Comments from: Jon Lipsky, MAS and FBI, Retired. Provided to RFSC on October 31, 2021; SUBJECT: US DOE/LM, RFS, Quarterly Report (Q2 2021) Briefing - Surface Water Monitoring: PFAS - Public Comment/Inquiry

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Comment #1

Since at least September 2018 PFOA, PFOS and its anions have been regulated by CDPHE as hazardous constituents with a standard, separately or combined, at 70 ppt to include corrective action plans. Lindsay Masters has repeatedly asserted CDPHE regulatory jurisdiction of PFOA/S at RFS yet no RFLMA Contact Record has been published for RFLMA enforcement or public consumption. In July 2019 Location ID 2784 results for PFOA/S exceeded the 70 ppt standard and on June 25, 2019 and October 9, 2019 Location ID 33502 results for PFOA/S exceeded the 70 ppt standard.

After over three (3) years of CDPHE jurisdiction of PFOA/S when will the RFLMA Contact Record be published?

DOE Response to Comment #1

Under CDPHE's Resource Conservation and Recovery Act (RCRA)/Colorado Hazardous Waste Act (CHWA) authority, the regulatory decision(s) regarding PFAS are documented via letter (CDPHE 2021), with detailed information in the 2021 Rocky Flats Sampling and Analysis Plan (SAP) for upcoming PFAS sampling and analysis efforts. CDPHE believed this decision was best captured by the state in letter format. As a result, a CR for the currently-implemented SAP will not be prepared because a regulatory decision has already been made in the CDPHE letter.

Comment #2

Where exactly is sample location 2784 and why is not a current sampling location for PFOA/S at RFS?

DOE Response to Comment #2

Sample 2784 is not a sample location. This sample number was assigned to a field blank, which is a quality control sample. Analytical results did not exceed 70 ng/L.

Comment #3

When will the public be informed of RFS, PFOA/S corrective action measures? When do we expect that CDPHE, USDOE and USEPA will conclude its PFOA/S investigation at RFS?

DOE Response to Comment #3

As noted in CDPHE's April 22, 2021 letter, "While the nature and extent of PFAS contamination at Rocky Flats has not been completely delineated, CDPHE is not currently requiring corrective action in light of the relatively low levels at both points of compliance, and the protections afforded by the Restrictive Notice." At this time, the agencies' mutual goal is to collect an expanded PFAS dataset with greater sampling event frequency over time to further delineate

nature and extent. Sampling locations near multiple potential sources of different types of PFAS chemicals were selected by the RFLMA parties. PFAS is also being discussed as part of the CERCLA FYR dialogue with CDPHE and EPA.

Reference: CDPHE (Colorado Department of Public Health and Environment), 2021. "January SAP for PFAS – CDPHE approval with modifications letter," letter from Lindsay Murl, CDPHE to Andrew Keim, LM. April 22.

Comment #4

Is USDOE at RFS subject to the decision of the Colorado Water Quality Control Commission (WQCC) and regulation of the Colorado Hazardous Waste Regulation, Part 261, within the jurisdiction of CDPHE regarding PFOA, PFOS and its anions and not only the RFLMA?

DOE Response to Comment #4

The Rocky Flats Site is subject to CERCLA and RCRA/CHWA, including Colorado Hazardous Waste Regulations Part 261. Specific provisions of the RCRA/CHWA regulations and the WQCC surface water regulations at 5 CCR 1002-31 (basic standards) and 5 CCR 1002-38 (site-specific standards) are applicable or relevant and appropriate requirements (ARARs) established in the 2006 CAD/ROD and are applicable to the Rocky Flats Site.

Comment #5

For reference, AFFF (CDPHE focus) was first manufactured in the mid-1960s however Teflon, PFOA and PFOS have been manufactured since the 1930s. The former Rocky Flats Nuclear Weapons Plant manufacturing of weapons-grade plutonium-239 triggers began in 1952 and concluded in 1989. USDOE/LM excluded a number of other RFS manufacturing buildings and waste stream areas where Teflon, PFOA or PFOS should be sampled. For example, tritium reservoir-to-pit delivery systems, amounting in the tens of thousands that contained Teflon; valve gaskets; other plating operations including Building 460; Buildings 776/777 and fire debris in the Triangle Area and its outfall from the May 1969 fire; potentially 320 tons of PFOA/S contaminated soil from the May 1969 fire east of Building 881; and, 207 Solar Evaporation Ponds, Building 774, Building 995 and the Present Landfill (PLF) concerning filtration or evaporation of 1969 fire effluent and sewage sludge disposal.

