DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER
INSTALLATION RESTORATION PROGRAM
NIAGARA FALLS AIR RESERVE STATION

AFCEC/CZOE
2405 Franklin Drive
Niagara Falls, NY 14304-5063

April 5, 2023

MEMO TO: Distribution

Re: Transmittal of Final Injection Summary Memorandum, Niagara Falls Air Reserve Station, New York

Seres-Arcadis SB JV, LLC is pleased to present our Final Injection Summary Memorandum for Niagara Falls ARS, New York, Northeast Group ORC.

Sincerely,

MAIRS.LINDSAY.LEE.1589783227 Digitally signed by MAIRS.LINDSAY.LEE.1589783227 Date: 2023.04.05 10:53:44 -04'00'

LINDSAY MAIRS
Remedial Project Manager

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Memo

SUBJECT
Final Remedial Injection Summary
Site 5 (DS004) and Site 10 (FT005)
Niagara Falls Air Reserve Station
Niagara Falls, New York

TO
U.S. Air Force Civil Engineering Center and
United States Army Corps of Engineers,
Baltimore District

DATE
05 April 2023

OUR REF
Northeast Group Optimized Remediation Contract
Contract W912DR-19-D-0009
Delivery Order W912DR-20-F-0483

NAME
SERES-Arcadis 8(a) JV 2, LLC
669 Marina Drive, Suite B-7
Charleston, South Carolina 29492
Tel 843 216 8531

On behalf of the Air Force Civil Engineer Center (AFCEC) and the United States Army Corps of Engineers (USACE), Baltimore District, the SERES-Arcadis Small Business Joint Venture, LLC (S-A JV) prepared this Remedial Injection Summary Memorandum for the Niagara Falls Air Reserve Station (NFARS) located in Niagara Falls, New York (**Figure 1**). AFCEC and USACE retained the S-A JV to provide remedial action support at NFARS under the Multiple Award Environmental Services Northeast Group Optimized Remediation Contract (ORC) No. W912DR-19-D-0009, Task Order No. W912DR-20-F-0483. Under the ORC, the S-A JV monitor chlorinated volatile organic compound (CVOC) impacts in overburden and shallow bedrock groundwater at certain sites located within NFARS under the Installation-Wide Groundwater Monitoring Program (IWGP).

In response to the ongoing observation of elevated CVOC concentrations in overburden and bedrock groundwater at Site 5 (DS004) and Site 10 (FT005) at NFARS, the S-A JV submitted the Final Remedial Injection Work Plan (Work Plan) to the New York State of Department Environmental Conservation (NYSDEC) on 26 April 2022 (S-A JV 2022a). That document proposed remedial injections to support the enhanced reductive dechlorination (ERD) of CVOC impacts in overburden and bedrock groundwater at those sites. The scope of the remedial injections was developed in consideration of remedial actions performed in 2015 and 2018 and groundwater data for the Fall 2020 monitoring event (which are illustrated on **Figure 2** [Site 5] and **Figure 3** [Site 10]), as well as groundwater concentration trend graphs for Site 5 and Site 10 (which were provided in Appendix A of the Work Plan). Following a review of the groundwater data for the Spring 2021 monitoring event, a supplement to the Work Plan proposing the installation of additional DPT injection points in the vicinity of MW5-1DA at Site 5 was submitted to NYSDEC on September 6, 2022 (S-A JV 2022b).

The remainder of this memorandum provides a summary of the remedial injection activities performed at Site 5 and Site 10 at NFARS. The activities summarized herein were implemented under the United States Department of Defense Installation Restoration Program and in compliance with the requirements of an Order on Consent and Administrative Settlement (Site No. 932106, Index No. R9-20150902-65; NYSDEC 2016).

Summary of Remedial Injection Activities

As indicated in the Work Plan, the ongoing ERD of CVOCs in overburden and bedrock groundwater at Site 5 and Site 10 was proposed to be augmented by the in-situ injection of a dilute organic carbon substrate (ABC-Olé, an emulsified vegetable oil manufactured by Redox Tech, LLC) applied via direct-push technology (DPT) injection points and gravity feed into existing bedrock core holes at Site 5 (**Figure 2)** and via DPT injection points at Site 10 (**Figure 3)**. Additional details regarding the specific activities performed in support of the Remedial Injections are provided below.

Injection Procedures

Underground Injection Control Authorization

On 14 September 2022, the S-A JV submitted an Underground Injection Control notification letter to the United States Environmental Protection Agency (USEPA) Region 2 (**Attachment 1)**. USEPA Region 2 submitted two e-mails on 20 September 2022 indicating that the S-A JV was authorized to proceed with the proposed remedial injections and that an Authorization by Rule would be issued separately as a permit was not required for the proposed work. That Authorization by Rule was subsequently received by e-mail on 3 October 2022.

Utility Clearance

Prior to initiating the remedial injections, the S-A JV performed utility location and clearance on 24 October 2022 in the area around each proposed DPT injection location identified on **Figure 2** (Site 5) and **Figure 3** (Site 10). The objective of the utility location and clearance activities was to identify any subsurface utilities (e.g., electrical, water supply, septic sewer, storm sewer, etc.) that may be present in the vicinity of the proposed DPT injection locations using multiple lines of evidence. Specifically, utility clearance was completed by visual inspection and multiple geophysical technologies, including:

- ground penetrating radar (GPR);
- electromagnetic (EM) induction;
- metal detection; and
- radio frequency (RF) detection

Specifically, the area around each proposed DPT location was scanned using a Seektech SR-24 EM/RF receiver using multiple frequencies to check for active power and communication signals. The areas were also scanned for linear metal anomalies using a Geophysical Survey Systems SIR-4000 GPR equipped with a 350-megahertz (MHz) antenna. The location services were completed in accordance with ASCE Standard 38-02, Quality Level "B" results. Identified utilities were marked on the ground surface with color coded flagging. As further described below, construction equipment and materials unrelated to the Remedial Injections were staged by others near well MW5-1DA at Site 5. As a result, the utility clearance and DPT injection point locations were modified slightly in the field to work around these obstructions. Finally, a notification to UDig New York for utility mark-out and underground utility clearance was completed by the S-A JV on 24 October 2022.

Mobilization and Injection Preparation Activities

Following completion of the utility clearing activities, field staff mobilized to NFARS between 7 and 16 November 2022 to perform the remedial injection activities. Upon arrival at NFARS, the field staff coordinated with the on base fire station to identify a source of potable mixing water to support the injection activities. The ABC-Olé was mixed to create a solution of approximately 2.8% by volume. The carbon solution was delivered to the DPT points and core holes via a modular system and batch-style mixing. Each injection point was equipped with a flow-control valve, flow totalizer, and pressure gauge to monitor and control the injection flow rate and pressure. Wellhead pressure, flow rate, total volume, and substrate dosing was monitored, recorded, and adjusted as necessary based on observed field conditions.

Remedial Injections

DPT injection points were then advanced to immediately above bedrock (approximately 10 to 15 feet below ground surface [bgs]). Upon reaching terminal depth, the drill rod was retracted, exposing a 4-foot screen through which the organic substrate was injected. Injection activities for the DPT points were initially attempted under gravity-feed conditions. However, since reasonable flow rates could not be achieved, a diaphragm pump was used to apply low pressure to increase flow rates. Injection pressures of less than 20 pounds per square inch

were used to minimize potential daylighting and/or the formation of preferential flow pathways. Injection activities at the Site 5 core holes were performed under gravity-feed conditions. As indicated in **Table 1,** a total volume of approximately 9,950 gallons ABC-Olé solution (including approximately 2,300 pounds of ABC-Olé) was injected into the subsurface at Site 5 and Site 10. Additional details regarding the specific injection activities performed at each site are provided below.

Site 5

As indicated on **Figure 4**, injections were performed at a total of 13 DPT injection points within Site 5, with five (5) DPT points located hydraulically upgradient of well RW5-1, five (5) DPT points located hydraulically upgradient of well RW5-2, and three (3) DPT points located hydraulically upgradient of well MW5-1DA. As previously noted, the orientation of the DPT injection points adjacent to MW5-1DA were modified from the locations proposed in the Work Plan due to presence of construction equipment and materials staged by others in the area around that well. The DPT points were spaced approximately 10 feet apart (based on an estimated five-foot radius of influence [ROI]), with a four (4) foot treatment interval at a depth of approximately 11 to 15 feet bgs.

