TETRA TECH

TECHNICAL MEMORANDUM

To:	**Nevada Environmental Response Trust**
Cc:	Nevada Division of Environmental Protection United States Environmental Protection Agency
From:	Chris Hayes
Date:	January 3, 2023
Subject:	**Unit 4 Source Area In-Situ Bioremediation Treatability Study Monthly Progress Report**

At the direction of the Nevada Environmental Response Trust (NERT or Trust), Tetra Tech, Inc. (Tetra Tech) has prepared this memorandum to summarize Tetra Tech's progress during November 2022 toward successfully implementing the Unit 4 Source Area In-Situ Bioremediation (ISB) Treatability Study.

Task Progress Update: November 2022

Task M21 – Unit 4 Source Area ISB Treatability Study

- Current Status –

  Phase 2 of the Unit 4 Source Area ISB Treatability Study is ongoing. A layout map and construction details of all injection, monitoring, and extraction wells are provided on Figure 1 and in Table 1. Operations, maintenance and monitoring activites completed during November 2022 are summarized below.

  - Operations and Maintenance
    - Area 1 – The first phase of the treatability study for Area 1 consists of a total dissolved solids (TDS) reduction period prior to the injection of a carbon substrate due to the presence of extremely elevated TDS concentrations in groundwater in the Area 1 deep zone. Groundwater-only circulation consisting of the injection of clean water (formerly known as stabilized Lake Mead water [SLMW]) in a pulsed manner and continuous groundwater extraction is being performed to reduce TDS concentrations to levels that will allow biodegradation processes to proceed (i.e., TDS concentrations to below 21,000 milligrams per liter [mg/L]) prior to carbon substrate/water injections. The water injection and extraction operations began in the Area 1 deep zone on September 8, 2022 and are on-going. Specific details of ongoing operations include:
      - No injection/extraction operations occurred within the Area 1 intermediate zone because TDS concentrations are already suitable for carbon substrate/water injections.

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        - During the month of November, a total of 52,221 gallons of clean water was injected into four injection wells within the Area 1 deep zone, while a total of 16,563 gallons of groundwater was extracted from one extraction well. Summaries of Area 1 extractions and injections are provided in Tables 2 and 3, respectively.
    - Operations were temporarily suspended from November 16 – 18, 2022 to perform extraction pump/well maintenance. Area 1 injection/extraction activities were also temporarily suspended from November 20 through 29, 2022 due to electrical communication issues between the extraction pump and controllers. The electrical subcontractor resolved the issue by replacing the Grundfos GENIbus equipment that connects the pump controllers to the pumps. Operations resumed on November 30, 2022.Area 2 – Because TDS concentrations in Area 2 are lower than Area 1 and averaged approximately 19,500 mg/L during baseline sampling, ISB injection/extraction activities are being implemented without an initial TDS reduction step. Carbon substrate solution/water injection and groundwater extraction operations began in both the intermediate and deep zones within Area 2 on September 13, 2022 and are on-going. The injection process consists of daily-pulsed injections of a carbon substrate solution, followed by daily injections of distribution water. The carbon substrate solution consists of molasses, filtered Fluidized Bed Reactor biosolids, 0.5 molar sodium bicarbonate solution, trace mineral solution, and vitamin B12. As explained in previous monthly reports, the macronutrient solution consisting of urea and diammonium phosphate is not currently being added to the injectate solution to minimize precipitate formation. This macronutrient may be added in the future if required based on effectiveness monitoring results. Specific details of ongoing operations include:
        - During the month of November 2022, a total of 30,625 gallons of carbon solution and 22,941 gallons of distribution water were injected into two injection wells within the Area 2 intermediate zone, while approximately 22,071 gallons of groundwater were extracted from two extraction wells. A total of 17,081 gallons of carbon solution and 12,667 gallons of distribution water were injected into four injection wells within the Area 2 deep zone, while approximately 13,496 gallons of groundwater were extracted from one extraction well. Summaries of Area 2 extractions and injections are provided in Tables 2 and 4, respectively.
        - Operations were temporarily suspended from November 16 – 18, 2022 to perform extraction pump/well maintenance.
- Effectiveness Monitoring – The effectiveness monitoring program consisted of baseline groundwater sampling that was completed in April 2022 prior to system start-up. Following system start-up in early September 2022, the effectiveness monitoring program was implemented in accordance with the NDEP-approved Unit 4 Source Area ISB Treatability Study Work Plan Addendum. During the first month of operations, one biweekly sampling event of Area 2 monitoring wells was conducted in September 2022. The monitoring program shifted to monthly sampling in October 2022 and is ongoing for both Areas 1 and 2. Available draft groundwater analytical results from the baseline sampling event and subsequent monitoring events performed from September to October 2022 are presented in Table 5. The October 2022 groundwater results are summarized below. Groundwater analytical results from the most recent effectiveness monitoring event performed from October 31 – November 4, 2022 will be provided in future monthly progress reports as data become available. Final validated data will be provided in the final treatability study results report.

- Area 1 Intermediate – Although active injection/extraction operations are not being performed in the Area 1 intermediate zone, groundwater samples were collected from three intermediate monitoring wells during the October 2022 sampling event. Perchlorate concentrations in groundwater samples collected from U4-MW-02I and U4-MW-05I increased to levels above baseline with concentrations of 891 mg/L and 2,760 mg/L. However, the groundwater sample collected from monitoring well U4-MW07I indicated a 51 percent decrease in perchlorate concentrations when compared to baseline concentrations. Nitrate and chlorate concentrations also decreased by 69 and 63 percent, respectively. TDS concentrations in the groundwater sample collected from U4-MW-07I only slightly decreased by 19 percent compared to baseline concentrations. TDS concentrations in the Area 1 intermediate zone ranged from 1,350 to 29,100 mg/L during the October 2022 sampling event. These reductions may be related to migration of treated groundwater from Area 2 into Area 1. Groundwater concentration trends in the Area 1 intermediate zone will continue to be monitored.
- Area 1 Deep – Groundwater samples were collected from four deep monitoring wells and one extraction well in Area 1 in October 2022 to evaluate TDS reductions due to active operations. The average TDS concentrations in samples collected from the four monitoring wells slightly reduced from a baseline concentration of 34,305 mg/L to 33,153 mg/L in October 2022, which is above the targeted 21,000 mg/L criteria for the TDS reduction phase. TDS concentration reductions of 35 and 77 percent were observed in groundwater samples collected from monitoring wells M-251-100 and U4-MW-07D, respectively. TDS concentrations also reduced by 45 percent in the groundwater sample collected from extraction well U4-E-03D. Similar concentration reductions of perchlorate, chlorate, and nitrate were also observed in groundwater samples collected from these wells. During October 2022, perchlorate concentrations in the Area 1 deep zone ranged from 76.4 to 3,530 mg/L. Groundwater concentration trends in the Area 1 deep zone will continue to be monitored and compared to the 21,000 mg/L target for the TDS reduction phase of operations.
- Area 2 Intermediate – Groundwater samples were collected from three monitoring wells and two extraction wells screened in the Area 2 intermediate zone. During October 2022, perchlorate concentrations in the Area 2 intermediate zone ranged from 0.53 to 212 mg/L. Perchlorate concentration reductions ranging from 49 to 99 percent were observed in groundwater samples collected from all three monitoring wells when compared to baseline concentrations. The results from the groundwater sample collected from monitoring well U4-MW-11I indicated the lowest groundwater perchlorate concentration to date of 0.530 mg/L, which represents a 99 percent reduction when compared to baseline concentrations (98.7 mg/L) and an improvement over the previous September perchlorate concentration reduction of 67 percent. Greater than 99 percent reductions in nitrate and chlorate concentrations were also observed in groundwater samples collected from monitoring well U4-MW-11I. The groundwater sample collected from this location also exhibited the highest total organic carbon (TOC) concentration of the October sampling event with a concentration of 61.8 mg/L, which is significantly higher than the baseline concentration of 1.04 mg/L and indicates that the injected carbon substrate solution is being successfully distributed in the area of U4-MW-11I. Concentration reductions in groundwater samples collected from monitoring wells U4-MW-12I and U4-MW13I also improved when compared to the previous September 2022 event, with perchlorate, chlorate, and nitrate concentration reductions ranging from 21 to 99 percent when compared to baseline. Lastly, sulfate concentrations in groundwater samples collected from Area 2 intermediate monitoring wells indicated concentration reductions

ranging from 14 to 75% but to a much smaller extent compared to concentration reductions of perchlorate, chlorate and nitrate, which is not unexpected since sulfate biodegradation often lags behind the more favorable nitrate, chlorate, and perchlorate. This appears to be the sequence observed in Area 2 intermediate monitoring wells based on groundwater concentration reductions observed thus far.

It is likely that contaminant concentrations will continue to reduce in future sampling events based on the observed concentration reduction trends and increase in TOC concentrations (which should continue as more carbon substrate is distributed throughout the Area 2 intermediate zone over time), both of which support the anaerobic respiration of perchlorate in the presence of a continuing carbon source.

- Area 2 Deep – Groundwater samples were collected from three deep monitoring wells and one deep extraction well during the October monthly sampling event. During both the September and October 2022 sampling events, perchlorate concentration reductions were observed in groundwater samples collected from two of the three deep monitoring wells in Area 2 (U4-MW-12D and U4-MW-13D) when compared to baseline; however, perchlorate concentrations in October 2022 indicated a slight increase compared to September 2022. Similar reductions were also observed for chlorate and nitrate, with concentration reductions of up to 72 percent and 89 percent in groundwater samples collected from U4-MW-12D and U4-MW-13D, respectively. the perchlorate concentration in the groundwater sample collected from U4-MW-11D increased to 1,410 mg/L in October 2022, which is slightly above the baseline concentration of 1,290 mg/L.

  The largest concentration reductions in groundwater samples collected from the Area 2 deep interval were observed in groundwater samples collected from monitoring well U4-MW-13D, where anaerobic conditions (oxidation-reduction potential [ORP] of -147.3 millivolts) and elevated TOC concentrations of 55.2 mg/L were present. These ORP levels and TOC concentrations are indicative of strongly reducing conditions and the presence of adequate carbon substrate for continued anaerobic respiration of perchlorate. Results will continue to be monitored throughout the study to assess the reduction components related to biodegradation and dilution on reducing concentrations.

- Dye Study Monitoring: Dye samples were also collected during the October 2022 effectiveness monitoring event, with results provided in Table 6. There were several cases where charcoal samplers showed low detections of dye, but the water samples did not show visible dye, indicating that either the dye peak already passed before the water sample was collected, or the concentration of dye in the water were too low to be detectable. Dye testing will continue to be performed during the planned groundwater monitoring and extraction monitoring activities. Results from the dye testing are presented in Table 6. Noteworthy results from the October 2022 sampling event are described below:
  - Area 1 – Fluorescein dye was detected in samples collected from monitoring wells U4-MW-05D and U4-MW-07D, which was expected because those wells are immediately downgradient of the dye release points of U4-E-04D and U4-E-05D. The dye has continued to move downgradient and has been detected in U4-E-01D, U4-E-02D, and U4-MW03D. As expected, fluorescein has also been detected in the samples collected from shallower monitoring wells screened in the intermediate zone, initially in samples from nearby U4-MW-07I and later followed by detections in samples collected from U4-MW-01I, which is located approximately 65 feet downgradient of the release points. This confirms some hydraulic connectivity between the deep and intermediate zones.

  - Area 2 – Rhodamine WT was released in the intermediate zone at U4-E-09I and U4-E-10I. Rhodamine has been sporadically detected in a mix of shallow, intermediate, and deep wells that are not spatially related (i.e., not all in the same cluster). Results to date indicate that the intermediate zone may have some very specific preferential flow paths that are relatively fast and cross-connect the various zones. Rhodamine has not been detected in monitoring wells in the southern portion of the study area, which may indicate that the monitoring wells in that vicinity are not well-connected to the preferential flow pathways intersected by the two release points. Lastly, although it was only detected at low concentrations in select monitoring wells during baseline, sulforhodamine B has been detected in groundwater from several monitoring wells since sampling began. Discussions with the laboratory are on-going about these results.

- Schedule and Progress Updates
  - Area 1 TDS reduction operations are anticipated to continue through March 2023 or until the average TDS concentrations from monitoring wells M251-100, U4-MW-02D, U4-MW-05D, and U4-MW-07D are reduced to approximaltey 21,000 mg/L or less, whichever occurs first.
  - Area 2 ISB operations are anticipated to continue through September 2023.
- Health and Safety
  - There were no health and safety incidents related to Task M21 during November 2022.

CERTIFICATION

Unit 4 Source Area In-Situ Bioremediation Treatability Study Monthly Progress Report

Nevada Environmental Response Trust Site
(Former Tronox LLC Site)
Henderson, Nevada

Nevada Environmental Response Trust (NERT) Representative Certification
I certify that this document and all attachments submitted to the Division were prepared at the request of, or under the direction or supervision of NERT. Based on my own involvement and/or my inquiry of the person or persons who manage the systems(s) or those directly responsible for gathering the information or preparing the document, or the immediate supervisor of such person(s), the information submitted and provided herein is, to the best of my knowledge and belief, true, accurate, and complete in all material respects.

Office of the Nevada Environmental Response Trust

Le Petomane XXVII, not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

Signature: Jay A. Steinberg Not Individually, but Solely as President of the Trustee, not individually, but solely in his representative capacity as President of the Nevada Environmental Response Trust Trustee

Name: Jay A. Steinberg, not individually, but solely in his representative capacity as President of the Nevada Environmental Response Trust Trustee

Title: Solely as President and not individually

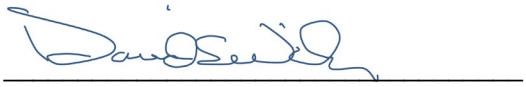
Company: Le Petomane XXVII, Inc., not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

Date: 1/ 3/23

CERTIFICATION

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been prepared in a manner consistent with the current standards of the profession, and to the best of my knowledge, comply with all applicable federal, state, and local statutes, regulations, and ordinances. I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.

Description of Services Provided: Prepared Unit 4 Source Area In-Situ Bioremediation Treatability Study Monthly Progress Report.



January 3, 2023

David S. Wilson, CEM
Principal Engineer
Tetra Tech, Inc.

Date

Nevada CEM Certificate Number: 2385
Nevada CEM Expiration Date: September 19, 2024

Figures

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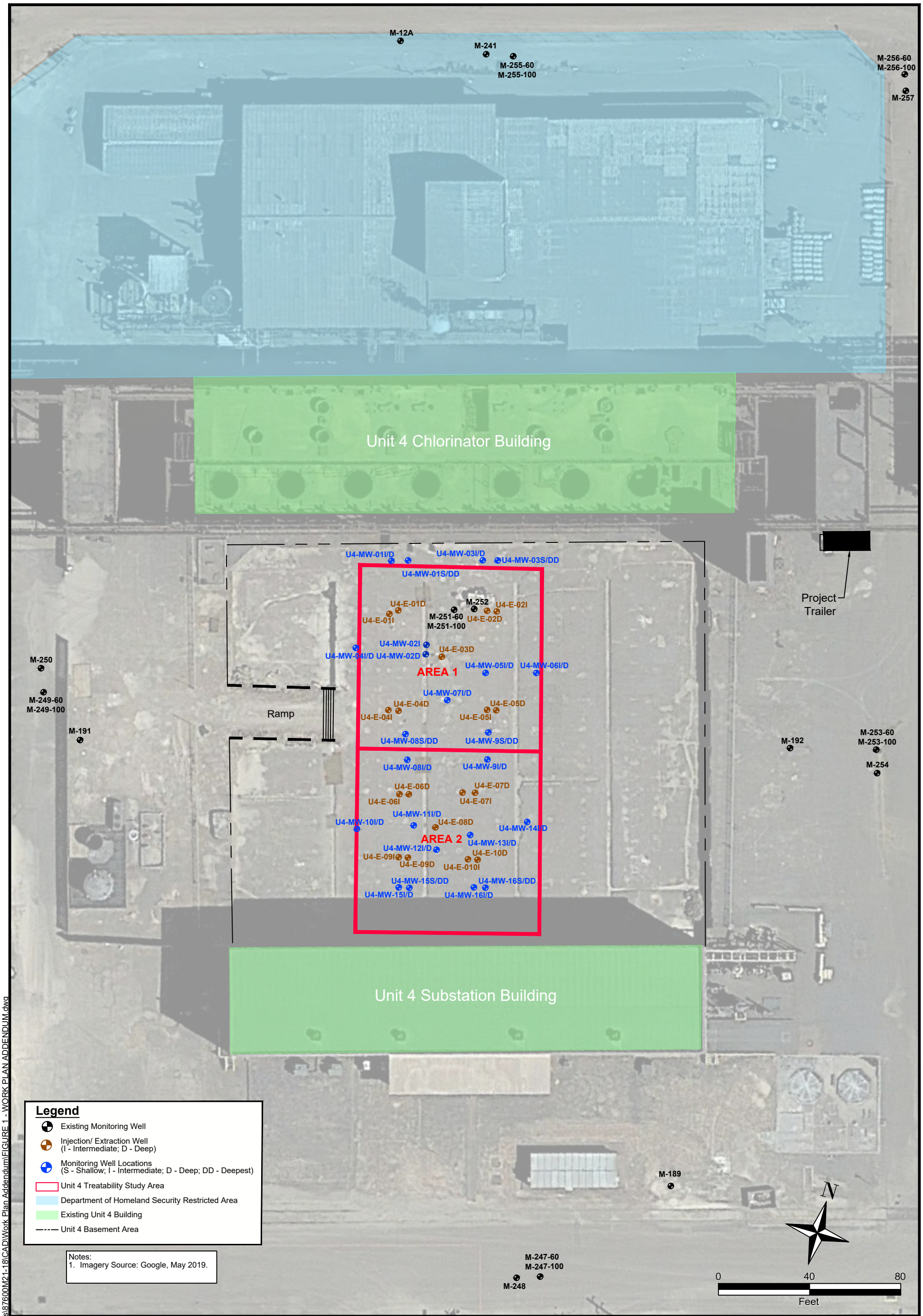

Legend

- Existing Monitoring Well
- Injection/ Extraction Well (I - Intermediate; D - Deep)
- Monitoring Well Locations (S - Shallow; I - Intermediate; D - Deep; DD - Deepest)
- Unit 4 Treatability Study Area
- Department of Homeland Security Restricted Area
- Existing Unit 4 Building
- Unit 4 Basement Area

Notes:
1. Imagery Source: Google, May 2019.

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NEVADA ENVIRONMENTAL RESPONSE TRUST SITE

UNIT 4 SOURCE AREA IN-SITU BIOREMEDIATION TREATABILITY STUDY
HENDERSON, NEVADA

INJECTION/ EXTRACTION AND MONITORING WELL LAYOUT

Project No.:	117-7502021-M21
Date:	May 10, 2022
Designed By:	AC

Figure No.