RFS has many other potential PFOA/S sampling locations when will these other locations be scoped for evaluation and potential corrective action?

DOE Response to Comment #5

Perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) are part of a larger group of chemicals known as PFAS. The current PFAS sample locations do not represent every possible source of PFAS at the site. Their selection was tailored to areas with the highest potential for PFAS based on historical site operations, interviews with former RFP fire department personnel, and industry-wide knowledge of potential PFAS sources (e.g., landfills). These locations were approved by CDPHE and EPA as screening locations that would provide

an indication of the presence or absence of PFAS at the site. LM has committed to a minimum of eight quarters of PFAS sampling at twelve locations. In addition to analyzing for PFOA and PFOS, LM has volunteered to analyze groundwater and surface water samples for an additional 20+ types of PFAS chemicals. Once these data are collected, LM will consult with CDPHE and EPA on the need for additional action at the site.

Comment #6

Along the same lines as PFAS, protectiveness of the public and the remedy; at least since 2012, 1,4-Dioxane (dioxane) and Pentachlorophenol standards were more stringent. In its 2017 Fourth 5-Year Review, USDOE/LM stated that dioxane and pentachlorophenol were not identified as analytes of interest nor contaminants of concern. No data exists for dioxane and pentachlorophenol was not detected. The 2017 RFS review also states that a change in the standards for dioxane does not [affect] protectiveness of the remedy.

Evidence indicates that the former Rocky Flats Nuclear Weapons Plant utilized and maintained an inventory of dioxane that was utilized in conjunction with an RFS contaminant of concern, TCA. Why did USDOE/LM decide not to sample and analyze for dioxane after the standard was established in 2009 and more stringent in 2012 and how is this inaction protective of the remedy?

What assurances exist that dioxane is not present, at the more stringent standard, when USDOE/LM does not sample and analyze dioxane?

DOE Response to Comment #6

The surface water and groundwater to be monitored at the former RFP following closure were determined in the 2006 CAD/ROD, based on the results of the Remedial Investigation/Feasibility Study (RI/FS) (DOE 2006). Monitoring frequency and sample analyses are prescribed in Table 2, *Water Monitoring Locations and Sampling Criteria* of Attachment 2 to RFLMA. 1,4-dioxane was not determined to be an analyte of interest (AOI) in the RI/FS or a contaminant of concern (COC) in the Comprehensive Risk Assessment.

The original list of analytes was included in Table 1, *Surface Water Standards* of Attachment 2 to RFLMA when the agreement was signed in 2007. The list came from a number of sources, including State of Colorado surface water quality standards and cleanup action levels for accelerated actions established in the Rocky Flats Cleanup Agreement. An extensive effort was not made at the time to tailor the list of analytes to expected post-closure site conditions. Since that time, modifications to Table 1 have been limited to updating changes in surface water standards. The 2009 1,4-dioxane standard change was adopted via a December 22, 2009 letter from LM to CDPHE ((available at https://lmpublicsearch.lm.doe.gov/SitePages/CERCLA.aspx?sitename=Rocky_Flats [Administrative Record document number PD-A-000200]).

In 2018 LM, CDPHE, and EPA completed a comprehensive review of the analyte list and standards included in Table 1. CR 2018-05 outlines the process utilized by the RFLMA parties to evaluate analytes on this table. In accordance with this process, the only analytes removed from

Table 1 were those that met both of the following criteria: (1) the analyte was not considered an analyte of interest (AOI) in the RI/FS or a contaminant of concern (COC) in the Comprehensive Risk Assessment and (2) the analyte was not detected in the post-closure dataset or no post-closure data were available (i.e., these were not targeted analytes and therefore no post-closure samples were analyzed for these analytes). Although 1,4-dioxane had been listed in Table 1 since RFLMA was signed in 2007, it was not identified as a AOI or COC and had not been analyzed in post-closure monitoring samples because it was not a targeted analyte. As a result, in December 2018, the RFLMA parties agreed to remove 1,4-dioxane from Table 1 (see CR 2018-05).

