CITGO Petroleum Corporation

2316 Terminal Drive
Arlington Heights, IL 60005

October 15, 2020

Reference No. 11209494

Ms. Wawczak and Mr. Gmitro – Project Managers
United States Environmental Protection Agency
Region 5 [Mail Code LU-16J]
77 W. Jackson Boulevard
Chicago, Illinois 60604-3590

Send Via E-mail
(Wawczak.Renee@epa.gov)
(Gmitro.Todd@epa.gov)

Dear Mr. Gmitro and Ms. Wawczak:

Re: Quarterly Progress Report – Q3-2020
EPA Docket No. RCRA-05-2020-0005
CITGO Terminal, East Chicago, Indiana

This submission has been prepared on behalf of CITGO Petroleum Corporation (CITGO) in accordance with the Section 3008(h) Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6928(h) Administrative Order on Consent (AOC) (RCRA Docket No: RCRA-05-2020-0005 with an effective date of January 24, 2020) for the CITGO Terminal at 2500 East Chicago Avenue, East Chicago, Indiana (EPA ID: IND 095267381) (Site).

This report is organized to address reporting requirements set out in Section VII of the AOC. This report summarizes the activities conducted at the Site from July 1, 2020 through September 30, 2020.

1. Summary of Work Performed during the Reporting Period (July 1, 2020 – September 30, 2020)

- 20 RFI monitoring wells installed, including soil sample collection from July 13th to July 21st, 2020.
- Project status call including discussion on RFI progress with CITGO, EPA, OXY, and GHD on July 16, 2020.
- RFI monitoring wells developed from July 22nd to July 24th, 2020.
- Full round of groundwater levels collected from August 4th to August 5th, 2020.
- Full round of groundwater sampling collected from August 6th to August 12th, 2020.
- Project status call including discussion on initial RFI results with CITGO, EPA, OXY, and GHD on August 27, 2020.
- All soil and groundwater data analyzed and validated from August 13th to September 16th, 2020.
- Project status call including discussion on RFI results with CITGO, EPA, OXY, and GHD on September 17, 2020.

2. Summary of Reports, and Other Deliverables Completed During the Reporting Period

- RCRA Facility Investigation Workplan (Including SAP and QAPP) approved July 13, 2020.
- Q2 2020 Quarterly Progress Report submitted July 15, 2020.
- Initial Financial Assurance documentation submitted September 10, 2020.
- Revised Financial Assurance documentation submitted September 28, 2020.

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3. Summary of Problems Encountered and Planned Resolutions

- None

4. Summary of Results of Sampling, Tests, or Other Data Received or Generated

- RFI field activities were completed in accordance with the approved RCRA Facility Investigation Work Plan (July 13, 2020) and the corresponding Sampling and Analysis and Quality Assurance Project Plans.
- Figure 1 presents the locations of all newly installed RFI monitoring wells
- Figure 2 presents a shallow groundwater elevation contour map
- Table 1 presents the soil sample results
- Table 2 presents the groundwater sample results
- Table 3 presents a summary of the groundwater monitoring level data from August 5, 2020.
- Attachment A presents construction logs for the 20 RFI monitoring wells

5. Anticipated Activities During the Next Reporting Period

- The second quarterly groundwater monitoring event is scheduled to take place in November 2020.

6. Project Schedule

- Attachment B presents the currently anticipated project schedule completed in accordance with the AOC.

7. Percent Project Completed

- At the time of this report, the project is approximately 18% completed.

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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Arlington Heights, IL 60005

Should you have any questions on the above, please do not hesitate to contact us.

Respectfully submitted,

CITGO Petroleum Corporation

Scott Buckner, CITGO Project Manager

JP/kf/4

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LEGEND

	CITGO PROPERTY (228.5 ACRES)
	FORMER CITIES REFINERY PROPERTY (93.2 ACRES)
1	SWMU
1	AOC
LIF13-19	LASER-INDUCED FLUORESCENCE (LIF) SAMPLE LOCATION
MIP62-19	MEMBRANE INTERFACE PROBE (MIP) SAMPLE LOCATION
LIF/MIP25-19	LASER-INDUCED FLUORESCENCE (LIF) AND MEMBRANE INTERFACE PROBE (MIP) SAMPLE LOCATION
CITGO-MW-XX	CITGO RFI MONITORING WELL LOCATION
LIF29-19	EXISTING FORMER CITIES REFINERY INVESTIGATION LOCATION
GSH-MW-XX	GSH RFI MONITORING LOCATION

SOLID WASTE MANAGEMENT UNITS (SWMU)
1. OIL-WATER SEPARATOR
2. FORMER TANK NO. 195
3. TANK NO. 88

AREAS OF CONCERN (AOC)
1. FORMER OIL-SATURATED SOIL AREA (OSS)
2. FORMER ASBESTOS-CONTAMINATED SOIL AREA

NOTE: FORMER ASBESTOS-CONTAMINATED SOIL AREA NOT IDENTIFIED (AOC 2)

0 300 600 ft

Coordinate System: IN83-WF

N

GHD

CITGO TERMINAL
EAST CHICAGO, INDIANA

INVESTIGATION LOCATIONS

Project No. 11209494
Date October 2020

FIGURE 1

Filename: N:\CA\Waterloo\Projects\662\11209494\Digital_Design\ACAD 2018\Figures\PRES002\11209494(PRES002)GN-WA001.DWG
Plot Date: 15 October 2020 12:19 PM

Source: AERIAL IMAGE, 2016 NAIP; MONITORING WELL SURVEY BY CM LAVOIE DATED JULY 30, 2020.

LEGEND

	CITGO PROPERTY (228.5 ACRES)
	FORMER CITIES REFINERY PROPERTY (93.2 ACRES)
CITGO-MWXX	CITGO RFI MONITORING WELL LOCATION
GSH-MWXX	GSH RFI MONITORING LOCATION
(585.03)	GROUNDWATER ELEVATION (FT AMSL)
MW-10-19	MONITORING WELL LOCATION (SURVEYED SEPTEMBER 5, 2019. NAVD88)
SG-2-17	STAFF GAUGE LOCATION (SURVEYED JUNE 2, 2017. NAVD88)
*	A CORRECTED GROUNDWATER WAS CALCULATED BY SUBTRACTING THE DEPTH TO PRODUCT FROM THE TOP OF CASING AND ADDING THE RELATIVE DENSITY OF THE LNAPL (0.9) MULTIPLIED BY THE THICKNESS OF THE LNAPL
584.00	GROUNDWATER ELEVATION CONTOUR (FT AMSL)
	GROUNDWATER FLOW DIRECTION

0 300 600 ft

Coordinate System: IN83-WF

N

GHD

CITGO TERMINAL
EAST CHICAGO, INDIANA

GROUNDWATER CONTOUR MAP
AUGUST 2020

Project No. **11209494**
Date **October 2020**

FIGURE 2

Filename: N:\CA\Waterloo\Projects\662\11209494\Digital_Design\ACAD 2018\Figures\PRES002\11209494(PRES002)GN-WA002.DWG
Plot Date: 15 October 2020 12:21 PM

Source: AERIAL IMAGE, 2016 NAIP; MONITORING WELL SURVEY BY CM LAVOIE DATED JULY 30, 2020.

Table 1

RCRA Facility Investigation - Soil Analytical Data Summary
CITGO Terminal
East Chicago, IN

Sample Location:		CITGO-MW01-20	CITGO-MW02-20	CITGO-MW03-20	CITGO-MW04-20	CITGO-MW05-20	CITGO-MW06-20	CITGO-MW06-20	CITGO-MW07-20	CITGO-MW08-20	CITGO-MW09-20	CITGO-MW10-20
Sample ID:		S-11209494-071620-YY-006	S-11209494-071620-YY-007	S-11209494-071620-YY-008	S-11209494-071520-YY-001	S-11209494-071620-YY-009	S-11209494-071520-YY-002	S-11209494-071520-YY-003	S-11209494-071720-YY-011	S-11209494-071520-YY-004	S-11209494-071720-YY-012	S-11209494-071720-YY-013
Sample Date:		07/16/2020	07/16/2020	07/16/2020	07/15/2020	07/16/2020	07/15/2020	07/15/2020	07/17/2020	07/15/2020	07/17/2020	07/17/2020
Sample Depth:		(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS (Duplicate)	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS
Parameters	**Units**											
Metals												
Aluminum	mg/kg	680	3200	3800	2000	8500	2100	2900	6600	1800	1300	1800
Antimony	mg/kg	4.2 U	3.8 J	1.8 J	1.6 J	3.7 J	2.0 J	2.0 J	4.4 U	2.4 J-	5.0 U	1.3 J
Arsenic	mg/kg	2.1 J	8.7	3.2 J	4.6	2.9 J	3.0 J	2.5 J	3.9	4.6	2.0 J	3.0 J
Barium	mg/kg	42 U	37 J	31 J	26 J	84	31 J	39 J	110	23 J	18 J	38 J
Beryllium	mg/kg	0.42 U	0.26 J	0.35 J	0.15 J	1.7	0.20 J	0.37 J	0.42 J	0.14 J	0.50 U	0.12 J
Cadmium	mg/kg	0.84 U	0.85	0.38 J	0.68 J	0.34 J	0.22 J	0.22 J	0.42 J	0.31 J	0.12 J	0.47 J
Calcium	mg/kg	17000	37000	37000	23000	68000	30000	32000	19000	79000	21000	26000
Chromium	mg/kg	2.0 J	8.3	5.0	5.8	7.2	4.0	4.4	19	24 J-,J	3.3	5.2
Cobalt	mg/kg	1.2 J	2.4 J	1.9 J	1.7 J	1.4 J	1.7 J	1.6 J	3.7 J	1.7 J	1.6 J	1.5 J
Copper	mg/kg	3.6 J	41	9.5	14	11	5.2 J	6.1	15	16 J-	5.4 J	15
Iron	mg/kg	2800	11000	4500	5500	4500	11000	9100	9800	16000 J	3300	5500
Lead	mg/kg	8.9	260	41 J-	48	120	22	26	170	33 J-	18	110
Magnesium	mg/kg	9600	17000	15000	11000	20000	14000	14000	8300	47000	12000	13000
Manganese	mg/kg	81	450	480	230	760	350	450	300	450	110	160
Mercury	mg/kg	0.069	3.7	0.017 J+	0.090	0.078	0.074	0.17	0.069	0.035	0.020 U	0.14
Nickel	mg/kg	1.9 J	6.7 J	3.6 J	3.8 J	3.3 J	2.5 J	2.5 J	8.6 J	2.6 J	2.8 J	3.9 J
Potassium	mg/kg	100 J	280 J	370 J	200 J	530 J	210 J	310 J	700 J	170 J	150 J	180 J
Selenium	mg/kg	4.2 U	4.2 U	4.7 U	0.78 J	1.4 J	4.3 U	1.4 J	0.94 J	4.2 U	1.3 J	0.99 J
Silver	mg/kg	2.1 U	2.1 U	2.4 U	2.3 U	2.3 U	2.2 U	2.2 U	2.2 U	2.1 U	2.5 U	2.3 U
Sodium	mg/kg	1000 U	130 J	260 J	110 J	350 J	110 J	140 J	240 J	140 J	1300 U	120 J
Thallium	mg/kg	4.2 U	4.2 U	4.7 U	4.5 U	4.6 U	4.3 U	4.4 U	4.4 U	4.2 U	5.0 U	4.6 U
Vanadium	mg/kg	3.4 J	12	7.8 J	10 J	7.9 J	6.8 J	6.2 J	17	12	6.8 J	9.3 J
Zinc	mg/kg	16	190	88	150	82	100	100	150	82 J-	36	120
SVOAs												
1,2,4-Trichlorobenzene	mg/kg	0.036 U	0.036 U	0.039 U	0.04 U	0.039 U	0.037 U	0.037 U	0.037 U	0.035 U	0.21 U	0.038 U
1,2-Dichlorobenzene	mg/kg	0.36 U	0.36 U	0.39 UJ	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
1,3-Dichlorobenzene	mg/kg	0.36 U	0.36 U	0.39 UJ	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
1,4-Dichlorobenzene	mg/kg	0.36 U	0.36 U	0.39 UJ	0.4 U	0.39 U	0.37 UJ	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
1,4-Dioxane	mg/kg	-	-	-	0.12 U	-	0.11 U	0.11 U	0.11 U	0.11 U	0.63 U	0.11 U
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
2,4,5-Trichlorophenol	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
2,4,6-Trichlorophenol	mg/kg	0.15 U	0.15 U	0.16 U	0.16 U	0.16 U	0.15 U	0.15 U	0.15 U	0.14 U	0.83 U	0.15 U
2,4-Dichlorophenol	mg/kg	0.15 U	0.15 U	0.16 U	0.16 U	0.16 U	0.15 UJ	0.15 U	0.15 U	0.14 U	0.83 U	0.15 U
2,4-Dimethylphenol	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
2,4-Dinitrophenol	mg/kg	0.29 U	0.29 U	0.31 UJ	0.32 U	0.32 U	0.3 U	0.3 U	0.3 U	0.28 U	1.7 U	0.31 U
2,4-Dinitrotoluene	mg/kg	0.073 U	0.074 U	0.079 U	0.082 U	0.08 U	0.075 U	0.075 U	0.075 U	0.07 U	0.42 U	0.077 U
2,6-Dinitrotoluene	mg/kg	0.073 U	0.074 U	0.079 U	0.082 U	0.08 U	0.075 U	0.075 U	0.075 U	0.07 U	0.42 U	0.077 U
2-Chloronaphthalene	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
2-Chlorophenol	mg/kg	0.36 U	0.36 U	0.39 UJ	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
2-Methylnaphthalene	mg/kg	0.022 J	0.46	0.018 J-	0.051 J	0.3 J	0.042 J	0.031 J	0.22 J	0.021 J	2.1 U	0.081 J
2-Methylphenol	mg/kg	0.36 U	0.36 U	0.39 UJ	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
2-Nitroaniline	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
2-Nitrophenol	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 UJ	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
3,3'-Dichlorobenzidine	mg/kg	0.15 U	0.15 U	0.16 U	0.16 U	0.16 U	0.15 U	0.15 U	0.15 U	0.14 U	0.83 U	0.15 U
3-Nitroaniline	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
4,6-Dinitro-2-methylphenol	mg/kg	0.29 U	0.29 U	0.31 UJ	0.32 U	0.32 U	0.3 UJ	0.3 U	0.3 U	0.28 U	1.7 U	0.31 U
4-Bromophenyl phenyl ether	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
4-Chloro-3-methylphenol	mg/kg	0.36 U	0.36 U	0.39 UJ	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
4-Chloroaniline	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
4-Chlorophenyl phenyl ether	mg/kg	0.36 U	0.36 U	0.39 UJ	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
4-Methylphenol	mg/kg	0.36 U	0.36 U	0.39 UJ	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
4-Nitroaniline	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
4-Nitrophenol	mg/kg	0.73 U	0.74 U	0.79 U	0.82 U	0.8 U	0.75 U	0.75 U	0.75 U	0.7 U	4.2 U	0.77 U
Acenaphthene	mg/kg	0.36 U	0.034 J	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
Acenaphthylene	mg/kg	0.013 J	0.11 J	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
Anthracene	mg/kg	0.36 U	0.27 J	0.39 U	0.015 J	0.07 J	0.37 U	0.37 U	0.06 J	0.35 U	0.27 J	0.09 J
Benzo(a)anthracene	mg/kg	0.064	0.72	0.077	0.083	0.52	0.056 J-	0.049	0.32	0.042	0.91	0.13
Benzo(a)pyrene	mg/kg	0.068	0.8	0.069	0.088	0.57	0.057	0.052	0.34	0.047	0.58	0.3
Benzo(b)fluoranthene	mg/kg	0.087	0.8	0.11	0.11	0.66	0.059	0.061	0.56	0.066	0.55	0.36
Benzo(g,h,i)perylene	mg/kg	0.55	1.8	0.26 J	0.045 J	1.2	0.053 J-	0.044 J	0.45	0.032 J	3.4	0.87
Benzo(k)fluoranthene	mg/kg	0.027 J	0.036 U	0.032 J	0.035 J	0.098	0.017 J	0.014 J	0.092	0.021 J	0.21 U	0.038 U
Benzyl alcohol	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
bis(2-Chloroethoxy)methane	mg/kg	0.36 U	0.36 U	0.39 UJ	0.4 U	0.39 U	0.37 UJ	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
bis(2-Chloroethyl)ether	mg/kg	0.036 U	0.036 U	0.039 UJ	0.04 U	0.039 U	0.037 UJ	0.037 U	0.037 U	0.035 U	0.21 U	0.038 U
bis(2-Ethylhexyl)phthalate (DEHP)	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.027 J	0.37 UJ	0.37 U	0.036 J	0.35 U	2.1 U	0.38 U
Butyl benzylphthalate (BBP)	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 UJ	0.37 U	0.044 J	0.35 U	2.1 U	0.38 U
Carbazole	mg/kg	0.028 J	0.23 J	0.042 J	0.018 J	0.1 J	0.37 U	0.37 U	0.084 J	0.35 U	0.44 J	0.092 J
Chrysene	mg/kg	0.11 J	1.7	0.22 J	0.15 J	1.3	0.15 J-	0.089 J	0.78	0.16 J	8.6	0.61
Dibenz(a,h)anthracene	mg/kg	0.025 J	0.35	0.038 J	0.017 J	0.27	0.018 J-	0.037 U	0.12	0.035 U	0.38	0.16
Dibenzofuran	mg/kg	0.36 U	0.06 J	0.39 U	0.013 J	0.034 J	0.0086 J	0.37 U	0.03 J	0.35 U	2.1 U	0.38 U
Diethyl phthalate	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
Dimethyl phthalate	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
Di-n-butylphthalate (DBP)	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 UJ	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
Di-n-octyl phthalate (DnOP)	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
Fluoranthene	mg/kg	0.072 J	0.47	0.092 J	0.11 J	0.31 J	0.042 J	0.041 J	0.33 J	0.046 J	0.27 J	0.14 J

