GLENN SPRINGS HOLDINGS, INC.
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10.12.2022

Renee Wawczak
Project Manager
United State Environmental Protection Agency
Region 5 (Mail Code LU-16J0
77 W. Jackson Boulevard
Chicago, Illinois 60604-3590
Wawczak.Renee@epa.gov

Dear Renee:

RE: Quarterly Progress Report – Q3-2022
EPA Docket No RCRA-05-2020-0006
Former Cities Refiner, East Chicago, Indiana

This submission has been prepared on behalf of OXY USA Inc. (OXY) 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-05-2020-0006 with an effective date of January 24, 2020) for the Former Cities Refinery at 2500 Rear East Chicago Avenue, East Chicago, Indiana (EPA ID: INR000123927, formerly part of IND095267381) (Site).

This report is organized to address reporting requirements set out in Section VII of the AOC. This report summarizes the activities conducted for and at the Site from July 1, 2022 through September 30, 2022.

1. Summary of Work Performed during the Reporting Period (July 1, 2022 – September 30, 2022)

   - Participated in project status calls including discussion on RFI progress with EPA, CITGO, OXY, and GHD on July 7th, August 18th, and September 16th, 2022.
   - Conducted visual inspections of on-Site manhole structures on July 12th, 2022 and September 28th, 2022.
   - Conducted cleaning of on-Site manhole structures on September 28th, 2022. An estimated 2 gallons of oil and oily-water were recovered and containerized from the on-Site manhole structures. The oil and oily water will be disposed of off-Site in accordance with applicable laws.
   - Quarterly groundwater gauging and sampling event was conducted between September 2nd – 15th, 2022.

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

   - Q2 2022 Quarterly Progress Report submitted July 15th, 2022.

- OXY submitted a work plan for the installation of additional monitoring wells, including a modified approach for the installation of the 2 off-site wells, and 2 additional proposed monitoring wells internal to the Site on September 29th, 2022.
- Submitted Environmental Indicator reporting (CA 725 and CA750) on September 30th, 2022.

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 plan outlined in the RFI Report submitted October 1, 2021, and slightly modified based on the response to EPA draft comments on the RFI dated January 31st, 2022.
   - Figure 1 presents the groundwater contours for the September 2022 gauging event.
   - Figure 2 presents a summary of exceedances of groundwater screening criteria including up to the quarterly groundwater monitoring event completed in June 2022. The September 2022 sampling event data is undergoing data validation and will be provided in the next quarterly status report.
   - Table 1 presents the validated groundwater sampling results from the June 2022 quarterly monitoring event.
   - Table 2 presents the results of the pre- and post-LNAPL degradation pilot study soil sample results. The results were inconclusive and no further assessment is proposed. A memo summarizing the results of the LNAPL degradation pilot study is being prepared and will be submitted to EPA.

5. Anticipated Activities During the Next Reporting Period

   - Complete validation of Q3-2022 quarterly sampling data.
   - Conduct Q4-2022 quarterly sampling event (December 2022).
   - Complete periodic inspections of on-Site manhole structures and removal of LNAPL, as needed.
   - Pending EPA approval of the September 29th, 2022 work plan, install 2 off-Site and 2 on-Site monitoring wells. OXY is in the process of coordinating with relevant parties (neighboring landowners, City of East Chicago, utility owners) to facilitate the well installations. The installations are tentatively scheduled for early-November 2022.

6. Project Schedule

   - Attachment A presents the currently anticipated project schedule.

7. Percent Project Completed

   - At the time of this report, the project is approximately 68% 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.

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

Sincerely,

Rick Passmore
VICE PRESIDENT OF OPERATIONS
GLENN SPRINGS HOLDINGS, INC.
Rick_Passmore@oxy.com
713.215.7622
859.221.7616

JEP/kf/27

cc: Gillian Asque, EPA (asque.gillian@epa.gov)
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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

NOTE:
ELEVATIONS MEASURED SEPTEMBER 2, 2022. CITGO-MW09-20, CITGO-MW10-20, CITGO-MW15-20 MEASURED SEPTEMBER 6, 2022.

