DEPARTMENT OF ENERGY
Environmental Management Los Alamos Field Office (EM-LA)
Los Alamos, New Mexico 87544

EMLA-24-303-2-1 Date: April 10, 2021

Mr. John Rhoderick and Mr. Rick Shean
New Mexico Environment Department
1190 St. Francis Drive, Suite N4050
Santa Fe, NM 87505

Subject: Response to New Mexico Environment Letter of February 6, 2024, Regarding Resumption of Interim Measures Associated with the Chromium Plume

Dear Messrs. Rhoderick and Shean:

The Department of Energy (DOE) Office of Environmental Management Los Alamos Field Office (EM-LA) has received the New Mexico Environment Department's (NMED) subject letter. EM-LA agrees with NMED that there is an urgent need to resume the Chromium Plume Control Interim Measures (IM) as soon as possible, as extended shutdown of the IM is not protective of the regional aquifer.

The IM was specifically designed to provide hydraulic control of the plume by operating injection wells along the downgradient edge of the plume and extraction wells within the plume to provide treated groundwater for injection (i.e., mass removal is not the purpose of the IM). On March 30, 2023, EM-LA shut down operation of the IM to comply with NMED's December 12, 2022 regulatory direction to cease injection by April 1, 2023. Chromium concentrations are significantly higher since shutdown. (See Figures 1, 2, and 3). Additionally, chromium concentrations are increasing much faster than expected in some wells.

EM-LA also agrees with NMED that the IM should operate during the expert review. After the expert review is complete, EM-LA is committed to incorporating the results to optimize IM operations, including conditions from NMED the expert review determines are appropriate. However, EM-LA does not agree to the conditions NMED specified in the February 6 "Revised Appendix A", as they: (1) are not protective of the regional aquifer; (2) do not consider the purpose and design of the IM; and (3) are not consistent with the purpose of an IM under the 2016 Compliance Order on Consent (Consent Order). Moreover, it is premature—given the ongoing expert review—to stipulate resumption of the IM on the conditions NMED specified in its "Revised Appendix A". Additional details as to why EM-LA does not agree with the conditions are as follows:

- **Limiting IM Duration**. First, NMED would require a limited duration of 24 months for operation of the IM. Yet under Section XV.A of the Consent Order, an IM is "implemented to reduce or prevent migration of site-related Contaminants which have or may result in an unacceptable human or environmental receptor risk while long-term corrective action activities are evaluated and implemented." The very nature of a "temporary recommencement" means the IM would not be in place while long-term corrective action activities are implemented.

- **Requiring Alternative Injection Location**. Second, NMED would require an alternative disposal location for injection of treated water, and that location must be at least 1,200 feet from the outer boundary of the plume. Yet NMED has not provided EM-LA with supporting analysis as to why this alternative location—or its distance from the plume—is necessary. NMED previously approved the location of injection wells in the plume, which were not 1,200 feet from the outer boundary. Additionally, in a 2015 engagement with Pueblo de San Ildefonso, Dr. Patrick Longmire, formerly with the NMED Groundwater Quality Bureau, told the Pueblo, "Chromium concentrations will decrease as the treated, injected water mixes with contaminated groundwater within the chromium plume, especially in the vicinity of monitoring well R-50."[1] Dr. Longmire also stated, "Remediation of the regional aquifer without using injection wells would most likely result in a higher mass and volume of chromium-contaminated groundwater migrating from LANL over a much longer time frame compared to the combination of injection and extraction wells."[2]
- **Arbitrary Conditions without Scientific Basis.** Both the 24-month period of operation and the requirement that alternative injection location be at least 1,200 feet from plume boundary, previously mentioned, were arbitrarily set by NMED. NMED has not provided any scientific basis for these conditions.
- **Conditioning Urgent Need to Resume IM on Installation of Monitoring Well s**. Fourth, if there is an urgent need to take immediate action and resume the IM, as NMED states in its February 6 letter, then it does not make sense to condition such action on subsequent completion of two additional monitoring wells—SIMR-3 and R-80. Resumption of the IM should take place as soon as possible. EM-LA and NMED can separately address what additional monitoring wells should be installed.

EM-LA respectfully requests NMED's approval to resume partial operation of the IM during the expert review and technical discussions. Partial operation of the IM should include injection wells CrIN-4 and CrIN-5 to prevent migration of the plume beyond Los Alamos National Laboratory onto Pueblo de San Ildefonso, and CrIN-3 to provide additional injection volume. Based on the response of R-45 Screen 2 to operation of CrEX-5, consideration could be given to restarting CrIN-2.

If you have questions, please contact Cheryl Rodriguez at (505) 414-0450 or cheryl.rodriguez@em.doe.gov.