Table 1

RCRA Facility Investigation - Soil Analytical Data Summary
CITGO Terminal
East Chicago, IN

Sample Location:		CITGO-MW01-20	CITGO-MW02-20	CITGO-MW03-20	CITGO-MW04-20	CITGO-MW05-20	CITGO-MW06-20	CITGO-MW06-20	CITGO-MW07-20	CITGO-MW08-20	CITGO-MW09-20	CITGO-MW10-20
Sample ID:		S-11209494-071620-YY-006	S-11209494-071620-YY-007	S-11209494-071620-YY-008	S-11209494-071520-YY-001	S-11209494-071620-YY-009	S-11209494-071520-YY-002	S-11209494-071520-YY-003	S-11209494-071720-YY-011	S-11209494-071520-YY-004	S-11209494-071720-YY-012	S-11209494-071720-YY-013
Sample Date:		07/16/2020	07/16/2020	07/16/2020	07/15/2020	07/16/2020	07/15/2020	07/15/2020	07/17/2020	07/15/2020	07/17/2020	07/17/2020
Sample Depth:		(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS (Duplicate)	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS
Parameters	**Units**											
SVOAs cont'd												
Fluorene	mg/kg	0.011 J	0.36 U	0.39 U	0.012 J	0.033 J	0.37 U	0.37 U	0.031 J	0.35 U	2.1 U	0.38 U
Hexachlorobenzene	mg/kg	0.036 U	0.036 U	0.039 U	0.04 U	0.039 U	0.037 U	0.037 U	0.037 U	0.035 U	0.21 U	0.038 U
Hexachlorobutadiene	mg/kg	0.073 U	0.074 U	0.079 U	0.082 U	0.08 U	0.075 U	0.075 U	0.075 U	0.07 U	0.42 U	0.077 U
Hexachlorocyclopentadiene	mg/kg	0.36 U	0.36 U	R	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
Hexachloroethane	mg/kg	0.036 U	0.036 U	0.039 UJ	0.04 U	0.039 U	0.037 UJ	0.037 U	0.037 U	0.035 U	0.21 U	0.038 U
Indeno(1,2,3-cd)pyrene	mg/kg	0.054	1.4	0.074	0.035 J	0.43	0.034 J-	0.024 J	0.23	0.024 J	0.65	0.69
Isophorone	mg/kg	0.15 U	0.15 U	0.16 UJ	0.16 U	0.16 U	0.15 UJ	0.15 U	0.15 U	0.14 U	0.83 U	0.15 U
Naphthalene	mg/kg	0.02 J	0.17 J	0.012 J-	0.04 J	0.15 J	0.024 J	0.019 J	0.1 J	0.012 J	2.1 U	0.38 U
Nitrobenzene	mg/kg	0.036 U	0.036 U	0.039 UJ	0.04 U	0.039 U	0.037 UJ	0.037 U	0.037 U	0.035 U	0.21 U	0.038 U
N-Nitrosodi-n-propylamine	mg/kg	0.036 U	0.036 U	0.039 UJ	0.04 U	0.039 U	0.037 UJ	0.037 U	0.037 U	0.035 U	0.21 U	0.038 U
N-Nitrosodiphenylamine	mg/kg	0.36 U	0.36 U	0.39 U	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
Pentachlorophenol	mg/kg	0.29 U	0.29 U	0.31 U	0.32 U	0.32 U	0.3 U	0.3 U	0.3 U	0.28 U	1.7 U	0.31 U
Phenanthrene	mg/kg	0.12 J	2.5	0.19 J	0.23 J	1.5	0.15 J	0.13 J	0.88	0.075 J	1.2 J	0.51
Phenol	mg/kg	0.36 U	0.36 U	0.39 UJ	0.4 U	0.39 U	0.37 U	0.37 U	0.37 U	0.35 U	2.1 U	0.38 U
Pyrene	mg/kg	0.13 J	1.4	0.19 J	0.15 J	1.4	0.1 J-	0.082 J	0.67	0.064 J	0.82 J	0.4
VOAs												
1,1,1-Trichloroethane	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
1,1,2,2-Tetrachloroethane	mg/kg	0.0012 UJ	0.00095 UJ	0.0011 U	0.00095 U	0.001 UJ	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
1,1,2-Trichloroethane	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
1,1-Dichloroethane	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
1,1-Dichloroethene	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
1,2-Dichloroethane	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
1,2-Dichloroethene (total)	mg/kg	0.0023 U	0.0019 U	0.0021 U	0.0019 U	0.0021 U	0.0021 U	0.0023 U	0.0022 U	0.0019 U	0.0021 U	0.0021 U
1,2-Dichloropropane	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
2-Butanone (Methyl ethyl ketone) (MEK)	mg/kg	0.0059 U	0.0047 U	0.0053 U	0.0047 U	0.0052 U	0.0052 U	0.0056 U	0.0055 U	0.0049 U	0.0053 U	0.0053 U
2-Hexanone	mg/kg	0.0059 UJ	0.0047 UJ	0.0053 U	0.0047 U	0.0052 UJ	0.0052 U	0.0056 U	0.0055 U	0.0049 U	0.0053 U	0.0053 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/kg	0.0059 U	0.0047 U	0.0053 U	0.0047 U	0.0052 U	0.0052 U	0.0056 U	0.0055 U	0.0049 U	0.0053 U	0.0053 U
Acetone	mg/kg	0.007 U	0.0057 U	0.0092	0.0057 U	0.014	0.019	0.023	0.0066 U	0.0062	0.007	0.0078
Benzene	mg/kg	0.0012 U	0.00095 U	0.0011 UJ	0.00026 J	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Bromodichloromethane	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Bromoform	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Bromomethane (Methyl bromide)	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Carbon disulfide	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.00074 J	0.00063 J	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Carbon tetrachloride	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Chlorobenzene	mg/kg	0.0012 U	0.00095 U	0.0011 UJ	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Chloroethane	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Chloroform (Trichloromethane)	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Chloromethane (Methyl chloride)	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
cis-1,2-Dichloroethene	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
cis-1,3-Dichloropropene	mg/kg	0.0012 U	0.00095 U	0.0011 UJ	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Dibromochloromethane	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Ethylbenzene	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Methylene chloride	mg/kg	0.0067	0.0031	0.0056 J-	0.0068	0.0071	0.0079	0.0083	0.0026	0.0076	0.006	0.0035
Styrene	mg/kg	0.0012 U	0.00095 U	0.0011 UJ	0.00043 J	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Tetrachloroethene	mg/kg	0.0012 U	0.00095 U	0.0011 UJ	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Toluene	mg/kg	0.0012 U	0.00095 U	0.0011 UJ	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
trans-1,2-Dichloroethene	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
trans-1,3-Dichloropropene	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Trichloroethene	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Vinyl chloride	mg/kg	0.0012 U	0.00095 U	0.0011 U	0.00095 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.00097 U	0.0011 U	0.0011 U
Xylenes (total)	mg/kg	0.0023 U	0.00018 J	0.0021 U	0.0019 U	0.0021 U	0.0021 U	0.0023 U	0.0022 U	0.0019 U	0.0021 U	0.0021 U

Footnotes:

U Not detected at the associated reporting limit.
J Estimated concentration.
UJ Not detected; associated reporting limit is estimated.
R Rejected.