Approximately 240 gallons of dilute carbon solution was injected into each DPT point using a diaphragm pump and 1,000 gallons of dilute carbon solution were gravity fed into shallow bedrock core holes CH5-01, CH5-02 and CH5-03. Following achievement of the target injection volumes at Site 5 and Site 10, a limited volume of ABC-Olé solution remained and was gravity fed into CH5-02 increasing the total volume of carbon solution injected at core hole CH5-02 to 1,650 gallons. As indicated in **Table 1**, the total volume of carbon solution injected at Site 5 was approximately 6,810 gallons, with total carbon loading of approximately 1,575 pounds of ABC-Olé.

Site 10

As indicated on **Figure 5**, injections were performed into a total of 13 DPT injection points within Site 10, with five (5) DPT points located hydraulically upgradient of well MW10-7 and eight (8) DPT points located hydraulically upgradient of well MW10-10D. Consistent with Site 5, the DPT points were spaced approximately 10 feet apart (based on an estimated five-foot ROI), with a four (4) foot treatment interval at a depth of six (6) to 10 feet bgs.

Approximately 240 gallons of dilute carbon solution was injected into each DPT point using a diaphragm pump. As indicated in **Table** 1, the total volume of carbon solution injected at Site 10 was approximately 3,140 gallons, with total carbon loading was approximately 720 pounds of ABC-Olé.

Remedial Injection Monitoring Activities

Select monitoring wells near the injection locations (i.e., MW5-1DA, MW5-5A, RW5-1, and RW5-2 at Site 5 and MW10-7 and MW10-10D at Site 10) were continuously monitored for daylighting during the injection activities. In addition, routine measurements of field parameters (temperature, pH, conductivity, dissolved oxygen, oxidation-reduction potential and turbidity) and depth to water were also recorded every few hours at these monitoring wells and the readings are presented in **Table 2**. It should be noted that the Work Plan proposed injection monitoring activities at well MW5-5D; however, field measurements could not be collected from that well as a passive diffusion bag was deployed in that well prior to the remedial injections as part of the Fall 2022 semi-annual monitoring event under the IWGP.

Investigation-Derived Waste and Demobilization

Investigation-derived waste generated during the remedial injection activities consisted of non-impacted disposable waste materials, which included used personal protective equipment (e.g., nitrile gloves), miscellaneous materials (i.e., plastic tubing), buckets and lids that contained ABC-Olé, flags and marking stakes, and other general refuse, which were all disposed of as general refuse. Upon completion of the remedial injection activities, the crew demobilized from the NFARS on 17 November 2022.

Future Monitoring and Reporting

The ERD performance monitoring program will be performed as described in Section 2.4 and summarized in Table 2-2 of the Work Plan (S-A JV 2022a). In summary, the performance monitoring activities will involve quarterly sampling over a period of one year for select wells at Site 5 (MW5-5D, RW5-1, and RW5-2) and Site 10 (MW10-1DA, MW10-7, MW10-10D, MW10-11D, and PW10-1) for analysis of VOCs by United States Environmental Protection Agency (USEPA) Method 8260C, dissolved gases (methane, ethene, and ethane) by Method RSK-175, and total organic carbon by USEPA Method 9060A. It is currently anticipated that the performance monitoring events will be performed in March, June, September, and December 2023 and will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP; S-A JV 2021a). The June and September 2023 performance monitoring events will be performed concurrently with the Spring and Fall 2023 semi-annual or annual monitoring events currently performed at Sites 5 and 10 under the IWGP. The results of the quarterly performance monitoring events will be evaluated and summarized (along with the results of the Spring and Fall 2023 semi-annual or annual monitoring events under the IWGP) in the 2023 Annual Report, which will be prepared in accordance with the Site Management Plan (EA Engineering P.C. and its affiliate EA Science and Technology, Inc. [EA] 2021).

References

EA. 2021. Site Management Plan. Niagara Falls Air Reserve Station. Niagara Falls, New York. June.

NYSDEC. 2016. Order on Consent and Administrative Settlement. Site Name: 914 Tactical Airlift Group. Site No.: 932106. Index No.: R9-20150902-65. August 22.

S-A JV. 2021a. Draft Quality Assurance Project Plan, Niagara Falls Air Reserve Station. Niagara Falls, New York. May.

S-A JV. 2022a. Final Remedial Injection Work Plan, Niagara Falls Air Reserve Station, New York, Contract W912DR-19-D-0009, Delivery Order W912DR-20-F-0483. April.

S-A JV. 2022b. Supplement to Final Remedial Injection Work Plan, Niagara Falls Air Reserve Station, New York, Contract W912DR-19-D-0009, Delivery Order W912DR-20-F-0483. September.

Enclosures

Table 1	Remedial Injection Details
Table 2	Remedial Injection Performance Monitoring
Figure 1	Site Location
Figure 2	Site 5 (DS004) Prior Remedial Actions, December 2020 Groundwater Data, and Proposed Remedial Injection Location
Figure 3	Site 10 (FT005) Prior Remedial Actions, December 2020 Groundwater Data, and Proposed Remedial Injection Location
Figure 4	Site 5 (DS004) Remedial Injection Locations
Figure 5	Site 10 (FT005) Remedial Injection Locations
Attachment 1	UIC Notification

TABLES

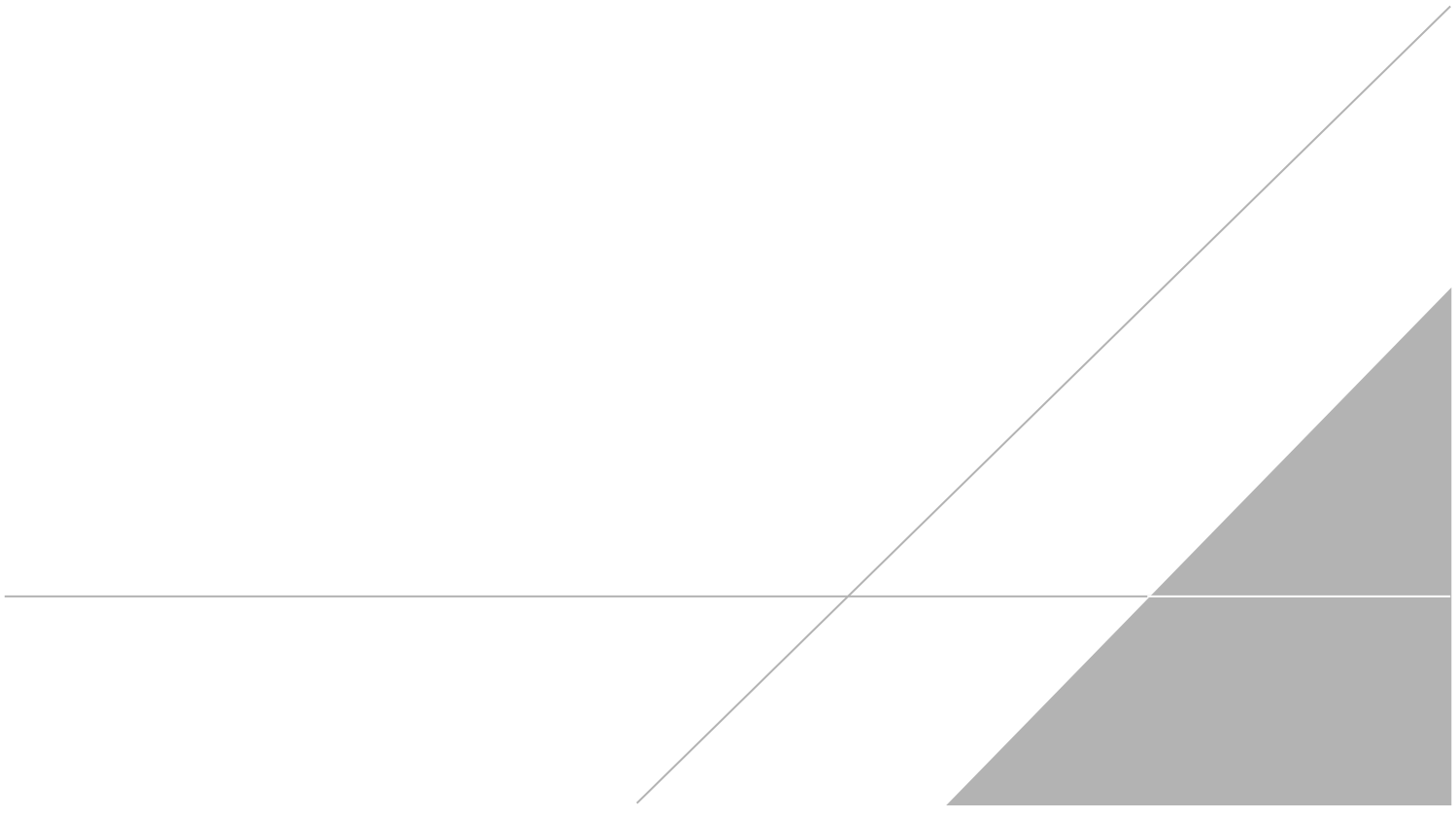


Table 1
Remedial Injection Details
Remedial Injection Summary
Site 5 (DS004) and Site 10 (FT005), Niagara Falls Air Reserve Station
Niagara Falls, New York

