

# ROCKY FLATS SITE REGULATORY CONTACT RECORD 2022-03

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**Purpose:** Reportable Condition for Uranium at Point of Evaluation (POE) GS10

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**Contact Record Approval Date:** February 2, 2023

**Site Contacts and Affiliations:** Andy Keim and Shawn Eichelberger, U.S. Department of Energy (DOE); Dana Santi and Ryan Wisniewski, RSI EnTech, LLC (RSI)

**Regulatory Contacts and Affiliations:** Lindsay Murl, Colorado Department of Public Health and Environment (CDPHE); Rob Stites, U.S. Environmental Protection Agency (EPA)

**Date of Consultation Meeting:** September 27, 2022

**Consultation Meeting Participants:** Lindsay Murl, CDPHE; Rob Stites, EPA; Andy Keim and Shawn Eichelberger, DOE; Dana Santi, Ryan Wisniewski, John Boylan, George Squibb, and Karin McShea, RSI

**Related Contact Records:** Contact Record (CR) 2021-02

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**Discussion:** In August 2022, DOE identified a reportable condition for uranium at the Rocky Flats Site, Colorado, POE GS10 during routine data evaluation for uranium. DOE performed the evaluation in accordance with the *Rocky Flats Legacy Management Agreement* (RFLMA) Attachment 2, Figure 6, Points of Evaluation, which will result in a calculated 12-month rolling average concentration for uranium on August 31, 2022, that will exceed the applicable RFLMA Attachment 2, Table 1 standard of 16.8 micrograms per liter ( $\mu\text{g/L}$ ), once the current in-progress composite sample is analyzed and data validated data are received. This projected 12-month rolling average includes available sample results from September 1, 2021–August 31, 2022.<sup>1</sup>

Although no recent validated sample data were received for POE GS10 (the most recent results are from the composite sample for the period from May 24–June 7, 2022), routine data evaluation indicates that the 12-month rolling average for uranium will trigger a reportable condition for August 31, 2022.<sup>2</sup> A composite sample was started on June 7, 2022 and is still in progress due to low surface water flows. As a result, analytical results are not available for June 7–August 31, 2022. However, DOE continuously collects flow data, which allows for the calculation of a projected 12-month rolling uranium average. DOE made this early determination based on the small volume of water represented by the in-progress sample through the month of

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<sup>1</sup> The 12-month rolling average is calculated for the last day of each month. Twelve average values are calculated and evaluated each year.

<sup>2</sup> This is the date that validated results are usually received identifying the reportable condition; either by sample result value or calculated average, depending on location and analyte. In this case, DOE determined on August 31, 2022, that uranium concentrations at surface water location GS10 will become reportable; regardless of the uranium concentration once analyzed, the limited volume of surface water flow associated with the current in-progress composite sample will not lower the average below the standard. DOE is providing this notification earlier than identified within the RFLMA flowchart for POEs to maintain the timely notification intent.

August 2022 and the insignificant effect this sample will have on the 12-month rolling average once validated results are available.

It has been a relatively dry year at the Site, and 2022 is on track to have some of the lowest surface water flows since closure in 2005. The unusually low spring runoff and the extended dry periods (no streamflow) have resulted in 12-month rolling average concentrations that are more influenced by the dry conditions than by increased water quality variation. At POE GS10, as the 12-month rolling average period progresses through 2022, water from 2021 with relatively lower uranium concentration falls outside the calculation period. Additionally, due to the lower spring runoff of 2022 and more recent dry periods, water with relatively higher uranium concentration (due to a higher proportion of groundwater seepage compared to surface water runoff) makes up a larger portion of the average.