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Tables

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Table 1
Well Construction Details
Unit 4 Source Area In-Situ Bioremediation Treatability Study

Well ID	Screened Lithology	Northing	Easting	Ground Surface Elevation[1]	Top of Casing Elevation	Construction Type	Casing Material	Screen Material	Slot Size	Filter Pack Gradation	Borehole Diameter	Borehole Total Depth	Well Diameter	Nominal Screen Length	Well Total Depth	Bottom of Screen	Top of Screen
				feet amsl	feet amsl				inches		inches	feet bgs[1]	inches	feet	feet bgs[1]	feet bgs[1]	feet bgs[1]
U4-E-01D	UMCf	26717332.49	828215.74	1805.50	1805.11	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	115.0	4	15	110.3	94.7	109.7
U4-E-01I	UMCf	26717330.42	828212.11	1805.40	1805.15	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.0	4	15	90.3	74.6	89.6
U4-E-02D	UMCf	26717338.47	828258.40	1805.55	1804.99	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	115.0	4	15	110.3	94.4	109.4
U4-E-02I	UMCf	26717338.14	828254.24	1805.51	1804.99	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.0	4	15	90.3	74.4	89.4
U4-E-04D	UMCf	26717288.90	828222.53	1805.49	1804.95	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	115.0	4	15	110.3	95.0	110.0
U4-E-03D	UMCf	26717310.37	828241.13	1805.49	1804.94	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	113.0	4	15	111.1	110.1	95.1
U4-E-04I	UMCf	26717288.51	828217.91	1805.64	1805.03	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.0	4	15	90.3	75.0	90.0
U4-E-05D	UMCf	26717295.64	828264.86	1805.48	1804.95	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	115.0	4	15	110.3	95.0	110.0
U4-E-05I	UMCf	26717295.15	828260.95	1805.58	1804.72	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.0	4	15	90.3	75.0	90.0
U4-E-06D	UMCf	26717253.44	828232.43	1805.44	1804.74	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	112.0	4	15	111.1	110.1	95.1
U4-E-06I	UMCf	26717252.90	828228.29	1805.47	1805.04	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.5	4	15	89.2	88.2	73.2
U4-E-07D	UMCf	26717258.48	828261.02	1805.62	1805.31	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	111.5	4	15	110.6	109.6	94.6
U4-E-07I	UMCf	26717257.68	828255.56	1805.62	1805.16	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.0	4	15	90.7	89.7	74.7
U4-E-08D	UMCf	26717240.82	828246.11	1805.45	1804.91	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	120.0	4	15	110.6	109.6	94.6
U4-E-09D	UMCf	26717225.92	828236.22	1805.45	1804.91	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	112.0	4	15	110.5	109.5	94.5
U4-E-09I	UMCf	26717225.46	828232.18	1805.47	1805.14	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	93.3	4	15	90.9	89.9	74.9
U4-E-10D	UMCf	26717229.55	828266.50	1805.66	1805.28	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	112.0	4	15	110.5	109.5	94.5
U4-E-10I	UMCf	26717229.15	828262.34	1805.71	1805.37	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.0	4	15	90.2	89.2	74.2
U4-MW-01I	UMCf	26717353.59	828209.51	1805.57	1805.14	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.0	2	10	86.7	86.7	76.7
U4-MW-01D	UMCf	26717353.51	828209.25	1805.57	1805.10		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	106.7	106.7	96.7
U4-MW-01S	UMCf	26717354.83	828216.42	1805.57	1805.02	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	131.0	2	10	64.7	64.7	54.7
U4-MW-01DD	UMCf	26717354.86	828216.87	1805.57	1805.09		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	129.9	129.9	119.9
U4-MW-02D	UMCf	26717315.33	828230.47	1805.50	1805.07	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	115.0	4	15	110.3	95.0	110.0
U4-MW-02I	UMCf	26717319.45	828230.17	1805.47	1805.07	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.0	4	15	90.3	75.0	90.0
U4-MW-03I	UMCf	26717359.79	828248.76	1805.61	1805.17	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.3	2	10	86.6	86.6	76.6
U4-MW-03D	UMCf	26717360.01	828249.20	1805.61	1805.18		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	106.6	106.6	96.6
U4-MW-03S	UMCf	26717360.79	828255.35	1805.56	1805.19	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	131.3	2	10	64.5	64.5	54.5
U4-MW-03DD	UMCf	26717360.84	828255.62	1805.56	1805.20		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	129.7	129.7	119.7
U4-MW-04I	UMCf	26717313.50	828199.89	1805.49	1805.13	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.5	2	10	86.8	86.8	76.8
U4-MW-04D	UMCf	26717313.36	828199.55	1805.49	1805.15		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	107.0	107.0	97.0
U4-MW-05I	UMCf	26717311.18	828257.53	1805.52	1805.06	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.0	2	10	86.6	86.6	76.6
U4-MW-05D	UMCf	26717311.18	828257.89	1805.52	1805.05		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	108.2	108.2	98.2
U4-MW-06I	UMCf	26717314.46	828279.53	1805.52	1805.21	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.3	2	10	86.5	86.5	76.5
U4-MW-06D	UMCf	26717314.51	828279.82	1805.52	1805.20		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	107.1	107.1	97.1
U4-MW-07I	UMCf	26717296.98	828242.85	1805.36	1805.16	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	109.2	2	10	86.8	86.8	76.8
U4-MW-07D	UMCf	26717296.68	828242.80	1805.36	1805.01		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	106.5	106.5	96.5
U4-MW-08I	UMCf	26717268.25	828229.36	1805.45	1804.97	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.0	2	10	88.0	88.0	78.0
U4-MW-08D	UMCf	26717268.30	828229.62	1805.45	1804.99		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	108.6	108.6	98.6
U4-MW-08S	UMCf	26717279.33	828226.78	1805.47	1804.94	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	131.2	2	10	64.9	64.9	54.9
U4-MW-08DD	UMCf	26717279.35	828227.22	1805.47	1804.95		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	129.8	129.8	119.8
U4-MW-09I	UMCf	26717273.70	828264.04	1805.62	1805.22	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.0	2	10	86.8	86.8	76.8
U4-MW-09D	UMCf	26717273.73	828264.40	1805.62	1805.20		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	106.9	106.9	96.9
U4-MW-09S	UMCf	26717285.44	828262.62	1805.55	1805.12	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	132.0	2	10	65.3	65.3	55.3
U4-MW-09DD	UMCf	26717285.52	828263.00	1805.55	1805.12		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	129.8	129.8	119.8
U4-MW-10I	UMCf	26717234.83	828212.05	1805.55	1805.10	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	109.0	2	10	87.1	87.1	77.1
U4-MW-10D	UMCf	26717235.18	828212.26	1805.55	1805.07		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	106.9	106.9	96.9
U4-MW-11I	UMCf	26717240.19	828236.42	1805.41	1805.03	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	109.0	2	10	87.0	87.0	77.0
U4-MW-11D	UMCf	26717240.23	828236.77	1805.41	1804.96		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	107.4	107.4	97.4
U4-MW-12I	UMCf	26717231.25	828247.87	1805.47	1805.11	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.0	2	10	86.8	86.8	76.8
U4-MW-12D	UMCf	26717231.22	828248.29	1805.47	1805.12		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	107.1	107.1	97.1
U4-MW-13I	UMCf	26717242.66	828261.00	1805.64	1805.28	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	109.0	2	10	87.1	87.1	77.1
U4-MW-13D	UMCf	26717242.70	828261.37	1805.64	1805.35		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	108.2	108.2	98.2
U4-MW-14I	UMCf	26717249.26	828285.32	1805.43	1805.13	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	109.0	2	10	87.3	87.3	77.3
U4-MW-14D	UMCf	26717249.24	828285.84	1805.43	1805.05		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	107.3	107.3	97.3
U4-MW-15I	UMCf	26717212.34	828233.91	1805.48	1805.03	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	109.0	2	10	86.8	86.8	76.8
U4-MW-15D	UMCf	26717212.35	828234.41	1805.48	1804.97		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	106.0	106.0	96.0
U4-MW-15S	UMCf	26717212.89	828238.61	1805.44	1805.05	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	132.0	2	10	64.8	64.8	54.8
U4-MW-15DD	UMCf	26717212.87	828239.01	1805.44	1804.98		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	130.3	130.3	120.3
U4-MW-16I	UMCf	26717217.25	828266.62	1805.68	1805.36	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.5	2	10	87.0	87.0	77.0
U4-MW-16D	UMCf	26717217.40	828266.90	1805.68	1805.27		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	106.8	106.8	96.8
U4-MW-16S	UMCf	26717217.87	828271.70	1805.59	1805.24	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	131.0	2	10	64.8	64.8	54.8
U4-MW-16DD	UMCf	26717218.04	828271.95	1805.59	1805.32		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	130.8	130.8	120.8

Notes
amsl - above mean sea level
bgs - below ground surface
bTOC - below top of casing
PVC - polyvinyl chloride
UMCf - Upper Muddy Creek formation
1. Ground surface refers to the concrete floor of the Unit 4 basement, which is approximately 8 feet below the surrounding grade.
2. Well names including E indicate an extraction/injection well. Well names including MW indicate a monitoring well.

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Table 2
Summary of Groundwater Extraction Activities - November 2022
Unit 4 Source Area Bioremediation Treatability Study

Study Area			Area 1 Deep			Area 2 Intermediate						Area 2 Deep		
Well ID			U4-E-03D			U4-E-06I			U4-E-07I			U4-E-08D		
Date	Time	Duration[1][3]	Average Flow Rate	Volume Extracted[1]	Cumulative Total Volume	Average Flow Rate	Volume Extracted[1]	Cumulative Total Volume	Average Flow Rate	Volume Extracted[1]	Cumulative Total Volume	Average Flow Rate	Volume Extracted[1]	Cumulative Total Volume
		minutes	gpm	gallons	gallons	gpm	gallons	gallons	gpm	gallons	gallons	gpm	gallons	gallons
11/1/2022	15:08	1,470	0.7	1,013.33	50,817.84	0.4	612.20	55748.91	0.2	244.39	18471.52	0.4	576.90	22045.20
11/2/2022	15:05	1,437	0.7	986.38	51,804.22	0.4	596.06	56344.97	0.2	229.36	18700.88	0.4	557.86	22603.06
11/3/2022	15:06	1,441	0.7	1,006.68	52,810.90	0.4	585.35	56930.32	0.2	231.87	18932.75	0.4	538.77	23141.83
11/4/2022	15:01	1,435	0.7	1,007.64	53,818.54	0.4	503.94	57434.26	0.2	235.56	19168.31	0.3	483.45	23625.28
11/5/2022	15:05	1,444	0.7	1,057.82	54,876.36	0.3	474.74	57909.00	0.2	234.15	19402.46	0.4	535.55	24160.83
11/6/2022	15:03	1,438	0.8	1,122.47	55,998.83	0.3	461.26	58370.26	0.2	232.97	19635.43	0.4	587.86	24748.69
11/7/2022	15:02	1,439	0.7	1,058.43	57,057.26	0.3	411.30	58781.56	0.2	217.70	19853.13	0.4	541.15	25289.84
11/8/2022	14:52	1,430	0.7	1,048.82	58,106.08	0.3	361.21	59142.77	0.1	210.14	20063.27	0.4	531.58	25821.42
11/9/2022	15:05	1,453	0.7	1,063.48	59,169.56	0.2	331.49	59474.26	0.1	215.10	20278.37	0.4	533.74	26355.16
11/10/2022	4:21	796	0.7	563.47	59,733.03	0.2	167.35	59641.61	0.1	117.90	20396.27	0.4	289.10	26644.26
11/11/2022	15:04	2,083	0.7	1,475.70	61,208.73	0.2	473.00	60114.61	0.2	325.01	20721.28	0.4	777.30	27421.56
11/12/2022	15:03	1,439	0.7	1,005.06	62,213.79	0.3	427.48	60542.09	0.2	225.67	20946.95	0.4	558.58	27980.14
11/13/2022	15:02	1,439	0.7	983.96	63,197.75	0.3	388.71	60930.80	0.2	226.94	21173.89	0.4	539.59	28519.73
11/14/2022	15:07	1,445	0.7	970.47	64,168.22	0.3	361.87	61292.67	0.2	217.50	21391.39	0.4	529.63	29049.36
11/15/2022	15:10	1,443	0.7	953.48	65,121.70	0.3	407.57	61700.24	0.2	218.12	21609.51	0.4	539.77	29589.13
11/16/2022	5:02	832	0.5	425.93	65,547.63	0.3	214.42	61914.66	0.1	91.20	21700.71	0.3	244.07	29833.20
11/17/2022[2]	---	---	---	---	65,547.63	---	---	61914.66	---	---	21700.71	---	---	29833.20
11/18/2022[2]	---	---	---	---	65,547.63	---	---	61914.66	---	---	21700.71	---	---	29833.20
11/19/2022	14:56	433	---	---	65,547.63	0.9	395.93	62310.59	0.1	138.92	21839.63	0.3	151.05	29984.25
11/20/2022	14:55	1,439	---	---	65,547.63	0.7	999.79	63310.38	0.3	402.89	22242.52	0.3	452.83	30437.08
11/21/2022	15:02	1,447	---	---	65,547.63	0.6	896.28	64206.66	0.3	367.61	22610.13	0.3	448.99	30886.07
11/22/2022	15:14	1,452	---	---	65,547.63	0.5	781.33	64987.99	0.3	357.76	22967.89	0.3	446.63	31332.70
11/23/2022	15:02	1,428	---	---	65,547.63	0.5	688.30	65676.29	0.3	337.26	23305.15	0.3	455.21	31787.91
11/24/2022	14:58	1,436	---	---	65,547.63	0.5	659.92	66336.21	0.3	329.99	23635.14	0.3	473.70	32261.61
11/25/2022	15:00	1,442	---	---	65,547.63	0.4	647.60	66983.81	0.3	325.83	23960.97	0.3	444.35	32705.96
11/26/2022	15:01	1,441	---	---	65,547.63	0.4	631.98	67615.79	0.3	312.29	24273.26	0.3	433.34	33139.30
11/27/2022	15:01	1,440	---	---	65,547.63	0.4	623.92	68239.71	0.3	306.91	24580.17	0.3	423.99	33563.29
11/28/2022	15:02	1,441	---	---	65,547.63	0.4	617.63	68857.34	0.2	284.76	24864.93	0.3	421.40	33984.69
11/29/2022	15:03	1,441	---	---	65,547.63	0.4	596.91	69454.25	0.2	261.52	25126.45	0.3	485.01	34469.70
11/30/2022	15:04	1,441	0.6	819.85	66,367.48	0.4	580.99	70035.24	0.2	272.81	25399.26	0.3	494.81	34964.51
September 2022 Total					**24,421.00**			**30,779.80**			**9,315.20**			**8,873.62**
October 2022 Total					**25,383.51**			**24,356.91**			**8,911.93**			**12,594.68**
November 2022 Total					**16,562.97**			**14,898.53**			**7,172.13**			**13,496.21**

Notes:
gpm - gallons per minute
1. Extraction operations are active 24 hours per day. Volume and duration quantities represent gallons or minutes of extraction since previous record indicated.
2. No extraction wells were operated on 11/17/22 and 11/18/22 due to system maintenance.
3. Extraction well U4-E-03D was not active from 11/19/22 through 11/29/22 due to Area 1 extraction system maintence.

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Table 3
Summary of Injection Activities
Area 1 - November 2022
Unit 4 Source Area Bioremediation Treatability Study

Study Area				Area 1 Deep											
Well ID				U4-E-01D			U4-E-02D			U4-E-04D			U4-E-05D		
Date	Injection Start Time	Injection Stop Time	Duration	Average Flow Rate	Volume Injected	Maximum Injection Pressure	Average Flow Rate	Volume Injected	Maximum Injection Pressure	Average Flow Rate	Volume Injected	Maximum Injection Pressure	Average Flow Rate	Volume Injected	Maximum Injection Pressure
			minutes	gpm	gallons	psi	gpm	gallons	psi	gpm	gallons	psi	gpm	gallons	psi
11/1/2022	11/1/22 4:34	11/1/22 14:33	599	1.3	800.20	21	1.3	789.60	30	1.3	781.61	19	1.3	786.01	18
11/2/2022	11/2/22 4:28	11/2/22 14:27	599	1.4	843.36	21	1.4	838.00	31	1.4	838.49	20	1.4	836.47	18
11/3/2022	11/3/22 4:32	11/3/22 14:32	600	1.4	850.87	22	1.4	841.26	31	1.4	841.43	20	1.4	833.70	20
11/4/2022	11/4/22 4:34	11/4/22 14:29	595	1.4	843.99	21	1.4	846.00	30	1.4	834.82	19	1.4	830.01	21
11/5/2022	11/5/22 4:40	11/5/22 14:35	595	1.4	850.98	22	1.4	836.33	30	1.4	842.51	19	1.4	842.17	20
11/6/2022	11/6/22 4:33	11/6/22 14:42	609	1.4	874.86	22	1.4	855.68	29	1.4	859.34	19	1.4	854.23	18
11/7/2022	11/7/22 4:43	11/7/22 14:43	600	1.4	851.42	21	1.4	832.87	30	1.4	840.80	20	1.4	835.38	18
11/8/2022	11/8/22 4:34	11/8/22 14:26	592	1.3	776.01	22	1.3	760.56	30	1.3	765.60	20	1.3	764.20	19
11/9/2022	11/9/22 4:22	11/9/22 14:21	599	1.4	851.82	22	1.4	844.24	30	1.4	845.34	20	1.4	845.43	20
11/10/2022	11/10/22 4:28	11/10/22 9:28	300	1.4	423.50	22	1.4	421.58	30	1.4	425.17	18	1.4	417.06	18
11/11/2022	11/11/22 4:31	11/11/22 14:34	603	1.4	863.95	22	1.4	848.55	30	1.4	849.89	18	1.4	839.38	20
11/12/2022	11/12/22 4:35	11/12/22 14:27	592	1.4	842.77	22	1.4	834.40	30	1.4	831.82	18	1.4	827.50	20
11/13/2022	11/13/22 4:39	11/13/22 14:35	596	1.4	847.47	22	1.4	834.41	30	1.4	833.14	19	1.4	838.22	20
11/14/2022	11/14/22 4:45	11/14/22 14:47	602	1.4	853.01	22	1.4	839.94	30	1.4	835.56	18	1.4	847.23	20
11/15/2022	11/15/22 4:35	11/15/22 14:35	600	1.4	849.87	22	1.4	837.47	30	1.4	845.00	18	1.4	847.59	20
11/16/2022[2]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/17/2022[2]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/18/2022[2]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/19/2022	11/19/22 7:21	11/19/22 9:10	109	1.6	170.47	22	1.6	172.11	29	1.3	144.60	19	1.5	163.87	22
11/20/2022[2]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/21/2022[2]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/22/2022[2]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/23/2022[2]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/24/2022[2]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/25/2022[2]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/26/2022[2]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/27/2022[2]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/28/2022[2]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/29/2022[2]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/30/2022	11/30/22 5:07	11/30/22 14:32	565	1.4	795.27	22	1.4	790.57	32	1.4	793.25	20	1.4	790.78	22
September Total					**18,524.74**			**17,036.15**			**18,474.90**			**18,327.61**	
October Total					**20,999.35**			**20,565.66**			**20,499.99**			**20,495.77**	
November Total					**13,189.82**			**13,023.57**			**13,008.37**			**12,999.23**	
Cumulative Total					**52,713.91**			**50,625.38**			**51,983.26**			**51,822.61**	

Notes:
gpm - gallons per minute
psi - pounds per square inch
1. No injections due to system maintenance.
2. Injectate solution in Area 1 Deep wells consists of only Stabilized Lake Mead Water as part of the total dissolved solids (TDS)-reduction period of the treatability study.

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Table 4
Summary of Injection Activities
Area 2 - November 2022
Unit 4 Source Area Bioremediation Treatability Study

Study Area				Area 2 Intermediate								Area 2 Deep			
Well ID				U4-E-09I				U4-E-10I				U4-E-06D			
Date	Injection Start Time	Injection Stop Time	Duration[1]	Volume Carbon Solution Injected[2]	Volume Distribution Water Solution Injected[3]	Average Flow Rate	Maximum Injection Pressure	Volume Carbon Solution Injected[2]	Volume Distribution Water Solution Injected[3]	Average Flow Rate	Maximum Injection Pressure	Volume Carbon Solution Injected[2]	Volume Distribution Water Solution Injected[3]	Average Flow Rate	Maximum Injection Pressure
			minutes	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi
11/1/2022	11/1/22 4:33	11/1/22 14:33	556	611.40	442.24	1.9	13	607.36	453.58	1.9	11	164.79	120.72	0.5	20
11/2/2022	11/2/22 4:27	11/2/22 14:27	555	605.26	434.09	1.9	13	600.95	453.90	1.9	10	164.81	130.84	0.5	20
11/3/2022	11/3/22 4:31	11/3/22 14:32	556	605.05	449.62	1.9	14	611.68	454.59	1.9	11	176.82	127.85	0.5	20
11/4/2022	11/4/22 4:33	11/4/22 14:29	552	613.65	452.15	1.9	15	607.24	451.92	1.9	11	165.45	122.06	0.5	20
11/5/2022	11/5/22 4:39	11/5/22 14:35	551	614.67	456.53	1.9	14	606.19	456.22	1.9	11	168.91	123.41	0.5	20
11/6/2022	11/6/22 4:32	11/6/22 14:42	566	627.45	450.19	1.9	13	620.78	457.78	1.9	11	179.16	125.15	0.5	20
11/7/2022	11/7/22 4:42	11/7/22 14:43	556	612.28	458.71	1.9	13	607.70	447.23	1.9	10	164.22	122.43	0.5	20
11/8/2022	11/8/22 4:33	11/8/22 14:26	549	609.57	450.62	1.9	13	605.68	435.10	1.9	10	161.78	116.73	0.5	20
11/9/2022	11/9/22 4:21	11/9/22 14:21	556	618.41	448.17	1.9	13	611.81	447.78	1.9	10	169.19	131.32	0.5	20
11/10/2022	11/10/22 4:27	11/10/22 9:28	277	295.53	235.30	1.9	14	294.36	236.88	1.9	11	79.14	67.62	0.5	20
11/11/2022	11/11/22 4:30	11/11/22 14:34	560	604.62	463.36	1.9	13	620.04	451.05	1.9	10	173.72	123.04	0.5	21
11/12/2022	11/12/22 4:34	11/12/22 14:27	549	614.56	446.23	1.9	14	605.82	446.77	1.9	11	169.65	119.12	0.5	22
11/13/2022	11/13/22 4:38	11/13/22 14:35	553	603.58	452.72	1.9	14	594.26	455.30	1.9	11	161.48	121.33	0.5	21
11/14/2022	11/14/22 4:44	11/14/22 14:47	559	629.95	435.53	1.9	14	622.87	430.95	1.9	10	164.67	120.52	0.5	22
11/15/2022	11/15/22 4:34	11/15/22 14:35	557	616.36	455.07	1.9	16	612.18	458.48	1.9	10	160.99	122.81	0.5	22
11/16/2022[4]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/17/2022[4]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/18/2022[4]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/19/2022	11/19/22 7:20	11/19/22 12:17	257	274.86	224.52	1.9	18	257.35	224.96	1.9	14	79.03	56.68	0.5	24
11/20/2022	11/20/22 4:44	11/20/22 14:25	536	566.57	463.97	1.9	16	568.64	464.57	1.9	12	158.57	124.81	0.5	24
11/21/2022	11/21/22 5:04	11/21/22 14:35	527	542.16	448.86	1.9	14	545.23	456.52	1.9	10	170.45	127.44	0.6	22
11/22/2022	11/22/22 5:02	11/22/22 14:17	511	548.89	410.91	1.9	12	568.55	410.18	1.9	10	155.88	120.07	0.5	22
11/23/2022	11/23/22 4:56	11/23/22 14:21	521	562.43	424.42	1.9	13	573.47	428.05	1.9	10	160.88	117.03	0.5	20
11/24/2022	11/24/22 4:44	11/24/22 14:08	519	554.29	430.64	1.9	14	566.86	427.29	1.9	10	152.64	115.89	0.5	21
11/25/2022	11/25/22 4:50	11/25/22 14:09	514	557.76	427.36	1.9	14	558.48	424.64	1.9	10	165.66	111.69	0.5	22
11/26/2022	11/26/22 4:52	11/26/22 14:15	519	552.96	422.67	1.9	13	566.83	424.00	1.9	10	163.48	115.47	0.5	22
11/27/2022	11/27/22 5:03	11/27/22 14:24	517	569.41	406.15	1.9	12	570.11	414.77	1.9	9	166.35	109.11	0.5	21
11/28/2022	11/28/22 5:06	11/28/22 14:35	525	572.72	424.39	1.9	12	573.25	421.18	1.9	9	154.96	118.14	0.5	21
11/29/2022	11/29/22 5:10	11/29/22 14:36	522	571.52	420.67	1.9	13	567.34	419.81	1.9	9	161.73	112.34	0.5	20
11/30/2022	11/30/22 5:06	11/30/22 14:32	521	558.56	427.70	1.9	13	565.24	424.68	1.9	10	166.20	115.61	0.5	22
		September Total		**8,865.83**	**7,003.57**			**8,525.14**	**6,908.92**			**2,749.97**	**2,328.86**		
		October Total		**15,362.98**	**11,815.29**			**15,427.59**	**11,782.52**			**4,281.88**	**3,201.80**		
		November Total		**15,314.47**	**11,462.79**			**15,310.27**	**11,478.18**			**4,280.61**	**3,139.23**		
		Cumulative Total		**39,543.28**	**30,281.65**			**39,263.00**	**30,169.62**			**11,312.46**	**8,669.89**		

Notes:

gpm - gallons per minute

psi - pounds per square inch

1. Injection duration indicates the total minutes of active injection per day, accounting for any downtime in injections that may have occurred throughout the day. Therefore, injection duration may be less than the difference in daily injection start and stop times indicated.

