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Date: June 1, 2021
Refer To: N3B-2021-0157

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 2021 Quarter 1, 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 June 1 for the January 1 through March 31 discharge period.

During the CY 2021 Quarter 1 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 five extraction wells: CrEX-1 through 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 2021 Quarter 1," 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
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N3B-Los Alamos

Sincerely,

ARTURO
DURAN

Arturo Q. Duran
Compliance and Permitting Manager
Environmental Management
Los Alamos Field Office

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Enclosure(s):

1. Two hard copies with electronic files – Quarterly Report for the Discharge of Treated Groundwater to the Regional Aquifer under Discharge Permit 1835, Calendar Year 2021 Quarter 1 (EM2021-0264)

cc (letter and enclosure[s] emailed):

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Pamela T. Maestas

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Sent: Wednesday, June 2, 2021 10:25 AM
To: Pamela T. Maestas
Cc: Hunter, Michelle, NMENV; Romero, Andrew C, NMENV; Longmire, Patrick, NMENV; cheryl.rodriguez@em.doe.gov; Christian T. Maupin
Subject: RE: Submittal to NMED on 6/1/2021 of DP-1835 Quarterly Rpt 1QCY21

Received – thank you Pamela.

Steve Pullen, Manager
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Cc: Pullen, Steve, NMENV <steve.pullen@state.nm.us>; Romero, Andrew C, NMENV <AndrewC.Romero@state.nm.us>; Longmire, Patrick, NMENV <Patrick.Longmire@state.nm.us>; Emily M. Day <Emily.Day@em-la.doe.gov>; Regulatory Documentation <RegDocs@EM-LA.DOE.GOV>; cheryl.rodriguez@em.doe.gov; Christian T. Maupin <Christian.Maupin@em-la.doe.gov>; Kenneth Ocker <kenneth.ocker@em.doe.gov>
Subject: [EXT] Submittal to NMED on 6/1/2021 of DP-1835 Quarterly Rpt 1QCY21

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 2021 Quarter 1, Class V Underground Injection Control Wells (N3B-2021-0157, letter and enclosure)

Please acknowledge receipt of this submittal by responding to this email. Hard copies of the report will be taken to your office on Friday.

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
regdocs@em-la.doe.gov



1200 Trinity Drive, Suite 150
Los Alamos, NM 87544

**Quarterly Report for the
Discharge of Treated
Groundwater to the
Regional Aquifer under
Discharge Permit 1835,
Calendar Year 2021 Quarter 1**

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 2021 Quarter 1 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 five extraction wells: CrEX-1 through 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 June 1 for the January 1 through March 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 2021 Quarter 1 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 through CrEX-5, was treated with treatment units CTUA and CTUC.

Table 2.1-1
Total Influent and Discharge Volumes
for IX Treatment Systems – CY 2021 Quarter 1, DP-1835

Treatment Unit	Influent Volume ^a (gal.)	Effluent Volume ^b (gal.)
CTUA	25,836,790	16,807,600
CTUC		9,023,176

Note: Individual flow meter accurate to ±5%.

^a Influent volume based on CrEX-1 through 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 2021 Quarter 1 for activities completed under DP-1835 are summarized in Table 2.2-1. No 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 2021 Quarter 1, 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-21-211183	1/5/2021	Chloride	16.9	mg/L	225 mg/L	n/a ^b	Y ^c	F ^d	0.335
CTUA	CTUA-21-211184	1/14/2021	Chloride	66	mg/L	225 mg/L	n/a	Y	F	1.68
CTUA	CTUA-21-211181	1/21/2021	Chloride	17.9	mg/L	225 mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-217761	1/26/2021	Chloride	17.1	mg/L	225 mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-217762	2/2/2021	Chloride	16.8	mg/L	225 mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-217763	2/11/2021	Chloride	23.2	mg/L	225 mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-217765	2/18/2021	Chloride	24.6	mg/L	225 mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-217764	2/25/2021	Chloride	59.3	mg/L	225 mg/L	n/a	Y	F	0.67
CTUA	CTUA-21-218236	3/2/2021	Chloride	23.9	mg/L	225 mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-218239	3/9/2021	Chloride	20.2	mg/L	225 mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-218240	3/16/2021	Chloride	20.1	mg/L	225 mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-218235	3/23/2021	Chloride	19.3	mg/L	225 mg/L	n/a	Y	F	0.335
CTUC	CTUC-21-210955	1/5/2021	Chloride	18.8	mg/L	225 mg/L	n/a	Y	F	0.335
CTUC	CTUC-21-210956	2/11/2021	Chloride	24.2	mg/L	225 mg/L	n/a	Y	F	0.335
CTUC	CTUC-21-210954	2/18/2021	Chloride	23.7	mg/L	225 mg/L	n/a	Y	F	0.335
CTUC	CTUC-21-210960	2/25/2021	Chloride	24.1	mg/L	225 mg/L	n/a	Y	F	0.67
CTUC	CTUC-21-210958	3/2/2021	Chloride	23.5	mg/L	225 mg/L	n/a	Y	F	0.335
CTUC	CTUC-21-210959	3/9/2021	Chloride	23.4	mg/L	225 mg/L	n/a	Y	F	0.335
CTUC	CTUC-21-210957	3/16/2021	Chloride	19.6	mg/L	225 mg/L	n/a	Y	F	0.335
CTUC	CTUC-21-210961	3/23/2021	Chloride	19.4	mg/L	225 mg/L	n/a	Y	F	0.335
CTUA	CTUA-21-211183	1/5/2021	Chromium	3	µg/L	45 µg/L	U ^e	N ^f	F	3
CTUA	CTUA-21-211184	1/14/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-211181	1/21/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-217761	1/26/2021	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-21-217762	2/2/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-217763	2/11/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-217765	2/18/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-217764	2/25/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-218236	3/2/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-218239	3/9/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-218240	3/16/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-218235	3/23/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-210955	1/5/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-210956	2/11/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-210954	2/18/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-210960	2/25/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-210958	3/2/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-210959	3/9/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-210957	3/16/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUC	CTUC-21-210961	3/23/2021	Chromium	3	µg/L	45 µg/L	U	N	F	3
CTUA	CTUA-21-211183	1/5/2021	Fluoride	0.396	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-211184	1/14/2021	Fluoride	0.3	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-211181	1/21/2021	Fluoride	0.305	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-217761	1/26/2021	Fluoride	0.293	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-217762	2/2/2021	Fluoride	0.312	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-217763	2/11/2021	Fluoride	0.373	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-217765	2/18/2021	Fluoride	0.261	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-217764	2/25/2021	Fluoride	0.432	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-218236	3/2/2021	Fluoride	0.425	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-21-218239	3/9/2021	Fluoride	0.274	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-218240	3/16/2021	Fluoride	0.313	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-218235	3/23/2021	Fluoride	0.389	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-210955	1/5/2021	Fluoride	0.39	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-210956	2/11/2021	Fluoride	0.287	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-210954	2/18/2021	Fluoride	0.298	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-210960	2/25/2021	Fluoride	0.418	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-210958	3/2/2021	Fluoride	0.422	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-210959	3/9/2021	Fluoride	0.277	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-210957	3/16/2021	Fluoride	0.311	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUC	CTUC-21-210961	3/23/2021	Fluoride	0.389	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-211183	1/5/2021	Fluoride	0.396	mg/L	1.44 mg/L	n/a	Y	F	0.033
CTUA	CTUA-21-211183	1/5/2021	Nitrate-Nitrite as Nitrogen	2.89	mg/L	9 mg/L	n/a	Y	F	0.17
CTUA	CTUA-21-211184	1/14/2021	Nitrate-Nitrite as Nitrogen	0.017	mg/L	9 mg/L	U	N	F	0.017
CTUA	CTUA-21-211181	1/21/2021	Nitrate-Nitrite as Nitrogen	3.13	mg/L	9 mg/L	n/a	Y	F	0.085
CTUA	CTUA-21-217761	1/26/2021	Nitrate-Nitrite as Nitrogen	2.88	mg/L	9 mg/L	n/a	Y	F	0.17
CTUA	CTUA-21-217762	2/2/2021	Nitrate-Nitrite as Nitrogen	3.02	mg/L	9 mg/L	n/a	Y	F	0.085
CTUA	CTUA-21-217763	2/11/2021	Nitrate-Nitrite as Nitrogen	4.14	mg/L	9 mg/L	n/a	Y	F	0.17
CTUA	CTUA-21-217765	2/18/2021	Nitrate-Nitrite as Nitrogen	3.62	mg/L	9 mg/L	n/a	Y	F	0.17
CTUA	CTUA-21-217764	2/25/2021	Nitrate-Nitrite as Nitrogen	0.017	mg/L	9 mg/L	U	N	F	0.017
CTUA	CTUA-21-218236	3/2/2021	Nitrate-Nitrite as Nitrogen	3.57	mg/L	9 mg/L	n/a	Y	F	0.085
CTUA	CTUA-21-218239	3/9/2021	Nitrate-Nitrite as Nitrogen	3.57	mg/L	9 mg/L	n/a	Y	F	0.17
CTUA	CTUA-21-218240	3/16/2021	Nitrate-Nitrite as Nitrogen	3.5	mg/L	9 mg/L	n/a	Y	F	0.17
CTUA	CTUA-21-218235	3/23/2021	Nitrate-Nitrite as Nitrogen	3.06	mg/L	9 mg/L	n/a	Y	F	0.085
CTUC	CTUC-21-210955	1/5/2021	Nitrate-Nitrite as Nitrogen	4.55	mg/L	9 mg/L	n/a	Y	F	0.425

