Continuing Impacts to GW are likely from deeper layers of impacted soil.
		→ Dust/Vapors	→ Inhalation	→ Resident and/or Worker	A soil vapor investigation was performed inside the new restaurant as part of the Phase II investigation performed in 2013. Results were well below OSHA PELs. VES installed to control below slab vapors.
		→ Surface Erosion to Surface Water and Sediment	→ Ingestion Dermal	→ Recreator, Ecological Receptor [1]	Site is paved or landscaped with little apparent erosion. Surface water run-off is directed towards city storm drains.
→	Sub-Surface Soil (> 2 ft bgs)	→ Soil	→ Ingestion Dermal	→ Construction Worker [2]	The majority of impacted soil has been removed from the site. The remaining contamination is in deeper soil layers (~ 15 - 16') and into the bedrock. Concentrations are low and should not be a source of exposure to construction workers.
		→ Soil	→ Leaching	→ Groundwater	Groundwater has been impacted by soil leaching. On-going natural attenuation has reduced concentrations of petroleum in groundwater.
		→ Indoor Air	→ Inhalation	→ Commercial or Residential Indoor Air	Impact to indoor air is most likely to occur in the Taco Johns Restaurant. Quarterly monitoring on VES system exhaust indicated no significant concentrations of hydrocarbons in the vapor.
		→ Dust/Vapors	→ Inhalation	→ Construction Worker	The majority of impacted soil has been removed from the site. The remaining contamination is in deeper soil layers (~ 15 - 16') and into the bedrock. Concentrations are low and should not be a source of exposure to construction workers.
		→ Buried Water Line	→ Ingestion Dermal	→ Resident and/or Worker	Buried utilities have not been investigated. The waterline supplying the restaurant is bedded in clean fill and should not impact customers or workers.
		→ Buried Utility Line	→ Inhalation of Indoor Air	→ Indoor Resident and/or Worker	Buried public utilities have not been investigated. Utilities supplying the restaurant have been bedded in clean fill. Should not impact customers or workers.
→	Groundwater	→ Groundwater	→	→ State water [3]	Down gradient wells from site have tested below HSS and RBSLs. Impacts to state waters from ground or surface water would be minimal.
		→ Indoor Air [4]	→ Inhalation of Indoor Air	→ Resident and/or Worker	The indoor air of the restaurant was tested in 2013 w/ results that were several magnitudes below the OSHA PELs. Very low exposure for customers or workers. A VES is in place at the restaurant.
		→ Groundwater and Vapors	→ Ingestion Dermal Inhalation	→ Construction Worker [2]	Impacted ground water is ~ 11 - 14' BGL with laboratory results indicating petroleum concentrations below or near the HHS and RBSLs. Ingestion, dermal, or inhalation exposures should be low.
		→ Drinking Water	→ Ingestion Dermal	→ Resident and/or Worker	Ground water levels are below the depths for buried utilities and the waterline supplying the restaurant. Little or no impact to drinking water.
		→ Surface Water and/or Sediment	→ Ingestion Dermal Inhalation	→ Recreator, Ecological Receptor	Site is paved or landscaped with little apparent erosion. Surface water run-off is directed towards city storm drains. Recreator or ecological receptor should not be impacted by remaining contamination.
		→ Buried Water Line	→ Ingestion Dermal	→ Resident and/or Worker	Ground water levels are below the depths for buried utilities and the waterline supplying the restaurant. Little to no impacts to customers or workers.
		→ Buried Utility Line	→ Inhalation of Indoor Air	→ Indoor Resident and/or Worker	The indoor air of the restaurant was tested in 2013 w/ results that were several magnitudes below the OSHA PELs. Quarterly monitoring of VES indicated low concentrations of petroleum vapors. It would appear that the buried utilities are not contributing to indoor customers' or workers' exposure to these chemicals.