Table 1

RCRA Facility Investigation - Soil Analytical Data Summary
CITGO Terminal
East Chicago, IN

Sample Location:		CITGO-MW11-20	CITGO-MW12-20	CITGO-MW13-20	CITGO-MW14-20	CITGO-MW15-20	CITGO-MW16-20	CITGO-MW16-20	CITGO-MW17-20	CITGO-MW18-20	CITGO-MW19-20	CITGO-MW20-20
Sample ID:		S-11209494-071720-YY-014	S-11209494-071520-YY-005	S-11209494-071720-YY-015	S-11209494-072020-YY-019	S-11209494-072120-YY-22	S-11209494-071720-YY-016	S-11209494-071720-YY-017	S-11209494-072020-YY-020	S-11209494-071720-YY-018	S-11209494-072020-YY-021	S-11209494-071620-YY-010
Sample Date:		07/17/2020	07/15/2020	07/17/2020	07/20/2020	07/21/2020	07/17/2020	07/17/2020	07/20/2020	07/17/2020	07/20/2020	07/16/2020
Sample Depth:		(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS (Duplicate)	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS	(0-2) ft BGS
Parameters	**Units**											
Metals												
Aluminum	mg/kg	27000	4500	9900	13000	1400	2400	5400	8100	2400	2200	6000
Antimony	mg/kg	16	1.6 J	6.1	5.5	5.2 U	4.3 U	2.7 J	4.8 J	4.6 U	1.6 J	2.7 J
Arsenic	mg/kg	6.8	2.0 J	4.2	4.0	1.7 J	2.8 J	3.5	5.0	3.2 J	4.8	3.6
Barium	mg/kg	310	45 J	100	160	15 J	21 J	74	84	24 J	22 J	110
Beryllium	mg/kg	4.3	0.51	1.3	2.3	0.52 U	0.22 J	0.71	1.1	0.19 J	0.16 J	0.71
Cadmium	mg/kg	0.33 J	0.20 J	0.41 J	0.25 J	1.0 U	0.23 J	0.46 J	0.32 J	0.30 J	0.30 J	0.45 J
Calcium	mg/kg	140000	39000	77000	81000	26000	36000	52000	55000	14000	31000	47000
Chromium	mg/kg	9.7	4.0	7.3	4.8	3.0	3.5	6.1	6.2	4.9	6.2	7.5
Cobalt	mg/kg	1.1 J	1.5 J	1.6 J	1.2 J	1.5 J	1.9 J	1.9 J	2.6 J	2.3 J	2.9 J	1.7 J
Copper	mg/kg	19	6.0	14	6.8	4.1 J	13	24	19	17	24	10
Iron	mg/kg	11000	4900	6300	5000	3200	5000	6000	7100	5900	6800	6700
Lead	mg/kg	30	18	200	43	28	280	410	190	490	310	140
Magnesium	mg/kg	10000	14000	26000	16000	14000	15000	16000	13000	5200	14000	14000
Manganese	mg/kg	5100	500	1600	1500	100	280	770	1200	220	200	700
Mercury	mg/kg	0.034	0.053	0.077	0.46	0.036	0.15	0.22	0.10	0.23	0.25	0.060
Nickel	mg/kg	7.0 J	4.0 J	4.2 J	2.3 J	2.6 J	3.1 J	3.7 J	4.8 J	3.6 J	5.8 J	3.6 J
Potassium	mg/kg	2700	430 J	1200	990 J	200 J	270 J	500 J	790 J	250 J	290 J	680 J
Selenium	mg/kg	6.4	1.8 J	2.8 J	3.0 J	5.2 U	1.1 J	1.2 J	1.7 J	0.94 J	0.77 J	4.8 U
Silver	mg/kg	2.2 U	2.3 U	2.3 U	2.2 U	2.6 U	2.1 U	2.2 U	2.4 U	2.3 U	2.1 U	2.4 U
Sodium	mg/kg	670 J	150 J	320 J	390 J	120 J	110 J	190 J	250 J	1100 U	130 J	330 J
Thallium	mg/kg	4.4 U	4.7 U	4.6 U	4.4 U	5.2 U	4.3 U	4.3 U	4.9 U	4.6 U	4.2 U	4.8 U
Vanadium	mg/kg	13	8.3 J	7.9 J	3.8 J	5.3 J	5.8 J	6.7 J	6.1 J	6.9 J	10 J	9.4 J
Zinc	mg/kg	95	48	140	60	25	59	120	92	81	85	140
SVOAs												
1,2,4-Trichlorobenzene	mg/kg	0.036 U	0.04 U	0.076 U	0.039 U	1.1 U	0.71 U	1.8 U	0.22 U	0.19 U	0.19 U	0.04 U
1,2-Dichlorobenzene	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
1,3-Dichlorobenzene	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
1,4-Dichlorobenzene	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
1,4-Dioxane	mg/kg	0.11 U	0.12 U	0.23 U	0.12 U	3.5 U	2.1 U	5.4 U	0.66 U	0.57 U	0.56 U	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
2,4,5-Trichlorophenol	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
2,4,6-Trichlorophenol	mg/kg	0.15 U	0.16 U	0.31 U	0.16 U	4.6 U	2.9 U	7.2 U	0.87 U	0.76 U	0.75 U	0.16 U
2,4-Dichlorophenol	mg/kg	0.15 U	0.16 U	0.31 U	0.16 U	4.6 U	2.9 U	7.2 U	0.87 U	0.76 U	0.75 U	0.16 U
2,4-Dimethylphenol	mg/kg	0.36 U	0.4 U	0.12 J	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
2,4-Dinitrophenol	mg/kg	0.29 U	0.32 U	0.61 U	0.31 U	9.2 U	5.7 U	14 U	1.7 U	1.5 U	1.5 U	0.32 U
2,4-Dinitrotoluene	mg/kg	0.073 U	0.081 U	0.15 U	0.078 U	2.3 U	1.4 U	3.6 U	0.44 U	0.38 U	0.38 U	0.08 U
2,6-Dinitrotoluene	mg/kg	0.073 U	0.081 U	0.15 U	0.078 U	2.3 U	1.4 U	3.6 U	0.44 U	0.38 U	0.38 U	0.08 U
2-Chloronaphthalene	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
2-Chlorophenol	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
2-Methylnaphthalene	mg/kg	0.032 J	0.052 J	0.25 J	0.036 J	11	110	110	9.2	0.19 J	0.29 J	0.22 J
2-Methylphenol	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
2-Nitroaniline	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
2-Nitrophenol	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
3,3'-Dichlorobenzidine	mg/kg	0.15 U	0.16 U	0.31 U	0.16 U	4.6 U	2.9 U	7.2 U	0.87 U	0.76 U	0.75 U	0.16 U
3-Nitroaniline	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
4,6-Dinitro-2-methylphenol	mg/kg	0.29 U	0.32 U	0.61 U	0.31 U	9.2 U	5.7 U	14 U	1.7 U	1.5 U	1.5 U	0.32 U
4-Bromophenyl phenyl ether	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
4-Chloro-3-methylphenol	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
4-Chloroaniline	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
4-Chlorophenyl phenyl ether	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
4-Methylphenol	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
4-Nitroaniline	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
4-Nitrophenol	mg/kg	0.73 U	0.81 U	1.5 U	0.78 U	23 U	14 U	36 U	4.4 U	3.8 U	3.8 U	0.8 U
Acenaphthene	mg/kg	0.36 U	0.4 U	0.18 J	0.39 U	1.8 J	2.9 J	4 J	0.74 J	1.9 U	0.34 J	0.4 U
Acenaphthylene	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	1.6 J	1.7 J	0.23 J	1.9 U	0.1 J	0.4 U
Anthracene	mg/kg	0.022 J	0.4 U	0.3 J	0.39 U	8.2 J	9.3	13 J	1.2 J	0.44 J	1.4 J	0.061 J
Benzo(a)anthracene	mg/kg	0.093	0.098	2.2	0.048	45	53	67	7.3	2.1	6.2	0.22
Benzo(a)pyrene	mg/kg	0.087	0.097	2.2	0.053	22	23	32	5.6	1.2	4.1	1.4
Benzo(b)fluoranthene	mg/kg	0.11	0.11	2.6	0.075	26	26	36	7	1.4	5.1	1.5
Benzo(g,h,i)perylene	mg/kg	0.05 J	0.15 J	1.4	0.18 J	17	17	25	2.7	8.8	2.1	1.6
Benzo(k)fluoranthene	mg/kg	0.038	0.043	0.49	0.011 J	1.1 U	3.2	4.8	0.97	0.32	0.59	0.1
Benzyl alcohol	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
bis(2-Chloroethoxy)methane	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
bis(2-Chloroethyl)ether	mg/kg	0.036 U	0.04 U	0.076 U	0.039 U	1.1 U	0.71 U	1.8 U	0.22 U	0.19 U	0.19 U	0.04 U
bis(2-Ethylhexyl)phthalate (DEHP)	mg/kg	0.36 U	0.4 U	0.11 J	0.39 U	11 U	7.1 U	1.4 J	2.2 U	1.9 U	1.9 U	0.061 J
Butyl benzylphthalate (BBP)	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.029 J
Carbazole	mg/kg	0.36 U	0.4 U	0.21 J	0.024 J	7.6 J	5.9 J	8.4 J	0.58 J	0.72 J	0.62 J	0.078 J
Chrysene	mg/kg	0.13 J	0.18 J	6.2	0.14 J	73	160	230	20	25	15	1.8
Dibenz(a,h)anthracene	mg/kg	0.02 J	0.024 J	0.59	0.028 J	6.6	9.2	13	1.1	1.1	0.9	0.56
Dibenzofuran	mg/kg	0.02 J	0.4 U	0.11 J	0.39 U	2.4 J	5.7 J	5.9 J	1 J	1.9 U	0.37 J	0.022 J
Diethyl phthalate	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
Dimethyl phthalate	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
Di-n-butylphthalate (DBP)	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
Di-n-octyl phthalate (DnOP)	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
Fluoranthene	mg/kg	0.14 J	0.1 J	1.7	0.039 J	36	45	57	6.2	0.44 J	4.8	0.18 J

Table 1

RCRA Facility Investigation - Soil Analytical Data Summary
CITGO Terminal
East Chicago, IN