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-21-210956	2/11/2021	Nitrate-Nitrite as Nitrogen	4	mg/L	9 mg/L	n/a	Y	F	0.17
CTUC	CTUC-21-210954	2/18/2021	Nitrate-Nitrite as Nitrogen	3.63	mg/L	9 mg/L	n/a	Y	F	0.17
CTUC	CTUC-21-210960	2/25/2021	Nitrate-Nitrite as Nitrogen	3.49	mg/L	9 mg/L	n/a	Y	F	0.085
CTUC	CTUC-21-210958	3/2/2021	Nitrate-Nitrite as Nitrogen	3.45	mg/L	9 mg/L	n/a	Y	F	0.085
CTUC	CTUC-21-210959	3/9/2021	Nitrate-Nitrite as Nitrogen	5.26	mg/L	9 mg/L	n/a	Y	F	0.17
CTUC	CTUC-21-210957	3/16/2021	Nitrate-Nitrite as Nitrogen	3.52	mg/L	9 mg/L	n/a	Y	F	0.17
CTUC	CTUC-21-210961	3/23/2021	Nitrate-Nitrite as Nitrogen	3.09	mg/L	9 mg/L	n/a	Y	F	0.085
CTUA	CTUA-21-211183	1/5/2021	Perchlorate	0.25	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUA	CTUA-21-211184	1/14/2021	Perchlorate	0.05	µg/L	12.4 µg/L	U	N	F	0.05
CTUA	CTUA-21-211181	1/21/2021	Perchlorate	0.108	µg/L	12.4 µg/L	J ^g	Y	F	0.05
CTUA	CTUA-21-217761	1/26/2021	Perchlorate	0.21	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUA	CTUA-21-217762	2/2/2021	Perchlorate	0.254	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUA	CTUA-21-217763	2/11/2021	Perchlorate	0.354	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUA	CTUA-21-217765	2/18/2021	Perchlorate	0.41	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUA	CTUA-21-217764	2/25/2021	Perchlorate	0.05	µg/L	12.4 µg/L	U	N	F	0.05
CTUA	CTUA-21-218236	3/2/2021	Perchlorate	0.201	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUA	CTUA-21-218239	3/9/2021	Perchlorate	0.181	µg/L	12.4 µg/L	J	Y	F	0.05
CTUA	CTUA-21-218240	3/16/2021	Perchlorate	0.195	µg/L	12.4 µg/L	J	Y	F	0.05
CTUA	CTUA-21-218235	3/23/2021	Perchlorate	0.261	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-210955	1/5/2021	Perchlorate	0.306	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-210956	2/11/2021	Perchlorate	0.766	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-210954	2/18/2021	Perchlorate	0.825	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-210960	2/25/2021	Perchlorate	0.682	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-210958	3/2/2021	Perchlorate	0.659	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-210959	3/9/2021	Perchlorate	1.09	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-21-210957	3/16/2021	Perchlorate	1.44	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUC	CTUC-21-210961	3/23/2021	Perchlorate	1.5	µg/L	12.4 µg/L	n/a	Y	F	0.05
CTUA	CTUA-21-211183	1/5/2021	Sulfate	23.7	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-211184	1/14/2021	Sulfate	0.133	mg/L	540 mg/L	U	N	F	0.133
CTUA	CTUA-21-211181	1/21/2021	Sulfate	25.6	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-217761	1/26/2021	Sulfate	23.9	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-217762	2/2/2021	Sulfate	24.1	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-217763	2/11/2021	Sulfate	38.2	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-217765	2/18/2021	Sulfate	33	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-217764	2/25/2021	Sulfate	0.133	mg/L	540 mg/L	U	N	F	0.133
CTUA	CTUA-21-218236	3/2/2021	Sulfate	28.6	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-218239	3/9/2021	Sulfate	28.7	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-218240	3/16/2021	Sulfate	30.9	mg/L	540 mg/L	n/a	Y	F	0.266
CTUA	CTUA-21-218235	3/23/2021	Sulfate	24.4	mg/L	540 mg/L	n/a	Y	F	0.665
CTUC	CTUC-21-210955	1/5/2021	Sulfate	0.133	mg/L	540 mg/L	U	N	F	0.133
CTUC	CTUC-21-210956	2/11/2021	Sulfate	36.4	mg/L	540 mg/L	n/a	Y	F	0.665
CTUC	CTUC-21-210954	2/18/2021	Sulfate	32.2	mg/L	540 mg/L	n/a	Y	F	0.665
CTUC	CTUC-21-210960	2/25/2021	Sulfate	34.1	mg/L	540 mg/L	n/a	Y	F	1.33
CTUC	CTUC-21-210958	3/2/2021	Sulfate	32.7	mg/L	540 mg/L	n/a	Y	F	0.665
CTUC	CTUC-21-210959	3/9/2021	Sulfate	12.3	mg/L	540 mg/L	n/a	Y	F	0.133
CTUC	CTUC-21-210957	3/16/2021	Sulfate	30.9	mg/L	540 mg/L	n/a	Y	F	0.266
CTUC	CTUC-21-210961	3/23/2021	Sulfate	24.5	mg/L	540 mg/L	n/a	Y	F	0.665
CTUA	CTUA-21-211183	1/5/2021	Total Dissolved Solids	223	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-211184	1/14/2021	Total Dissolved Solids	201	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-211181	1/21/2021	Total Dissolved Solids	210	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
CTUA	CTUA-21-217761	1/26/2021	Total Dissolved Solids	273	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-217762	2/2/2021	Total Dissolved Solids	246	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-217763	2/11/2021	Total Dissolved Solids	271	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-217765	2/18/2021	Total Dissolved Solids	286	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-217764	2/25/2021	Total Dissolved Solids	217	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-218236	3/2/2021	Total Dissolved Solids	249	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-218239	3/9/2021	Total Dissolved Solids	227	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-218240	3/16/2021	Total Dissolved Solids	253	mg/L	900 mg/L	n/a	Y	F	3.4
CTUA	CTUA-21-218235	3/23/2021	Total Dissolved Solids	213	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-210955	1/5/2021	Total Dissolved Solids	210	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-210956	2/11/2021	Total Dissolved Solids	283	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-210954	2/18/2021	Total Dissolved Solids	294	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-210960	2/25/2021	Total Dissolved Solids	219	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-210958	3/2/2021	Total Dissolved Solids	270	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-210959	3/9/2021	Total Dissolved Solids	253	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-210957	3/16/2021	Total Dissolved Solids	229	mg/L	900 mg/L	n/a	Y	F	3.4
CTUC	CTUC-21-210961	3/23/2021	Total Dissolved Solids	230	mg/L	900 mg/L	n/a	Y	F	3.4

^a In accordance with Condition No. 13 of DP-1835, analysis of the treated effluent from each IX unit is required only once every month for the CY 2021 Q1 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 classified as estimated.

The pilot-scale molasses and sodium dithionite amendment studies continued during 2021 Quarter 1. 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 2021 Quarter 1 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 2021 was not obtained during Quarter 1 but is expected to be obtained during Quarter 4.

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 2021 Quarter 1 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 2021 Quarter 1, 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-21-211183	1/5/2021	Arsenic	2	µg/L	9 µg/L	U	N	F ^b	2
CTUA	CTUA-21-211184	1/14/2021	Arsenic	2.14	µg/L	9 µg/L	J ^c	Y ^d	F	2
CTUA	CTUA-21-211181	1/21/2021	Arsenic	3.61	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-217761	1/26/2021	Arsenic	2.41	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-217762	2/2/2021	Arsenic	2.54	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-217763	2/11/2021	Arsenic	3.22	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-217765	2/18/2021	Arsenic	3.46	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-217764	2/25/2021	Arsenic	3.94	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-218236	3/2/2021	Arsenic	2.8	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-218239	3/9/2021	Arsenic	3.82	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-218240	3/16/2021	Arsenic	4.95	µg/L	9 µg/L	J	Y	F	2
CTUA	CTUA-21-218235	3/23/2021	Arsenic	3.39	µg/L	9 µg/L	J	Y	F	2
CTUC	CTUC-21-210955	1/5/2021	Arsenic	2	µg/L	9 µg/L	U ^e	N ^f	F	2
CTUC	CTUC-21-210956	2/11/2021	Arsenic	3.32	µg/L	9 µg/L	J	Y	F	2
CTUC	CTUC-21-210954	2/18/2021	Arsenic	3.22	µg/L	9 µg/L	J	Y	F	2
CTUC	CTUC-21-210960	2/25/2021	Arsenic	6.05	µg/L	9 µg/L	n/a ^g	Y	F	2
CTUC	CTUC-21-210958	3/2/2021	Arsenic	2.79	µg/L	9 µg/L	J	Y	F	2
CTUC	CTUC-21-210959	3/9/2021	Arsenic	5.37	µg/L	9 µg/L	n/a	Y	F	2
CTUA	CTUA-21-211183	1/5/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-211184	1/14/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-211181	1/21/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-217761	1/26/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-217762	2/2/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-217763	2/11/2021	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-21-217765	2/18/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-217764	2/25/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-218236	3/2/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-218239	3/9/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-218240	3/16/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-218235	3/23/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-210955	1/5/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-210956	2/11/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-210954	2/18/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-210960	2/25/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-210958	3/2/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-210959	3/9/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-210957	3/16/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUC	CTUC-21-210961	3/23/2021	Iron	30	µg/L	900 µg/L	U	N	F	30
CTUA	CTUA-21-211183	1/5/2021	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-211184	1/14/2021	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-211181	1/21/2021	Manganese	7.16	µg/L	180 µg/L	J	Y	F	2
CTUA	CTUA-21-217761	1/26/2021	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-217762	2/2/2021	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-217763	2/11/2021	Manganese	11.2	µg/L	180 µg/L	n/a	Y	F	2
CTUA	CTUA-21-217765	2/18/2021	Manganese	3.44	µg/L	180 µg/L	J	Y	F	2
CTUA	CTUA-21-217764	2/25/2021	Manganese	3.23	µg/L	180 µg/L	J	Y	F	2
CTUA	CTUA-21-218236	3/2/2021	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-218239	3/9/2021	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-218240	3/16/2021	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUA	CTUA-21-218235	3/23/2021	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
CTUC	CTUC-21-210955	1/5/2021	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUC	CTUC-21-210956	2/11/2021	Manganese	10.9	µg/L	180 µg/L	n/a	Y	F	2
CTUC	CTUC-21-210954	2/18/2021	Manganese	3.51	µg/L	180 µg/L	J	Y	F	2
CTUC	CTUC-21-210960	2/25/2021	Manganese	2.9	µg/L	180 µg/L	J	Y	F	2
CTUC	CTUC-21-210958	3/2/2021	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUC	CTUC-21-210959	3/9/2021	Manganese	52.7	µg/L	180 µg/L	n/a	Y	F	2
CTUC	CTUC-21-210957	3/16/2021	Manganese	2	µg/L	180 µg/L	U	N	F	2
CTUC	CTUC-21-210961	3/23/2021	Manganese	2	µg/L	180 µg/L	U	N	F	2

