Kelly Sperbeck
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September 26, 2024

Mr. Mike Bratcher
Environmental Bureau
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re: Stage I and II Abatement Plan Amendment, Proposed Modifications to the Groundwater Monitoring Program, Former Dowell Schlumberger Facility, Artesia, New Mexico

Dear Mr. Bratcher,

Schlumberger Technology Corporation (STC) has prepared this Stage I and II Abatement Plan Amendment to modify the current groundwater monitoring program at the Former Dowell Schlumberger Facility in Artesia, New Mexico (Figure 1).

As summarized in Table 1, the current groundwater monitoring program includes measuring water levels at 23 monitoring wells semiannually in April and October, sampling groundwater at 13 monitoring wells in April, and sampling groundwater at 16 monitoring wells in October. Depending on the monitoring well, the groundwater samples are analyzed for volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (USEPA) Method 8260, anions by USEPA Method 300.0, and total organic carbon (TOC) by USEPA Standard Method SM5310C to evaluate progress from ongoing operation of the groundwater extraction and treatment system and the 2022 carbon substrate injections (completed in injection well locations shown as orange dots in Figure 1).

Only two of the site monitoring wells (MW-35 and MW-38[1]) have contaminant of concern (COC) concentrations that exceed their respective New Mexico Water Quality Control Commission (NMWQCC) standards due to long-term remediation progress. Groundwater monitoring results from April 2015 through April 2024 from monitoring wells in the current groundwater monitoring program are presented in Table 2, and results from the April 2024 groundwater monitoring event are shown in Figures 2 and 3. The April 2024 1,1-dichloroethene (1,1-DCE) concentration at MW-35 (0.0103 milligram per liter [mg/L]), just downgradient of the property boundary, exceeds its NMWQCC standard of 0.005 mg/L; however, concentrations have consistently decreased from the historical maximum of 0.0298 mg/L in April 2017 (Figure 4). The October 2023 1,1-dichloroethane (1,1-DCA) concentration at MW-38 (0.0552 mg/L), in the former source area, exceeds its NMWQCC standard of 0.025 mg/L; however, concentrations have consistently decreased from the historical maximum of 0.131 mg/L in January 2020 (Figure 5).

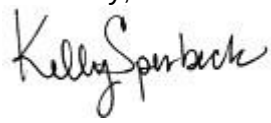
Given that groundwater from only two monitoring wells has COC concentrations that exceed their NMWQCC standards, and the concentrations have been decreasing, STC proposes to optimize the groundwater sampling program as follows:

[1] MW-38 was not sampled in April 2024 because there was insufficient groundwater for sampling. The 1,1-DCA concentration at MW-38 exceeded its NMWQCC standard in the most recent groundwater sample collected in October 2023.

- Measure groundwater levels annually in April. Except for MW-32, which was recommended in the 2023 Annual Groundwater Monitoring Report (CH2M HILL Engineers, Inc. 2024) to be removed from the sampling program because access has not been granted by private property owner since October 2023, groundwater levels in monitoring wells in the current sampling program will be gauged.
- Collect groundwater samples from MW-12, MW-36, MW-37, and MW-38 for analyses of VOCs by USEPA Method 8260, anions by USEPA Method 300.0, and TOC by USEPA Standard Method SM5310C annually in April. The data will continue to be used to evaluate progress from the 2022 carbon substrate injections.
- Collect groundwater samples from MW-28, MW-29, MW-35, MW-39, and MW-40 for analyses of VOCs by USEPA Method 8260 annually in April. The data will continue to be used to evaluate progress from ongoing operation of the groundwater extraction and treatment system at the distal end of the plume.
- Remove MW-11, MW-17C, MW-22, MW-25, MW-30, MW-31, and MW-34 from the sampling program because these wells have not had COC concentration exceedances of their respective NMWQCC standards during the past 9 to 23 consecutive sampling events, or at least since 2017.

It is proposed that upon receipt of the New Mexico Oil Conservation Division's approval, the groundwater monitoring program revisions discussed in this Stage I and II Abatement Plan Amendment will be implemented in April 2025. The analytical data collected in 2024 and presented in this Stage I and II Abatement Plan Amendment will be presented in the 2024 Annual Groundwater Monitoring Report.

Sincerely,



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Enclosures:

- Table 1. Proposed Groundwater Gauging and Sampling Summary
- Table 2. Summary of Groundwater Analytical Data – April 2015 through April 2024
- Figure 1. Site Plan
- Figure 2. Concentration Map for 1,1-DCE – April 2024
- Figure 3. Concentration Map for 1,1-DCA – 2024
- Figure 4. 1,1-DCE Concentrations over Time in Groundwater (2017 - 2024)
- Figure 5. 1,1-DCA Concentrations over Time in Groundwater (2019 - 2023)

c: Meredith Harris/The Dow Chemical Company
Monica Schneider/CH2M HILL Engineers, Inc.
Anne Nea/CH2M HILL Engineers, Inc.
Aleeca Forsberg/CH2M HILL Engineers, Inc.

Reference

CH2M HILL Engineers, Inc. 2024. *2023 Annual Groundwater Monitoring Report Former Dowell Schlumberger Facility Artesia, New Mexico 507 East Richey Avenue Artesia, Eddy County, New Mexico*. March.

Tables

Table 1. Proposed Groundwater Gauging and Sampling Summary

Stage I and II Abatement Plan Amendment, Proposed Modifications to the Groundwater Monitoring Program

Former Dowell Schlumberger Facility, Artesia, New Mexico

Well Number	Current Groundwater Sampling Program		Groundwater Sampling Status[a]	Number of Consecutive Sampling Events without an Exceedance	Proposed Groundwater Sampling Program	
	April	October			April	October
MW-8			Not sampled since 2018. No exceedances from 2015 to 2018.	4		
MW-11	XX	XX	No exceedances since sampling began in 2015.	23		
MW-12	XX	XX	No exceedances since October 2022.	3	XX	
MW-15			Not sampled since 2019. No exceedances from 2015 to 2019.	8		
MW-17C	XX	XX	No exceedances since December 2017.	19		
MW-18			Not sampled since 2019. No exceedances from 2015 to 2019.	9		
MW-20			Not sampled since 2018. No exceedances from 2015 to 2018.	4		
MW-21			Not sampled since 2019. No exceedances from 2015 to 2019.	9		
MW-22		X	No exceedances since April 2015.	15		
MW-25		X	No exceedances since sampling began in 2015.	16		
MW-26			Not sampled since 2019. No exceedances from 2015 to 2019.	9		
MW-28	X	X	No exceedances since October 2020.	7	X	
MW-29	X	X	No exceedances since October 2022.	3	X	
MW-30	X	X	No exceedances since November 2015.	17		
MW-31	X	X	No exceedances since sampling began in 2015.	20		
MW-32			Not sampled since 2022. No exceedances from 2015 to 2022. Access restricted by private property owner since 2022.	15		
MW-34		X	No exceedances since October 2016.	12		
MW-35	X	X	The April 2024 1,1-DCE concentration (0.0103 mg/L) exceeded its NMWQCC standard of 0.005 mg/L; however, concentrations have consistently decreased from the historical maximum of 0.0298 mg/L in April 2017 (Figure 4).	0	X	
MW-36	XX	XX	No exceedances since October 2020.	9	XX	
MW-37	XX	XX	No exceedances since April 2023. MW-37 was not sampled in April 2024 because there was insufficient groundwater for sampling.	1	XX	
MW-38	XX	XX	The October 2023 1,1-dichloroethane (1,1-DCA) concentration (0.0552 mg/L) exceeds its NMWQCC standard of 0.025 mg/L; however, concentrations have consistently decreased from the historical maximum of 0.131 mg/L in January 2020 (Figure 5). MW-38 was not sampled in April 2024 because there was insufficient groundwater for sampling.	0	XX	
MW-39	X	X	No exceedances since September 2021.	6	X	
MW-40	X	X	No exceedances since sampling began in September 2021.	7	X	
Total water levels	23	23			22	
Total sampled	13	16			9	

Notes:

[a] Reflects 1,1-DCE, 1,1-DCA, benzene, naphthalene, and tetrachloroethene concentrations relative to their respective NMWQCC standards.