2. Carbon substrate solution is batch mixed. Batches of carbon substrate solution includes the following components in solution with Stabilized Lake Mead Water (SLMW): 0.5% molasses, 0.25% filtered Fluidized Bed Reactor (FBR) sludge, 1.25% 0.5 Molar Sodium Bicarbonate Solution, 0.001% trace mineral solution, and 5 milligrams per liter Vitamin B12.

3. Distribution water solution is batch mixed. Batches of distribution water solution includes 0.0025 pounds of Vitamin C per gallon of Stabilized Lake Mead Water (SLMW).

4. No injections were performed due to system maintenance.

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Table 4
Summary of Injection Activities
Area 2 - November 2022
Unit 4 Source Area Bioremediation Treatability Study

Study Area				Area 2 Deep											
Well ID				U4-E-07D				U4-E-09D				U4-E-010D			
Date	Injection Start Time	Injection Stop Time	Duration[1]	Volume Carbon Solution Injected[2]	Volume Distribution Water Solution Injected[3]	Average Flow Rate	Maximum Injection Pressure	Volume Carbon Solution Injected[2]	Volume Distribution Water Solution Injected[3]	Average Flow Rate	Maximum Injection Pressure	Volume Carbon Solution Injected[2]	Volume Distribution Water Solution Injected[3]	Average Flow Rate	Maximum Injection Pressure
			minutes	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi
11/1/2022	11/1/22 4:33	11/1/22 14:33	556	177.16	129.10	0.6	19	169.55	131.89	0.5	12	175.54	122.62	0.5	18
11/2/2022	11/2/22 4:27	11/2/22 14:27	555	177.96	122.78	0.5	18	170.31	127.95	0.5	13	170.38	124.07	0.5	17
11/3/2022	11/3/22 4:31	11/3/22 14:32	556	174.40	131.98	0.6	20	165.09	126.07	0.5	12	170.46	111.11	0.5	18
11/4/2022	11/4/22 4:33	11/4/22 14:29	552	181.44	123.52	0.6	20	163.65	120.46	0.5	12	168.10	124.99	0.5	18
11/5/2022	11/5/22 4:39	11/5/22 14:35	551	180.65	133.12	0.6	20	169.91	128.80	0.5	12	172.59	120.67	0.5	18
11/6/2022	11/6/22 4:32	11/6/22 14:42	566	186.19	139.38	0.6	20	169.04	129.87	0.5	12	169.62	128.68	0.5	18
11/7/2022	11/7/22 4:42	11/7/22 14:43	556	177.73	130.85	0.6	19	170.54	131.41	0.5	11	146.00	122.30	0.5	18
11/8/2022	11/8/22 4:33	11/8/22 14:26	549	169.81	125.29	0.5	16	167.21	127.56	0.5	11	160.79	120.60	0.5	17
11/9/2022	11/9/22 4:21	11/9/22 14:21	556	187.52	128.38	0.6	16	169.28	129.34	0.5	12	167.44	125.19	0.5	16
11/10/2022	11/10/22 4:27	11/10/22 9:28	277	88.99	66.11	0.6	18	79.32	66.33	0.5	12	76.88	66.82	0.5	18
11/11/2022	11/11/22 4:30	11/11/22 14:34	560	182.06	132.77	0.6	18	170.30	125.00	0.5	12	141.70	132.54	0.5	19
11/12/2022	11/12/22 4:34	11/12/22 14:27	549	167.60	136.49	0.6	18	167.82	119.96	0.5	12	171.59	122.83	0.5	18
11/13/2022	11/13/22 4:38	11/13/22 14:35	553	179.86	130.38	0.6	19	166.02	119.43	0.5	12	157.56	122.06	0.5	18
11/14/2022	11/14/22 4:44	11/14/22 14:47	559	171.29	124.96	0.5	17	171.54	122.69	0.5	12	164.54	117.69	0.5	18
11/15/2022	11/15/22 4:34	11/15/22 14:35	557	165.59	131.68	0.5	17	172.84	121.01	0.5	12	161.86	121.53	0.5	18
11/16/2022[4]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/17/2022[4]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/18/2022[4]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11/19/2022	11/19/22 7:20	11/19/22 12:17	257	90.32	63.08	0.6	19	85.05	64.28	0.6	18	61.72	62.32	0.5	21
11/20/2022	11/20/22 4:44	11/20/22 14:25	536	147.63	134.33	0.5	15	155.59	130.11	0.5	18	155.49	131.64	0.5	19
11/21/2022	11/21/22 5:04	11/21/22 14:35	527	172.24	124.60	0.6	16	160.28	123.57	0.5	15	164.41	119.60	0.5	20
11/22/2022	11/22/22 5:02	11/22/22 14:17	511	162.97	107.99	0.5	15	156.44	113.27	0.5	14	154.65	111.52	0.5	18
11/23/2022	11/23/22 4:56	11/23/22 14:21	521	156.63	118.88	0.5	16	156.11	120.82	0.5	14	151.02	115.38	0.5	18
11/24/2022	11/24/22 4:44	11/24/22 14:08	519	135.75	115.83	0.5	16	156.97	112.61	0.5	13	159.01	114.48	0.5	18
11/25/2022	11/25/22 4:50	11/25/22 14:09	514	148.94	109.54	0.5	17	156.98	117.50	0.5	13	154.72	111.52	0.5	20
11/26/2022	11/26/22 4:52	11/26/22 14:15	519	153.84	112.56	0.5	18	153.00	108.56	0.5	12	158.77	115.88	0.5	20
11/27/2022	11/27/22 5:03	11/27/22 14:24	517	162.45	110.03	0.5	18	156.25	109.10	0.5	12	146.42	110.77	0.5	19
11/28/2022	11/28/22 5:06	11/28/22 14:35	525	165.26	119.24	0.5	15	152.64	112.45	0.5	11	152.83	112.29	0.5	17
11/29/2022	11/29/22 5:10	11/29/22 14:36	522	163.18	118.52	0.5	14	155.67	116.69	0.5	12	161.73	113.21	0.5	18
11/30/2022	11/30/22 5:06	11/30/22 14:32	521	161.49	119.88	0.5	15	161.46	114.58	0.5	12	166.89	112.96	0.5	20
		September Total		**2,768.33**	**2,227.39**			**2,693.95**	**2,339.33**			**2,696.94**	**2,327.15**		
		October Total		**4,439.80**	**3,249.33**			**4,261.59**	**3,153.44**			**4,335.35**	**3,185.87**		
		November Total		**4,388.95**	**3,241.27**			**4,248.86**	**3,171.31**			**4,162.71**	**3,115.27**		
		Cumulative Total		**11,597.08**	**8,717.99**			**11,204.40**	**8,664.08**			**11,195.00**	**8,628.29**		

Notes:

gpm - gallons per minute

psi - pounds per square inch

1. Injection duration indicates the total minutes of active injection per day, accounting for any downtime in injections that may have occurred throughout the day. Therefore, injection duration may be less than the difference in daily injection start and stop times indicated.

2. Carbon substrate solution is batch mixed. Batches of carbon substrate solution includes the following components in solution with Stabilized Lake Mead Water (SLMW): 0.5% molasses, 0.25% filtered Fluidized Bed Reactor (FBR) sludge, 1.25% 0.5 Molar Sodium Bicarbonate Solution, 0.001% trace mineral solution, and 5 milligrams per liter Vitamin B12.

3. Distribution water solution is batch mixed. Batches of distribution water solution includes 0.0025 pounds of Vitamin C per gallon of Stabilized Lake Mead Water (SLMW).

4. No injections were performed due to system maintenance.

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Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	E314.0	E300.1	E300.1	Anions by E300.0/SW9065A			E350.1	E351.2	E365.1	Alkalinity by SM2320B				Dissolved Metals by SW6020								
						Perchlorate	Chlorate	Chlorite	Chloride	Nitrate (as N)	Sulfate	Ammonia (as N)	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Antimony	Arsenic	Cadmium	Copper	Lead	Nickel	Selenium	Silver	Thallium
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	3,080	12,800	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	2,850,000	26,900,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	3,110,000	21,100,000	<240,000	5,360,000	52,900	1,480,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	10/13/2022	N	EM02	UMCf	92.5 - 102.5	2,000,000	11,700,000	----	----	29,700	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	27,900	316,000	<2,400	234,000	2,360	1,220,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	91,200	381,000	<2,400	259,000	2,440	180,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	457,000	505,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	75,100	564,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	2,500,000	19,700,000	<240000 R	4,560,000	45,200	1,020,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	219,000	1,670,000	<24,000	542,000	4,170	1,050,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01I	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	253,000	2,010,000	<24,000	706,000	6,420	1,030,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	1,040,000	5,060,000	<24,000	1,460,000	12,200	1,120,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	428,000	2,390,000	<24000 R	842,000	7,430	1,020,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	2,170,000	16,600,000	<24,000	4,310,000	48,700	1,420,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-03D	10/13/2022	N	EM02	UMCf	95.1 - 110.1	1,320,000	8,100,000	<240,000	2,400,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	1,270,000	12,100,000	<24,000	2,640,000	27,800	508,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	47,900	793,000	<2,400	321,000	3,940	1,090,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	1,900,000	11,600,000	<240,000	2,770,000	4,770	758,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	164,000	993,000	<24,000	400,000	3,290	1,100,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	320,000	4,550,000	<24000 R	1,150,000	12,200	214,000	<117	<1,400	33.3 R	68,700	68,700	<8,450	<8,450	<1.03	5.21	<0.150	<1.51	<0.849	5.53	2.53	<0.0700	<0.121
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	36,400	660,000	<2,400	355,000	3,550	1,220,000	<117	<700	33.3 R	96,800	96,800	<8,450	<8,450	<1.03	32.9	<0.150	2.20 J	<0.849	<0.816	2.37	<0.0700	<0.121
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	35,900	553,000	<12,000	345,000	3,660	1,300,000	<117	<700	33.3 R	96,100	96,100	<8,450	<8,450	<1.03	32.6	<0.150	3.02 J	<0.849	<0.816	2.53	<0.0700	<0.121
U4-E-06I	10/12/2022	N	EM02	UMCf	73.2 - 88.2	367,000	4,900,000	<240,000	1,140,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	1,700,000	18,500,000	<240,000	3,780,000	56,100	965,000	<117	<7,000	<33.3	120,000	----	----	----	<10.3	12.2 J	<1.50	<15.1	<8.49	<8.16	9.10 J	<0.700	<1.21
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	301,000	4,470,000	<24,000	723,000	10,200	1,120,000	<117	<7,000	194 J+	179,000	----	----	----	1.17 J	72.5	<0.150	2.99 J	<0.849	1.14 J	3.34	<0.0700	<0.121
U4-E-07I	10/11/2022	N	EM02	UMCf	74.7 - 89.7	948,000	7,420,000	<240,000	1,810,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	1,570,000	20,600,000	<240,000	4,180,000	63,500	948,000	<117	<7,000	<33.3	131,000	----	----	----	<10.3	5.36 J	<1.50	<15.1	<8.49	<8.16	7.15 J	<0.700	<1.21
U4-E-08D	10/11/2022	N	EM02	UMCf	94.6 - 109.6	1,330,000	12,000,000	<240,000	2,780,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	464,000	7,850,000	<24,000	1,710,000	19,200	475,000	<117	<3,500	<33.3	76,100	76,100	<8,450	<8,450	<10.3	9.35 J	<1.50	<15.1	<8.49	<8.16	3.01 J	<0.700	<1.21
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	130,000	2,210,000	<24,000	638,000	9,440	1,100,000	<117	<1,400	52.3 J	105,000	105,000	<8,450	<8,450	1.07 J	30.8	<0.150	6.53	<0.849	2.61	2.47	<0.0700	<0.121
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	412,000	3,430,000	<24,000	895,000	11,200	550,000	<117	<1,400	33.3 R	59,100	51,600	<8,450	<8,450	<1.03	6.71	<0.150	<1.51	<0.849	20.5	2.51	<0.0700	<0.121
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	407,000	3,550,000	<24,000	911,000	10,400	711,000	<117	<1,400	33.3 R	114,000	114,000	<8,450	<8,450	<1.03	19.6	<0.150	4.02 J	<0.849	2.29	2.58	<0.0700	<0.121
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	708,000	5,180,000	<24,000	1,040,000	5,360	437,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-01DD	4/19/2022	N	BL02	UMCf	119.9 - 129.9	29,800	217,000	<2,400	191,000	230	214,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-01DD	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	28,500	202,000	<2,400	191,000	259	214,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	410,000	3,510,000	<24,000	920,000	5,610	590,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	37,300	312,000	<2,400	289,000	2,730	1,290,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	2,850,000	24,800,000	<240,000	6,150,000	72,300	993,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-02D	10/11/2022	N	EM02	UMCf	95.0 - 110.0	3,530,000	28,400,000	----	----	84,600	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	291,000	2,420,000	<24,000	808,000	9,670	1,200,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-02I	10/11/2022	N	EM02	UMCf	75.0 - 90.0	891,000	5,380,000	----	----	15,300	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	1,430,000	9,200,000	<240,000	2,110,000	22,400	534,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-03DD	4/20/2022	N	BL02	UMCf	119.7 - 129.7	152,000	735,000	<2,400	319,000	1,180	255,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	207,000	1,200,000	<24,000	391,000	3,990 J	1,080,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	26,500	262,000	<2,400	222,000	1,750	1,160,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	26,200	264,000	<2,400	215,000	1,680	1,180,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	3,270,000	26,400,000	<240,000	5,690,000	53,500	1,160,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	1,100,000	10,700,000	<24,000	2,460,000	23,300	1,150,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	2,240,000	13,600,000	<240,000	4,020,000	46,500	1,400,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-05D	10/13/2022	N	EM02	UMCf	98.2 - 108.2	2,930,000	12,500,000	----	----	42,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	1,220,000	8,940,000	<24,000	2,380,000	26,000	1,300,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-05I	10/13/2022	N	EM02	UMCf	76.6 - 86.6	2,760,000	12,200,000	----	----	40,500	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	4,270,000	17,900,000	<240,000	4,670,000	48,100	1,160,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	201,000	801,000	<24,000	353,000	146 J+	967,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-07D	4/15/2022	N	BL02	UMCf	96.8 - 106.5	471,000	5,210,000	<24,000	1,260,000	13,500	568,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-07D	10/12/2022	N	EM02	UMCf	96.8 - 106.5	76,400	413,000	----	----	1,240	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-07D	10/12/2022	FD	EM02	UMCf	96.8 - 106.5	61,100	383,000	----	----	1,230	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	140,000	1,150,000	<24,000	463,000	4,200	1,190,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	69,100 J-	426,000	----	----	1,290	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	1,640,000	2,450,000	<24,000	4,960,000	71,400	1,130,000	<117	<2,800	68.2 J	184,000	184,000	<8,450	<8,450	<10.3	10.8 J	<1.50	<15.1	<8.49	<8.16	7.61 J	<0.700	<1.21
U4-MW-08DD	4/20/2022	N	BL02	UMCf	119.8 - 129.8	25,700	281,000	<2,400	213,000	1,520	210,000	<117	<140	146 J+	89,800	89,800	<8,450	<8,450	<1.03	10.9	<0.150	<1.51	<0.849	1.49 J	2.68	<0.0700	<0.121
U4-MW-08DD	4/20/2022	FD	BL02	UMCf	119.8 - 129.8	23,800	294,000	<2,400	227,000	1,610	230,000	<117	<140	133 J	84,300	84,300	<8,450	<8,450	<1.03	11.1	<0.150	<1.51	<0.849	1.44 J	2.31	<0.0700	<0.121
U4-MW-08I	4/13/2022	N	BL02	UMCf	78.0 - 88.0	152,000	2,550,000	<24,000	768,000	7,610	1,160,000	<117	<700	55.5 J	175,000	166,000	9,060 J	<8,450	<1.03	43.1	<0.150	1.90 J	<0.849	0.820 J	2.69	<0.0700	<0.121
U4-MW-08S	4/15/2022	N	BL02	UMCf	54.9 - 64.9	11,600	154,000	<2,400	227,000	3,430	1,280,000	<117	<140	<33.3	57,500	15,500 J	42,000	<8,450	<1.03	14.5	<0.150	<1.51	<0.849	<0.816	2.19	<0.0700	<0.121
U4-MW-09D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	1,770,000	14,600,000	<240,000	3,270,000	43,200	877,000	<117	<1,400	58.0 J	179,000	179,000	<8,450	<8,450	<10.3	7.44 J	<1.50	<15.1	<8.49	<8.16	3.90 J	<0.700	<1.21
U4-MW-09DD	4/14/2022	N	BL02	UMCf	119.8 - 129.8	25,200	110,000	<2,400	172,000	1,060	178,000	<117	<140	84.5 J	98,100	91,300	<8,450	<8,450	<1.03	10.2	<0.150	3.53 J	<0.849	<0.816	1.98 J	<0.0700	<0.121
U4-MW-09I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	78,700	439,000	<2,400	242,000	3,120	1,100,000	<117	<140	120 J+	109,000	109,000	<8,450	<8,450	<1.03	24.8	<0.150	2.16 J	<0.849	0.971 J	2.24	<0.0700	<0.121
U4-MW-09S	4/14/2022	N	BL02	UMCf	55.3 - 65.3	14,800	91,400	<2,400	182,000	2,260	964,000	<117	<140	76.5 J	141,000	123,000	17,900 J	<8,450	<1.03	46.2	<0.150	1.69 J	<0.849	<0.816	2.13	<0.0700	<0.121