^a In accordance with Condition No. 13 of DP-1835, analysis of the treated effluent from each IX unit is required only once every month for the CY 2021 Q1 reporting period.

^b F = Filtered.

^c J = Analyte is classified as estimated.

^d Y = Detected.

^e U = Analyte is classified as not detected.

^f N = Not detected.

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

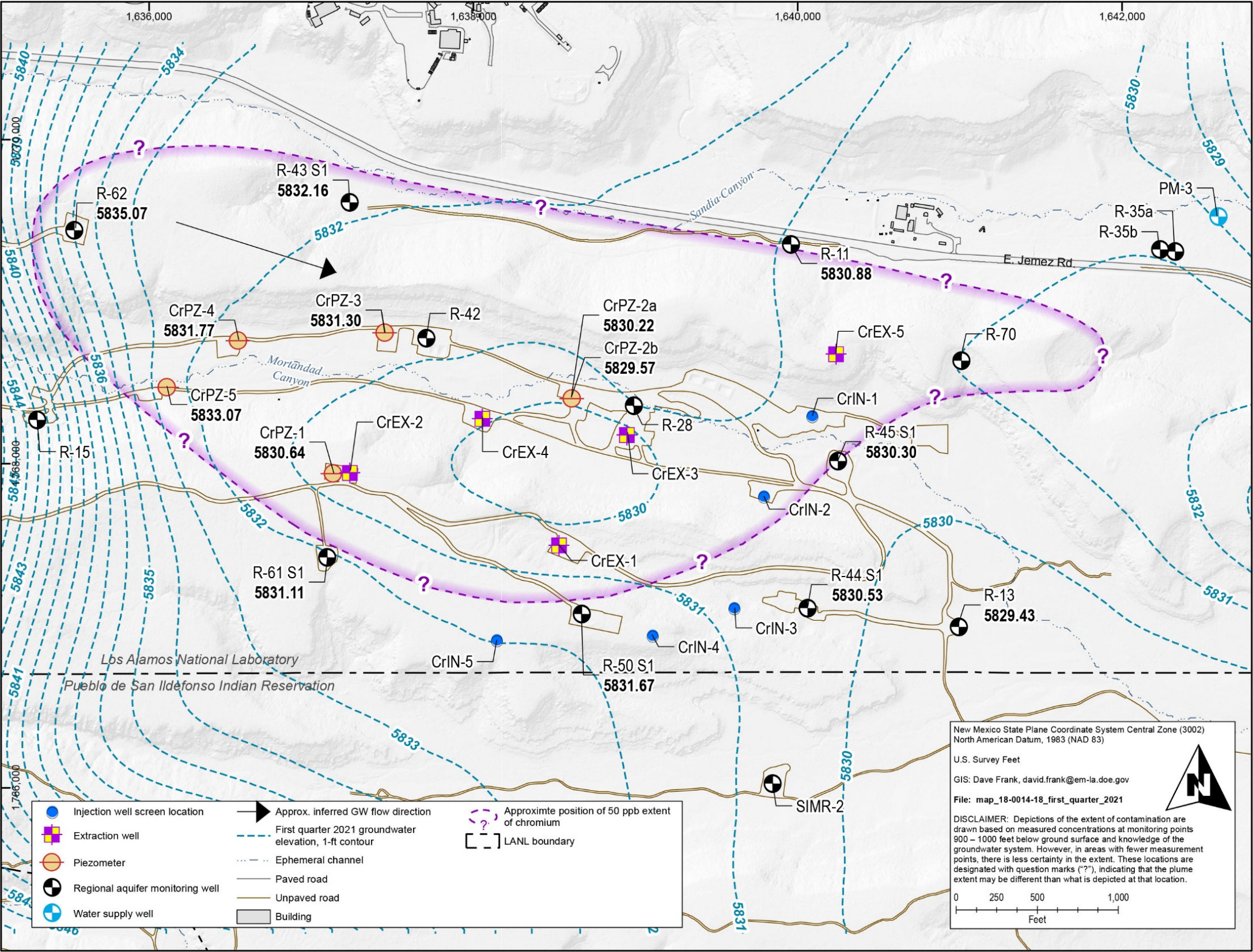


Figure 2.3-1 Groundwater elevation contour map – CY 2021 Quarter 1, DP-1835

Table 2.3-1
Groundwater Elevations Summary for
Groundwater Monitoring Wells – CY 2021 Quarter 1, DP-1835

Monitoring Well	Groundwater Elevation ^a (ft)
CrPZ-1 (CrCH-1)	5830.64
CrPZ-2a (CrCH-2a)	5830.22
CrPZ-2b (CrCH-2b)	5829.57
CrPZ-3 (CrCH-3)	5831.30
CrPZ-4 (CrCH-4)	5831.77
CrPZ-5 (CrCH-5)	5833.07
R-11	5830.88
R-13	5829.43
R-43 S1 ^b	5832.16
R-43 S2 ^c	5831.34
R-44 S1	5830.53
R-44 S2	5830.21
R-45 S1	5830.70
R-45 S2	5830.23
R-50 S1	5831.67
R-50 S2	5830.59
R-61 S1	5831.11
R-61 S2	5832.05
R-62	5835.07
SIMR-2 ^d	5830.57

^a Groundwater elevations provided are based on average February 2021 values from transducers.

^b S1 = Screen 1.

^c S2 = Screen 2.

^d Fourth quarter average November 2020 SIMR-2 data are reported here in accordance with the DP-1835 2020 Quarter 4 report (N3B 2021). 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 2021 Quarter 1, DP-1835

Field Sample ID	Location ID	Sample Date	Parameter Name	Report Result	Report Unit	Lab Qualifier	Detect Flag	Filtered	Method Detection Limit
CASA-21-217351	R-11	01/25/2021	Total Dissolved Solids	7.14	mg/L	J ^a	Y ^b	UF ^c	3.40
CASA-21-217351	R-11	01/25/2021	Fluoride	0.0330	mg/L	U ^d	N ^e	UF	0.0330
CASA-21-217351	R-11	01/25/2021	Sulfate	0.133	mg/L	U	N	UF	0.133
CASA-21-217351	R-11	01/25/2021	Chloride	0.0670	mg/L	U	N	UF	0.0670
CASA-21-217351	R-11	01/25/2021	Nitrate-Nitrite as Nitrogen	0.0170	mg/L	U	N	UF	0.0170
CASA-21-217351	R-11	01/25/2021	Perchlorate	0.0500	µg/L	U	N	UF	0.0500
CASA-21-217351	R-11	01/25/2021	Chromium	3.00	µg/L	U	N	UF	3.00
CASA-21-217684	R-11	02/26/2021	Nitrate-Nitrite as Nitrogen	5.74	mg/L	n/a ^f	Y	F ^g	0.170
CASA-21-217684	R-11	02/26/2021	Sulfate	10.1	mg/L	n/a	Y	F	0.133
CASA-21-217684	R-11	02/26/2021	Total Dissolved Solids	191	mg/L	n/a	Y	F	3.40
CASA-21-217684	R-11	02/26/2021	Chloride	4.04	mg/L	J+ ^h	Y	F	0.0670
CASA-21-217684	R-11	02/26/2021	Perchlorate	0.790	µg/L	n/a	Y	F	0.0500
CASA-21-217684	R-11	02/26/2021	Chromium	12.7	µg/L	n/a	Y	F	3.00
CASA-21-217684	R-11	02/26/2021	Fluoride	0.458	mg/L	n/a	Y	F	0.0330
CASA-21-219596	R-11	03/19/2021	Total Dissolved Solids	190	mg/L	n/a	Y	F	3.40
CASA-21-219596	R-11	03/19/2021	Sulfate	9.85	mg/L	n/a	Y	F	0.133
CASA-21-219596	R-11	03/19/2021	Fluoride	0.574	mg/L	n/a	Y	F	0.0330
CASA-21-219596	R-11	03/19/2021	Chromium	13.0	µg/L	n/a	Y	F	3.00
CASA-21-219596	R-11	03/19/2021	Perchlorate	0.865	µg/L	n/a	Y	F	0.0500
CASA-21-219596	R-11	03/19/2021	Chloride	4.42	mg/L	n/a	Y	F	0.0670
CASA-21-219596	R-11	03/19/2021	Nitrate-Nitrite as Nitrogen	5.78	mg/L	n/a	Y	F	0.170
CAMO-21-217352	R-13	02/04/2021	Nitrate-Nitrite as Nitrogen	0.800	mg/L	n/a	Y	F	0.0850
CAMO-21-217352	R-13	02/04/2021	Total Dissolved Solids	144	mg/L	n/a	Y	F	3.40
CAMO-21-217352	R-13	02/04/2021	Chloride	2.67	mg/L	n/a	Y	F	0.0670