Groundwater level in monitoring well is gauged.

X Groundwater sampling (VOCs via USEPA Method 8260D)

XX Groundwater sampling (VOCs via USEPA Method 8260D, anions by USEPA Method 300.0, and total organic carbon via USEPA Method SM5310C)

1,1-DCA = 1,1-dichloroethane

1,1-DCE = 1,1-dichloroethene

mg/L = milligram(s) per liter

NMWQCC = New Mexico Water Quality Control Commission

USEPA = U.S. Environmental Protection Agency

VOC = volatile organic compound

Table 2. Summary of Groundwater Analytical Data – April 2015 through April 2024

Stage I and II Abatement Plan Amendment, Proposed Modifications to the Groundwater Monitoring Program

Former Dowell Schlumberger Facility, Artesia, New Mexico

COMPOUND		1,1-DCA	1,1-DCE	Benzene	Naphthalene	PCE
UNITS		mg/L	mg/L	mg/L	mg/L	mg/L
NMWQCC STANDARDS		0.025	0.005	0.01	0.03	0.02
WELL NUMBER	SAMPLE DATE					
MW-11	11/4/2015	**0.00427**	**0.000297 J**	< 0.000176	< 0.000129	**0.000481 J**
	10/12/2016	**0.00548 J**	< 0.000192	< 0.000176	< 0.000129	**0.000898 J**
	10/2/2017	**0.0056**	**0.000516 J**	< 0.000176	< 0.000129	**0.000569 J**
	12/5/2017	**0.0091**	< 0.000192	< 0.000176	< 0.000129	**0.000464 J**
	2/7/2018	**0.00578**	**0.000318 J**	< 0.000176	< 0.000129	**0.000447 J**
	4/23/2018	**0.00657**	< 0.000192	< 0.000176	< 0.000129	**0.000578 J**
	7/17/2018	**0.00318**	**0.000234 J**	< 0.000176	< 0.000129	**0.000339 J**
	10/23/2018	**0.00245**	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	4/22/2019	**0.00304**	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	10/29/2019	**0.00488**	**0.000201 J**	< 0.000176	**0.000441 J**	**0.00039 J**
	1/14/2020	**0.0036**	< 0.000192	< 0.000176	< 0.000527	< 0.000333
	4/28/2020	**0.00645**	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	7/14/2020	**0.00487**	< 0.000192	< 0.000176	< 0.000129	**0.000391 J**
	10/6/2020	**0.00533 J**	**0.000223 J**	< 0.000176	< 0.000129	< 0.000333
	1/26/2021	**0.00368**	< 0.0003	< 0.00033	< 0.0002	< 0.000189
	4/28/2021	**0.0036**	< 0.000216	< 0.000214	< 0.002	< 0.0005
	7/1/2021	**0.00423**	< 0.000216	< 0.000214	< 0.002	< 0.0005
	10/11/2021	**0.000911**	< 0.0000433	< 0.0000429	< 0.0004	< 0.0001
	4/20/2022	**0.00279**	< 0.000216	< 0.000214	< 0.002	< 0.0005
	10/26/2022	**0.00202**	< 0.000738	< 0.000533	< 0.00135	< 0.000801
	4/19/2023	< 0.000635	< 0.000738	< 0.000533	< 0.00135	< 0.000801
	10/4/2023	**0.00208**	< 0.000738	< 0.00046	< 0.00135	< 0.000655
	4/24/2024	< 0.000635	< 0.000738	< 0.00046	< 0.00135	< 0.000655
MW-12	4/22/2015	**0.025**	**0.00203**	**0.00953**	**0.0204**	**0.0016**
	11/4/2015	**0.0822**	**0.0044 J**	**0.0464**	**0.494**	**0.00429 J**
	11/4/2015	**0.0692**	**0.0049 J**	**0.023**	**0.296**	**0.00481 J**
	4/28/2016	**0.0588**	< 0.00384	**0.0323**	**0.111 J**	< 0.00666
	10/12/2016	**0.0595**	**0.0044**	**0.0485**	**0.296**	**0.00232**
	4/4/2017	**0.0441**	**0.00243**	**0.0234**	**0.124**	**0.00138**
	10/2/2017	**0.0305**	**0.00292**	**0.00322**	**0.0256**	**0.000723 J**
	12/5/2017	< 0.000168	< 0.000192	< 0.000176	**0.0026 B**	< 0.000333
	2/7/2018	**0.0333**	**0.00249**	**0.000922 J**	**0.00566**	< 0.000333
	4/23/2018	**0.0208**	**0.00163**	**0.000208 J**	< 0.000129	< 0.000333
	7/17/2018	**0.0308**	**0.00189**	**0.000403 J**	< 0.000129	< 0.000333
	10/23/2018	**0.0276**	**0.00137**	**0.000246 J**	< 0.000129	< 0.000333
	4/22/2019	**0.026**	**0.00161**	**0.00617**	**0.0466**	**0.00377**
	10/29/2019	**0.0502**	**0.00252**	**0.00858**	**0.0297**	**0.00172**
	1/14/2020	**0.0517**	**0.00275**	**0.00899**	**0.0034**	**0.000515 J**
	4/27/2020	**0.0319**	**0.00135**	**0.00528**	**0.00776**	**0.000529 J**
	7/14/2020	**0.047**	**0.00164**	**0.00328**	**0.00668**	**0.000816 J**
	10/6/2020	**0.0556**	**0.00324 J**	< 0.000176	**0.00382**	**0.000366 J**
	1/26/2021	**0.0357**	**0.00158**	**0.000806 J**	**0.00108 J**	< 0.000189
	4/28/2021	**0.0433**	< 0.000216	**0.000737 J**	< 0.002	< 0.0005
	7/1/2021	**0.0252**	**0.000719 J**	< 0.000214	< 0.002	< 0.0005
	10/11/2021	**0.0408**	**0.00222**	**0.000877 J**	< 0.002	< 0.0005
	4/20/2022	**0.0303**	**0.000866 J**	**0.000363 J**	< 0.002	< 0.0005

Table 2. Summary of Groundwater Analytical Data – April 2015 through April 2024

Stage I and II Abatement Plan Amendment, Proposed Modifications to the Groundwater Monitoring Program