0 300 600 ft

Coordinate System: IN83-WF

N

GHD

FORMER CITIES REFINERY
EAST CHICAGO, INDIANA

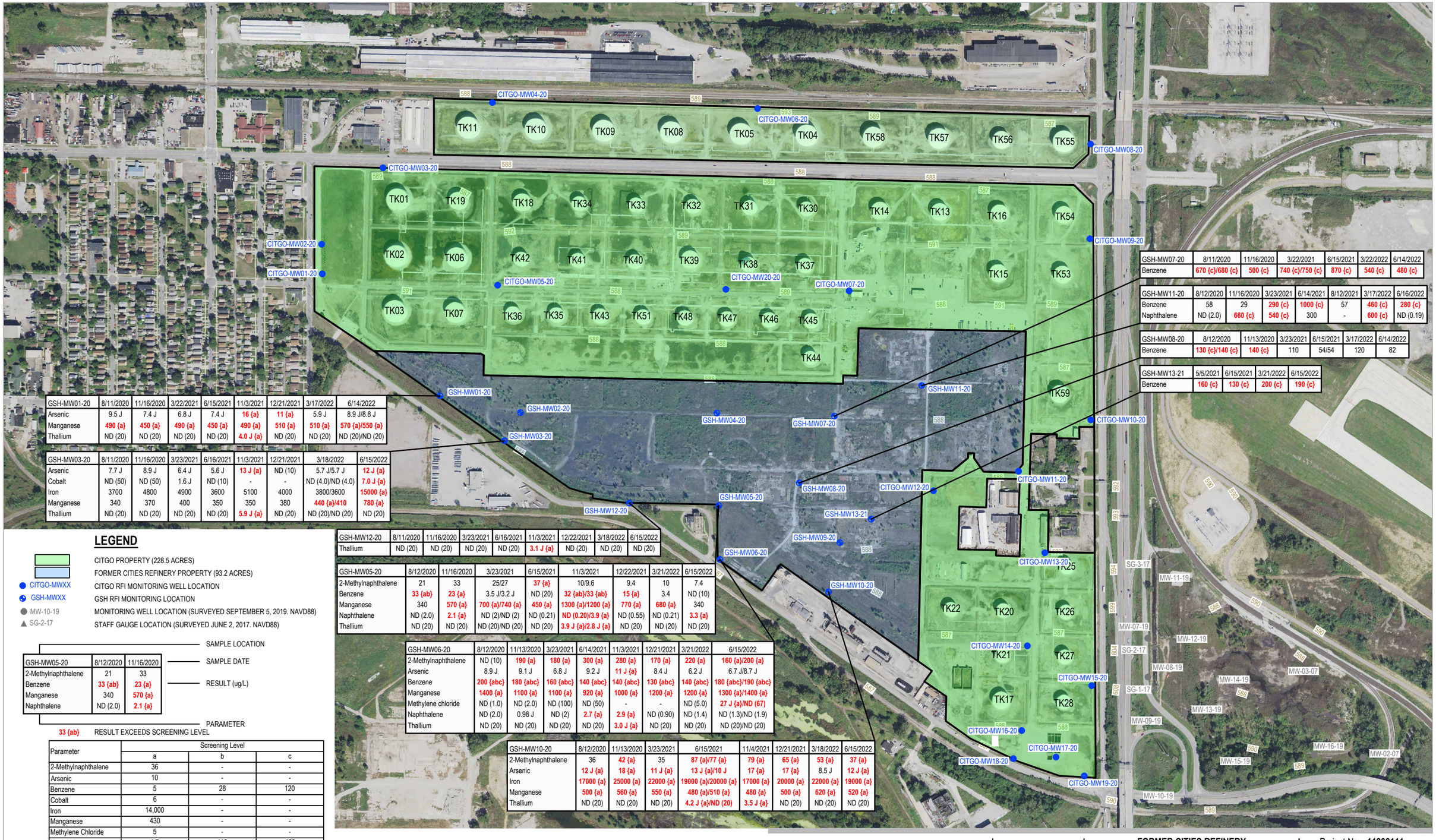
GROUNDWATER CONTOUR MAP
SEPTEMBER 2022

Project No. **11208111**
Date **September 2022**

FIGURE 1

Filename: \\ghdnet\ghd\CA\Waterloo\Projects\662\11208111\Digital_Design\ACAD 2020\Figures\PRE022\11208111-GHD-00-00-PRE-EN-D101_WA-022.dwg
Plot Date: 27 September 2022 10:56 AM

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



GSH-MW01-20	8/11/2020	11/16/2020	3/22/2021	6/15/2021	11/3/2021	12/21/2021	3/17/2022	6/14/2022
Arsenic	9.5 J	7.4 J	6.8 J	7.4 J	**16 {a}**	**11 {a}**	5.9 J	8.9 J/8.8 J
Manganese	**490 {a}**	**450 {a}**	**490 {a}**	**450 {a}**	**490 {a}**	**510 {a}**	**510 {a}**	**570 {a}/550 {a}**
Thallium	ND (20)	ND (20)	ND (20)	ND (20)	**4.0 J {a}**	ND (20)	ND (20)	ND (20)/ND (20)

GSH-MW03-20	8/11/2020	11/16/2020	3/23/2021	6/16/2021	11/3/2021	12/21/2021	3/18/2022	6/15/2022
Arsenic	7.7 J	8.9 J	6.4 J	5.6 J	**13 J {a}**	ND (10)	5.7 J/5.7 J	**12 J {a}**
Cobalt	ND (50)	ND (50)	1.6 J	ND (10)	-	-	ND (4.0)/ND (4.0)	**7.0 J {a}**
Iron	3700	4800	4900	3600	5100	4000	3800/3600	**15000 {a}**
Manganese	340	370	400	350	350	380	**440 {a}/410**	**780 {a}**
Thallium	ND (20)	ND (20)	ND (20)	ND (20)	**5.9 J {a}**	ND (20)	ND (20)/ND (20)	ND (20)

GSH-MW12-20	8/11/2020	11/16/2020	3/23/2021	6/16/2021	11/3/2021	12/22/2021	3/18/2022	6/15/2022
Thallium	ND (20)	ND (20)	ND (20)	ND (20)	**3.1 J {a}**	ND (20)	ND (20)	ND (20)

GSH-MW05-20	8/12/2020	11/16/2020	3/23/2021	6/15/2021	11/3/2021	12/22/2021	3/21/2022	6/15/2022
2-Methylnaphthalene	21	33	25/27	**37 {a}**	10/9.6	9.4	10	7.4
Benzene	**33 {ab}**	**23 {a}**	3.5 J/3.2 J	ND (20)	**32 {ab}/33 {ab}**	**15 {a}**	3.4	ND (10)
Manganese	340	**570 {a}**	**700 {a}/740 {a}**	**450 {a}**	**1300 {a}/1200 {a}**	**770 {a}**	**680 {a}**	340
Naphthalene	ND (2.0)	**2.1 {a}**	ND (2)/ND (2)	ND (0.21)	**ND (0.20)/3.9 {a}**	ND (0.55)	ND (0.21)	**3.3 {a}**
Thallium	ND (20)	ND (20)	ND (20)/ND (20)	ND (20)	**3.9 J {a}/2.8 J {a}**	ND (20)	ND (20)	ND (20)

GSH-MW06-20	8/12/2020	11/13/2020	3/23/2021	6/14/2021	11/3/2021	12/21/2021	3/21/2022	6/15/2022
2-Methylnaphthalene	ND (10)	**190 {a}**	**180 {a}**	**300 {a}**	**280 {a}**	**170 {a}**	**220 {a}**	**160 {a}/200 {a}**
Arsenic	8.9 J	9.1 J	6.8 J	9.2 J	**11 J {a}**	8.4 J	6.2 J	6.7 J/8.7 J
Benzene	**200 {abc}**	**180 {abc}**	**160 {abc}**	**140 {abc}**	**140 {abc}**	**130 {abc}**	**140 {abc}**	**180 {abc}/190 {abc}**
Manganese	**1400 {a}**	**1100 {a}**	**1100 {a}**	**920 {a}**	**1000 {a}**	**1200 {a}**	**1200 {a}**	**1300 {a}/1400 {a}**
Methylene chloride	ND (1.0)	ND (2.0)	ND (100)	ND (50)	-	-	ND (5.0)	**27 J {a}/ND (67)**
Naphthalene	ND (2.0)	0.98 J	ND (2)	**2.7 {a}**	**2.9 {a}**	ND (0.90)	ND (1.4)	ND (1.3)/ND (1.9)
Thallium	ND (20)	ND (20)	ND (20)	ND (20)	**3.0 J {a}**	ND (20)	ND (20)	ND (20)/ND (20)