The RFLMA Parties considered the following information to develop a path forward as outlined in this CR:

- No reportable conditions are triggered by downstream monitoring at the Walnut Creek Point of Compliance (WALPOC). The calculated 12-month rolling average at WALPOC for total uranium on August 31, 2022, is 13.1 µg/L, which is below the RFLMA Table 1 standard of 16.8 µg/L.
- The most recent uranium concentrations at POE GS10 are consistent with concentrations observed during the 17 years since closure.
- As with POE GS10, flows at WALPOC have been very low during 2022; there have only been 27 days with flow at WALPOC in 2022, and no flow since June 8, 2022.
- Uranium in groundwater in the POE GS10 area is variable and some monitoring wells have high concentrations of naturally-occurring uranium. Since closure, numerous samples from POE GS10 have been sent to Los Alamos National Laboratory (LANL) or Lawrence Berkeley National Laboratory (LBNL) for isotopic analysis to determine the percentages of natural and anthropogenic uranium. Historically, naturally-occurring uranium has made up a much greater proportion of the concentration at POE GS10, averaging about 70%<sup>3</sup>.
- The elevated uranium concentrations observed since closure at POE GS10 are primarily the result of proportionally increased groundwater contributions to surface water baseflow due to reduced surface runoff resulting from the removal of impervious surfaces (e.g., pavement, buildings) that were present before closure.
- Uranium concentrations in surface water are expected to fluctuate due to the natural variability in environmental conditions such as precipitation runoff and groundwater recharge. Uranium concentrations have exceeded the RFLMA standard at POE GS10 since Site closure. Previous reportable conditions for uranium at this location were triggered for the period from April 30, 2006, to March 31, 2009, with the 12-month rolling averages in the range of 10.2 to 15.8 picocuries per liter (pCi/L). The RFLMA uranium standard was subsequently revised from an activity-based radionuclide parameter of 10 pCi/L to a concentration-based parameter of 16.8 µg/L. Since that standard change, the 12-month

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<sup>3</sup> LBNL and LANL data are included as an appendix to the Rocky Flats Site annual report for the years that these isotopic analyses are completed.

rolling average for uranium at POE GS10 has been above 16.8 µg/L for the periods April 30, 2011, to February 28, 2013; May 31, 2013, to August 31, 2013; and April 30, 2021<sup>4</sup>.

- The variability of the uranium concentration was detailed in a study conducted by geochemistry experts, the results of which were published in the *Evaluation of Water Quality Variability for Uranium and Other Selected Parameters in Walnut Creek at the Rocky Flats Site* (September 2015). This report has subsequently been updated twice, most recently in 2021; the 2021 report is available at [https://lmpublicsearch.lm.doe.gov/lmsites/rfs\\_evaluation\\_of\\_water\\_quality\\_variability\\_walnut\\_creek\\_dec\\_2021.pdf](https://lmpublicsearch.lm.doe.gov/lmsites/rfs_evaluation_of_water_quality_variability_walnut_creek_dec_2021.pdf)

### **Proposed Plan and Path Forward:**

The following actions described are consistent with the response to previous reportable conditions for uranium at POE GS10 and serve as the plan and schedule for the evaluation:

- DOE will continue sampling in accordance with RFLMA Table 2.
- DOE will routinely collect flow-paced composite samples at POE GS10, which will continue to be analyzed on an accelerated 2-week turnaround.
- DOE will make available upon CDPHE's request a split sample from an upcoming composite sample collected at POE GS10.
- DOE will report the results of continued monitoring and of the subsequent evaluation in RFLMA quarterly and annual reports of surveillance and monitoring activities.

**Resolution:** CDPHE, after consultation with EPA, approves this CR.

**Action Complete:** The actions approved in this CR will continue as part of routine surface water monitoring and reporting, as identified in the sections above and documented within the RFLMA. Any future changes to these steps will be documented separately.

**Contact Record Prepared by:** Ryan Wisniewski, RSI

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Rocky Flats Contact Record File

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<sup>4</sup> Calculations for 12-month averages are performed using daily time steps; however, a value is only calculated for the last calendar day of each month. The 12-month rolling average for the last day of each month is calculated using an interval of time that includes the previous 365 calendar days. During 2021, the April 30 value was above the standard, but the March 31 and May 31 values were not. Therefore, the 2021 reportable condition period is expressed as only April 30, 2021.