Sincerely,

S. Elizabeth Gilbertson

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Ms. S. Elizabeth Gilbertson, Acting Manager
Department of Energy
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[1] Summary of Meeting between NMED and Pueblo de San Ildefonso on October 21, 2015. Available at: https://www.env.nm.gov/wp-content/uploads/sites/12/2019/10/LANL-15-0362015-10-15Approvalw-ModsWPCrPlumeCenterCharacterization.pdf.

[2] *Id.*

Enclosures:

1. Figure 1. *Chromium Concentration Trends in Chromium Plume Control Interim Measures Extraction Wells CrEX-1, -2, -3, -4, and -5 through January 2024 and CrEX-1 through February 2024 and Chromium Characterization Piezometers CrPZ-1, -2, 3, -4, & -5 through January 2024*
2. Figure 2. *Chromium Concentration Trends in Chromium Plume Control Interim Measures Extraction Well CrEX-5 and Groundwater Monitoring Wells R-70 Screen 1 (S1) and S2 and R-45 S1 and S2 through January 2024, and Chromium Characterization Piezometers CrPZ-1, -2, 3, -4, & -5 through January 2024*
3. Figure 3. *Chromium Concentration Trends in Chromium Plume Control Interim Measures Extraction Wells CrEX-1 and CrEX-2 and Groundwater Monitoring Wells R-61 S1 and R-50 S1 and S2 through January 2024*

cc:
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Rep. Eliseo Lee Alcon
Rep. Cathrynn N. Brown
Rep. Christine Chandler
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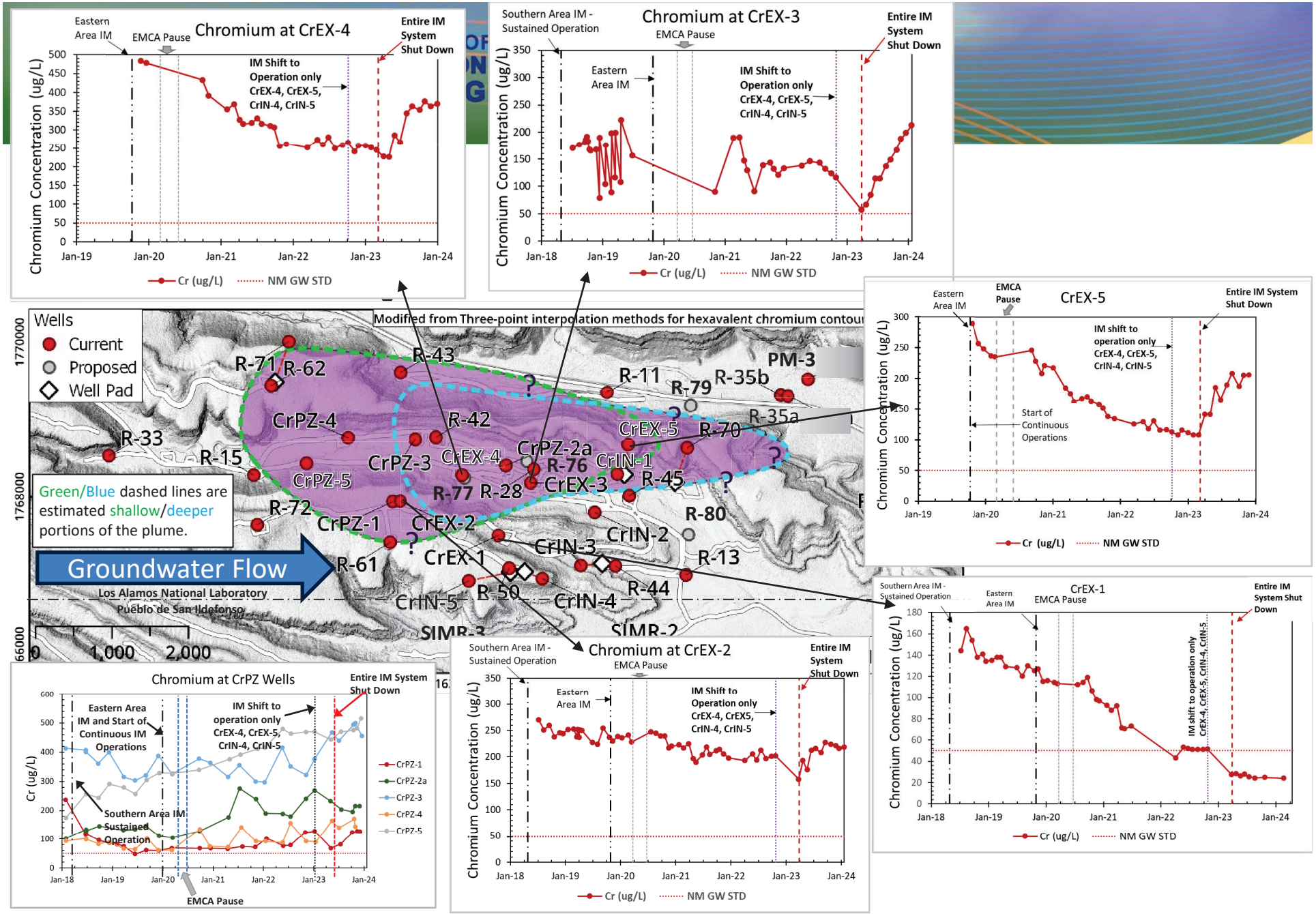