Data Gaps:	Possible soil contamination under 13 St. South and along the 9th Alley South
Recommendations:	Continue monitoring Wells TH-5 and TH-6b until two executive monitoring events show contaminant levels below the RBSLs. Interim data reports will be submitted after sampling events.

Footnotes:

1. Ecological Receptors (e.g. plants and animals) can be added as a separate line associated with surface soil but it is not common for PTC sites.
2. Construction worker covers excavations conducted for building construction, utility installation and repair, as well as residents planting trees, etc.
3. Standard or RBSL exceedence are a complete pathway to a receptor, which is state water (or groundwater).
4. Indoor Air is the exposure medium for a potential or known vapor intrusion setting where a resident or an employee of a business may breathe petroleum vapor from the release.

MT DEQ Petroleum Tank Cleanup Section -- Release Closure Plan (7 Mar 2018)
for the Investigation, Cleanup, Monitoring & Closure of Petroleum Releases

Part 3: Evaluation of Cleanup Alternatives

reference: MT DEQ Remedial Alternatives Analysis (RAA) Guidance for Petroleum Releases

Consultant:	0		Date:	1/0/1900	DEQ PM:	0
Facility Name / Address:	0					
Facility ID:	**0**	**Release:**	**0**	WP ID:	0	

Administrative Rules of Montana 17.56.605(3) requires screening and selection of cleanup methods to develop a matrix evaluation of cleanup alternatives. A cleanup plan requires information on all alternatives and an explanation why any alternative was selected.

Enter appropriate site-specific Cleanup Methods that are based on RI results & CSM

Evaluation Criteria		No Action*	e.g. Excavation	ORC Alternative	e.g. SVE & AS	fill-in as needed or leave blank	fill-in as needed or leave blank	fill-in as needed or leave blank
Estimated Costs		$10,000		$20,000 not including materials				
Performance	Protective of Human Health & Environment (e. g. residences, utilities, water supply, future use)	Yes		Yes				
	Method-specific regulatory requirements (e. g. disposal of impacted soil & water, access agreements)	None		None				
	Method-specific feasibility requirements (e. g. pilot tests, treatability studies)	None		Sub-surface Application of ORC.	Pilot test and underground construction			
	Contaminant-specific requirements (e. g. method achieves soil & GW RBSLs & DEQ-7 standards)	Yes		Yes	Yes			
	Location-specific requirements (e. g. potential historical, cultural, or ecological significance, or site near wetlands, floodplains, surface water, endangered species / migratory bird habitat)	None		None	None			
Reliability -- Short Term		Good		Good	Good			
Reliability -- Long Term		Moderate		Good	Moderate			
Implementation Issues & Limitations		None		Yes - Off-Site Work	Yes - Off-Site Work			
Safety Issues		None		Yes - traffic	Yes - traffic			
Effects on Public Health and Environment (includes Receptors)		Low Impact		Low Impact				
Other site-specific criteria & issues:								
Advantages of Cleanup Method:		Low Cost		Reduce contamination and faster closure				
Disadvantages of Cleanup Method:		Slower		Extra Cost	Extra Cost			
Est. Years to Complete Cleanup Method:		6		1	5			
Cleanup Recommendations:								

Information & Data Gaps:	Possible soil contamination under 13 St. South and along the 9th Alley South
Recommendations and comments:	Continue monitoring Wells TH-5 and TH6b until two executive monitoring events show contaminant levels below the RBSLs. Interim data reports will be submitted after sampling events.

* Note: Cleanup technologies may be removed or added as appropriate for each Release; however, the 'No Action' alternative must be evaluated for comparison at every Release.