GSH-MW10-20	8/12/2020	11/13/2020	3/23/2021	6/15/2021	11/4/2021	12/21/2021	3/18/2022	6/15/2022
2-Methylnaphthalene	36	**42 {a}**	35	**87 {a}/77 {a}**	**79 {a}**	**65 {a}**	**53 {a}**	**37 {a}**
Arsenic	**12 J {a}**	**18 {a}**	**11 J {a}**	**13 J {a}/10 J**	**17 {a}**	**17 {a}**	8.5 J	**12 J {a}**
Iron	**17000 {a}**	**25000 {a}**	**22000 {a}**	**19000 {a}/20000 {a}**	**17000 {a}**	**20000 {a}**	**22000 {a}**	**19000 {a}**
Manganese	**500 {a}**	**560 {a}**	**550 {a}**	**480 {a}/510 {a}**	**480 {a}**	**500 {a}**	**620 {a}**	**520 {a}**
Thallium	ND (20)	ND (20)	ND (20)	**4.2 J {a}/ND (20)**	**3.5 J {a}**	ND (20)	ND (20)	ND (20)

GSH-MW07-20	8/11/2020	11/16/2020	3/22/2021	6/15/2021	3/22/2022	6/14/2022
Benzene	**670 {c}/680 {c}**	**500 {c}**	**740 {c}/750 {c}**	**870 {c}**	**540 {c}**	**480 {c}**

GSH-MW11-20	8/12/2020	11/16/2020	3/23/2021	6/14/2021	8/12/2021	3/17/2022	6/16/2022
Benzene	58	29	**290 {c}**	**1000 {c}**	57	**460 {c}**	**280 {c}**
Naphthalene	ND (2.0)	**660 {c}**	**540 {c}**	300	-	**600 {c}**	ND (0.19)

GSH-MW08-20	8/12/2020	11/13/2020	3/23/2021	6/15/2021	3/17/2022	6/14/2022
Benzene	**130 {c}/140 {c}**	**140 {c}**	110	54/54	120	82

GSH-MW13-21	5/5/2021	6/15/2021	3/21/2022	6/15/2022
Benzene	**160 {c}**	**130 {c}**	**200 {c}**	**190 {c}**

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GSH-MW05-20	8/12/2020	11/16/2020
2-Methylnaphthalene	21	33
Benzene	**33 {ab}**	**23 {a}**
Manganese	340	**570 {a}**
Naphthalene	ND (2.0)	**2.1 {a}**

SAMPLE LOCATION; SAMPLE DATE; RESULT (ug/L); PARAMETER

33 {ab} RESULT EXCEEDS SCREENING LEVEL

Parameter	Screening Level		
	a	b	c
2-Methylnaphthalene	36	-	-
Arsenic	10	-	-
Benzene	5	28	120
Cobalt	6	-	-
Iron	14,000	-	-
Manganese	430	-	-
Methylene Chloride	5	-	-
Naphthalene	1.7	110	460
Thallium	2	-	-

a - EPA - MCL OR IDEM - TAP/RESIDENTIAL
b - IDEM 2019 - GROUND WATER/RESIDENTIAL
c - IDEM 2019 - GROUND WATER/COMMERCIAL/INDUSTRIAL

NOTE:
RESULTS FROM MONITORING LOCATIONS GSH-MW02-20, GSH-MW04-20, GSH-MW07-20, GSH-MW08-20, GSH-MW09-20, AND GSH-MW11-20 ARE SCREENED AGAINST INDUSTRIAL SCREENING LEVEL ONLY

0 300 600 ft

Coordinate System: IN83-WF

N

GHD

FORMER CITIES REFINERY
EAST CHICAGO, INDIANA

SUMMARY OF EXCEEDANCES OF SCREENING LEVELS IN GROUNDWATER

Project No. **11208111**
Date **August 2022**

FIGURE 2

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

Filename: N:\CA\Waterloo\Projects\662\11208111\Digital_Design\ACAD 2020\Figures\PRE020\11208111-GHD-00-00-PRE-EN-D101_WA-020.DWG
Plot Date: 09 August 2022 7:18 AM

Table 1

Former Cities Refinery
Analytical Results Summary

Location ID:		GSH-MW01-20	GSH-MW01-20	GSH-MW02-20	GSH-MW03-20	GSH-MW04-20	GSH-MW04-20	GSH-MW05-20	GSH-MW06-20	GSH-MW06-20	GSH-MW07-20
Sample Name:		WG-061422-NN-01	WG-061422-NN-03	WG-061622-DS-14	WG-061522-NN-05	WG-061622-AC-15	WG-061622-AC-16	WG-061522-NN-12	WG-061522-DS-10	WG-061522-DS-11	WG-061422-AC-04
Sample Date:		06/14/2022	06/14/2022 Duplicate	06/16/2022	06/15/2022	06/16/2022	06/16/2022	06/15/2022	06/15/2022	06/15/2022	06/14/2022
Parameters	**Unit**										
Volatile Organic Compounds											
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 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	10 U	13 U	6.9 U	13 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	10 U	13 U	6.9 U	13 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 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	10 U	13 U	6.9 U	13 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	100 U	130 U	69 U	130 U
2-Hexanone	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	100 U	130 U	69 U	130 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	100 U	130 U	69 U	130 U
Acetone	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	100 U	130 U	69 U	75 J
Benzene	µg/L	1.0 U	1.0 U	62	1.0 U	1.0 U	1.0 U	10 U	190	180	480
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Carbon disulfide	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 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	10 U	13 U	6.9 U	13 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	10 U	13 U	6.9 U	13 U
Cyclohexane	µg/L	2.5	2.6	0.60 J	1.0 U	15	1.0 U	250	380	360	600
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Ethylbenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	45	29	29	22
Isopropyl benzene	µg/L	1.8	1.9	1.0 U	1.0 U	0.94 J	1.0 U	46	34	34	33
Methyl acetate	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	100 U	320	69 U	130 U
Methyl cyclohexane	µg/L	5.4	5.5	1.0 U	1.0 U	0.67 J	1.0 U	180	130	130	350
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	10 U	13 U	6.9 U	13 U
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	67 U	27 J	63 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Toluene	µg/L	1.8	1.8	1.0 U	1.0 U	1.0 U	1.0 U	10 U	17	15	83
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 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	10 U	13 U	6.9 U	13 U
Trichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Trifluorotrichloroethane (CFC-113)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	13 U	6.9 U	13 U
Xylenes (total)	µg/L	3.9	4.0	2.0 U	2.0 U	2.0 U	2.0 U	24	52	47	140
Semivolatile Organic Compounds											
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	3.7 U
2,4,5-Trichlorophenol	µg/L	4.8 U	5.0 U	4.5 U	4.8 U	4.8 U	4.8 U	4.8 U	48 U	32 U	19 U
2,4,6-Trichlorophenol	µg/L	4.8 U	5.0 U	4.5 U	4.8 U	4.8 U	4.8 U	4.8 U	48 U	32 U	19 U
2,4-Dichlorophenol	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
2,4-Dimethylphenol	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
2,4-Dinitrophenol	µg/L	9.6 U	10 U	8.9 U	9.6 U	9.6 U	9.6 U	9.6 U	96 U	64 U	37 U
2,4-Dinitrotoluene	µg/L	4.8 U	5.0 U	4.5 U	4.8 U	4.8 U	4.8 U	4.8 U	48 U	32 U	19 U
2,6-Dinitrotoluene	µg/L	4.8 U	5.0 U	4.5 U	4.8 U	4.8 U	4.8 U	4.8 U	48 U	32 U	19 U
2-Chloronaphthalene	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	3.7 U
2-Chlorophenol	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	3.7 U
2-Methylnaphthalene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	7.4	200	160	5.8
2-Methylphenol	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	3.7 U