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Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	E314.0	E300.1	E300.1	Anions by E300.0/SW9065A			E350.1	E351.2	E365.1	Alkalinity by SM2320B				Dissolved Metals by SW6020								
						Perchlorate	Chlorate	Chlorite	Chloride	Nitrate (as N)	Sulfate	Ammonia (as N)	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Antimony	Arsenic	Cadmium	Copper	Lead	Nickel	Selenium	Silver	Thallium
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
U4-MW-10D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	118,000	2,180,000	<24,000	706,000	4,090	340,000	<117	<700	<33.3	93,000	93,000	<8,450	<8,450	<1.03	8.78	<0.150	<1.51	<0.849	<0.816	2.14	<0.0700	<0.121
U4-MW-10I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	141,000	2,330,000	<24,000	936,000	8,520	1,300,000	<117	<1,400	65.7 J	187,000	187,000	<8,450	<8,450	<1.03	12.6	0.369 J	2.97 J	<0.849	1.08 J	2.88	<0.0700	0.490 J
U4-MW-11D	4/15/2022	N	BL02	UMCf	97.4 - 107.4	1,290,000	20,100,000	<240,000	4,040,000	62,300	880,000	<117	<3,500	71.7 J	201,000	201,000	<8,450	<8,450	<10.3	6.16 J	<1.50	<15.1	<8.49	<8.16	6.05 J	<0.700	<1.21
U4-MW-11D	9/26/2022	N	EM01	UMCf	97.4 - 107.4	1,350,000	20,700,000	<120,000	3,720,000	47,900	751,000	<117	<700	118 J-	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-11D	10/11/2022	N	EM02	UMCf	97.4 - 107.4	1,410,000	19,000,000	<240,000	4,260,000	55,600	886,000	<117	<2,800	42.1 J	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-11I	4/14/2022	N	BL02	UMCf	77.0 - 87.0	98,700	1,550,000	<24000 R	512,000	7,100	1,080,000	<117	<1,400	210 J+	96,300	92,500	<8,450	<8,450	<1.03	17.5	<0.150	1.60 J	<0.849	1.07 J	2.57	<0.0700	<0.121
U4-MW-11I	9/26/2022	N	EM01	UMCf	77.0 - 87.0	33,000	266,000	54,400	328,000	<48.0	694,000	<117	968	739 J	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-11I	9/26/2022	FD	EM01	UMCf	77.0 - 87.0	34,400	265,000	53,300	328,000	<48.0	694,000	<117	792	35.9 J	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-11I	10/10/2022	N	EM02	UMCf	77.0 - 87.0	530	<2,400	66,800	363,000	<48.0	508,000	<117	970 J	<33.3 UJ	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-11I	10/10/2022	FD	EM02	UMCf	77.0 - 87.0	476	2,400 J	66,100	362,000	<48.0	509,000	<117	1,230 J	102 J	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-12D	4/15/2022	N	BL02	UMCf	97.1 - 107.1	1,280,000	14,400,000	<24,000	3,380,000	61,000	1,130,000	<117	<3,500	67.4 J	138,000	138,000	<8,450	<8,450	<10.3	6.66 J	<1.50	<15.1	<8.49	<8.16	6.13 J	<0.700	<1.21
U4-MW-12D	9/27/2022	N	EM01	UMCf	97.1 - 107.1	793,000	8,490,000	<120,000	2,080,000	29,800	696,000	<117	<1,400	161 J-	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-12D	10/12/2022	N	EM02	UMCf	97.1 - 107.1	1,070,000	9,510,000	<240,000	2,150,000	32,400	846,000	<117	<700	48.9 J	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-12I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	424,000	4,000,000	<24,000	967,000	7,700	1,230,000	<117	<1,400	68.0 J	147,000	147,000	<8,450	<8,450	3.92 J	14.6	2.51 J	3.24 J	2.29	4.10 J	5.65 J	0.454 J	2.39
U4-MW-12I	4/14/2022	FD	BL02	UMCf	76.8 - 86.8	420,000	3,920,000	<24,000	968,000	8,310	1,220,000	<117	<1,400	104 J+	139,000	139,000	<8,450	<8,450	1.29 J	12.6	<0.150 UJ	2.11 J	<0.849	1.90 J	3.39 J	<0.0700	<0.121
U4-MW-12I	9/27/2022	N	EM01	UMCf	76.8 - 86.8	51,500	535,000	<2,400	278,000	2,190	1,080,000	<117	<140	271 J-	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-12I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	35,100	475,000 J	<240000 R	280,000	535	1,030,000	<117 UJ	<140 UJ	42.6 J	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	1,330,000	14,700,000	<240,000	3,130,000	60,700	662,000	<117	<1,400	115 J+	128,000	128,000	<8,450	<8,450	<10.3	5.43 J	<1.50	<15.1	<8.49	<8.16	4.11 J	<0.700	<1.21
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	401,000	5,370,000	<24,000	1,330,000	10,900	336,000 J	<117	<280	<33.3 UJ	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13D	10/11/2022	N	EM02	UMCf	98.2 - 108.2	413,000	4,100,000	<120,000	1,400,000	6,780 J	379,000 J	<117	<560	<33.3	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	418,000	4,180,000	<24,000	943,000	7,030	1,090,000	<117	<1,400	109 J+	116,000	116,000	<8,450	<8,450	<1.03	12.6	<0.150	<1.51	<0.849	1.80 J	3.62	<0.0700	<0.121
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	233,000	1,720,000	<12,000	487,000	9,130 J	1,040,000	<117	<280	79.5 J	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	10/10/2022	N	EM02	UMCf	77.1 - 87.1	212,000	1,410,000	<24,000	441,000	5,560	1,060,000	<117	<140	50.5 J	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	140,000	462,000	<12,000	349,000	729 J	2,560,000	<117	<140	33.3 R	101,000	101,000	<8,450	<8,450	<1.03	21.3	<0.150	3.44 J	<0.849	9.04	3.31	<0.0700	<0.121
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	181,000	506,000	<2,400	274,000	2,490	1,410,000	<117	<140	173 J+	77,600	70,500	<8,450	<8,450	<1.03	16.6	<0.150	<1.51	<0.849	1.09 J	2.53	<0.0700	<0.121
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	141,000	2,400,000	<24,000	749,000	3,170	410,000	<117	<700	63.7 J	112,000	112,000	<8,450	<8,450	<1.03	9.66	<0.150	<1.51	<0.849	0.944 J	2.38	<0.0700	0.186 J
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	1,380	19,700	<2,400	152,000	878	214,000	<117	<140	<33.3	108,000	100,000	<8,450	<8,450	<1.03	18.8	<0.150	2.23 J	<0.849	2.78	2.15	<0.0700	<0.121
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	86,400	1,190,000	<24,000	420,000	5,590	1,070,000	<117	<140	85.9 J	233,000	----	----	----	<1.03	31.1	<0.150	<1.51	<0.849	<0.816	2.64	<0.0700	<0.121
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	3,800	36,100	<24.0	178,000	2,750	1,190,000	<117	<140	74.6 J	100,000	100,000	<8,450	<8,450	<1.03	35.0	<0.150	<1.51	<0.849	<0.816	2.71	<0.0700	<0.121
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	1,670,000	15,000,000	<240,000	3,030,000	39,300	722,000	<117	<2,800	33.3 R	119,000	119,000	<8,450	<8,450	<10.3	7.23 J	<1.50	<15.1	<8.49	<8.16	5.89 J	<0.700	<1.21
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	77,900	396,000	<240	229,000	569	623,000	<117	<140	87.1 J	94,500	----	----	----	<1.03	20.0	<0.150	2.29 J	<0.849	0.870 J	3.05	<0.0700	<0.121
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	366,000	1,820,000	<24,000	546,000	6,600	979,000	<117	<700	33.3 R	60,000	42,800	17,200 J	<8,450	<1.03	11.2	<0.150	<1.51	<0.849	<0.816	2.58	<0.0700	<0.121
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	9,400	64,100	<240	173,000	2,700	1,150,000	<117	<140	<33.3	64,800	----	----	----	<1.03	20.9	<0.150	<1.51	<0.849	<0.816	2.47	<0.0700	<0.121
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	9,860	64,100	<240	171,000	2,850	1,140,000	<117	<140	33.3 R	64,400	----	----	----	<1.03	21.2	<0.150	<1.51	<0.849	<0.816	2.96	<0.0700	<0.121
U4-T3 (Effluent)	10/13/2022	N	EM02	-	-	928,000	7,380,000	<240,000	1,890,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Notes:

FD - Field duplicate

E - Field instrument error.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- - The result is an estimated quantity, but the result may be biased low.

J+ - The result is an estimated quantity, but the result may be biased high.

mg/L - milligrams per liter

µg/L - micrograms per liter

N - Normal field sample

R - The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

UMCf- Upper Muddy Creek Formation

< - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

-- Not tested.

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Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Dissolved Metals by SW6020		Dissolved Metals by SW6010B													FIELD TESTS					
						Uranium	Zinc	Aluminum	Barium	Beryllium	Calcium	Chromium	Cobalt	Iron	Magnesium	Manganese	Molybdenum	Phosphorus	Potassium	Sodium	Vanadium	Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Purge Rate
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mS/cm	mg/L	mg/L	mV	SU	mL/min
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	0.956	1.80	0.0 U	22.9	8.02	190
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	34.552	0.56	0.0 U	140.6	6.99	120
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	42.112	1.63	0.0 U	212.1	7.36	100
M-251-100	10/13/2022	N	EM02	UMCf	92.5 - 102.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	16.998	4.13	----	172.0	7.19	280
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5.163	5.64	0.0 U	44.4	10.69	100
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2.053	5.66	0.0 U	142.6	8.13	100
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2.393	3.04	0.0 U	36.4	8.03	60
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2.198	1.87	0.0 U	175.7	7.89	100
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	42.734	0.85	0.0 U	167.3	7.78	100
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	0.072	9.17	0.0 U	120.6	8.70	100
U4-E-01I	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	9.255	0.62	0.0 U	129.9	7.36	130
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	9.309	4.25	0.0 U	190.6	8.46	105
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	36.139	0.68	0.0 U	96.0	7.14	200
U4-E-03D	10/13/2022	N	EM02	UMCf	95.1 - 110.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	22.249	1.29	0.0 U	34.2	7.19	70
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	4.524	0.84	0.0 U	-18.2	8.40	70
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	26.037	3.43	0.0 U	177.7	7.33	100
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5.209	0.59	0.0 U	101.8	8.45	100
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	5.59	5.24 J	81.0 J	187 J	<0.330	515,000 J	11,900 J	<0.840	<18.0	255,000 J	19.9	3.31 J	25.3 J	32,800 J	1,310,000	<4.99	9.911	2.39	0.0 U	138.8	7.24	90
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	7.83	4.73 J	87.1 J	34.2	<0.330	223,000	2,270	<0.840	<18.0	88,400	8.86 J	13.6	45.1 J	23,300	624,000	17.4 J	4.282	2.10	0.0 U	128.1	7.47	90
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	7.85	5.71 J	68.8 J	33.8	<0.330	222,000	2,260	<0.840	<18.0	87,900	8.46 J	13.9	46.2 J	23,200	622,000	15.5 J	----	----	----	----	----	----
U4-E-06I	10/12/2022	N	EM02	UMCf	73.2 - 88.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	5.33 J	<30.2	<280	135	<1.65	1,450,000	79,000	<4.20	<90.0	634,000	22.5 J	8.85 J	<91.5	74,800	5,760,000	<25.0	28.599	1.02	0.0 U	134.9	7.20	100
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	9.05	3.42 J	117 J	29.6 J+	<0.330	157,000	15,100	<0.840	<18.0	66,000	8.86 J	18.0	194 J	23,400	1,610,000	45.7	6.791	2.78	0.0 U	164.9	8.12	100
U4-E-07I	10/11/2022	N	EM02	UMCf	74.7 - 89.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	7.00 J	<30.2	<280	143	<1.65	1,670,000	92,600	<4.20	<90.0	737,000	54.7	10.2 J	<91.5	82,200	6,200,000	<25.0	31.747	1.11	0.0 U	185.4	7.17	100
U4-E-08D	10/11/2022	N	EM02	UMCf	94.6 - 109.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	5.49 J	<30.2	106 J	106	<0.330	832,000	27,200	<0.840	18.8 J	360,000	23.2	<5.80	172 J	46,900	1,840,000	7.06 J	16.373	1.12	0.0 U	131.3	7.20	100
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	9.29	3.75 J	<56.1	27.1	<0.330	215,000	9,660	<0.840	<18.0	91,600	21.6	13.2	199 J	25,300	1,100,000	16.8 J	6.980	5.93	0.0 U	42.3	7.51	100
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	1.64	<3.02	102 J	112	<0.330	436,000	9,680	<0.840	<18.0	165,000	7.51 J	8.19	34.0 J	29,700	1,120,000	6.53 J	8.624	0.77	0.0 U	200.4	8.07	100
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	10.6	7.05 J	115 J	34.7	<0.330	307,000	16,100	<0.840	<18.0	133,000	7.93 J	11.6	<18.3	26,000	1,410,000	14.5 J	9.367	1.04	0.0 U	223.7	7.20	100
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	11.556	0.72	0.0 U	130.5	7.14	130
U4-MW-01DD	4/19/2022	N	BL02	UMCf	119.9 - 129.9	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1.873	0.81	0.0 U	70.8	7.75	100
U4-MW-01DD	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	9.209	0.67	0.0 U	103.3	7.70	220
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	4.903	4.81	0.0 U	99.5	8.75	220
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	47.936	0.74	0.0 U	206.4	7.25	100
U4-MW-02D	10/11/2022	N	EM02	UMCf	95.0 - 110.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	82.713	0.99	----	202.1	7.14	280
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	8.827	3.75	0.0 U	159.8	8.09	100
U4-MW-02I	10/11/2022	N	EM02	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	20.389	0.98	----	172.7	7.07	280
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	19.006	2.71	0.0 U	209.7	7.29	100
U4-MW-03DD	4/20/2022	N	BL02	UMCf	119.7 - 129.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2.756	1.07	0.0 U	220.6	7.54	100
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	6.055	1.28	0.0 U	57.0	8.02	60
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	4.716	9.18	0.0 U	105.4	9.74	195
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	50.188	0.90	0.0 U	76.7	7.01	200
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	22.833	0.68	0.0 U	49.8	7.36	100
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	39.740	0.77	0.0 U	146.1	7.03	100
U4-MW-05D	10/13/2022	N	EM02	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	24.933	3.56	----	190.6	7.02	280
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	20.080	0.87	0.0 U	140.1	7.54	100
U4-MW-05I	10/13/2022	N	EM02	UMCf	76.6 - 86.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	24.065	2.94	----	205.5	7.04	280
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	0.0 U	----	----	----
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	6.356	0.75	0.0 U	132.2	8.14	100
U4-MW-07D	4/15/2022	N	BL02	UMCf	96.8 - 106.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	10.924	4.48	0.0 U	182.2	7.48	100
U4-MW-07D	10/12/2022	N	EM02	UMCf	96.8 - 106.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2.057	6.89	----	93.5	7.79	50
U4-MW-07D	10/12/2022	FD	EM02	UMCf	96.8 - 106.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5.556	0.59	0.0 U	158.2	7.86	100
U4-MW-07I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2.078	6.24	----	135.0	7.86	50
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	10.1	<30.2	<280	144	<1.65	1,610,000	112,000	<4.20	<90.0	707,000	37.2 J	11.9 J	<91.5	102,000	7,950,000	<25.0	43.677	1.07	0.0 U	166.4	6.92	100
U4-MW-08DD	4/20/2022	N	BL02	UMCf	119.8 - 129.8	3.24	<3.02	<56.1	19.0	<0.330	58,200	764	<0.840	<18.0	28,400	14.7	9.57	110 J	11,000	258,000	10.4 J	1.774	0.95	0.0 U	5.0	7.70	70
U4-MW-08DD	4/20/2022	FD	BL02	UMCf	119.8 - 129.8	3.20	<3.02	<56.1	19.2	<0.330	58,000	780	<0.840	<18.0	28,400	14.6	9.89	107 J	11,100	258,000	9.34 J	----	----	----	----	----	----
U4-MW-08I	4/13/2022	N	BL02	UMCf	78.0 - 88.0	6.55	3.30 J	92.7 J	20.6	<0.330	107,000	8,950	<0.840	<18.0	44,400	5.20 J	18.7	25.4 J	23,000	1,300,000	23.5	8.786	1.97	0.0 U	183.3	7.71	100
U4-MW-08S	4/15/2022	N	BL02	UMCf	54.9 - 64.9	0.591 J	<3.02	<56.1	25.0	<0.330	165,000	519	<0.840	26.0 J	3,570	<0.934	20.1	<18.3	20,400	580,000	47.5	3.391	3.42	0.0 U	79.6	9.96	285
U4-MW-09D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	10.2	165 J	<56.1	14.2	<0.330	123,000	5,930	<0.840	<18.0	532,000	4.62 J	<1.16	<18.3	6,610	475,000	<4.99	25.834	1.79	0.0 U	36.4	7.03	100
U4-MW-09DD	4/14/2022	N	BL02	UMCf	119.8 - 129.8	2.98	3.03 J	<56.1	27.6	<0.330	41,300	154	<0.840	18.0 J	20,000	7.39 J	9.61	221 J	7,460	181,000	9.16 J	1.339	1.49	0.0 U	144.1	7.81	100
U4-MW-09I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	5.48	<3.02	<56.1	16.6	<0.330	114,000	2,350	<0.840	<18.0	42,300	4.58 J	13.2	172 J	19,300	588,000	19.1 J	3.354	10.37	0.0 U	8.8	7.57	120
U4-MW-09S	4/14/2022	N	BL02	UMCf	55.3 - 65.3	6.57	<3.02	<56.1	17.5	<0.330	72,400	398	<0.840	141	30,200	5.72 J	19.0	168 J	14,000	461,000	36.3	2.893	4.00	0.0 U	179.7	8.27	160

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Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Dissolved Metals by SW6020		Dissolved Metals by SW6010B													FIELD TESTS					
						Uranium	Zinc	Aluminum	Barium	Beryllium	Calcium	Chromium	Cobalt	Iron	Magnesium	Manganese	Molybdenum	Phosphorus	Potassium	Sodium	Vanadium	Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Purge Rate
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mS/cm	mg/L	mg/L	mV	SU	mL/min
U4-MW-10D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	9.13	3.53 J	<56.1	58.7	<0.330	275,000	5,290	<0.840	<18.0	134,000	23.5	8.67	32.2 J	24,200	626,000	8.78 J	5.411	0.91	0.0 U	206.3	7.33	100
U4-MW-10I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	6.45	4.88 J	<56.1	35.2	<0.330	278,000	5,960	<0.840	27.9 J	135,000	25.2	17.8	194 J	31,700	995,000	9.70 J	7.650	0.90	0.0 U	183.9	7.68	100
U4-MW-11D	4/15/2022	N	BL02	UMCf	97.4 - 107.4	5.93 J	<30.2	<280	151	<1.65	1,530,000	92,800	<4.20	<90.0	652,000	68.0	17.8 J	315 J	86,800	5,920,000	<25.0	31.458	0.75	0.0 U	194.9	7.12	100
U4-MW-11D	9/26/2022	N	EM01	UMCf	97.4 - 107.4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	49.507	1.26	0.0 U	49.2	7.38	100
U4-MW-11D	10/11/2022	N	EM02	UMCf	97.4 - 107.4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	49.047	1.30	0.0 U	5.2	7.07	250
U4-MW-11I	4/14/2022	N	BL02	UMCf	77.0 - 87.0	3.18	<3.02	<56.1	24.6	<0.330	161,000	6,040	<0.840	40.5 J	47,100	10.4	18.7	202 J	26,900	924,000	14.2 J	7.803	1.01	0.0 U	123.8	7.72	110
U4-MW-11I	9/26/2022	N	EM01	UMCf	77.0 - 87.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5.582	10.67	0.0 U	-17.7	6.92	100
U4-MW-11I	9/26/2022	FD	EM01	UMCf	77.0 - 87.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-11I	10/10/2022	N	EM02	UMCf	77.0 - 87.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2.413	1.08	0.0 U	-117.1	6.58	250
U4-MW-11I	10/10/2022	FD	EM02	UMCf	77.0 - 87.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-12D	4/15/2022	N	BL02	UMCf	97.1 - 107.1	10.8	<30.2	115 J	115	<0.330	1,230,000	72,500	<4.20	92.3 J	501,000	59.4	15.8 J	365 J	83,300	4,920,000	<4.99	32.048	0.90	0.0 U	90.8	6.98	100
U4-MW-12D	9/27/2022	N	EM01	UMCf	97.1 - 107.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	17.403	5.30	0.0 U	183.7	7.31	100
U4-MW-12D	10/12/2022	N	EM02	UMCf	97.1 - 107.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	11.998	2.16	0.0 U	193.7	7.02	250
U4-MW-12I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	9.47	<3.02	<56.1	48.2	<0.330	317,000	17,200	<0.840	18.3 J	126,000	44.1	17.6	122 J	35,700	1,720,000	9.09 J	11.234	1.32	----	35.2	7.74	100
U4-MW-12I	4/14/2022	FD	BL02	UMCf	76.8 - 86.8	7.29	<3.02	61.1 J	47.3	<0.330	314,000	16,700	<0.840	41.4 J	125,000	44.4	17.7	265 J+	35,500	1,690,000	6.67 J	----	----	----	----	----	----
U4-MW-12I	9/27/2022	N	EM01	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	3.677	0.92	0.0 U	121.6	7.60	140
U4-MW-12I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2.587	1.25	0.0 U	190.1	7.30	280
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	10.8	<30.2	375 J	173	<1.65	1,520,000	55,300	<4.20	<90.0	664,000	32.9 J	9.95 J	140 J	71,200	3,990,000	<25.0	32.518	0.90	0.0 U	136.1	6.94	100
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	11.793	0.96	0.0 U	-329.7	6.65	100
U4-MW-13D	10/11/2022	N	EM02	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	11.124	1.77	0.0 U	-147.3	6.57	50
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	7.29	<3.02	<56.1	43.5	<0.330	395,000	20,300	<0.840	<18.0	169,000	28.6	13.8	132 J	33,100	1,640,000	9.14 J	11.607	2.38	0.0 U	127.9	7.42	100
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5.667	2.79	0.0 U	96.9	7.52	100
U4-MW-13I	10/10/2022	N	EM02	UMCf	77.1 - 87.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	6.053	1.93	0.0 U	110.0	7.58	50
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	18.5	<3.02	<56.1	33.5	<0.330	561,000	308	<0.840	<18.0	152,000	79.2	41.2	<18.3	25,400	673,000	22.2	5.770	0.87	0.0 U	161.5	7.20	100
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	4.68	<3.02	<56.1	23.1	<0.330	237,000	2,150	<0.840	<18.0	52,400	19.0	16.2	191 J	25,400	596,000	13.3 J	5.720	0.77	0.0 U	110.5	8.07	150
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	13.6	<3.02	149 J	56.0	<0.330	338,000	4,940	<0.840	21.8 J	157,000	26.1	9.77	<18.3	25,500	646,000	8.06 J	5.015	1.02	0.0 U	209.2	7.09	100
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	4.23	<3.02	<56.1	21.3	<0.330	34,000	64.4	<0.840	162	15,400	2.57 J	10.4	<18.3	6,830	159,000	17.9 J	0.999	2.14	0.0 U	123.8	8.36	100
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	6.59	<3.02	<56.1	20.5 J+	<0.330	127,000	5,510	<0.840	24.4 J	56,500	14.9	17.8	25.2 J	22,300	897,000	18.7 J	5.348	1.45	0.0 U	125.1	7.95	150
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	4.94	<3.02	112 J	21.0	<0.330	166,000 J	268 J	<0.840	95.9 J	50,100 J	2.61 J	19.2	50.3 J	15,200 J	387,000 J	23.5	2.466	5.73	0.0 U	165.2	8.11	200
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	6.64 J	44.4 J	<56.1	191	<0.330	474,000	12,600	<0.840	<18.0	240,000	12.4	4.62 J	<18.3	30,600	1,210,000	<4.99	27.119	4.03	0.0 U	165.2	7.15	100
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	7.68	5.37 J	<56.1	24.7 J+	<0.330	114,000	922	<0.840	25.5 J	48,200	11.0	13.8	<18.3	12,500	390,000	18.9 J	2.380	1.10	0.0 U	121.7	7.62	100
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	2.26	3.91 J	<56.1	38.6	<0.330	231,000	8,620	<0.840	<18.0	76,200	2.20 J	13.7	<18.3	30,800	968,000	<4.99	6.673	8.63	0.0 U	129.8	8.36	200
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	3.64	<3.02	<56.1	22.2 J+	<0.330	169,000	427	<0.840	<18.0	37,500	2.69 J	18.3	28.9 J	18,500	409,000	15.4 J	2.712	4.29	0.0 U	136.6	8.80	200
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	3.66	<3.02	<56.1	22.5 J+	<0.330	168,000	426	<0.840	<18.0	37,700	2.07 J	18.4	25.5 J	18,300	405,000	14.3 J	----	----	----	----	----	----
U4-T3 (Effluent)	10/13/2022	N	EM02	-	-	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Notes:

FD - Field duplicate

E - Field instrument error.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- - The result is an estimated quantity, but the result may be biased low.

