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Date: February 26, 2021
Refer To: N3B-2021-0038

Michelle Hunter, Chief
 Ground Water Quality Bureau
 New Mexico Environment Department
 1190 S. St. Francis Drive
 Santa Fe, NM 87502-5469

Subject: Submittal of the Quarterly Report for the Discharge of Treated Groundwater to the Regional Aquifer under Discharge Permit 1835, Calendar Year 2020 Quarter 4, Class V Underground Injection Control Wells

Dear Ms. Hunter:

On August 31, 2016, the New Mexico Environment Department (NMED) issued Discharge Permit 1835 (DP-1835) to the U.S. Department of Energy (DOE) and Los Alamos National Security, LLC (LANS) for the discharge of treated groundwater to the regional aquifer from up to six Class V underground injection control (UIC) wells. On July 21, 2017, NMED approved minor updates to DP-1835. During the second quarter of calendar year (CY) 2018, ownership of the discharge permit transferred to Newport News Nuclear BWXT-Los Alamos, LLC (N3B) from LANS. Pursuant to Condition No. 10 of the above-referenced discharge permit, DOE/N3B are required to submit quarterly reports for the previous quarter to document the following:

1. influent and discharge volumes from the treatment systems,
2. quarterly groundwater and treated effluent sampling results, and
3. operations and maintenance activities.

Pursuant to Condition No. 11, 12, and 13 of DP-1835, the quarterly reports shall also contain general information, performance information, and monitoring data for treated effluent from each ion exchange treatment system. Condition No. 10 requires submission of a quarterly report to NMED by March 1 for the October 1 through December 31 discharge period.

During the CY 2020 Quarter 4 reporting period for DP-1835, discharge of treated groundwater to the regional aquifer occurred at five UIC wells: CrIN-1 through CrIN-5. Groundwater originated predominantly from four extraction wells: CrEX-1, CrEX-2, CrEX-4, and CrEX-5. The groundwater was treated by chromium treatment unit A (CTUA) and chromium treatment unit C (CTUC) before injection at the UIC wells.

The enclosed "Quarterly Report for the Discharge of Treated Groundwater to the Regional Aquifer under Discharge Permit 1835, Calendar Year 2020 Quarter 4," provides the information required under DP-1835 for this reporting period.

If you have questions, please contact Christian Maupin at (505) 695-4281 (christian.maupin@em-la.doe.gov) or Cheryl Rodriguez at (505) 414-0450 (cheryl.rodriguez@em.doe.gov).

Sincerely,



Joseph Murdock
Program Manager
Environment, Safety and Health
N3B-Los Alamos

Sincerely,

Arturo Q.
Duran

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Arturo Q. Duran
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Enclosure(s):

1. Quarterly Report for the Discharge of Treated Groundwater to the Regional Aquifer under Discharge Permit 1835, Calendar Year 2020 Quarter 4 (EM2021-0056)

cc (letter and enclosure[s] emailed):

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Sent: Monday, March 1, 2021 9:39 AM
To: Pamela T. Maestas; Hunter, Michelle, NMENV
Cc: Pullen, Steve, NMENV; Longmire, Patrick, NMENV; Emily M. Day; Regulatory Documentation; cheryl.rodriquez@em.doe.gov; Christian T. Maupin
Subject: Re: Submittal to NMED on 2/26/2021 of DP-1835 Quarterly Rpt 4QCY20

Good morning Pamela,

GWQB acknowledges receipt of this report, thank you for your timely submittal.

Regards,

Andrew Romero, Environmental Scientist

New Mexico Environment Department
Ground Water Quality Bureau
1190 St. Francis Dr, Santa Fe, NM 87505
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From: Pamela T. Maestas <pamela.maestas@em-la.doe.gov>
Sent: Friday, February 26, 2021 3:14 PM
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Cc: Pullen, Steve, NMENV; Romero, Andrew C, NMENV; Longmire, Patrick, NMENV; Emily M. Day; Regulatory Documentation; cheryl.rodriquez@em.doe.gov; Christian T. Maupin
Subject: [EXT] Submittal to NMED on 2/26/2021 of DP-1835 Quarterly Rpt 4QCY20

Ms. Hunter,

Attached for submittal is a pdf of the following:

- Submittal of the Quarterly Report for the Discharge of Treated Groundwater to the Regional Aquifer under Discharge Permit 1835, Calendar Year 2020 Quarter 4, Class V Underground Injection Control Wells (N3B-2021-0038, letter and enclosure)

Please acknowledge receipt of this submittal by responding to this email.

Let me know if you have any questions.

Thank you.

Pamela T. Maestas

Regulatory Documentation Manager

Newport News Nuclear BWXT-Los Alamos, LLC
c. 505-927-7882 
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**Quarterly Report for the
Discharge of Treated
Groundwater to the
Regional Aquifer under
Discharge Permit 1835,
Calendar Year 2020 Quarter 4**

Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the U.S. Department of Energy Office of Environmental Management Contract No. 89303318CEM000007 (the Los Alamos Legacy Cleanup Contract), has prepared this document. The public may copy and use this document without charge, provided that this notice and any statement of authorship are reproduced on all copies.

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1.0 INTRODUCTION

On August 31, 2016, the New Mexico Environment Department (NMED) issued Discharge Permit 1835 (DP-1835) to the U.S. Department of Energy (DOE) and Los Alamos National Security, LLC (LANS) for the discharge of treated groundwater to the regional aquifer through Class V underground injection control (UIC) wells. On July 21, 2017, NMED approved minor updates to DP-1835. During Quarter 2 of calendar year (CY) 2018, ownership of the discharge permit transferred from LANS to Newport News Nuclear BWXT-Los Alamos, LLC (N3B). Pursuant to Condition No. 10 of the above-referenced discharge permit, DOE and N3B are required to submit quarterly reports.

During the 2020 Quarter 4 reporting period for DP-1835, discharge of treated groundwater to the regional aquifer occurred at five UIC wells: CrIN-1 through CrIN-5. Groundwater originated predominantly from four extraction wells: CrEX-1, CrEX-2, CrEX-4, and CrEX-5. The groundwater was treated by chromium treatment unit A (CTUA) and chromium treatment unit C (CTUC) before injection at the UIC wells.

Condition No. 10 of DP-1835 requires submission of a quarterly report to NMED by March 1 for the October 1 through December 31 discharge period. Several conditions within the permit identify information to be submitted in the quarterly report, as follows:

1. Influent and discharge volumes for the ion exchange (IX) treatment systems (Condition No. 10)
2. Quarterly treated effluent sampling results from each IX treatment system (Condition No. 10 and 13)
3. Quarterly depth-to-groundwater and groundwater-quality sampling results (Condition No. 10 and 14)
4. Any operations/maintenance activities performed (Condition No. 10)
5. Any periodic test of mechanical integrity conducted (Condition No. 11)
6. Any replacement of primary or secondary IX vessels or associated treatment system infrastructure (Condition No. 11)
7. Any well workovers conducted (Condition No. 11)
8. Any additional operational changes with the potential to markedly affect the discharge (Condition No. 11)
9. Monthly average, maximum, and minimum values for flow rate and volume of treated effluent transferred to each UIC well (Condition No. 12)
10. Total monthly volume of treated effluent transferred to each UIC well (Condition No. 12)
11. Monthly average, maximum, and minimum values of injection water level (pressure head) above static level for each UIC well (Condition No. 12)
12. Daily volume injected at each UIC well (Condition No. 12)
13. Daily volume pumped from each extraction well (Condition No. 12)
14. Facility layout map (Condition No. 14)
15. Groundwater elevation contour map (Condition No. 15)

This report addresses each of these requirements.

2.0 REQUIREMENTS

2.1 Influent and Discharge Volumes for the Ion Exchange Treatment Systems (Requirement 1)

Table 2.1-1 provides the influent and discharge volumes for IX treatment systems during 2020 Quarter 4 for activities completed under DP-1835. As previously identified, injection occurred at UIC wells CrIN-1 through CrIN-5 during the quarter. Treated discharge, which originated from extraction wells CrEX-1, CrEX-2, CrEX-4, and CrEX-5, was treated with treatment units CTUA and CTUC.

Table 2.1-1
Total Influent and Discharge Volumes
for IX Treatment Systems – CY 2020 Quarter 4, DP-1835

Treatment Unit	Influent Volume ^a (gal.)	Effluent Volume ^b (gal.)
CTUA	24,342,900	13,501,652
CTUC		10,835,344

Note: Individual flow meter accurate to $\pm 5\%$.

^a Influent volume based on CrEX-1, CrEX-2, CrEX-4, and CrEX-5 extraction volumes.

^b Effluent volume based on CTUA and CTUC flow-meter readings.

2.2 Quarterly Treated Effluent Sampling Results from Each IX Treatment System (Requirement 2)

Treated effluent analytical results from samples collected during 2020 Quarter 4 for activities completed under DP-1835 are summarized in Table 2.2-1. Note that sample CTUA-21-211143, taken on November 19, 2020, has an elevated nitrate-nitrite as nitrogen result of 715 mg/L. This value exceeds any previous nitrate-nitrite as nitrogen result, which typically falls between 3.0 and 4.0 mg/L. The field test result using the HACH instrument analysis provided a result of 2.875 mg/L for the sample taken on November 19, 2020. The laboratory performed analysis on the sample again and verified the 715 mg/L result. Upon further evaluation, it appears that nitric acid was inadvertently used to preserve the sample.

No other sample results for total chromium, nitrate, perchlorate, sulfate, fluoride, chloride, or total dissolved solids exceeded 90% of the numeric standards of 20.6.2.3103 New Mexico Administrative Code (NMAC) or 90% of the numeric screening levels established for tap water in Table A-1 of the 2019 NMED "Risk Assessment Guidance for Site Investigations and Remediation" for constituents not listed in 20.6.2.3103 NMAC. The 90% values for these seven analytes are as follows:

- Chromium 45 µg/L
- Nitrate 9 mg/L
- Perchlorate 12.4 µg/L
- Sulfate 540 mg/L
- Fluoride 1.44 mg/L
- Chloride 225 mg/L
- Total dissolved solids 900 mg/L

Table 2.2-1
Treated Effluent Analytical Results Summary Table – CY 2020 Quarter 4, DP-1835

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-21-208884	10/06/2020	Chloride	17.9	mg/L	225 mg/L	n/a ^b	Y ^c	F ^d	0.335
CTUA	CTUA-21-208885	10/13/2020	Chloride	20.5	mg/L	225 mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-208886	10/20/2020	Chloride	19.9	mg/L	225 mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-208887	11/05/2020	Chloride	90.6	mg/L	225 mg/L	n/a	Y	F	1.34
CTUA	CTUA-21-211143	11/19/2020	Chloride	19	mg/L	225 mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-211162	11/23/2020	Chloride	19.1	mg/L	225 mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-211178	12/01/2020	Chloride	19.5	mg/L	225 mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-211179	12/08/2020	Chloride	17.8	mg/L	225 mg/L	n/a	Y	F	0.134
CTUA	CTUA-21-217243	12/16/2020	Chloride	16.8	mg/L	225 mg/L	n/a	Y	F	1.34
CTUA	CTUA-21-211182	12/21/2020	Chloride	17.2	mg/L	225 mg/L	n/a	Y	F	0.134
CTUC	CTUC-21-209505	10/06/2020	Chloride	68	mg/L	225 mg/L	n/a	Y	F	1.34
CTUC	CTUC-21-209506	10/13/2020	Chloride	20.6	mg/L	225 mg/L	n/a	Y	F	0.335
CTUC	CTUC-21-209507	10/20/2020	Chloride	19.2	mg/L	225 mg/L	n/a	Y	F	0.335
CTUC	CTUC-21-209508	10/29/2020	Chloride	17.5	mg/L	225 mg/L	n/a	Y	F	0.134
CTUC	CTUC-21-209509	11/05/2020	Chloride	18.1	mg/L	225 mg/L	n/a	Y	F	0.335
CTUC	CTUC-21-209510	11/10/2020	Chloride	66.8	mg/L	225 mg/L	n/a	Y	F	0.67
CTUC	CTUC-21-209512	11/19/2020	Chloride	18.7	mg/L	225 mg/L	n/a	Y	F	0.335
CTUC	CTUC-21-209511	11/23/2020	Chloride	19.2	mg/L	225 mg/L	n/a	Y	F	0.335
CTUC	CTUC-21-209513	12/01/2020	Chloride	19.3	mg/L	225 mg/L	n/a	Y	F	0.335
CTUC	CTUC-21-209514	12/08/2020	Chloride	17.8	mg/L	225 mg/L	n/a	Y	F	0.134
CTUC	CTUC-21-217245	12/16/2020	Chloride	16.8	mg/L	225 mg/L	n/a	Y	F	0.335
CTUC	CTUC-21-210953	12/21/2020	Chloride	17.3	mg/L	225 mg/L	n/a	Y	F	0.134
CTUA	CTUA-21-208884	10/06/2020	Chromium	3	µg/L	45 µg/L	U ^e	N ^f	F	3
CTUA	CTUA-21-208885	10/13/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3

Table 2.2-1 (continued)

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-21-208886	10/20/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-208887	11/05/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-211143	11/19/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-211162	11/23/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-211178	12/01/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-211179	12/08/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-217243	12/16/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-211182	12/21/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-209505	10/06/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-209506	10/13/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-209507	10/20/2020	Chromium	10	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-209508	10/29/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-209509	11/05/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-209510	11/10/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-209512	11/19/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-209511	11/23/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-209513	12/01/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-209514	12/08/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-217245	12/16/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-210953	12/21/2020	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-208884	10/06/2020	Fluoride	0.304	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-208885	10/13/2020	Fluoride	0.289	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-208886	10/20/2020	Fluoride	0.234	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-208887	11/05/2020	Fluoride	0.033	mg/L	1.44 mg/L	U	N	F	0.033
CTUA	CTUA-21-211143	11/19/2020	Fluoride	0.269	mg/L	1.44 mg/L	n/a	Y	F	0.033

Table 2.2-1 (continued)