MT DEQ Petroleum Tank Cleanup Section -- Release Closure Plan

(7 Mar 2018)

for the Investigation, Cleanup, Monitoring & Closure of Petroleum Releases

Part 4: Compliance Monitoring

reference: MT DEQ Remedial Alternatives Analysis (RAA) Guidance for Petroleum Releases

Consultant:	0		Date:	1/0/1900	DEQ PM:	0
Facility Name / Address:	0					
Facility ID:	**0**	**Release:**	**0**	WP ID:	0	

Compliance & Operation Monitoring Methods to Evaluate Effectiveness of each Cleanup Alternative Listed in Part 3

	Administrative Rules of Montana 17.56.605(6) requires the cleanup plan to include a plan and schedule for compliance monitoring to evaluate the effectiveness of cleanup activities.	No Action*	e.g. Excavation	ORC Alternative	e.g. SVE & AS	Chemical Oxidation	fill-in as needed or leave blank	fill-in as needed or leave blank
Evaluation of Cleanup	Confirmation Sampling	None	Completed in 2008	2022				
	Borings/ Monitoring Wells (MWs)	None / TH5, TH6A, TH6B		None / TH5, TH6A, TH6B				
	GW Monitoring (freq., wells, years)	3 wells, qrtl, 12 yrs.		Once if cleanup is successful				
	System O/M (frequency & years)	None		None				
	Petroleum Vapor Monitoring (freq., locations, years)	Run in on-site restaurant but not off site.		None				
	Receptor Monitoring	None		None				
	Waste Management	None		None				
	Other site-specific monitoring:	None		None				
	Method(s) to Evaluate Interim Results and Optimize Cleanup:	GW Monitoring		GW Sampling to determine if cleanup was successful				
	Est. Years to Complete all Monitoring:	6		1	5	2		
	Estimated costs for O/M & monitoring:	$25,000		$5,000	$20,000			
Closure	Estimated Total Years to Closure:	6		1	5	2		
	Natural Attenuation Trends:	Generally downward. One off-site well continues to have GW contamination above RBSLs.						
	What currently prevents Closure?	Cross-gradient, off-site wells to the west of the site continue to have GW contamination above RBSLs						
	Is this a PMZ Closure Candidate?	Yes						
	Other:							
	Information & Data Gaps:							
	Recommendations and comments:							

* Note: Cleanup technologies may be removed or added as appropriate for each Release; however, the 'No Action' alternative must be evaluated for comparison at every Release.

DESCRIPTION OF ORC ALTERNATIVE

TD&H would use our Geoprobe direct-push rig to inject PermeOx oxygen release compound (ORC) slurry in the subsurface over a roughly 50-foot-by-50-foot area centered on the west side of 13th Street and including well TH-5. This work would require a short-term closure of one lane of 13th Street to include coordination with the City of Great Falls and traffic control, a utility locate, and cold-patch asphalt for repairs to the street and parking lot surfaces. A preliminary cost estimate for this work is $20,000 for rig time and labor and not including materials.

29-Oct-2020

Customer:	**TD&H Engineering**	**Prepared by:**	
Contact:	**Peter Klevberg**	**Otavio Rodriguez**	
Site Location:	**Great Falls, MT**	**55-11-97466681**	
Proposal Number:	**OPP 23493**	**Otavio.Rodriguez@peroxychem.com**	

PermeOx® Ultra Demand Calculations and Cost Estimate

Please find a reagent cost quotation below for the site and application referenced above. Product pricing is provided for two different packaging options. A product description, design assumptions, demand calculations and application guidelines are included as an appendix to this cost proposal.

PERMEOX ULTRA PACKAGING OPTIONS AND PRICING

Available Packaging Types	# of packages per pallet	Mass PermeOx per pallet (lbs)	# of packages needed*
25 # pails	36	900	68
100 # drum	7	700	17

Available Packaging Types	Unit Rate ($USD / lb)	Total Mass (lbs)	Cost in $USD (FOB Origin)
25 # pails	6.90	1,700	$11,730.00
100 # drum	6.50	1,700	$11,050.00

1) Number of packages needed is rounded up to nearest whole unit.

2) Price valid for 90 days from date at top of document. Terms: net 30 days. Prices are FOB Origin.