Sample Location:		**CITGO-MW11-20**	**CITGO-MW12-20**	**CITGO-MW13-20**	**CITGO-MW14-20**	**CITGO-MW15-20**	**CITGO-MW16-20**	**CITGO-MW16-20**	**CITGO-MW17-20**	**CITGO-MW18-20**	**CITGO-MW19-20**	**CITGO-MW20-20**
Sample ID:		**S-11209494-071720-YY-014**	**S-11209494-071520-YY-005**	**S-11209494-071720-YY-015**	**S-11209494-072020-YY-019**	**S-11209494-072120-YY-22**	**S-11209494-071720-YY-016**	**S-11209494-071720-YY-017**	**S-11209494-072020-YY-020**	**S-11209494-071720-YY-018**	**S-11209494-072020-YY-021**	**S-11209494-071620-YY-010**
Sample Date:		**07/17/2020**	**07/15/2020**	**07/17/2020**	**07/20/2020**	**07/21/2020**	**07/17/2020**	**07/17/2020**	**07/20/2020**	**07/17/2020**	**07/20/2020**	**07/16/2020**
Sample Depth:		**(0-2) ft BGS**	**(0-2) ft BGS**	**(0-2) ft BGS**	**(0-2) ft BGS**	**(0-2) ft BGS**	**(0-2) ft BGS**	**(0-2) ft BGS (Duplicate)**	**(0-2) ft BGS**	**(0-2) ft BGS**	**(0-2) ft BGS**	**(0-2) ft BGS**
Parameters	**Units**											
SVOAs cont'd												
Fluorene	mg/kg	0.042 J	0.4 U	0.28 J	0.39 U	12	16	19	3.4	0.082 J	2.1	0.049 J
Hexachlorobenzene	mg/kg	0.036 U	0.04 U	0.076 U	0.039 U	1.1 U	0.71 U	1.8 U	0.22 U	0.19 U	0.19 U	0.04 U
Hexachlorobutadiene	mg/kg	0.073 U	0.081 U	0.15 U	0.078 U	2.3 U	1.4 U	3.6 U	0.44 U	0.38 U	0.38 U	0.08 U
Hexachlorocyclopentadiene	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
Hexachloroethane	mg/kg	0.036 U	0.04 U	0.076 U	0.039 U	1.1 U	0.71 U	1.8 U	0.22 U	0.19 U	0.19 U	0.04 U
Indeno(1,2,3-cd)pyrene	mg/kg	0.047	0.065	0.83	0.039	8.7	9.4	14	1.5	1.1	1.1	0.76
Isophorone	mg/kg	0.15 U	0.16 U	0.31 U	0.16 U	4.6 U	2.9 U	7.2 U	0.87 U	0.76 U	0.75 U	0.16 U
Naphthalene	mg/kg	0.043 J	0.029 J	0.094 J	0.017 J	0.43 J	35	42	0.72 J	0.11 J	0.15 J	0.065 J
Nitrobenzene	mg/kg	0.036 U	0.04 U	0.076 U	0.039 U	1.1 U	0.71 U	1.8 U	0.22 U	0.19 U	0.19 U	0.04 U
N-Nitrosodi-n-propylamine	mg/kg	0.036 U	0.04 U	0.076 U	0.039 U	1.1 U	0.71 U	1.8 U	0.22 U	0.19 U	0.19 U	0.04 U
N-Nitrosodiphenylamine	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
Pentachlorophenol	mg/kg	0.29 U	0.32 U	0.61 U	0.31 U	9.2 U	5.7 U	14 U	1.7 U	1.5 U	1.5 U	0.32 U
Phenanthrene	mg/kg	0.16 J	0.26 J	1.2	0.13 J	160	130	150	9.8	1.8 J	9.6	0.96
Phenol	mg/kg	0.36 U	0.4 U	0.76 U	0.39 U	11 U	7.1 U	18 U	2.2 U	1.9 U	1.9 U	0.4 U
Pyrene	mg/kg	0.14 J	0.19 J	5.9	0.099 J	120	150	220	22	1.9	16	0.8
VOAs												
1,1,1-Trichloroethane	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
1,1,2,2-Tetrachloroethane	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 UJ
1,1,2-Trichloroethane	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
1,1-Dichloroethane	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
1,1-Dichloroethene	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
1,2-Dichloroethane	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
1,2-Dichloroethene (total)	mg/kg	0.0021 U	0.0022 U	0.002 U	0.0021 U	0.17 U	0.45 U	1.2 U	0.26 U	0.002 U	0.0021 U	0.0028 U
1,2-Dichloropropane	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
2-Butanone (Methyl ethyl ketone) (MEK)	mg/kg	0.0053 U	0.0055 U	0.005 U	0.0054 U	0.41 U	1.1 U	3 U	0.65 U	0.0049 U	0.027	0.0069 U
2-Hexanone	mg/kg	0.0053 U	0.0055 U	0.005 U	0.0054 U	0.41 U	1.1 U	3 U	0.65 U	0.0049 U	0.0053 U	0.0069 UJ
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/kg	0.0053 U	0.0055 U	0.005 U	0.0054 U	0.41 U	1.1 U	3 U	0.65 U	0.0049 U	0.0053 U	0.0069 U
Acetone	mg/kg	0.015	0.043	0.082	0.0086	0.41 U	1.1 U	3 U	0.65 U	0.019	0.11	0.0083 U
Benzene	mg/kg	0.00042 J	0.0011 U	0.00099 U	0.0011 U	0.083 U	1.8	2.5	0.058 J	0.00098 U	0.0011	0.00038 J
Bromodichloromethane	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
Bromoform	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
Bromomethane (Methyl bromide)	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
Carbon disulfide	mg/kg	0.0022	0.0011 U	0.0019	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00027 J	0.00068 J	0.00047 J
Carbon tetrachloride	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
Chlorobenzene	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
Chloroethane	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
Chloroform (Trichloromethane)	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
Chloromethane (Methyl chloride)	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
cis-1,2-Dichloroethene	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
cis-1,3-Dichloropropene	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
Dibromochloromethane	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
Ethylbenzene	mg/kg	0.0011 U	0.0011 U	0.0012	0.0011 U	1.9	14	20	0.31	0.00098 U	0.00047 J	0.0014 U
Methylene chloride	mg/kg	0.003	0.011	0.003	0.0059	0.083 U	0.23 U	0.59 U	0.13 U	0.0033	0.0055	0.0029
Styrene	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
Tetrachloroethene	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
Toluene	mg/kg	0.0011 U	0.0011 U	0.0083	0.0011 U	0.047 J	0.31	0.53 J	0.067 J	0.00098 U	0.0016	0.0014 U
trans-1,2-Dichloroethene	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
trans-1,3-Dichloropropene	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
Trichloroethene	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
Vinyl chloride	mg/kg	0.0011 U	0.0011 U	0.00099 U	0.0011 U	0.083 U	0.23 U	0.59 U	0.13 U	0.00098 U	0.0011 U	0.0014 U
Xylenes (total)	mg/kg	0.0021 U	0.0022 U	0.043	0.0021 U	2.3	39	82	0.86	0.002 U	0.0014 J	0.0028 U

Footnotes:

U Not detected at the associated reporting limit.
J Estimated concentration.
UJ Not detected; associated reporting limit is estimated.
R Rejected.

Table 2

RCRA Facility Investigation - Groundwater Analytical Data Summary
CITGO Terminal
East Chicago, IN

Sample Location:		CITGO-MW01-20	CITGO-MW02-20	CITGO-MW03-20	CITGO-MW03-20	CITGO-MW04-20	CITGO-MW05-20	CITGO-MW06-20	CITGO-MW07-20	CITGO-MW08-20	CITGO-MW09-20	CITGO-MW10-20
Sample ID:		WG-11209494-080620-YY-01	WG-11209494-080620-YY-02	WG-11209494-080620-YY-03	WG-11209494-080620-YY-05	WG-11209494-081020-YY-21	WG-11209494-080620-YY-04	WG-11209494-081020-YY-23	WG-11209494-080620-YY-06	WG-11209494-081020-YY-16	WG-11209494-080720-JH-08	WG-11209494-080720-JH-12
Sample Date:		8/6/2020	8/6/2020	8/6/2020	8/6/2020	8/10/2020	8/6/2020	8/10/2020	8/6/2020	8/10/2020	8/7/2020	8/7/2020
					(Duplicate)							
Parameters	**Units**											
Fumigant												
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	-	-	-	-	0.019 U	-	0.020 U	-	0.019 U	-	-
1,2-Dibromoethane (Ethylene dibromide)	µg/L	-	-	-	-	0.019 U	-	0.020 U	-	0.019 U	-	-
Metals												
Aluminum	µg/L	160 J	200 U	160 J	120 J	290	200 U	200 U	200 U	170 J	110 J	200 U
Antimony	µg/L	4.7 J	20 U	4.6 J	20 U	3.7 J	5.0 J	4.7 J	4.7 J	20 U	20 U	20 U
Arsenic	µg/L	34	15 U	6.7 J	7.4 J	7.7 J	5.4 J	7.3 J	10 J	5.0 J	15 U	15 U
Barium	µg/L	34 J	25 J	16 J	15 J	51 J	24 J	26 J	140 J	21 J	19 J	72 J
Beryllium	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cadmium	µg/L	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Calcium	µg/L	93000	70000	51000	48000	59000	48000	63000	140000	50000	37000	91000
Chromium	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	µg/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Copper	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Iron	µg/L	12000	2600	300	260	1300	620	820	15000	3800	630	3100
Lead	µg/L	8.5 J	5.1 J	12	11	3.0 J	4.3 J	3.1 J	10	2.9 J	2.7 J	7.9 J
Magnesium	µg/L	13000	8400	5500	5200	9600	6800	5300	21000	6300	6500	8300
Manganese	µg/L	480	240	33	30	360	110	250	1200	180	200	780
Mercury	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	µg/L	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Potassium	µg/L	1200 J	950 J	2400 J	2300 J	2400 J	1900 J	2400 J	7300	1200 J	620 J	1900 J
Selenium	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Silver	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	µg/L	1600 J	5700	22000	21000	18000	11000	12000	29000	2600 J	2300 J	15000
Thallium	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Vanadium	µg/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	µg/L	7.8 J	4.4 J	4.1 J	4.4 J	7.4 J	2.4 J	3.8 J	3.6 J	3.5 J	4.0 J	2.4 J
SVOAs												
1,2,4-Trichlorobenzene	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4-Dinitrotoluene	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
2,6-Dinitrotoluene	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
2-Chloronaphthalene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	7.5 J	10 U	10 U
2-Methylphenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-methylphenol	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Bromophenyl phenyl ether	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Acenaphthene	µg/L	10 U	1.1 J	10 U	10 U	10 U	10 U	10 U	10 U	1.6 J	10 U	10 U
Acenaphthylene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)pyrene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(b)fluoranthene	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Benzo(g,h,i)perylene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzyl alcohol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Butyl benzylphthalate (BBP)	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Dibenz(a,h)anthracene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibenzofuran	µg/L	10 U	1.6 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Table 2

RCRA Facility Investigation - Groundwater Analytical Data Summary
CITGO Terminal
East Chicago, IN

Sample Location:		CITGO-MW01-20	CITGO-MW02-20	CITGO-MW03-20	CITGO-MW03-20	CITGO-MW04-20	CITGO-MW05-20	CITGO-MW06-20	CITGO-MW07-20	CITGO-MW08-20	CITGO-MW09-20	CITGO-MW10-20
Sample ID:		WG-11209494-080620-YY-01	WG-11209494-080620-YY-02	WG-11209494-080620-YY-03	WG-11209494-080620-YY-05	WG-11209494-081020-YY-21	WG-11209494-080620-YY-04	WG-11209494-081020-YY-23	WG-11209494-080620-YY-06	WG-11209494-081020-YY-16	WG-11209494-080720-JH-08	WG-11209494-080720-JH-12
Sample Date:		8/6/2020	8/6/2020	8/6/2020	8/6/2020	8/10/2020	8/6/2020	8/10/2020	8/6/2020	8/10/2020	8/7/2020	8/7/2020
					(Duplicate)							
Parameters	**Units**											
Dimethyl phthalate	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate (DBP)	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl phthalate (DnOP)	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	µg/L	10 U	2.6 J	10 U	10 U	10 U	10 U	10 U	10 U	1.2 J	10 U	10 U
Hexachlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Hexachlorobutadiene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Hexachlorocyclopentadiene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Indeno(1,2,3-cd)pyrene	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Isophorone	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0	2.0 U	2.0 U
Nitrobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
N-Nitrosodi-n-propylamine	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
N-Nitrosodiphenylamine	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Phenanthrene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
SVOAsSIM												
1,4-Dioxane	µg/L	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
VOAs												
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	-	1.0 U	-	1.0 U	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	-	1.0 U	-	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	3.9 J	5.0 U	5.0 U	5.0 U
2-Hexanone	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	µg/L	7.5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	7.9	5.0 U	5.0 U	5.0 U
Benzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.1	1.0 U	1.0 U	2.7	1.0 U	24	1.0 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	µg/L	1.0 U	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	22	0.77 J	1.2	1.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.35 J	1.0 U	1.0 U
Isopropyl benzene	µg/L	1.0 U	0.83 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.1	0.98 J	1.0 U	1.0 U
Methyl acetate	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl cyclohexane	µg/L	1.0 U	2.3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.2	0.61 J	0.76 J	1.0 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.8	1.0 U	1.0 U	1.0 U
Methylene chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	µg/L	1.0 U	0.44 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.3	0.51 J	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	2.0 U	1.2 J	2.0 U	2.0 U	2.0 U	2.0 U	7.3	4.2	2.6	2.0 U	2.0 U

Footnotes:

U Not detected at the associated reporting limit.
J Estimated concentration.