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-21-217352	R-13	02/04/2021	Perchlorate	0.414	µg/L	n/a	Y	F	0.0500
CAMO-21-217352	R-13	02/04/2021	Chromium	4.28	µg/L	J	Y	F	3.00
CAMO-21-217352	R-13	02/04/2021	Fluoride	0.345	mg/L	n/a	Y	F	0.0330
CAMO-21-217352	R-13	02/04/2021	Sulfate	3.40	mg/L	n/a	Y	F	0.133
CASA-21-217372	R-43 S1 ⁱ	02/09/2021	Nitrate-Nitrite as Nitrogen	5.08	mg/L	n/a	Y	F	0.170
CASA-21-217372	R-43 S1	02/09/2021	Chloride	9.01	mg/L	n/a	Y	F	0.0670
CASA-21-217372	R-43 S1	02/09/2021	Perchlorate	0.692	µg/L	n/a	Y	F	0.0500
CASA-21-217372	R-43 S1	02/09/2021	Chromium	189	µg/L	n/a	Y	F	15.0
CASA-21-217372	R-43 S1	02/09/2021	Fluoride	0.394	mg/L	n/a	Y	F	0.0330
CASA-21-217372	R-43 S1	02/09/2021	Sulfate	17.1	mg/L	n/a	Y	F	0.133
CASA-21-217372	R-43 S1	02/09/2021	Total Dissolved Solids	164	mg/L	n/a	Y	F	3.40
CASA-21-217441	R-43 S2 ^j	02/05/2021	Fluoride	0.395	mg/L	n/a	Y	F	0.0330
CASA-21-217441	R-43 S2	02/05/2021	Sulfate	11.3	mg/L	n/a	Y	F	0.133
CASA-21-217441	R-43 S2	02/05/2021	Total Dissolved Solids	184	mg/L	n/a	Y	F	3.40
CASA-21-217441	R-43 S2	02/05/2021	Chloride	7.71	mg/L	J+	Y	F	0.0670
CASA-21-217441	R-43 S2	02/05/2021	Perchlorate	0.890	µg/L	n/a	Y	F	0.0500
CASA-21-217441	R-43 S2	02/05/2021	Chromium	41.7	µg/L	n/a	Y	F	3.00
CASA-21-217441	R-43 S2	02/05/2021	Nitrate-Nitrite as Nitrogen	4.10	mg/L	n/a	Y	F	0.170
CAMO-21-217443	R-44 S1	02/01/2021	Nitrate-Nitrite as Nitrogen	2.65	mg/L	n/a	Y	F	0.170
CAMO-21-217443	R-44 S1	02/01/2021	Total Dissolved Solids	217	mg/L	n/a	Y	F	3.40
CAMO-21-217443	R-44 S1	02/01/2021	Chloride	19.1	mg/L	n/a	Y	F	0.335
CAMO-21-217443	R-44 S1	02/01/2021	Fluoride	0.312	mg/L	n/a	Y	F	0.0330
CAMO-21-217443	R-44 S1	02/01/2021	Sulfate	19.7	mg/L	n/a	Y	F	0.133
CAMO-21-217443	R-44 S1	02/01/2021	Perchlorate	0.381	µg/L	J	Y	F	0.0500
CAMO-21-217443	R-44 S1	02/01/2021	Chromium	4.16	µg/L	J	Y	F	3.00
CAMO-21-217696	R-44 S1	02/25/2021	Nitrate-Nitrite as Nitrogen	2.67	mg/L	n/a	Y	F	0.0850

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-21-217696	R-44 S1	02/25/2021	Sulfate	19.6	mg/L	n/a	Y	F	0.665
CAMO-21-217696	R-44 S1	02/25/2021	Total Dissolved Solids	177	mg/L	n/a	Y	F	3.40
CAMO-21-217696	R-44 S1	02/25/2021	Chloride	20.3	mg/L	n/a	Y	F	0.335
CAMO-21-217696	R-44 S1	02/25/2021	Perchlorate	0.361	µg/L	n/a	Y	F	0.0500
CAMO-21-217696	R-44 S1	02/25/2021	Chromium	4.35	µg/L	J	Y	F	3.00
CAMO-21-217696	R-44 S1	02/25/2021	Fluoride	0.361	mg/L	n/a	Y	F	0.0330
CAMO-21-219714	R-44 S1	03/25/2021	Total Dissolved Solids	199	mg/L	J+	Y	F	3.40
CAMO-21-219714	R-44 S1	03/25/2021	Chromium	4.20	µg/L	J	Y	F	3.00
CAMO-21-219714	R-44 S1	03/25/2021	Perchlorate	0.385	µg/L	n/a	Y	F	0.0500
CAMO-21-219714	R-44 S1	03/25/2021	Fluoride	0.177	mg/L	n/a	Y	F	0.0330
CAMO-21-219714	R-44 S1	03/25/2021	Nitrate-Nitrite as Nitrogen	2.60	mg/L	n/a	Y	F	0.0850
CAMO-21-219714	R-44 S1	03/25/2021	Sulfate	19.5	mg/L	n/a	Y	F	0.665
CAMO-21-219714	R-44 S1	03/25/2021	Chloride	19.9	mg/L	n/a	Y	F	0.335
CAMO-21-217446	R-44 S2	02/01/2021	Chloride	2.41	mg/L	n/a	Y	F	0.0670
CAMO-21-217446	R-44 S2	02/01/2021	Fluoride	0.441	mg/L	n/a	Y	F	0.0330
CAMO-21-217446	R-44 S2	02/01/2021	Sulfate	2.41	mg/L	n/a	Y	F	0.133
CAMO-21-217446	R-44 S2	02/01/2021	Nitrate-Nitrite as Nitrogen	0.705	mg/L	n/a	Y	F	0.0850
CAMO-21-217446	R-44 S2	02/01/2021	Total Dissolved Solids	160	mg/L	n/a	Y	F	3.40
CAMO-21-217446	R-44 S2	02/01/2021	Perchlorate	0.358	µg/L	J	Y	F	0.0500
CAMO-21-217446	R-44 S2	02/01/2021	Chromium	5.41	µg/L	J	Y	F	3.00
CAMO-21-217699	R-44 S2	02/25/2021	Chloride	2.34	mg/L	n/a	Y	F	0.0670
CAMO-21-217699	R-44 S2	02/25/2021	Perchlorate	0.334	µg/L	n/a	Y	F	0.0500
CAMO-21-217699	R-44 S2	02/25/2021	Chromium	5.84	µg/L	J	Y	F	3.00
CAMO-21-217699	R-44 S2	02/25/2021	Sulfate	2.46	mg/L	n/a	Y	F	0.133
CAMO-21-217699	R-44 S2	02/25/2021	Total Dissolved Solids	116	mg/L	n/a	Y	F	3.40
CAMO-21-217699	R-44 S2	02/25/2021	Nitrate-Nitrite as Nitrogen	0.683	mg/L	n/a	Y	F	0.0170

