

ROCKY FLATS SITE

REGULATORY CONTACT RECORD 2021-02

Purpose: Reportable condition for uranium at Point of Evaluation (POE) GS10.

Contact Record Approval Date: November 2, 2021

Site Contacts and Affiliations: Andy Keim, 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); Jesse Aviles, U.S. Environmental Protection Agency (EPA)

Date of Consultation Meeting: July 21, 2021; September 8, 2021

Consultation Meeting Participants: Lindsay Murl, CDPHE; Jesse Aviles, EPA; Andy Keim, DOE; Dana Santi, Ryan Wisniewski, Patty Gallo, John Boylan, George Squibb, Jody Nelson, April Tischer, Chris Oliver, RSI

Related Contact Records: CR 2011-04, CR 2011-05

Discussion: A reportable condition at Point of Evaluation (POE) GS10 was determined upon receipt of recently available validated analytical results for uranium from the composite sample collected from 9:30 on 4/30/2021 to 10:38 on 5/4/2021. Validated results were received on June 3, 2021. DOE notified the *Rocky Flats Legacy Management Agreement* (RFLMA) Parties on June 8 of the reportable condition and provided a proposed response plan on June 30 in accordance with reportable conditions for a POE as outlined within the RFLMA.

The evaluation was performed in accordance with RFLMA Attachment 2, Figure 6, Points of Evaluation, which resulted in a calculated 12-month rolling average concentration for uranium of 18.1 micrograms per liter ($\mu\text{g/L}$) on April 30, 2021. This concentration exceeds the applicable RFLMA Attachment 2, Table 1, standard of 16.8 $\mu\text{g/L}$. This 12-month rolling average includes sample results for May 1, 2020, through April 30, 2021.

Subsequent uranium sample results for composite samples collected through August 5, 2021, are all below the 16.8 $\mu\text{g/L}$ standard. As of May 31, 2021, the 12-month rolling average for uranium at GS10 was 12.4 $\mu\text{g/L}$, ending the reportable condition discussed here.

Based on the short-term nature of the current reportable condition, the similarity to previous reportable conditions for uranium at GS10, and the reasons listed below, no mitigating actions are warranted at this time.

- POEs are intended to provide an early indication of water-quality trends that may affect water quality at downstream Points of Compliance (POCs). The most recent uranium concentrations at GS10 are consistent with concentrations observed during the 15 years since closure. Figure 1 illustrates the 12-month rolling average for total uranium since

late 1997. The absence of a significant increasing trend suggests no new source term to be present.^{1,2}

- The calculated 12-month rolling average at the Walnut Creek POC (WALPOC) for total uranium on April 30, 2021, is 10.5 µg/L, which is well below the RFLMA Table 1 standard of 16.8 µg/L. Uranium results from subsequent composite samples collected at WALPOC through July 13, 2021, are all well below 16.8 µg/L. As of June 30, 2021, the 12-month rolling average for uranium at WALPOC is 8.1 µg/L.
- Postclosure, the increase in uranium concentrations at GS10 is 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) during site closure (Figure 1).
- Uranium concentrations in surface water are expected to vary due to the natural variability of environmental conditions such as precipitation runoff and groundwater recharge. Uranium concentrations have exceeded the RFLMA standard at GS10 several times since site closure (Figure 1). Previous reportable conditions for uranium at this location were triggered for 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 metal parameter of 16.8 µg/L, which equates to approximately 11.3 pCi/L. Since that standard change, the 12-month rolling average for uranium at GS10 has previously been above 16.8 µg/L for April 30, 2011, to February 28, 2013, and May 31, 2013, to August 31, 2013.
- The variability of the uranium concentration influenced by environmental conditions was detailed in a study conducted by a qualified geochemistry subcontractor, 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 was updated in 2019 and can be found at https://www.lm.doe.gov/Rocky_Flats/SWB_Rpt_Eval_Water_Quality_Variability.pdf; this report is also scheduled to be updated in 2021 with recent monitoring data from the RFLMA and Adaptive Management Plan monitoring programs.

¹ Uranium in groundwater in the GS10 area is variable, and some locations have high concentrations of naturally occurring uranium. Since closure, numerous samples from GS10 have been sent to Los Alamos National Laboratory or Lawrence Berkeley National Laboratory 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 GS10, averaging about 70%.

² Although the recent 12-month rolling average at GS10 is above the 16.8 µg/L site standard, it is well below the 30 µg/L drinking water maximum contaminant level (MCL) for uranium. Since closure, the 12-month rolling average for uranium at GS10 has never exceeded the drinking water MCL. The 16.8 µg/L standard is a level at which there are no known or anticipated adverse effects on the health of a person, based on an adult weighing 70 kilograms consuming 2 liters of water per day for a lifetime. Because Walnut Creek has an intermittent flow of water and is not a source of drinking water, there remains an adequate margin of safety.

Plan and Schedule to Address the Reportable Condition: The RFLMA Parties agreed that the steps described below in this contact record (CR) shall serve as the approved plan and schedule response for this reportable condition. These actions are consistent with the response to previous reportable conditions for uranium at GS10.