Table 2

RCRA Facility Investigation - Groundwater Analytical Data Summary
CITGO Terminal
East Chicago, IN

Sample Location:		CITGO-MW11-20	CITGO-MW12-20	CITGO-MW13-20	CITGO-MW14-20	CITGO-MW15-20	CITGO-MW16-20	CITGO-MW17-20	CITGO-MW18-20	CITGO-MW19-20	CITGO-MW19-20	CITGO-MW20-20
Sample ID:		WG-11209494-080720-YY-011	WG-11209494-080620-YY-09	WG-11209494-080720-YY-013	WG-11209494-080720-YY-015	WG-11209494-080720-JH-14	WG-11209494-080720-YY-017	WG-11209494-081020-YY-20	WG-11209494-080720-YY-019	WG-11209494-081020-YY-22	WG-11209494-081020-YY-25	WG-11209494-080620-YY-07
Sample Date:		8/7/2020	8/6/2020	8/7/2020	8/7/2020	8/7/2020	8/7/2020	8/10/2020	8/7/2020	8/10/2020	8/10/2020 (Duplicate)	8/6/2020
Parameters	**Units**											
Fumigant												
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	-	-	-	-	-	-	0.020 U	-	0.019 U	0.019 U	-
1,2-Dibromoethane (Ethylene dibromide)	µg/L	-	-	-	-	-	-	0.020 U	-	0.019 U	0.019 U	-
Metals												
Aluminum	µg/L	280	200 U	78 J	130 J	200 U	360	460	200 U	220	310	220
Antimony	µg/L	20 U	20 U	3.8 J	20 U	20 U	6.1 J	5.2 J	20 U	5.1 J	3.7 J	20 U
Arsenic	µg/L	6.1 J	5.1 J	7.1 J	6.9 J	4.0 J	6.7 J	15 U	4.3 J	12 J	15	23
Barium	µg/L	45 J	22 J	65 J	18 J	49 J	88 J	57 J	80 J	130 J	120 J	48 J
Beryllium	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cadmium	µg/L	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Calcium	µg/L	120000	43000	140000	35000	85000	130000	85000	93000	130000	120000	55000
Chromium	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	µg/L	50 U	50 U	50 U	50 U	50 U	2.0 J	50 U	50 U	50 U	50 U	50 U
Copper	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Iron	µg/L	5900	660	5900	590	5200	22000	6800	8500	8100	8700	2000
Lead	µg/L	14	8.9 J	12	14	5.9 J	19	7.8 J	7.9 J	5.6 J	8.1 J	16
Magnesium	µg/L	16000	3000 J	13000	2900 J	18000	11000	9100	9500	14000	13000	6500
Manganese	µg/L	550	180	720	72	360	1500	520	460	680	670	270
Mercury	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	µg/L	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Potassium	µg/L	2200 J	2200 J	2400 J	1700 J	1600 J	2700 J	2300 J	2200 J	3600 J	3200 J	3400 J
Selenium	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Silver	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	µg/L	3400 J	6400	18000	13000	14000	32000	7600	6200	200000	160000	28000
Thallium	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Vanadium	µg/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	µg/L	10 J	3.0 J	3.3 J	4.3 J	4.8 J	14 J	6.7 J	1.9 J	4.1 J	6.4 J	9.7 J
SVOAs												
1,2,4-Trichlorobenzene	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	µg/L	10 U	10 U	10 U	10 U	10 U	13	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4-Dinitrotoluene	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
2,6-Dinitrotoluene	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
2-Chloronaphthalene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	µg/L	10 U	10 U	10 U	10 U	1.5 J	1.3 J	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-methylphenol	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Bromophenyl phenyl ether	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Acenaphthene	µg/L	10 U	10 U	10 U	10 U	10 U	1.2 J	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)pyrene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.56 J
Benzo(b)fluoranthene	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	0.70 J
Benzo(g,h,i)perylene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzyl alcohol	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Butyl benzylphthalate (BBP)	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	µg/L	10 U	10 U	10 U	10 U	45	5.8 J	38	10 U	10 U	10 U	10 U
Chrysene	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	1.5 J
Dibenz(a,h)anthracene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibenzofuran	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Table 2

RCRA Facility Investigation - Groundwater Analytical Data Summary
CITGO Terminal
East Chicago, IN

Sample Location:		CITGO-MW11-20	CITGO-MW12-20	CITGO-MW13-20	CITGO-MW14-20	CITGO-MW15-20	CITGO-MW16-20	CITGO-MW17-20	CITGO-MW18-20	CITGO-MW19-20	CITGO-MW19-20	CITGO-MW20-20
Sample ID:		WG-11209494-080720-YY-011	WG-11209494-080620-YY-09	WG-11209494-080720-YY-013	WG-11209494-080720-YY-015	WG-11209494-080720-JH-14	WG-11209494-080720-YY-017	WG-11209494-081020-YY-20	WG-11209494-080720-YY-019	WG-11209494-081020-YY-22	WG-11209494-081020-YY-25	WG-11209494-080620-YY-07
Sample Date:		8/7/2020	8/6/2020	8/7/2020	8/7/2020	8/7/2020	8/7/2020	8/10/2020	8/7/2020	8/10/2020	8/10/2020 (Duplicate)	8/6/2020
Parameters	**Units**											
Dimethyl phthalate	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate (DBP)	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl phthalate (DnOP)	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	µg/L	10 U	10 U	10 U	10 U	1.1 J	1.6 J	1.1 J	10 U	10 U	10 U	10 U
Hexachlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Hexachlorobutadiene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Hexachlorocyclopentadiene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Indeno(1,2,3-cd)pyrene	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Isophorone	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Nitrobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
N-Nitrosodi-n-propylamine	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
N-Nitrosodiphenylamine	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Phenanthrene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenol	µg/L	10 U	10 U	10 U	10 U	10 U	11	10 U	10 U	10 U	10 U	10 U
Pyrene	µg/L	10 U	10 U	10 U	10 U	3.7 J	2.1 J	2.6 J	10 U	10 U	10 U	3.3 J
SVOAsSIM												
1,4-Dioxane	µg/L	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
VOAs												
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	-	1.0 U	-	-	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	-	1.0 U	-	-	1.0 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.5
Benzene	µg/L	1.1	1.0 U	3.5	1.0 U	4.2	650	5.8	1.0 U	1.0 U	1.0 U	2.0
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	65	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	µg/L	160	1.0 U	32	1.0 U	4.2	21	24	3.6	1.0 U	1.0 U	1.6
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	5.5	1.0 U	9.2	23	0.32 J	1.0 U	1.0 U	1.0 U	1.0 U
Isopropyl benzene	µg/L	36	1.0 U	4.0	1.0 U	1.6	27	5.6	1.0 U	1.0 U	1.0 U	0.34 J
Methyl acetate	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl cyclohexane	µg/L	190	1.0 U	33	1.0 U	3.5	13	6.9	0.44 J	0.37 J	0.34 J	4.0
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.61 J
Methylene chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	µg/L	2.3	1.0 U	5.7	1.0 U	2.8	6.9	1.7	1.0 U	1.0 U	1.0 U	0.53 J
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	3.0	2.0 U	11	2.0 U	11	430	2.9	2.0 U	2.0 U	2.0 U	0.69 J

Footnotes:

U Not detected at the associated reporting limit.
J Estimated concentration.

Table 3

Summary of Groundwater Monitoring Well Data August 5, 2020
CITGO Terminal
East Chicago, Indiana

	Screened Interval					5-Aug-20			
Well ID	From	To (ft bgs)	Ref Elev (ft amsl)	Ground Surface (ft amsl)	Stick Up (ft)	Measured Depth (ft)	Water Elev (ft amsl)	Water Depth (ft bgs)	Notes
CITGO-MW01-20	3.5	13.5	590.77	587.35	3.42	7.94	582.83	4.52	
CITGO-MW02-20	5.0	10.0	590.7	587.54	3.16	7.54	583.16	4.38	
CITGO-MW03-20	3.0	13.0	590.62	587.50	3.12	5.38	585.24	2.26	
CITGO-MW04-20	3.0	13.0	590.45	587.20	3.25	5.77	584.68	2.52	
CITGO-MW05-20	3.0	13.0	591.11	588.18	2.93	5.31	585.80	2.38	
CITGO-MW06-20	5.0	10.0	591.12	587.77	3.35	6.15	584.97	2.80	
CITGO-MW07-20	3.0	13.0	592.04	588.93	3.11	5.53	586.51	2.42	
CITGO-MW08-20	4.0	14.0	590.77	587.64	3.13	5.42	585.35	2.29	
CITGO-MW09-20	3.0	13.0	589.15	586.25	2.9	4.42	584.73	1.52	
CITGO-MW10-20	3.0	8.0	590.46	587.53	2.93	5.77	584.69	2.84	
CITGO-MW11-20	3.0	13.0	591	587.72	3.28	6.34	584.66	3.06	
CITGO-MW12-20	3.5	13.5	590.76	587.55	3.21	4.77	585.99	1.56	
CITGO-MW13-20	3.0	13.0	591.06	587.79	3.27	6.11	584.95	2.84	
CITGO-MW14-20	3.0	13.0	590.71	587.48	3.23	5.52	585.19	2.29	
CITGO-MW15-20	3.0	13.0	589.36	586.19	3.17	4.72	584.64	1.55	
CITGO-MW16-20	3.0	13.0	590.57	587.42	3.15	6.05	584.52	2.90	
CITGO-MW17-20	3.0	13.0	590.9	587.52	3.38	6.79	584.11	3.41	
CITGO-MW18-20	7.0	12.0	590.25	586.90	3.35	6.47	583.78	3.12	
CITGO-MW19-20	3.0	13.0	589.87	586.67	3.2	5.66	584.21	2.46	
CITGO-MW20-20	3.0	13.0	590.73	587.70	3.03	4.41	586.32	1.38	

CITGO Petroleum Corporation

2316 Terminal Drive
Arlington Heights, IL 60005

ATTACHMENT A

Monitoring Well Logs

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

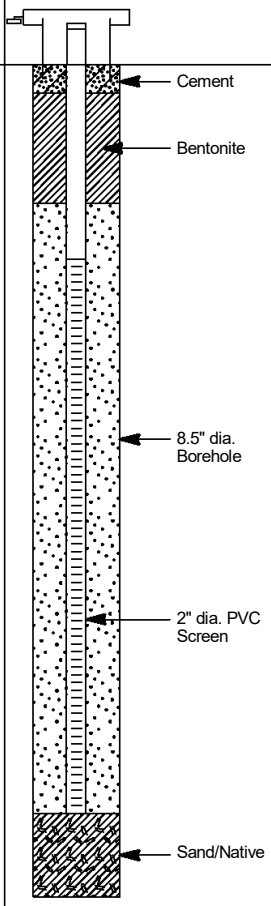
HOLE DESIGNATION: CITGO-MW01-20
DATE COMPLETED: July 16, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: Y.YANG

NORTHING: 2323663.02
EASTING: 2852038.27

	ELEV.
TOP OF CASING	590.77
GROUND SURFACE	587.35

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	TOPSOIL, sandy, loose, dark brown, moist	587.15
	FILL, sandy, loose to compact, moist	
2	SP-SAND, compact, fine grained, light brown to brown, moist	585.35
4	- wet at 4.00ft BGS	
6		
8	- light greyish brown at 8.00ft BGS	
10		
12		
14		
	END OF BOREHOLE @ 15.00ft BGS	572.35
16		
18		
20		
22		
24		

MONITORING WELL



WELL DETAILS
Screened interval:
583.85 to 573.85
3.50 to 13.50ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
586.85 to 584.85
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
584.85 to 573.85
2.50 to 13.50ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
006				0
GP-1		2.00		0
				0.1
GP-2		3.40		0.1
				0.2
				0.3
GP-3		3.00		0.3
				0.4

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ⬭

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

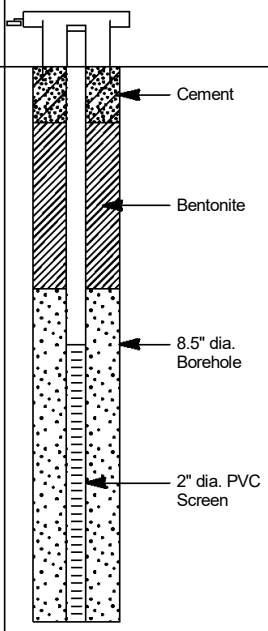
HOLE DESIGNATION: CITGO-MW02-20
DATE COMPLETED: June 16, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: Y.YANG

NORTHING: 2323860
EASTING: 2852033.7

	ELEV.
TOP OF CASING	590.70
GROUND SURFACE	587.54

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	FILL, sandy, loose, dark brown, moist	
	SP-SAND, compact, light brown to dark brown, moist to wet	584.44
	- very fine to fine grained at 4.20ft BGS	
	- light greyish brown at 7.20ft BGS	
	organic lens	579.54 579.34
	END OF BOREHOLE @ 10.00ft BGS	577.54

MONITORING WELL



WELL DETAILS
Screened interval:
582.54 to 577.54
5.00 to 10.00ft BGS
Length: 5ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
586.54 to 583.54
1.00 to 4.00ft BGS
Material: BENTONITE
Sand Pack:
583.54 to 577.54
4.00 to 10.00ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
007				1.2
GP-1		2.00		0.9
				1.7
GP-2		3.20		2.8
				2.4

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

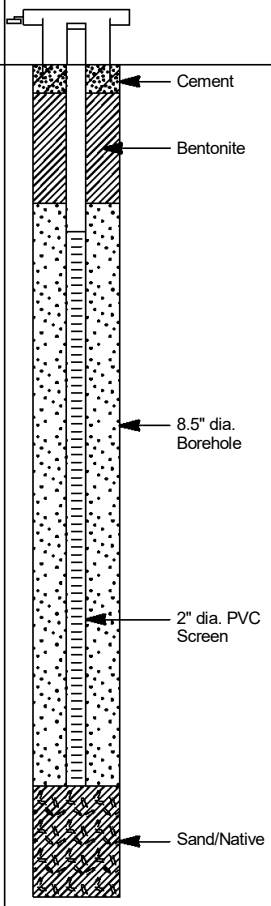
HOLE DESIGNATION: CITGO-MW03-20
DATE COMPLETED: July 16, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: Y.YANG