Former Dowell Schlumberger Facility, Artesia, New Mexico

COMPOUND		1,1-DCA	1,1-DCE	Benzene	Naphthalene	PCE
UNITS		mg/L	mg/L	mg/L	mg/L	mg/L
NMWQCC STANDARDS		0.025	0.005	0.01	0.03	0.02
WELL NUMBER	SAMPLE DATE					
MW-12	10/26/2022	**0.0349**	**0.0012**	**0.00354**	**0.0796**	**0.001**
	4/18/2023	**0.0227**	< 0.000738	**0.00167**	**0.00166 J**	< 0.000801
	10/4/2023	**0.0159**	< 0.000738	< 0.00046	< 0.00135	< 0.000655
	4/24/2024	**0.0073**	< 0.000738	< 0.00046	< 0.00135	< 0.000655
MW-17C	4/22/2015	< 0.000168	**0.000388 J**	< 0.000176	< 0.000129	< 0.000514
	11/4/2015	< 0.000168	**0.000299 J**	< 0.000176	< 0.000129	< 0.000333
	4/28/2016	**0.000267 J**	**0.000397 J**	< 0.000176	< 0.000129	< 0.000333
	10/12/2016	**0.000359 J**	**0.000557 J**	< 0.000176	< 0.000129	< 0.000333
	4/4/2017	**0.000292 J**	**0.000698 J**	< 0.000176	< 0.000129	< 0.000333
	10/2/2017	**0.00034 J**	**0.000629 J**	< 0.000176	< 0.000129	< 0.000333
	12/5/2017	**0.0534**	**0.00575**	**0.00372**	**0.0107 B**	< 0.000333
	2/7/2018	< 0.000168	**0.000501 J**	< 0.000176	< 0.000129	< 0.000333
	4/23/2018	< 0.000168	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	7/17/2018	< 0.000168	**0.000247 J**	< 0.000176	< 0.000129	< 0.000333
	10/23/2018	< 0.000168	**0.000278 J**	< 0.000176	< 0.000129	< 0.000333
	4/22/2019	< 0.000168	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	10/29/2019	**0.000178 J**	**0.00035 J**	< 0.000176	**0.00222**	< 0.000333
	1/14/2020	< 0.000168	**0.000277 J**	< 0.000176	< 0.000129	< 0.000333
	4/29/2020	< 0.000168	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	7/14/2020	< 0.000168	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	10/6/2020	**0.000252 J**	**0.000276 J**	< 0.000176	< 0.000129	< 0.000333
	1/26/2021	< 0.000168	< 0.0003	< 0.00033	< 0.0002	< 0.000189
	4/28/2021	< 0.000244	< 0.000216	< 0.000214	< 0.002	< 0.0005
	7/1/2021	< 0.000244	< 0.000216	< 0.000214	< 0.002	< 0.0005
	10/11/2021	< 0.0000489	< 0.0000433	< 0.0000429	< 0.0004	< 0.0001
	4/19/2022	< 0.000244	< 0.000216	< 0.000214	< 0.002	< 0.0005
	10/25/2022	< 0.000635	< 0.000738	< 0.000533	< 0.00135	< 0.000801
	4/18/2023	< 0.000635	< 0.000738	< 0.000533	< 0.00135	< 0.000801
	10/3/2023	< 0.000635	< 0.000738	< 0.00046	< 0.00135	< 0.000655
	4/24/2024	< 0.000635	< 0.000738	< 0.00046	< 0.00135	< 0.000655
MW-22	4/22/2015	**0.00347**	**0.0102**	< 0.000176	< 0.000129	**0.0115**
	11/4/2015	**0.00142**	**0.00366**	< 0.000176	< 0.000129	**0.00401**
	4/28/2016	**0.00131**	**0.002**	< 0.000176	< 0.000129	**0.00396**
	10/12/2016	**0.00117**	**0.00151**	< 0.000176	< 0.000129	**0.00431**
	4/4/2017	**0.000302 J**	**0.000856 J**	< 0.000176	< 0.000129	**0.00102**
	10/2/2017	**0.000527 J**	**0.000687 J**	< 0.000176	< 0.000129	**0.000944 J**
	4/24/2018	< 0.000168	< 0.000192	< 0.000176	< 0.000129	**0.000389 J**
	10/23/2018	< 0.000168	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	4/23/2019	**0.000546 J**	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	10/29/2019	**0.000832 J**	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	4/27/2020	**0.00167**	**0.000437 J**	< 0.000176	< 0.000129	< 0.000333
	10/5/2020	**0.00111 J**	**0.000239 J**	< 0.000176	< 0.000129	< 0.000333
	4/28/2021	< 0.000244	< 0.000216	< 0.000214	< 0.002	< 0.0005
	10/11/2021	< 0.0000489	< 0.0000433	< 0.0000429	< 0.0004	< 0.0001
	10/26/2022	< 0.000635	< 0.000738	< 0.000533	< 0.00135	< 0.000801
	10/4/2023	< 0.000635	< 0.000738	< 0.00046	< 0.00135	**0.000703 J**
MW-25	4/22/2015	**0.00208**	**0.0013**	< 0.000176	< 0.000129	**0.00545**

Table 2. Summary of Groundwater Analytical Data – April 2015 through April 2024

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Former Dowell Schlumberger Facility, Artesia, New Mexico

COMPOUND		1,1-DCA	1,1-DCE	Benzene	Naphthalene	PCE
UNITS		mg/L	mg/L	mg/L	mg/L	mg/L
NMWQCC STANDARDS		0.025	0.005	0.01	0.03	0.02
WELL NUMBER	SAMPLE DATE					
MW-25	11/4/2015	**0.00133**	**0.00441**	< 0.000176	< 0.000129	**0.00503**
	4/28/2016	**0.00178**	**0.00438**	< 0.000176	< 0.000129	**0.00532**
	10/12/2016	**0.00113**	**0.00392**	< 0.000176	< 0.000129	**0.00521**
	4/4/2017	**0.00091 J**	**0.00369**	< 0.000176	< 0.000129	**0.00322**
	10/2/2017	**0.00117**	**0.00311**	< 0.000176	< 0.000129	**0.00337**
	4/24/2018	**0.000574 J**	**0.00176**	< 0.000176	< 0.000129	**0.00183**
	10/23/2018	< 0.000168	**0.00144**	< 0.000176	< 0.000129	**0.00196**
	4/23/2019	**0.000701 J**	**0.000777 J**	< 0.000176	< 0.000129	**0.00118**
	10/29/2019	**0.000989 J**	**0.000473 J**	< 0.000176	< 0.000129	**0.000895 J**
	4/27/2020	**0.00171**	**0.00167**	< 0.000176	< 0.000129	**0.00119**
	10/5/2020	**0.00168**	**0.00194**	< 0.000176	< 0.000129	**0.00129**
	4/28/2021	**0.000771 J**	**0.000528 J**	< 0.000214	< 0.002	< 0.0005
	10/11/2021	< 0.0000489	< 0.0000433	< 0.0000429	< 0.0004	< 0.0001
	10/26/2022	< 0.000635	< 0.000738	< 0.000533	< 0.00135	< 0.000801
	10/4/2023	< 0.000635	< 0.000738	< 0.00046	< 0.00135	**0.000703 J**
MW-28	4/23/2015	**0.00679**	**0.0216**	< 0.000176	< 0.000129	**0.0188**
	11/3/2015	**0.00626**	**0.0155**	< 0.000176	< 0.000129	**0.0183**
	4/28/2016	**0.00712**	**0.0148**	< 0.000176	< 0.000129	**0.0202**
	10/12/2016	**0.00549**	**0.012**	< 0.000176	< 0.000129	**0.0175**
	4/4/2017	**0.00601**	**0.0158**	< 0.000176	< 0.000129	**0.0163**
	10/2/2017	**0.00743**	**0.0169**	< 0.000176	< 0.000129	**0.0221**
	4/23/2018	**0.00613**	**0.0157**	< 0.000176	< 0.000129	**0.0188**
	10/23/2018	**0.00513**	**0.0138**	< 0.000176	< 0.000129	**0.0163**
	4/23/2019	**0.00465**	**0.0127**	< 0.000176	< 0.000129	**0.0176**
	10/29/2019	**0.00553**	**0.0132**	< 0.000176	**0.000316 J**	**0.0178**
	4/28/2020	**0.00438**	**0.0101**	< 0.000176	< 0.000129	**0.00808**
	10/5/2020	**0.00451**	**0.00882**	< 0.000176	< 0.000129	**0.00769**
	4/28/2021	**0.00306**	**0.00506**	< 0.000214	< 0.002	**0.00649**
	10/11/2021	**0.000949**	**0.00163**	< 0.0000429	< 0.0004	**0.00145**
	4/19/2022	**0.00246**	**0.00362**	< 0.000214	< 0.002	**0.00535**
	10/26/2022	< 0.000635	**0.00231**	< 0.000533	< 0.00135	**0.00297**
	4/18/2023	< 0.000635	< 0.000738	< 0.000533	< 0.00135	**0.00388**
	10/4/2023	**0.000959 J**	**0.00134**	< 0.00046	< 0.00135	**0.00177**
	4/24/2024	**0.00104**	**0.000951 J**	< 0.00046	< 0.00135	**0.00164**
MW-29	4/23/2015	**0.00477**	**0.0162**	< 0.000176	< 0.000129	**0.0103**
	11/3/2015	**0.00732**	**0.0196**	< 0.000176	< 0.000129	**0.017**
	11/3/2015	**0.00655**	**0.0196**	< 0.000176	< 0.000129	**0.0135**
	4/28/2016	**0.00965**	**0.021**	< 0.000176	< 0.000129	**0.0248**
	10/12/2016	**0.0099**	**0.0332**	< 0.000176	< 0.000129	**0.0238**
	4/4/2017	**0.00885**	**0.0213**	< 0.000176	< 0.000129	**0.0207**
	10/2/2017	**0.0114**	**0.028**	< 0.000176	< 0.000129	**0.0319**
	4/23/2018	**0.0086**	**0.0212**	< 0.000176	< 0.000129	**0.024**
	10/22/2018	**0.0128**	**0.0406**	< 0.000176	< 0.000129	**0.0294**
	4/23/2019	**0.00861**	**0.0237**	< 0.000176	< 0.000129	**0.0306**
	10/29/2019	**0.0103**	**0.0267**	< 0.000176	< 0.000129	**0.0365**
	4/28/2020	**0.0111**	**0.0252**	< 0.000176	< 0.000129	**0.0205**
	10/5/2020	**0.0104**	**0.0184**	< 0.000176	< 0.000129	**0.0184**