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-21-211162	11/23/2020	Fluoride	0.273	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-211178	12/01/2020	Fluoride	0.358	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-211179	12/08/2020	Fluoride	0.299	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-217243	12/16/2020	Fluoride	0.382	mg/L	1.44 mg/L	J- ^g	Y	F	0.033
CTUA	CTUA-21-211182	12/21/2020	Fluoride	0.301	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-209505	10/06/2020	Fluoride	0.319	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-209506	10/13/2020	Fluoride	0.29	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-209507	10/20/2020	Fluoride	0.234	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-209508	10/29/2020	Fluoride	0.369	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-209509	11/05/2020	Fluoride	0.404	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-209510	11/10/2020	Fluoride	0.285	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-209512	11/19/2020	Fluoride	0.293	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-209511	11/23/2020	Fluoride	0.278	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-209513	12/01/2020	Fluoride	0.451	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-209514	12/08/2020	Fluoride	0.295	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-217245	12/16/2020	Fluoride	0.385	mg/L	1.44 mg/L	J-	Y	F	0.033
CTUC	CTUC-21-210953	12/21/2020	Fluoride	0.297	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-208884	10/06/2020	Nitrate-Nitrite as Nitrogen	3.68	mg/L	9 mg/L	n/a	Y	F	0.17
CTUA	CTUA-21-208885	10/13/2020	Nitrate-Nitrite as Nitrogen	3.56	mg/L	9 mg/L	n/a	Y	F	0.17
CTUA	CTUA-21-208886	10/20/2020	Nitrate-Nitrite as Nitrogen	3.43	mg/L	9 mg/L	n/a	Y	F	0.17
CTUA	CTUA-21-208887	11/05/2020	Nitrate-Nitrite as Nitrogen	0.0215	mg/L	9 mg/L	J ^h	Y	F	0.017
CTUA	CTUA-21-211143	11/19/2020	Nitrate-Nitrite as Nitrogen	715	mg/L	9 mg/L	n/a	Y	F	0.17
CTUA	CTUA-21-211162	11/23/2020	Nitrate-Nitrite as Nitrogen	3.57	mg/L	9 mg/L	n/a	Y	F	0.085
CTUA	CTUA-21-211178	12/01/2020	Nitrate-Nitrite as Nitrogen	3.08	mg/L	9 mg/L	n/a	Y	F	0.085
CTUA	CTUA-21-211179	12/08/2020	Nitrate-Nitrite as Nitrogen	3.06	mg/L	9 mg/L	n/a	Y	F	0.17

Table 2.2-1 (continued)

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-21-217243	12/16/2020	Nitrate-Nitrite as Nitrogen	2.73	mg/L	9 mg/L	J-	Y	UF ⁱ	0.033
CTUA	CTUA-21-211182	12/21/2020	Nitrate-Nitrite as Nitrogen	3.11	mg/L	9 mg/L	n/a	Y	F	0.085
CTUC	CTUC-21-209505	10/06/2020	Nitrate-Nitrite as Nitrogen	0.0435	mg/L	9 mg/L	J	Y	F	0.017
CTUC	CTUC-21-209506	10/13/2020	Nitrate-Nitrite as Nitrogen	3.58	mg/L	9 mg/L	n/a	Y	F	0.17
CTUC	CTUC-21-209507	10/20/2020	Nitrate-Nitrite as Nitrogen	3.38	mg/L	9 mg/L	n/a	Y	F	0.17
CTUC	CTUC-21-209508	10/29/2020	Nitrate-Nitrite as Nitrogen	3.19	mg/L	9 mg/L	n/a	Y	F	0.17
CTUC	CTUC-21-209509	11/05/2020	Nitrate-Nitrite as Nitrogen	2.73	mg/L	9 mg/L	n/a	Y	F	0.17
CTUC	CTUC-21-209510	11/10/2020	Nitrate-Nitrite as Nitrogen	0.729	mg/L	9 mg/L	n/a	Y	F	0.017
CTUC	CTUC-21-209512	11/19/2020	Nitrate-Nitrite as Nitrogen	4.0	mg/L	9 mg/L	n/a	Y	F	0.085
CTUC	CTUC-21-209511	11/23/2020	Nitrate-Nitrite as Nitrogen	3.62	mg/L	9 mg/L	n/a	Y	F	0.085
CTUC	CTUC-21-209513	12/01/2020	Nitrate-Nitrite as Nitrogen	3.04	mg/L	9 mg/L	n/a	Y	F	0.085
CTUC	CTUC-21-209514	12/08/2020	Nitrate-Nitrite as Nitrogen	2.92	mg/L	9 mg/L	n/a	Y	F	0.17
CTUC	CTUC-21-217245	12/16/2020	Nitrate-Nitrite as Nitrogen	2.73	mg/L	9 mg/L	J-	Y	UF	0.033
CTUC	CTUC-21-210953	12/21/2020	Nitrate-Nitrite as Nitrogen	3.28	mg/L	9 mg/L	n/a	Y	F	0.085
CTUA	CTUA-21-208884	10/06/2020	Perchlorate	0.385	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUA	CTUA-21-208885	10/13/2020	Perchlorate	0.56	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUA	CTUA-21-208886	10/20/2020	Perchlorate	0.522	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUA	CTUA-21-208887	11/05/2020	Perchlorate	0.05	µg/L	12.4 µg/L	J	Y	F	0.05
CTUA	CTUA-21-211143	11/19/2020	Perchlorate	0.118	µg/L	12.4 µg/L	J	Y	F	0.05
CTUA	CTUA-21-211162	11/23/2020	Perchlorate	0.122	µg/L	12.4 µg/L	J	Y	F	0.05
CTUA	CTUA-21-211178	12/01/2020	Perchlorate	0.109	µg/L	12.4 µg/L	J	Y	F	0.05
CTUA	CTUA-21-211179	12/08/2020	Perchlorate	0.098	µg/L	12.4 µg/L	J	Y	F	0.05
CTUA	CTUA-21-217243	12/16/2020	Perchlorate	0.116	µg/L	12.4 µg/L	J	Y	F	0.05
CTUA	CTUA-21-211182	12/21/2020	Perchlorate	0.172	µg/L	12.4 µg/L	J	Y	F	0.05
CTUC	CTUC-21-209505	10/06/2020	Perchlorate	0.317	µg/L	12.4 µg/L	n/a	Y	F	0.05

Table 2.2-1 (continued)

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUC	CTUC-21-209506	10/13/2020	Perchlorate	1.97	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-209507	10/20/2020	Perchlorate	2.6	µg/L	12.4 µg/L	n/a	Y	F	0.1
CTUC	CTUC-21-209508	10/29/2020	Perchlorate	0.286	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-209509	11/05/2020	Perchlorate	1.48	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-209510	11/10/2020	Perchlorate	0.146	µg/L	12.4 µg/L	J	Y	F	0.05
CTUC	CTUC-21-209512	11/19/2020	Perchlorate	0.265	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-209511	11/23/2020	Perchlorate	0.445	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-209513	12/01/2020	Perchlorate	0.582	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-209514	12/08/2020	Perchlorate	0.573	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-217245	12/16/2020	Perchlorate	0.556	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-210953	12/21/2020	Perchlorate	0.527	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUA	CTUA-21-208884	10/06/2020	Sulfate	19.4	mg/L	540 mg/L	n/a	Y	F	0.133
CTUA	CTUA-21-208885	10/13/2020	Sulfate	30.5	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-208886	10/20/2020	Sulfate	29.1	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-208887	11/05/2020	Sulfate	0.133	mg/L	540 mg/L	U	N	F	0.133
CTUA	CTUA-21-211143	11/19/2020	Sulfate	25	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-211162	11/23/2020	Sulfate	28.4	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-211178	12/01/2020	Sulfate	30	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-211179	12/08/2020	Sulfate	23.5	mg/L	540 mg/L	n/a	Y	F	0.266
CTUA	CTUA-21-217243	12/16/2020	Sulfate	23.9	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-211182	12/21/2020	Sulfate	23.6	mg/L	540 mg/L	n/a	Y	F	0.266
CTUC	CTUC-21-209505	10/06/2020	Sulfate	0.133	mg/L	540 mg/L	U	N	F	0.133
CTUC	CTUC-21-209506	10/13/2020	Sulfate	29.7	mg/L	540 mg/L	n/a	Y	F	0.665
CTUC	CTUC-21-209507	10/20/2020	Sulfate	28.3	mg/L	540 mg/L	n/a	Y	F	0.665
CTUC	CTUC-21-209508	10/29/2020	Sulfate	22.2	mg/L	540 mg/L	n/a	Y	F	0.266

Table 2.2-1 (continued)

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUC	CTUC-21-209509	11/05/2020	Sulfate	27.7	mg/L	540 mg/L	n/a	Y	F	0.665
CTUC	CTUC-21-209510	11/10/2020	Sulfate	7.01	mg/L	540 mg/L	n/a	Y	F	0.133
CTUC	CTUC-21-209512	11/19/2020	Sulfate	14.4	mg/L	540 mg/L	n/a	Y	F	0.133
CTUC	CTUC-21-209511	11/23/2020	Sulfate	28.2	mg/L	540 mg/L	n/a	Y	F	0.665
CTUC	CTUC-21-209513	12/01/2020	Sulfate	30.1	mg/L	540 mg/L	n/a	Y	F	0.665
CTUC	CTUC-21-209514	12/08/2020	Sulfate	24.3	mg/L	540 mg/L	n/a	Y	F	0.266
CTUC	CTUC-21-217245	12/16/2020	Sulfate	23.7	mg/L	540 mg/L	n/a	Y	F	0.665
CTUC	CTUC-21-210953	12/21/2020	Sulfate	23.6	mg/L	540 mg/L	n/a	Y	F	0.266
CTUA	CTUA-21-208884	10/06/2020	Total Dissolved Solids	224	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-208885	10/13/2020	Total Dissolved Solids	237	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-208886	10/20/2020	Total Dissolved Solids	250	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-208887	11/05/2020	Total Dissolved Solids	271	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-211143	11/19/2020	Total Dissolved Solids	257	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-211162	11/23/2020	Total Dissolved Solids	181	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-211178	12/01/2020	Total Dissolved Solids	246	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-211179	12/08/2020	Total Dissolved Solids	221	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-217243	12/16/2020	Total Dissolved Solids	211	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-211182	12/21/2020	Total Dissolved Solids	199	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-209505	10/06/2020	Total Dissolved Solids	247	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-209506	10/13/2020	Total Dissolved Solids	233	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-209507	10/20/2020	Total Dissolved Solids	260	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-209508	10/29/2020	Total Dissolved Solids	224	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-209509	11/05/2020	Total Dissolved Solids	227	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-209510	11/10/2020	Total Dissolved Solids	239	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-209512	11/19/2020	Total Dissolved Solids	259	mg/L	900 mg/L	n/a	Y	F	3.4

Table 2.2-1 (continued)

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUC	CTUC-21-209511	11/23/2020	Total Dissolved Solids	184	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-209513	12/01/2020	Total Dissolved Solids	243	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-209514	12/08/2020	Total Dissolved Solids	236	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-217245	12/16/2020	Total Dissolved Solids	221	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-210953	12/21/2020	Total Dissolved Solids	176	mg/L	900 mg/L	n/a	Y	F	3.4

^a In accordance with condition 13 of DP-1835, analysis of the treated effluent from each IX unit is required only once every month for the CY 2020 Q4 reporting period.

^b n/a = Not applicable: no qualifiers applied.

^c Y = Detected.

^d F = Filtered.

^e U = Analyte is classified as not detected.

^f N = Not detected.

^g J- = Analyte is considered estimated and is biased low.

^h J = Analyte is classified as estimated.

ⁱ UF = Unfiltered.

The pilot-scale molasses and sodium dithionite amendment studies continued during 2020 Quarter 4. NMED determined that no permit was required for the deployment of these amendments, and these studies began with NMED conditional approvals during 2017 Quarter 4 (NMED 2017a, NMED 2017b). In accordance with the NMED conditional approvals, iron, manganese, and arsenic sampling in the treated water from extraction wells was completed, and the results were submitted in the quarterly monitoring reports under DP-1835. These results for 2020 Quarter 4 are provided in Table 2.2-2. No results for iron, manganese, or arsenic exceeded 90% of the numeric standards of 20.6.2.3103 NMAC. The 90% values for iron, manganese, and arsenic are 900 µg/L, 180 µg/L, and 9 µg/L, respectively.

DP-1835 Permit Condition No. 13 requires treated effluent to be analyzed annually for all water contaminants listed in 20.6.2.3103 NMAC and all toxic pollutants defined in 20.6.2.7.T(2) NMAC. The annual sample for 2020 was obtained during Quarter 4 and the results are provided in Table 2.2-3.

2.3 Quarterly Depth to Groundwater and Groundwater Quality Sampling Results (Requirement 3)

Depth to groundwater is expressed as the elevation of the groundwater above sea level. Figure 2.3-1 is the groundwater elevation map, and Table 2.3-1 provides the quarterly groundwater elevation measurements. An explanation of how the groundwater elevation map was generated is provided below. Quarterly groundwater analytical results from samples collected during 2020 Quarter 4 for the monitoring wells listed in Condition No. 14 are summarized in Table 2.3-2.

The regional aquifer beneath Los Alamos National Laboratory (LANL or the Laboratory) is a complex hydrogeological system. The shape of the regional water table beneath the Pajarito Plateau is predominantly controlled by the areas of recharge to the west (i.e., the flanks of the Sierra de los Valles and the Pajarito fault zone) and discharge to the east (i.e., the Rio Grande and the White Rock Canyon Springs). At a more local scale, such as the chromium plume area, the structure of the regional water table and groundwater flow is also expected to be influenced by

- local infiltration zones and recharge areas (e.g., beneath canyons),
- heterogeneity and anisotropy in the aquifer properties, and
- extraction and injection locations (municipal water-supply wells and chromium interim measure (IM) extraction/injection wells).

Long-term water-level data, contaminant transport observations (travel times and direction of migration), and calibrated model results are all lines of evidence that suggest that the water table was relatively flat in the area of the chromium plume before the implementation of CrEX extraction and CrIN injection wells. Steeper gradients are found to the west (far outside the boundary depicted in Figure 2.3-1) because of the mountain-front recharge and to the east toward the Rio Grande. The low ambient gradient in the chromium plume area could be related to the relatively high permeability of the Puye Formation and Miocene pumiceous sediments, anisotropy of the regional aquifer, localized recharge along the canyons above the regional aquifer, faults, or other lineaments that affect regional-scale hydraulic conductivity, and nearby water-supply pumping. Although it is difficult to infer absolute groundwater flow directions from the relatively flat contours in the chromium plume area, groundwater elevation data and contaminant transport observations indicate that groundwater flows generally toward the east-southeast.