SERES Engineering & Services, LLC
ARCADIS
a joint venture

Injection Type	Injection Location	Injection Date	Injection Interval (feet bgs)	Per Point Injection Volume (gallons)	% ABC-Olé	Gallon of ABC-Olé	lbs of ABC-Olé	Pressure (psi) Initial	Pressure (psi) Final	Flow rate (gpm)
Site 5 (DS004)										
Temporary DPT Points	DPT5-1	11/8/2022	11 to 15	248	2.8	6.94	56.75	6-8	3	0.93
	DPT5-2	11/8/2022	11 to 15	244	2.8	6.82	55.84	7-8	3	0.91
	DPT5-3	11/8/2022	11 to 15	242	2.8	6.77	55.38	4-7	2	0.78
	DPT5-4	11/8/2022	11 to 15	250	2.8	6.99	57.21	4-6	2	1.16
	DPT5-5	11/8/2022	11 to 15	243	2.8	6.80	55.61	6-7	2-3	1.07
	DPT5-6	11/9/2022	11 to 15	240	2.8	6.71	54.92	6-8	2-3	0.96
	DPT5-7	11/9/2022	11 to 15	241	2.8	6.74	55.15	6-8	2	1.42
	DPT5-8	11/9/2022	11 to 15	245	2.8	6.85	56.07	5-7	4-6	0.78
	DPT5-9	11/9/2022	11 to 15	246	2.8	6.88	56.30	6-8	2	0.97
	DPT5-10	11/9/2022	11 to 15	240	2.8	6.71	54.92	5-7	2	0.96
	DPT5-11	11/15/2022	11 to 15	240	2.8	6.71	54.92	6-8	4-5	1.24
	DPT5-12	11/15/2022	11 to 15	240	2.8	6.71	54.92	7-9	4-6	1.01
	DPT5-13	11/15/2022	11 to 15	240	2.8	6.71	54.92	6-8	5-6	0.96
Bedrock Core Holes	CH5-01	11/9/2022	17.5 to 32.5	750	2.8	20.97	171.63	Gravity		11.06
	CH5-01	11/16/2022	17.5 to 32.5	250	2.8	6.99	57.21	Gravity		13.88
	CH5-02	11/9/2022	18.3 to 33.3	1,000	2.8	27.97	228.85	Gravity		9.53
	CH5-02	11/16/2022	18.3 to 33.3	650	3.08	20.00	163.66	Gravity		11.4
	CH5-03	11/9/2022	18.5 to 33.5	1,000	2.8	27.97	228.85	Gravity		7.87
Site 5 Totals				**6,809**		**192**	**1,573**			
Site 10 (FT005)										
Temporary DPT Points	DPT10-1	11/14/2022	6 to 10	249	2.8	6.96	56.98	9	7	1.59
	DPT10-2	11/14/2022	6 to 10	241	2.8	6.74	55.15	8	6	1.43
	DPT10-3	11/15/2022	6 to 10	240	2.8	6.71	54.92	9	6	1.43
	DPT10-4	11/15/2022	6 to 10	240	2.8	6.71	54.92	10	6	1.74
	DPT10-5	11/15/2022	6 to 10	240	2.8	6.71	54.92	10	7	1.28
	DPT10-6	11/15/2022	6 to 10	240	2.8	6.71	54.92	8	5	1.36
	DPT10-7	11/15/2022	6 to 10	240	2.8	6.71	54.92	9	6	1.58
	DPT10-8	11/15/2022	6 to 10	242	2.8	6.77	55.38	10	7	1.97
	DPT10-9	11/16/2022	6 to 10	242	2.8	6.77	55.38	12	9	2.63
	DPT10-10	11/16/2022	6 to 10	240	2.8	6.71	54.92	12	8	2.37
	DPT10-11	11/16/2022	6 to 10	240	2.8	6.71	54.92	9	6	1.66
	DPT10-12	11/16/2022	6 to 10	243	2.8	6.80	55.61	9	6	1.26
	DPT10-13	11/16/2022	6 to 10	241	2.8	6.74	55.15	11	8	1.17
Site 10 Totals				**3,138**		**88**	**718**			
Overall Total				**9,947**		**280**	**2,291**			

Notes:
bgs = below ground surface
DPT = direct-push technology
gpm = gallons per minute
lbs = pounds
psi = pounds per square inch

Table 2
Injection Perfomance Monitoring
Remedial Injection Summary
Site 5 (DS004) and Site 10 (FT005), Niagara Falls Air Reserve Station
Niagara Falls, New York

SERES Engineering & Services, LLC
ARCADIS
a joint venture

Date	Well ID	Time	Depth to Water (ft)	Temperature (°C)	pH	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTUs)
Site 5 (DS004)									
11/8/2022	RW5-1	7:30	9.06	11.63	7.09	1.65	9.32	-135	36
11/8/2022	RW5-1	12:30	9.19	12.48	6.96	1.64	9.3	-134	130
11/8/2022	RW5-1	14:30	9.35	12.16	7.05	1.64	9.5	-152	152
11/8/2022	RW5-1	16:30	9.51	11.36	7.03	1.61	9.83	-136	291
11/9/2022	RW5-1	7:30	0.4	9.18	7.14	1.65	9.01	-96	226
11/9/2022	RW5-1	9.:30	9.52	11.88	7.13	1.52	9.71	-119	210
11/9/2022	RW5-1	11:30	7.91	14.84	7.27	1.24	10.61	-86	0
11/9/2022	RW5-1	13:30	2.08	15.77	7.1	0.964	10.49	-5	0
11/9/2022	RW5-1	15:30	1.89	15.57	7.23	0.617	9.69	-33	0
11/8/2022	RW5-2	7:30	7.22	11.68	6.88	1.23	9.9	-84	29.7
11/8/2022	RW5-2	12:30	4.52	13.17	6.76	0.904	10.45	-108	0
11/8/2022	RW5-2	14:30	3.48	12.08	7.02	0.839	10.17	-87	0
11/8/2022	RW5-2	16:30	2.83	11.21	7.05	0.835	9.97	-22	0
11/9/2022	RW5-2	7:30	6.92	8.74	7.21	0.889	9.66	-120	0
11/9/2022	RW5-2	9:30	7.01	11.02	7.14	0.887	9.73	-100	0
11/10/2022	MW5-5A	8:30	14.69	12.66	7.82	0.955	10.94	209	32.1
11/10/2022	MW5-5A	10:30	7.54	15.12	7.51	0.527	10.31	162	0
11/10/2022	MW5-5A	12:30	3.72	19.55	7.56	0.465	9.01	146	0
11/10/2022	MW5-1DA	8:30	13.87	13.15	7.7	0.909	10.23	205	15.6
11/10/2022	MW5-1DA	10:30	13.84	17.83	7.54	0.892	8.78	109	16.3
11/10/2022	MW5-1DA	12:30	13.77	18.43	7.79	0.858	12.28	94	722
Site 10 (FT005)									
11/14/2022	MW10-10D	12:40	4.5	15.63	6.95	1.29	9.77	-42	170
11/14/2022	MW10-10D	14:40	4.55	10.43	5.98	1.33	10.26	-26	165
11/15/2022	MW10-10D	8:40	4.5	8.88	6.73	1.3	10.68	41	226
11/15/2022	MW10-10D	9:50	2.5	8.67	6.86	1.11	10.56	42	0
11/15/2022	MW10-10D	11:50	2.13	8.34	7.23	0.477	10.81	57	0
11/15/2022	MW10-10D	13:50	1.89	8.71	7.32	0.484	10.95	174	0
11/16/2022	MW10-7	9:00	6.15	13.62	7.5	0.755	11.2	15	559
11/16/2022	MW10-7	9:40	4.08	9.62	7.42	0.675	11.28	98	0
11/16/2022	MW10-7	11:40	3.65	9.15	7.56	0.458	11.32	123	0
11/16/2022	MW10-7	13:40	2.71	8.86	7.5	0.463	10.88	137	0

Notes:

Field parameters were collected at the near by monitoring wells once every 2 hours during nearby injections.