Table 2. Summary of Groundwater Analytical Data – April 2015 through April 2024

Stage I and II Abatement Plan Amendment, Proposed Modifications to the Groundwater Monitoring Program

Former Dowell Schlumberger Facility, Artesia, New Mexico

COMPOUND		1,1-DCA	1,1-DCE	Benzene	Naphthalene	PCE
UNITS		mg/L	mg/L	mg/L	mg/L	mg/L
NMWQCC STANDARDS		0.025	0.005	0.01	0.03	0.02
WELL NUMBER	SAMPLE DATE					
MW-29	4/28/2021	**0.00681**	**0.013**	< 0.000214	< 0.002	**0.0197**
	10/11/2021	**0.00107**	**0.00393**	< 0.0000429	< 0.0004	**0.00349**
	4/19/2022	**0.00404**	**0.00657**	< 0.000214	< 0.002	**0.0119**
	10/26/2022	**0.00377**	**0.00804**	< 0.000533	< 0.00135	**0.0135**
	4/18/2023	**0.00256**	**0.0054**	< 0.000533	< 0.00135	**0.0114**
	10/4/2023	**0.00225**	**0.00435**	< 0.00046	< 0.00135	**0.00851**
	4/24/2024	**0.00177**	**0.0033**	< 0.00046	< 0.00135	**0.00689**
MW-30	4/23/2015	**0.0052**	**0.0147**	< 0.000176	< 0.000129	**0.0169**
	4/23/2015	**0.00509**	**0.015**	< 0.000176	< 0.000129	**0.0181**
	11/3/2015	**0.00391**	**0.00654**	< 0.000176	< 0.000129	**0.0132**
	4/28/2016	**0.00487**	**0.00405**	< 0.000176	< 0.000129	**0.0109**
	10/12/2016	**0.00283**	**0.00473**	< 0.000176	< 0.000129	**0.00592**
	4/4/2017	**0.00322**	**0.004**	< 0.000176	< 0.000129	**0.00578**
	10/2/2017	**0.00207**	**0.00441**	< 0.000176	< 0.000129	**0.00604**
	4/23/2018	**0.00187**	**0.0042**	< 0.000176	< 0.000129	**0.00537**
	10/22/2018	**0.00173**	**0.00544**	< 0.000176	< 0.000129	**0.00458**
	4/22/2019	**0.00096 J**	**0.00271**	< 0.000176	< 0.000129	**0.0035**
	10/29/2019	**0.00132**	**0.00315**	< 0.000176	**0.000249 J**	**0.00498**
	4/28/2020	**0.001**	**0.00266**	< 0.000176	< 0.000129	**0.0028**
	10/6/2020	**0.00137 J**	**0.00304 J**	< 0.000176	< 0.000129	**0.00325 J**
	4/28/2021	**0.00102**	**0.00178**	< 0.000214	< 0.002	**0.00266**
	10/11/2021	< 0.0000489	**0.000947**	< 0.0000429	< 0.0004	**0.000568**
	4/19/2022	< 0.000244	**0.00181**	< 0.000214	< 0.002	**0.00311**
	10/26/2022	**0.000995 J**	**0.00256**	< 0.000533	< 0.00135	**0.00326**
	4/18/2023	< 0.000635	**0.000931 J**	< 0.000533	< 0.00135	**0.0012**
	10/3/2023	< 0.000635	**0.000952 J**	< 0.00046	< 0.00135	**0.00129**
	4/24/2024	< 0.000635	**0.000879 J**	< 0.00046	< 0.00135	**0.00139**
MW-31	4/23/2015	< 0.000168	< 0.000192	< 0.000176	< 0.000129	< 0.000514
	11/4/2015	< 0.000168	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	11/4/2015	< 0.000168	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	4/28/2016	< 0.000168	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	10/12/2016	**0.000317 J**	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	4/5/2017	< 0.000168	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	10/2/2017	**0.000298 J**	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	4/24/2018	< 0.000168	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	10/23/2018	**0.00246**	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	4/23/2019	**0.00181**	**0.000411 J**	< 0.000176	< 0.000129	< 0.000333
	10/29/2019	**0.00316**	**0.00215**	< 0.000176	< 0.000129	< 0.000333
	4/28/2020	**0.00168**	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	10/5/2020	**0.000537 J**	< 0.000192	< 0.000176	< 0.000129	< 0.000333
	4/28/2021	**0.00116**	< 0.000216	< 0.000214	< 0.002	< 0.0005
	10/11/2021	< 0.0000489	< 0.0000433	< 0.0000429	< 0.0004	< 0.0001
	4/19/2022	**0.000278 J**	< 0.000216	< 0.000214	< 0.002	< 0.0005
	10/26/2022	**0.00291**	< 0.000738	< 0.000533	< 0.00135	< 0.000801
	4/18/2023	**0.0025**	< 0.000738	< 0.000533	< 0.00135	< 0.000801
	10/4/2023	**0.00207**	< 0.000738	< 0.00046	< 0.00135	< 0.000655
	4/24/2024	**0.00135**	< 0.000738	< 0.00046	< 0.00135	< 0.000655

Table 2. Summary of Groundwater Analytical Data – April 2015 through April 2024

Stage I and II Abatement Plan Amendment, Proposed Modifications to the Groundwater Monitoring Program