J+ - The result is an estimated quantity, but the result may be biased high.

mg/L - milligrams per liter

µg/L - micrograms per liter

N - Normal field sample

R - The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

UMCf- Upper Muddy Creek Formation

< - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

-- Not tested.

DRAFT

Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	FIELD TESTS			RSK175			SM2540C	SW7199	Volatile Organic Compounds by SW8260B								
						Sulfide	Temperature	Turbidity	Ethane	Ethene	Methane	Total Dissolved Solids	Chromium, Hexavalent	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane
						mg/L	C	NTU	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	0.0 U	26.9	22.0	----	----	----	712,000	<150	----	----	----	----	----	----	----	----	----
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	0.0 U	27.5	60.6	----	----	----	54,000,000	77,000	----	----	----	----	----	----	----	----	----
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	0.0 U	26.3	17.1	----	----	----	39,900,000	96,900 J-	<0.147	<0.149	<0.133	<0.158	0.204 J	0.484 J	<0.142	<0.230	0.428 J
M-251-100	10/13/2022	N	EM02	UMCf	92.5 - 102.5	----	24.9	58.8	----	----	----	25,800,000	57,600	<0.147	<0.149	<0.133	<0.158	<0.100	0.398 J	0.297 J	<0.230	<0.237
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	0.0 U	30.5	18.3	----	----	----	2,330,000 J	1,510 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	0.0 U	29.6	9.9	----	----	----	1,410,000	32.5 J	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	0.0 U	25.2	21.0	----	----	----	2,130,000	598	----	----	----	----	----	----	----	----	----
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	0.0 U	25.1	12.0	----	----	----	1,600,000	1,350	----	----	----	----	----	----	----	----	----
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	0.0 U	26.2	8.7	----	----	----	43,600,000	87,000 J-	<0.735	<0.745	<0.665	<0.790	<0.500	<0.940	<0.710	<1.15	<1.19
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	0.0 U	26.5	2.7	----	----	----	4,770,000 J	6,190 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-E-01I	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	----	----	----	----	----	----	2,770,000 J	7,860 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	0.0 U	27.0	2.0	----	----	----	10,800,000	17,400	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	0.0 U	24.6	9.8	----	----	----	4,130,000	8,910 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	0.0 U	28.6	33.2	----	----	----	34,400,000	77,900 J-	<0.147	<0.149	<0.133	<0.158	0.126 J	0.465 J	<0.142	<0.230	0.293 J
U4-E-03D	10/13/2022	N	EM02	UMCf	95.1 - 110.1	----	----	----	----	----	----	18,900,000 J-	48,700	<29.4	<29.8	<26.6	<31.6	<20.0	<37.6	<28.4	<46.0	<47.4
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	0.0 U	25.5	15.1	----	----	----	24,000,000	37,500 J-	<0.147	<0.149	<0.133	<0.158	<0.100	0.223 J	<0.142	<0.230	<0.237
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	0.0 U	27.4	28.9	----	----	----	3,430,000	3,380 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	0.0 U	28.8	45.2	----	----	----	28,400,000	47,900 J-	<0.147	<0.149	<0.133	<0.158	<0.100	0.271 J	<0.142	<0.230	<0.237
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	0.0 U	28.4	10.5	----	----	----	4,070,000	5,710 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	0.0 U	23.5	37.2	<4.07	<4.26	<2.91	9,590,000	10,800	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	0.0 U	25.8	11.6	<4.07	<4.26	<2.91	3,220,000	2,420	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	----	----	----	<4.07	<4.26	<2.91	3,150,000	3,210	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-E-06I	10/12/2022	N	EM02	UMCf	73.2 - 88.2	----	----	----	----	----	----	9,760,000 J-	9,930	<0.147	<0.149	<0.133	<0.158	<0.100	0.210 J	0.258 J	<0.230	<0.237
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	0.0 U	18.5	16.0	<4.07	<4.26	<2.91	37,900,000	76,300 J-	<0.147	<0.149	<0.133	<0.158	<0.100	0.682 J	0.594 J	<0.230	0.393 J
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	0.0 U	20.2	2.8	<4.07	<4.26	<2.91	6,860,000	12,200 J	<0.147	<0.149	<0.133	<0.158	0.122 J	0.424 J	<0.142	<0.230	<0.237
U4-E-07I	10/11/2022	N	EM02	UMCf	74.7 - 89.7	----	----	----	----	----	----	17,000,000	48,700	<1.47	<1.49	<1.33	<1.58	<1.00	<1.88	<1.42	<2.30	<2.37
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	0.0 U	20.2	3.6	<4.07	<4.26	<2.91	39,500,000	85,100 J-	<0.147	<0.149	<0.133	<0.158	<0.100	0.759 J	0.631 J	<0.230	0.429 J
U4-E-08D	10/11/2022	N	EM02	UMCf	94.6 - 109.6	----	----	----	----	----	----	24,000,000	69,700	<1.47	<1.49	<1.33	<1.58	<1.00	<1.88	<1.42	<2.30	<2.37
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	0.0 U	26.7	5.2	<4.07	<4.26	<2.91	7,500,000	26,400 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	0.0 U	25.0	53.8	<4.07	<4.26	<2.91	5,550,000	13,000	<0.147	<0.149	<0.133	<0.158	<0.100	0.401 J	<0.142	<0.230	<0.237
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	0.0 U	23.0	13.1	<4.07	<4.26	<2.91	3,940,000	9,360	<0.147	<0.149	<0.133	<0.158	<0.100	0.398 J	<0.142	<0.230	<0.237
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	0.0 U	21.6	17.0	<4.07	<4.26	<2.91	3,690,000	17,000	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	0.0 U	30.0	7.9	----	----	----	7,230,000	16,500 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-01DD	4/19/2022	N	BL02	UMCf	119.9 - 129.9	0.0 U	33.3	27.7	----	----	----	1,040,000	477 J	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-01DD	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	----	----	----	----	----	----	1,020,000	458 J	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	0.0 U	27.3	60.1	----	----	----	3,790,000	<150 UJ	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	0.0 U	27.6	1501.7	----	----	----	3,130,000	1,770 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	0.0 U	26.4	5.4	----	----	----	63,700,000	95,800	<0.147	<0.149	<0.133	<0.158	0.135 J	0.735 J	<0.142	<0.230	<0.237
U4-MW-02D	10/11/2022	N	EM02	UMCf	95.0 - 110.0	----	26.1	2.9	----	----	----	75,100,000 J-	148,000	<0.147	<0.149	<0.133	<0.158	<0.100	0.517 J	<0.142	<0.230	<0.237
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	0.0 U	28.4	15.2	----	----	----	6,660,000	12,800	<0.147	<0.149	<0.133	<0.158	<0.100	0.431 J	<0.142	<0.230	<0.237
U4-MW-02I	10/11/2022	N	EM02	UMCf	75.0 - 90.0	----	25.3	56.9	----	----	----	11,000,000	33,900	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	0.0 U	26.7	31.0	----	----	----	23,000,000	42,100	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-03DD	4/20/2022	N	BL02	UMCf	119.7 - 129.7	0.0 U	26.3	24.2	----	----	----	2,070,000	2,660	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	0.0 U	30.2	8489.8	----	----	----	2,350,000	<150 UJ	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	0.0 U	27.3	38.0	----	----	----	2,890,000	1,390 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	----	----	----	----	----	----	2,190,000 J-	1,390 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	0.0 U	30.1	18.0	----	----	----	56,100,000	103,000 J	<0.147	<0.149	<0.133	<0.158	<0.100	0.560 J	<0.142	<0.230	<0.237
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	0.0 U	27.6	78.2	----	----	----	22,500,000	34,300 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	0.0 U	28.3	39.5	----	----	----	27,800,000	73,100 J-	<0.147	<0.149	<0.133	<0.158	0.181 J	0.659 J	0.565 J	<0.230	<0.237
U4-MW-05D	10/13/2022	N	EM02	UMCf	98.2 - 108.2	----	28.3	235.7	----	----	----	30,400,000 J-	69,500	<14.7	<14.9	<13.3	<15.8	<10.0	<18.8	<14.2	<23.0	<23.7
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	0.0 U	23.2	2057.3	----	----	----	12,900,000	42,800 J-	<0.147	<0.149	<0.133	<0.158	<0.100	0.359 J	0.311 J	<0.230	<0.237
U4-MW-05I	10/13/2022	N	EM02	UMCf	76.6 - 86.6	----	25.6	1860.6	----	----	----	29,100,000	70,800	<14.7	<14.9	<13.3	<15.8	<10.0	<18.8	<14.2	<23.0	<23.7
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	0.0 U	----	----	----	----	----	43,400,000	73,100 J-	<0.147	<0.149	<0.133	<0.158	0.134 J	0.315 J	<0.142	<0.230	<0.237
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	0.0 U	27.5	171.5	----	----	----	3,420,000	3,070 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-07D	4/15/2022	N	BL02	UMCf	96.8 - 106.5	0.0 U	26.7	52.5	----	----	----	5,820,000	23,900 J+	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-07D	10/12/2022	N	EM02	UMCf	96.8 - 106.5	----	28.7	9.7	----	----	----	1,310,000 J-	2,080	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-07D	10/12/2022	FD	EM02	UMCf	96.8 - 106.5	----	----	----	----	----	----	1,330,000	2,120	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	0.0 U	25.6	10.7	----	----	----	1,670,000	4,810 J+	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-07I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	----	26.9	119.0	----	----	----	1,350,000 J	2,720	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	0.0 U	24.7	98.8 E	<4.07	<4.26	<2.91	48,000,000	106,000	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-08DD	4/20/2022	N	BL02	UMCf	119.8 - 129.8	0.0 U	24.6	62.4	<4.07	<4.26	<2.91	1,240,000	694	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-08DD	4/20/2022	FD	BL02	UMCf	119.8 - 129.8	----	----	----	<4.07	<4.26	<2.91	1,220,000	723	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-08I	4/13/2022	N	BL02	UMCf	78.0 - 88.0	0.0 U	22.8	-5857914.0 E	<4.07	<4.26	<2.91	3,380,000	7,950	<0.147	<0.149	<0.133	<0.158	<0.100	1.02	<0.142	<0.230	<0.237
U4-MW-08S	4/15/2022	N	BL02	UMCf	54.9 - 64.9	0.0 U	27.1	55.4	<4.07	<4.26	<2.91	1,970,000	506 J+	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-09D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	0.0 U	24.3	640.2	<4.07	<4.26	<2.91	30,000,000	67,800	<0.147	<0.149	<0.133	<0.158	<0.100	0.455 J	<0.142	<0.230	<0.237
U4-MW-09DD	4/14/2022	N	BL02	UMCf	119.8 - 129.8	0.0 U	23.2	25.6	<4.07	<4.26	<2.91	759,000 J	121	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-09I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	0.0 U	24.5	322.6	<4.07	<4.26	<2.91	2,030,000	2,320	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-09S	4/14/2022	N	BL02	UMCf	55.3 - 65.3	0.0 U	23.4	33.5	<4.07	<4.26	<2.91	1,900,000	387	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237

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Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	FIELD TESTS			RSK175			SM2540C	SW7199	Volatile Organic Compounds by SW8260B								
						Sulfide	Temperature	Turbidity	Ethane	Ethene	Methane	Total Dissolved Solids	Chromium, Hexavalent	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane
						mg/L	C	NTU	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
U4-MW-10D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	0.0 U	22.6	52.9	<4.07	<4.26	<2.91	4,840,000	5,450	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-10I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	0.0 U	23.9	72915.5	<4.07	<4.26	<2.91	5,670,000	6,160	<0.147	<0.149	<0.133	<0.158	<0.100	0.373 J	<0.142	<0.230	<0.237
U4-MW-11D	4/15/2022	N	BL02	UMCf	97.4 - 107.4	0.0 U	23.3	218.4	<4.07	<4.26	<2.91	34,200,000	90,100 J+	<0.147	<0.149	<0.133	<0.158	<0.100	0.543 J	0.380 J	<0.230	0.334 J
U4-MW-11D	9/26/2022	N	EM01	UMCf	97.4 - 107.4	0.0 U	31.6	74.6	----	----	----	34,600,000	93,300	<7.35	<7.45	<6.65	<7.90	<5.00	<9.40	<7.10	<11.5	<11.9
U4-MW-11D	10/11/2022	N	EM02	UMCf	97.4 - 107.4	0.0 U	23.7	155.4	----	----	----	40,200,000	96,300	<1.47	<1.49	<1.33	<1.58	<1.00	<1.88	<1.42	<2.30	<2.37
U4-MW-11I	4/14/2022	N	BL02	UMCf	77.0 - 87.0	0.0 U	26.3	99.8	<4.07	<4.26	<2.91	2,730,000	6,370	<0.147	<0.149	<0.133	<0.158	<0.100	0.385 J	<0.142	<0.230	<0.237
U4-MW-11I	9/26/2022	N	EM01	UMCf	77.0 - 87.0	0.0 U	27.0	384.2	----	----	----	2,470,000	1,320 J	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-11I	9/26/2022	FD	EM01	UMCf	77.0 - 87.0	----	----	----	----	----	----	2,690,000	1,330 J	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-11I	10/10/2022	N	EM02	UMCf	77.0 - 87.0	0.0 U	24.4	170.6	----	----	----	2,200,000	0.753 J-	<1.47	<1.49	<1.33	<1.58	<1.00	<1.88	<1.42	<2.30	<2.37
U4-MW-11I	10/10/2022	FD	EM02	UMCf	77.0 - 87.0	----	----	----	----	----	----	2,450,000	0.886	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-12D	4/15/2022	N	BL02	UMCf	97.1 - 107.1	0.0 U	26.2	40.3	<4.07	<4.26	<2.91	29,700,000	63,700 J-	<0.147	<0.149	<0.133	<0.158	<0.100	0.417 J	0.374 J	<0.230	<0.237
U4-MW-12D	9/27/2022	N	EM01	UMCf	97.1 - 107.1	0.0 U	27.2	97.6	----	----	----	14,900,000	41,900	<2.94	<2.98	<2.66	<3.16	<2.00	<3.76	<2.84	<4.60	<4.74
U4-MW-12D	10/12/2022	N	EM02	UMCf	97.1 - 107.1	0.0 U	23.4	141.7	----	----	----	19,300,000 J-	50,700	<0.147	<0.149	<0.133	<0.158	<0.100	0.326 J	0.350 J	<0.230	0.325 J
U4-MW-12I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	----	26.1	988.9	<4.07	<4.26	<2.91	8,680,000	21,200	<0.147	<0.149	<0.133	<0.158	<0.100	0.465 J	<0.142	<0.230	<0.237
U4-MW-12I	4/14/2022	FD	BL02	UMCf	76.8 - 86.8	----	----	----	<4.07	<4.26	<2.91	8,670,000	19,400	<0.147	<0.149	<0.133	<0.158	<0.100	0.461 J	<0.142	<0.230	<0.237
U4-MW-12I	9/27/2022	N	EM01	UMCf	76.8 - 86.8	0.0 U	27.4	70.6	----	----	----	2,360,000	2,880 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-12I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	0.0 U	23.5	343.0	----	----	----	2,410,000 J-	2,060	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	0.0 U	25.2	85.7	<4.07	<4.26	<2.91	30,300,000	56,200	<0.147	<0.149	<0.133	<0.158	<0.100	0.565 J	<0.142	<0.230	<0.237
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	0.0 U	28.9	50.9	----	----	----	6,280,000 J+	45,000	<1.47	<1.49	<1.33	<1.58	<1.00	<1.88	<1.42	<2.30	<2.37
U4-MW-13D	10/11/2022	N	EM02	UMCf	98.2 - 108.2	0.0 U	23.5	22.7	----	----	----	6,140,000	19,800	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	0.0 U	23.7	2478.1	<4.07	<4.26	<2.91	8,680,000	21,900	<0.147	<0.149	<0.133	<0.158	<0.100	0.403 J	<0.142	<0.230	<0.237
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	0.0 U	27.2	70.5	----	----	----	2,540,000 J+	17,000	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-13I	10/10/2022	N	EM02	UMCf	77.1 - 87.1	0.0 U	27.9	142.6	----	----	----	2,660,000	8,000	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	0.0 U	26.5	50.4	<4.07	<4.26	<2.91	2,550,000	239	<0.147	<0.149	<0.133	<0.158	<0.100	0.409 J	<0.142	<0.230	<0.237
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	0.0 U	22.8	57.4	<4.07	<4.26	<2.91	3,220,000	2,270	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	0.0 U	20.7	76.6	<4.07	<4.26	<2.91	3,490,000	5,240	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	0.0 U	18.6	82.3	<4.07	<4.26	<2.91	677,000	67.5	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	0.0 U	22.6	20895.7 E	<4.07	<4.26	<2.91	4,080,000	5,010	<0.147	<0.149	<0.133	<0.158	<0.100	0.367 J	<0.142	<0.230	<0.237
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	0.0 U	21.5	71.7	<4.07	<4.26	<2.91	1,450,000	262	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	0.0 U	23.7	84.8 E	<4.07	<4.26	<2.91	30,500,000	61,300	<0.147	<0.149	<0.133	<0.158	<0.100	0.237 J	<0.142	<0.230	<0.237
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	0.0 U	18.3	35.4	<4.07	<4.26	<2.91	1,940,000	682	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	0.0 U	23.5	-449448.0 E	<4.07	<4.26	<2.91	5,220,000	9,350	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	0.0 U	22.3	-8.5	<4.07	8.07 J	19.8	1,990,000	365 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	----	----	----	<4.07	<4.26	<2.91	2,000,000	361 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	<0.142	<0.230	<0.237
U4-T3 (Effluent)	10/13/2022	N	EM02	-	-	----	----	----	----	----	----	16,100,000 J-	38,400	<0.147	<0.149	<0.133	<0.158	<0.100	0.284 J	0.271 J	<0.230	<0.237

Notes:

FD - Field duplicate

E - Field instrument error.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- - The result is an estimated quantity, but the result may be biased low.

J+ - The result is an estimated quantity, but the result may be biased high.

mg/L - milligrams per liter

µg/L - micrograms per liter

N - Normal field sample

R - The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

UMCf- Upper Muddy Creek Formation

< - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

-- Not tested.