Comments from: Jon Lipsky, MAS and FBI, Retired. Provided to RFSC via email on October 31, 2021 SUBJECT: US DOE/LM, RFS, Quarterly Report (Q2 2021) Briefing - Surface Water Monitoring: 12-month rolling average uranium and plutonium concentrations - Public Comment/Inquiry

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The email sent to RFSC included the June 14, 2021 email from Andrew Keim, USDOE/LM, to Lindsay Masters, CDPHE, and Jesse Aviles, USEPA and others; and, Lindsay Masters, CDPHE, email dated June 15, 2021, to Andrew Keim, USDOE/LM and Jesse Aviles, USEPA and others entitled "Informal Notification of Reportable 12- Month Average Plutonium Concentrations at SW017 (sic)."

BACKGROUND

In the attached June 14, 2021 email Mr. Keim, USDOE/LM, notified CDPHE and USEPA, with RFLMA chapter and verse requirements, of a reportable condition at the Rocky Flats Site (RFS), RFLMA Point of Evaluation SW027. USDOE/ LM cites a calculated value 12-month rolling concentration for plutonium on April 30, 2021 of 0,9 pCi/L which exceeds the RFLMA Attachment 2, applicable Table 1 Standard of 0.15 pCi/L. "This 12-month rolling average includes results for the period from May 1, 2020 through April 30, 2021." The subsequent two plutonium sample results collected between May 3, 2021 and May 20, 2021 are well below 0.15 pCi/L. Plutonium concentrations at the downstream Point of Compliance, WOMPOC, remain below the 0.15 pCi/L standard. On June 15, 2021 Ms. Masters, CDPHE, acknowledged Mr. Keim's reportable conditions within Rocky Flats: one for plutonium at SW-027 and one for uranium at GS-10.

The RFSC published the RFSC Notice for 11-1-21 and RFSC Board meeting packet for 11-1-21 on October 22, 2021. On PDF pages 49-50 of the RFSC Board meeting packet for 11-1-21 Melissa Weakley, under RFSC letterhead, Page 1 of 3 documented on October 21, 2021 USDOE/LM's Quarterly Report (Q2 2021) Briefing outline. The statements of interest are (emphasis added):

"The12-month rolling average uranium concentration at Point of Evaluation (POE) GS10 was 18.1 micrograms per liter (ug/L) on April 30, 2021, exceeding the 16.8 ug/L RFLMA standard and triggering a reportable condition. As of May 31, 2021, the 12-month rolling average for uranium at GS10 was 12.4 ug/L, ending the reportable condition;" and,

"The12-month rolling average plutonium concentration at POE SW027 was 0.9 picocuries per liter (pCi/L) on April 30, 2021, exceeding the 0.15 pCi/L RFLMA standard and triggering a reportable condition. As of May 31, 2021, the 12- month rolling average for plutonium at SW027 was 0.061 pCi/L, ending the reportable condition."

PUBLIC COMMENT/INQUIRY

Comment #1

Ms. Weakley's report states that the reportable conditions for uranium and plutonium ended the April 30, 2021 reportable condition with the May 31, 2021, 12-month rolling average.

Just exactly how does the RFLMA authorize the 12-month rolling average from May 1, 2020 through April 30, 2021 include samples of plutonium and uranium in May 2021, outside the previous 12-month rolling average time frame?

DOE Response to Comment #1

The 12-month rolling average from May 1, 2020, through April 30, 2021 does not include samples from May 2021. Referenced sample results from May 2021 are only used to indicate the time the location remained reportable.

The 12-month rolling average is calculated once per month for the last day of each month. The 12-month rolling average for a specific analyte is a volume-weighted average of the concentrations for all composite samples collected at a particular location during a 12-month period. For example, the 12-month rolling average for April 30 includes all sample results back through May of the previous calendar year.