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-21-217699	R-44 S2	02/25/2021	Fluoride	0.559	mg/L	n/a	Y	F	0.0330
CAMO-21-219717	R-44 S2	03/25/2021	Chromium	6.08	µg/L	J	Y	F	3.00
CAMO-21-219717	R-44 S2	03/25/2021	Total Dissolved Solids	149	mg/L	J+	Y	F	3.40
CAMO-21-219717	R-44 S2	03/25/2021	Sulfate	2.49	mg/L	n/a	Y	F	0.133
CAMO-21-219717	R-44 S2	03/25/2021	Nitrate-Nitrite as Nitrogen	0.667	mg/L	n/a	Y	F	0.0170
CAMO-21-219717	R-44 S2	03/25/2021	Fluoride	0.367	mg/L	n/a	Y	F	0.0330
CAMO-21-219717	R-44 S2	03/25/2021	Perchlorate	0.349	µg/L	n/a	Y	F	0.0500
CAMO-21-219717	R-44 S2	03/25/2021	Chloride	2.28	mg/L	n/a	Y	F	0.0670
CAMO-21-217449	R-45 S1	01/26/2021	Chloride	17.0	mg/L	n/a	Y	F	0.134
CAMO-21-217449	R-45 S1	01/26/2021	Nitrate-Nitrite as Nitrogen	2.50	mg/L	n/a	Y	F	0.170
CAMO-21-217449	R-45 S1	01/26/2021	Fluoride	0.274	mg/L	n/a	Y	F	0.0330
CAMO-21-217449	R-45 S1	01/26/2021	Sulfate	16.7	mg/L	n/a	Y	F	0.133
CAMO-21-217449	R-45 S1	01/26/2021	Total Dissolved Solids	177	mg/L	n/a	Y	F	3.40
CAMO-21-217449	R-45 S1	01/26/2021	Perchlorate	0.470	µg/L	n/a	Y	F	0.0500
CAMO-21-217449	R-45 S1	01/26/2021	Chromium	13.5	µg/L	n/a	Y	F	3.00
CAMO-21-217702	R-45 S1	02/23/2021	Nitrate-Nitrite as Nitrogen	3.01	mg/L	n/a	Y	F	0.0850
CAMO-21-217702	R-45 S1	02/23/2021	Chloride	15.4	mg/L	n/a	Y	F	0.134
CAMO-21-217702	R-45 S1	02/23/2021	Total Dissolved Solids	199	mg/L	J+	Y	F	3.40
CAMO-21-217702	R-45 S1	02/23/2021	Sulfate	15.4	mg/L	n/a	Y	F	0.133
CAMO-21-217702	R-45 S1	02/23/2021	Fluoride	0.293	mg/L	n/a	Y	F	0.0330
CAMO-21-217702	R-45 S1	02/23/2021	Perchlorate	0.450	µg/L	n/a	Y	F	0.0500
CAMO-21-217702	R-45 S1	02/23/2021	Chromium	10.6	µg/L	n/a	Y	F	3.00
CAMO-21-219721	R-45 S1	03/23/2021	Nitrate-Nitrite as Nitrogen	2.72	mg/L	n/a	Y	F	0.0850
CAMO-21-219721	R-45 S1	03/23/2021	Chloride	17.7	mg/L	n/a	Y	F	0.134
CAMO-21-219721	R-45 S1	03/23/2021	Chromium	10.1	µg/L	n/a	Y	F	3.00
CAMO-21-219721	R-45 S1	03/23/2021	Total Dissolved Solids	227	mg/L	J+	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-21-219721	R-45 S1	03/23/2021	Perchlorate	0.592	µg/L	n/a	Y	F	0.0500
CAMO-21-219721	R-45 S1	03/23/2021	Sulfate	17.7	mg/L	n/a	Y	F	0.133
CAMO-21-219721	R-45 S1	03/23/2021	Fluoride	0.236	mg/L	n/a	Y	F	0.0330
CAMO-21-217452	R-45 S2	01/26/2021	Nitrate-Nitrite as Nitrogen	1.08	mg/L	n/a	Y	F	0.0850
CAMO-21-217452	R-45 S2	01/26/2021	Chloride	6.09	mg/L	n/a	Y	F	0.0670
CAMO-21-217452	R-45 S2	01/26/2021	Fluoride	0.347	mg/L	n/a	Y	F	0.0330
CAMO-21-217452	R-45 S2	01/26/2021	Total Dissolved Solids	141	mg/L	n/a	Y	F	3.40
CAMO-21-217452	R-45 S2	01/26/2021	Sulfate	7.36	mg/L	n/a	Y	F	0.133
CAMO-21-217452	R-45 S2	01/26/2021	Perchlorate	0.528	µg/L	n/a	Y	F	0.0500
CAMO-21-217452	R-45 S2	01/26/2021	Chromium	48.9	µg/L	n/a	Y	F	3.00
CAMO-21-217705	R-45 S2	02/23/2021	Total Dissolved Solids	176	mg/L	J+	Y	F	3.40
CAMO-21-217705	R-45 S2	02/23/2021	Sulfate	7.31	mg/L	n/a	Y	F	0.133
CAMO-21-217705	R-45 S2	02/23/2021	Chloride	6.00	mg/L	n/a	Y	F	0.0670
CAMO-21-217705	R-45 S2	02/23/2021	Nitrate-Nitrite as Nitrogen	1.22	mg/L	n/a	Y	F	0.0170
CAMO-21-217705	R-45 S2	02/23/2021	Fluoride	0.374	mg/L	n/a	Y	F	0.0330
CAMO-21-217705	R-45 S2	02/23/2021	Perchlorate	0.446	µg/L	n/a	Y	F	0.0500
CAMO-21-217705	R-45 S2	02/23/2021	Chromium	47.3	µg/L	n/a	Y	F	3.00
CAMO-21-219724	R-45 S2	03/23/2021	Chromium	51.4	µg/L	n/a	Y	F	3.00
CAMO-21-219724	R-45 S2	03/23/2021	Total Dissolved Solids	177	mg/L	J+	Y	F	3.40
CAMO-21-219724	R-45 S2	03/23/2021	Perchlorate	0.486	µg/L	n/a	Y	F	0.0500
CAMO-21-219724	R-45 S2	03/23/2021	Fluoride	0.323	mg/L	n/a	Y	F	0.0330
CAMO-21-219724	R-45 S2	03/23/2021	Sulfate	7.84	mg/L	n/a	Y	F	0.133
CAMO-21-219724	R-45 S2	03/23/2021	Nitrate-Nitrite as Nitrogen	1.19	mg/L	n/a	Y	F	0.0170
CAMO-21-219724	R-45 S2	03/23/2021	Chloride	6.51	mg/L	n/a	Y	F	0.0670
CAMO-21-217455	R-50 S1	01/20/2021	Nitrate-Nitrite as Nitrogen	2.60	mg/L	n/a	Y	F	0.0850
CAMO-21-217455	R-50 S1	01/20/2021	Total Dissolved Solids	174	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-21-217455	R-50 S1	01/20/2021	Chloride	20.0	mg/L	n/a	Y	F	0.335
CAMO-21-217455	R-50 S1	01/20/2021	Sulfate	19.6	mg/L	n/a	Y	F	0.665
CAMO-21-217455	R-50 S1	01/20/2021	Perchlorate	0.399	µg/L	n/a	Y	F	0.0500
CAMO-21-217455	R-50 S1	01/20/2021	Chromium	24.7	µg/L	n/a	Y	F	3.00
CAMO-21-217455	R-50 S1	01/20/2021	Fluoride	0.247	mg/L	n/a	Y	F	0.0330
CAMO-21-217708	R-50 S1	02/24/2021	Chloride	18.3	mg/L	n/a	Y	F	0.335
CAMO-21-217708	R-50 S1	02/24/2021	Nitrate-Nitrite as Nitrogen	2.75	mg/L	n/a	Y	F	0.0850
CAMO-21-217708	R-50 S1	02/24/2021	Fluoride	0.265	mg/L	n/a	Y	F	0.0330
CAMO-21-217708	R-50 S1	02/24/2021	Sulfate	19.5	mg/L	n/a	Y	F	0.133
CAMO-21-217708	R-50 S1	02/24/2021	Total Dissolved Solids	186	mg/L	n/a	Y	F	3.40
CAMO-21-217708	R-50 S1	02/24/2021	Perchlorate	0.416	µg/L	n/a	Y	F	0.0500
CAMO-21-217708	R-50 S1	02/24/2021	Chromium	24.6	µg/L	n/a	Y	F	3.00
CAMO-21-219729	R-50 S1	03/29/2021	Nitrate-Nitrite as Nitrogen	2.63	mg/L	n/a	Y	F	0.0850
CAMO-21-219729	R-50 S1	03/29/2021	Chloride	19.1	mg/L	n/a	Y	F	0.335
CAMO-21-219729	R-50 S1	03/29/2021	Chromium	21.1	µg/L	n/a	Y	F	3.00
CAMO-21-219729	R-50 S1	03/29/2021	Perchlorate	0.403	µg/L	n/a	Y	F	0.0500
CAMO-21-219729	R-50 S1	03/29/2021	Total Dissolved Solids	219	mg/L	n/a	Y	F	3.40
CAMO-21-219729	R-50 S1	03/29/2021	Sulfate	19.9	mg/L	n/a	Y	F	0.133
CAMO-21-219729	R-50 S1	03/29/2021	Fluoride	0.239	mg/L	n/a	Y	F	0.0330
CAMO-21-217458	R-50 S2	02/01/2021	Chloride	2.21	mg/L	n/a	Y	F	0.0670
CAMO-21-217458	R-50 S2	02/01/2021	Nitrate-Nitrite as Nitrogen	0.590	mg/L	n/a	Y	F	0.0850
CAMO-21-217458	R-50 S2	02/01/2021	Fluoride	0.461	mg/L	n/a	Y	F	0.0330
CAMO-21-217458	R-50 S2	02/01/2021	Sulfate	2.52	mg/L	n/a	Y	F	0.133
CAMO-21-217458	R-50 S2	02/01/2021	Total Dissolved Solids	180	mg/L	n/a	Y	F	3.40
CAMO-21-217458	R-50 S2	02/01/2021	Perchlorate	0.378	µg/L	J	Y	F	0.0500
CAMO-21-217458	R-50 S2	02/01/2021	Chromium	4.19	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-21-217711	R-50 S2	02/24/2021	Chromium	4.46	µg/L	J	Y	F	3.00
CAMO-21-217711	R-50 S2	02/24/2021	Sulfate	2.47	mg/L	n/a	Y	F	0.133
CAMO-21-217711	R-50 S2	02/24/2021	Chloride	2.15	mg/L	n/a	Y	F	0.0670
CAMO-21-217711	R-50 S2	02/24/2021	Fluoride	0.449	mg/L	n/a	Y	F	0.0330
CAMO-21-217711	R-50 S2	02/24/2021	Nitrate-Nitrite as Nitrogen	0.587	mg/L	n/a	Y	F	0.0170
CAMO-21-217711	R-50 S2	02/24/2021	Total Dissolved Solids	149	mg/L	n/a	Y	F	3.40
CAMO-21-217711	R-50 S2	02/24/2021	Perchlorate	0.366	µg/L	n/a	Y	F	0.0500
CAMO-21-219732	R-50 S2	03/29/2021	Chromium	3.86	µg/L	J	Y	F	3.00
CAMO-21-219732	R-50 S2	03/29/2021	Perchlorate	0.301	µg/L	n/a	Y	F	0.0500
CAMO-21-219732	R-50 S2	03/29/2021	Total Dissolved Solids	143	mg/L	n/a	Y	F	3.40
CAMO-21-219732	R-50 S2	03/29/2021	Sulfate	2.54	mg/L	n/a	Y	F	0.133
CAMO-21-219732	R-50 S2	03/29/2021	Nitrate-Nitrite as Nitrogen	0.580	mg/L	n/a	Y	F	0.0170
CAMO-21-219732	R-50 S2	03/29/2021	Fluoride	0.402	mg/L	n/a	Y	F	0.0330
CAMO-21-219732	R-50 S2	03/29/2021	Chloride	2.21	mg/L	n/a	Y	F	0.0670
CAMO-21-217465	R-62	02/02/2021	Sulfate	34.9	mg/L	n/a	Y	F	0.665
CAMO-21-217465	R-62	02/02/2021	Total Dissolved Solids	221	mg/L	n/a	Y	F	3.40
CAMO-21-217465	R-62	02/02/2021	Chloride	19.9	mg/L	n/a	Y	F	0.335
CAMO-21-217465	R-62	02/02/2021	Perchlorate	0.874	µg/L	n/a	Y	F	0.0500
CAMO-21-217465	R-62	02/02/2021	Chromium	331	µg/L	n/a	Y	F	3.00
CAMO-21-217465	R-62	02/02/2021	Fluoride	0.165	mg/L	n/a	Y	F	0.0330
CAMO-21-217465	R-62	02/02/2021	Nitrate-Nitrite as Nitrogen	2.37	mg/L	n/a	Y	F	0.170
CAMO-21-208209	SIMR-2 ^k	10/14/2020	Chloride	2.23	mg/L	n/a	Y	F	0.0670
CAMO-21-208209	SIMR-2	10/14/2020	Perchlorate	0.424	µg/L	n/a	Y	F	0.0500
CAMO-21-208209	SIMR-2	10/14/2020	Chromium	4.81	µg/L	J	Y	F	3.00
CAMO-21-208209	SIMR-2	10/14/2020	Fluoride	0.316	mg/L	n/a	Y	F	0.0330
CAMO-21-208209	SIMR-2	10/14/2020	Nitrate-Nitrite as Nitrogen	0.723	mg/L	n/a	Y	F	0.0170