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Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B													
						1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene (Mesitylene)	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone (MEK)	2-Chlorotoluene
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	<0.481	<0.322	<0.276	<0.126	<0.107	0.346 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
M-251-100	10/13/2022	N	EM02	UMCf	92.5 - 102.5	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	7.60 J	<0.106
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	<2.41	<1.61	<1.38	<0.630	<0.535	<0.409	<0.745	<0.520	<0.550	<0.550	<0.600	<0.805	<5.95	<0.530
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	3.29 J	<0.106
U4-E-01I	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	3.45 J	<0.106
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	<0.481	<0.322 UJ	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104 R	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-E-03D	10/13/2022	N	EM02	UMCf	95.1 - 110.1	<96.2	<64.4	<55.2	<25.2	<21.4	<16.4	<29.8	<20.8	<22.0	<22.0	<24.0	<32.2	<238	<21.2
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	2.86 J	<0.106
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	4.61 J	<0.106
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-E-06I	10/12/2022	N	EM02	UMCf	73.2 - 88.2	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	8.89 J	<0.106
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.481	<0.322	<0.276	<0.126	<0.107	0.205 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	<0.481	<0.322	<0.276	<0.126	<0.107	0.138 J	0.191 J	<0.104	<0.110	<0.110	<0.120	<0.161	1.25 J	<0.106
U4-E-07I	10/11/2022	N	EM02	UMCf	74.7 - 89.7	<4.81	<3.22	<2.76	<1.26	<1.07	<0.819	<1.49	<1.04	<1.10	<1.10	<1.20	<1.61	<11.9	<1.06
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.481	<0.322	<0.276	<0.126	<0.107	0.240 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-E-08D	10/11/2022	N	EM02	UMCf	94.6 - 109.6	<4.81	<3.22	<2.76	<1.26	<1.07	<0.819	<1.49	<1.04	<1.10	<1.10	<1.20	<1.61	<11.9	<1.06
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	<0.481 UJ	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	<0.481	<0.322	<0.276	<0.126	<0.107	0.118 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	1.24 J	<0.106
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	<0.481	<0.322	<0.276	<0.126	<0.107	0.132 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	<0.481	<0.322	<0.276	<0.126	<0.107	0.120 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	3.67 J	<0.106
U4-MW-01DD	4/19/2022	N	BL02	UMCf	119.9 - 129.9	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	5.15 J	<0.106
U4-MW-01DD	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	5.81 J	<0.106
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	<0.481	<0.322	<0.276	<0.126	<0.107	0.322 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-02D	10/11/2022	N	EM02	UMCf	95.0 - 110.0	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	<0.481	<0.322	<0.276	<0.126	<0.107	0.102 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-02I	10/11/2022	N	EM02	UMCf	75.0 - 90.0	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-03DD	4/20/2022	N	BL02	UMCf	119.7 - 129.7	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	3.03 J	<0.106
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	17.3	<0.106
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	<0.481	<0.322	<0.276	<0.126	<0.107	0.900 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	2.71 J	<0.106
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	<0.481 UJ	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-05D	10/13/2022	N	EM02	UMCf	98.2 - 108.2	<48.1	<32.2	<27.6	<12.6	<10.7	<8.19	<14.9	<10.4	<11.0	<11.0	<12.0	<16.1	<119	<10.6
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	<0.481 UJ	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-05I	10/13/2022	N	EM02	UMCf	76.6 - 86.6	<48.1	<32.2	<27.6	<12.6	<10.7	<8.19	<14.9	<10.4	<11.0	<11.0	<12.0	<16.1	<119	<10.6
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	<0.481	<0.322	<0.276	<0.126	<0.107	0.785 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	4.05 J	<0.106
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-07D	4/15/2022	N	BL02	UMCf	96.8 - 106.5	<0.481 UJ	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-07D	10/12/2022	N	EM02	UMCf	96.8 - 106.5	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	1.20 J	<0.106
U4-MW-07D	10/12/2022	FD	EM02	UMCf	96.8 - 106.5	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	<0.481 UJ	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-07I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-08DD	4/20/2022	N	BL02	UMCf	119.8 - 129.8	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	18.7 J	<0.106
U4-MW-08DD	4/20/2022	FD	BL02	UMCf	119.8 - 129.8	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	5.79 J	<0.106
U4-MW-08I	4/13/2022	N	BL02	UMCf	78.0 - 88.0	<0.481	<0.322	<0.276	<0.126	<0.107	0.345 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-08S	4/15/2022	N	BL02	UMCf	54.9 - 64.9	<0.481 UJ	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	1.31 J	<0.106
U4-MW-09D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	<0.481	<0.322	<0.276	<0.126	<0.107	0.239 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-09DD	4/14/2022	N	BL02	UMCf	119.8 - 129.8	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-09I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-09S	4/14/2022	N	BL02	UMCf	55.3 - 65.3	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106

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Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B													
						1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene (Mesitylene)	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone (MEK)	2-Chlorotoluene
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
U4-MW-10D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-10I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	<0.481	<0.322	<0.276	<0.126	<0.107	0.115 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-11D	4/15/2022	N	BL02	UMCf	97.4 - 107.4	<0.481 UJ	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-11D	9/26/2022	N	EM01	UMCf	97.4 - 107.4	<24.1	<16.1	<13.8	<6.30	<5.35	<4.09	<7.45	<5.20	<5.50	<5.50	<6.00	<8.05	<59.5	<5.30
U4-MW-11D	10/11/2022	N	EM02	UMCf	97.4 - 107.4	<4.81	<3.22	<2.76	<1.26	<1.07	<0.819	<1.49	<1.04	<1.10	<1.10	<1.20	<1.61	<11.9	<1.06
U4-MW-11I	4/14/2022	N	BL02	UMCf	77.0 - 87.0	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104 UJ	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-11I	9/26/2022	N	EM01	UMCf	77.0 - 87.0	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	20.1	<0.106
U4-MW-11I	9/26/2022	FD	EM01	UMCf	77.0 - 87.0	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	20.5	<0.106
U4-MW-11I	10/10/2022	N	EM02	UMCf	77.0 - 87.0	<4.81	<3.22	<2.76	<1.26	<1.07	<0.819	<1.49	<1.04	<1.10	<1.10	<1.20	<1.61	16.0 J	<1.06
U4-MW-11I	10/10/2022	FD	EM02	UMCf	77.0 - 87.0	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	24.1	<0.106
U4-MW-12D	4/15/2022	N	BL02	UMCf	97.1 - 107.1	<0.481 UJ	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	1.23 J	<0.106
U4-MW-12D	9/27/2022	N	EM01	UMCf	97.1 - 107.1	<9.62	<6.44	<5.52	<2.52	<2.14	<1.64	<2.98	<2.08	<2.20	<2.20	<2.40	<3.22	<23.8	<2.12
U4-MW-12D	10/12/2022	N	EM02	UMCf	97.1 - 107.1	<0.481	<0.322	<0.276	<0.126	<0.107	0.157 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-12I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	<0.481	<0.322	<0.276	<0.126	<0.107	0.144 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	1.87 J	<0.106
U4-MW-12I	4/14/2022	FD	BL02	UMCf	76.8 - 86.8	<0.481	<0.322	<0.276	<0.126	<0.107	0.146 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	2.86 J	<0.106
U4-MW-12I	9/27/2022	N	EM01	UMCf	76.8 - 86.8	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-12I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	<0.481	<0.322	<0.276	<0.126	<0.107	0.0834 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	<0.481	<0.322	<0.276	<0.126	<0.107	0.200 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	<4.81	<3.22	<2.76	<1.26	<1.07	<0.819	<1.49	<1.04	<1.10	<1.10	<1.20	<1.61	<11.9	<1.06
U4-MW-13D	10/11/2022	N	EM02	UMCf	98.2 - 108.2	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	14.7	<0.106
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	<0.481	<0.322	<0.276	<0.126	<0.107	0.133 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-13I	10/10/2022	N	EM02	UMCf	77.1 - 87.1	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	1.81 J	<0.106
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	<0.481	<0.322	<0.276	<0.126	<0.107	0.134 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	1.22 J	<0.106
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-T3 (Effluent)	10/13/2022	N	EM02	-	-	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106

Notes:

FD - Field duplicate

E - Field instrument error.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- - The result is an estimated quantity, but the result may be biased low.

J+ - The result is an estimated quantity, but the result may be biased high.

mg/L - milligrams per liter

µg/L - micrograms per liter

N - Normal field sample

R - The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

UMCf- Upper Muddy Creek Formation

< - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

-- Not tested.

DRAFT

Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B														
						2-Hexanone	4-Chlorotoluene	4-Methyl-2-Pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	13.1	8.80	<0.605	<0.128	<0.116	<0.192	8,010	<0.960
M-251-100	10/13/2022	N	EM02	UMCf	92.5 - 102.5	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	6.92	3.40	<0.605	<0.128	<0.116	<0.192	3,950	<0.960
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	<0.787	<0.114	<0.478	<11.3	0.132 J	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	13.5	<0.960
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	0.192 J	<0.960
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	<3.94	<0.570	<2.39	<56.5	<0.471	<0.590	<0.640	5.46	9.81 J-	<3.03	<0.640	<0.580	<0.960	6,650	<4.80
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	<0.787	<0.114	<0.478	11.7 J	<0.0941	<0.118	<0.128	0.521 J	0.388 J	<0.605	<0.128	<0.116	<0.192	186 J	<0.960
U4-E-01I	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	0.848 J	<0.114	<0.478	11.7 J	<0.0941	<0.118	<0.128	0.509 J	<0.129	<0.605	<0.128	<0.116	<0.192	280 J	<0.960
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	3.33 J+	1.82	<0.605	<0.128	<0.116	<0.192	1,660	<0.960
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118 UJ	<0.128	1.65	1.65	<0.605	<0.128	<0.116	<0.192	727	<0.960
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	10.9	6.45	<0.605	<0.128	<0.116	<0.192	6,390	<0.960
U4-E-03D	10/13/2022	N	EM02	UMCf	95.1 - 110.1	<157	<22.8	<95.6	<2,260	<18.8	<23.6	<25.6	<27.2	<25.8	<121	<25.6	<23.2	<38.4	4,280	<192
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	2.28	0.947 J	<0.605	<0.128	<0.116	<0.192	2,980	<0.960
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.591 J	<0.129	<0.605	<0.128	<0.116	<0.192	433	<0.960
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	4.11	3.20	<0.605	<0.128	<0.116	<0.192	3,780	<0.960
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.41	1.99	<0.605	<0.128	<0.116	<0.192	516	<0.960
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	<0.787	<0.114	<0.478	<11.3	0.186 J	<0.118	<0.128	0.502 J	0.185 J	<0.605	<0.128	<0.116	<0.192	819	<0.960
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	<0.787	<0.114	<0.478	<11.3	0.166 J	<0.118	<0.128	0.679 J	<0.129	<0.605	<0.128	<0.116	<0.192	218	<0.960
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	<0.787	<0.114	<0.478	<11.3	0.153 J	<0.118	<0.128	0.605 J	<0.129	<0.605	<0.128	<0.116	<0.192	215	<0.960
U4-E-06I	10/12/2022	N	EM02	UMCf	73.2 - 88.2	<0.787	<0.114	<0.478	33.8 J	<0.0941	<0.118	<0.128	0.445 J	1.58	0.258 J	<0.605	1.14	<0.116	<0.192	<0.111	<0.960
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	3.05	1.20	<0.605	2.62	<0.116	<0.192	5,980	<0.960
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.21	0.866 J	<0.605	1.03	<0.116	<0.192	1,140	<0.960
U4-E-07I	10/11/2022	N	EM02	UMCf	74.7 - 89.7	<7.87	<1.14	<4.78	<113	<0.941	<1.18	<1.28	2.84 J	<1.29	<6.05	5.80 J	<1.16	<1.92	3,920	<9.60
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	0.298 J	2.74	0.954 J	<0.605	2.96	<0.116	<0.192	7,120	<0.960
U4-E-08D	10/11/2022	N	EM02	UMCf	94.6 - 109.6	<7.87	<1.14	<4.78	<113	<0.941	<1.18	<1.28	<1.36	<1.29	<6.05	5.96 J	<1.16	<1.92	4,850	<9.60
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.642 J	0.461 J	<0.605	0.533 J	<0.116	<0.192	1,450	<0.960
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	<0.787	<0.114	<0.478	<11.3	0.188 J	<0.118	<0.128	1.00 J	0.618 J	<0.605	0.610 J	<0.116	<0.192	1,240	<0.960
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.14	0.707 J	<0.605	0.717 J	<0.116	<0.192	704 J+	<0.960
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.478 J	0.509 J	<0.605	0.585 J	<0.116	<0.192	1,330	<0.960
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.564 J	0.346 J	<0.605	<0.128	<0.116	<0.192	608	<0.960
U4-MW-01DD	4/19/2022	N	BL02	UMCf	119.9 - 129.9	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.170 J	<0.129	<0.605	<0.128	<0.116	<0.192	21.2	<0.960
U4-MW-01DD	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	20.3	<0.960
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.622 J	0.371 J	<0.605	<0.128	<0.116	<0.192	395	<0.960
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.375 J	0.147 J	<0.605	<0.128	<0.116	<0.192	56.8	<0.960
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	9.08	5.28	<0.605	2.50	<0.116	<0.192	8,990	<0.960
U4-MW-02D	10/11/2022	N	EM02	UMCf	95.0 - 110.0	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	13.2	6.19	<0.605	5.24	<0.116	<0.192	10,700	<0.960
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	2.73	1.62	<0.605	0.809 J	<0.116	<0.192	1,380	<0.960
U4-MW-02I	10/11/2022	N	EM02	UMCf	75.0 - 90.0	<0.787	<0.114	<0.478	11.9 J	<0.0941	<0.118	<0.128	4.87	2.46	<0.605	2.06	<0.116	<0.192	2,860	<0.960
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.81 J+	0.629 J	<0.605	<0.128	<0.116	<0.192	2,270	<0.960
U4-MW-03DD	4/20/2022	N	BL02	UMCf	119.7 - 129.7	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.152 J	<0.129	<0.605	<0.128	<0.116	<0.192	173	<0.960
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	1.71 J	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.846 J	0.580 J	<0.605	<0.128	<0.116	<0.192	277	<0.960
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118 UJ	<0.128	0.176 J	<0.129	<0.605	<0.128	<0.116	<0.192	45.1	<0.960
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118 UJ	<0.128	0.182 J	<0.129	<0.605	<0.128	<0.116	<0.192	44.1	<0.960
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	4.27	1.46	<0.605	<0.128	<0.116	<0.192	6,140	<0.960
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.86	0.968 J	<0.605	<0.128	<0.116	<0.192	1,830	<0.960
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	14.8	8.45 J-	<0.605	3.80	<0.116	<0.192	6,320	<0.960
U4-MW-05D	10/13/2022	N	EM02	UMCf	98.2 - 108.2	<78.7	<11.4	<47.8	<1,130	<9.41	<11.8	<12.8	<13.6	<12.9	<60.5	<12.8	<11.6	<19.2	5,350	<96.0
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	9.46	5.71 J-	<0.605	2.53	<0.116	<0.192	3,530	<0.960
U4-MW-05I	10/13/2022	N	EM02	UMCf	76.6 - 86.6	<78.7	<11.4	<47.8	<1,130	<9.41	<11.8	<12.8	<13.6	<12.9	<60.5	<12.8	<11.6	<19.2	5,930	<96.0
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	10.0	5.10	<0.605	<0.128	<0.116	<0.192	4,840	<0.960
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	<0.787	<0.114	<0.478	<11.3	0.128 J	<0.118	<0.128	0.674 J	0.297 J	<0.605	<0.128	<0.116	<0.192	217	<0.960
U4-MW-07D	4/15/2022	N	BL02	UMCf	96.8 - 106.5	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.13	0.515 J	<0.605	0.461 J	0.137 J	<0.192	1,330	<0.960
U4-MW-07D	10/12/2022	N	EM02	UMCf	96.8 - 106.5	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	3.77	0.211 J	<0.605	0.373 J	<0.116	<0.192	113	<0.960
U4-MW-07D	10/12/2022	FD	EM02	UMCf	96.8 - 106.5	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	2.98	0.201 J	<0.605	<0.128	<0.116	<0.192	95.5	<0.960
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.676 J	0.206 J	<0.605	0.313 J	<0.116	<0.192	373	<0.960
U4-MW-07I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	5.11	0.403 J	<0.605	0.425 J	<0.116	<0.192	164	<0.960
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	0.452 J	<0.605	<0.128	<0.116	<0.192	10,300 J+	<0.960
U4-MW-08DD	4/20/2022	N	BL02	UMCf	119.8 - 129.8	3.03 J	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	90.2	<0.960
U4-MW-08DD	4/20/2022	FD	BL02	UMCf	119.8 - 129.8	1.23 J	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	85.4	<0.960
U4-MW-08I	4/13/2022	N	BL02	UMCf	78.0 - 88.0	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	5.72	2.19	<0.605	2.14	<0.116	<0.192	1,100 J+	<0.960
U4-MW-08S	4/15/2022	N	BL02	UMCf	54.9 - 64.9	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.213 J	<0.129 UJ	<0.605	<0.128	<0.116	<0.192	38.2	<0.960
U4-MW-09D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.86	0.936 J	<0.605	0.488 J	<0.116	<0.192	2,940	<0.960
U4-MW-09DD	4/14/2022	N	BL02	UMCf	119.8 - 129.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	21.9	<0.960
U4-MW-09I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	<0.787	<0.114	<0.478	<11.3	2.49	<0.118	<0.128	0.516 J	0.526 J	<0.605	0.384 J	<0.116	<0.192	130	<0.960
U4-MW-09S	4/14/2022	N	BL02	UMCf	55.3 - 65.3	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.248 J	<0.129	<0.605	<0.128	<0.116	<0.192	20.3	<0.960

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Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B														
						2-Hexanone	4-Chlorotoluene	4-Methyl-2-Pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
U4-MW-10D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.213 J	0.477 J	<0.605	<0.128	<0.116	<0.192	316	<0.960
U4-MW-10I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.790 J	0.558 J	<0.605	0.491 J	<0.116	<0.192	695	<0.960
U4-MW-11D	4/15/2022	N	BL02	UMCf	97.4 - 107.4	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	2.44	0.612 J	<0.605	2.22	<0.116	<0.192	5,540	<0.960
U4-MW-11D	9/26/2022	N	EM01	UMCf	97.4 - 107.4	<39.4	<5.70	<23.9	<565	<4.71	<5.90	<6.40	<6.80	<6.45	<30.3	<6.40	<5.80	<9.60	8,910	<48.0
U4-MW-11D	10/11/2022	N	EM02	UMCf	97.4 - 107.4	<7.87	<1.14	<4.78	<113	<0.941	<1.18	<1.28	1.68 J	<1.29	<6.05	6.48 J	<1.16	<1.92	6,480	<9.60
U4-MW-11I	4/14/2022	N	BL02	UMCf	77.0 - 87.0	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.588 J	0.503 J	<0.605	0.593 J	<0.116	<0.192	704	<0.960
U4-MW-11I	9/26/2022	N	EM01	UMCf	77.0 - 87.0	<0.787	<0.114	<0.478	184	<0.0941	<0.118	<0.128	0.397 J	<0.129	<0.605	<0.128	<0.116	<0.192	287	<0.960
U4-MW-11I	9/26/2022	FD	EM01	UMCf	77.0 - 87.0	<0.787	<0.114	<0.478	176	<0.0941	<0.118	0.663 J	0.336 J	<0.129	<0.605	<0.128	<0.116	<0.192	273	<0.960
U4-MW-11I	10/10/2022	N	EM02	UMCf	77.0 - 87.0	<7.87	<1.14	<4.78	<113	<0.941	<1.18	<1.28	<1.36	<1.29	<6.05	<1.28	<1.16	<1.92	203	<9.60
U4-MW-11I	10/10/2022	FD	EM02	UMCf	77.0 - 87.0	<0.787	<0.114	<0.478	18.3 J	<0.0941	<0.118	0.614 J	<0.136	<0.129	<0.605	2.85	<0.116	<0.192	214	<0.960
U4-MW-12D	4/15/2022	N	BL02	UMCf	97.1 - 107.1	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	2.15	0.934 J	<0.605	1.81	<0.116	<0.192	4,690	<0.960
U4-MW-12D	9/27/2022	N	EM01	UMCf	97.1 - 107.1	<15.7	<2.28	<9.56	<226	<1.88	<2.36	<2.56	<2.72	<2.58	<12.1	<2.56	<2.32	<3.84	4,030 J	<19.2
U4-MW-12D	10/12/2022	N	EM02	UMCf	97.1 - 107.1	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.59	0.380 J	<0.605	1.63	<0.116	<0.192	<0.111	<0.960
U4-MW-12I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.28	0.688 J	<0.605	0.961 J	<0.116	<0.192	1,670	<0.960
U4-MW-12I	4/14/2022	FD	BL02	UMCf	76.8 - 86.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.16	0.609 J	<0.605	0.812 J	<0.116	<0.192	1,640	<0.960
U4-MW-12I	9/27/2022	N	EM01	UMCf	76.8 - 86.8	<0.787	<0.114	<0.478	13.7 J	<0.0941	<0.118	<0.128	0.456 J	<0.129	<0.605	0.351 J	<0.116	<0.192	231	<0.960
U4-MW-12I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.344 J	<0.129 UJ	<0.605	0.486 J	<0.116	<0.192	194	<0.960
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.63	0.706 J	<0.605	1.11	<0.116	<0.192	3,460	<0.960
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	<7.87	<1.14	<4.78	<113	<0.941	<1.18	<1.28	<1.36	<1.29	<6.05	<1.28	<1.16	<1.92	1,270	<9.60
U4-MW-13D	10/11/2022	N	EM02	UMCf	98.2 - 108.2	<0.787	<0.114	<0.478	66.9	<0.0941	<0.118	<0.128	0.628 J	<0.129	<0.605	<0.128	<0.116	<0.192	983	<0.960
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.18	0.624 J	<0.605	0.865 J	<0.116	<0.192	1,350	<0.960
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	<0.787	<0.114	<0.478	<11.3	0.157 J	<0.118	<0.128	0.584 J	<0.129	<0.605	0.400 J	<0.116	<0.192	154 J-	<0.960
U4-MW-13I	10/10/2022	N	EM02	UMCf	77.1 - 87.1	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.505 J	<0.129	<0.605	0.759 J	<0.116	<0.192	451	<0.960
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.920 J	0.628 J	<0.605	0.805 J	<0.116	<0.192	110 J	<0.960
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.557 J	0.536 J	<0.605	0.537 J	<0.116	<0.192	157	<0.960
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.402 J	<0.129	<0.605	<0.128	<0.116	<0.192	407 J+	<0.960
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	13.2 J+	<0.960
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.609 J	0.428 J	<0.605	0.809 J	<0.116	<0.192	705	<0.960
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	9.07 J+	<0.960
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	<0.787	<0.114	<0.478	<11.3	0.261 J	<0.118	<0.128	1.91	0.510 J	<0.605	<0.128	<0.116	<0.192	3,310	<0.960
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	0.369 J	<0.116	<0.192	121	<0.960
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	<0.787	<0.114	<0.478	<11.3	0.186 J	<0.118	<0.128	0.794 J	0.154 J	<0.605	<0.128	<0.116	<0.192	424	<0.960
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.323 J	<0.129	<0.605	0.365 J	<0.116	<0.192	12.8	<0.960
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.308 J	<0.129	<0.605	0.346 J	<0.116	<0.192	12.3	<0.960
U4-T3 (Effluent)	10/13/2022	N	EM02	-	-	<0.787	<0.114	<0.478	22.8 J	<0.0941	<0.118	<0.128	4.01	1.87	<0.605	<0.128	<0.116	<0.192	3,720	<0.960

Notes:

FD - Field duplicate

E - Field instrument error.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- - The result is an estimated quantity, but the result may be biased low.