Figure 1. Chromium Concentration Trends in Chromium Plume Control Interim Measures Extraction Wells CrEX-1, -2, -3, -4, and -5 through January 2024 and CrEX-1 through February 2024 and Chromium Characterization Piezometers CrPZ-1, -2, 3, -4, & -5 through January 2024

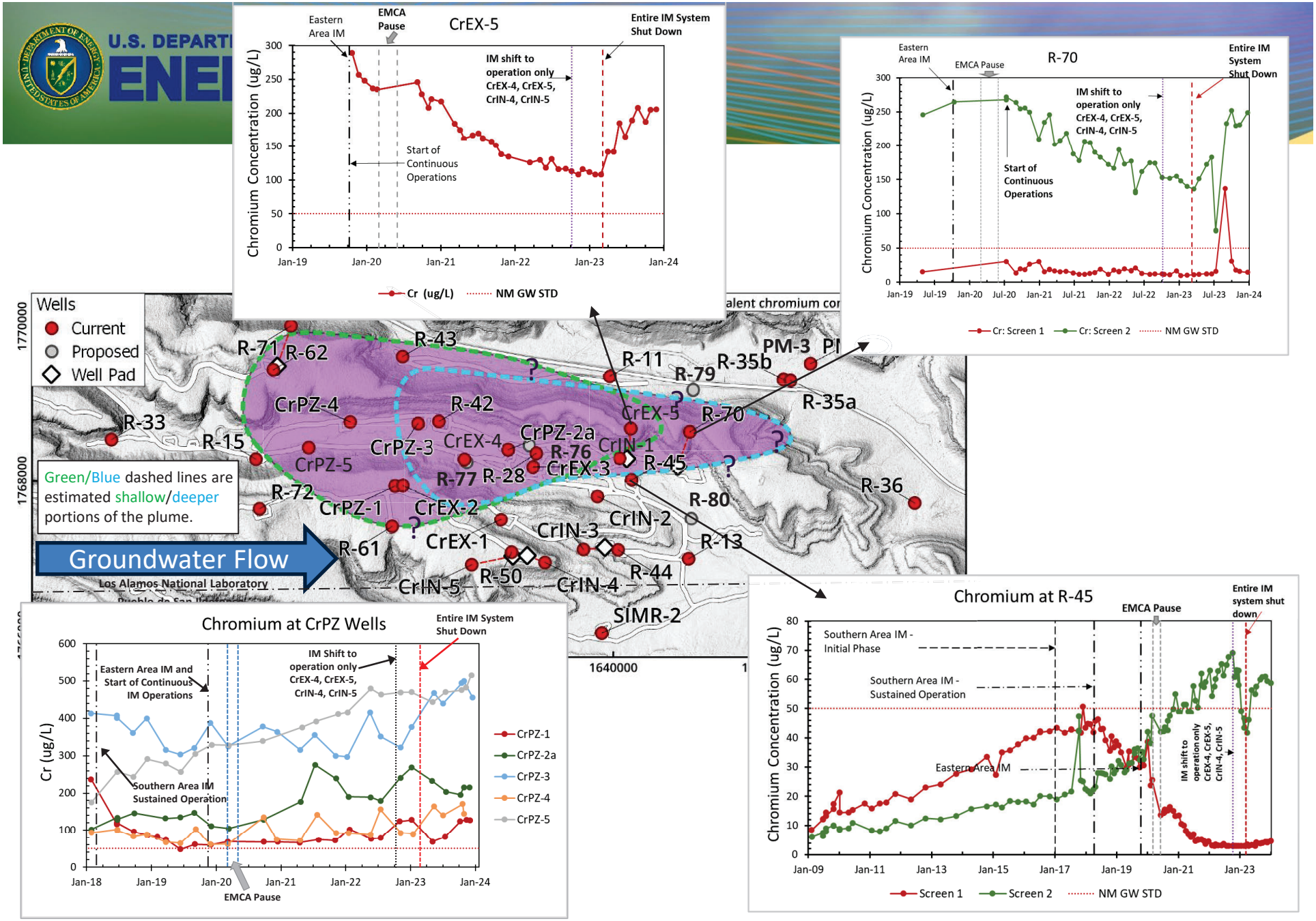

Figure 2. Chromium Concentration Trends in Chromium Plume Control Interim Measures Extraction Well CrEX-5 and Groundwater Monitoring Wells R-70 Screen 1 (S1) and S2 and R-45 S1 and S2 through January 2024, and Chromium Characterization Piezometers CrPZ-1, -2, 3, -4, & -5 through January 2024