°C - degree celcius

ft = feet

µS/cm = microsiemens per centimeter

mg/L = milligrams per liter

mV = millivolt

NTU = Nephelometric Turbidity Unit

ORP = oxidation reduction potential

FIGURES

78°58'0"W 78°57'30"W 78°57'0"W 78°56'30"W 78°56'0"W 78°55'30"W

43°7'20"N 43°7'0"N 43°6'40"N 43°6'20"N

LOCKPORT RD
PACKARD RD
RUBIN WAY
RUBIN WAY
KIRSCH DR
BLEWETT AVE
WAGNER DR
JOHNSON ST
ENT AVE
FIRE LANE
KIRKBRIDGE DR
HULBY ST
KRUG AVE
COSEGLIA ST
FRANKLIN DR
THOMPSON ST
OLMSTEAD ST
McGUIRE ST
LANGLEY ST
KINROSS ST
OTIS DR
UTZIG DR
HASELEY DR
HASELEY DR
Cayuga Creek
WALMORE RD
TUSCARORA RD
STATE HWY 182
NA

Site 5
DS004

Site 10
FT005

Legend

Installation Boundary

0 850 1,700

SCALE IN FEET

NIAGARA FALLS AIR RESERVE STATION
NEW YORK

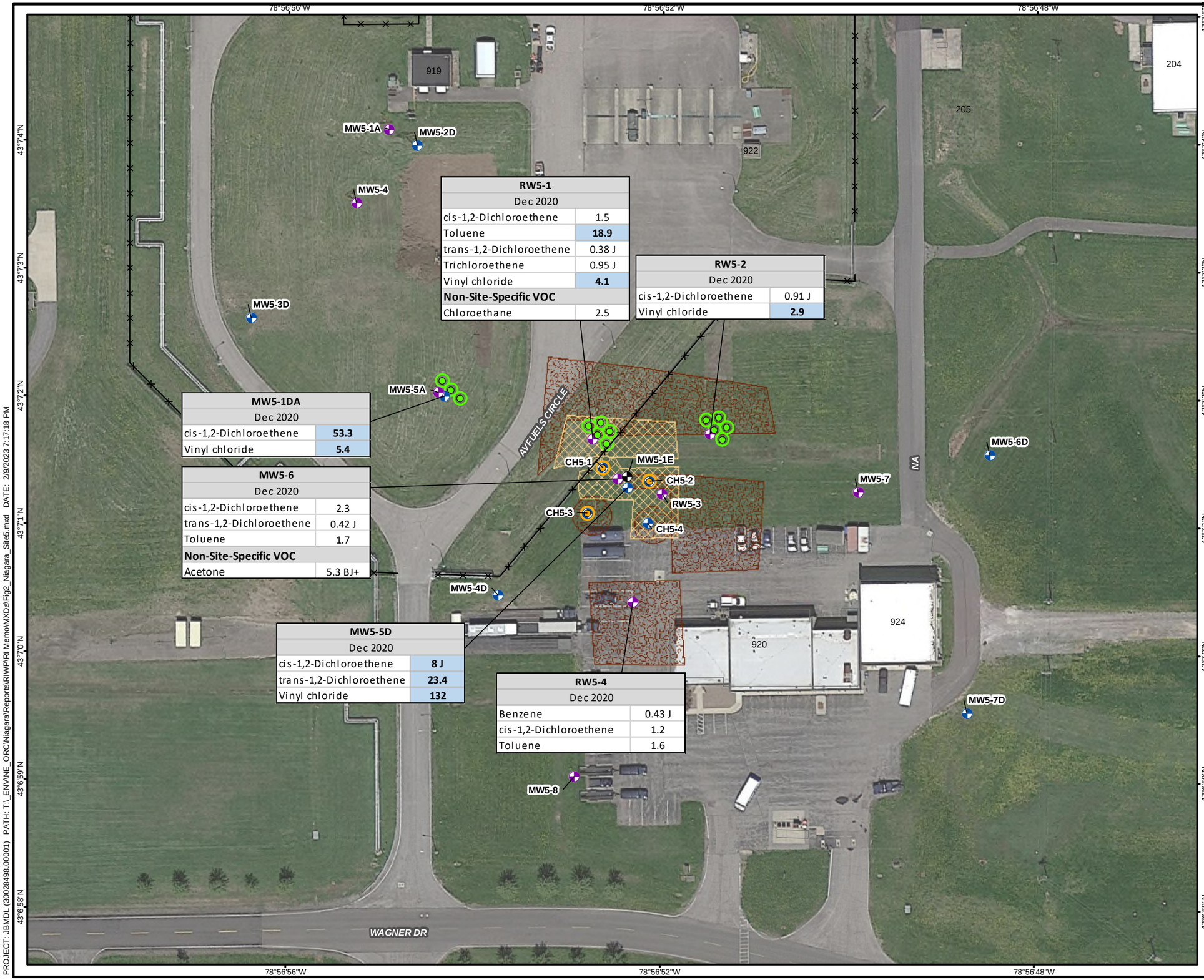
Remedial Injection Summary Memoradum

SITE LOCATION

SERES Engineering & Services, LLC
ARCADIS a joint venture

FIGURE
1

DIV/GROUP: ENV/MDV DB: sbell LD: PIC: PM: TM:
PROJECT: JBMDL (30028498.00001) PATH: T:_ENV\NE_ORC\Niagara\Reports\RIWP\RI Memo\MXDs\Fig1_Niagara_SiteLocation.mxd DATE: 2/6/2023 3:22:40 PM



Legend

- Bedrock Core Hole Injection Location
- Assumed Radius of Influence
- Overburden DPT Injection Point Location
- Assumed Radius of Influence
- Overburden Well
- Shallow Bedrock Well
- Deep Bedrock Well
- Fence
- 2015 Injection Area
- 2018 Injection Area
- Installation Boundary

Notes:
1. Constituent concentrations in micrograms per liter (µg/L).
2. Blue shading indicates result is greater than NYSDEC Class GA Standards.
3. Only detected results are presented.
4. Injection Areas digitized from the 2019 Remedial Action Injection Summary Report, Figure 5-1 (EA Engineering, P.C.).

Abbreviations:
BJ+ = Result is an estimated quantity and may be biased high due to blank contamination
J = Constituent detected at an estimated concentration
DPT = Direct-Push Technology
NYSDEC = New York State Department of Environmental Conservation
VOC = volatile organic compound

N

0 75 150
SCALE IN FEET

NIAGARA FALLS AIR RESERVE STATION
NEW YORK
Remedial Injection Summary Memorandum

SITE 5 (DS004) – PRIOR REMEDIAL ACTIONS, DECEMBER 2020 GROUNDWATER DATA, AND PROPOSED REMEDIAL INJECTION LOCATIONS

SERES Engineering & Services, LLC
ARCADIS a joint venture

FIGURE 2

DIV/GROUP: ENV/MDV DB: sbell LD: PIC: PM: TM:
PROJECT: JBMDL (30028498.00001) PATH: T:_ENV\NE_ORC\Niagara\Reports\RIWP\RI Memo\MXDs\Fig2_Niagara_Site5.mxd DATE: 2/9/2023 7:17:18 PM

78°56'0"W
78°55'54"W
43°6'44"N
43°6'40"N

MW10-1DA	
Dec 2020	
Benzene	**3.8**
cis-1,2-Dichloroethene	0.9 J
Ethylbenzene	0.4 J
Toluene	0.44 J
trans-1,2-Dichloroethene	0.48 J
Vinyl chloride	**4.1**
Total Xylenes	3.7
Non-Site-Specific VOC	
Cyclohexane	0.33 J