Table 2.2-2

**Treated Effluent Analytical Results Summary Table Related to Molasses and
Sodium Dithionite Pilot Studies under NMED Conditional Approval – CY 2020 Quarter 4, DP-1835**

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-21-208884	10/06/2020	Arsenic	5.66	µg/L	9 µg/L	n/a ^b	Y ^c	F ^d	2
CTUA	CTUA-21-208885	10/13/2020	Arsenic	3.11	µg/L	9 µg/L	J ^e	Y	F	2
CTUA	CTUA-21-208886	10/20/2020	Arsenic	3.64	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-208887	11/05/2020	Arsenic	2.99	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-211143	11/19/2020	Arsenic	2.63	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-211162	11/23/2020	Arsenic	3.25	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-211178	12/01/2020	Arsenic	3.08	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-211179	12/08/2020	Arsenic	2.3	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-217243	12/16/2020	Arsenic	2.87	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-211182	12/21/2020	Arsenic	2.71	µg/L	9 µg/L	J	Y	F	2
CTUC	CTUC-21-209505	10/06/2020	Arsenic	3.8	µg/L	9 µg/L	J	Y	F	2
CTUC	CTUC-21-209506	10/13/2020	Arsenic	3.62	µg/L	9 µg/L	J	Y	F	2
CTUC	CTUC-21-209507	10/20/2020	Arsenic	3.41	µg/L	9 µg/L	J	Y	F	2
CTUC	CTUC-21-209508	10/29/2020	Arsenic	2.96	µg/L	9 µg/L	J	Y	F	2
CTUC	CTUC-21-209509	11/05/2020	Arsenic	4.84	µg/L	9 µg/L	J	Y	F	2
CTUC	CTUC-21-209510	11/10/2020	Arsenic	2	µg/L	9 µg/L	U ^f	N ^g	F	2
CTUC	CTUC-21-209512	11/19/2020	Arsenic	2	µg/L	9 µg/L	U	N	F	2
CTUC	CTUC-21-209511	11/23/2020	Arsenic	3.14	µg/L	9 µg/L	J	Y	F	2
CTUC	CTUC-21-209513	12/01/2020	Arsenic	3.38	µg/L	9 µg/L	J	Y	F	2
CTUC	CTUC-21-209514	12/08/2020	Arsenic	2.34	µg/L	9 µg/L	J	Y	F	2
CTUC	CTUC-21-217245	12/16/2020	Arsenic	3.02	µg/L	9 µg/L	J	Y	F	2
CTUC	CTUC-21-210953	12/21/2020	Arsenic	2.66	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-208884	10/06/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-208885	10/13/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-208886	10/20/2020	Iron	30	µg/L	900 µg/L	U	N	F	30

Table 2.2-2 (continued)

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-21-208887	11/05/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-211143	11/19/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-211162	11/23/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-211178	12/01/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-211179	12/08/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-217243	12/16/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-211182	12/21/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-209505	10/06/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-209506	10/13/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-209507	10/20/2020	Iron	100	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-209508	10/29/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-209509	11/05/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-209510	11/10/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-209512	11/19/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-209511	11/23/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-209513	12/01/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-209514	12/08/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-217245	12/16/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-210953	12/21/2020	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-208884	10/06/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-208885	10/13/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-208886	10/20/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-208887	11/05/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-211143	11/19/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-211162	11/23/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-211178	12/01/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2

Table 2.2-2 (continued)

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	90% of Standard or Screening Level	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-21-211179	12/08/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-217243	12/16/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-211182	12/21/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUC	CTUC-21-209505	10/06/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUC	CTUC-21-209506	10/13/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUC	CTUC-21-209507	10/20/2020	Manganese	10	µg/L	180 µg/L	U	N	F	2
CTUC	CTUC-21-209508	10/29/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUC	CTUC-21-209509	11/05/2020	Manganese	26.9	µg/L	180 µg/L	n/a	Y	F	2
CTUC	CTUC-21-209510	11/10/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUC	CTUC-21-209512	11/19/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUC	CTUC-21-209511	11/23/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUC	CTUC-21-209513	12/01/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUC	CTUC-21-209514	12/08/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUC	CTUC-21-217245	12/16/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUC	CTUC-21-210953	12/21/2020	Manganese	2	µg/L	180 µg/L	U	N	F	2

^a In accordance with condition 13 of DP-1835, analysis of the treated effluent from each IX unit is required only once every month for the CY 2020 Q4 reporting period.

^b n/a = Not applicable: no qualifiers applied.

^c Y = Detected.

^d F = Filtered.

^e J = Analyte is classified as estimated.

^f U = Analyte is classified as not detected.

^g N = Not detected.

Table 2.2-3

Treated Effluent Analytical Results Summary Table Annual Sample – 2020 Quarter 4, DP-1835

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-21-217243	12/16/2020	Antimony	1	µg/L	U ^b	N ^c	F ^d	1
CTUA	CTUA-21-217243	12/16/2020	Arsenic	2.87	µg/L	J ^e	Y ^f	F	2
CTUA	CTUA-21-217243	12/16/2020	Barium	41.2	µg/L	n/a ^g	Y	F	1
CTUA	CTUA-21-217243	12/16/2020	Beryllium	1	µg/L	U	N	Y	1
CTUA	CTUA-21-217243	12/16/2020	Cadmium	0.3	µg/L	U	N	Y	0.3
CTUA	CTUA-21-217243	12/16/2020	Chromium	3	µg/L	U	N	Y	3
CTUA	CTUA-21-217244	12/16/2020	Cyanide (total)	0.00167	mg/L	U	N	UF ^h	0.00167
CTUA	CTUA-21-217243	12/16/2020	Fluoride	0.382	mg/L	J- ⁱ	Y	F	0.033
CTUA	CTUA-21-217243	12/16/2020	Lead	0.5	µg/L	U	N	F	0.5
CTUA	CTUA-21-217243	12/16/2020	Mercury	0.067	µg/L	U	N	F	0.067
CTUA	CTUA-21-217244	12/16/2020	Nitrite	0.067	mg/L	J-	Y	UF	0.066
CTUA	CTUA-21-217244	12/16/2020	Nitrate	2.73	mg/L	J-	Y	UF	0.033
CTUA	CTUA-21-217243	12/16/2020	Selenium	2	µg/L	U	N	F	2
CTUA	CTUA-21-217243	12/16/2020	Silver	0.3	µg/L	U	N	F	0.3
CTUA	CTUA-21-217243	12/16/2020	Thallium	0.6	µg/L	U	N	F	0.6
CTUA	CTUA-21-217243	12/16/2020	Uranium	0.067	µg/L	U	N	F	0.067
CTUA	CTUA-21-217244	12/16/2020	Radium-226	0.487	pCi/L	n/a	Y	UF	n/a
CTUA	CTUA-21-217244	12/16/2020	Radium-228	0.0457	pCi/L	U	N	UF	n/a
CTUA	CTUA-21-217244	12/16/2020	Benzene	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Aroclor-1260	0.0406	µg/L	U	N	UF	0.0406
CTUA	CTUA-21-217244	12/16/2020	Aroclor-1254	0.0406	µg/L	U	N	UF	0.0406
CTUA	CTUA-21-217244	12/16/2020	Aroclor-1221	0.0406	µg/L	U	N	UF	0.0406
CTUA	CTUA-21-217244	12/16/2020	Aroclor-1232	0.0406	µg/L	U	N	UF	0.0406
CTUA	CTUA-21-217244	12/16/2020	Aroclor-1248	0.0406	µg/L	U	N	UF	0.0406

Table 2.2-3 (continued)

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-21-217244	12/16/2020	Aroclor-1016	0.0406	µg/L	U	N	UF	0.0406
CTUA	CTUA-21-217244	12/16/2020	Aroclor-1242	0.0406	µg/L	U	N	UF	0.0406
CTUA	CTUA-21-217244	12/16/2020	Aroclors (sum of all Aroclors)	0.0406	µg/L	U	N	UF	0.0406
CTUA	CTUA-21-217244	12/16/2020	Toluene	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Carbon tetrachloride	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Dichloroethane[1,2-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Dichloroethene[1,1-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Tetrachloroethene	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Trichloroethene	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Ethylbenzene	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Xylene[1,3-]+xylene[1,4-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Methylene chloride	1	µg/L	U	N	UF	1
CTUA	CTUA-21-217244	12/16/2020	Chloroform	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Dichloroethane[1,1-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Dibromoethane[1,2-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Trichloroethane[1,1,1-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Trichloroethane[1,1,2-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Tetrachloroethane[1,1,2,2-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Vinyl chloride	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Naphthalene	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Benzo(a)pyrene	0.036	µg/L	U	N	UF	.036
CTUA	CTUA-21-217244	12/16/2020	Dichloroethene[cis-1,2-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Dichloroethene[trans-1,2-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Dichloropropane[1,2-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Styrene	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Dichlorobenzene[1,2-]	0.3	µg/L	U	N	UF	0.3

Table 2.2-3 (continued)

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-21-217244	12/16/2020	Dichlorobenzene[1,4-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Trichlorobenzene[1,2,4-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Pentachlorophenol	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Atrazine	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217243	12/16/2020	Chloride	16.8	mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-217243	12/16/2020	Copper	3	µg/L	U	N	F	3
CTUA	CTUA-21-217243	12/16/2020	Iron	30	µg/L	U	N	F	30
CTUA	CTUA-21-217243	12/16/2020	Manganese	2	µg/L	U	N	F	2
CTUA	CTUA-21-217244	12/16/2020	Phenol	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217243	12/16/2020	Sulfate	23.9	mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-217243	12/16/2020	Total dissolved solids	211	mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-217243	12/16/2020	Zinc	19.8	µg/L	J+ ^j	Y	F	3.3
CTUA	CTUA-21-217243	12/16/2020	pH	7.98	SU	n/a	Y	F	0.01
CTUA	CTUA-21-217244	12/16/2020	Methyl tert-butyl ether	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217243	12/16/2020	Aluminum	68.0	mg/L	U	N	F	68
CTUA	CTUA-21-217243	12/16/2020	Boron	18.0	µg/L	J	Y	F	15
CTUA	CTUA-21-217243	12/16/2020	Cobalt	1	µg/L	U	N	F	1
CTUA	CTUA-21-217243	12/16/2020	Molybdenum	0.856	µg/L	U	N	F	0.2
CTUA	CTUA-21-217243	12/16/2020	Nickel	3.61	µg/L	n/a	Y	F	0.6
CTUA	CTUA-21-217244	12/16/2020	Acrolein	1.5	µg/L	U	N	UF	1.5
CTUA	CTUA-21-217244	12/16/2020	Acrylonitrile	1.5	µg/L	U	N	UF	1.5
CTUA	CTUA-21-217244	12/16/2020	Chlorobenzene	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Tetrachlorobenzene[1,2,4,5]	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Pentachlorobenzene	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Hexachlorobenzene	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Dichlorophenol[2,4-]	3.72	µg/L	U	N	UF	3.72

Table 2.2-3 (continued)

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-21-217244	12/16/2020	Trichlorophenol[2,4,5-]	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Trichlorophenol[2,4,6-]	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Bis(2-chloroethyl)ether	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Oxybis(1-chloropropane)[2,2'-]	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Dichloropropene[cis-1,3-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Dichloropropene[trans-1,3-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Dichloropropene[1,1-]	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Dioxane[1,4-]	3.72	µg/L	U	N	UF	3.33
CTUA	CTUA-21-217244	12/16/2020	Hexachloroethane	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Bromodichloromethane	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Bromomethane	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Chloromethane	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Dichlorodifluoromethane	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Bromoform	0.3	µg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Trichlorofluoromethane	0.3	mg/L	U	N	UF	0.3
CTUA	CTUA-21-217244	12/16/2020	Hexachlorobutadiene	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Isophorone	4.34	µg/L	U	N	UF	4.34
CTUA	CTUA-21-217244	12/16/2020	Nitrobenzene	0.0982	µg/L	U	N	UF	0.0982
CTUA	CTUA-21-217244	12/16/2020	Dinitrotoluene[2,4-]	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Dinitrotoluene[2,6-]	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	HMX ^a	0.0982	µg/L	U	N	UF	0.0982
CTUA	CTUA-21-217244	12/16/2020	RDX ^b	0.0982	µg/L	U	N	UF	0.0982
CTUA	CTUA-21-217244	12/16/2020	Trinitrotoluene[2,4,6-]	0.0982	µg/L	U	N	UF	0.0982
CTUA	CTUA-21-217244	12/16/2020	Dinitro-2-methylphenol[4,6-]	3.72	µg/L	U	N	F	3.72
CTUA	CTUA-21-217244	12/16/2020	Dinitrophenol[2,4-]	6.21	µg/L	U	N	UF	6.21
CTUA	CTUA-21-217244	12/16/2020	Nitrosodiethylamine[N-]	3.72	µg/L	U	N	UF	3.72

Table 2.2-3 (continued)