In the case of the 2021 reportable conditions at POEs GS10 and SW027, the April 30, 2021 averages exceeded the applicable RFLMA surface-water standards (uranium at GS10; plutonium at SW027). These April 30, 2021 averages included all sample results back to (and including) May 1, 2020. When the May 31, 2021 averages were subsequently calculated for GS10 and SW027, these values were less than the applicable RFLMA surface-water standards. The calculated averages changed between April 30, 2021 and May 31, 2021 because the May 2020 samples were removed from the calculation, while the May 2021 samples were added to the calculation. Even though the reportable periods ended with the May 31, 2021 calculation, the reportable conditions had already been triggered and subsequent consultation and evaluation was still required.

A detailed description of RFLMA surface-water data evaluation can be found in Section 6.1.11.1 of the Rocky Flats Site Operations Guide (Rocky Flats Site, Colorado, Site Operations Guide (doe.gov)). A similar description is provided in Section B2.2 (Appendix B) of each annual report.

Comment #2
USDOE/LM acknowledged in its email it must submit a plan and schedule to address the condition to the regulators for an evaluation to address the condition within 30 days (on or before July 3, 2021) of receiving the validated data for the reportable condition.

What is the date of the meeting that USDOE/LM submitted its required plan and schedule to address the condition with CDPHE and USEPA?

DOE Response to Comment #2
RFLMA specifies that a plan and schedule be submitted within 30 days, but it does not specify a timeline for consultation meetings to discuss the plan and schedule.

Contact Record 2021-02, approved November 2, 2021 and posted on the LM website provides the timeline information for the reportable condition for uranium at GS10. Consultation meetings were held on July 21, 2021 and September 8, 2021. A proposed plan and schedule to address the reportable condition at GS10 were submitted to CDPHE and EPA by email on June 30.

The reportable condition for plutonium at SW027 was discussed at consultation meetings on July 21, 2021 and September 8, 2021. A proposed plan and schedule to address the reportable condition at SW027 were submitted by email to CDPHE and EPA on July 8. Consultation on this reportable condition is ongoing.

Comment #3
What are the details of USDOE/LM's plan and schedule to address the above mentioned plutonium and uranium conditions for protection of the remedy?

DOE Response to Comment #3
The plan and schedule for addressing the reportable condition for uranium at GS10 are provided in the approved contact record CR 2021-02, posted on the LM website. As detailed in the CR, the most recent uranium concentrations at GS10 are consistent with concentrations observed during the 15 years since site closure. The absence of a significant increasing trend suggests that a new source of uranium contamination is not present. Given this and based on the short-term nature of the reportable condition and the similarity to previous reportable conditions for uranium at GS10, no mitigating actions were warranted.

Consultation between the RFLMA parties is ongoing regarding the plan and schedule for addressing the reportable condition for plutonium at SW027. Details of the plan and schedule for the reportable condition at SW027 will be provided in a contact record when the RFLMA consultation is complete. In the interim, response actions completed to address the reportable condition include: sampling in accordance with RFLMA Attachment 2 Table 2; continued source

evaluation monitoring at surface water location GS51; monitoring of vegetation on the 903 hillside best management practice (BMP) vegetation monitoring area; erosion controls evaluation; and reseeding and wood straw application in the BMP vegetation monitoring area to improve overall vegetation.

Comment #4

Did USDOE/LM share validated analytical results for plutonium and uranium samples collected in May 2021, and outside the previous 12-month rolling average period, with CDPHE and USEPA at the RFLMA mandated July 3, 2021 meeting or before that meeting?

Or, was the RFLMA mandated consultation meeting for the April 30, 2021 results on or before July 3, 2021 delayed to consider the May 2021 validated analytical results for plutonium and uranium from the 12-month rolling average beginning May 1, 2021?

DOE Response to Comment #4

Validated results at GS10 were received on June 3, 2021. DOE notified the RFLMA Parties on June 8 of the reportable condition for uranium at GS10 and provided a proposed response plan on June 30 in accordance with reportable conditions for a POE as outlined within the RFLMA. Validated results at SW027 were received on June 11, 2021. DOE notified the RFLMA parties on June 14 of the reportable condition for plutonium at SW027 and provided a proposed response plan on July 8 in accordance with reportable conditions for a POE as outlined in the RFLMA.

As described in the response to Comment #1 above, the calculated averages changed between April 30, 2021 and May 31, 2021 because the May 2020 samples were removed from the calculation, while the May 2021 samples were added to the calculation.