Former Dowell Schlumberger Facility, Artesia, New Mexico

COMPOUND		1,1-DCA	1,1-DCE	Benzene	Naphthalene	PCE
UNITS		mg/L	mg/L	mg/L	mg/L	mg/L
NMWQCC STANDARDS		0.025	0.005	0.01	0.03	0.02
WELL NUMBER	SAMPLE DATE					
MW-34	4/23/2015	**0.00185**	**0.00373**	< 0.000176	< 0.000129	**0.00291**
	11/3/2015	**0.0021**	**0.00541**	< 0.000176	< 0.000129	**0.00516**
	4/28/2016	**0.00259**	**0.00589**	< 0.000176	< 0.000129	**0.00661**
	10/12/2016	**0.002**	**0.00694**	< 0.000176	< 0.000129	**0.00505**
	4/5/2017	**0.00145**	**0.00484**	< 0.000176	< 0.000129	**0.00482**
	10/2/2017	**0.00131**	**0.00267**	< 0.000176	< 0.000129	**0.00316**
	4/23/2018	**0.000709 J**	**0.00188**	< 0.000176	< 0.000129	**0.00221**
	10/23/2018	**0.000371 J**	**0.000679 J**	< 0.000176	< 0.000129	**0.000966 J**
	4/22/2019	**0.00068 J**	**0.000507 J**	< 0.000176	< 0.000129	**0.000858 J**
	10/29/2019	**0.00104**	**0.000784 J-**	< 0.000176	**0.000174 J**	**0.00126**
	4/28/2020	**0.0017**	**0.000914 J**	< 0.000176	**0.00109 J**	**0.00056 J**
	10/5/2020	**0.00163**	< 0.000192	< 0.000176	< 0.000129	**0.000446 J**
	4/28/2021	**0.000973 J**	< 0.000216	< 0.000214	< 0.002	**0.000544 J**
	10/11/2021	**0.000217**	< 0.0000433	< 0.0000429	< 0.0004	< 0.0001
	10/26/2022	< 0.000635	< 0.000738	< 0.000533	< 0.00135	< 0.000801
	10/3/2023	< 0.000635	< 0.000738	< 0.00046	< 0.00135	< 0.000655
MW-35	1/19/2017	--	**0.0169**	--	--	**0.0137**
	4/5/2017	--	**0.0298**	--	--	**0.0204**
	10/2/2017	--	**0.0271**	--	--	**0.0256**
	4/23/2018	--	**0.0253**	--	--	**0.0266**
	10/22/2018	--	**0.0386**	--	--	**0.0223**
	4/23/2019	--	**0.0205**	--	--	**0.0233**
	10/29/2019	--	**0.0234**	--	--	**0.0262**
	4/28/2020	--	**0.0158**	--	--	**0.0116**
	10/5/2020	--	**0.0171**	--	--	**0.0121**
	4/28/2021	--	**0.0127**	--	--	**0.0137**
	9/11/2021	--	**0.0119**	--	--	**0.0127**
	10/11/2021	--	**0.00308**	--	--	**0.00306**
	4/19/2022	--	**0.0107**	--	--	**0.0118**
	10/25/2022	--	**0.0135**	--	--	**0.0149**
	4/18/2023	--	**0.0128**	--	--	**0.0168**
	10/3/2023	--	**0.0134**	--	--	**0.0146**
	4/24/2024	--	**0.0103**	--	--	**0.0108**
MW-36	8/29/2019	**0.0412 J**	**0.00193**	**0.0292 J**	**0.00696 J**	**0.00063 J**
	10/29/2019	**0.0337**	**0.000593 J**	**0.0129**	**0.0236**	**0.01**
	1/14/2020	**0.0411**	**0.000457 J**	**0.0138**	**0.00696**	**0.00733**
	4/27/2020	**0.0408**	< 0.000192	**0.0198**	**0.00991**	**0.00807**
	7/14/2020	**0.0458**	< 0.000192	**0.0219**	**0.0146**	**0.00969**
	10/6/2020	**0.034 J**	**0.000441 J**	**0.00934 J**	**0.00503**	**0.00845 J**
	1/26/2021	**0.0177**	**0.000466 J**	**0.00295**	**0.00337 J**	**0.00856**
	4/28/2021	**0.0174**	< 0.000216	**0.00131**	< 0.002	**0.00645**
	7/1/2021	**0.00903**	< 0.000216	**0.000756 J**	< 0.002	**0.00482**
	10/12/2021	**0.0116**	< 0.000216	**0.00126**	< 0.002	**0.00602**
	4/19/2022	**0.0121 J**	**0.000324 J**	**0.000658 J**	< 0.002	**0.00566**
	10/25/2022	**0.0111**	< 0.000738	**0.000897 J**	< 0.00135	**0.00294 F1**
	4/18/2023	**0.0165**	< 0.000738	**0.00642**	< 0.00135	**0.0058**
	10/3/2023	**0.0172**	< 0.000738	**0.00753**	< 0.00135	**0.00229**

Table 2. Summary of Groundwater Analytical Data – April 2015 through April 2024

Stage I and II Abatement Plan Amendment, Proposed Modifications to the Groundwater Monitoring Program

Former Dowell Schlumberger Facility, Artesia, New Mexico

COMPOUND		1,1-DCA	1,1-DCE	Benzene	Naphthalene	PCE
UNITS		mg/L	mg/L	mg/L	mg/L	mg/L
NMWQCC STANDARDS		0.025	0.005	0.01	0.03	0.02
WELL NUMBER	SAMPLE DATE					
MW-36	4/24/2024	**0.00814**	< 0.000738	**0.00183**	< 0.00135	< 0.000655
MW-37	8/28/2019	**0.241**	**0.0125**	**0.00569**	**0.00755**	**0.0101**
	10/29/2019	**0.0475**	**0.00822**	**0.00701**	**0.0114**	**0.00688**
	1/14/2020	**0.0477**	**0.00667**	**0.00521**	**0.0056**	**0.00432**
	4/27/2020	**0.0347 J**	**0.00207 J**	**0.00258 J**	**0.0083 J**	**0.00236**
	7/14/2020	**0.0794**	**0.00761**	**0.0296**	**0.0878**	**0.00413**
	10/6/2020	**0.0547 J**	**0.00446**	< 0.000176	**0.00313**	**0.00389**
	1/26/2021	**0.0292 J**	**0.00286**	**0.00179**	**0.00109 J**	**0.00362**
	4/28/2021	**0.0288**	**0.00347**	**0.00253**	< 0.002	**0.00393**
	7/1/2021	**0.0147**	**0.00165**	**0.00103**	< 0.002	**0.00334**
	10/11/2021	**0.0213 J**	**0.00294**	**0.00405**	**0.00227 J**	**0.00155 J**
	4/19/2022	**0.0124**	**0.00171**	**0.000492 J**	< 0.002	**0.00192**
	10/26/2022	**0.0638**	**0.00261**	**0.00639**	**0.0017 J**	**0.00544**
	4/19/2023	**0.00496**	**0.00117**	**0.0154**	**0.00314 J**	**0.00202**
	10/3/2023	**0.000683 J**	< 0.000738	**0.0113**	**0.00471 J**	**0.00101**
	4/24/2024	NS	NS	NS	NS	NS
MW-38	8/28/2019	**0.0699**	**0.0145**	**0.0098**	**0.0127**	**0.00903**
	10/29/2019	**0.154**	**0.0101**	**0.00167**	**0.0221**	**0.0108**
	1/14/2020	**0.131**	**0.00982**	**0.00125**	**0.0103**	**0.00748**
	4/27/2020	**0.12**	**0.0074**	**0.00112**	**0.0053**	**0.00673**
	7/14/2020	**0.1**	**0.00581**	**0.000885 J**	**0.00737**	**0.00667**
	10/6/2020	**0.0922**	**0.0015 J**	< 0.000176	**0.000866 J**	**0.00442 J**
	1/26/2021	**0.102**	**0.00294**	**0.00185**	**0.00145 J**	**0.005**
	4/28/2021	**0.114**	**0.00336**	**0.0014**	< 0.002	**0.00456**
	7/1/2021	**0.0879**	**0.00178**	**0.00115**	< 0.002	**0.00349**
	10/12/2021	**0.0708**	**0.00171**	**0.00101**	< 0.002	**0.00365**
	4/19/2022	**0.0626**	**0.00141**	**0.00119**	< 0.002	**0.00271**
	10/25/2022	**0.0669**	**0.00122**	**0.00471**	**0.0036 J**	**0.00177**
	4/19/2023	**0.102**	**0.00167**	**0.00481**	**0.00153 J**	**0.00191**
	10/4/2023	**0.0552**	< 0.000738	**0.00258**	**0.00167 J**	**0.000921 J**
	4/24/2024	NS	NS	NS	NS	NS
MW-39	9/11/2021	--	**0.0063**	--	--	**0.00477**
	10/11/2021	--	**0.000807**	--	--	**0.00132**
	4/19/2022	--	**0.00526**	--	--	**0.00721**
	10/25/2022	--	**0.00438**	--	--	**0.00872**
	4/18/2023	--	**0.00455**	--	--	**0.00875**
	10/3/2023	--	**0.00263**	--	--	**0.00687**
	4/24/2024	--	**0.00514**	--	--	**0.00764**

Table 2. Summary of Groundwater Analytical Data – April 2015 through April 2024

Stage I and II Abatement Plan Amendment, Proposed Modifications to the Groundwater Monitoring Program

Former Dowell Schlumberger Facility, Artesia, New Mexico

COMPOUND		1,1-DCA	1,1-DCE	Benzene	Naphthalene	PCE
UNITS		mg/L	mg/L	mg/L	mg/L	mg/L
NMWQCC STANDARDS		0.025	0.005	0.01	0.03	0.02
WELL NUMBER	SAMPLE DATE					
MW-40	9/10/2021	--	< 0.000216	--	--	< 0.0005
	10/11/2021	--	< 0.0000433	--	--	< 0.0001
	4/19/2022	--	< 0.000216	--	--	< 0.0005
	10/25/2022	--	< 0.000738	--	--	< 0.000801
	4/18/2023	--	< 0.000738	--	--	< 0.000801
	10/3/2023	--	< 0.000738	--	--	< 0.000655
	4/24/2024	--	< 0.000738	--	--	< 0.000655

Notes:

The analytical method used is USEPA Method 8260 (VOCs).