The following steps have been or are being taken:

- Sampling will continue in accordance with RFLMA Attachment 2, Table 2.
- Flow-paced composite samples routinely collected at GS10 will continue to be analyzed on an accelerated 2-week turnaround.
- DOE will make available, upon CDPHE's request, a split sample from a recent composite sample collected at GS10. That composite sample was started on June 4, 2021, and retrieved from the field on June 16, 2021.
- 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 response approved in this CR will continue as part of the routine surface water monitoring and reporting as identified in the section above and documented within the RFLMA. Any future changes to these steps will be documented under separate cover.

Contact Record Prepared by: Ryan Wisniewski, RSI

Distribution:

Andy Keim, DOE
Lindsay Murl, CDPHE
Jesse Aviles, EPA
Dana Santi, RSI
Rocky Flats Contact Record File

POE GS10: 12-Month Rolling Average for Total Uranium (9/30/1997 - 7/31/2021)

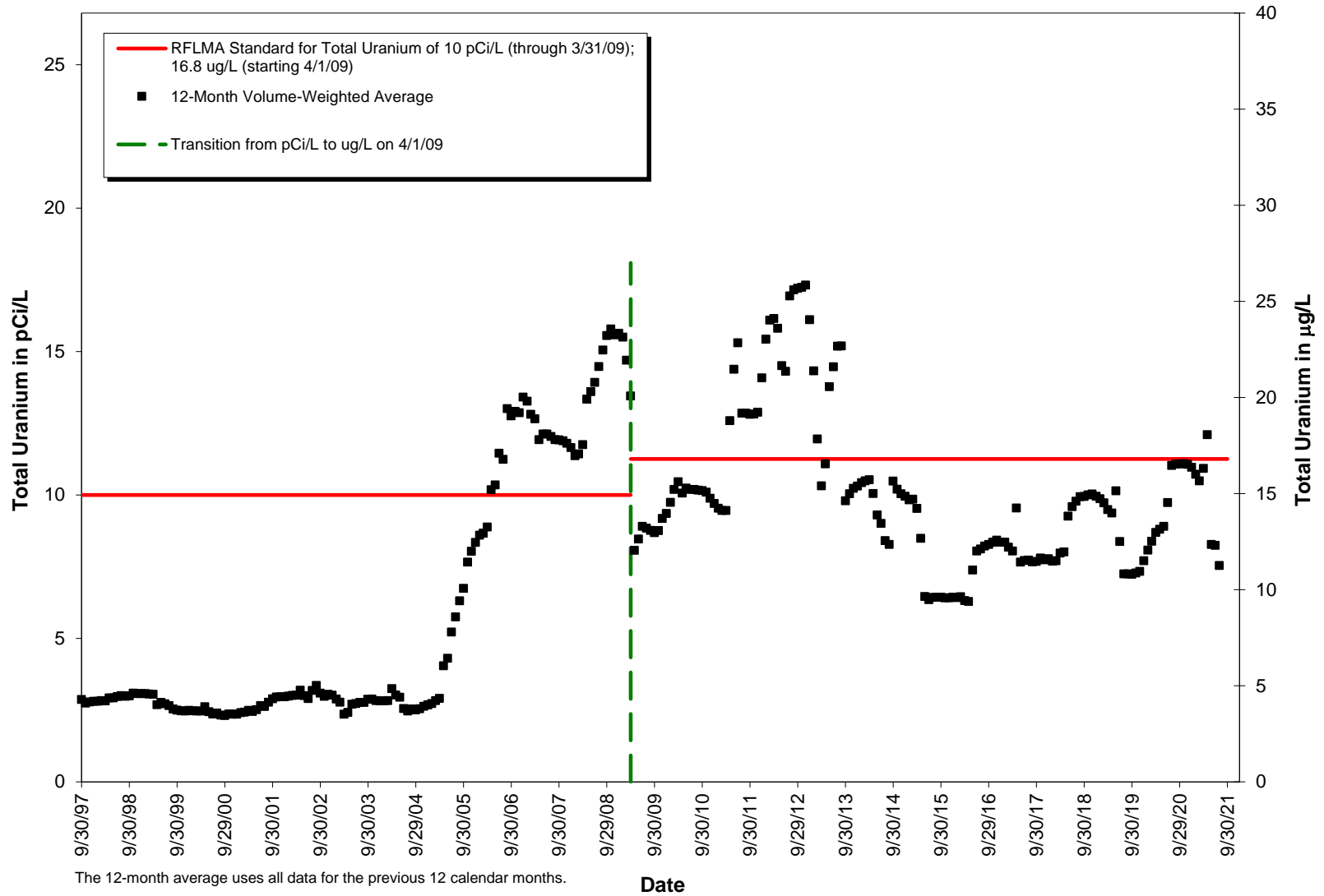


Figure 1. POE GS10: 12-Month Rolling Average for Total Uranium (9/20/1997–7/31/2021)