PW10-2	
Dec 2020	
Benzene	**1.5**
Ethylbenzene	0.38 J
Non-Site-Specific VOC	
Acetone	5.4 BJ+

MW10-3	
Dec 2020	
Trichloroethene	0.61 J

MW10-10D	
Dec 2020	
cis-1,2-Dichloroethene	**1580 J+**
Toluene	**14.5 J**
trans-1,2-Dichloroethene	**16 J**
Trichloroethene	**47.6**
Vinyl chloride	**296**
Non-Site-Specific VOC	
2-Butanone (MEK)	37.7 J
2-Hexanone	381

MW10-4D	
Dec 2020	
Benzene	**1.3**
cis-1,2-Dichloroethene	0.83 J
Vinyl chloride	**3.5**

MW10-4E	
Dec 2020	
cis-1,2-Dichloroethene	**6.7**
Vinyl chloride	1.2

MW10-7	
Dec 2020	
1,1-dichloroethane	1.3
Benzene	**1.3**
cis-1,2-Dichloroethene	**174**
Toluene	1
trans-1,2-Dichloroethene	0.37 J
Trichloroethene	1.5
Vinyl chloride	**41.2**
Non-Site-Specific VOC	
Carbon Disulfide	0.58 J
Cyclohexane	0.61 J
Methylyclohexane	1.2

PW10-1	
Dec 2020	
cis-1,2-Dichloroethene	0.72 J
Vinyl chloride	0.85 J
Non-Site-Specific VOC	
Acetone	7 BJ+
Carbon Disulfide	0.36 J

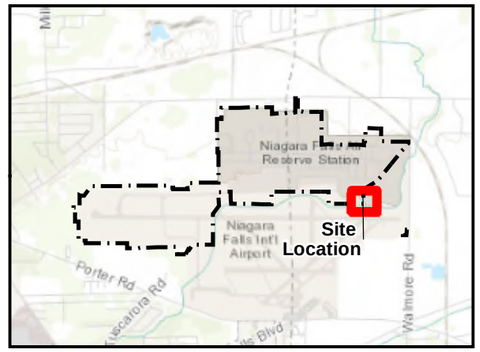
PZ10-7	
Dec 2020	
All VOCs	ND

MW10-9D	
Dec 2020	
cis-1,2-Dichloroethene	**7.2**
Vinyl chloride	**10.9**

MW10-3D	
Dec 2020	
All VOCs	ND

SW10-5, MW10-5D, SW10-8, MW10-13, MW10-13D, MW10-1EA, MW10-1F, MW10-2, MW10-4, MW10-6, MW10-8, MW10-8D, MW10-11, MW10-11D, MW10-12, MW10-12D, MW10-2E, SW10-6, MW10-6D, SW10-7, MW10-3E

Cayuga Creek



Legend

- Overburden DPT Injection Point Location
- Assumed Radius of Influence
- Overburden Well/Piezometer
- Shallow Bedrock Well
- Deep Bedrock Well
- Surface Water Sample Location
- Groundwater Collection Trench
- Installation Boundary

Notes:
1. Constituent concentrations in micrograms per liter (µg/L).
2. Blue shading indicates result is greater than NYSDEC Class GA Standards.
3. Only detected results are presented.
4. Injection Areas digitized from the 2019 Remedial Action Injection Summary Report, Figure 5-1 (EA Engineering, P.C.).

Abbreviations:
BJ+ = Result is an estimated quantity and may be biased high due to blank contamination
J+ = Constituent detected at an estimated concentration
DPT = Direct-Push Technology
ND = not detected
NYSDEC = New York State Department of Environmental Conservation
VOC = volatile organic compound

N

0 75 150
SCALE IN FEET

NIAGARA FALLS AIR RESERVE STATION
NEW YORK

Remedial Injection Summary Memorandum

SITE 10 (FT005) – PRIOR REMEDIAL ACTIONS, DECEMBER 2020 GROUNDWATER DATA, AND PROPOSED REMEDIAL INJECTION LOCATIONS

SERES Engineering & Services, LLC
ARCADIS a joint venture

FIGURE 3

DIV/GROUP: ENV/MDV DB: sbell LD: PIC: PM: TM:
PROJECT: JBMDL (30028498.00001) PATH: T:_ENV\NE_ORC\NiagaraReports\RIWPRI Memo\MXDs\Fig3_Niagara_Site10_Analytical.mxd DATE: 2/6/2023 3:18:43 PM

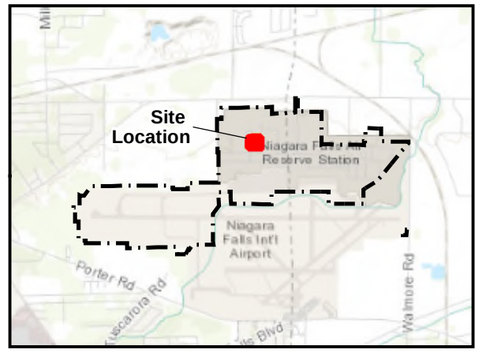
78°56'52"W

43°72'N

43°71'N

43°70'N

DPT5-11
DPT5-12
DPT5-13
MW5-5A
MW5-1DA
DPT5-10
DPT5-7
DPT5-9
DPT5-6
RW5-1
DPT5-8
DPT5-1
DPT5-5
DPT5-2
DPT5-3
RW5-2
DPT5-4
CH5-1
MW5-1E
MW5-6
CH5-2
MW5-5D
RW5-3
CH5-3
CH5-4
MW5-4D
RW5-4
AVFUELS CIRCLE
920



Legend

- Bedrock Core Hole Injection Location
- Overburden DPT Injection Point Location
- Overburden Well
- Shallow Bedrock Well
- Deep Bedrock Well
- Fence
- Installation Boundary

Note:
1. Performance monitoring wells are highlighted in yellow.

Abbreviations:
DPT - Direct-Push Technology

N

0 30 60

SCALE IN FEET

NIAGARA FALLS AIR RESERVE STATION
NEW YORK

Remedial Injection Summary Memorandum

SITE 5 (DS004)
REMEDIAL INJECTION LOCATIONS

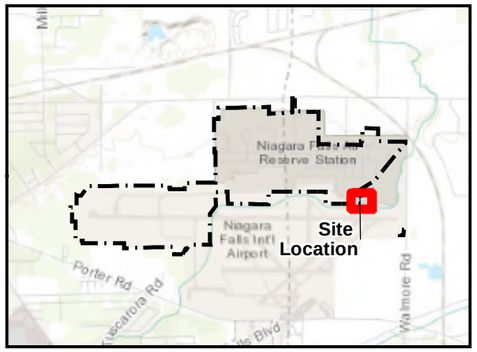
SERES Engineering & Services, LLC
ARCADIS a joint venture

FIGURE
4

DIV/GROUP: ENV/MDV DB: sbell LD: PIC: PM: TM:
PROJECT: JBMDL (30028498.00001) PATH: T:_ENV\NE_ORC\NiagaraReports\RIWP\RI Memo\MXDs\Fig4_Niagara_Site5_Inj_Locations.mxd DATE: 2/10/2023 1:37:34 PM

78°56'0"W
78°55'54"W
43°6'40"N

SW10-5
MW10-5D
MW10-3
SW10-8
DPT10-3
DPT10-2
DPT10-4
DPT10-1
DPT10-8
DPT10-5
DPT10-7
DPT10-6
MW10-10D
MW10-13
MW10-13D
PW10-2
MW10-1EA
MW10-1F
MW10-1DA
MW10-2
MW10-4
MW10-4D
MW10-4E
MW10-6
MW10-11
MW10-11D
MW10-8
MW10-8D
DPT10-9
DPT10-10
DPT10-11
DPT10-13
DPT10-12
MW10-7
MW10-12
MW10-12D
PW10-1
Cayuga Creek
MW10-2E
PZ10-7
MW10-6D
SW10-6
MW10-9D
SW10-7
MW10-3E
MW10-3D



Legend

- Overburden DPT Injection Point Location
- Overburden Well/Piezometer
- Shallow Bedrock Well
- Deep Bedrock Well
- Surface Water Sample Location
- Groundwater Collection Trench
- Installation Boundary

Note:
1. Performance monitoring wells are highlighted in yellow.