Table 1

Former Cities Refinery
Analytical Results Summary

Location ID:		GSH-MW01-20	GSH-MW01-20	GSH-MW02-20	GSH-MW03-20	GSH-MW04-20	GSH-MW04-20	GSH-MW05-20	GSH-MW06-20	GSH-MW06-20	GSH-MW07-20
Sample Name:		WG-061422-NN-01	WG-061422-NN-03	WG-061622-DS-14	WG-061522-NN-05	WG-061622-AC-15	WG-061622-AC-16	WG-061522-NN-12	WG-061522-DS-10	WG-061522-DS-11	WG-061422-AC-04
Sample Date:		06/14/2022	06/14/2022 Duplicate	06/16/2022	06/15/2022	06/16/2022	06/16/2022	06/15/2022	06/15/2022	06/15/2022	06/14/2022
Parameters	**Unit**										
Semivolatile Organic Compounds cont'd											
2-Nitroaniline	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
2-Nitrophenol	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
3&4-Methylphenol	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
3,3'-Dichlorobenzidine	µg/L	4.8 U	5.0 U	4.5 U	4.8 U	4.8 U	4.8 U	4.8 U	48 U	32 U	19 U
3-Nitroaniline	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
4,6-Dinitro-2-methylphenol	µg/L	4.8 U	5.0 U	4.5 U	4.8 U	4.8 U	4.8 U	4.8 U	48 U	32 U	19 U
4-Bromophenyl phenyl ether	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
4-Chloro-3-methylphenol	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
4-Chloroaniline	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
4-Chlorophenyl phenyl ether	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
4-Nitroaniline	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
4-Nitrophenol	µg/L	9.6 U	10 U	8.9 U	9.6 U	9.6 U	9.6 U	9.6 U	96 U	64 U	37 U
Acenaphthene	µg/L	1.0	1.2	0.18 U	0.31	0.19 U	0.19 U	1.9	5.2	4.9	1.1
Acenaphthylene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	0.19 U	1.9 U	1.3 U	0.74 U
Acetophenone	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	3.7 U
Anthracene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	0.27	1.9 U	1.3 U	0.74 U
Atrazine	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
Benzaldehyde	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
Benzo(a)anthracene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	0.19 U	1.9 U	1.3 U	0.74 U
Benzo(a)pyrene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	0.19 U	1.9 U	1.3 U	0.74 U
Benzo(b)fluoranthene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	0.19 U	1.9 U	1.3 U	0.92
Benzo(g,h,i)perylene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	0.19 U	1.9 U	1.3 U	0.74 U
Benzo(k)fluoranthene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	0.19 U	1.9 U	1.3 U	0.74 U
Biphenyl (1,1-Biphenyl)	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	3.7 U
bis(2-Chloroethoxy)methane	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	3.7 U
bis(2-Chloroethyl)ether	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	3.7 U
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	4.8 U	5.0 U	4.5 U	4.8 U	4.8 U	4.8 U	4.8 U	48 U	32 U	19 U
Butyl benzylphthalate (BBP)	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
Caprolactam	µg/L	4.8 U	5.0 U	4.5 U	4.8 U	4.8 U	1.7 J	4.8 U	48 U	32 U	19 U
Carbazole	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	1.1	19	17	22
Chrysene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	0.19 U	1.9 U	1.3 U	0.74 U
Di-n-butylphthalate (DBP)	µg/L	4.8 U	5.0 U	4.5 U	4.8 U	4.8 U	4.8 U	4.8 U	48 U	32 U	19 U
Di-n-octyl phthalate (DnOP)	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
Dibenz(a,h)anthracene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	0.19 U	1.9 U	1.3 U	0.74 U
Dibenzofuran	µg/L	0.96 U	1.0	0.89 U	0.96 U	0.96 U	0.96 U	1.1	9.6 U	6.4 U	3.7 U
Diethyl phthalate	µg/L	4.8 U	5.0 U	4.5 U	4.8 U	4.8 U	4.8 U	4.8 U	48 U	32 U	19 U
Dimethyl phthalate	µg/L	1.9 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	13 U	7.4 U
Fluoranthene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	0.19 U	1.9 U	1.3 U	1.7
Fluorene	µg/L	2.9	3.4	0.35	0.19 U	0.19 U	0.19 U	2.8	4.4	1.3 U	0.74 U
Hexachlorobenzene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	0.19 U	1.9 U	1.3 U	0.74 U
Hexachlorobutadiene	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	3.7 U
Hexachlorocyclopentadiene	µg/L	9.6 U	10 U	8.9 U	9.6 U	9.6 U	9.6 U	9.6 U	96 U	64 U	37 U
Hexachloroethane	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	3.7 U
Indeno(1,2,3-cd)pyrene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	0.19 U	1.9 U	1.3 U	0.74 U
Isophorone	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	3.7 U
N-Nitrosodi-n-propylamine	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	3.7 U
N-Nitrosodiphenylamine	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	3.7 U
Naphthalene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	3.3	1.9 U	1.3 U	0.74 U
Nitrobenzene	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	3.7 U
Pentachlorophenol	µg/L	9.6 U	10 U	8.9 U	9.6 U	9.6 U	9.6 U	9.6 U	96 U	64 U	37 U
Phenanthrene	µg/L	0.19 U	0.20 U	0.18 U	0.19 U	0.19 U	0.19 U	2.1	13	12	0.74 U
Phenol	µg/L	0.96 U	1.0 U	0.89 U	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	6.4 U	7.1
Pyrene	µg/L	0.31	0.46	0.18 U	0.19 U	0.19 U	0.19 U	0.59	1.9 U	1.3 U	1.2
Semivolatile Organic Compounds, SIM											
1,4-Dioxane	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