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-21-217244	12/16/2020	Nitrosodimethylamine[N-]	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Nitroso-di-n-butylamine[N-]	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Nitrosopyrrolidine[N-]	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217243	12/16/2020	Perchlorate	0.116	µg/L	J	Y	F	0.05
CTUA	CTUA-21-217244	12/16/2020	Aldrin	0.00665	µg/L	U	N	UF	0.00665
CTUA	CTUA-21-217244	12/16/2020	Chlordane[alpha-]	0.00665	µg/L	U	N	UF	0.00665
CTUA	CTUA-21-217244	12/16/2020	Chlordane[gamma-]	0.00665	µg/L	U	N	UF	0.00665
CTUA	CTUA-21-217244	12/16/2020	DDT[4,4'-] ^c	0.01	µg/L	U	N	UF	0.01
CTUA	CTUA-21-217244	12/16/2020	Dieldrin	0.01	µg/L	U	N	UF	0.01
CTUA	CTUA-21-217244	12/16/2020	Total endosulfan (endosulfan I and II)	0.01	µg/L	U	N	UF	0.01
CTUA	CTUA-21-217244	12/16/2020	Endrin	0.01	µg/L	U	N	UF	0.01
CTUA	CTUA-21-217244	12/16/2020	Heptachlor	0.00665	µg/L	U	N	UF	0.00665
CTUA	CTUA-21-217244	12/16/2020	BHC ^d [alpha-]	0.00665	µg/L	U	N	UF	0.00665
CTUA	CTUA-21-217244	12/16/2020	BHC[beta-]	0.00665	µg/L	U	N	UF	0.00665
CTUA	CTUA-21-217244	12/16/2020	BHC[delta-]	0.00665	µg/L	U	N	UF	0.00665
CTUA	CTUA-21-217244	12/16/2020	Hexachlorocyclopentadiene	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Toxaphene (technical grade)	0.15	µg/L	U	N	UF	0.15
CTUA	CTUA-21-217244	12/16/2020	Di-n-butylphthalate	0.372	µg/L	U	N	UF	0.372
CTUA	CTUA-21-217244	12/16/2020	Bis(2-ethylhexyl)phthalate	0.372	µg/L	U	N	UF	0.372
CTUA	CTUA-21-217244	12/16/2020	Diethylphthalate	0.372	µg/L	U	N	UF	0.372
CTUA	CTUA-21-217244	12/16/2020	Dimethyl phthalate	0.372	µg/L	U	N	UF	0.372
CTUA	CTUA-21-217244	12/16/2020	Benzidine	4.84	µg/L	U	N	UF	4.84
CTUA	CTUA-21-217244	12/16/2020	Dichlorobenzidine[3,3'-]	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Anthracene	0.372	µg/L	U	N	UF	0.372
CTUA	CTUA-21-217244	12/16/2020	Benzo(b)fluoranthene	0.372	µg/L	U	N	UF	0.372
CTUA	CTUA-21-217244	12/16/2020	Benzo(k)fluoranthene	0.372	µg/L	U	N	UF	0.372

Table 2.2-3 (continued)

Location ID	Sample ID	Sample Date ^a	Parameter Name	Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CTUA	CTUA-21-217244	12/16/2020	Fluoranthene	0.372	µg/L	U	N	UF	0.372
CTUA	CTUA-21-217244	12/16/2020	Fluorene	0.372	µg/L	U	N	UF	0.372
CTUA	CTUA-21-217244	12/16/2020	Methylnaphthalene[1-]	0.372	µg/L	U	N	UF	0.372
CTUA	CTUA-21-217244	12/16/2020	Methylnaphthalene[2-]	0.372	µg/L	U	N	UF	0.372
CTUA	CTUA-21-217244	12/16/2020	Phenanthrene	0.372	µg/L	U	N	UF	0.372
CTUA	CTUA-21-217244	12/16/2020	Pyrene	0.372	µg/L	U	N	UF	0.372
CTUA	CTUA-21-217244	12/16/2020	Bis(chloromethyl)ether	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Diphenylhydrazine	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	N-nitrosodiphenylamine	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Perfluorohexanesulfonic acid	0.598	ng/L	U	N	UF	0.598
CTUA	CTUA-21-217244	12/16/2020	Perfluorooctane sulfonate	0.724	ng/L	U	N	UF	0.724
CTUA	CTUA-21-217244	12/16/2020	Perfluorooctanoic acid	0.724	ng/L	U	N	UF	0.724
CTUA	CTUA-21-217244	12/16/2020	Total polycyclic aromatic hydrocarbons	0.372	µg/L	U	N	UF	0.372
CTUA	CTUA-21-217244	12/16/2020	Prometon	3.72	µg/L	U	N	UF	3.72
CTUA	CTUA-21-217244	12/16/2020	Sulfolane	3.72	µg/L	U	N	UF	3.72

^a In accordance with condition 13 of DP-1835, analysis of the treated effluent from each IX unit is required only once every month for the CY 2020 Q4 reporting period.

^b U = Analyte is classified as not detected.

^c N = Not detected.

^d F = Filtered.

^e J = Analyte is classified as estimated.

^f Y = Detected.

^g n/a = Not applicable: no qualifiers applied.

^h UF = Unfiltered.

ⁱ J- = Analyte is considered estimated and is biased low.

^j J+ = Analyte is considered estimated and is biased high.

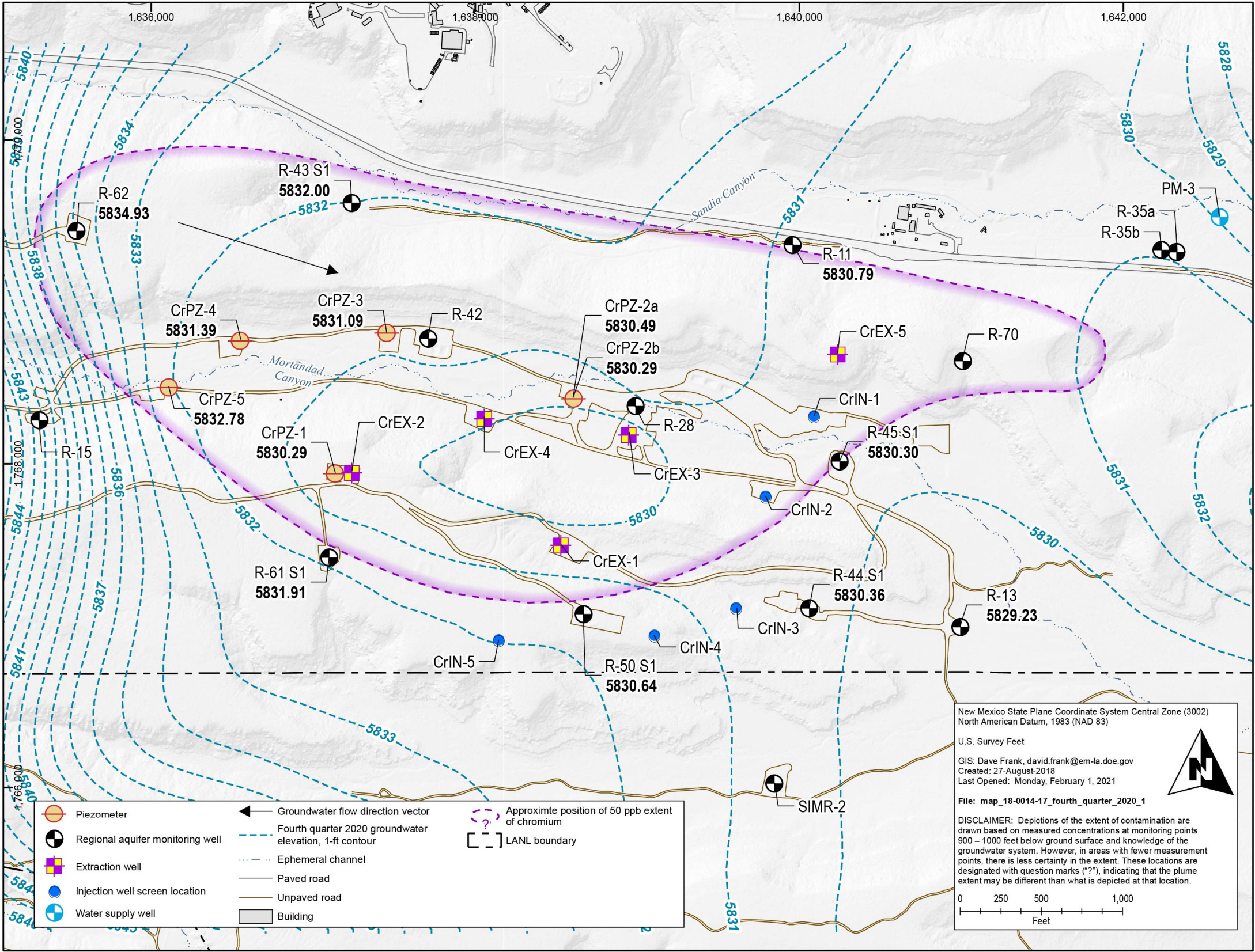


Figure 2.3-1 Groundwater elevation contour map – CY 2020 Quarter 4, DP-1835

Table 2.3-1
Groundwater Elevations Summary for
Groundwater Monitoring Wells – CY 2020 Quarter 4, DP-1835

Monitoring Well	Groundwater Elevation ^a (ft)
CrPZ-1 (CrCH-1)	5830.29
CrPZ-2a (CrCH-2a)	5830.49
CrPZ-2b (CrCH-2b)	5830.29
CrPZ-3 (CrCH-3)	5831.09
CrPZ-4 (CrCH-4)	5831.39
CrPZ-5 (CrCH-5)	5832.78
R-11	5830.79
R-13	5829.23
R-43 S1 ^b	5832.00
R-43 S2 ^c	5831.29
R-44 S1	5830.36
R-44 S2	5829.96
R-45 S1	5830.30
R-45 S2	5829.93
R-50 S1	5830.64
R-50 S2	5830.57
R-61 S1	5831.91
R-61 S2	5831.83
R-62	5834.93
SIMR-2 ^d	5817.32

^a Groundwater elevations provided are based on average November 2020 values from transducers.

^b S1 = Screen 1.

^c S2 = Screen 2.

^d Third quarter average August 2020 SIMR-2 data are reported here in accordance with the DP-1835 2020 Quarter 3 report (N3B 2020). Data were unavailable at the time of that report's preparation and are included in this report in accordance with the memorandum of agreement between San Ildefonso Pueblo and DOE. Data from the current quarter are not available at this time and will be presented in the next quarterly report.

Table 2.3-2
Groundwater Monitoring Wells Analytical Results Summary Table – CY 2020 Quarter 4, DP-1835

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CASA-21-208125	R-11	10/06/2020	Chloride	3.71	mg/L	n/a ^a	Y ^b	F ^c	0.067
CASA-21-208125	R-11	10/06/2020	Perchlorate	0.754	µg/L	n/a	Y	F	0.050
CASA-21-208125	R-11	10/06/2020	Chromium	5.82	µg/L	J ^d	Y	F	3.00
CASA-21-208125	R-11	10/06/2020	Fluoride	0.558	mg/L	n/a	Y	F	0.033
CASA-21-208125	R-11	10/06/2020	Nitrate-nitrite as nitrogen	5.78	mg/L	n/a	Y	F	0.170
CASA-21-208125	R-11	10/06/2020	Sulfate	9.53	mg/L	n/a	Y	F	0.133
CASA-21-208125	R-11	10/06/2020	Total dissolved solids	194	mg/L	n/a	Y	F	3.40
CASA-21-210528	R-11	11/03/2020	Chloride	3.87	mg/L	n/a	Y	F	0.067
CASA-21-210528	R-11	11/03/2020	Perchlorate	0.726	µg/L	n/a	Y	F	0.050
CASA-21-210528	R-11	11/03/2020	Chromium	15.1	µg/L	n/a	Y	F	3.00
CASA-21-210528	R-11	11/03/2020	Fluoride	0.579	mg/L	n/a	Y	F	0.033
CASA-21-210528	R-11	11/03/2020	Nitrate-nitrite as nitrogen	5.45	mg/L	n/a	Y	F	0.425
CASA-21-210528	R-11	11/03/2020	Sulfate	9.43	mg/L	n/a	Y	F	0.133
CASA-21-210528	R-11	11/03/2020	Total dissolved solids	189	mg/L	J+ ^e	Y	F	3.40
CASA-21-211026	R-11	12/08/2020	Chloride	3.84	mg/L	n/a	Y	F	0.067
CASA-21-211025	R-11	12/08/2020	Perchlorate	0.820	µg/L	n/a	Y	F	0.050
CASA-21-211025	R-11	12/08/2020	Chromium	10.4	µg/L	n/a	Y	F	3.00
CASA-21-211025	R-11	12/08/2020	Fluoride	0.408	mg/L	n/a	Y	F	0.033
CASA-21-211025	R-11	12/08/2020	Nitrate-nitrite as nitrogen	5.4	mg/L	n/a	Y	F	0.425
CASA-21-211025	R-11	12/08/2020	Sulfate	9.29	mg/L	n/a	Y	F	0.133
CASA-21-211025	R-11	12/08/2020	Total dissolved solids	213	mg/L	J+	Y	F	3.40
CAMO-21-210530	R-13	11/13/2020	Chloride	2.79	mg/L	n/a	Y	F	0.067
CAMO-21-210530	R-13	11/13/2020	Perchlorate	0.404	µg/L	n/a	Y	F	0.05
CAMO-21-210530	R-13	11/13/2020	Chromium	4.85	µg/L	J	Y	F	3.00

Table 2.3-2 (continued)