Abbreviations:
DPT = Direct-Push Technology

0 60 120
SCALE IN FEET

NIAGARA FALLS AIR RESERVE STATION
NEW YORK

Remedial Injection Summary Memorandum

SITE 10 (FT005)
REMEDIAL INJECTION LOCATIONS

SERES Engineering & Services, LLC
ARCADIS a joint venture

FIGURE
5

DIV/GROUP: ENV/MDV DB: sbell LD: PIC: PM: TM:
PROJECT: JBMDL (30028498.00001) PATH: T:_ENV\NE_ORC\NiagaraReports\RIWP\RI Memo\MXDs\Fig5_Niagara_Site10_Inj_Locations.mxd DATE: 2/10/2023 1:38:50 PM

ATTACHMENT A

Ms. Nancy Schlotter
USEPA Region 2
290 Broadway, 20th Floor
New York, New York 10007-1866

SERES-Arcadis SB JV LLC
669 Marina Drive, Suite B-7
Charleston
South Carolina 29492

Date: September 14, 2022
Our Ref: 30036646
Subject: Remedial Injections at Sites 5 and 10, Niagara Falls Air Reserve Station, Niagara Falls, New York Site Number: NYS 932106

Dear Ms. Schlotter,

On behalf of the Air Force Civil Engineer Center (AFCEC) and United States Army Corps of Engineers (USACE), Baltimore District, the SERES-Arcadis Small Business Joint Venture (SERES-Arcadis SB JV), LLC, is providing notification of upcoming remedial injection work at the Niagara Falls Air Reserve Station (NFARS), Niagara Falls, New York. The planned remedial injection work is being performed to treat remaining chlorinated volatile organic compound (CVOC) impacts in overburden and shallow bedrock groundwater at Site 5 (DS004) and Site 10 (FT005) at NFARS. This work is being conducted under a work plan approved by the New York State Department of Environmental Conservation (NYSDEC). The NYSDEC Facility ID Number associated with this site is NYS 932106.

The SERES-Arcadis SB JV LLC plans to implement Enhanced Reductive Dechlorination (ERD) injections using ABC-Olé (organic carbon substrate) provided by Redox Tech, LLC. The safety data sheet (SDS) for ABC-Olé is provided as Attachment 1. A total of 9,240 gallons of ABC-Olé solution (two to five percent, by volume) will be injected into the subsurface using 13 direct-push technology (DPT) points (DPT5-01 through DPT5-13) and three coreholes (CH5-01, CH5-02 and CH5-03) at Site 5 (Figure 2-1, Attachment 2) and 13 DPT points (DPT10-01 through DPT10-13) at Site 10 (Figure 2-2, Attachment 2). An Inventory of Injection Wells (EPA Form 7520-16) is provided as Attachment 3. The ABC-Olé solution will be injected at depths between approximately 11 and 15 feet below ground surface (ft bgs) at Site 5 and 6 and 10 ft bgs at Site 10. The remedial injection work is schedule to be performed between October 24 to November 6, 2022.

If you have any questions concerning this matter or require additional information, please contact me at the numbers below.

Sincerely,
SERES-Arcadis SB JV LLC

Corey Averill,
Project Manager

Email: corey.averill@arcadis.com
Direct Line: 315 671 9224
Mobile: 315 415 4394

Ms. Nancy Schlotter
USEPA Region 2
September 14, 2022

CC.
Steven Moeller, DEC (w/ enclosure)
Stanley Radon, DEC (w/ enclosure)
James Sullivan, DOH (w/ enclosure)
Melvin Alli, AFCEC (w/ enclosure)
Lindsay Mairs, AFCEC (w/ enclosure)

Enclosures:

- Attachment 1
- Attachment 2
- Attachment 3

Attachment 1

Material Safety Data Sheet ABC-Olé (Redox Tech LLC)

SAFETY DATA SHEET
ABC-Olé

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **ABC-Olé**
GENERAL USE: **Bioremediation of halogenated organics and metals**

MANUFACTURER:

Redox Tech, LLC
200 Quade Drive
Cary, NC 27513
919-678-0140

EMERGENCY TELEPHONE:

Within USA and Canada: 1-800-424-9300
+1 703-527-3887 (collect calls accepted)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Product is generally recognized as safe. May cause irritation exposure to eyes. Long term contact to skin may cause some drying and minor irritation.

3. COMPOSITION INFORMATION ON INGREDIENTS

Proprietary mixture of fatty acids, glycerol, hydrolyzed vegetable oil, emulsifying agent and dipotassium phosphate.

4. FIRST AID MEASURES

EYES: Immediately flush with water for up to 15 minutes. If irritation persists, seek medical attention.

SKIN: Rinse with water. Irritation is unlikely, but if irritation occurs or persists, seek medical attention.

INGESTION: Generally safe to ingest but not recommended.

INHALATION: No first aid required.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Deluge with water

FIRE/EXPLOSION HAZARDS: Product is combustible only at temperatures above 600C

FIRE FIGHTING PROCEDURES: Use flooding with plenty of water, carbon dioxide or other inert gasses. Wear full protective clothing and self-contained breathing apparatus. Deluging with water is the best method to control combustion of the product.

FLAMMABILITY LIMITS: non-combustible

SENSITIVITY TO IMPACT: non-sensitive

SENSITIVITY TO STATIC DISCHARGE: non-senstive

6. ACCIDENTAL RELEASE MEASURES

Confine and collect spill. Transfer to an approved DOT container and properly dispose. Do not dispose of or rinse material into sewer, stormwater or surface water. Discharge of product to surface water could result in depressed dissolved oxygen levels and subsequent biological impacts.

7. HANDLING AND STORAGE

HANDLING: Protective gloves and safety glasses are recommended.

STORAGE: Keep dry. Use first in, first out storage system. Keep container tightly closed when not in use. Avoid contamination of opened product. Avoid contact with reducing agents.

8. EXPOSURE CONTROLS – PERSONAL PROTECTION

EXPOSURE LIMITS

Chemical Name	ACGIH	OSHA	Supplier
ABC	**NA**	**NA**	**NA**

ENGINEERING CONTROLS: None are required

PERSONAL PROTECTIVE EQUIPMENT

EYES and FACE: Safety glasses recommended
RESPIRATOR: none necessary
PROTECTIVE CLOTHING: None necessary
GLOVES: rubber, latex or neoprene recommended but not required

9. PHYSICAL AND CHEMICAL PROPERTIES

Odor:	none to mild pleasant organic odor
Appearance:	milky
Auto-ignition Temperature	Non-combustible
Boiling Point	>600 C

Melting Point	NA
Density	0.98 gram/cc
Solubility	infinite (miscible)
pH	6-8

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Do not contact with strong oxidizers
STABILITY: product is stable
POLYMERIZATION: will not occur
INCOMPATIBLE MATERIALS: strong oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS:

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
A: General Product Information
Acute exposure may cause mild skin and eye irritation.
B: Component Analysis - LD50/LC50

No information available.

B: Component Analysis - TDLo/LDLo
TDLo (Oral-Man) none

Carcinogenicity
A: General Product Information
No information available.
B: Component Carcinogenicity
Product is not listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Epidemiology
No information available.

Neurotoxicity
No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Discharge to water may cause depressed dissolved oxygen and subsequent ecological stresses
Environmental Fate
No potential for food chain concentration

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Material is not considered hazardous, but consult with local, state and federal agencies prior to disposal to ensure all applicable laws are met.

14. TRANSPORT INFORMATION

NOTE: The shipping classification information in this section (Section 14) is meant as a guide to the overall classification of the product. However, transportation classifications may be subject to change with changes in package size. Consult shipper requirements under I.M.O., I.C.A.O. (I.A.T.A.) and 49 CFR to assure regulatory compliance.