NORTHING: 2324369.18
EASTING: 2852443.56

TOP OF CASING 590.62
GROUND SURFACE 587.50

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	FILL, sandy and gravelly, loose, dark brown to blackish brown, moist	
	SP-SAND, compact, very fine to fine grained, light brown, moist to wet - wet at 3.00ft BGS - gravel lens at 9.20ft BGS - light greyish brown at 9.30ft BGS	585.10
	END OF BOREHOLE @ 15.00ft BGS	572.50

MONITORING WELL



WELL DETAILS
Screened interval:
584.50 to 574.50
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
587.00 to 585.00
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
585.00 to 574.50
2.50 to 13.00ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
008				0.4
GP-1		2.50		0.3
				0.5
GP-2		3.80		0.6
				0.7
				0.8
GP-3		3.70		0.8
				0.7

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

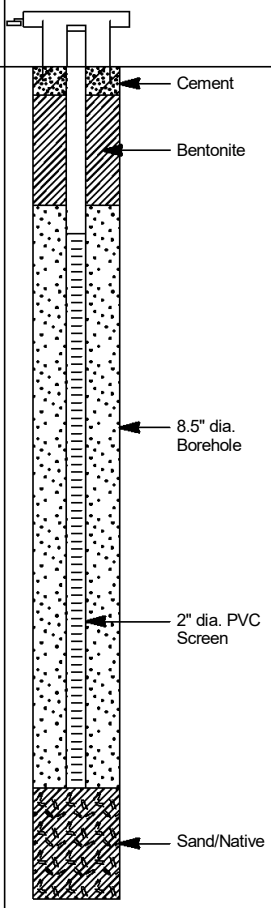
HOLE DESIGNATION: CITGO-MW04-20
DATE COMPLETED: July 15, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: Y.YANG

NORTHING: 2324804.21
EASTING: 2853171.88

	ELEV.
TOP OF CASING	590.45
GROUND SURFACE	587.20

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	FILL, gravel and silt, loose, light grey and dark grey, dry to damp	586.70
	FIIL, sandy, dark greyish brown, staining, moist to wet	
2		
4	- loose, wet at 4.00ft BGS	582.70
	SP-SAND, very fine to fine grained, compact, brown to greyish brown, wet	
	- light greyish brown at 5.50ft BGS	
6		
8		
10		
12		
14		572.20
	END OF BOREHOLE @ 15.00ft BGS	
16		
18		
20		
22		
24		

MONITORING WELL



WELL DETAILS
Screened interval:
584.20 to 574.20
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
586.70 to 584.70
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
584.70 to 574.20
2.50 to 13.00ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
001				13.7
GP-1		2.00		3.6
				0.9
GP-2		3.00		1.5
				0.8
				0.5
GP-3		3.50		0.3
				0.2

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ⬭

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

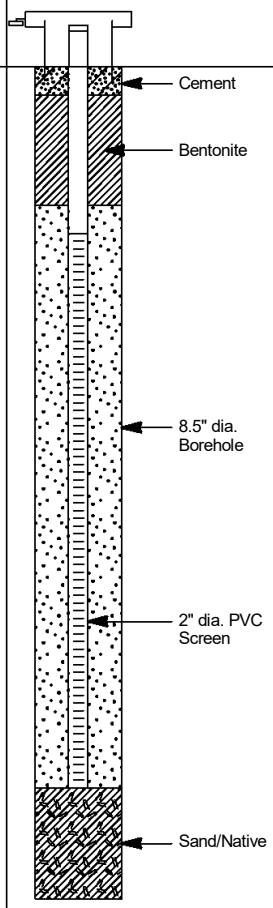
PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

HOLE DESIGNATION: CITGO-MW05-20
DATE COMPLETED: July 16, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: Y.YANG

NORTHING: 2323586.76
EASTING: 2853207.41

	ELEV.
TOP OF CASING	591.11
GROUND SURFACE	588.18

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	FILL, sandy and gravelly, loose, dark brown, moist	
	SP-SAND, compact, light brown, moist to wet - wet at 2.00ft BGS	586.68
2		
4		
6		
8	- very fine grained to fine grained, light greyish brown at 7.80ft BGS	
10		
12	- fine to coarse grained from 11.20 to 12.00ft BGS - very fine to fine grained from 12.00 to 15.00ft BGS	
14		
	END OF BOREHOLE @ 15.00ft BGS	573.18
16		
18		
20		
22		
24		



WELL DETAILS
Screened interval:
585.18 to 575.18
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
587.68 to 585.68
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
585.68 to 575.18
2.50 to 13.00ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
009				0.2
GP-1		2.40		0
				0
GP-2		3.40		0.1
				0.6
				0.3
GP-3				0.4
				0.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

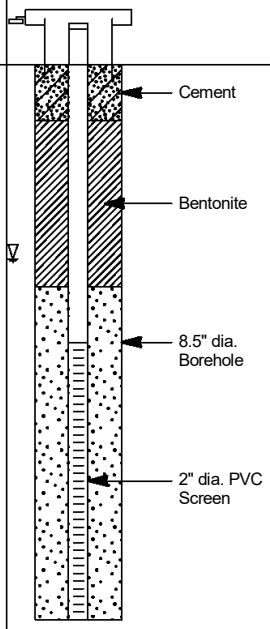
PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

HOLE DESIGNATION: CITGO-MW06-20
DATE COMPLETED: July 15, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: Y.YANG

NORTHING: 2324764.35
EASTING: 2854939.3

TOP OF CASING 591.12
GROUND SURFACE 587.77

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.	SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
	FILL, sandy with trace gravel, loose to compact, light brown, moist		002				1.9
2			GP-1		1.40		1.6
	- wet at 3.50ft BGS						
4	SP-SAND, compact, very fine to fine grained, light brown, wet	583.77					1.3
	- light greyish brown at 5.00ft BGS						
6							1.5
8			GP-2		3.00		2.4
10	END OF BOREHOLE @ 10.00ft BGS	577.77					
12							
14							
16							
18							
20							
22							
24							



WELL DETAILS
Screened interval:
582.77 to 577.77
5.00 to 10.00ft BGS
Length: 5ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
586.77 to 583.77
1.00 to 4.00ft BGS
Material: BENTONITE
Sand Pack:
583.77 to 577.77
4.00 to 10.00ft BGS
Material: 20/40 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇ 7/15/2020
CHEMICAL ANALYSIS ◯

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

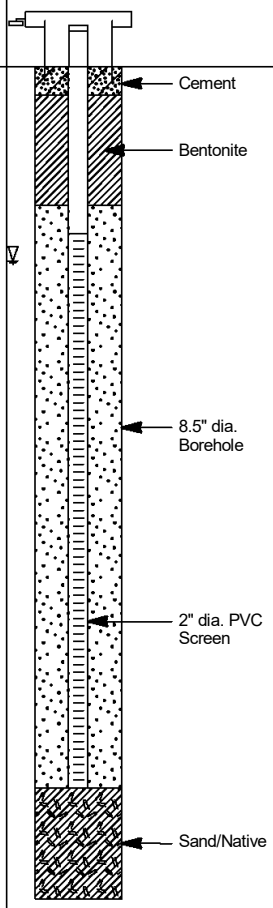
HOLE DESIGNATION: CITGO-MW07-20
DATE COMPLETED: July 17, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: K.SCHUSLER/Y.YANG

NORTHING: 2323549.7
EASTING: 2855549.6

TOP OF CASING 592.04
GROUND SURFACE 588.93

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.	SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
	TOPSOIL, sandy, loose, dark grey	588.43					
	FILL, sandy clay, trace gravel, compact, dark brown, dry-moist	586.23					0.1
2							
	SP, compact, dark grey-black, strong odor, not plastic, no structure, wet, fine grained						140
4							
							370
6							
							6.5
	- overall very fine-fine grained, minor coarse sand lenses, dark grey, slight odor at 7.50ft BGS						
8							
							7
10							
							14
12							
							18
14							
							5
	END OF BOREHOLE @ 15.00ft BGS	573.93					
16							
18							
20							
22							
24							

MONITORING WELL



WELL DETAILS
Screened interval:
585.93 to 575.93
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
588.43 to 586.43
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
586.43 to 575.93
2.50 to 13.00ft BGS
Material: 20/40 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇ 7/17/2020

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

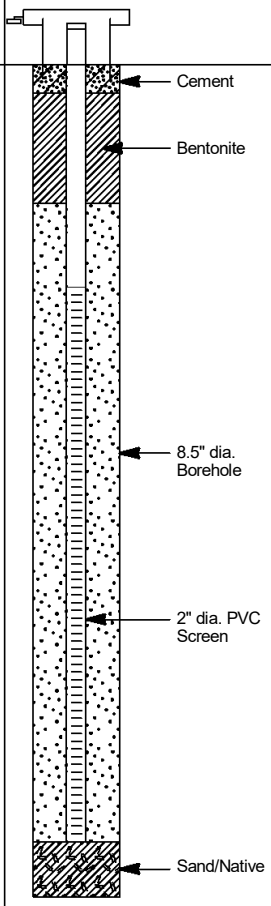
HOLE DESIGNATION: CITGO-MW08-20
DATE COMPLETED: July 15, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: Y.YANG

NORTHING: 2324527.64
EASTING: 2857159.05

	ELEV.
TOP OF CASING	590.77
GROUND SURFACE	587.64

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	FILL, gravelly and sandy, light tan to light grey	
	SP-SAND, loose to compact, light brown, moist to wet	586.14
2		
	- very fine to fine grained, wet at 3.50ft BGS	
4	- staining, greyish, hydrocarbon odor at 4.20ft BGS	
6	- fine to medium grained at 6.00ft BGS	
8		
	- very fine to fine grained at 9.00ft BGS	
10		
12		
14		
	END OF BOREHOLE @ 15.00ft BGS	572.64
16		
18		
20		
22		
24		

MONITORING WELL



WELL DETAILS
Screened interval:
583.64 to 573.64
4.00 to 14.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
587.14 to 585.14
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
585.14 to 573.64
2.50 to 14.00ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
004				0.7
GP-1		2.40		122.4
				117
GP-2		3.10		5.4
				3.5
				3.7
GP-3		3.40		2.5
				2.1

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ◯

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

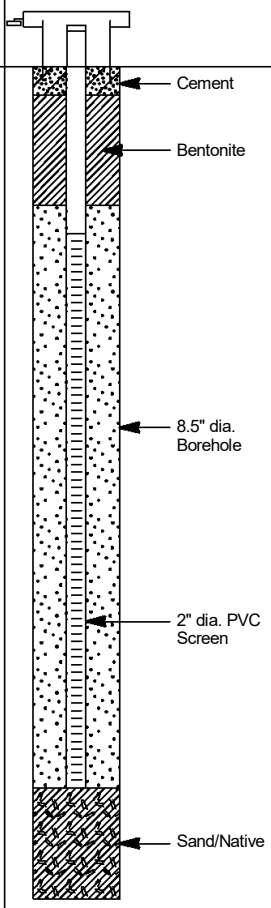
HOLE DESIGNATION: CITGO-MW09-20
DATE COMPLETED: July 17, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: K.SCHUSLER

NORTHING: 2323896.23
EASTING: 2857154.35

TOP OF CASING 589.15
GROUND SURFACE 586.25

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	FILL, sandy, loose, brown to dark brown, moist	
	SP-SAND, dark brown to greyish brown, moist to wet, slight hydrocarbon odor	585.05
2	- very fine to fine grained, wet at 2.00ft BGS	
4	- compact, visible sheen, staining at 3.50ft BGS	
6		
8		
10		
12		
14		
	END OF BOREHOLE @ 15.00ft BGS	571.25
16		
18		
20		
22		
24		

MONITORING WELL



WELL DETAILS
Screened interval:
583.25 to 573.25
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
585.75 to 583.75
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
583.75 to 573.25
2.50 to 13.00ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
HA-1				0.4
HA-2				9.2
HA-3				36.7
				96.8
GP-1		3.20		3.9
				1.4
GP-2		3.50		1.1
				0.7

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

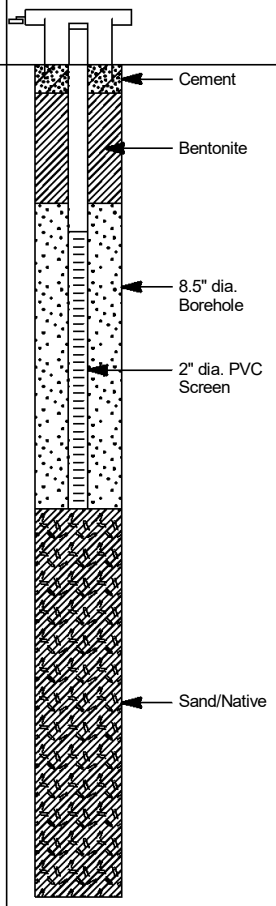
PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