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CAMO-21-210530	R-13	11/13/2020	Fluoride	0.277	mg/L	n/a	Y	F	0.033
CAMO-21-210530	R-13	11/13/2020	Nitrate-nitrite as nitrogen	0.70	mg/L	n/a	Y	F	0.085
CAMO-21-210530	R-13	11/13/2020	Sulfate	3.38	mg/L	n/a	Y	F	0.133
CAMO-21-210530	R-13	11/13/2020	Total dissolved solids	144	mg/L	n/a	Y	F	3.40
CASA-21-210549	R-43 S1 ^f	11/19/2020	Chloride	7.98	mg/L	J+	Y	F	0.067
CASA-21-210549	R-43 S1	11/19/2020	Perchlorate	0.753	µg/L	n/a	Y	F	0.050
CASA-21-210549	R-43 S1	11/19/2020	Chromium	202	µg/L	n/a	Y	F	3.00
CASA-21-210549	R-43 S1	11/19/2020	Fluoride	0.322	mg/L	J+	Y	F	0.033
CASA-21-210549	R-43 S1	11/19/2020	Nitrate-nitrite as nitrogen	5.31	mg/L	n/a	Y	F	0.170
CASA-21-210549	R-43 S1	11/19/2020	Sulfate	16.7	mg/L	n/a	Y	F	0.133
CASA-21-210549	R-43 S1	11/19/2020	Total dissolved solids	183	mg/L	J+	Y	F	3.40
CASA-21-210552	R-43 S2 ^g	11/03/2020	Chloride	7.12	mg/L	n/a	Y	F	0.067
CASA-21-210552	R-43 S2	11/03/2020	Perchlorate	0.941	µg/L	n/a	Y	F	0.050
CASA-21-210552	R-43 S2	11/03/2020	Chromium	49.1	µg/L	n/a	Y	F	3.00
CASA-21-210552	R-43 S2	11/03/2020	Fluoride	0.445	mg/L	n/a	Y	F	0.033
CASA-21-210552	R-43 S2	11/03/2020	Nitrate-nitrite as nitrogen	3.92	mg/L	n/a	Y	F	0.170
CASA-21-210552	R-43 S2	11/03/2020	Sulfate	10.5	mg/L	n/a	Y	F	0.133
CASA-21-210552	R-43 S2	11/03/2020	Total dissolved solids	171	mg/L	J+	Y	F	3.40
CAMO-21-208155	R-44 S1	10/08/2020	Chloride	18.8	mg/L	n/a	Y	F	0.335
CAMO-21-208155	R-44 S1	10/08/2020	Perchlorate	0.305	µg/L	n/a	Y	F	0.050
CAMO-21-208155	R-44 S1	10/08/2020	Chromium	4.57	µg/L	U ^h	N	F	3.00
CAMO-21-208155	R-44 S1	10/08/2020	Fluoride	0.033	mg/L	U	N	F	0.033
CAMO-21-208155	R-44 S1	10/08/2020	Nitrate-nitrite as nitrogen	2.53	mg/L	n/a	Y	F	0.170
CAMO-21-208155	R-44 S1	10/08/2020	Sulfate	18.9	mg/L	n/a	Y	F	0.133
CAMO-21-208155	R-44 S1	10/08/2020	Total dissolved solids	219	mg/L	J+	Y	F	3.40
CAMO-21-210554	R-44 S1	11/17/2020	Chloride	18.8	mg/L	n/a	Y	F	0.335

Table 2.3-2 (continued)

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CAMO-21-210554	R-44 S1	11/17/2020	Perchlorate	0.322	µg/L	n/a	Y	F	0.050
CAMO-21-210554	R-44 S1	11/17/2020	Chromium	4	µg/L	J	Y	F	3.00
CAMO-21-210554	R-44 S1	11/17/2020	Fluoride	0.202	mg/L	n/a	Y	F	0.033
CAMO-21-210554	R-44 S1	11/17/2020	Nitrate-nitrite as nitrogen	2.23	mg/L	n/a	Y	F	0.170
CAMO-21-210554	R-44 S1	11/17/2020	Sulfate	19.0	mg/L	n/a	Y	F	0.133
CAMO-21-210554	R-44 S1	11/17/2020	Total dissolved solids	231	mg/L	n/a	Y	F	3.40
CAMO-21-210995	R-44 S1	12/14/2020	Chloride	18.4	mg/L	n/a	Y	F	0.335
CAMO-21-210995	R-44 S1	12/14/2020	Perchlorate	0.327	µg/L	n/a	Y	F	0.050
CAMO-21-210995	R-44 S1	12/14/2020	Chromium	4.09	µg/L	J	Y	F	3.00
CAMO-21-210995	R-44 S1	12/14/2020	Fluoride	0.275	mg/L	n/a	Y	F	0.033
CAMO-21-210995	R-44 S1	12/14/2020	Nitrate-nitrite as nitrogen	2.55	mg/L	n/a	Y	F	0.085
CAMO-21-210995	R-44 S1	12/14/2020	Sulfate	19	mg/L	n/a	Y	F	0.133
CAMO-21-210995	R-44 S1	12/14/2020	Total dissolved solids	186	mg/L	n/a	Y	F	3.40
CAMO-21-208162	R-44 S2	10/08/2020	Chloride	2.29	mg/L	n/a	Y	F	0.067
CAMO-21-208162	R-44 S2	10/08/2020	Perchlorate	0.335	µg/L	n/a	Y	F	0.050
CAMO-21-208162	R-44 S2	10/08/2020	Chromium	6.55	µg/L	U	N	F	3.00
CAMO-21-208162	R-44 S2	10/08/2020	Fluoride	0.564	mg/L	n/a	Y	F	0.033
CAMO-21-208162	R-44 S2	10/08/2020	Nitrate-nitrite as nitrogen	0.716	mg/L	n/a	Y	F	0.017
CAMO-21-208162	R-44 S2	10/08/2020	Sulfate	2.45	mg/L	n/a	Y	F	0.133
CAMO-21-208162	R-44 S2	10/08/2020	Total dissolved solids	139	mg/L	J+	Y	F	3.40
CAMO-21-210557	R-44 S2	11/17/2020	Chloride	2.18	mg/L	n/a	Y	F	0.067
CAMO-21-210557	R-44 S2	11/17/2020	Perchlorate	0.343	µg/L	n/a	Y	F	0.050
CAMO-21-210557	R-44 S2	11/17/2020	Chromium	5.45	µg/L	J	Y	F	3.00
CAMO-21-210557	R-44 S2	11/17/2020	Fluoride	0.369	mg/L	n/a	Y	F	0.033
CAMO-21-210557	R-44 S2	11/17/2020	Nitrate-nitrite as nitrogen	0.632	mg/L	n/a	Y	F	0.017
CAMO-21-210557	R-44 S2	11/17/2020	Sulfate	2.41	mg/L	n/a	Y	F	0.133

Table 2.3-2 (continued)

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CAMO-21-210557	R-44 S2	11/17/2020	Total dissolved solids	174	mg/L	n/a	Y	F	3.40
CAMO-21-210998	R-44 S2	12/14/2020	Chloride	2.47	mg/L	n/a	Y	F	0.067
CAMO-21-210998	R-44 S2	12/14/2020	Perchlorate	0.331	µg/L	n/a	Y	F	0.050
CAMO-21-210998	R-44 S2	12/14/2020	Chromium	6.2	µg/L	J	Y	F	3.00
CAMO-21-210998	R-44 S2	12/14/2020	Fluoride	0.497	mg/L	n/a	Y	F	0.033
CAMO-21-210998	R-44 S2	12/14/2020	Nitrate-nitrite as nitrogen	0.695	mg/L	n/a	Y	F	0.085
CAMO-21-210998	R-44 S2	12/14/2020	Sulfate	2.42	mg/L	n/a	Y	F	0.133
CAMO-21-210998	R-44 S2	12/14/2020	Total dissolved solids	140	mg/L	n/a	Y	F	3.40
CAMO-21-208167	R-45 S1	10/09/2020	Chloride	12.5	mg/L	n/a	Y	F	0.134
CAMO-21-208167	R-45 S1	10/09/2020	Perchlorate	0.387	µg/L	U	Y	F	0.050
CAMO-21-208167	R-45 S1	10/09/2020	Chromium	16.4	µg/L	n/a	Y	F	3.00
CAMO-21-208167	R-45 S1	10/09/2020	Fluoride	0.417	mg/L	n/a	Y	F	0.033
CAMO-21-208167	R-45 S1	10/09/2020	Nitrate-nitrite as nitrogen	2.52	mg/L	n/a	Y	F	0.085
CAMO-21-208167	R-45 S1	10/09/2020	Sulfate	12.7	mg/L	n/a	Y	F	0.133
CAMO-21-208167	R-45 S1	10/09/2020	Total dissolved solids	183	mg/L	J+	Y	F	3.40
CAMO-21-210560	R-45 S1	11/19/2020	Chloride	13.8	mg/L	J+	Y	F	0.134
CAMO-21-210560	R-45 S1	11/19/2020	Perchlorate	0.423	µg/L	n/a	Y	F	0.050
CAMO-21-210560	R-45 S1	11/19/2020	Chromium	15	µg/L	n/a	Y	F	3.00
CAMO-21-210560	R-45 S1	11/19/2020	Fluoride	0.260	mg/L	n/a	Y	F	0.033
CAMO-21-210560	R-45 S1	11/19/2020	Nitrate-nitrite as nitrogen	2.87	mg/L	n/a	Y	F	0.085
CAMO-21-210560	R-45 S1	11/19/2020	Sulfate	14.8	mg/L	n/a	Y	F	0.133
CAMO-21-210560	R-45 S1	11/19/2020	Total dissolved solids	213	mg/L	J+	Y	F	3.40
CAMO-21-211001	R-45 S1	12/16/2020	Chloride	16.7	mg/L	J+	Y	F	0.134
CAMO-21-211001	R-45 S1	12/16/2020	Perchlorate	0.457	µg/L	n/a	Y	F	0.050
CAMO-21-211001	R-45 S1	12/16/2020	Chromium	13.2	µg/L	n/a	Y	F	3.00
CAMO-21-211001	R-45 S1	12/16/2020	Fluoride	0.366	mg/L	J ⁱ	Y	F	0.033

Table 2.3-2 (continued)

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CAMO-21-211001	R-45 S1	12/16/2020	Nitrate-nitrite as nitrogen	3.06	mg/L	n/a	Y	F	0.170
CAMO-21-211001	R-45 S1	12/16/2020	Sulfate	16.2	mg/L	n/a	Y	F	0.133
CAMO-21-211001	R-45 S1	12/16/2020	Total dissolved solids	207	mg/L	n/a	Y	F	3.40
CAMO-21-208192	R-45 S2	10/09/2020	Chloride	5.91	mg/L	n/a	Y	F	0.067
CAMO-21-208192	R-45 S2	10/09/2020	Perchlorate	0.463	µg/L	n/a	Y	F	0.050
CAMO-21-208192	R-45 S2	10/09/2020	Chromium	47.6	µg/L	n/a	Y	F	3.00
CAMO-21-208192	R-45 S2	10/09/2020	Fluoride	0.507	mg/L	n/a	Y	F	0.033
CAMO-21-208192	R-45 S2	10/09/2020	Nitrate-nitrite as nitrogen	1.15	mg/L	n/a	Y	F	0.017
CAMO-21-208192	R-45 S2	10/09/2020	Sulfate	7.11	mg/L	n/a	Y	F	0.133
CAMO-21-208192	R-45 S2	10/09/2020	Total dissolved solids	180	mg/L	J+	Y	F	3.40
CAMO-21-210563	R-45 S2	11/19/2020	Chloride	6.06	mg/L	J+	Y	F	0.067
CAMO-21-210563	R-45 S2	11/19/2020	Perchlorate	0.461	µg/L	n/a	Y	F	0.050
CAMO-21-210563	R-45 S2	11/19/2020	Chromium	49.9	µg/L	n/a	Y	F	3.00
CAMO-21-210563	R-45 S2	11/19/2020	Fluoride	0.339	mg/L	n/a	Y	F	0.033
CAMO-21-210563	R-45 S2	11/19/2020	Nitrate-nitrite as nitrogen	1.32	mg/L	n/a	Y	F	0.085
CAMO-21-210563	R-45 S2	11/19/2020	Sulfate	7.59	mg/L	n/a	Y	F	0.133
CAMO-21-210563	R-45 S2	11/19/2020	Total dissolved solids	174	mg/L	J+	Y	F	3.40
CAMO-21-211005	R-45 S2	12/16/2020	Chloride	6.18	mg/L	n/a	Y	F	0.067
CAMO-21-211005	R-45 S2	12/16/2020	Perchlorate	0.448	µg/L	n/a	Y	F	0.050
CAMO-21-211005	R-45 S2	12/16/2020	Chromium	55	µg/L	n/a	Y	F	3.00
CAMO-21-211005	R-45 S2	12/16/2020	Fluoride	0.612	mg/L	J-	Y	F	0.033
CAMO-21-211005	R-45 S2	12/16/2020	Nitrate-nitrite as nitrogen	1.27	mg/L	n/a	Y	F	0.017
CAMO-21-211005	R-45 S2	12/16/2020	Sulfate	7.57	mg/L	n/a	Y	F	0.133
CAMO-21-211005	R-45 S2	12/16/2020	Total dissolved solids	160	mg/L	n/a	Y	F	3.40
CAMO-21-208195	R-50 S1	10/13/2020	Chloride	18.4	mg/L	n/a	Y	F	0.335
CAMO-21-208195	R-50 S1	10/13/2020	Perchlorate	0.358	µg/L	n/a	Y	F	0.050

Table 2.3-2 (continued)

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CAMO-21-208195	R-50 S1	10/13/2020	Chromium	30.4	µg/L	n/a	Y	F	3.00
CAMO-21-208195	R-50 S1	10/13/2020	Fluoride	0.374	mg/L	n/a	Y	F	0.033
CAMO-21-208195	R-50 S1	10/13/2020	Nitrate-nitrite as nitrogen	2.55	mg/L	n/a	Y	F	0.170
CAMO-21-208195	R-50 S1	10/13/2020	Sulfate	18.4	mg/L	n/a	Y	F	0.665
CAMO-21-208195	R-50 S1	10/13/2020	Total dissolved solids	189	mg/L	n/a	Y	F	3.40
CAMO-21-210566	R-50 S1	11/13/2020	Chloride	18.3	mg/L	n/a	Y	F	0.335
CAMO-21-210566	R-50 S1	11/13/2020	Perchlorate	0.363	µg/L	n/a	Y	F	0.050
CAMO-21-210566	R-50 S1	11/13/2020	Chromium	29.7	µg/L	n/a	Y	F	3.00
CAMO-21-210566	R-50 S1	11/13/2020	Fluoride	0.164	mg/L	n/a	Y	F	0.033
CAMO-21-210566	R-50 S1	11/13/2020	Nitrate-nitrite as nitrogen	2.28	mg/L	n/a	Y	F	0.170
CAMO-21-210566	R-50 S1	11/13/2020	Sulfate	19.1	mg/L	n/a	Y	F	0.133
CAMO-21-210566	R-50 S1	11/13/2020	Total dissolved solids	194	mg/L	n/a	Y	F	3.40
CAMO-21-211008	R-50 S1	12/17/2020	Chloride	19.7	mg/L	J-	Y	F	0.134
CAMO-21-211008	R-50 S1	12/17/2020	Perchlorate	0.375	µg/L	n/a	Y	F	0.050
CAMO-21-211008	R-50 S1	12/17/2020	Chromium	23.2	µg/L	n/a	Y	F	3.00
CAMO-21-211008	R-50 S1	12/17/2020	Fluoride	0.250	mg/L	n/a	Y	F	0.033
CAMO-21-211008	R-50 S1	12/17/2020	Nitrate-nitrite as nitrogen	2.8	mg/L	n/a	Y	F	0.170
CAMO-21-211008	R-50 S1	12/17/2020	Sulfate	19.1	mg/L	n/a	Y	F	0.133
CAMO-21-211008	R-50 S1	12/17/2020	Total dissolved solids	177	mg/L	n/a	Y	F	3.40
CAMO-21-208198	R-50 S2	10/13/2020	Chloride	2.17	mg/L	n/a	Y	F	0.067
CAMO-21-208198	R-50 S2	10/13/2020	Perchlorate	0.318	µg/L	n/a	Y	F	0.050
CAMO-21-208198	R-50 S2	10/13/2020	Chromium	4.02	µg/L	J	Y	F	3.00
CAMO-21-208198	R-50 S2	10/13/2020	Fluoride	0.519	mg/L	n/a	Y	F	0.033
CAMO-21-208198	R-50 S2	10/13/2020	Nitrate-nitrite as nitrogen	0.547	mg/L	n/a	Y	F	0.017
CAMO-21-208198	R-50 S2	10/13/2020	Sulfate	2.43	mg/L	n/a	Y	F	0.133
CAMO-21-208198	R-50 S2	10/13/2020	Total dissolved solids	126	mg/L	n/a	Y	F	3.40