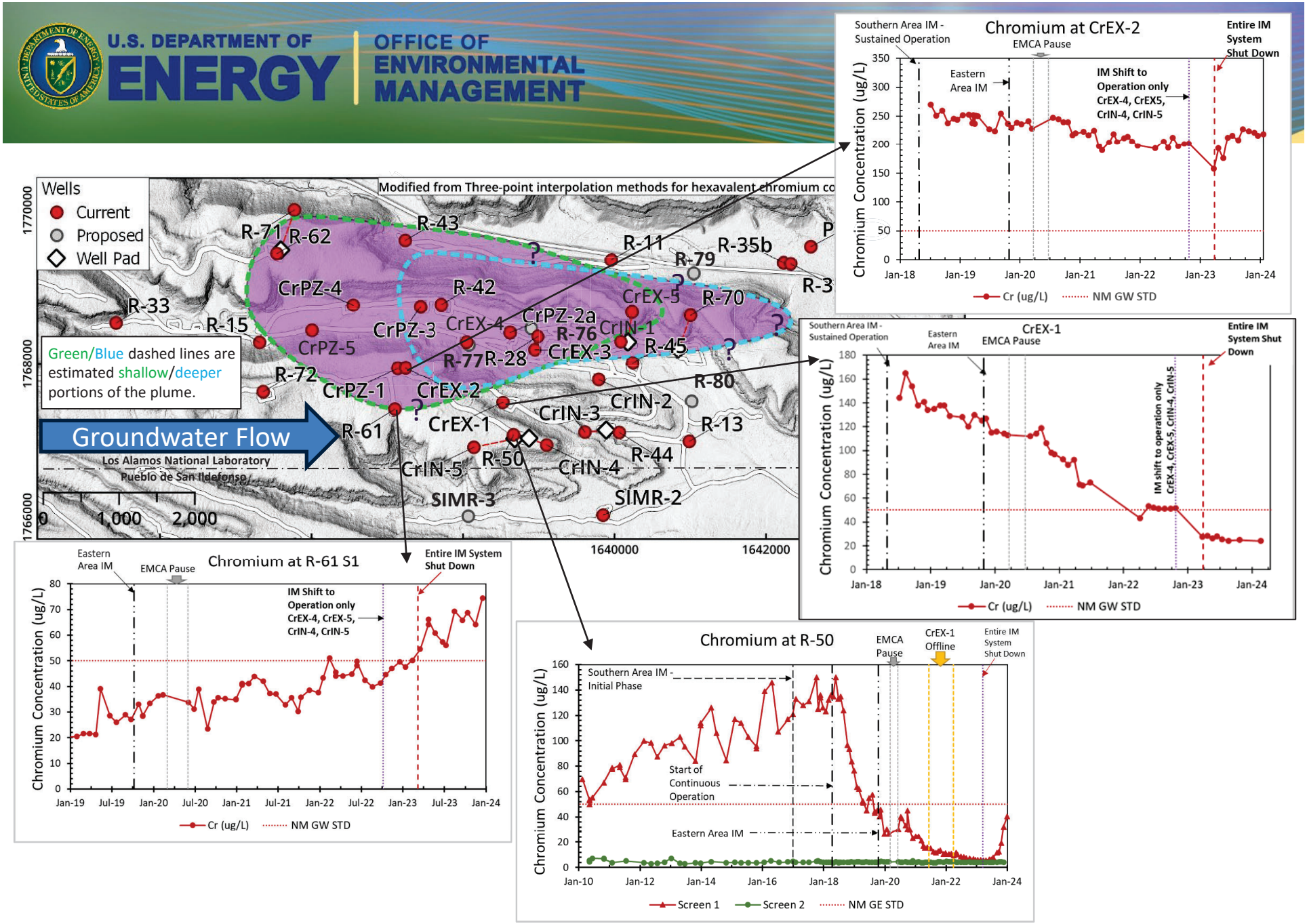

Figure 3. Chromium Concentration Trends in Chromium Plume Control Interim Measures Extraction Wells CrEX-1 and CrEX-2 and Groundwater Monitoring Wells R-61 S1 and R-50 S1 and S2 through January 2024