Detected results are shown in bold font.

Results exceeding NMWQCC standards are shown in bold font and shaded. Results that do not exceed the NMWQCC standards at the same significant figure as the screening level are not shaded.

-- = sample not analyzed for listed analyte

< = chemical not detected at a concentration greater than the instrument detection limit

1,1-DCA = 1,1-dichloroethane

1,1-DCE = 1,1-dichloroethene

J = chemical detected at concentration greater than instrument detection limit but less than method detection limit

mg/L = milligram(s) per liter

NMWQCC = New Mexico Water Quality Control Commission

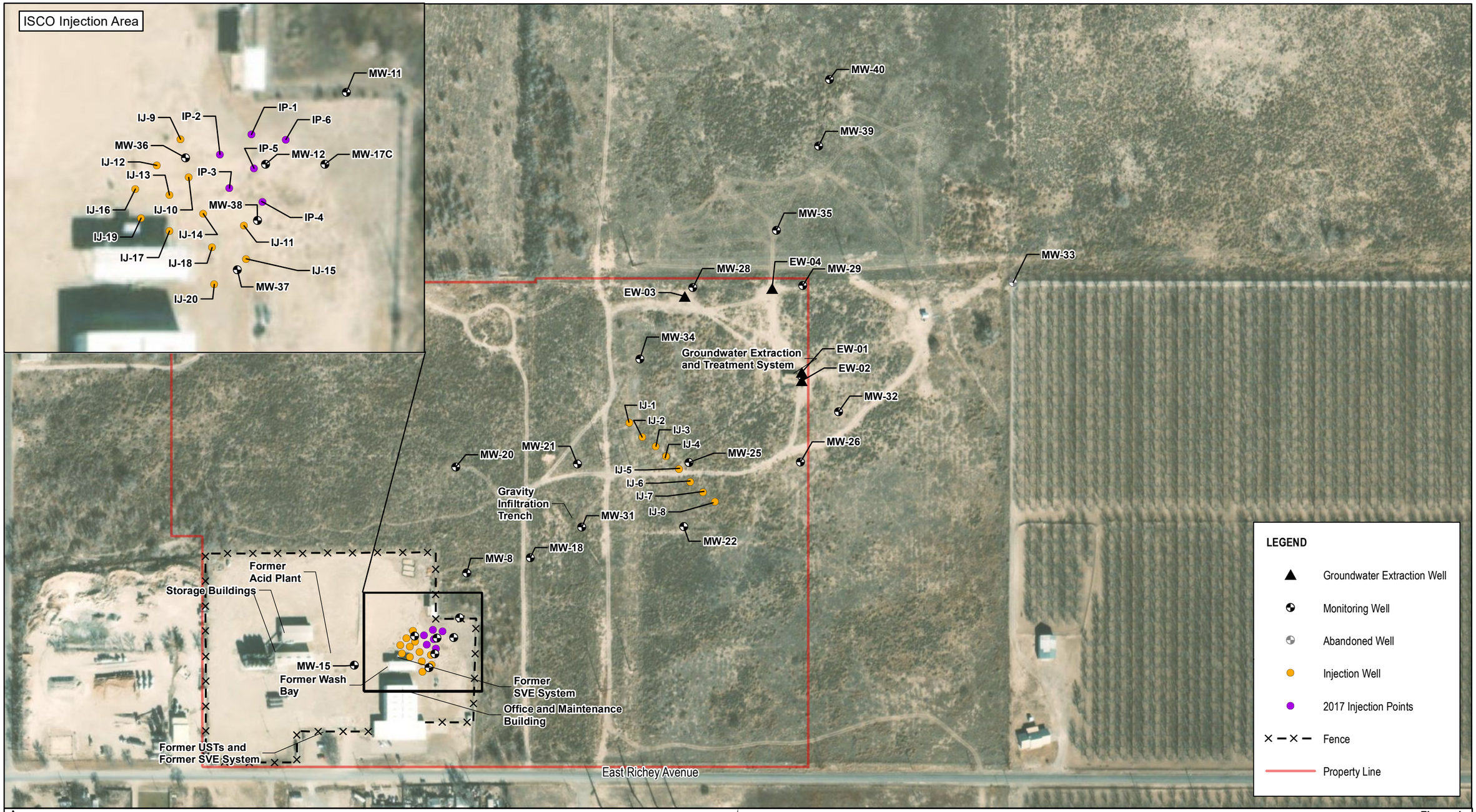
NS = not sampled, not enough water in well for sample collection

PCE = tetrachloroethene

USEPA = U.S. Environmental Protection Agency

VOC = volatile organic compound

Figures



Acronyms:
ISCO = in situ chemical oxidation
SVE = soil vapor extraction
UST = underground storage tank

Source:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Aorbis DS. USGS,AeroGRID, IGN,and the GIS User Community

N

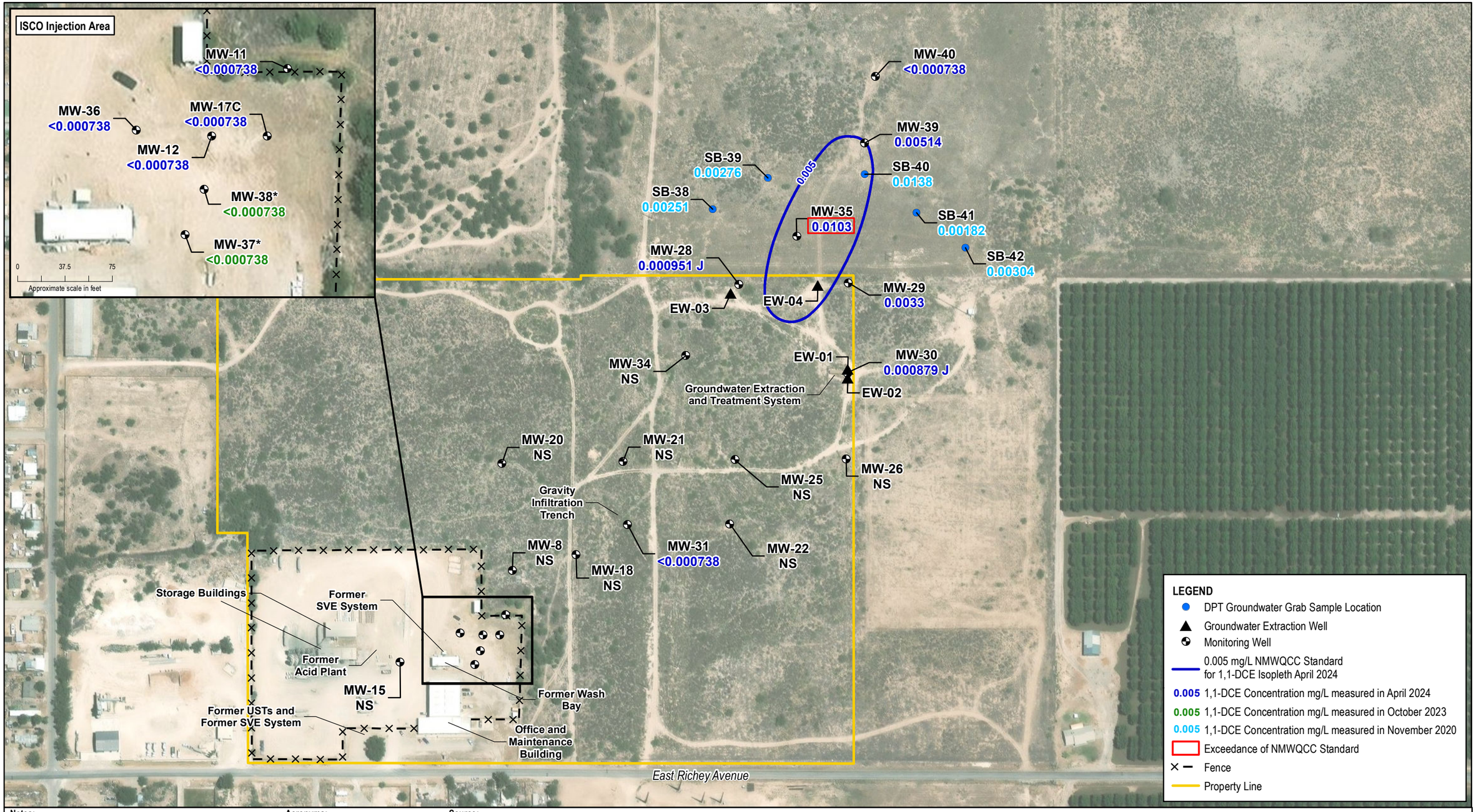
0 150 300

Approximate scale in feet

Figure 1.
Site Plan
Former Dowell Schlumberger Facility
Artesia, New Mexico

CH2M HILL Engineers, Inc.