Table 2.3-2 (continued)

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CAMO-21-210569	R-50 S2	11/20/2020	Chloride	2.13	mg/L	n/a	Y	F	0.067
CAMO-21-210569	R-50 S2	11/20/2020	Perchlorate	0.337	µg/L	n/a	Y	F	0.050
CAMO-21-210569	R-50 S2	11/20/2020	Chromium	4.08	µg/L	J	Y	F	3.00
CAMO-21-210569	R-50 S2	11/20/2020	Fluoride	0.415	mg/L	n/a	Y	F	0.033
CAMO-21-210569	R-50 S2	11/20/2020	Nitrate-nitrite as nitrogen	0.577	mg/L	n/a	Y	F	0.017
CAMO-21-210569	R-50 S2	11/20/2020	Sulfate	2.45	mg/L	n/a	Y	F	0.133
CAMO-21-210569	R-50 S2	11/20/2020	Total dissolved solids	153	mg/L	n/a	Y	F	3.40
CAMO-21-211030	R-50 S2	12/17/2020	Chloride	2.08	mg/L	J-	Y	F	0.067
CAMO-21-211030	R-50 S2	12/17/2020	Perchlorate	0.325	µg/L	n/a	Y	F	0.050
CAMO-21-211030	R-50 S2	12/17/2020	Chromium	4.25	µg/L	J	Y	F	3.00
CAMO-21-211030	R-50 S2	12/17/2020	Fluoride	0.389	mg/L	n/a	Y	F	0.033
CAMO-21-211030	R-50 S2	12/17/2020	Nitrate-nitrite as nitrogen	0.548	mg/L	n/a	Y	F	0.017
CAMO-21-211030	R-50 S2	12/17/2020	Sulfate	2.39	mg/L	n/a	Y	F	0.133
CAMO-21-211030	R-50 S2	12/17/2020	Total dissolved solids	130	mg/L	n/a	Y	F	3.40
CAMO-21-210574	R-62	11/06/2020	Chloride	19	mg/L	n/a	Y	F	0.335
CAMO-21-210574	R-62	11/06/2020	Perchlorate	0.880	µg/L	n/a	Y	F	0.050
CAMO-21-210574	R-62	11/06/2020	Chromium	346	µg/L	n/a	Y	F	3.00
CAMO-21-210574	R-62	11/06/2020	Fluoride	0.236	mg/L	n/a	Y	F	0.033
CAMO-21-210574	R-62	11/06/2020	Nitrate-nitrite as nitrogen	2.14	mg/L	n/a	Y	F	0.170
CAMO-21-210574	R-62	11/06/2020	Sulfate	33.4	mg/L	n/a	Y	F	0.665
CAMO-21-210574	R-62	11/06/2020	Total dissolved solids	220	mg/L	n/a	Y	F	3.40
CAMO-20-205445	SIMR-2 ^j	07/22/2020	Chloride	2.51	mg/L	n/a	Y	F	0.067
CAMO-20-205445	SIMR-2	07/22/2020	Perchlorate	0.417	µg/L	J	Y	F	0.050
CAMO-20-205445	SIMR-2	07/22/2020	Chromium	4.98	µg/L	J	Y	F	3.00
CAMO-20-205445	SIMR-2	07/22/2020	Fluoride	0.426	mg/L	n/a	Y	F	0.033
CAMO-20-205445	SIMR-2	07/22/2020	Nitrate-nitrite as nitrogen	0.757	mg/L	n/a	Y	F	0.017

Table 2.3-2 (continued)

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CAMO-20-205445	SIMR-2	07/22/2020	Sulfate	2.84	mg/L	n/a	Y	F	0.133
CAMO-20-205445	SIMR-2	07/22/2020	Total dissolved solids	139	mg/L	n/a	Y	F	3.40
CAMO-20-198960	SIMR-2	08/13/2020	Chloride	2.31	mg/L	n/a	Y	F	0.067
CAMO-20-198960	SIMR-2	08/13/2020	Perchlorate	0.568	µg/L	n/a	Y	F	0.050
CAMO-20-198960	SIMR-2	08/13/2020	Chromium	4.73	µg/L	J	Y	F	3.00
CAMO-20-198960	SIMR-2	08/13/2020	Fluoride	0.313	mg/L	n/a	Y	F	0.033
CAMO-20-198960	SIMR-2	08/13/2020	Nitrate-nitrite as nitrogen	0.745	mg/L	n/a	Y	F	0.017
CAMO-20-198960	SIMR-2	08/13/2020	Sulfate	2.86	mg/L	n/a	Y	F	0.133
CAMO-20-198960	SIMR-2	08/13/2020	Total dissolved solids	137	mg/L	J	Y	F	3.40
CAMO-20-206028	SIMR-2	09/25/2020	Chloride	2.39	mg/L	n/a	Y	F	0.067
CAMO-20-206028	SIMR-2	09/25/2020	Perchlorate	0.401	µg/L	n/a	Y	F	0.050
CAMO-20-206028	SIMR-2	09/25/2020	Chromium	5.34	µg/L	J	Y	F	3.00
CAMO-20-206028	SIMR-2	09/25/2020	Fluoride	0.273	mg/L	n/a	Y	F	0.033
CAMO-20-206028	SIMR-2	09/25/2020	Nitrate-nitrite as nitrogen	0.710	mg/L	J-	Y	F	0.017
CAMO-20-206028	SIMR-2	09/25/2020	Sulfate	2.93	mg/L	n/a	Y	F	0.133
CAMO-20-206028	SIMR-2	09/25/2020	Total dissolved solids	134	mg/L	n/a	Y	F	3.40

^a n/a = Not applicable: no qualifiers applied.^b Y = Detected.^c F = Filtered.^d J = Analyte is classified as estimated.^e J+ = Analyte is classified as estimated and biased high.^f S1 = Screen 1.^g S2 = Screen 2.^h U = Analyte is classified as not detected.ⁱ J- = Analyte is classified as estimated and biased low.^j SIMR-2 data are reported here in accordance with the memorandum of agreement and protocol agreement between San Ildefonso Pueblo and DOE.

Water table elevations in the chromium plume area can vary temporally as a result of transient effects that include injection into and extraction from the chromium IM infrastructure wells and pumping of Los Alamos County's water-supply wells. This is discussed for the case of 2020 Quarter 4 below.

Effects on flow direction from water-supply pumping are small compared with the local effects of extraction and injection at chromium IM wells. Observations of transience in the water levels observed at the monitoring wells within the plume area do not appear to be substantially affected by the water-supply pumping at the nearby production wells (PM-2, PM-3, PM-4, PM-5, and O-4) (LANL 2009).

A long-term decline of approximately 0.5 to 1 ft/yr has been observed in the regional water levels throughout the aquifer beneath the Pajarito Plateau. The decline could be caused by long-term changes in the aquifer recharge and discharge conditions. Because of the long-term declines and pumping transience described above, the water-level data and the respective water table contour maps are variable over time; each map therefore represents a specific period of time. Figure 2.3-1 depicts the average water-level data and water table contours for November 2020. General flow direction is indicated by the vector.

To generate this contour map, average water levels are calculated using values from the middle month of the three-month reporting period. Monitoring wells within and surrounding the plume are used, including wells not presented on the map (i.e., R-21, R-31, R-32, R-37, and R-40). Water levels in wells surrounding the plume provide useful control points for contouring along the edges of the area of interest for this report. Only well screens near the water table are used for contouring.

Regular pumping at wells CrEX-1, CrEX-2, CrEX-3, CrIN-4, and CrIN-5 began on May 23, 2018, and therefore may have started to have a minor influence upon water levels as early as 2018 Quarter 2. During 2018 Quarter 3, an influence was readily recognized as demonstrated by a cone of depression in the area of the extraction wells. In 2018 Quarter 4, the trend continued, with the cone of depression expanding slightly over the previous quarter. The cone of depression continued to expand in northerly and westerly (upstream) directions, possibly in response to pumping at CrEX-2; and in southerly and easterly (downstream) directions, likely because of pumping at CrEX-1. In addition, increased water levels were observed to the southwest of the cone of depression, possibly in response to injection at CrIN-4 and CrIN-5 (Figure 2.3-1). In 2019 Quarter 3, regular injection occurred at CrIN-3, CrIN-4, and CrIN-5, with regular extraction occurring at CrEX-1 and CrEX-2. The water table elevation appeared to respond strongly to extraction activities with a decrease in the center of the cone of depression near CrEX-2 and an extension of the cone further downstream from CrEX-1 as compared with the previous quarter. During 2019 Quarter 4, the cone of depression continued to expand, likely in response to regular pumping at CrEX-1 and CrEX-2.

The largest injection rates occurred at CrIN-4 and CrIN-5, and an increase in water level at the nearest monitoring well (R-50) was observed (Figure 2.3-1). CrEX-5 (which was converted from CrIN-6), CrIN-1, and CrIN-2 began sustained operation in November 2019, and effects on water levels were not yet detectable in 2019 Quarter 4. In 2020 Quarter 1, injection occurred regularly at CrIN-2, CrIN-4, and CrIN-5. A northward shift in the 5832-ft contour near CrIN-4 and CrIN-5 was evident, as was a westward shift in the 5831-ft contour around the cone of depression west of CrIN-2. The water table also appears to have responded to extraction at CrEX-1, CrEX-2, and CrEX-5. The cone of depression expanded toward CrEX-2, and the 5832-ft contour migrated toward CrEX-5. Consistent injection at CrIN-2, CrIN-4, and CrIN-5 and extraction at CrEX-1, CrEX-2, and CrEX-5 continued until late March 2020, when injection and extraction activities ceased because of the transition to essential mission critical activity (EMCA) status in response to the COVID-19 pandemic. In 2020 Quarter 2, changes in the water level elevations appeared to be influenced more by seasonal variations than by injection/extraction, with the cone of depression shifting slightly downgradient toward the east/southeast. In 2020 Quarter 3 reporting period,

water levels declined across the area of the chromium plume, with multiple wells indicating a decline of approximately 1 ft since the previous quarter, likely due in part to seasonal variations and regional drought conditions. Also, pumping recommenced in July 2020 after shutdown in March 2020 due to the EMCA status (DOE 2020). Extraction at CrEX-2 appeared to have a strong impact, with the cone of depression becoming deeper and translating toward CrEX-2. In the current report period of 2020 Quarter 4, the upstream (western) edge of the central depression appears less pronounced than in prior periods. The change in the upstream edge of the depression may be a continued effect of the EMCA shut-off and related in particular to the lack of extraction at CrEX-2 and CrEX-4. This interpretation is supported by the observed increase in water level at CrPZ-1, which is close to CrEX-2, and could be expected to exhibit decreased water levels if pumping at CrEX-2 was strongly impacting water levels, as noted in prior quarters.

Simple interpolation methods for water table data from a complex heterogeneous site could produce maps that do not represent physically realistic hydrological systems. This water table map is contoured by incorporating process knowledge of groundwater hydraulics (e.g., flownet conformity rules) as well as conceptual models of groundwater flow in the project area as described above. Key inputs to the conceptual model include knowledge of long-term operations of extraction and injection wells, water-level elevations in monitoring wells near extraction and injection points, and cross-hole tracer data between injection wells and monitoring wells.

Because of the spatial coverage of wells and piezometers available as control points, and because of the regional structure of significantly steeper gradients to the east and west of the chromium plume area, the surrounding control points (i.e., R-21, R-31, R-32, R-37, and R-40) are used to provide estimated water-level elevations in areas that do not have sufficient data to provide constraints. As additional analysis is performed using historical and developing data sets from existing wells and data from proposed wells, the use of these control points are being reanalyzed, adjusted, or discontinued based on additional supporting data and contouring methods.

2.4 Any Operations/Maintenance Activities Performed (Requirement 4)

Extraction, treatment, and injection operations continued during 2020 Quarter 4. CrEX-3 was operated only briefly in order to collect wellhead samples prior to rehabilitation of the well. CrEX-3 has not operated because of plugging of the treatment system influent filters after approximately 3–4 days of operation. CrEX-3 is scheduled to be rehabilitated during CY 2021 Quarter 1.

Operations and maintenance activities completed during 2020 Quarter 4 are listed in Table 2.4-1 for the extraction, treatment, and injection system.

Table 2.4-1
Operations and Maintenance Activity Summary Table – CY 2020 Quarter 4, DP-1835

Maintenance Date	Elements Impacted	Operation/Maintenance Description
10/1/20 through 10/5/20	CrEX-1, CrEX-2, CrEX-5, CTUA, CTUC, CrIN-1, CrIN-2, CrIN-3, CrIN-4, CrIN-5	Extraction, treatment, and injection of treated groundwater occurred per operational plan.