Table 1

Former Cities Refinery
Analytical Results Summary

Location ID:		GSH-MW01-20	GSH-MW01-20	GSH-MW02-20	GSH-MW03-20	GSH-MW04-20	GSH-MW04-20	GSH-MW05-20	GSH-MW06-20	GSH-MW06-20	GSH-MW07-20
Sample Name:		WG-061422-NN-01	WG-061422-NN-03	WG-061622-DS-14	WG-061522-NN-05	WG-061622-AC-15	WG-061622-AC-16	WG-061522-NN-12	WG-061522-DS-10	WG-061522-DS-11	WG-061422-AC-04
Sample Date:		06/14/2022	06/14/2022 Duplicate	06/16/2022	06/15/2022	06/16/2022	06/16/2022	06/15/2022	06/15/2022	06/15/2022	06/14/2022
Parameters	**Unit**										
Metals											
Aluminum	µg/L	200	500	890	7000	250	200 U	57 J	270	170 J	210
Antimony	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Arsenic	µg/L	8.8 J	8.9 J	13 J	12 J	18	15 U	15 U	8.7 J	6.7 J	10 J
Barium	µg/L	32 J	33 J	26 J	42 J	25 J	200 U	36 J	55 J	54 J	260
Beryllium	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
Cadmium	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
Calcium	µg/L	110000	110000	110000	190000	79000	5000 U	130000	180000	170000	150000
Chromium	µg/L	10 U	10 U	10 U	10	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	µg/L	10 U	10 U	0.96 J	7.0 J	10 U	10 U	10 U	10 U	10 U	10 U
Copper	µg/L	25 U	25 U	25 U	4.6 J	25 U	25 U	25 U	25 U	25 U	25 U
Iron	µg/L	14000	14000	13000	15000	9900	200 U	2500	7800	7500	7600
Lead	µg/L	10 U	4.5 J	4.5 J	14	7.6 J	10 U	8.0 J	6.5 J	5.5 J	3.2 J
Magnesium	µg/L	20000	20000	14000	49000	6900	5000 U	19000	11000	11000	31000
Manganese	µg/L	550	570	810	780	420	15 U	340	1400	1300	450
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
Nickel	µg/L	40 U	40 U	40 U	14 J	40 U	40 U	2.8 J	2.4 J	2.5 J	40 U
Potassium	µg/L	1000 J	1200 J	1800 J	4600 J	790 J	5000 U	2400 J	2400 J	2300 J	11000
Selenium	µg/L	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	0.67 J	10 U	10 U	10 U	10 U	10 U
Sodium	µg/L	5000 U	5000 U	5000 U	2200 J	5100	5000 U	2100 J	5000 U	5000 U	7900
Thallium	µg/L	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	14 J	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	µg/L	50 U	50 U	50 U	78 U	50 U	50 U	50 U	50 U	50 U	50 U
Fumigant											
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.019 U	0.020 U	0.020 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 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

Former Cities Refinery
Analytical Results Summary

Location ID:		GSH-MW08-20	GSH-MW09-20	GSH-MW10-20	GSH-MW11-20	GSH-MW12-20	GSH-MW13-21
Sample Name:		WG-061422-AC-02	WG-061522-AC-08	WG-061522-AC-06	WG-061622-AC-13	GW-061522-NN-09	WG-061522-DS-07
Sample Date:		06/14/2022	06/15/2022	06/15/2022	06/16/2022	06/15/2022	06/15/2022
Parameters	**Unit**						
Volatile Organic Compounds							
1,1,1-Trichloroethane	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
1,1,2,2-Tetrachloroethane	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
1,1,2-Trichloroethane	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
1,1-Dichloroethane	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
1,1-Dichloroethene	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
1,2,4-Trichlorobenzene	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
1,2-Dichlorobenzene	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
1,2-Dichloroethane	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
1,2-Dichloropropane	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
1,3-Dichlorobenzene	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
1,4-Dichlorobenzene	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	100 U	10 U	10 U	31 J	10 U	8.1 J
2-Hexanone	µg/L	100 U	10 U	10 U	100 U	10 U	59 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	100 U	10 U	10 U	100 U	10 U	59 U
Acetone	µg/L	170	10 U	10 U	100 U	10 U	59 U
Benzene	µg/L	82	1.0 U	2.3	280	1.0 U	190
Bromodichloromethane	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Bromoform	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Bromomethane (Methyl bromide)	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Carbon disulfide	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Carbon tetrachloride	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Chlorobenzene	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Chloroethane	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Chloroform (Trichloromethane)	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Chloromethane (Methyl chloride)	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
cis-1,2-Dichloroethene	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
cis-1,3-Dichloropropene	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Cyclohexane	µg/L	520	1.8	51	360	1.0 U	50
Dibromochloromethane	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Dichlorodifluoromethane (CFC-12)	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Ethylbenzene	µg/L	26	1.0 U	1.8	320	1.0 U	170
Isopropyl benzene	µg/L	37	1.0 U	2.8	34	1.0 U	12
Methyl acetate	µg/L	100 U	10 U	10 U	100 U	10 U	59 U
Methyl cyclohexane	µg/L	160	12	39	280	1.0 U	44
Methyl tert butyl ether (MTBE)	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Methylene chloride	µg/L	50 U	5.0 U	5.0 U	55	5.0 U	29 U
Styrene	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Tetrachloroethene	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Toluene	µg/L	46	0.50 J	3.3	100	1.0 U	44
trans-1,2-Dichloroethene	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
trans-1,3-Dichloropropene	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Trichloroethene	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Trichlorofluoromethane (CFC-11)	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Trifluorotrichloroethane (CFC-113)	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Vinyl chloride	µg/L	10 U	1.0 U	1.0 U	10 U	1.0 U	5.9 U
Xylenes (total)	µg/L	130	1.1 J	4.9	200	2.0 U	46
Semivolatile Organic Compounds							
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	1.9 U
2,4,5-Trichlorophenol	µg/L	4.8 U	4.8 U	19 U	4.8 U	4.8 U	9.6 U
2,4,6-Trichlorophenol	µg/L	4.8 U	4.8 U	19 U	4.8 U	4.8 U	9.6 U
2,4-Dichlorophenol	µg/L	1.9 U	1.9 U	7.7 U	1.9 U	1.9 U	3.8 U
2,4-Dimethylphenol	µg/L	1.9 U	1.9 U	7.7 U	16	1.9 U	3.8 U
2,4-Dinitrophenol	µg/L	9.6 U	9.6 U	38 U	9.6 U	9.6 U	19 U
2,4-Dinitrotoluene	µg/L	4.8 U	4.8 U	19 U	4.8 U	4.8 U	9.6 U
2,6-Dinitrotoluene	µg/L	4.8 U	4.8 U	19 U	4.8 U	4.8 U	9.6 U
2-Chloronaphthalene	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	1.9 U
2-Chlorophenol	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	1.9 U
2-Methylnaphthalene	µg/L	4.1	0.58	37	0.71	0.19 U	56
2-Methylphenol	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	1.9 U