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-21-208209	SIMR-2	10/14/2020	Sulfate	2.77	mg/L	n/a	Y	F	0.133
CAMO-21-208209	SIMR-2	10/14/2020	Total Dissolved Solids	117	mg/L	J+	Y	F	3.40
CAMO-21-210584	SIMR-2	11/12/2020	Chloride	2.51	mg/L	n/a	Y	F	0.0670
CAMO-21-210584	SIMR-2	11/12/2020	Perchlorate	0.450	µg/L	n/a	Y	F	0.0500
CAMO-21-210584	SIMR-2	11/12/2020	Fluoride	0.290	mg/L	n/a	Y	F	0.0330
CAMO-21-210584	SIMR-2	11/12/2020	Nitrate-Nitrite as Nitrogen	0.730	mg/L	n/a	Y	F	0.0850
CAMO-21-210584	SIMR-2	11/12/2020	Sulfate	2.84	mg/L	n/a	Y	F	0.133
CAMO-21-210584	SIMR-2	11/12/2020	Total Dissolved Solids	181	mg/L	J+	Y	F	3.40
CAMO-21-210584	SIMR-2	11/12/2020	Chromium	5.57	µg/L	J	Y	F	3.00
CAMO-21-211022	SIMR-2	12/10/2020	Chloride	2.30	mg/L	J+	Y	F	0.0670
CAMO-21-211022	SIMR-2	12/10/2020	Perchlorate	0.445	ug/L	n/a	Y	F	0.0500
CAMO-21-211022	SIMR-2	12/10/2020	Sulfate	2.75	mg/L	J+	Y	F	0.133
CAMO-21-211022	SIMR-2	12/10/2020	Chromium	4.99	µg/L	J	Y	F	3.00
CAMO-21-211022	SIMR-2	12/10/2020	Fluoride	0.333	mg/L	J+	Y	F	0.0330
CAMO-21-211022	SIMR-2	12/10/2020	Nitrate-Nitrite as Nitrogen	0.764	mg/L	n/a	Y	F	0.0170
CAMO-21-211022	SIMR-2	12/10/2020	Total Dissolved Solids	126	mg/L	n/a	Y	F	3.40

^a J = Analyte is classified as estimated.

^b Y = Detected.

^c UF = Unfiltered.

^d U = Analyte is classified as not detected.

^e N = Not detected.

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

^g F = Filtered.

^h J+ = Analyte is classified as estimated and biased high.

ⁱ S1 = Screen 1.

^j S2 = Screen 2.

^k 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 2021 Quarter 1 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 February 2021. 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, comparing 2018 Quarter 4 to 2018 Quarter 3, increased water levels were observed to the southwest of the cone of depression, possibly in response to injection at CrIN-4 and CrIN-5. 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 (N3B 2020).

The largest injection rates in 2019 Quarter 4 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 2020 Quarter 4, the upstream (western) edge of the central depression appeared less pronounced than in prior periods. The change in the upstream edge of the depression may be a lingering effect of the EMCA shut-off and/or 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. In the current reporting period of 2021 Quarter 1 (Figure 2.3-1), a slight increase in average water levels is apparent across the site, as compared to 2020 Quarter 4, likely due to seasonal trends in water table elevation. An exception is the decrease in water level recorded at CrPZ-2, which caused the contour for the central depression to expand northward as compared to the previous quarters, and which is likely linked to extraction at CrEX-3 during February 2021.

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 and the regional structure of significantly steeper gradients to the east and west of the chromium plume area, surrounding wells (i.e., R-21, R-31, R-32, R-37, and R-40) and control points based on expert opinion 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 is 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 2021 Quarter 1. Operations and maintenance activities completed during 2021 Quarter 1 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 2021 Quarter 1, DP-1835

Maintenance Date	Elements Impacted	Operation/Maintenance Description
1/1/21 through 1/21/21	CrEX-1, CrEX-2, CrEX-5, CTUA, CTUC, CrIN-1, CrIN-3, CrIN-4, CrIN-5	Extraction, treatment, and injection of treated groundwater occurred per operational plan.
1/21/21 through 2/1/21	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. CrIN-2 brought online and CrIN-3 turned off on 1/21/21.
2/1/21 through 2/5/21	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. CrIN-3 brought online on 2/1/21. CrIN-1 brought online on 2/2/21. CrIN-4 and CrIN-5 turned off on 2/3/21.
2/5/21 through 2/9/21	Entire treatment system	Treatment system shut down due to unscheduled wind storm-related power outage in Mortandad Canyon. CrEX-5 restarted when power was restored on 2/6/21 and ran unattended while the rest of the system remained off.
2/8/21	CTUA CrIN-4, CrIN-5	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. CrIN-4 and CrIN-5 operated briefly to bring treated water storage tanks level down.
2/10/21 through 3/2/21	CrEX-1, CrEX-2, CrEX-3, CrEX-4, CTUA, CTUC, CrIN-1, CrIN-2, CrIN-4, CrIN-5	Extraction, treatment, and injection of treated groundwater occurred per operational plan. CrEX-5 remained off after restarting system to investigate programming issue in variable-frequency drive. CrIN-3 also remained off. CrEX-3 brought online in continuous service following well rehabilitation.
2/23/21	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.
3/2/21 through 3/31/21	CrEX-1, CrEX-2, CrEX-3, 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. CrEX-3 and CrIN-3 ran intermittently in March to evaluate the well rehabilitation effort at CrEX-3.

Table 2.4-1 (continued)

Maintenance Date	Elements Impacted	Operation/Maintenance Description
3/4/21	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.
3/17/21	CrIN-4, CrIN-5	Backflush/maintenance pumping.
3/18/21	CrIN-3	Backflush/maintenance pumping.
3/25/21	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.
3/30/21	CrIN-2	Well off for tracer injection.
3/31/21	CrIN-1	Well off for tracer injection.

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

Periodic testing of mechanical integrity was not conducted or reported to NMED during 2021 Quarter 1. 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 2021 Quarter 1.

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 2021 Quarter 1 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 2021 Quarter 1.

Table 2.9-1
Flows and Volumes of Treated Effluent Injected – CY 2021 Quarter 1, DP-1835

Injection Well	Flow rate (gpm ^a)			Daily Volume (gal.)			Total Volume (gal.)
	Average ^b	Maximum	Minimum ^c	Average	Maximum	Minimum	
January 2021							
CrIN-1	0.0	0.0	0.0	0	0	0	0
CrIN-2	48.6	53.2	24.3	69,993	76,573	34,947	769,927
CrIN-3	28.1	32.5	11.6	40,487	46,824	16,702	850,233
CrIN-4	57.3	66.2	41.5	82,560	95,345	59,744	2,559,354
CrIN-5	57.5	70.0	41.5	82,804	100,762	59,760	2,566,916
February 2021							
CrIN-1	57.3	67.6	34.9	82,578	97,407	50,312	1,899,303
CrIN-2	56.4	68.6	27.0	81,282	98,760	38,898	1,950,760
CrIN-3	30.9	36.0	15.6	44,427	51,825	22,432	222,137
CrIN-4	47.7	60.5	12.0	68,733	87,074	17,265	1,512,127
CrIN-5	47.4	59.6	10.6	68,228	85,787	15,299	1,501,011

Table 2.9-1 (continued)

Injection Well	Flow rate (gpm ^a)			Daily Volume (gal.)			Total Volume (gal.)
	Average ^b	Maximum	Minimum ^c	Average	Maximum	Minimum	
March 2021							
CrIN-1	65.4	70.2	50.8	94,140	101,071	73,155	2,918,326
CrIN-2	67.7	73.0	52.1	97,544	105,060	75,029	3,023,849
CrIN-3	28.5	41.0	11.5	41,030	59,050	16,574	943,699
CrIN-4	58.2	63.9	46.5	83,786	91,988	66,994	2,597,353
CrIN-5	57.7	62.0	42.2	83,103	89,291	60,706	2,576,197

^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 2021 Quarter 1.