Table 2.4-1 (continued)

Maintenance Date	Elements Impacted	Operation/Maintenance Description
10/5/20	CTUC	IX vessel exchanges were completed as follows because of an increase in the amount of hexavalent chromium at the primary IX vessel effluent as determined via Hach instrument analysis: • Treatment train A – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. • Treatment train B – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. Both influent and both effluent filter bags replaced.
10/5/20 through 10/28/20	CrEX-1, CrEX-2, CrEX-4, CrEX-5, CTUA, CTUC, CrIN-1, CrIN-3, CrIN-4, CrIN-5	Extraction, treatment, and injection of treated groundwater occurred per operational plan.
10/28/20	Entire treatment system	System shut down for IX vessel failure in CTUA. System off for approximately 20 minutes. CTUA isolated and system restarted with reduced flow going through CTUC only.
10/28/20 through 11/4/20	CrEX-1, CrEX-2, CTUC, CrIN-4, CrIN-5	Extraction, treatment, and injection of treated groundwater occurred with reduced flow through CTUC only.
11/5/20 through 11/12/20	CrEX-1, CrEX-2, CrEX-4, CrEX-5, CTUA, CTUC, CrIN-1, CrIN-2, CrIN-3, CrIN-4, CrIN-5	Extraction, treatment, and injection of treated groundwater occurred per operational plan. CTUA brought back online.
11/5/20	CTUA	IX vessel exchanges were completed as follows because of an increase in the amount of hexavalent chromium at the primary IX vessel effluent as determined via Hach instrument analysis: • Treatment train A – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. • Treatment train B – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. • Treatment train C – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. Both influent and all three effluent filter bags replaced.
	CrEX-3	CrEX-3 briefly turned on to collect pre-rehabilitation wellhead samples.
11/9/20	CTUC	IX vessel exchanges were completed as follows because of an increase in the amount of hexavalent chromium at the primary IX vessel effluent as determined via Hach instrument analysis: • Treatment train A – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. • Treatment train B – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. Both influent and both effluent filter bags replaced.
11/13/20 through 11/15/20	Entire treatment system	Treatment system shut down due to unscheduled power outage in Mortandad Canyon.
11/16/20 through 11/25/20	CrEX-1, CrEX-2, CrEX-4, CrEX-5, CTUA, CTUC, CrIN-1, CrIN-2, CrIN-3, CrIN-4, CrIN-5	Extraction, treatment, and injection of treated groundwater occurred per operational plan.

Table 2.4-1 (continued)

Maintenance Date	Elements Impacted	Operation/Maintenance Description
11/26/20 through 11/29/20	CrEX-4, CrEX-5, CrIN-1	These wells turned off in order to slow system down over Thanksgiving holiday weekend.
11/30/20 through 12/5/20	CrEX-1, CrEX-2, CrEX-4, CrEX-5, CTUA, CTUC, CrIN-1, CrIN-2, CrIN-3, CrIN-4, CrIN-5	Extraction, treatment, and injection of treated groundwater occurred per operational plan.
12/6/20 through 12/31/20	CrEX-1, CrEX-2, CrEX-5, CTUA, CTUC, CrIN-3, CrIN-4, CrIN-5	Extraction, treatment, and injection of treated groundwater occurred per operational plan. CrIN-1 and CrIN-2 removed from service.
12/30/20	CTUC	IX vessel exchanges were completed as follows because of an increase in the amount of hexavalent chromium at the primary IX vessel effluent as determined via Hach instrument analysis: • Treatment train A – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. • Treatment train B – replaced primary IX vessel with the secondary IX vessel; new secondary IX vessel installed. Both influent and both effluent filter bags replaced.

2.5 Any Periodic Test of Mechanical Integrity Conducted (Requirement 5)

Periodic testing of mechanical integrity was not conducted or reported to NMED during 2020 Quarter 4. Mechanical integrity testing was performed and reported to NMED during the 2019 Quarter 2 reporting period. In accordance with Condition No. 3, mechanical integrity testing will occur at least once every five years unless a UIC well is reconfigured. Under this scenario, a mechanical integrity test before reinjection of treated effluent at a specific reconfigured well will be completed pursuant to Condition No. 3.

2.6 Any Replacement of Primary or Secondary IX Vessels or Associated Treatment System Infrastructure (Requirement 6)

New primary and secondary IX vessels were installed at various times for treatment unit CTUA (all three treatment trains) and at CTUC (both treatment trains) during the reporting period, as cited in section 2.4.

2.7 Any Well Workovers Conducted (Requirement 7)

No well workovers were conducted during 2020 Quarter 4.

2.8 Any Additional Operational Changes with the Potential to Markedly Affect the Discharge (Requirement 8)

During the reporting period, the pilot-scale molasses amendment and sodium dithionite amendment studies continued. In accordance with NMED's conditional approval of these studies, analytical results from iron, manganese, and arsenic testing of the treated water from the extraction wells during the study are being provided in the quarterly monitoring reports under DP-1835. These results for 2020 Quarter 4 are provided in Table 2.2-2.

No results for arsenic, iron, or manganese exceeded 90% of the numeric standards of 20.6.2.3103 NMAC or 90% of the numeric standards established for tap water in Table A-1 for constituents not listed in

20.6.2.3103 NMAC. The 90% values for arsenic, iron, and manganese are 9 µg/L, 900 µg/L, and 180 µg/L, respectively.

Other than the activities cited in section 2.4, no additional operational changes occurred during the reporting period.

2.9 Monthly Average, Maximum, and Minimum Values for Flow Rate and Volume of Treated Effluent Transferred to Each UIC Well (Requirement 9)

Table 2.9-1 provides the monthly average, maximum, and minimum values for flow rate and volume of treated effluent transferred to each well in 2020 Quarter 4.

Table 2.9-1
Flows and Volumes of Treated Effluent Injected – CY 2020 Quarter 4, DP-1835

Injection Well	Flow rate (gpm ^a)			Daily Volume (gal.)			Total Volume (gal.)
	Average ^b	Maximum	Minimum ^c	Average	Maximum	Minimum	
October 2020							
CrIN-1	72.3	78.3	47.0	104,051	112,690	67,643	2,913,433
CrIN-2	34.5	34.5	34.5	49,622	49,622	49,622	49,622
CrIN-3	48.1	62.1	20.6	69,231	89,483	29,671	1,938,466
CrIN-4	60.4	64.8	41.1	86,930	93,373	59,132	2,694,818
CrIN-5	59.4	61.0	56.9	85,512	87,848	81,950	2,650,886
November 2020							
CrIN-1	60.4	76.3	0.5	86,932	109,907	754	1,477,851
CrIN-2	8.2	21.9	0.4	11,777	31,531	573	58,884
CrIN-3	26.6	33.0	0.2	38,363	47,550	312	805,617
CrIN-4	54.1	64.1	31.3	77,924	92,271	45,094	2,103,952
CrIN-5	58.3	66.0	31.2	84,014	94,969	44,969	2,268,368
December 2020							
CrIN-1	42.2	51.5	26.4	60,736	74,142	37,945	182,209
CrIN-2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CrIN-3	30.0	36.3	28.0	43,253	52,316	40,290	1,340,829
CrIN-4	67.2	69.0	63.2	96,729	99,381	91,001	2,998,614
CrIN-5	68.3	70.0	64.3	98,418	100,799	92,639	3,050,970

^a gpm = Gallons per minute.

^b Average flow rate and daily volume represent arithmetic mean values of results provided during periods when treated groundwater was being injected.

^c Minimum values represent the minimum daily value recorded during days when pumping occurred.

2.10 Total Monthly Volume of Treated Effluent Transferred to Each UIC Well (Requirement 10)

Table 2.9-1 provides total monthly volumes of treated effluent transferred to each well. As previously identified, injection occurred at UIC wells CrIN-1, CrIN-2, CrIN-3, CrIN-4, and CrIN-5 during 2020 Quarter 4.

2.11 Monthly Average, Maximum, and Minimum Values of Injection Water Level (Pressure Head) Above Static Level for Each UIC Well (Requirement 11)

Table 2.11-1 provides the monthly average, maximum, and minimum values for injection water level above static level for each UIC well.

Table 2.11-1
Water-Level Values Above Static Level by UIC Well – CY 2020 Quarter 4, DP-1835

UIC Well	October 2020			November 2020			December 2020		
	Average ^a (ft)	Maximum (ft)	Minimum (ft)	Average (ft)	Maximum (ft)	Minimum (ft)	Average (ft)	Maximum (ft)	Minimum (ft)
CrIN-1	6.9	10.0	3.6	7.5	9.9	4.3	7.3	10.0	2.6
CrIN-2	6.6	9.4	0.0	5.4	14.4	0.1	n/a ^b	n/a	n/a
CrIN-3	84.3	106.2	6.7	38.0	44.5	1.7	46.0	70.0	39.9
CrIN-4	9.1	10.6	5.8	9.0	10.8	4.8	11.8	12.9	10.3
CrIN-5	14.8	15.9	13.0	15.8	17.9	11.4	19.2	20.5	17.0

^a Average values provided represent arithmetic mean values of maximum daily values during periods when treated groundwater was being injected.

^b n/a = Not applicable: treated groundwater not injected during the month at this location.

2.12 Daily Volume Injected at Each UIC Well (Requirement 12)

Daily volumes of groundwater injected (following treatment) during 2020 Quarter 4 are presented in Table 2.12-1.

Table 2.12-1
Daily Injection Summary Table – CY 2020 Quarter 4, DP-1835

Date	CrIN-1 (gal.)	CrIN-2 (gal.)	CrIN-3 (gal.)	CrIN-4 (gal.)	CrIN-5 (gal.)	Total (gal.)
10/1/2020	92,188	49,622	38,314	91,557	85,675	357,357
10/2/2020	92,254	0	82,087	90,761	85,925	351,026
10/3/2020	92,291	0	83,770	90,634	85,259	351,954
10/4/2020	92,228	0	85,058	90,689	83,769	351,745
10/5/2020	93,064	0	84,740	90,413	83,844	352,061
10/6/2020	99,268	0	87,652	89,627	85,306	361,853
10/7/2020	103,328	0	89,483	89,780	85,933	368,523
10/8/2020	104,231	0	89,204	89,797	85,821	369,052
10/9/2020	107,547	0	89,289	89,255	85,487	371,578
10/10/2020	108,005	0	80,435	89,256	85,425	363,121
10/11/2020	109,397	0	73,437	89,280	85,793	357,906
10/12/2020	109,376	0	73,460	89,304	85,967	358,108
10/13/2020	109,401	0	73,422	89,261	85,963	358,047
10/14/2020	110,778	0	73,447	89,287	85,653	359,165
10/15/2020	112,352	0	73,410	89,275	85,068	360,106

Table 2.12-1 (continued)

Date	CrIN-1 (gal.)	CrIN-2 (gal.)	CrIN-3 (gal.)	CrIN-4 (gal.)	CrIN-5 (gal.)	Total (gal.)
10/16/2020	112,277	0	73,441	89,252	85,016	359,986
10/17/2020	112,317	0	73,338	88,887	84,985	359,527
10/18/2020	112,259	0	73,130	88,902	85,138	359,429
10/19/2020	112,375	0	66,734	89,306	85,994	354,409
10/20/2020	112,533	0	63,384	89,678	86,403	351,998
10/21/2020	112,690	0	63,346	90,082	86,380	352,499
10/22/2020	108,915	0	56,232	91,342	86,880	343,370
10/23/2020	105,072	0	51,859	92,511	87,736	337,177
10/24/2020	105,056	0	51,810	92,585	87,504	336,956
10/25/2020	104,910	0	51,843	93,373	87,848	337,974
10/26/2020	101,829	0	53,184	92,183	87,666	334,862
10/27/2020	109,847	0	53,285	90,992	85,826	339,950
10/28/2020	67,643	0	29,671	78,782	85,063	261,159
10/29/2020	0	0	0	59,132	81,950	141,082
10/30/2020	0	0	0	60,038	83,008	143,046
10/31/2020	0	0	0	59,598	82,600	142,198
11/1/2020	0	0	0	59,123	82,196	141,319
11/2/2020	0	0	0	59,048	82,059	141,107
11/3/2020	0	0	0	59,048	82,091	141,140
11/4/2020	0	0	0	59,499	82,077	141,576
11/5/2020	60,423	0	20,049	70,067	82,914	233,453
11/6/2020	103,678	0	34,552	77,774	83,735	299,739
11/7/2020	103,691	0	34,558	77,757	83,566	299,573
11/8/2020	103,698	0	34,564	77,768	83,529	299,558
11/9/2020	103,612	11,385	35,074	77,616	84,669	312,355
11/10/2020	105,951	13,312	45,987	77,801	85,581	328,632
11/11/2020	106,656	0	46,065	77,718	86,404	316,844
11/12/2020	61,762	0	26,703	45,094	50,114	183,672
11/13/2020	0	0	0	0	0	0
11/14/2020	0	0	0	0	0	0
11/15/2020	0	0	0	0	0	0
11/16/2020	754	0	312	46,473	44,969	92,509
11/17/2020	0	0	0	85,703	84,532	170,235
11/18/2020	0	0	0	81,664	86,236	167,899
11/19/2020	50,742	0	25,725	83,493	87,014	246,974
11/20/2020	104,881	0	47,527	87,896	87,183	327,487
11/21/2020	107,996	0	47,502	89,003	87,830	332,331

Table 2.12-1 (continued)