US DOT Information
Shipping Name: Not Regulated
Hazard Class: Not Classified
UN/NA #: Not Classified
Packing Group:None
Required Label(s):None

50thEdition International Air Transport Association (IATA):
Not hazardous and not regulated

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

Material is not regulated under IMDG

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III
SECTION 311 No Hazard for Immediate health Hazard
SECTION 312 No Threshold Quanitity
SECTION 313 Not listed

CERCLA NOT REGULATED UNDER CERCLA

TSCA NOT REGULATED UNDER TSCA

CANADA (WHIMS): NOT REGULATED

16. OTHER INFORMATION

HMIS:

Health	0
Flammability	0
Physical Hazard	0
Personal Protection	E

E: Safety Glasses, gloves

Attachment 2

Proposed Remedial Injection Locations

78°56'52"W

43°7'2"N

43°7'1"N

43°7'0"N

MW5-5A

MW5-1DA

Dec 2020	
cis-1,2-Dichloroethene	**53.3**
Vinyl chloride	**5.4**

RW5-1	
Dec 2020	
cis-1,2-Dichloroethene	1.5
Toluene	**18.9**
trans-1,2-Dichloroethene	0.38 J
Trichloroethene	0.95 J
Vinyl chloride	**4.1**
Non-Site-Specific VOC	
Chloroethane	2.5

RW5-2	
Dec 2020	
cis-1,2-Dichloroethene	0.91 J
Vinyl chloride	**2.9**

CH5-1

MW5-1E

CH5-2

MW5-6	
Dec 2020	
cis-1,2-Dichloroethene	2.3
trans-1,2-Dichloroethene	0.42 J
Toluene	1.7
Non-Site-Specific VOC	
Acetone	5.3 BJ+

MW5-5D	
Dec 2020	
cis-1,2-Dichloroethene	**8 J**
trans-1,2-Dichloroethene	**23.4**
Vinyl chloride	**132**

RW5-3

CH5-3

CH5-4

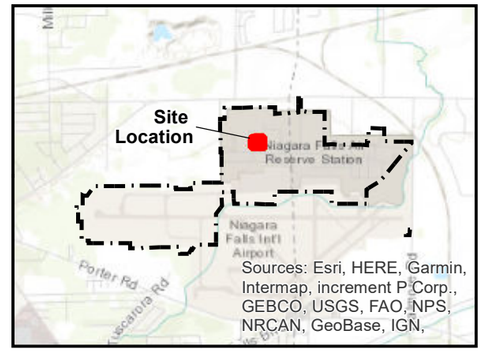
AVFUELS CIRCLE

MW5-4D

RW5-4	
Dec 2020	
Benzene	0.43 J
cis-1,2-Dichloroethene	1.2
Toluene	1.6

920

Esri, USDA Farm Service Agency



Legend

- Bedrock Core Hole Injection Location
- Assumed Radius of Influence
- Overburden DPT Injection Point Location
- Assumed Radius of Influence
- Overburden Well
- Shallow Bedrock Well
- Deep Bedrock Well
- Fence
- Installation Boundary

Notes:
1. Constituent concentrations in micrograms per liter (µg/L).
2. Blue shading indicates result is greater than NYSDEC Class GA Standards.
3. Only detected results are presented.
4. Proposed performance monitoring wells are highlighted in yellow.

Abbreviations:
BJ+ = Result is an estimated quantity and may be biased high due to blank contamination
J = Constituent detected at an estimated concentration
DPT = Direct-Push Technology
NYSDEC = New York State Department of Environmental Conservation
VOC = volatile organic compound

N

0 30 60

SCALE IN FEET

NIAGARA FALLS AIR RESERVE STATION
NEW YORK

Remedial Injection Work Plan

SITE 5 (DS004) - PROPOSED REMEDIAL INJECTION LOCATIONS

SERES Engineering & Services, LLC
ARCADIS a joint venture

FIGURE
2-1

DIV/GROUP: ENV/MDV DB: TYarbrough LD: PIC: PM: TM:
PROJECT: JBMDL (30028498.00001) PATH: T:_ENV\NE_ORC\Niagara\Reports\RIWP\2021\MXDs\Fig2-1_Niagara_Site5_Analytical_rev2_new.mxd DATE: 9/1/2022 4:05:30 PM

78°56'0"W

78°55'54"W

43°6'40"N

722

SW10-5

MW10-5D

SW10-8

MW10-13

MW10-13D

MW10-1EA

MW10-1F

MW10-2

MW10-4

MW10-6

MW10-8

MW10-8D

MW10-11

MW10-11D

MW10-12

MW10-12D

MW10-2E

SW10-6

MW10-6D

SW10-7

MW10-3E

Cayuga Creek

MW10-1DA	
Dec 2020	
Benzene	**3.8**
cis-1,2-Dichloroethene	0.9 J
Ethylbenzene	0.4 J
Toluene	0.44 J
trans-1,2-Dichloroethene	0.48 J
Vinyl chloride	**4.1**
Total Xylenes	3.7
Other VOCs	
Cyclohexane	0.33 J

PW10-2	
Dec 2020	
Benzene	**1.5**
Ethylbenzene	0.38 J
Other VOCs	
Acetone	5.4 BJ+

MW10-3	
Dec 2020	
Trichloroethene	0.61 J

MW10-10D	
Dec 2020	
cis-1,2-Dichloroethene	**1580 J+**
Toluene	**14.5 J**
trans-1,2-Dichloroethene	**16 J**
Trichloroethene	**47.6**
Vinyl chloride	**296**
Other VOCs	
2-Butanone (MEK)	37.7 J
2-Hexanone	381

MW10-4D	
Dec 2020	
Benzene	**1.3**
cis-1,2-Dichloroethene	0.83 J
Vinyl chloride	**3.5**

MW10-7	
Dec 2020	
1,1-dichloroethane	1.3
Benzene	**1.3**
cis-1,2-Dichloroethene	**174**
Toluene	1
trans-1,2-Dichloroethene	0.37 J
Trichloroethene	1.5
Vinyl chloride	**41.2**
Other VOCs	
Carbon Disulfide	0.58 J
Cyclohexane	0.61 J
Methylyclohexane	1.2

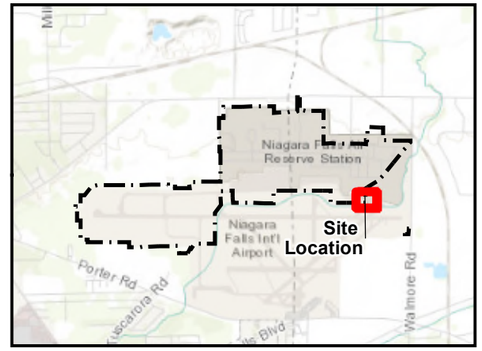
MW10-4E	
Dec 2020	
cis-1,2-Dichloroethene	**6.7**
Vinyl chloride	1.2

PW10-1	
Dec 2020	
cis-1,2-Dichloroethene	0.72 J
Vinyl chloride	0.85 J
Other VOCs	
Acetone	7 BJ+
Carbon Disulfide	0.36 J

PZ10-7	
Dec 2020	
All VOCs	ND

MW10-9D	
Dec 2020	
cis-1,2-Dichloroethene	**7.2**
Vinyl chloride	**10.9**

MW10-3D	
Dec 2020	
All VOCs	ND



Legend

- Overburden DPT Injection Point Location
- Overburden Well/Piezometer
- Shallow Bedrock Well/Piezometer
- Deep Bedrock Well
- Surface Water Sample
- Fence
- Groundwater Collection
- Installation Boundary

Notes:
1. Concentrations in micrograms per liter (µg/L).
2. Blue shading indicates result is greater than NYSDEC Class GA Standards.
3. Only detected results are presented here.
4. Performance monitoring wells are highlighted in yellow.

Abbreviations:
BJ+ = Result is an estimated quantity and may be biased high due to blank contamination
J+ = Analyte detected, estimated concentration that may be biased high.
DPT = Direct-Push Technology
ROI = radius of Influence
ND = not detected
NYSDEC = New York State Department of Environmental Conservation
VOC = volatile organic compound

0 60 120

SCALE IN FEET

NIAGARA FALLS AIR RESERVE STATION
NEW YORK

Remedial Injection Work Plan

SITE 10 (FT005)
PROPOSED REMEDIAL LAYOUT

SERES Engineering & Services, LLC
ARCADIS a joint venture

FIGURE
2-2

DIV/GROUP: ENV/MDV DB: sbell LD: PIC: PM: TM:
PROJECT: JBMDL (30028498.00001) PATH: T:_ENV\NE_ORC\Niagara\Reports\RIWP\2021\MXDs\Fig2-2_Niagara_Site10_Analytical.mxd DATE: 9/13/2021 4:26:35 PM

Attachment 3

Inventory of Injection Wells (EPA Form 7520-16)

Type or print all information. See reverse for instructions. OMB No. 2040-0042 Approval Expires 12/31/2011

INVENTORY OF INJECTION WELLS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF GROUND WATER AND DRINKING WATER

(This information is collected under the authority of the Safe Drinking Water Act)

1. DATE PREPARED *(Year, Month, Day)*: 22-09-09

2. FACILITY ID NUMBER: NYS 932106

PAPERWORK REDUCTION ACT NOTICE

The public reporting burden for this collection of information is estimated at about 0.5 hour per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, Director, Collection Strategies Division (2822), U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460, and to the Office of Management and Budget, Paperwork Reduction Project, Washington, DC20503.