HOLE DESIGNATION: CITGO-MW10-20
DATE COMPLETED: July 17, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: K.SCHUSLER

NORTHING: 2322689.55
EASTING: 2857159.94

	ELEV.
TOP OF CASING	590.46
GROUND SURFACE	587.53

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	FILL, sandy, loose, light brown to dark grey brown, moist	
	Organic rich layer, loose, black to dark brown, moist	584.03
	- wet at 5.00ft BGS	582.63
	SP-SAND, compact, very fine to fine grained, light greyish brown	
	No recovery	577.53
	END OF BOREHOLE @ 15.00ft BGS	572.53



WELL DETAILS
Screened interval:
584.53 to 579.53
3.00 to 8.00ft BGS
Length: 5ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
587.03 to 585.03
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
585.03 to 572.53
2.50 to 15.00ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
HA-1				0.1
HA-2				0.5
HA-3				0.8
				0.4
GP-1		3.10		1.8
				2

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

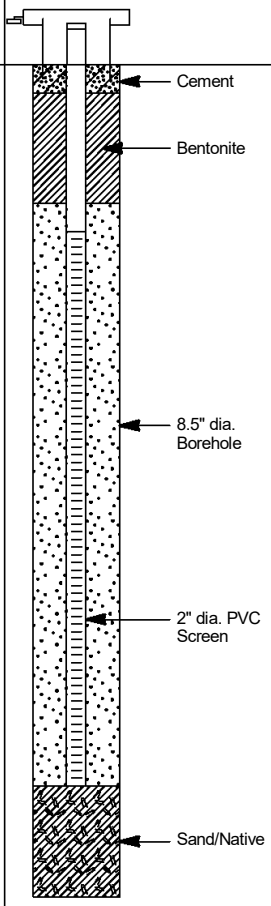
HOLE DESIGNATION: CITGO-MW11-20
DATE COMPLETED: July 17, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: K.SCHUSLER/Y.YANG

NORTHING: 2322347.28
EASTING: 2856679.05

	ELEV.
TOP OF CASING	591.00
GROUND SURFACE	587.72

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	FILL, sandy and gravelly, loose to compact, moist, strong hydrocarbon odor	
2	SP-SAND, compact, fine grained, light greyish brown to grey, staining, strong hydrocarbon odor	585.72
4	- wet at 4.50ft BGS	
6		
8		
10		
12		
14		
	END OF BOREHOLE @ 15.00ft BGS	572.72
16		
18		
20		
22		
24		

MONITORING WELL



WELL DETAILS
Screened interval:
584.72 to 574.72
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
587.22 to 585.22
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
585.22 to 574.72
2.50 to 13.00ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
014				3335
GP-1		2.30		4525
				2588
GP-2		2.90		4759
				2105
				162.8
GP-3		2.50		25.8
				10.9

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ⬭

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

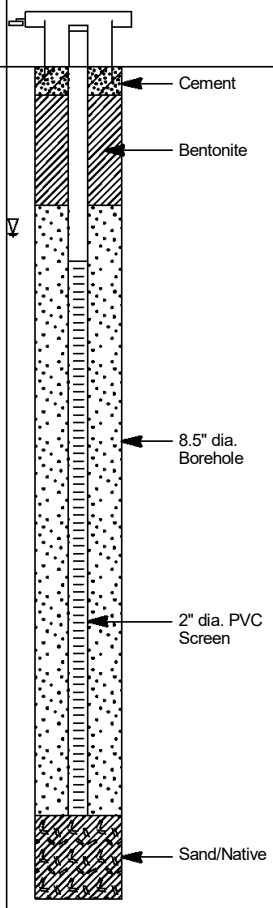
HOLE DESIGNATION: CITGO-MW12-20
DATE COMPLETED: July 15, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: Y.YANG

NORTHING: 2322216.93
EASTING: 2856111.24

	ELEV.
TOP OF CASING	590.76
GROUND SURFACE	587.55

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	FILL, sandy and gravelly, loose, dark brown, moist	
	SP-SAND, compact, very fine to fine grained, light brown to light greyish brown, moist to wet	586.05
	- wet at 3.00ft BGS	
	END OF BOREHOLE @ 15.00ft BGS	572.55

MONITORING WELL



WELL DETAILS
Screened interval:
584.05 to 574.05
3.50 to 13.50ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
587.05 to 585.05
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
585.05 to 574.05
2.50 to 13.50ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
005				0.9
GP-1		2.80		1.1
				0.6
GP-2		3.30		0.4
				0.8
				1
GP-3		2.60		1.1
				0.4

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇ 7/15/2020
CHEMICAL ANALYSIS ⬭

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

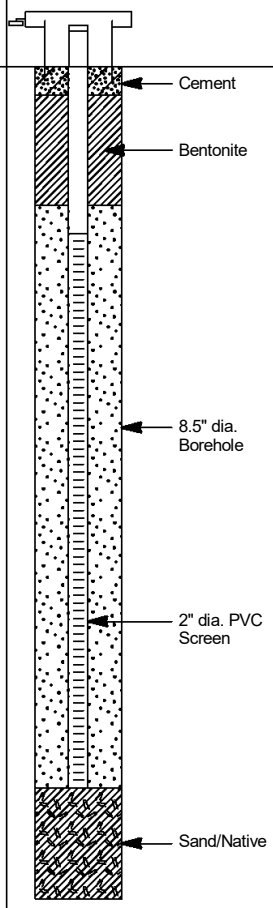
PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

HOLE DESIGNATION: CITGO-MW13-20
DATE COMPLETED: July 17, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: K.SCHUSLER/Y.YANG

NORTHING: 2321803.84
EASTING: 2856853.55

	ELEV.
TOP OF CASING	591.06
GROUND SURFACE	587.79

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	FILL, sandy and gravelly, loose, brown to greyish brown, moist	
	SP-SAND, loose to compact, staining, moist to wet, strong hydrocarbon odor	586.19
	- light greyish brown to grey, wet at 4.00ft BGS	
	END OF BOREHOLE @ 15.00ft BGS	572.79



WELL DETAILS
Screened interval:
584.79 to 574.79
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
587.29 to 585.29
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
585.29 to 574.79
2.50 to 13.00ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
015				530.1
GP-1		2.50		1451
				707.4
GP-2		3.50		825
				50.6
				39.8
GP-3		3.40		21.3
				20.1

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

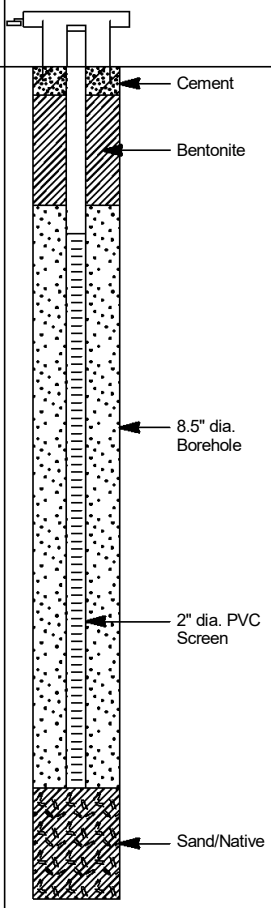
HOLE DESIGNATION: CITGO-MW14-20
DATE COMPLETED: July 20, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: Y.YANG

NORTHING: 2321183.82
EASTING: 2856737.36

	ELEV.
TOP OF CASING	590.71
GROUND SURFACE	587.48

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	FILL, sandy, gravelly -trace of brick and slag materials at 1.5 ft BGS	
	SP-SAND, compact, very fine to fine grained, light brown - wet at 3.00ft BGS - light greyish brown at 4.80ft BGS	585.98
	END OF BOREHOLE @ 15.00ft BGS	572.48

MONITORING WELL



WELL DETAILS
Screened interval:
584.48 to 574.48
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 10
Material: PVC
Seal:
586.98 to 584.98
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
584.98 to 574.48
2.50 to 13.00ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
019				1.1
GP-1		3.50		1.4
				1.4
GP-2		2.20		1.2
				1.1
				0.8
GP-3		3.90		0.7
				0.6

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

HOLE DESIGNATION: CITGO-MW15-20
DATE COMPLETED: July 21, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: Y.YANG

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.	MONITORING WELL	SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
	NORTHING: 2320918.01 TOP OF CASING EASTING: 2857165.88 GROUND SURFACE	589.36 586.19						
	SP-SAND, fine grained, hydrocarbon odor		Cement Bentonite	022				151
2								235
4								292
6			8.5" dia. Borehole					
	- oily, strong hydrocarbon odor at 7.50ft BGS							288
8								243
10			2" dia. PVC Screen					
								201
12								118
	END OF BOREHOLE @ 13.00ft BGS	573.19						
14								
16								
18								
20								
22								
24								

WELL DETAILS
Screened interval:
583.19 to 573.19
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 10
Material: PVC
Seal:
585.69 to 583.69
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
583.69 to 573.19
2.50 to 13.00ft BGS
Material: 20/40 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

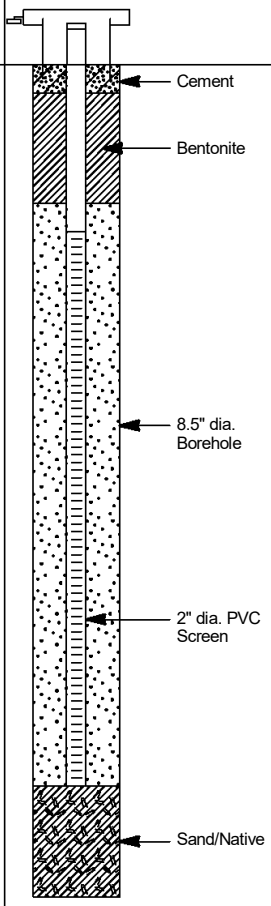
HOLE DESIGNATION: CITGO-MW16-20
DATE COMPLETED: July 17, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: K.SCHUSLER/Y.YANG

NORTHING: 2320618.87
EASTING: 2856699.74

	TOP OF CASING	GROUND SURFACE
ELEV.	590.57	587.42

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	FILL, sandy and silty, compact, black to dark brown, moist, slight hydrocarbon odor	
	SP-SAND, compact, grey brown to grey, moist to wet	586.02
2		
4	- very fine to fine grained, staining, wet, strong hydrocarbon odor at 4.00ft BGS	
6		
8	- light greyish brown at 7.50ft BGS	
10		
12		
14		
	END OF BOREHOLE @ 15.00ft BGS	572.42
16		
18		
20		
22		
24		

MONITORING WELL



WELL DETAILS
Screened interval:
584.42 to 574.42
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
586.92 to 584.92
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
584.92 to 574.42
2.50 to 13.00ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
016 / 017				2764
GP-1		2.50		2029
				1513
GP-2		3.00		349.2
				54.9
				124.5
GP-3		3.60		84.7
				7.7

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ◯

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

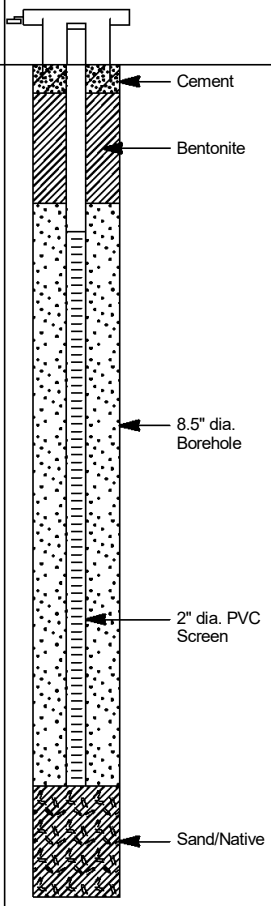
HOLE DESIGNATION: CITGO-MW17-20
DATE COMPLETED: July 20, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: Y.YANG

NORTHING: 2320442.31
EASTING: 2856928.18

	ELEV.
TOP OF CASING	590.90
GROUND SURFACE	587.52

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	FILL, sandy and gravelly, dark brown, staining, wet, hydrocarbon odor	
	SP-SAND, compact, very fine to fine grained, greyish brown, staining, wet, hydrocarbon odor	586.32
2		
4		
6	- light greyish brown, slight hydrocarbon odor at 6.00ft BGS	
8		
10		
12		
14		
	END OF BOREHOLE @ 15.00ft BGS	572.52
16		
18		
20		
22		
24		