Date	CrIN-1 (gal.)	CrIN-2 (gal.)	CrIN-3 (gal.)	CrIN-4 (gal.)	CrIN-5 (gal.)	Total (gal.)
11/22/2020	109,763	0	47,530	88,686	87,812	333,791
11/23/2020	108,679	2,084	47,486	88,846	88,250	335,345
11/24/2020	109,907	573	47,535	88,946	88,562	335,524
11/25/2020	61,795	0	47,487	87,514	87,884	284,680
11/26/2020	0	0	47,532	89,771	91,007	228,310
11/27/2020	0	0	47,516	92,271	94,899	234,685
11/28/2020	0	0	47,519	92,127	94,969	234,615
11/29/2020	0	0	47,550	92,159	94,778	234,488
11/30/2020	73,863	31,531	26,844	91,086	93,507	316,831
12/1/2020	74,142	0	52,316	91,001	93,418	310,877
12/2/2020	70,121	0	46,218	91,090	92,639	300,069
12/3/2020	37,945	0	46,860	91,637	93,482	269,924
12/4/2020	0	0	47,508	92,356	94,351	234,215
12/5/2020	0	0	47,496	93,328	95,004	235,828
12/6/2020	0	0	47,004	93,484	94,692	235,180
12/7/2020	0	0	46,416	93,563	94,807	234,785
12/8/2020	0	0	46,807	93,571	94,754	235,131
12/9/2020	0	0	46,596	93,571	94,766	234,934
12/10/2020	0	0	46,496	92,123	93,584	232,203
12/11/2020	0	0	46,071	97,903	100,368	244,342
12/12/2020	0	0	46,085	97,929	100,140	244,153
12/13/2020	0	0	45,900	97,909	100,080	243,889
12/14/2020	0	0	40,320	98,016	100,799	239,134
12/15/2020	0	0	40,331	98,810	100,791	239,932
12/16/2020	0	0	40,325	98,824	100,789	239,939
12/17/2020	0	0	40,314	99,135	100,580	240,030
12/18/2020	0	0	40,320	99,358	100,760	240,439
12/19/2020	0	0	40,313	99,374	100,782	240,469
12/20/2020	0	0	40,326	99,377	100,275	239,978
12/21/2020	0	0	40,342	99,381	100,475	240,198
12/22/2020	0	0	40,290	99,320	100,425	240,035
12/23/2020	0	0	40,331	99,351	100,741	240,423
12/24/2020	0	0	40,313	99,378	99,879	239,570
12/25/2020	0	0	40,328	99,349	100,382	240,059
12/26/2020	0	0	40,328	99,380	100,585	240,292
12/27/2020	0	0	40,298	99,337	100,441	240,076
12/28/2020	0	0	41,261	99,367	100,523	241,151
12/29/2020	0	0	41,762	99,365	100,687	241,813

Table 2.12-1 (continued)

Date	CrIN-1 (gal.)	CrIN-2 (gal.)	CrIN-3 (gal.)	CrIN-4 (gal.)	CrIN-5 (gal.)	Total (gal.)
12/30/2020	0	0	41,229	97,010	99,620	237,859
12/31/2020	0	0	40,323	95,020	100,350	235,693
						Total 24,534,519

2.13 Daily Volume Pumped from Each Extraction Well (Requirement 13)

Daily volumes of groundwater pumped from extraction wells during 2020 Quarter 4 are presented in Table 2.13-1.

Table 2.13-1
Daily Extraction Summary Table – CY 2020 Quarter 4, DP-1835

Date	CrEX-1 (gal.)	CrEX-2 (gal.)	CrEX-3 (gal.)	CrEX-4 (gal.)	CrEX-5 (gal.)	Total (gal.)
10/1/2020	120,960	95,061	0	0	135,351	351,373
10/2/2020	120,928	95,000	0	0	135,365	351,292
10/3/2020	121,009	95,759	0	0	130,190	346,958
10/4/2020	120,969	95,917	0	0	128,252	345,139
10/5/2020	119,845	95,906	0	0	120,611	336,361
10/6/2020	111,625	94,524	0	42,360	111,164	359,673
10/7/2020	99,717	93,553	0	85,496	91,261	370,027
10/8/2020	99,605	93,517	0	79,855	91,159	364,136
10/9/2020	100,332	93,608	0	72,958	91,945	358,842
10/10/2020	100,412	93,610	0	72,528	91,914	358,464
10/11/2020	100,279	93,595	0	72,185	91,971	358,030
10/12/2020	99,989	93,589	0	72,000	91,849	357,426
10/13/2020	97,577	94,361	0	72,963	89,187	354,088
10/14/2020	95,279	94,830	0	73,427	87,833	351,370
10/15/2020	93,591	95,006	0	73,432	87,831	349,860
10/16/2020	93,589	94,972	0	73,422	87,825	349,809
10/17/2020	93,613	94,984	0	73,413	87,846	349,855
10/18/2020	93,605	94,939	0	73,319	87,782	349,645
10/19/2020	98,267	94,059	0	72,374	87,048	351,748
10/20/2020	100,802	93,571	0	71,974	86,780	353,127
10/21/2020	100,758	93,609	0	72,008	86,713	353,088
10/22/2020	86,422	95,368	0	73,181	88,075	343,046
10/23/2020	76,316	96,477	0	73,469	89,083	335,345
10/24/2020	76,338	96,501	0	73,458	88,926	335,223
10/25/2020	75,318	94,396	0	65,117	87,394	322,225
10/26/2020	78,297	96,501	0	59,056	89,318	323,172

Table 2.13-1 (continued)

Date	CrEX-1 (gal.)	CrEX-2 (gal.)	CrEX-3 (gal.)	CrEX-4 (gal.)	CrEX-5 (gal.)	Total (gal.)
10/27/2020	78,785	96,141	0	58,993	89,263	323,181
10/28/2020	82,363	81,911	0	39,242	53,930	257,446
10/29/2020	83,500	64,789	0	0	0	148,289
10/30/2020	82,391	64,761	0	0	0	147,153
10/31/2020	82,083	63,904	0	0	0	145,987
11/1/2020	82,100	63,404	0	0	0	145,504
11/2/2020	82,059	63,372	0	0	0	145,431
11/3/2020	82,040	63,540	0	0	0	145,580
11/4/2020	81,228	63,484	0	0	0	144,713
11/5/2020	74,358	62,266	1,826	44,230	49,300	231,980
11/6/2020	73,336	64,755	0	74,891	83,533	296,515
11/7/2020	73,260	64,619	0	74,877	83,515	296,270
11/8/2020	72,780	64,486	0	74,692	83,491	295,449
11/9/2020	77,140	72,340	0	71,384	82,800	303,665
11/10/2020	80,818	79,105	0	80,885	77,742	318,550
11/11/2020	80,691	79,208	0	80,739	77,745	318,383
11/12/2020	46,685	45,793	0	46,690	44,977	184,145
11/13/2020	0	0	0	0	0	0
11/14/2020	0	0	0	0	0	0
11/15/2020	0	0	0	0	0	0
11/16/2020	49,311	43,285	0	1,093	1,063	94,752
11/17/2020	89,402	78,791	0	0	0	168,193
11/18/2020	89,427	78,879	0	0	0	168,306
11/19/2020	90,059	80,715	0	36,540	39,521	246,835
11/20/2020	88,948	83,365	0	79,208	80,695	332,216
11/21/2020	89,182	80,959	0	79,200	80,948	330,290
11/22/2020	90,285	79,021	0	79,188	81,305	329,800
11/23/2020	91,386	75,735	0	79,228	81,747	328,095
11/24/2020	92,127	73,432	0	79,201	82,056	326,817
11/25/2020	113,429	81,830	0	43,587	45,301	284,148
11/26/2020	139,670	92,115	0	0	0	231,785
11/27/2020	139,717	92,117	0	0	0	231,834
11/28/2020	139,677	92,151	0	0	0	231,828
11/29/2020	139,670	92,084	0	0	0	231,754
11/30/2020	114,711	84,161	0	56,760	57,428	313,061
12/1/2020	91,198	35,933	0	74,280	83,985	285,397
12/2/2020	94,884	35,378	0	88,670	97,523	316,455

Table 2.13-1 (continued)

Date	CrEX-1 (gal.)	CrEX-2 (gal.)	CrEX-3 (gal.)	CrEX-4 (gal.)	CrEX-5 (gal.)	Total (gal.)
12/3/2020	117,414	65,977	0	34,824	59,247	277,462
12/4/2020	117,087	80,563	0	487	37,757	235,895
12/5/2020	100,083	69,107	0	6,058	59,892	235,141
12/6/2020	100,817	69,134	0	0	60,422	230,374
12/7/2020	100,779	69,105	0	0	60,378	230,262
12/8/2020	101,267	69,865	0	0	62,647	233,779
12/9/2020	101,213	69,101	0	0	64,656	234,969
12/10/2020	97,050	67,005	0	441	72,590	237,086
12/11/2020	99,419	68,268	0	0	73,325	241,011
12/12/2020	99,370	68,900	0	0	73,344	241,613
12/13/2020	99,353	68,811	0	0	73,345	241,510
12/14/2020	99,360	68,898	0	0	73,386	241,644
12/15/2020	99,349	68,955	0	0	73,367	241,670
12/16/2020	99,378	68,940	0	0	73,355	241,673
12/17/2020	99,343	68,908	0	0	73,261	241,512
12/18/2020	99,360	68,997	0	0	73,299	241,657
12/19/2020	99,373	68,851	0	0	73,327	241,550
12/20/2020	99,344	68,765	0	0	73,287	241,396
12/21/2020	99,383	68,800	0	0	73,219	241,402
12/22/2020	97,563	68,955	0	0	71,901	238,419
12/23/2020	96,455	68,895	0	0	74,771	240,122
12/24/2020	96,214	68,726	0	0	76,477	241,417
12/25/2020	96,233	68,785	0	0	76,442	241,460
12/26/2020	96,278	68,830	0	0	76,396	241,504
12/27/2020	96,344	68,914	0	0	76,352	241,609
12/28/2020	96,317	68,959	0	0	75,641	240,917
12/29/2020	89,688	68,905	0	0	72,515	231,108
12/30/2020	84,428	68,566	0	0	80,873	233,867
12/31/2020	99,335	68,998	0	0	73,408	241,741
						Total 24,342,900

2.14 Facility Layout Map (Requirement 14)

Figure 2.14-1 is the facility layout map for 2020 Quarter 4, showing the location and number of each well.

2.15 Groundwater Elevation Contour Map (Requirement 15)

Figure 2.3-1 provides the groundwater elevation contour map and section 2.3 provides an explanation of how this map was generated.

3.0 REFERENCES

- DOE (U.S. Department of Energy) March 31, 2020. "U.S. Department of Energy Environmental Management Los Alamos Field Office Transition to Essential Mission Critical Activities Notification," U.S. Department of Energy letter (EMLA-2020-1393-02-001) to K. Pierard (NMED-HWB) from A. Duran (EM-LA), Los Alamos, New Mexico (DOE 2020).
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- NMED (New Mexico Environment Department) 2017b. "Response to Notice of Intent to Discharge; Discharge Permit Not Required for Los Alamos National Laboratory Pilot Scale Sodium Dithionite Amendment Study in Regional Aquifer Monitoring Well R-42, AI:856 PRD20170003" New Mexico Environment Department letter to J.C. Bretzke (LANL) and A.Q. Duran (EM-LA) from M. Hunter (NMED-GWQB), Santa Fe, New Mexico (July 18, 2017).

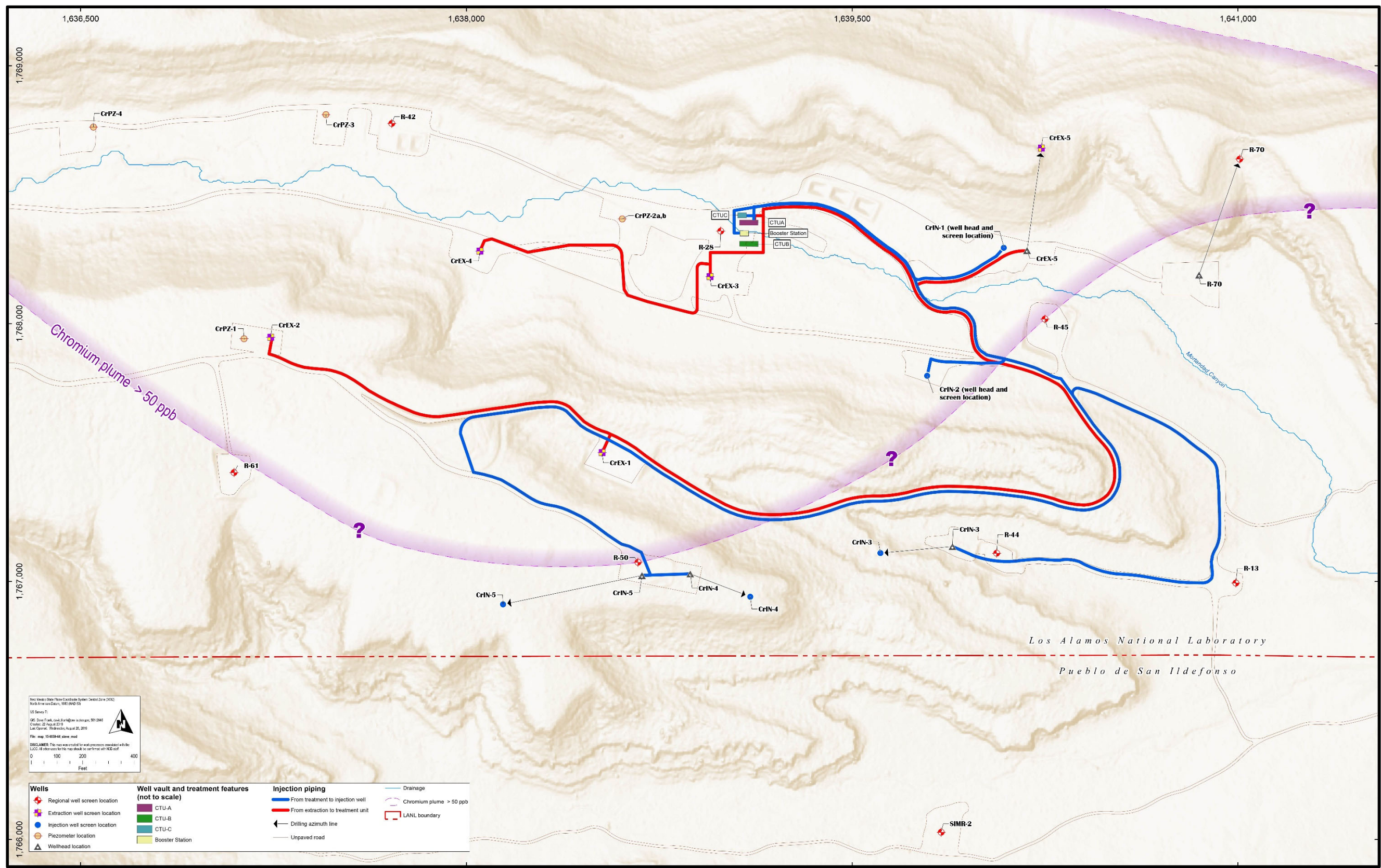


Figure 2.14-1 Facility layout map – CY 2020 Quarter 4, DP-1835