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 2021 Quarter 1, DP-1835

UIC Well	January 2021			February 2021			March 2021		
	Average ^a (ft)	Maximum (ft)	Minimum (ft)	Average (ft)	Maximum (ft)	Minimum (ft)	Average (ft)	Maximum (ft)	Minimum (ft)
CrIN-1	n/a ^b	n/a	n/a	20.3	28.7	7.1	23.2	31.9	14.5
CrIN-2	n/a	n/a	n/a	7.5	9.0	3.5	8.8	10.8	6.3
CrIN-3	46.1	55.8	9.9	47.8	50.8	16.4	33.0	66.0	0.5
CrIN-4	10.3	11.7	6.3	9.4	11.4	6.5	9.8	13.9	6.5
CrIN-5	17.3	20.2	10.2	15.1	19.1	3.0	16.5	20.8	9.8

^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 2021 Quarter 1 are presented in Table 2.12-1.

Table 2.12-1
Daily Injection Summary Table – CY 2021 Quarter 1, DP-1835

Date	CrIN-1 (gal.)	CrIN-2 (gal.)	CrIN-3 (gal.)	CrIN-4 (gal.)	CrIN-5 (gal.)	Total (gal.)
1/1/2021	0	0	40,311	95,066	100,762	236,139
1/2/2021	0	0	40,377	95,286	100,664	236,328
1/3/2021	0	0	40,248	95,345	100,600	236,193
1/4/2021	0	0	44,532	95,112	99,630	239,274
1/5/2021	0	0	46,824	95,017	99,434	241,275
1/6/2021	0	0	46,580	94,884	99,395	240,859
1/7/2021	0	0	46,162	94,553	99,343	240,058
1/8/2021	0	0	46,087	94,867	99,361	240,316
1/9/2021	0	0	46,092	95,042	99,361	240,495
1/10/2021	0	0	46,142	95,014	99,366	240,521
1/11/2021	0	0	46,237	94,383	99,365	239,984
1/12/2021	0	0	16,702	59,744	59,760	136,207
1/13/2021	0	0	18,007	75,699	70,289	163,996
1/14/2021	0	0	37,396	90,384	86,210	213,990
1/15/2021	0	0	45,850	90,695	86,278	222,823
1/16/2021	0	0	45,280	90,730	85,765	221,775
1/17/2021	0	0	44,839	90,726	85,480	221,045
1/18/2021	0	0	44,700	90,726	85,301	220,727
1/19/2021	0	0	45,307	91,040	85,637	221,984
1/20/2021	0	0	45,522	90,073	85,304	220,899
1/21/2021	0	34,947	17,037	75,424	74,671	202,080
1/22/2021	0	75,463	0	65,716	68,319	209,498
1/23/2021	0	76,295	0	66,249	65,953	208,497
1/24/2021	0	76,343	0	67,199	66,582	210,124
1/25/2021	0	76,367	0	66,779	67,675	210,820
1/26/2021	0	76,573	0	66,221	67,617	210,411
1/27/2021	0	71,692	0	66,626	66,187	204,505
1/28/2021	0	70,559	0	67,728	66,006	204,293
1/29/2021	0	70,565	0	67,712	65,651	203,927
1/30/2021	0	70,558	0	67,595	65,691	203,844
1/31/2021	0	70,565	0	67,717	65,259	203,541
2/1/2021	0	38,898	22,432	67,652	66,224	195,207
2/2/2021	53,752	55,486	51,234	23,922	24,107	208,501
2/3/2021	92,166	95,083	51,825	0	0	239,075
2/4/2021	92,138	95,380	51,792	0	0	239,309
2/5/2021	77,398	83,257	44,854	0	0	205,509

Table 2.12-1 (continued)

Date	CrIN-1 (gal.)	CrIN-2 (gal.)	CrIN-3 (gal.)	CrIN-4 (gal.)	CrIN-5 (gal.)	Total (gal.)
2/6/2021	0	0	0	0	0	0
2/7/2021	0	0	0	0	0	0
2/8/2021	0	0	0	17,265	15,299	32,564
2/9/2021	0	0	0	0	0	0
2/10/2021	50,312	51,960	0	44,152	45,144	191,569
2/11/2021	97,407	98,760	0	87,074	85,787	369,028
2/12/2021	94,278	88,835	0	77,440	77,806	338,359
2/13/2021	88,431	85,246	0	72,030	76,290	321,997
2/14/2021	68,724	62,371	0	72,223	75,504	278,822
2/15/2021	58,054	47,537	0	70,104	71,897	247,592
2/16/2021	61,297	60,451	0	61,998	60,823	244,569
2/17/2021	77,078	80,913	0	72,245	71,113	301,349
2/18/2021	91,626	91,090	0	77,925	79,310	339,951
2/19/2021	92,744	92,723	0	76,715	78,352	340,534
2/20/2021	95,496	96,525	0	81,844	74,745	348,610
2/21/2021	95,197	92,332	0	78,349	77,464	343,343
2/22/2021	90,737	86,794	0	73,813	68,861	320,205
2/23/2021	87,000	91,395	0	77,462	77,645	333,501
2/24/2021	82,205	87,940	0	76,525	76,377	323,046
2/25/2021	81,944	90,299	0	76,314	75,083	323,640
2/26/2021	86,460	93,375	0	76,673	74,539	331,047
2/27/2021	88,351	91,015	0	75,219	74,954	329,539
2/28/2021	96,506	93,095	0	75,183	73,688	338,471
3/1/2021	97,860	93,336	0	76,461	75,940	343,597
3/2/2021	98,364	93,063	31,738	77,031	75,255	375,451
3/3/2021	98,298	91,864	35,208	76,934	73,191	375,495
3/4/2021	87,823	81,392	0	78,141	78,909	326,265
3/5/2021	99,331	98,145	0	76,740	83,135	357,351
3/6/2021	99,334	104,075	0	76,347	81,632	361,388
3/7/2021	99,398	103,615	0	76,369	82,138	361,519
3/8/2021	99,394	103,706	0	78,715	81,269	363,084
3/9/2021	101,071	100,811	37,152	82,840	80,126	402,001
3/10/2021	94,837	98,555	57,174	82,537	79,416	412,518
3/11/2021	92,691	99,941	59,050	80,957	82,237	414,876
3/12/2021	92,137	104,516	25,152	85,820	86,335	393,960
3/13/2021	94,892	105,060	0	88,984	87,911	376,848
3/14/2021	100,884	102,620	0	89,740	87,951	381,195
3/15/2021	96,562	99,993	28,274	91,988	87,943	404,760

Table 2.12-1 (continued)

Date	CrIN-1 (gal.)	CrIN-2 (gal.)	CrIN-3 (gal.)	CrIN-4 (gal.)	CrIN-5 (gal.)	Total (gal.)
3/16/2021	99,722	101,497	45,500	90,733	87,195	424,647
3/17/2021	98,866	103,178	44,040	66,994	60,706	373,785
3/18/2021	97,375	100,623	38,282	91,249	87,346	414,876
3/19/2021	93,494	100,803	43,198	91,233	89,263	417,991
3/20/2021	93,359	100,849	43,337	91,257	89,291	418,093
3/21/2021	93,527	102,590	43,055	91,621	89,035	419,829
3/22/2021	75,499	104,747	41,676	90,894	89,199	402,016
3/23/2021	94,034	75,029	46,823	87,833	89,194	392,913
3/24/2021	88,985	91,053	16,574	83,108	85,700	365,420
3/25/2021	85,598	88,845	29,721	82,260	83,166	369,589
3/26/2021	94,482	99,925	53,972	83,305	83,340	415,024
3/27/2021	93,281	98,266	53,430	83,386	82,925	411,288
3/28/2021	93,620	102,690	54,885	84,439	83,609	419,243
3/29/2021	94,417	98,777	25,734	84,815	81,754	385,497
3/30/2021	96,036	81,221	34,795	86,578	84,089	382,720
3/31/2021	73,155	93,063	54,930	88,041	86,996	396,184
Total 25,891,192						

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

Daily volumes of groundwater pumped from extraction wells during 2021 Quarter 1 are presented in Table 2.13-1.

Table 2.13-1
Daily Extraction Summary Table – CY 2021 Quarter 1, DP-1835

Date	CrEX-1 (gal.)	CrEX-2 (gal.)	CrEX-3 (gal.)	CrEX-4 (gal.)	CrEX-5 (gal.)	Total (gal.)
1/1/2021	99,369	68,984	0	0	73,376	241,730
1/2/2021	99,367	68,933	0	0	73,390	241,689
1/3/2021	99,347	68,941	0	0	73,391	241,680
1/4/2021	99,352	68,902	0	0	73,370	241,624
1/5/2021	100,335	68,986	0	0	68,905	238,225
1/6/2021	100,814	68,879	0	0	67,066	236,759
1/7/2021	100,775	68,923	0	0	67,047	236,745
1/8/2021	100,492	68,911	0	0	71,255	240,658
1/9/2021	100,259	68,936	0	0	73,371	242,566
1/10/2021	99,812	68,879	0	0	73,376	242,067
1/11/2021	99,799	68,866	0	0	73,323	241,988

Table 2.13-1 (Continued)