\\ABQFPP01\ARCINFO\AV_PROJ\DOWELL_SCHLUMBERGER\ARTESIA_469935\MAPFILES\ANN_GW_MON_2022\FIG1-2_SITE_PLAN.MXD AESPEJO 1/24/2023



Notes:
Figure presents select November 2020 groundwater grab sample results to provide the basis for the closed isopleths for 1,1-DCE.
* = October 2023 analytical data used because samples were not collected in April 2024 due to insufficient water in the well.
< = analyte not detected at concentration above detection limit shown
J = Result is less than the reporting limit but greater or equal to the method detection limit and the concentration is an approximate value.
NMWQCC standard for 1,1-DCE is 0.005 mg/L. Results not exceeding the NMWQCC Standard at one significant figure are not considered exceedances.

Acronyms:
1,1-DCE = 1,1-dichloroethene
ISCO = in situ chemical oxidation
mg/L= milligrams per liter
NMWQCC = New Mexico Water Quality Control Commission
NS = not sampled
SVE = soil vapor extraction
UST = underground storage tank

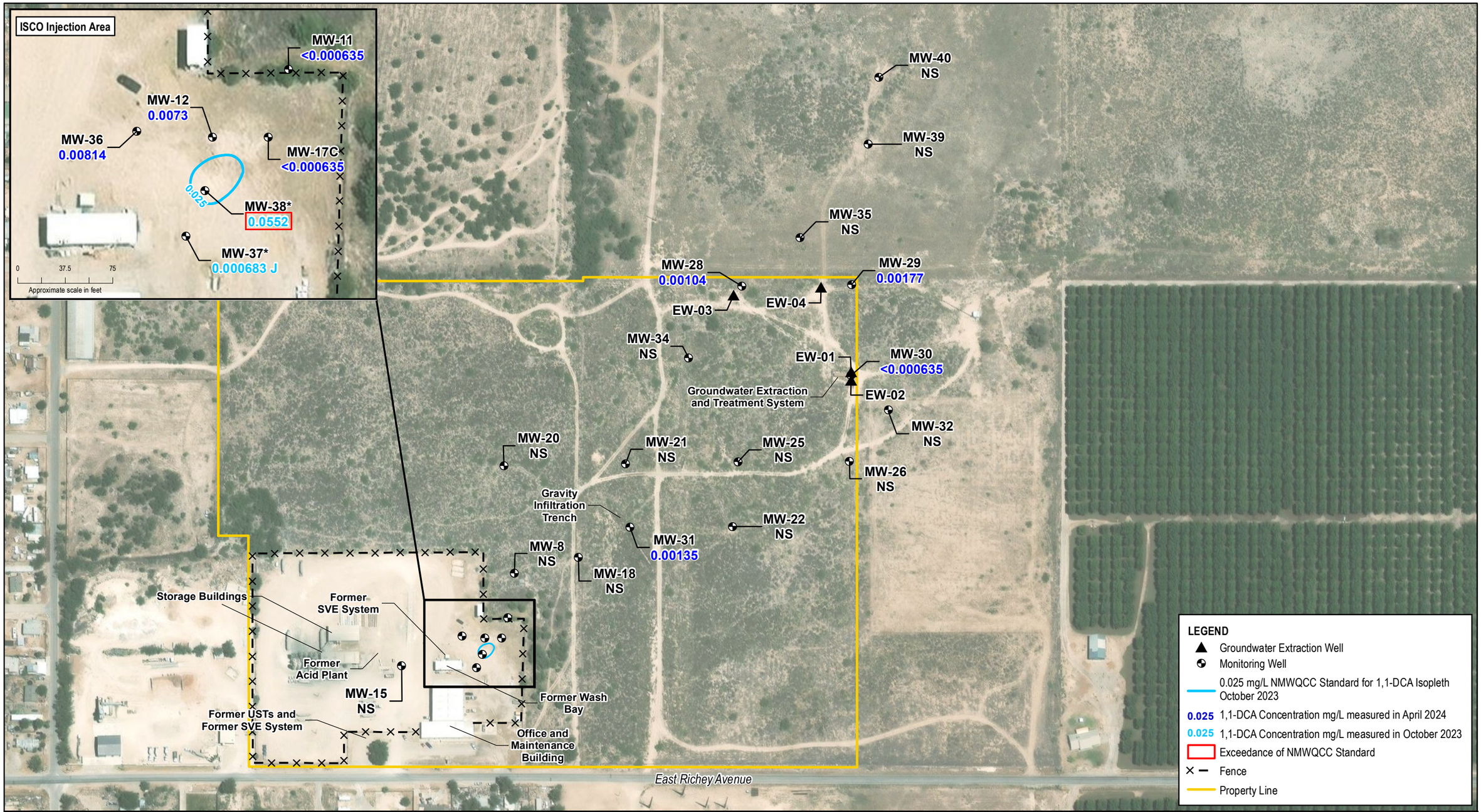
Source:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbis DS. USGS, AeroGRID, IGN, and the GIS User Community

N
0
150
300
Approximate scale in feet

Figure 2.
Concentration Map for 1,1-DCE – April 2024
Former Dowell Schlumberger Facility
Artesia, New Mexico

CH2M HILL Engineers, Inc.

\\DC1VS01\GISPROJ\D\DOWELL\ARTESIA\MAPFILES\2024\20240821\FIG2_ISOCON_DCE_2024.MXD AESPEJO 8/30/2024



Notes:
* = October 2023 analytical data used because samples were not collected in April 2024 due to insufficient water in the well.
< = analyte not detected at concentration above detection limit shown
J = Result is less than the reporting limit but greater or equal to the method detection limit and the concentration is an approximate value.