Table 1

Former Cities Refinery
Analytical Results Summary

Location ID:		**GSH-MW08-20**	**GSH-MW09-20**	**GSH-MW10-20**	**GSH-MW11-20**	**GSH-MW12-20**	**GSH-MW13-21**
Sample Name:		**WG-061422-AC-02**	**WG-061522-AC-08**	**WG-061522-AC-06**	**WG-061622-AC-13**	**GW-061522-NN-09**	**WG-061522-DS-07**
Sample Date:		**06/14/2022**	**06/15/2022**	**06/15/2022**	**06/16/2022**	**06/15/2022**	**06/15/2022**
Parameters	**Unit**						
Semivolatile Organic Compounds cont'd							
2-Nitroaniline	µg/L	1.9 U	1.9 U	7.7 U	1.9 U	1.9 U	3.8 U
2-Nitrophenol	µg/L	1.9 U	1.9 U	7.7 U	1.9 U	1.9 U	3.8 U
3&4-Methylphenol	µg/L	1.9 U	1.9 U	7.7 U	1.9 U	1.9 U	3.8 U
3,3'-Dichlorobenzidine	µg/L	4.8 U	4.8 U	19 U	4.8 U	4.8 U	9.6 U
3-Nitroaniline	µg/L	1.9 U	1.9 U	7.7 U	1.9 U	1.9 U	3.8 U
4,6-Dinitro-2-methylphenol	µg/L	4.8 U	4.8 U	19 U	4.8 U	4.8 U	9.6 U
4-Bromophenyl phenyl ether	µg/L	1.9 U	1.9 U	7.7 U	1.9 U	1.9 U	3.8 U
4-Chloro-3-methylphenol	µg/L	1.9 U	1.9 U	7.7 U	1.9 U	1.9 U	3.8 U
4-Chloroaniline	µg/L	1.9 U	1.9 U	7.7 U	1.9 U	1.9 U	3.8 U
4-Chlorophenyl phenyl ether	µg/L	1.9 U	1.9 U	7.7 U	1.9 U	1.9 U	3.8 U
4-Nitroaniline	µg/L	1.9 U	1.9 U	7.7 U	1.9 U	1.9 U	3.8 U
4-Nitrophenol	µg/L	9.6 U	9.6 U	38 U	9.6 U	9.6 U	19 U
Acenaphthene	µg/L	1.1	2.1	1.7	0.58	0.87	6.2
Acenaphthylene	µg/L	0.19 U	0.19 U	0.77 U	0.19 U	0.19 U	0.38 U
Acetophenone	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	1.9 U
Anthracene	µg/L	0.19 U	0.19 U	0.77 U	0.19 U	0.19 U	0.96
Atrazine	µg/L	1.9 U	1.9 U	7.7 U	1.9 U	1.9 U	3.8 U
Benzaldehyde	µg/L	1.9 U	1.9 U	7.7 U	R	1.9 U	3.8 U
Benzo(a)anthracene	µg/L	0.19 U	1.4	0.77 U	0.19 U	0.19 U	0.38 U
Benzo(a)pyrene	µg/L	0.19 U	0.56	0.77 U	0.19 U	0.19 U	0.38 U
Benzo(b)fluoranthene	µg/L	0.20	0.58	0.77 U	0.19 U	0.19 U	0.38 U
Benzo(g,h,i)perylene	µg/L	0.19 U	0.39	0.77 U	0.19 U	0.19 U	0.38 U
Benzo(k)fluoranthene	µg/L	0.19 U	0.19 U	0.77 U	0.19 U	0.19 U	0.38 U
Biphenyl (1,1-Biphenyl)	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	1.9 U
bis(2-Chloroethoxy)methane	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	1.9 U
bis(2-Chloroethyl)ether	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	1.9 U
bis(2-Ethylhexyl)phthalate (DEHP)	µg/L	4.8 U	4.8 U	19 U	4.8 U	4.8 U	9.6 U
Butyl benzylphthalate (BBP)	µg/L	1.9 U	1.9 U	7.7 U	1.9 U	1.9 U	3.8 U
Caprolactam	µg/L	4.8 U	4.8 U	19 U	R	4.8 U	9.6 U
Carbazole	µg/L	26	0.96 U	3.8 U	2.2	0.96 U	25
Chrysene	µg/L	0.30	4.2	0.77 U	0.19 U	0.19 U	0.38 U
Di-n-butylphthalate (DBP)	µg/L	4.8 U	4.8 U	19 U	4.8 U	4.8 U	9.6 U
Di-n-octyl phthalate (DnOP)	µg/L	1.9 U	1.9 U	7.7 U	1.9 U	1.9 U	3.8 U
Dibenz(a,h)anthracene	µg/L	0.19 U	0.19 U	0.77 U	0.19 U	0.19 U	0.38 U
Dibenzofuran	µg/L	1.0	4.1	3.8 U	0.96 U	0.96 U	3.5
Diethyl phthalate	µg/L	4.8 U	4.8 U	19 U	4.8 U	4.8 U	9.6 U
Dimethyl phthalate	µg/L	1.9 U	1.9 U	7.7 U	1.9 U	1.9 U	3.8 U
Fluoranthene	µg/L	0.19 U	2.9	0.77 U	0.19 U	0.19 U	0.38 U
Fluorene	µg/L	3.3	15	0.77 U	0.58	0.19 U	7.8
Hexachlorobenzene	µg/L	0.19 U	0.19 U	0.77 U	0.19 U	0.19 U	0.38 U
Hexachlorobutadiene	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	1.9 U
Hexachlorocyclopentadiene	µg/L	9.6 U	9.6 U	38 U	9.6 U	9.6 U	19 U
Hexachloroethane	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	1.9 U
Indeno(1,2,3-cd)pyrene	µg/L	0.19 U	0.19 U	0.77 U	0.19 U	0.19 U	0.38 U
Isophorone	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	1.9 U
N-Nitrosodi-n-propylamine	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	1.9 U
N-Nitrosodiphenylamine	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	1.9 U
Naphthalene	µg/L	1.4	0.61	0.77 U	0.19 U	0.19 U	8.9
Nitrobenzene	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	1.9 U
Pentachlorophenol	µg/L	9.6 U	9.6 U	38 U	9.6 U	9.6 U	19 U
Phenanthrene	µg/L	2.8	22	0.96	0.24	0.19 U	8.7
Phenol	µg/L	0.96 U	0.96 U	3.8 U	0.96 U	0.96 U	4.2
Pyrene	µg/L	0.75	8.2	0.77 U	0.19 U	0.19 U	0.72
Semivolatile Organic Compounds, SIM							
1,4-Dioxane	µg/L	0.20 U	0.17 J	0.15 J	0.20 U	0.20 U	0.25