3) Any applicable taxes not included. Please provide a copy of your tax exempt certificate or resale tax number when placing your order. In accordance with the law, applicable state and local taxes will be applied at the time of invoicing if PeroxyChem has not been presented with your fully executed tax exemption documentation.

4) Shipping not included. Estimated freight rates available upon request. Standard delivery time can vary from 1-3 weeks from time of order, depending upon volume. Expedited transport can be arranged at extra cost.

5) Return Policy: Unless otherwise stated, within 90 days after sale, following written approval by PeroxyChem, products in their unopened containers in good condition, may be accepted for return at invoiced price, less 25% handling charge and return freight, excluding original freight paid by buyer. Products made to order, custom blended, or buffers are non-returnable.

6) All sales are per PeroxyChem's Terms and Conditions.

Disclaimer:

The estimated dosage and recommended application methodology described in this document are based on the site information provided to us, but are not meant to constitute a guaranty of performance or a predictor of the speed at which a given site is remediated. The calculations in the Cost Estimate regarding the amount of product to be used in your project are based on stoichiometry or default minimum guideline values, and do not take into account the kinetics, or speed of the reaction. Note that the Stoichiometric mass represent the minimum anticipated amount needed to address the contaminants of concern (COCs). As a result, these calculations should be used as a general approximation for purposes of an initial economic assessment. PeroxyChem recommends that you or your consultants complete a comprehensive remedial design that takes into consideration the precise nature of the COC impact and actual site conditions.

PROPOSAL ATTACHMENTS

PRODUCT OVERVIEW

PermeOx® Ultra is an engineered calcium peroxide for the slow release of oxygen and nutrients to stimulate aerobic bioremediation of soils, sediment or groundwater environments. For organic contaminants amenable to aerobic biodegradation processes (e.g., petroleum hydrocarbons, certain pesticides/herbicides), PermeOx Ultra significantly stimulates the catabolic activity of the indigenous microflora, thereby accelerating the rate of contaminant removal.

The product is supplied as a dry powder in five-gallon pails with 25 lbs/11.3 kg per pail or in drums with 100 lbs/44.6 kg per drum. PermeOx Ultra will release approximately 18% oxygen by weight over an estimated 12-month period.

PermeOx Ultra is also available in granular form. PermeOx Ultra Granular is ideal for backfill or emplacement applications. It is easy to use and reduces dust hazards and matieral handing issues in the field. Please contact us for more information on PermeOx Ultra Granular.

SITE INFORMATION / DESIGN ASSUMPTIONS

	Value	Unit	Comment
Treatment Area Dimensions:			
Width of targeted zone (perpendicular to gw flow)	50	ft	customer supplied
Length of targeted zone (parallel to gw flow)	50	ft	customer supplied
Depth to top of treatment zone	10	ft bgs	customer supplied
Treatment zone thickness	5	ft	customer supplied
Treatment volume	12,500	ft3	calculated value
Porosity	54	%	default value
Groundwater volume	6,750	ft3	calculated value
Soil bulk density	92	lbs/ft3	default value
Soil mass	575	ton	calculated value
Transport characteristics:			
Treatment time / design life for one application	1	years	default value
Linear groundwater flow velocity	0	ft/year	calculated value
Distance of inflowing gw over design life	0	ft	calculated value
Effective porosity for groundwater flow	15	%	default value
Volume of water passing region over design life	0	ft3	calculated value
Soil type	low permeability		customer supplied
Fraction organic carbon in soil, foc	0.010		estimated value

CONTAMINANTS OF CONCERN (COCs)

Contaminant	GW (mg/L)	Soil* (mg/kg)	Total COC Mass** (lb)
benzene	0.005	0.00415	0.01
hexane	0.65	0	0.3

*Unless provided, sorbed concentrations were roughly estimated based on expected groundwater concentrations, foc and Koc values. For a more refined estimate, it is recommended that actual values be verified via direct sampling of the targeted treatment interval.