Date	CrEX-1 (gal.)	CrEX-2 (gal.)	CrEX-3 (gal.)	CrEX-4 (gal.)	CrEX-5 (gal.)	Total (gal.)
1/12/2021	34,244	24,372	0	0	73,860	132,477
1/13/2021	29,228	26,036	0	0	111,272	166,536
1/14/2021	80,685	70,865	0	0	64,536	216,087
1/15/2021	79,151	78,254	0	0	60,068	217,472
1/16/2021	79,067	78,198	0	0	59,977	217,243
1/17/2021	79,031	78,222	0	0	60,017	217,270
1/18/2021	79,008	78,310	0	0	59,887	217,206
1/19/2021	78,265	78,151	0	0	60,120	216,535
1/20/2021	74,148	70,113	1,397	0	68,507	214,165
1/21/2021	72,282	57,451	3,954	0	88,175	221,862
1/22/2021	82,089	54,736	0	0	85,279	222,104
1/23/2021	87,429	50,411	0	0	74,943	212,784
1/24/2021	88,932	50,497	0	0	70,455	209,884
1/25/2021	88,810	50,477	0	0	70,502	209,789
1/26/2021	86,449	57,346	0	0	68,737	212,533
1/27/2021	86,267	63,352	0	0	59,605	209,224
1/28/2021	89,093	63,380	0	0	51,376	203,849
1/29/2021	89,164	63,341	0	0	51,251	203,755
1/30/2021	89,233	63,356	0	0	51,359	203,949
1/31/2021	88,752	63,366	0	0	51,414	203,532
2/1/2021	91,573	57,640	0	0	48,948	198,161
2/2/2021	84,430	63,637	0	0	64,436	212,503
2/3/2021	73,098	75,228	0	0	74,897	223,223
2/4/2021	69,130	78,762	0	0	90,849	238,741
2/5/2021	59,214	68,224	0	0	80,770	208,208
2/6/2021	0	0	0	0	0	0
2/7/2021	0	0	0	0	0	0
2/8/2021	791	0	779	835	1,013	3,418
2/9/2021	0	0	0	0	0	0
2/10/2021	53,772	42,076	44,246	49,615	0	189,709
2/11/2021	114,783	68,132	85,676	91,890	0	360,481
2/12/2021	101,734	59,521	87,303	81,587	0	330,145
2/13/2021	89,191	73,411	87,667	79,389	0	329,657
2/14/2021	35,528	73,418	87,509	83,583	0	280,037
2/15/2021	0	68,593	87,916	86,554	0	243,063
2/16/2021	0	75,965	89,307	85,731	0	251,003
2/17/2021	55,616	81,044	87,402	70,846	0	294,908
2/18/2021	90,757	86,463	89,344	77,329	0	343,893

Table 2.13-1 (Continued)

Date	CrEX-1 (gal.)	CrEX-2 (gal.)	CrEX-3 (gal.)	CrEX-4 (gal.)	CrEX-5 (gal.)	Total (gal.)
2/19/2021	90,419	86,399	89,283	75,970	0	342,072
2/20/2021	92,396	86,327	89,035	74,154	0	341,912
2/21/2021	101,545	86,401	88,028	71,499	0	347,473
2/22/2021	98,154	80,619	82,329	66,183	2,527	329,812
2/23/2021	92,039	75,459	73,421	72,992	0	313,911
2/24/2021	86,417	77,173	87,627	83,876	0	335,093
2/25/2021	81,958	77,165	86,252	81,875	0	327,250
2/26/2021	79,081	76,894	83,095	82,842	0	321,911
2/27/2021	102,050	71,774	79,677	83,092	0	336,593
2/28/2021	106,644	86,868	77,659	77,302	0	348,473
3/1/2021	105,338	86,420	76,332	75,739	0	343,830
3/2/2021	97,143	86,204	74,738	71,656	38,767	368,509
3/3/2021	87,386	88,464	38,895	71,555	87,644	373,945
3/4/2021	96,169	82,434	0	67,860	79,329	325,792
3/5/2021	103,215	77,167	0	79,064	93,365	352,811
3/6/2021	105,012	73,761	0	80,639	100,028	359,439
3/7/2021	103,574	92,966	0	79,161	99,404	375,105
3/8/2021	100,641	89,371	0	76,821	96,408	363,241
3/9/2021	98,518	91,407	33,942	77,565	96,929	398,360
3/10/2021	94,255	90,551	57,614	76,356	95,087	413,863
3/11/2021	93,657	90,646	55,117	76,027	94,984	410,430
3/12/2021	95,641	90,257	22,766	78,555	103,800	391,020
3/13/2021	96,967	91,691	0	80,689	110,186	379,533
3/14/2021	97,911	91,086	0	80,643	110,182	379,822
3/15/2021	91,527	89,974	32,669	75,155	113,191	402,516
3/16/2021	87,188	88,931	50,436	72,011	116,607	415,173
3/17/2021	86,543	85,904	36,359	54,719	106,165	369,689
3/18/2021	95,052	90,103	46,205	72,387	108,479	412,227
3/19/2021	99,095	89,240	48,259	75,592	108,602	420,788
3/20/2021	99,383	89,496	48,308	76,227	103,625	417,040
3/21/2021	99,510	89,601	48,371	76,136	103,690	417,309
3/22/2021	101,362	90,037	50,957	62,001	100,772	405,129
3/23/2021	106,554	90,208	40,150	59,595	96,104	392,611
3/24/2021	103,373	89,896	57,237	80,833	20,688	352,028
3/25/2021	88,235	80,750	55,815	85,443	56,528	366,770
3/26/2021	101,826	90,206	49,859	71,905	104,138	417,934
3/27/2021	102,389	89,535	50,468	64,814	104,673	411,879
3/28/2021	102,236	90,077	49,488	64,712	104,131	410,644

Table 2.13-1 (Continued)

Date	CrEX-1 (gal.)	CrEX-2 (gal.)	CrEX-3 (gal.)	CrEX-4 (gal.)	CrEX-5 (gal.)	Total (gal.)
3/29/2021	105,553	91,981	23,128	61,952	99,142	381,756
3/30/2021	103,788	90,298	28,932	67,024	98,300	388,342
3/31/2021	100,298	88,587	36,018	57,946	110,771	393,619
Total 25,836,790						

2.14 Facility Layout Map (Requirement 14)

Figure 2.14-1 is the facility layout map for 2021 Quarter 1, 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

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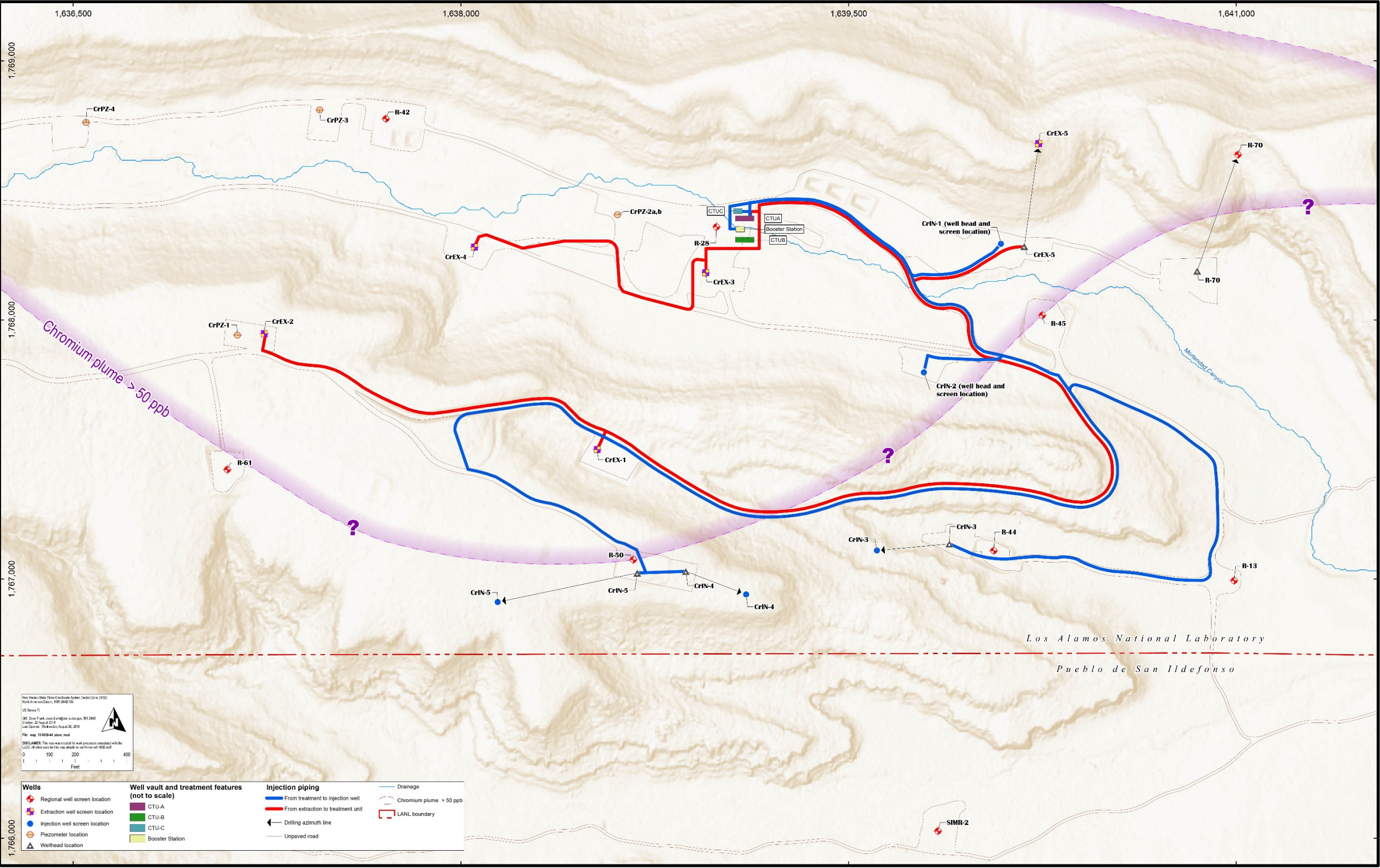


Figure 2.14-1 Facility layout map – CY 2021 Quarter 1, DP-1835