Table 1

Former Cities Refinery
Analytical Results Summary

Location ID:		**GSH-MW08-20**	**GSH-MW09-20**	**GSH-MW10-20**	**GSH-MW11-20**	**GSH-MW12-20**	**GSH-MW13-21**
Sample Name:		**WG-061422-AC-02**	**WG-061522-AC-08**	**WG-061522-AC-06**	**WG-061622-AC-13**	**GW-061522-NN-09**	**WG-061522-DS-07**
Sample Date:		**06/14/2022**	**06/15/2022**	**06/15/2022**	**06/16/2022**	**06/15/2022**	**06/15/2022**
Parameters	**Unit**						
Metals							
Aluminum	µg/L	50 J	270	250	570	56 J	53 J
Antimony	µg/L	20 U	20 U	20 U	20 U	20 U	20 U
Arsenic	µg/L	22	15 U	12 J	15 U	15 U	15 U
Barium	µg/L	160 J	36 J	52 J	79 J	11 J	39 J
Beryllium	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Cadmium	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Calcium	µg/L	160000	79000	130000	110000	63000	160000
Chromium	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Copper	µg/L	25 U	25 U	25 U	25 U	25 U	25 U
Iron	µg/L	6200	2100	19000	4400	790	6400
Lead	µg/L	9.5 J	10 U	2.9 J	3.1 J	10 U	10 U
Magnesium	µg/L	11000	9800	34000	11000	15000	13000
Manganese	µg/L	1100	370	520	1300	100	1300
Mercury	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	µg/L	40 U	2.2 J	2.8 J	40 U	2.2 J	40 U
Potassium	µg/L	2400 J	2000 J	1300 J	2200 J	1500 J	2700 J
Selenium	µg/L	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
Sodium	µg/L	3800 J	4500 J	8800	8600	2400 J	7900
Thallium	µg/L	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
Zinc	µg/L	50 U	50 U	50 U	50 U	50 U	50 U
Fumigant							
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 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

Former Cities Refinery
LNAPL Degradation Pilot Study
Soil Analytical Results Summary

Location ID:		**Pre-Pilot Section 1**	**Post-Pilot Section 1**	**Pre-Pilot Section 2**	**Post-Pilot Section 2**	**Pre-Pilot Section 3**	**Post-Pilot Section 3**
Sample Name:		**S-053122-DS-01**	**S-071222-NN-01**	**S-053122-DS-02**	**S-071222-NN-02**	**S-053122-DS-03**	**S-071222-NN-03**
Sample Date:		**05/31/2022**	**07/12/2022**	**05/31/2022**	**07/12/2022**	**05/31/2022**	**07/12/2022**
Parameters	**Unit**						
Total Petroleum Hydrocarbons							
Total Petroleum Hydrocarbons (C10-C44) EFH	mg/kg	23000	38000	32000	73000	13000	69000

Notes:

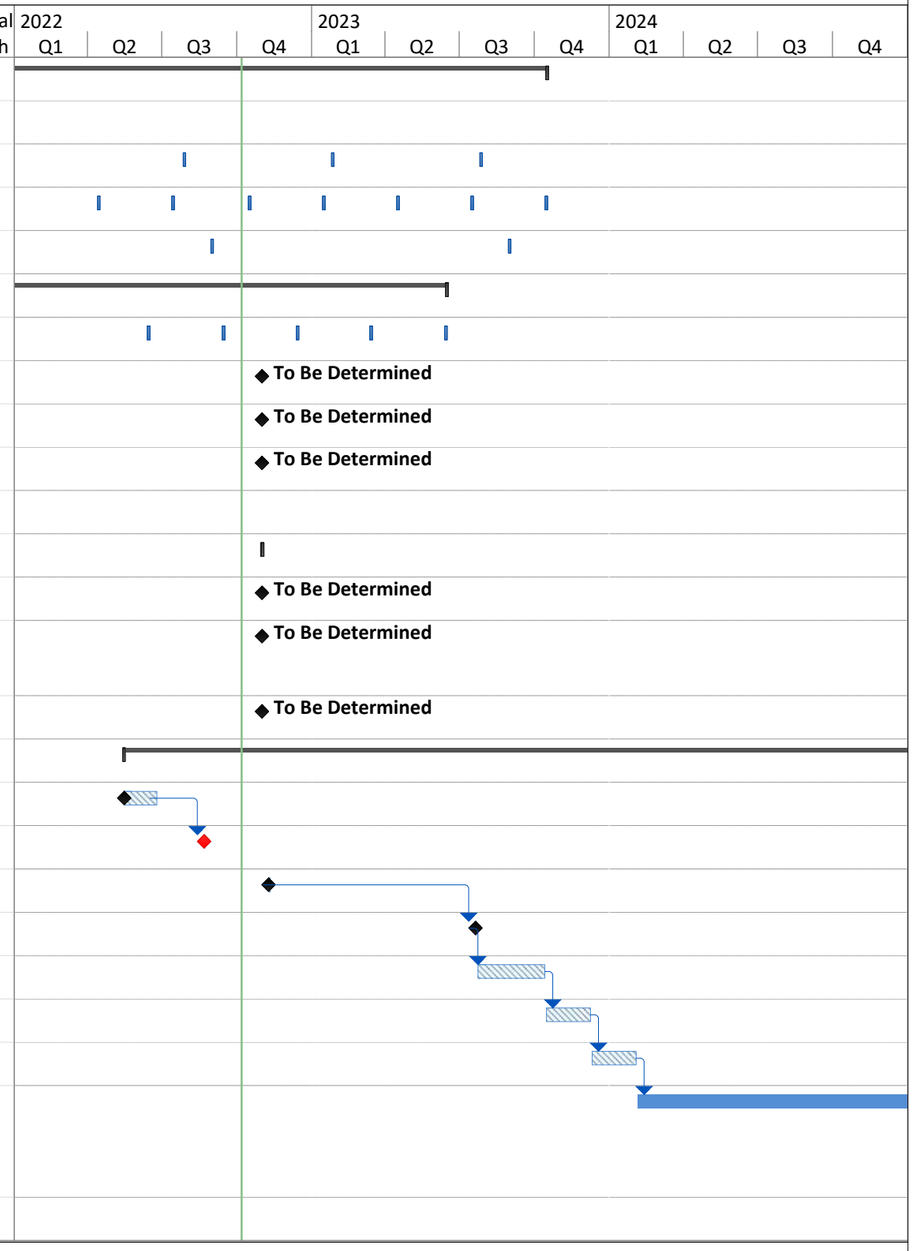
Section 1 - No Treatment
Section 2 - Weekly FFT Applications. No soil disturbance
Section 3 - Weekly FFT Applications. Periodic manual soil agitation and application of additional water

ATTACHMENT A

Project Schedule

Draft Project Schedule - AOC
Former Cities Refinery
East Chicago, IN

ID	Task Name	Duration	Start	Finish	Actual Finish
1	**Administrative**	**965 days**	**Fri 1/24/20**	**Mon 10/16/23**	**NA**
2	Effective Date of AOC	1 day	Fri 1/24/20	Fri 1/24/20	NA
3	Semi-Annual Meetings - Meeting with EPA either by phone or in person on at least a semi-annual basis	261 days	Fri 7/29/22	Fri 7/28/23	NA
7	Quarterly Reports - Fifteenth day of the month after the end of each quarter	392 days	Fri 4/15/22	Mon 10/16/23	**NA**
15	Financial Assurance Update (Updated annually and/or with subsequent work plans)	523 days	Mon 9/20/21	Thu 9/21/23	**NA**
18	**RFI**	**444 days**	**Fri 10/1/21**	**Thu 6/15/23**	**NA**
19	On-going Quarterly Groundwater Monitoring and Off-Site Investigation (Exact Dates TBD)	262 days	Wed 6/15/22	Thu 6/15/23	**NA**
25	Additional RFI Work Plan(s), as needed	1 day	Tue 11/1/22	Tue 11/1/22	NA
26	EPA Review and Approval of RFI Work Plan(s), as needed	1 day	Tue 11/1/22	Tue 11/1/22	NA
27	RFI Field Activities, as needed	1 day	Tue 11/1/22	Tue 11/1/22	NA
28	Submit RFI Report - No later than October 1, 2021	1 day	Fri 10/1/21	Fri 10/1/21	NA
29	**Interim Corrective Measures, as needed**	**1 day**	**Tue 11/1/22**	**Tue 11/1/22**	**NA**
30	Interim Corrective Measures Work Plan(s), as needed	1 day	Tue 11/1/22	Tue 11/1/22	NA
31	Interim Corrective Measures Implementation, as needed (90 days following submittal of Interim Corrective Measures Work Plan and Schedule)	1 day	Tue 11/1/22	Tue 11/1/22	NA
32	Interim Corrective Measures Report (Either prior to or as part of the Environmental Indicators Report)	1 day	Tue 11/1/22	Tue 11/1/22	NA
33	**Final Corrective Measures**	**730 days**	**Mon 5/16/22**	**Fri 2/28/25**	**NA**
34	Public Meeting, including 30-Day Comment Period (Exact Date TBD)	30 days	Mon 5/16/22	Fri 6/24/22	NA
35	Environmental Indicators Report(s) - 60 Days following EPA Final Comments on RFI	1 day	Mon 8/22/22	Mon 8/22/22	NA
36	Installation of Off-Site Monitoring Wells (Estimated Schedule)	2 days	Wed 11/9/22	Thu 11/10/22	NA
37	Corrective Measures Proposal - Within 90 Days following 2 quarters of Data from Off-Site Monitoring Wells	1 day	Fri 7/21/23	Fri 7/21/23	NA
38	EPA review and comments, supplemental information / investigation request (if needed)	3 mons	Mon 7/24/23	Fri 10/13/23	NA
39	Public review and comment	2 mons	Mon 10/16/23	Fri 12/8/23	NA
40	EPA Final Decision	2 mons	Mon 12/11/23	Fri 2/2/24	NA
41	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	Mon 2/5/24	Fri 1/3/25	NA
42	Final Remedy Construction Completion Report (Including an Operation and Maintenance Plan)	2 mons	Mon 1/6/25	Fri 2/28/25	NA



Project: Former Cities Refinery, East Chicago, IN
Date: Fri 10/7/223:41 PM

Expected Timeframe
Contingent Timeframe
Expected Date
Fixed Date
Summary
Manual Progress

Note: Per AOC, 'days' refers to calendar days
Schedule subject to change based on regulatory reviews/approvals, weather, and other factors beyond Respondent's control
DRAFT

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