3. TRANSACTION TYPE *(Please mark one of the following)*

- ☐ Deletion
- ☑ First Time Entry
- ☐ Entry Change
- ☐ Replacement

4. FACILITY NAME AND LOCATION

A. NAME *(last, first, and middle initial)*: Niagara Falls Air Reserve Station, Sites 5 and 10

B. STREET ADDRESS/ROUTE NUMBER: 2405 Franklin Drive

C. LATITUDE

DEG	MIN	SEC
43	6	50.0142

D. LONGITUDE

DEG	MIN	SEC
-78	56	10.5822

E. TOWNSHIP/RANGE

TOWNSHIP	RANGE	SECT	1/4 SECT

F. CITY/TOWN: Niagara Falls

G. STATE: NY

H. ZIP CODE: 14304 5063

I. NUMERIC COUNTY CODE: 063

J. INDIAN LAND *(mark "x")*: ☐ Yes ☒ No

5. LEGAL CONTACT:

A. TYPE *(mark "x")*: ☐ Owner ☒ Operator

B. NAME *(last, first, and middle initial)*: Corey, Averill

C. PHONE *(area code and number)*: (315) 671-9224

D. ORGANIZATION: SERES-ARCADIS

E. STREET/P.O. BOX: 669 Marina Drive, Suite B-7

F. CITY/TOWN: Charleston

G. STATE: SC

H. ZIP CODE: 29492

I. OWNERSHIP *(mark "x")*

- ☐ PRIVATE
- ☐ PUBLIC
- ☐ SPECIFY OTHER
- ☐ STATE
- ☒ FEDERAL

6. WELL INFORMATION:

A. CLASS AND TYPE		B. NUMBER OF WELLS		C. TOTAL NUMBER OF WELLS	D. WELL OPERATION STATUS				
		COMM	NON-COMM		UC	AC	TA	PA	AN
5	B	0	29	29	26	3	0	0	0
				0					
				0					
				0					
				0					
				0					
				0					

COMMENTS *(Optional)*:

The AFCEC and USACE will be injecting ABC-Olé into 13 DPT points and 3 coreholes at Site 5 and 13 DPT points at Site 10 to remediate remaining impacts of CVOCs. See map (Attachement 1). The well class type is 5B6 (Beneficial Use- Subsurface environmental remediation).

KEY:

DEG = Degree
MIN = Minute
SEC = Second
SECT = Section
1/4 SECT = Quarter Section

COMM = Commercial
NON-COMM = Non-Commercial
AC = Active
UC = Under Construction
TA = Temporarily Abandoned
PA = Permanently Abandoned and Approved by State
AN = Permanently Abandoned and not Approved by State

SECTION 1. DATE PREPARED: Enter date in order of year, month, and day.

SECTION 2. FACILITY ID NUMBER: In the first two spaces, insert the appropriate U.S. Postal Service State Code. In the third space, insert one of the following one letter alphabetic identifiers:

D - DUNS Number,
G - GSA Number, or
S - State Facility Number.

In the remaining spaces, insert the appropriate nine digit DUNS, GSA, or State Facility Number. For example, A Federal facility (GSA - 123456789) located in Virginia would be entered as : VAG123456789.

SECTION 3. TRANSACTION TYPE: Place an "x" in the applicable box. See below for further instructions.

Deletion. Fill in the Facility ID Number.
First Time Entry. Fill in all the appropriate information.
Entry Change. Fill in the Facility ID Number and the information that has changed.
Replacement.

SECTION 4. FACILITY NAME AND LOCATION:

A. Name. Fill in the facility's official or legal name.
B. Street Address. Self Explanatory.
C. Latitude. Enter the facility's latitude (all latitudes assume North Except for American Samoa).
D. Longitude. Enter the facility's longitude (all longitudes assume West except Guam).
E. Township/Range. Fill in the complete township and range. The first 3 spaces are numerical and the fourth is a letter (N,S,E,W) specifying a compass direction. A township is North or South of the baseline, and a range is East or West of the principal meridian (e.g., 132N, 343W).
F. City/Town. Self Explanatory.
G. State. Insert the U.S. Postal Service State abbreviation.
H. Zip Code. Insert the five digit zip code plus any extension.

SECTION 4. FACILITY NAME & LOCATION (CONT'D.):

I. Numeric County Code. Insert the numeric county code from the Federal Information Processing Standards Publication (FIPS Pub 6-1) June 15, 1970, U.S. Department of Commerce, National Bureau of Standards. For Alaska, use the Census Division Code developed by the U.S. Census Bureau.
J. Indian Land. Mark an "x" in the appropriate box (Yes or No) to indicate if the facility is located on Indian land.

SECTION 5. LEGAL CONTACT:

A. Type. Mark an "x" in the appropriate box to indicate the type of legal contact (Owner or Operator). For wells operated by lease, the operator is the legal contact.
B. Name. Self Explanatory.
C. Phone. Self Explanatory.
D. Organization. If the legal contact is an individual, give the name of the business organization to expedite mail distribution.
E. Street/P.O. Box. Self Explanatory.
F. City/Town. Self Explanatory.
G. State. Insert the U.S. Postal Service State abbreviation.
H. Zip Code. Insert the five digit zip code plus any extension.
I. Ownership. Place an "x" in the appropriate box to indicate ownership status.

SECTION 6. WELL INFORMATION:

A. Class and Type. Fill in the Class and Type of injection wells located at the listed facility. Use the most pertinent code (specified below) to accurately describe each type of injection well. For example, 2R for a Class II Enhanced Recovery Well, or 3M for a Class III Solution Mining Well, etc.
B. Number of Commercial and Non-Commercial Wells. Enter the total number of commercial and non-commercial wells for each Class/Type, as applicable.
C. Total Number of Wells. Enter the total number of injection wells for each specified Class/Type.
D. Well Operation Status. Enter the number of wells for each Class/Type under each operation status (see key on other side).

CLASS I Industrial, Municipal, and Radioactive Waste Disposal Wells used to inject waste below the lowermost Underground Source of Drinking Water (USDW).

TYPE		
	1I	Non-Hazardous Industrial Disposal Well.
	1M	Non-Hazardous Municipal Disposal Well.
	1H	Hazardous Waste Disposal Well injecting below the lowermost USDW.
	1R	Radioactive Waste Disposal Well.
	1X	Other Class I Wells.

CLASS II Oil and Gas Production and Storage Related Injection Wells.

TYPE		
	2A	Annular Disposal Well.
	2D	Produced Fluid Disposal Well.
	2H	Hydrocarbon Storage Well.
	2R	Enhanced Recovery Well.
	2X	Other Class II Wells.

CLASS III Special Process Injection Wells.

TYPE		
	3G	*In Situ* Gasification Well
	3M	Solution Mining Well.

CLASS III (CONT'D.)

TYPE		
	3S	Sulfur Mining Well by Frasch Process.
	3T	Geothermal Well.
	3U	Uranium Mining Well.
	3X	Other Class III Wells.

CLASS IV Wells that inject hazardous waste into/above USDWs.

TYPE		
	4H	Hazardous Facility Injection Well.
	4R	Remediation Well at RCRA or CERCLA site.

CLASS V Any Underground Injection Well not included in Classes I through IV.

TYPE		
	5A	Industrial Well.
	5B	Beneficial Use Well.
	5C	Fluid Return Well.
	5D	Sewage Treatment Effluent Well.
	5E	Cesspools (non-domestic).
	5F	Septic Systems.
	5G	Experimental Technology Well.
	5H	Drainage Well.
	5I	Mine Backfill Well.
	5J	Waste Discharge Well.

PAPERWORK REDUCTION ACT The public reporting and record keeping burden for this collection of information is estimated to average 0.5 hours per response. Burden means the total time, effort, or financial resource expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal Agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to the collection of information; search data sources; complete and review the collection of information; and, transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques to Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822), 1200 Pennsylvania Ave., NW., Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed forms to this address.