**The total COC mass was estimated based on concentrations in soil and groundwater within the targeted area plus expected contributions from inflowing groundwater over the projected design life.

GEOCHEMICAL DATA

	GW (mg/L)	Soil (mg/kg)
Reduced Metals (dissolved Fe, Mn)	0.34	NA
Biological Oxygen Demand, BOD	0	NA
Chemical Oxygen Demand, COD	0	NA

STOICHIOMETRIC OXYGEN DEMAND CALCULATIONS

The oxygen demand was calculated based on available data and assumptions presented above. The oxygen demand from COCs were estimated using EPA oxygen demand rates and represent the minimum anticipated amount needed to mineralize the COCs. The calculations based on BOD and COD provides a more conservative estimate as it includes the oxygen demand from COCs, reduced metals and natural organics. Therefore, if available, we recommend using these parameters as a bases for estimating the total PermeOx Ultra requirements below (selecting the higher number).

	Dissolved Phase Demand (lbs)	Sorbed Phase Demand (lbs)	Demand from Flux (lbs)	Total Oxygen Demand (lbs)
Calculation 1 - COCs + Metals	0.0	0.0	0.0	0.0
Calculation 2 - BOD	0.0	NA	0.0	0.0
Calculation 3 - COD	0.0	NA	0.0	0.0

Note, for a more refined estimate of the total oxygen demand we recommend sampling both soil and groundwater for BOD or COD.

PERMEOX ULTRA DEMAND CALCULATIONS

Bases for recommendation: Calculation 1 - COCs + Metals

	Value	Unit
Oxygen Demand from COCs	0.0	lbs
Oxygen Release from PermeOx	18%	by weight
Mass PermeOx needed to meet O2 Demand	0.3	lbs
Recommended min. conc. PermeOx in pore water*	4,000	mg/L
Mass of PermeOx Ulta recommended	**1,686**	**lbs**

*Note, our general recommendation of targeting at least 4,000 mg/L PermeOx Ultra in groundwater exceeds the mass required based on oxygen demand calculations and was therefore used for the purpose of this dosing calculation.

INSTALLATION

The product is supplied as a dry powder which can be mixed with soil or slurried in water. Installation techniques vary widely depending on the application. For example, the powder can be directly mixed into the soil using deep soil mixing equipment or placed into an open excavation where prior soil removal had been conducted. A slurry can be made and the mixture can be injected into the subsurface using techniques such as injection through direct push rods or hydraulic fracturing. Injection through fixed wells is not recommended given that the product does not dissolve in water. **Review and follow guidance in the appropriate Safety Data Sheet (SDS) with all workers prior to use.**

PermeOx Slurry Preparation (assuming 25 lb pails packaging)

The PermeOx slurry can been prepared in a variety of ways, including using paddle mixers, recirculation and manual mixing using a hand-held drill with a mixing attachment. However, particularly for larger projects, we recommend having a mechanical mixing system available on site. In general we recommend continuous mixing in smaller batches (<100 USG / 400 L) to avoid settling of solids at the bottom.

The amount of water to prepare the PermeOx slurry could be varied depending on the desired injection volume and slurry properties. When applied via direct injection, normally a concentration of between 10 and 30% is targeted. The below table shows the amount of water needed per 25-lb pail depending on the targeted concentration and the resulting total injection volumes and percent pore fill (injection volume to total pore volume).

Target concentration (% solids):	**10%**	**20%**	**30%**
Mass PermeOx Ultra per pail (lbs)	25	25	25
Volume water per pail (USG)	27	12	7
Volume slurry per pail (USG)	29	13	8
Total mass PermeOx Ultra (lbs)	1,700	1,700	1,700
Total volume water (USG)	1,834	815	475
Total injection volume (USG)	1,976	918	568
Resulting injection volume to total pore volume	3.9%	1.8%	1.1%