MONITORING WELL



WELL DETAILS
Screened interval:
584.52 to 574.52
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 10
Material: PVC
Seal:
587.02 to 585.02
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
585.02 to 574.52
2.50 to 13.00ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
020				242.4
GP-1		2.00		1724
				1193
GP-2		2.50		36.7
				31.5
GP-3		2.70		21.7
				5.7
				2.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ⬭

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

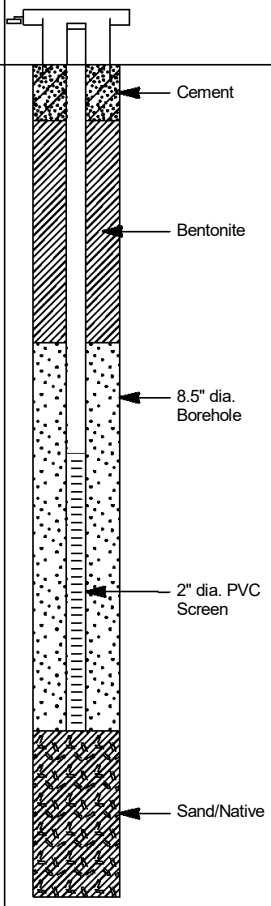
HOLE DESIGNATION: CITGO-MW18-20
DATE COMPLETED: July 17, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: K.SCHUSLER/Y.YANG

NORTHING: 2320432.19
EASTING: 2856644.08

TOP OF CASING 590.25
GROUND SURFACE 586.90

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.	SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
	FILL, sandy clay with minor gravel, compact-loosely compact, fine grained with granule gravel pieces, dark brown to medium brown, moist		018				0.5
2							1
4	SP-SAND, compact, fine to very fine grained, minor amounts of intact coarse-grained fossils, light grey to tan, wet at 4ft BGS	582.90					4.4
6							5
8							1.1
10							1.4
12							1.4
14							1.2
	END OF BOREHOLE @ 15.00ft BGS	571.90					
16							
18							
20							
22							
24							

MONITORING WELL



WELL DETAILS
Screened interval:
579.90 to 574.90
7.00 to 12.00ft BGS
Length: 5ft
Diameter: 2in
Slot Size: 10
Material: PVC
Seal:
585.90 to 581.90
1.00 to 5.00ft BGS
Material: BENTONITE
Sand Pack:
581.90 to 574.90
5.00 to 12.00ft BGS
Material: 20/40 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

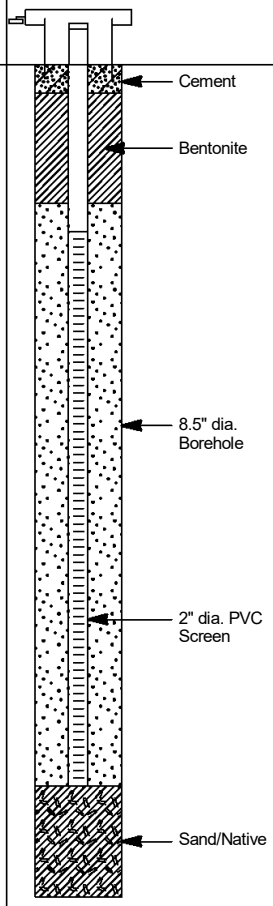
PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

HOLE DESIGNATION: CITGO-MW19-20
DATE COMPLETED: July 20, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: Y.YANG

NORTHING: 2320317.31
EASTING: 2857116.49

TOP OF CASING 589.87
GROUND SURFACE 586.67

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.	SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
	FILL, sandy, staining, moist, slight hydrocarbon odor		021				98.0
2	SP-SAND, compact, very fine to fine grained, greyish brown, staining, strong hydrocarbon odor	584.67	GP-1		2.40		115.2
4	- wet at 4.00ft BGS						
	- visible sheen from 5.00 to 8.00ft BGS						137.1
6	- light greyish brown at 6.00ft BGS						
8			GP-2		2.30		61.2
							16.9
10							
							21.9
12			GP-3		3.20		8.3
14							2.7
	END OF BOREHOLE @ 15.00ft BGS	571.67					
16							
18							
20							
22							
24							



WELL DETAILS
Screened interval:
583.67 to 573.67
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 10
Material: PVC
Seal:
586.17 to 584.17
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
584.17 to 573.67
2.50 to 13.00ft BGS
Material: 20/40 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ◯

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

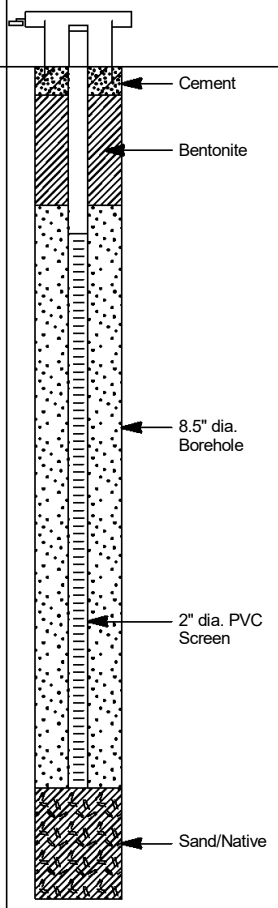
PROJECT NAME: Citgo Terminal
PROJECT NUMBER: 11209494
CLIENT: Citgo
LOCATION: East Chicago, Indiana

HOLE DESIGNATION: CITGO-MW20-20
DATE COMPLETED: July 16, 2020
DRILLING METHOD: GEOPROBE/HSA
FIELD PERSONNEL: Y.YANG

NORTHING: 2323559.28
EASTING: 2854727.99

	ELEV.
TOP OF CASING	590.73
GROUND SURFACE	587.70

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.
	FILL, sandy, loose, dark brown, wet, hydrocarbon odor	
	SP-SAND, compact, fine grained, dark brown to greyish brown, wet, hydrocarbon odor, staining, visible sheen	583.70
	END OF BOREHOLE @ 15.00ft BGS	572.70



WELL DETAILS
Screened interval:
584.70 to 574.70
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.01
Material: PVC
Seal:
587.20 to 585.20
0.50 to 2.50ft BGS
Material: BENTONITE
Sand Pack:
585.20 to 574.70
2.50 to 13.00ft BGS
Material: 20/40 SAND

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' Value	PID (ppm)
010				18.3
GP-1		1.70		80.1
				563.8
GP-2		2.90		179.6
				33.8
				45.3
GP-3				16.3
				7.8

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ⬭

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\662\11209494\TECH\GINT\DATABASE\11209494-CITGO.GPJ Library File: GHD_ENV07-29-2020.GLB Report: OVERBURDEN LOG Date: 10/15/20

CITGO Petroleum Corporation

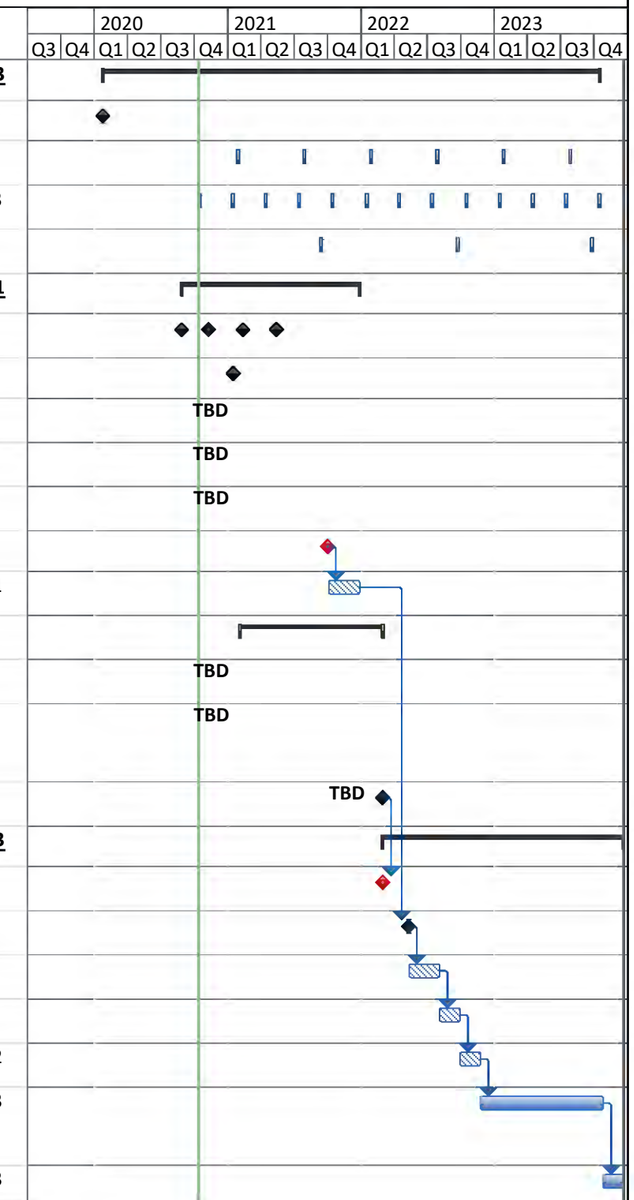
2316 Terminal Drive
Arlington Heights, IL 60005

ATTACHMENT B

Project Schedule

Project Schedule - AOC
Former Cities Refinery
East Chicago, IN

ID	Task Name	Duration	Start	Finish
1	**Administrative**	**965 days**	**Fri 1/24/20**	**Mon 10/16/23**
2	Effective Date of AOC	1 day	Fri 1/24/20	Fri 1/24/20
3	Semi-Annual Meetings - Meeting with EPA either by phone or in person on at least a semi-annual basis	650 days	Fri 1/29/21	Fri 7/28/23
10	Quarterly Reports - Fifteenth day of the month after the end of each quarter	778 days	Thu 10/15/20	Mon 10/16/23
24	Financial Assurance Update (Updated annually and/or with subsequent work plans)	531 days	Mon 9/13/21	Tue 9/26/23
28	**RFI**	**340 days**	**Fri 8/28/20**	**Mon 12/27/21**
29	Quarterly Groundwater Monitoring	184 days	Fri 8/28/20	Thu 5/20/21
34	Interim RFI Data Report (to be submitted following the completion of two quarterly groundwater sampling events)	1 day	Fri 1/15/21	Fri 1/15/21
35	Additional RFI Work Plan(s), as needed	1 day	Mon 2/1/21	Mon 2/1/21
36	EPA Review and Approval of RFI Work Plan(s), as needed	1 day	Tue 2/2/21	Tue 2/2/21
37	RFI Field Activities, as needed	1 day	Wed 2/3/21	Wed 2/3/21
38	Submit RFI Report - No later than October 1, 2021	1 day	Fri 10/1/21	Fri 10/1/21
39	EPA Review and Approval of the RFI Report	3 mons	Mon 10/4/21	Mon 12/27/21
40	**Interim Corrective Measures, as needed**	**279 days**	**Wed 2/3/21**	**Tue 3/1/22**
41	Interim Corrective Measures Work Plan(s), as needed	1 day	Wed 2/3/21	Wed 2/3/21
42	Interim Corrective Measures Implementation, as needed (90 days following submittal of Interim Corrective Measures Work Plan and Schedule)	1 day	Thu 2/4/21	Thu 2/4/21
43	Interim Corrective Measures Report (Either prior to or as part of the Environmental Indicators Report)	1 day	Tue 3/1/22	Tue 3/1/22
44	**Final Corrective Measures**	**472 days**	**Tue 3/1/22**	**Wed 12/20/23**
45	Environmental Indicators Report - No later than March 1, 2022 (unless EPA agrees to extend that deadline)	1 day	Tue 3/1/22	Tue 3/1/22
46	Final Corrective Measures Proposal (Including schedule) - Within 135 days of EPA's approval of the RFI report	1 day	Wed 5/11/22	Wed 5/11/22
47	EPA review and comments, supplemental information / investigation request	3 mons	Thu 5/12/22	Wed 8/3/22
48	Public review and comment	2 mons	Thu 8/4/22	Wed 9/28/22
49	EPA Final Decision	2 mons	Thu 9/29/22	Wed 11/23/22
50	Final Corrective Measures Implementation - (According to the schedule in the Final Decision, i.e. much of the construction completed within one year, or within a reasonable period of time after EPA selects the final corrective measures)	12 mons	Thu 11/24/22	Wed 10/25/23
51	Final Remedy Construction Completion Report (Including an Operation and Maintenance Plan)	2 mons	Thu 10/26/23	Wed 12/20/23



Project: Former Cities Refinery, East Chicago, IN
Date: Tue 10/13/204:03 PM

Expected Timeframe — Expected Date — Summary
Contingent Timeframe — Fixed Date

Note: Per AOC, 'days' refers to calendar days and thus do not reflect weekends, holidays, etc.
Schedule subject to change based on regulatory reviews/approvals, weather, and other factors beyond Respondent's control