Per RFLMA Attachment 2, Section 6.0, "when reportable conditions occur (except in the case of evidence of violation of institutional controls as described below), DOE will inform CDPHE and EPA within 15 days of receiving the inspection reports or validated data. Within 30 days of receiving inspection reports or validated analytical data documenting a reportable condition, DOE will submit a plan and a schedule for an evaluation to address the condition. DOE will consult as described in RFLMA Paragraph 11 to determine if mitigating actions are necessary." Paragraph 11 describes the consultative approach and states that consultation should occur in a timely manner. RFLMA does not specify a timeline for consultation meetings.
Individual validated analytical results and evaluation of those results are included in each quarterly and annual report. These results are also made available to the public through the GEMS website once they are sent from the laboratory and subsequently been validated. Results may be posted on GEMS prior to being evaluated in the reports. In addition, individual results from POEs and POCs that are above the RFLMA standard, but don't cause a reportable

condition under RFLMA, are immediately transmitted to Adaptive Management Plan (AMP) participants upon validation. Results that do cause a RFLMA Reportable Condition are shared with AMP participants at the same time RFLMA notifications are made.

Comment #5

On June 15, 2021 Lindsay Masters, CDPHE, wrote in her email of June 15, 2021 to Andrew Keim, USDOE/LM: "At this point, DOE has not provided notice of a reportable condition at a point of compliance."

RFLMA Contact Records for GS10 (uranium) and SW027 (plutonium), points of evaluation (POE) were not published on the RFS USDOE/LM web site for public consumption or comment. What criteria was utilized during the RFLMA Tri-party consultation for the 12-month rolling average from May 1, 2020 through April 30, 2021 to decide not to publish RFLMA Contact Records?

DOE Response to Comment #5

The contact record for the reportable condition for uranium at GS10 was approved on November 2, 2021 and posted on the LM website. The contact record for the reportable condition for plutonium at SW027 will be prepared and published at the completion of the ongoing consultation between the RFLMA parties.

Comment #6

What discharge permit (CWA, RCRA, CERCLA or RFLMA) regulates hazardous constituents or substances, that exceed standards, at RFS Points of Compliance (WALPOC and/or WOMPOC) and discharge into navigable waters of the US?

DOE Response to Comment #6

The Clean Water Act (CWA) discharge permit (NPDES permit) for Rocky Flats was terminated at site closure in 2005. The site does not have any current discharge permits. The RFLMA is the tri-party regulatory agreement that implements the remedy and provides the framework for the evaluation of surface water quality at the POCs. Water quality standards for Rocky Flats surface water are established by the Colorado WQCC and are listed in Attachment 2, Table 1 of RFLMA. These remedy performance standards are based on the tables found in the WQCC Regulation No. 31: Basic Standards and Methodologies for Surface Water (5 CCR 1002-31) and on the site-specific standards in Regulation No. 38 (5 CCR 1002-38). The Table 1 standards are tailored to the conditions at the Rocky Flats Site and their use is limited to the evaluation of environmental monitoring data required by RFLMA. RFLMA also defines the process for evaluating water quality sample results and determining when an exceedance becomes a reportable condition subject to consultation with CDPHE.

Comment #7

What type of document (similar to a Discharge Monitoring Report for NPDES permits) is published by USDOE/LM to report an exceedance of a hazardous constituent or substance from a RFS point of compliance?

DOE Response to Comment #7

If an exceedance of an analyte at a POC (or other monitoring location) is determined to be a reportable condition as defined in RFLMA, consultation with CDPHE is initiated. Contact Records or other written correspondence document reportable conditions and other regulatory decisions and are posted to the LM website after approval by CDPHE. LM quarterly and annual reports contain environmental data and evaluations that support these regulatory decisions.

Comments from: Jon Lipsky, MAS and FBI, Retired. Provided to the RFSC on November 1, 2021; Subject: US DOE/LM, RFS, Quarterly Report (Q2 2021) Briefing - Surface Water Monitoring: Process Knowledge - Public Comment/Inquiry

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BACKGROUND

Since at least June 2006, USDOE has referred to contiguous, mappable extent to determine whether a constituent should be retained or eliminated as an analyte of interest (AOI) based on process knowledge or other criteria involving professional judgement.