J+ - The result is an estimated quantity, but the result may be biased high.

mg/L - milligrams per liter

µg/L - micrograms per liter

N - Normal field sample

R - The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

UMCf- Upper Muddy Creek Formation

< - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

-- Not tested.

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Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B													
						cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Diisopropyl Ether (DIPE)	Ethyl Tert-Butyl Ether (ETBE)	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	m,p-Xylene (Sum of Isomers)	Methylene Chloride	Naphthalene	n-Butylbenzene
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	<0.126	<0.111	6.51	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.11 J	<1.00	<0.157
M-251-100	10/13/2022	N	EM02	UMCf	92.5 - 102.5	<0.126	<0.111	3.91	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.845 J	<1.00 UJ	<0.157
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	<0.630	<0.555	4.26 J	<0.610	<1.87	<0.525	<0.505	<0.685	<1.69	<0.525	<2.15	<2.15	<5.00	<0.785 UJ
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	<0.126	<0.111	0.328 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-E-01I	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	<0.126	<0.111	1.39	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.478 J	<1.00	<0.157
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	<0.126	<0.111	0.956 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430 UJ	<0.430	<1.00 UJ	<0.157 UJ
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	<0.126	<0.111	4.96	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.797 J	<1.00	<0.157
U4-E-03D	10/13/2022	N	EM02	UMCf	95.1 - 110.1	<25.2	<22.2	<28.0	<24.4	<74.8	<21.0	<20.2	<27.4	<67.4	<21.0	<86.0	<86.0	<200 UJ	<31.4
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.126	<0.111	0.812 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	<0.126	<0.111	0.141 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.126	<0.111	2.06	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	<0.126	<0.111	0.948 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-E-06I	10/12/2022	N	EM02	UMCf	73.2 - 88.2	<0.126	<0.111	0.447 J	<0.122	<0.374	<0.105	4.56	<0.137	<0.337	<0.105	<0.430	0.976 J	<1.00	<0.157
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.126	<0.111	1.08	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.637 J	<1.00	<0.157
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	<0.126	<0.111	0.715 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-E-07I	10/11/2022	N	EM02	UMCf	74.7 - 89.7	<1.26	<1.11	<1.40	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	<4.30	<10.0	<1.57
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.126	<0.111	1.00 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.819 J	<1.00	<0.157
U4-E-08D	10/11/2022	N	EM02	UMCf	94.6 - 109.6	<1.26	<1.11	<1.40	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	<4.30	<10.0	<1.57
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	<0.126	<0.111	0.209 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	<0.157
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	<0.126	<0.111	0.576 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	<0.126	<0.111	0.612 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	<0.126	<0.111	0.441 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	<0.126	<0.111	0.274 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-01DD	4/19/2022	N	BL02	UMCf	119.9 - 129.9	<0.126	<0.111	0.190 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-01DD	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	<0.126	<0.111	0.259 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	<0.126	<0.111	3.00	0.473 J	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.47 J	<1.00	<0.157
U4-MW-02D	10/11/2022	N	EM02	UMCf	95.0 - 110.0	<0.126	<0.111	4.51	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.47 J	<1.00	<0.157
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	<0.126	<0.111	1.22	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-02I	10/11/2022	N	EM02	UMCf	75.0 - 90.0	<0.126	<0.111	1.94	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.571 J	<1.00	<0.157
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	<0.126	<0.111	0.605 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-03DD	4/20/2022	N	BL02	UMCf	119.7 - 129.7	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	<0.126	<0.111	0.457 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	<0.126	<0.111	1.42	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.856 J	<1.00	<0.157
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	<0.126	<0.111	0.749 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	<0.126	<0.111	7.16	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	<0.157
U4-MW-05D	10/13/2022	N	EM02	UMCf	98.2 - 108.2	<12.6	<11.1	<14.0	<12.2	<37.4	<10.5	<10.1	<13.7	<33.7	<10.5	<43.0	<43.0	<100 UJ	<15.7
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	<0.126	<0.111	4.75	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	<0.157
U4-MW-05I	10/13/2022	N	EM02	UMCf	76.6 - 86.6	<12.6	<11.1	<14.0	<12.2	<37.4	<10.5	<10.1	<13.7	<33.7	<10.5	<43.0	<43.0	<100 UJ	<15.7
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	<0.126	<0.111	3.82	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.58 J	<1.00	<0.157
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	<0.126	<0.111	0.273 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-07D	4/15/2022	N	BL02	UMCf	96.8 - 106.5	<0.126	<0.111	0.410 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	<0.157
U4-MW-07D	10/12/2022	N	EM02	UMCf	96.8 - 106.5	<0.126	<0.111	2.38	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-07D	10/12/2022	FD	EM02	UMCf	96.8 - 106.5	<0.126	<0.111	1.83	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	<0.126	<0.111	0.189 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	<0.157
U4-MW-07I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	<0.126	<0.111	3.22	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.478 J	<1.00	<0.157
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	<0.126	<0.111	0.370 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-08DD	4/20/2022	N	BL02	UMCf	119.8 - 129.8	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-08DD	4/20/2022	FD	BL02	UMCf	119.8 - 129.8	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-08I	4/13/2022	N	BL02	UMCf	78.0 - 88.0	<0.126	<0.111	1.76	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.14 J	<1.00	<0.157
U4-MW-08S	4/15/2022	N	BL02	UMCf	54.9 - 64.9	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	<0.157
U4-MW-09D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	<0.126	<0.111	0.814 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.520 J	<1.00	<0.157
U4-MW-09DD	4/14/2022	N	BL02	UMCf	119.8 - 129.8	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-09I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	<0.126	<0.111	0.509 J	<0.122	<0.374	<0.105	<0.101	0.232 J	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-09S	4/14/2022	N	BL02	UMCf	55.3 - 65.3	<0.126	<0.111	0.374 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157

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Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B													
						cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Diisopropyl Ether (DIPE)	Ethyl Tert-Butyl Ether (ETBE)	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	m,p-Xylene (Sum of Isomers)	Methylene Chloride	Naphthalene	n-Butylbenzene
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
U4-MW-10D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	<0.126	<0.111	0.400 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-10I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	<0.126	<0.111	0.460 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-11D	4/15/2022	N	BL02	UMCf	97.4 - 107.4	<0.126	<0.111	0.584 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.565 J	<1.00 UJ	<0.157
U4-MW-11D	9/26/2022	N	EM01	UMCf	97.4 - 107.4	<6.30	<5.55	<7.00	<6.10	<18.7	<5.25	<5.05	<6.85	<16.9	<5.25	<21.5	<21.5	<50.0	<7.85
U4-MW-11D	10/11/2022	N	EM02	UMCf	97.4 - 107.4	<1.26	<1.11	<1.40	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	<4.30	<10.0	<1.57
U4-MW-11I	4/14/2022	N	BL02	UMCf	77.0 - 87.0	<0.126	<0.111	0.462 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-11I	9/26/2022	N	EM01	UMCf	77.0 - 87.0	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	4.90	<0.137	<0.337	<0.105	<0.430	0.707 J	<1.00	<0.157
U4-MW-11I	9/26/2022	FD	EM01	UMCf	77.0 - 87.0	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	5.43	<0.137	<0.337	<0.105	<0.430	0.866 J	<1.00	<0.157
U4-MW-11I	10/10/2022	N	EM02	UMCf	77.0 - 87.0	<1.26	<1.11	<1.40	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	5.54 J	<10.0	<1.57
U4-MW-11I	10/10/2022	FD	EM02	UMCf	77.0 - 87.0	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	3.02	<0.137	<0.337	<0.105	<0.430	2.44 J	<1.00	<0.157
U4-MW-12D	4/15/2022	N	BL02	UMCf	97.1 - 107.1	<0.126	<0.111	0.664 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.639 J	<1.00 UJ	<0.157
U4-MW-12D	9/27/2022	N	EM01	UMCf	97.1 - 107.1	<2.52	<2.22	<2.80	<2.44	<7.48	<2.10	<2.02	<2.74	<6.74	<2.10	<8.60	<8.60	<20.0	<3.14
U4-MW-12D	10/12/2022	N	EM02	UMCf	97.1 - 107.1	<0.126	<0.111	0.454 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-12I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	<0.126	<0.111	0.610 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-12I	4/14/2022	FD	BL02	UMCf	76.8 - 86.8	<0.126	<0.111	0.573 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-12I	9/27/2022	N	EM01	UMCf	76.8 - 86.8	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-12I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	<0.126	<0.111	0.639 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	<1.26	<1.11	<1.40	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	5.02 J	<10.0	<1.57
U4-MW-13D	10/11/2022	N	EM02	UMCf	98.2 - 108.2	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.543 J	<1.00	<0.157
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	<0.126	<0.111	0.618 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	<0.126	<0.111	0.164 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	2.01 J	<0.157
U4-MW-13I	10/10/2022	N	EM02	UMCf	77.1 - 87.1	0.394 J	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	<0.126	<0.111	0.561 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	<0.126	<0.111	0.471 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	<0.126	<0.111	0.447 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	<0.126	<0.111	0.533 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	<0.126	<0.111	0.256 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	<0.126	<0.111	0.363 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157
U4-T3 (Effluent)	10/13/2022	N	EM02	-	-	<0.126	<0.111	2.05	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.687 J	<1.00 UJ	<0.157

Notes:

FD - Field duplicate

E - Field instrument error.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- - The result is an estimated quantity, but the result may be biased low.

J+ - The result is an estimated quantity, but the result may be biased high.

mg/L - milligrams per liter

µg/L - micrograms per liter

N - Normal field sample

R - The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

UMCf- Upper Muddy Creek Formation

< - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

-- Not tested.

DRAFT

Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B																
						n-Propylbenzene	o-Xylene	p-Cymene (p-Isopropyltoluene)	sec-Butylbenzene	Styrene	tert-Amyl Methyl Ether	tert-Butyl Alcohol	tert-Butyl Methyl Ether (MTBE)	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Chloride	Xylenes, Total
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.907 J	<0.160	<0.234	<0.174
M-251-100	10/13/2022	N	EM02	UMCf	92.5 - 102.5	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	12.5 J+	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.557 J	<0.160	<0.234	<0.174
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.292 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	<0.497	<0.870	<0.600	<0.625	<0.590 UJ	<0.975	<20.3 UJ	<0.505	<0.635	<1.50	<1.39	<0.745	<0.590	<0.950	<0.800	<1.17	<0.870
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	6.58	<0.101	<0.127	<0.300	0.471 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-E-01I	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.05	<0.101	<0.127	<0.300	0.330 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.644 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	<0.0993 UJ	<0.174 UJ	<0.120	<0.125 UJ	<0.118 R	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.260 J	<0.160	<0.234	<0.174
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	6.74	<0.101	<0.127	<0.300	0.333 J	<0.149	<0.118	0.609 J	<0.160	<0.234	<0.174
U4-E-03D	10/13/2022	N	EM02	UMCf	95.1 - 110.1	<19.9	<34.8	<24.0	<25.0	<23.6	<39.0	<812	<20.2	<25.4	<60.0	<55.6	<29.8	<23.6	<38.0	<32.0	<46.8	<34.8
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.71	<0.101	<0.127	<0.300	0.341 J	<0.149	<0.118	0.460 J	<0.160	<0.234	<0.174
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	4.31 J	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.513 J	<0.149	<0.118	0.429 J	<0.160	<0.234	<0.174
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	<0.0993	<0.174	<0.120	<0.125	<0.118 R	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-E-06I	10/12/2022	N	EM02	UMCf	73.2 - 88.2	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	0.450 J	<0.278	<0.149	<0.118	0.514 J	<0.160	<0.234	<0.174
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	4.41 J	<0.101	<0.127	<0.300	3.53	<0.149	<0.118	0.745 J	<0.160	<0.234	<0.174
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	13.0	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.259 J	<0.160	<0.234	<0.174
U4-E-07I	10/11/2022	N	EM02	UMCf	74.7 - 89.7	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.12	<0.101	<0.127	<0.300	1.49	<0.149	<0.118	0.807 J	<0.160	<0.234	<0.174
U4-E-08D	10/11/2022	N	EM02	UMCf	94.6 - 109.6	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.672 J	<0.149	<0.118	0.211 J	<0.160	<0.234	<0.174
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	<0.0993	0.220 J	<0.120	<0.125	<0.118	<0.195	12.7	<0.101	<0.127	<0.300	0.454 J	<0.149	<0.118	0.223 J	<0.160	<0.234	0.220 J
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.235 J	<0.160	<0.234	<0.174
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	7.15	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-01DD	4/19/2022	N	BL02	UMCf	119.9 - 129.9	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-01DD	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.42	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.883 J	<0.160	<0.234	<0.174
U4-MW-02D	10/11/2022	N	EM02	UMCf	95.0 - 110.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	0.459 J	<0.278	<0.149	<0.118	1.23	<0.160	<0.234	<0.174
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.222 J	<0.160	<0.234	<0.174
U4-MW-02I	10/11/2022	N	EM02	UMCf	75.0 - 90.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	0.429 J	<0.278	<0.149	<0.118	0.414 J	<0.160	<0.234	<0.174
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.74 J	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.208 J	<0.160	<0.234	<0.174
U4-MW-03DD	4/20/2022	N	BL02	UMCf	119.7 - 129.7	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.285 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	4.28 J	<0.101	<0.127	<0.300	0.798 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.59	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.805 J	<0.160	<0.234	<0.174
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	10.8	<0.101	<0.127	<0.300	0.375 J	<0.149	<0.118	0.225 J	<0.160	<0.234	<0.174
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.920 J	<0.160	<0.234	<0.174
U4-MW-05D	10/13/2022	N	EM02	UMCf	98.2 - 108.2	<9.93	<17.4	<12.0	<12.5	<11.8	<19.5	<406	<10.1	<12.7	<30.0	<27.8	<14.9	<11.8	<19.0	<16.0	<23.4	<17.4
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.500 J	<0.160	<0.234	<0.174
U4-MW-05I	10/13/2022	N	EM02	UMCf	76.6 - 86.6	<9.93	<17.4	<12.0	<12.5	<11.8	<19.5	<406	<10.1	<12.7	<30.0	<27.8	<14.9	<11.8	<19.0	<16.0	<23.4	<17.4
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.524 J	<0.160	<0.234	<0.174
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.332 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-07D	4/15/2022	N	BL02	UMCf	96.8 - 106.5	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.04 J	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.191 J	<0.160	<0.234	<0.174
U4-MW-07D	10/12/2022	N	EM02	UMCf	96.8 - 106.5	<0.0993	0.181 J	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.557 J	<0.149	<0.118	<0.190	<0.160	<0.234	0.181 J
U4-MW-07D	10/12/2022	FD	EM02	UMCf	96.8 - 106.5	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.576 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-07I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.315 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	8.05	<0.101	<0.127	2.63	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-08DD	4/20/2022	N	BL02	UMCf	119.8 - 129.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.486 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-08DD	4/20/2022	FD	BL02	UMCf	119.8 - 129.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.531 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-08I	4/13/2022	N	BL02	UMCf	78.0 - 88.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	6.37	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.904 J	<0.160	0.413 J	<0.174
U4-MW-08S	4/15/2022	N	BL02	UMCf	54.9 - 64.9	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-09D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.195 J	<0.160	<0.234	<0.174
U4-MW-09DD	4/14/2022	N	BL02	UMCf	119.8 - 129.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-09I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	<0.0993	0.326 J	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	3.30	<0.149	<0.118	<0.190	<0.160	<0.234	0.326 J
U4-MW-09S	4/14/2022	N	BL02	UMCf	55.3 - 65.3	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174

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Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B															
						n-Propylbenzene	o-Xylene	p-Cymene (p-Isopropyltoluene)	sec-Butylbenzene	Styrene	tert-Amyl Methyl Ether	tert-Butyl Alcohol	tert-Butyl Methyl Ether (MTBE)	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Chloride	Xylenes, Total
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
U4-MW-10D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-10I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-11D	4/15/2022	N	BL02	UMCf	97.4 - 107.4	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<406	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.873 J	<0.160	<0.234	<0.174
U4-MW-11D	9/26/2022	N	EM01	UMCf	97.4 - 107.4	<4.97	<8.70	<6.00	<6.25	<5.90	<9.75	<203	<5.05	<6.35	<15.0	<13.9	<7.45	<5.90	<9.50	<8.00	<11.7	<8.70
U4-MW-11D	10/11/2022	N	EM02	UMCf	97.4 - 107.4	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74
U4-MW-11I	4/14/2022	N	BL02	UMCf	77.0 - 87.0	<0.0993	<0.174	<0.120	<0.125	<0.118 R	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.194 J	<0.160	<0.234	<0.174
U4-MW-11I	9/26/2022	N	EM01	UMCf	77.0 - 87.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-11I	9/26/2022	FD	EM01	UMCf	77.0 - 87.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-11I	10/10/2022	N	EM02	UMCf	77.0 - 87.0	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01	<1.27	95.7 J	3.30 J	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74
U4-MW-11I	10/10/2022	FD	EM02	UMCf	77.0 - 87.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	1.82 J	<0.278	<0.149	<0.118	0.631 J	<0.160	<0.234	<0.174
U4-MW-12D	4/15/2022	N	BL02	UMCf	97.1 - 107.1	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.752 J	<0.160	<0.234	<0.174
U4-MW-12D	9/27/2022	N	EM01	UMCf	97.1 - 107.1	<1.99	<3.48	<2.40	<2.50	<2.36	<3.90	<81.2	<2.02	<2.54	<6.00	<5.56	<2.98	<2.36	<3.80	<3.20	<4.68	<3.48
U4-MW-12D	10/12/2022	N	EM02	UMCf	97.1 - 107.1	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.684 J	<0.160	<0.234	<0.174
U4-MW-12I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.31	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.363 J	<0.160	<0.234	<0.174
U4-MW-12I	4/14/2022	FD	BL02	UMCf	76.8 - 86.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.314 J	<0.160	<0.234	<0.174
U4-MW-12I	9/27/2022	N	EM01	UMCf	76.8 - 86.8	<0.0993	<0.174	<0.120	<0.125	<0.118 UJ	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-12I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	7.16	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.456 J	<0.160	<0.234	<0.174
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74
U4-MW-13D	10/11/2022	N	EM02	UMCf	98.2 - 108.2	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	4.13 J	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.291 J	<0.160	<0.234	<0.174
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.395 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-13I	10/10/2022	N	EM02	UMCf	77.1 - 87.1	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	5.02	0.914 J	<0.149	<0.118	1.49	<0.160	<0.234	<0.174
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.295 J	<0.160	<0.234	<0.174
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	6.75	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	4.48 J	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.215 J	<0.160	<0.234	<0.174
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.534 J	<0.160	<0.234	<0.174
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174
U4-T3 (Effluent)	10/13/2022	N	EM02	-	-	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	35.0 J+	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.525 J	<0.160	<0.234	<0.174

Notes:

FD - Field duplicate

E - Field instrument error.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- - The result is an estimated quantity, but the result may be biased low.

J+ - The result is an estimated quantity, but the result may be biased high.

mg/L - milligrams per liter

µg/L - micrograms per liter

N - Normal field sample

R - The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

UMCf- Upper Muddy Creek Formation

< - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

-- Not tested.