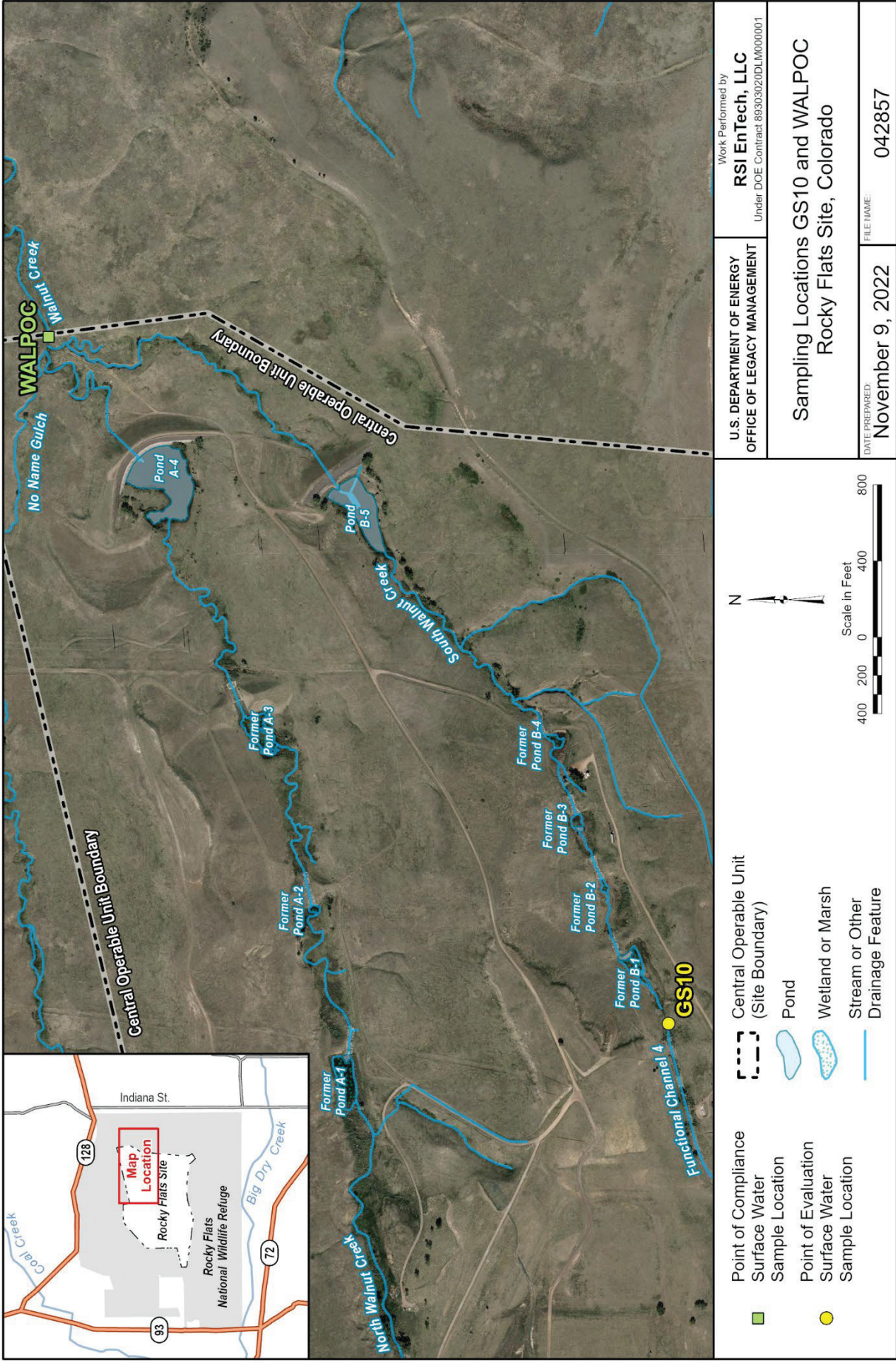


Figure 1. POE GS10 Location