In USDOE's June 2006 RCRA Facility Investigation - Remedial Investigation/ Corrective Measures Study, Feasibility Study Report for the Rocky Flats Environmental Technology Site, Section 4.0, Nature and Extent of Groundwater Contamination report numerous analytes were eliminated. The eliminated analytes represented chemicals utilized at the former Rocky Flats Nuclear Weapons Plant.

In sum, 4.5.6 AOI Screening Step 6 - Process Knowledge Evaluation "involves the determination of whether a constituent that has a contiguous, mappable extent should be retained or eliminated as an AOI base on process knowledge or other criteria involving professional judgment." AOI screening Step 6 involves other criteria for example, the use of stainless-steel wells or pumps, improper well completion, aquifer geochemistry, and process knowledge) based on professional judgment, that may lead to the elimination of an analyte as an AOI.

As well in USDOE's June 2006 RCRA Facility Investigation - Remedial Investigation/Corrective Measures Study - Feasibility Study Report for the Rocky Flats Environmental Technology Site, Section 5.0, Nature and Extent of Surface Water and Sediment Contamination numerous analytes were eliminated. The eliminated analytes represented chemicals utilized at the former Rocky Flats Nuclear Weapons Plant.

"Process knowledge is subsequently used to determine whether an analyte is a site-related contaminant and whether it should be retained or eliminated as an AOI. The basis for eliminating or retaining an analyte using process knowledge is documented for each analyte."

"Process knowledge alone is not used to eliminate or retain an analyte as an AOI. Other analyte criteria such as its areal distribution relative to RFETS activities, its proximity to contaminant sources, accelerated actions performed to remove a contaminant source, and its natural occurrence and distribution in the environment were also considered when evaluating whether to retain or eliminate a constituent as an AOI."

Hazardous waste determination and recordkeeping requires USDOE to make accurate determinations as to whether that waste is a hazardous waste in order to ensure wastes are properly managed according to RCRA regulations. (40 CFR 262.11). The hazardous waste determination for each solid waste must be made at the point of waste generation, before any

dilution, mixing, or other alteration of the waste occurs, and at any time in the course of its management that it has, or may have, changed its properties as a result of exposure to the environment or other factors that may change the properties of the waste such that the RCRA classification of the waste may change. (40 CFR 262.11(a)).

The person then must also determine whether the waste exhibits one or more hazardous characteristics as identified in subpart C of 40 CFR part 261 by following the procedures in paragraph (d)(1) or (2) of this section, or a combination of both. (40 CFR 262.11(d)). The person must apply knowledge of the hazard characteristic of the waste in light of the materials or the processes used to generate the waste. Acceptable knowledge may include process knowledge (e.g., information about chemical feedstocks and other inputs to the production process); knowledge of products, by-products, and intermediates produced by the manufacturing process; chemical or physical characterization of wastes; information on the chemical and physical properties of the chemicals used or produced by the process or otherwise contained in the waste; testing that illustrates the properties of the waste; or other reliable and relevant information about the properties of the waste or its constituents. A test other than a test method set forth in subpart C of 40 CFR part 261, or an equivalent test method approved by the Administrator under 40 CFR 260.21, may be used as part of a person's knowledge to determine Page 2 of 3 whether a solid waste exhibits a characteristic of hazardous waste. However, such tests do not, by themselves, provide definitive results. Persons testing their waste must obtain a representative sample of the waste for the testing, as defined at 40 CFR 260.10.

The applicability of the Resource Conservation and Recovery Act (RCRA) at the Rocky Flats Site is not inconsequential. On July 9, 1999 USDOE approved DOE M 435.1-1, Radioactive Waste Management Manual purpose describes the requirements and establishes specific responsibilities for implementing DOE O 435.1, Radioactive Waste Management, for the management of DOE ... and the radioactive component of mixed waste. On page 7, Attachment 2 at “53. Waste Characterization. The identification of waste composition and properties, by review of acceptable knowledge (which includes process knowledge) …”

PUBLIC COMMENT/INQUIRY

Comment #1

During the pendency of the accelerated Superfund action at the Rocky Flats Site (RFS) ‘process knowledge’ and ‘professional judgment’ supplanted “Acceptable knowledge” a comprehensive RCRA term recognized by USDOE Order.