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Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	SW9060A/SM5310B	Volatile Fatty Acids by AM23G									
						Total Organic Carbon	3-Methylbutanoic Acid	Acetic Acid	Butyric Acid	Formic Acid	Hexanoic Acid	i-Hexanoic Acid	Lactic Acid	Pentanoic Acid	Propionic Acid	Pyruvic Acid
						µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	----	----	----	----	----	----	----	----	----	----	----
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	----	----	----	----	----	----	----	----	----	----	----
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	1,410 J+	----	----	----	----	----	----	----	----	----	----
M-251-100	10/13/2022	N	EM02	UMCf	92.5 - 102.5	3,660 J+	----	----	----	----	----	----	----	----	----	----
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	1,590 J+	----	----	----	----	----	----	----	----	----	----
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	520 J	----	----	----	----	----	----	----	----	----	----
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	----	----	----	----	----	----	----	----	----	----	----
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	----	----	----	----	----	----	----	----	----	----	----
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	1,030 J+	----	----	----	----	----	----	----	----	----	----
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	2,420 J+	----	----	----	----	----	----	----	----	----	----
U4-E-01I	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	2,670 J+	----	----	----	----	----	----	----	----	----	----
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	1,540 J+	----	----	----	----	----	----	----	----	----	----
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	1,240 J+	----	----	----	----	----	----	----	----	----	----
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	1,660 J+	----	----	----	----	----	----	----	----	----	----
U4-E-03D	10/13/2022	N	EM02	UMCf	95.1 - 110.1	971 J	----	----	----	----	----	----	----	----	----	----
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	1,380 J+	----	----	----	----	----	----	----	----	----	----
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	863 J	----	----	----	----	----	----	----	----	----	----
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	1,070 J+	----	----	----	----	----	----	----	----	----	----
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	1,110 J+	----	----	----	----	----	----	----	----	----	----
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	605 J	----	----	----	----	----	----	----	----	----	----
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	863 J	----	----	----	----	----	----	----	----	----	----
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	909 J	----	----	----	----	----	----	----	----	----	----
U4-E-06I	10/12/2022	N	EM02	UMCf	73.2 - 88.2	221,000	----	----	----	----	----	----	----	----	----	----
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	3,200 J	----	----	----	----	----	----	----	----	----	----
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	2,760 J	----	----	----	----	----	----	----	----	----	----
U4-E-07I	10/11/2022	N	EM02	UMCf	74.7 - 89.7	12,500	----	----	----	----	----	----	----	----	----	----
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	3,170 J	----	----	----	----	----	----	----	----	----	----
U4-E-08D	10/11/2022	N	EM02	UMCf	94.6 - 109.6	2,450	----	----	----	----	----	----	----	----	----	----
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	875 J	----	----	----	----	----	----	----	----	----	----
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	1,280 J	----	----	----	----	----	----	----	----	----	----
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	766 J	----	----	----	----	----	----	----	----	----	----
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	1,790 J	----	----	----	----	----	----	----	----	----	----
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	952 J	----	----	----	----	----	----	----	----	----	----
U4-MW-01DD	4/19/2022	N	BL02	UMCf	119.9 - 129.9	1,120 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-01DD	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	1,080 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	1,160 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	972 J	----	----	----	----	----	----	----	----	----	----
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	1,570 J	----	----	----	----	----	----	----	----	----	----
U4-MW-02D	10/11/2022	N	EM02	UMCf	95.0 - 110.0	787 J	----	----	----	----	----	----	----	----	----	----
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	1,100 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-02I	10/11/2022	N	EM02	UMCf	75.0 - 90.0	8,510	----	----	----	----	----	----	----	----	----	----
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	964 J	----	----	----	----	----	----	----	----	----	----
U4-MW-03DD	4/20/2022	N	BL02	UMCf	119.7 - 129.7	999 J	----	----	----	----	----	----	----	----	----	----
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	3,300 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	1,200 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	1,320 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	7,260 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	1,530 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	1,710 J	----	----	----	----	----	----	----	----	----	----
U4-MW-05D	10/13/2022	N	EM02	UMCf	98.2 - 108.2	1,300 J	----	----	----	----	----	----	----	----	----	----
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	1,460 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-05I	10/13/2022	N	EM02	UMCf	76.6 - 86.6	1,180 J	----	----	----	----	----	----	----	----	----	----
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	1,350 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	1,190 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-07D	4/15/2022	N	BL02	UMCf	96.8 - 106.5	631 J	----	----	----	----	----	----	----	----	----	----
U4-MW-07D	10/12/2022	N	EM02	UMCf	96.8 - 106.5	1,630 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-07D	10/12/2022	FD	EM02	UMCf	96.8 - 106.5	1,490 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	2,760 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	1,370 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	3,420 J	----	----	----	----	----	----	----	----	----	----
U4-MW-08DD	4/20/2022	N	BL02	UMCf	119.8 - 129.8	670 J	----	----	----	----	----	----	----	----	----	----
U4-MW-08DD	4/20/2022	FD	BL02	UMCf	119.8 - 129.8	672 J	----	----	----	----	----	----	----	----	----	----
U4-MW-08I	4/13/2022	N	BL02	UMCf	78.0 - 88.0	1,740 J	----	----	----	----	----	----	----	----	----	----
U4-MW-08S	4/15/2022	N	BL02	UMCf	54.9 - 64.9	1,190 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-09D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	1,590 J	----	----	----	----	----	----	----	----	----	----
U4-MW-09DD	4/14/2022	N	BL02	UMCf	119.8 - 129.8	493 J	----	----	----	----	----	----	----	----	----	----
U4-MW-09I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	1,090 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-09S	4/14/2022	N	BL02	UMCf	55.3 - 65.3	892 J	----	----	----	----	----	----	----	----	----	----

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Table 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	SW9060A/SM5310B	Volatile Fatty Acids by AM23G									
						Total Organic Carbon	3-Methylbutanoic Acid	Acetic Acid	Butyric Acid	Formic Acid	Hexanoic Acid	i-Hexanoic Acid	Lactic Acid	Pentanoic Acid	Propionic Acid	Pyruvic Acid
						µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
U4-MW-10D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	1,020 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-10I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	1,200 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-11D	4/15/2022	N	BL02	UMCf	97.4 - 107.4	3,440 J+	<6.1	25 J	<5.8	460	<5.8	<5.6	<5.3	<5.6	<5.3	<6.0
U4-MW-11D	9/26/2022	N	EM01	UMCf	97.4 - 107.4	20,200 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-11D	10/11/2022	N	EM02	UMCf	97.4 - 107.4	1,360 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-11I	4/14/2022	N	BL02	UMCf	77.0 - 87.0	1,040 J+	<1.2	3.6 J	<1.2	91	<1.2	<1.1	<1.1	<1.1	<1.1	<1.2
U4-MW-11I	9/26/2022	N	EM01	UMCf	77.0 - 87.0	208,000	----	----	----	----	----	----	----	----	----	----
U4-MW-11I	9/26/2022	FD	EM01	UMCf	77.0 - 87.0	201,000	----	----	----	----	----	----	----	----	----	----
U4-MW-11I	10/10/2022	N	EM02	UMCf	77.0 - 87.0	61,800 J	----	----	----	----	----	----	----	----	----	----
U4-MW-11I	10/10/2022	FD	EM02	UMCf	77.0 - 87.0	306,000 J	----	----	----	----	----	----	----	----	----	----
U4-MW-12D	4/15/2022	N	BL02	UMCf	97.1 - 107.1	1,440 J+	<6.1	26 J	<5.8	460	<5.8	43 J	<5.3	<5.6	<5.3	<6.0
U4-MW-12D	9/27/2022	N	EM01	UMCf	97.1 - 107.1	903 J	----	----	----	----	----	----	----	----	----	----
U4-MW-12D	10/12/2022	N	EM02	UMCf	97.1 - 107.1	1,020 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-12I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	1,630 J	<6.1	<12	<5.8	240	<5.8	<5.6	<5.3	<5.6	<5.3	<6.0
U4-MW-12I	4/14/2022	FD	BL02	UMCf	76.8 - 86.8	1,930 J	<6.1	<12	<5.8	220	<5.8	<5.6	<5.3	<5.6	<5.3	<6.0
U4-MW-12I	9/27/2022	N	EM01	UMCf	76.8 - 86.8	1,440 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-12I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	4,410 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	1,640 J	<12	27 J	<12	490	<12	<11	<11	<11	<11	<12
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	58,400	----	----	----	----	----	----	----	----	----	----
U4-MW-13D	10/11/2022	N	EM02	UMCf	98.2 - 108.2	55,200	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	1,080 J+	<3.0	17 J	<2.9	240	<2.9	<2.8	21 J	<2.8	<2.6	<3.0
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	2,450 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	10/10/2022	N	EM02	UMCf	77.1 - 87.1	1,900 J	----	----	----	----	----	----	----	----	----	----
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	1,220 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	1,090 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	1,240 J	----	----	----	----	----	----	----	----	----	----
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	532 J	----	----	----	----	----	----	----	----	----	----
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	1,440 J	----	----	----	----	----	----	----	----	----	----
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	848 J	----	----	----	----	----	----	----	----	----	----
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	1,340 J	----	----	----	----	----	----	----	----	----	----
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	827 J	----	----	----	----	----	----	----	----	----	----
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	950 J	----	----	----	----	----	----	----	----	----	----
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	1,070 J+	----	----	----	----	----	----	----	----	----	----
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	931 J	----	----	----	----	----	----	----	----	----	----
U4-T3 (Effluent)	10/13/2022	N	EM02	-	-	114,000	----	----	----	----	----	----	----	----	----	----

Notes:

FD - Field duplicate

E - Field instrument error.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- - The result is an estimated quantity, but the result may be biased low.

J+ - The result is an estimated quantity, but the result may be biased high.

mg/L - milligrams per liter

µg/L - micrograms per liter

N - Normal field sample

R - The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

UMCf- Upper Muddy Creek Formation

< - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

-- Not tested.

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Table 6
Tracer Dye Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Location	Sample Date	Sample ID	Event	Eosine				Fluorescein				Rhodamine WT (RWT)				Sulforhodamine B (SRB)			
				Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
				Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)
CARBON-SOLN	10/18/2022	CARBON-SOLN-20221018	EM02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
M-251-100	4/19/2022	M-251-100-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
M-251-100	9/20/2022	M-251-100-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
M-251-100	10/11/2022	M-251-100-EM02	EM02	ND	--	ND	--	ND	--	ND	--	570.1	1.15	571.2 **	18.7	ND	--	ND	--
M-251-60	4/18/2022	M-251-60-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
M-251-60	9/20/2022	M-251-60-INJ	INJ	ND	--	ND	--	ND	--	ND	--	566.5	3.70	ND	--	ND	--	ND	--
M-251-60	10/11/2022	M-251-60-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
M-252	4/21/2022	M-252-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
M-252	9/20/2022	M-252-INJ	INJ	ND	--	ND	--	ND	--	ND	--	567.7	9.28	571.8 **	72.4	ND	--	ND	--
M-252	10/11/2022	M-252-EM02	EM02	ND	--	ND	--	ND	--	ND	--	567.6	36.2	571.2 **	173	ND	--	ND	--
U4-E-01D	4/18/2022	U4-E-01D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	583.8 **	2.31
U4-E-01I	4/19/2022	U4-E-01I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	581.8	4.97
U4-E-02D	4/20/2022	U4-E-02D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-02I	4/18/2022	U4-E-02I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-03D	4/19/2022	U4-E-03D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-03D	10/13/2022	U4-E-03D-EM02	EM02	---	---	ND	--	---	---	507.8	1.24	---	---	ND	--	---	---	ND	--
U4-E-04D	4/19/2022	U4-E-04D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-04I	4/18/2022	U4-E-04I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-05D	4/19/2022	U4-E-05D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-05I	4/19/2022	U4-E-05I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-06D	4/11/2022	U4-E-06D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-06I	4/11/2022	U4-E-06I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-06I	10/12/2022	U4-E-06I-EM02	EM02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-07D	4/12/2022	U4-E-07D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-07I	4/12/2022	U4-E-07I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-07I	10/11/2022	U4-E-07I-EM02	EM02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-08D	4/12/2022	U4-E-08D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-08D	10/11/2022	U4-E-08D-EM02	EM02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-09D	4/15/2022	U4-E-09D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-09I	4/14/2022	U4-E-09I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-10D	4/13/2022	U4-E-10D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-E-10I	4/13/2022	U4-E-10I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-01D	4/19/2022	U4-MW-01D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-01D	9/24/2022	U4-MW-01D-INJ	INJ	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	577.2	1.71	ND	--
U4-MW-01D	10/10/2022	U4-MW-01D-EM02	EM02	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	579.5	4.99	584.5 **	12.2
U4-MW-01DD	4/19/2022	U4-MW-01DD-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	586.2 **	5.88
U4-MW-01DD	9/20/2022	U4-MW-01DD-INJ	INJ	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	579.1	5.65	581.9	0.897
U4-MW-01DD	10/10/2022	U4-MW-01DD-EM02	EM02	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	579.0	6.23	581.5	0.598
U4-MW-01I	4/19/2022	U4-MW-01I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-01I	9/24/2022	U4-MW-01I-INJ	INJ	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	578.3	7.13	585.5 **	10.7
U4-MW-01I	10/10/2022	U4-MW-01I-EM02	EM02	ND	--	ND	--	ND	--	507.8	0.027	ND	--	ND	--	578.5	5.28	580.4	8.83
U4-MW-01S	4/18/2022	U4-MW-01S-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	583.6	1.33
U4-MW-01S	9/20/2022	U4-MW-01S-INJ	INJ	ND	--	ND	--	ND	--	ND	15.1	ND	--	ND	--	576.2	1.34	ND	--
U4-MW-01S	10/10/2022	U4-MW-01S-EM02	EM02	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	577.8	1.67	ND	--
U4-MW-02D	4/14/2022	U4-MW-02D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-02D	10/11/2022	U4-MW-02D-EM02	EM02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	585.6 **	0.772
U4-MW-02I	4/14/2022	U4-MW-02I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-02I	10/11/2022	U4-MW-02I-EM02	EM02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	584.6 *	0.059
U4-MW-03D	4/20/2022	U4-MW-03D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-03D	9/22/2022	U4-MW-03D-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-03D	10/10/2022	U4-MW-03D-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-03DD	4/20/2022	U4-MW-03DD-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-03DD	9/22/2022	U4-MW-03DD-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-03DD	10/11/2022	U4-MW-03DD-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-03I	4/19/2022	U4-MW-03I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-03I	9/22/2022	U4-MW-03I-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-03I	10/10/2022	U4-MW-03I-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---

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Table 6
Tracer Dye Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Location	Sample Date	Sample ID	Event	Eosine				Fluorescein				Rhodamine WT (RWT)				Sulforhodamine B (SRB)			
				Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
				Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)
U4-MW-03S	4/18/2022	U4-MW-03S-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-03S	9/22/2022	U4-MW-03S-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-03S	10/11/2022	U4-MW-03S-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-04D	4/19/2022	U4-MW-04D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-04D	9/22/2022	U4-MW-04D-INJ	INJ	ND	--	ND	--	ND	--	ND	--	565.8 **	2.81	574.6	24.2	ND	--	ND	--
U4-MW-04D	10/11/2022	U4-MW-04D-EM02	EM02	ND	--	ND	--	ND	--	ND	--	567.5	19.4	571.8 **	2.18	ND	--	ND	--
U4-MW-04I	4/19/2022	U4-MW-04I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-04I	9/22/2022	U4-MW-04I-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-04I	10/11/2022	U4-MW-04I-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-05D	4/15/2022	U4-MW-05D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-05D	10/13/2022	U4-MW-05D-EM02	EM02	---	---	ND	--	---	---	507.5	4.37	---	---	ND	--	---	---	586.6 **	2.40
U4-MW-05I	4/15/2022	U4-MW-05I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-05I	10/13/2022	U4-MW-05I-EM02	EM02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	585.2 **	4.11
U4-MW-06D	4/19/2022	U4-MW-06D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-06D	9/21/2022	U4-MW-06D-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-06D	10/11/2022	U4-MW-06D-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-06I	4/19/2022	U4-MW-06I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-06I	9/21/2022	U4-MW-06I-INJ	INJ	ND	--	ND	--	514.6	0.834	ND	--	568.8 *	1.43	ND	--	--	--	ND	--
U4-MW-06I	10/11/2022	U4-MW-06I-EM02	EM02	ND	--	ND	--	515.0	1.38	ND	--	568.2	0.953	572.0	11.5	ND	--	ND	--
U4-MW-07D	4/15/2022	U4-MW-07D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-07D	9/21/2022	U4-MW-07D-INJ	INJ	ND	--	ND	--	516	2590	507.2	--	ND	--	ND	--	578	464	581.6	2.92
U4-MW-07D	10/12/2022	U4-MW-07D-EM02	EM02	ND	--	ND	--	515.6	3,620	507.3	30.7	ND	--	ND	--	579.1	27.0	ND	--
U4-MW-07I	4/15/2022	U4-MW-07I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-07I	9/21/2022	U4-MW-07I-INJ	INJ	ND	--	ND	--	515.2	162	507.1	36.9	ND	--	ND	--	579.1	104	586.1 **	5.54
U4-MW-07I	10/12/2022	U4-MW-07I-EM02	EM02	ND	--	ND	--	515.9	2,070	507.4	32.4	ND	--	ND	--	579	3.94	ND	--
U4-MW-08D	4/13/2022	U4-MW-08D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-08D	9/20/2022	U4-MW-08D-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-08D	10/12/2022	U4-MW-08D-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-08DD	4/20/2022	U4-MW-08DD-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-08DD	10/11/2022	U4-MW-08DD-EM02	EM02	ND	--	ND	--	ND	--	ND	--	569.3	1.67	573.8	10.6	ND	--	ND	--
U4-MW-08I	4/13/2022	U4-MW-08I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-08I	9/20/2022	U4-MW-08I-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-08I	10/12/2022	U4-MW-08I-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-08S	4/15/2022	U4-MW-08S-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-08S	9/20/2022	U4-MW-08S-INJ	INJ	ND	--	ND	--	ND	--	ND	--	566.2 *	0.924	ND	--	ND	--	ND	--
U4-MW-08S	10/11/2022	U4-MW-08S-EM02	EM02	ND	--	ND	--	ND	--	ND	--	569.0 *	0.839	574.3	5.65	ND	--	ND	--
U4-MW-09D	4/14/2022	U4-MW-09D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-09D	10/13/2022	U4-MW-09D-EM02	EM02	---	---	ND	--	---	---	507.5	6.50	---	---	ND	--	---	---	581.1	11.2
U4-MW-09DD	4/14/2022	U4-MW-09DD-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-09DD	9/20/2022	U4-MW-09DD-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-09DD	10/12/2022	U4-MW-09DD-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-09I	4/14/2022	U4-MW-09I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-09I	10/13/2022	U4-MW-09I-EM02	EM02	---	---	ND	--	---	---	507.3	0.765	---	---	ND	--	---	---	582.9	16.9
U4-MW-09S	4/14/2022	U4-MW-09S-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-09S	9/20/2022	U4-MW-09S-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-09S	10/12/2022	U4-MW-09S-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-10D	4/14/2022	U4-MW-10D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-10D	9/20/2022	U4-MW-10D-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-10D	10/12/2022	U4-MW-10D-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-10I	4/14/2022	U4-MW-10I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-10I	9/20/2022	U4-MW-10I-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-10I	10/12/2022	U4-MW-10I-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-11D	4/15/2022	U4-MW-11D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	586.7 **	24.5
U4-MW-11D	9/26/2022	U4-MW-11D-EM01	EM01	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	584.2 **	7.58
U4-MW-11D	10/11/2022	U4-MW-11D-EM02	EM02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	585.0 **	6.96
U4-MW-11I	4/14/2022	U4-MW-11I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-11I	9/26/2022	U4-MW-11I-EM01	EM01	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	586.6 **	21.1

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Table 6
Tracer Dye Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Location	Sample Date	Sample ID	Event	Eosine				Fluorescein				Rhodamine WT (RWT)				Sulforhodamine B (SRB)			
				Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
				Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)
U4-MW-11I	10/10/2022	U4-MW-11I-EM02	EM02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-12D	4/15/2022	U4-MW-12D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-12D	9/27/2022	U4-MW-12D-EM01	EM01	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	585.3 **	39.9
U4-MW-12D	10/12/2022	U4-MW-12D-EM02	EM02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	584.9 **	5.99
U4-MW-12I	4/14/2022	U4-MW-12I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-12I	9/27/2022	U4-MW-12I-EM01	EM01	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	587.0 **	4.07
U4-MW-12I	10/12/2022	U4-MW-12I-EM02	EM02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	586.4 **	3.73
U4-MW-13D	4/14/2022	U4-MW-13D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-13D	9/28/2022	U4-MW-13D-EM01	EM01	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	586.2 **	12.9
U4-MW-13D	10/11/2022	U4-MW-13D-EM02	EM02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	584.6 **	3.87
U4-MW-13I	4/14/2022	U4-MW-13I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-13I	9/28/2022	U4-MW-13I-EM01	EM01	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	586.2 **	7.80
U4-MW-13I	10/10/2022	U4-MW-13I-EM02	EM02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	586.6 **	4.67
U4-MW-14D	4/13/2022	U4-MW-14D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-14D	9/20/2022	U4-MW-14D-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-14D	10/13/2022	U4-MW-14D-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-14I	4/14/2022	U4-MW-14I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-14I	9/20/2022	U4-MW-14I-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-14I	10/13/2022	U4-MW-14I-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-15D	4/13/2022	U4-MW-15D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-15D	9/19/2022	U4-MW-15D-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-15D	10/12/2022	U4-MW-15D-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-15DD	4/13/2022	U4-MW-15DD-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-15DD	9/19/2022	U4-MW-15DD-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-15DD	10/13/2022	U4-MW-15DD-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-15I	4/12/2022	U4-MW-15I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-15I	9/19/2022	U4-MW-15I-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-15I	10/12/2022	U4-MW-15I-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-15S	4/13/2022	U4-MW-15S-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-15S	9/19/2022	U4-MW-15S-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-15S	10/13/2022	U4-MW-15S-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-16D	4/11/2022	U4-MW-16D-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-16D	9/19/2022	U4-MW-16D-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-16D	10/13/2022	U4-MW-16D-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-16DD	4/12/2022	U4-MW-16DD-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-16DD	9/19/2022	U4-MW-16DD-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-16DD	10/13/2022	U4-MW-16DD-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-16I	4/11/2022	U4-MW-16I-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-16I	9/19/2022	U4-MW-16I-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-16I	10/13/2022	U4-MW-16I-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-16S	4/12/2022	U4-MW-16S-BL02	BL02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--
U4-MW-16S	9/19/2022	U4-MW-16S-INJ	INJ	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-MW-16S	10/13/2022	U4-MW-16S-EM02	EM02	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---
U4-SLMW	10/18/2022	SLMW-20221018	EM02	---	---	ND	--	---	---	ND	--	---	---	ND	--	---	---	ND	--

Notes:
ND No dye detected
* A fluorescence peak is present that does not meet all the criteria for a positive dye result. However, it has been calculated as though it was the tracer dye.
** A fluorescence peak is present that does not meet all the criteria for this dye. However, it has been calculated as a positive dye result.
--- Not tested
ppb parts per billion
nm nanometers