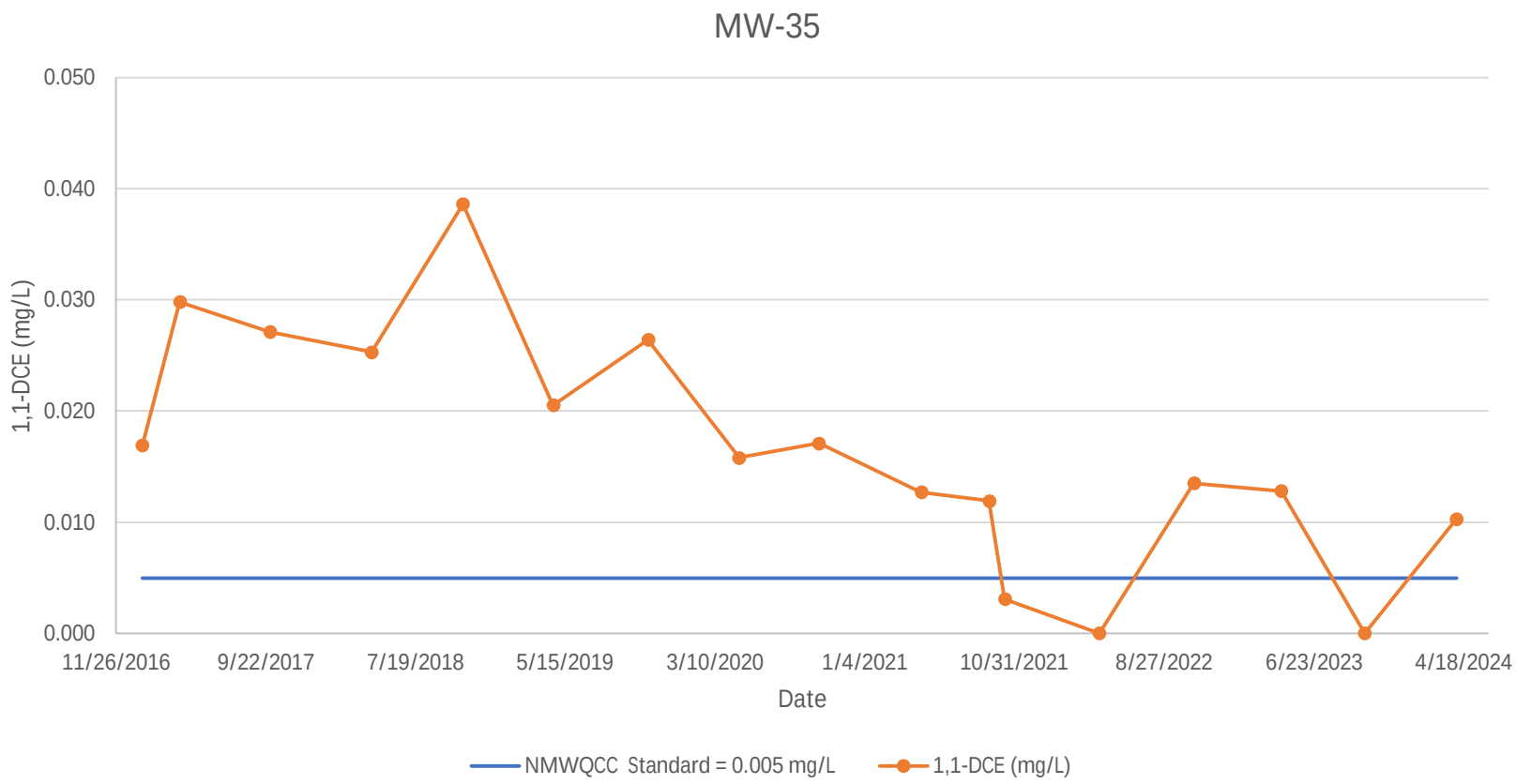
Acronyms:
1,1-DCA = 1,1-dichloroethane
ISCO = in situ chemical oxidation
mg/L= milligrams per liter
NMWQCC = New Mexico Water Quality Control Commission
NS = not sampled
SVE = soil vapor extraction
UST = underground storage tank

Source:
Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Aorbis DS. USGS, AeroGRID, IGN, and the GIS User Community

Figure 3.
Concentration Map for 1,1-DCA – 2024
Former Dowell Schlumberger Facility
Artesia, New Mexico

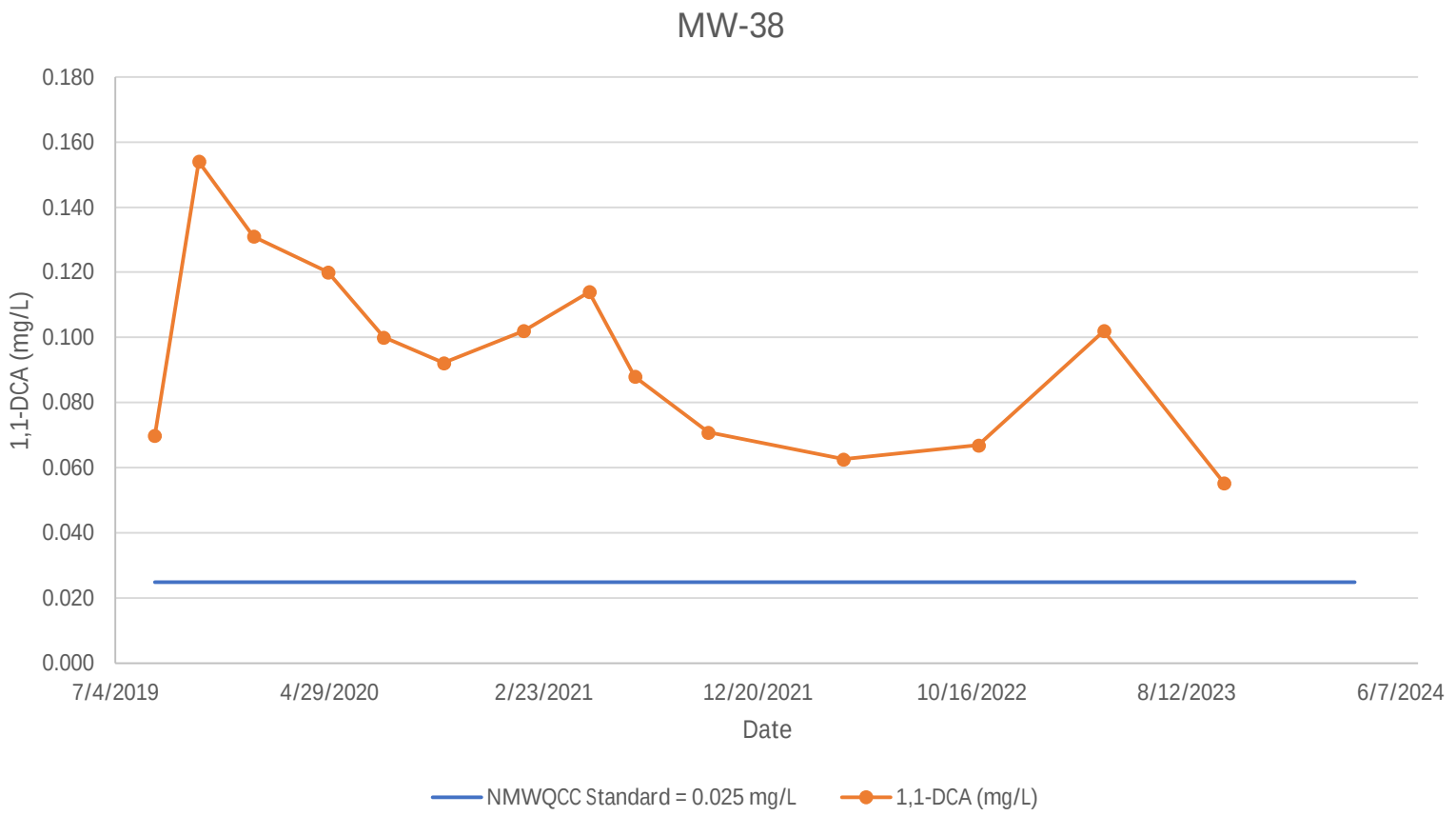
CH2M HILL Engineers, Inc.

\\DC1VS01\GISPROJ\D\DOWELL\ARTESIA\MAPFILES\2024\20240821\FIG3_ISOCON_DCA_2024.MXD AESPEJO 8/22/2024



Notes:
1,1-DCE = 1,1-dichloroethene
mg/L = milligram(s) per liter
NMWQCC = New Mexico Water Quality Control Standard
The NMWQCC standard for 1,1-DCE in groundwater is 0.005 mg/L.

Figure 4.
1,1-DCE Concentrations over Time in Groundwater (2017 - 2024)
Former Dowell Schlumberger Facility
Artesia, New Mexico



Notes:
1,1-DCA = 1,1-dichloroethane
mg/L = milligram(s) per liter
NMWQCC = New Mexico Water Quality Control Standard
The NMWQCC standard for 1,1-DCA in groundwater is 0.025 mg/L.

Figure 5.
1,1-DCA Concentrations **o**ver **Ti**me in Groundwater (2019 - 2023)
Former Dowell Schlumberger Facility
Artesia, New Mexico

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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: Schlumberger Technology Corporation 121 Industrial Blvd Sugar Land, TX 77478	OGRID: 330624
	Action Number: 464898
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
jburdine	Groundwater sampling revisions approved as proposed	8/5/2025