DOE Response to Comment #1

Both "process knowledge" and "professional judgment" are concepts found in EPA guidance. The comment describes the method prescribed in RCRA and other state and federal regulations for making hazardous waste determinations to ensure wastes are properly managed. As stated in the DOE manual cited in the comment (USDOE 435.1-1), "acceptable knowledge" for making waste determinations includes process knowledge, i.e., information about chemical

production process, chemical or physical characterization of wastes, etc. An example of the concept of professional judgement is in the NPDES Permit Writers' Manual (USEPA 2010), which defines "best professional judgment" as a method used to develop technology-based NPDES permit conditions on a case-by-case basis using all reasonably available and relevant data.

Cleanup and closure of Rocky Flats was completed under The Rocky Flats Cleanup Agreement (RFCA), a legally binding tri-party agreement to accomplish the required cleanup of radioactive and other hazardous substances contamination at Rocky Flats. RFCA integrated CERCLA, RCRA, CHWA, DOE orders and all other applicable statues, regulations, and Executive Orders into a framework to guide the Rocky Flats cleanup.

Generated waste (including excavated environmental media) destined for offsite disposal was characterized using analytical data and/or process knowledge in accordance with RCRA/CHWA and considering the waste acceptance requirements of the waste disposal facility. This characterization included determining if the waste was subject to RCRA and other regulations and facility permit requirements. The characterization of each waste stream was approved by the waste disposal facility before the waste was shipped for disposal.

RFCA also provided the framework for characterization and evaluation of contaminated soil, sediments, and groundwater that would remain in place after closure. RFCA Attachment 5, approved in 1996 and modified in 2003, provided the action leveIs and standards framework for surface water, groundwater and soils. RFCA Attachment 5 also summarizes the basis for the action levels and standards. The Radionuclide Soil Action Levels (RSAL) and the soil action levels for other contaminants were predicated upon the adoption of an integrated risk-based approach for surface and subsurface contamination.

Comment #2

Which USDOE document(s) identify the processes used to generate RFS waste? Which USDOE document(s) identify site-related analytes with correlation to chemical feedstocks and other inputs to the production process?

DOE Response to Comment #2

Waste streams at Rocky Flats were identified as part of the RCRA permitting process beginning in the mid-1980s. The Historical Release Report documents individual sites where hazardous waste was generated. A series of documents produced by CDPHE also summarizes the when, where, and how of hazardous waste releases:

CDPHE. 1991 - 1994. Historical Public Health Studies. ChemRisk for Health Advisory Panel, August.
https://cdphe.colorado.gov/rocky-flats-historical-public-exposure-studies

- Task 1 – Identification of Chemicals and Radionuclides Used at Rocky Flats, March 1991
- Task 2 – Selection of the Chemicals and Radionuclides of Concern, June 1991

- Task 3 and 4 - Reconstruction of Historical Rocky Flats Operations & Identification of Release Points – Final Draft Report, August 1992
- Task 5 - Estimating Historical Emissions from Rocky Flats, 1952-1989, March 1994

Comment #3

Which USDOE document(s) describe other analyte criteria such as its areal distribution relative to RFETS activities, its proximity to contaminant sources, accelerated actions performed to remove a contaminant source, and its natural occurrence and distribution in the environment were also considered when evaluating whether to retain or eliminate a constituent as an AOI? With the use of chemicals like 1,4-Dioxane as an input to the production process how are contiguous, mappable extents (plumes) and the use of stainless-steel wells or pumps, improper well completion, aquifer geochemistry, and process knowledge based on professional judgment consistent with RCRA Acceptable Knowledge, which led to the elimination of an analyte as an AOI at RFS?

DOE Response to Comment #3

According to the CAD/ROD, the "purpose of identifying AOIs was to focus the nature and extent evaluation on constituents that were detected at concentrations that may contribute to the risk to future receptors and to show the overall spatial and temporal trends of those constituents on a site-wide basis." That is different than the purpose for making RCRA waste determinations, but both methods have similarities, and both include using process knowledge and professional judgement. Section 4 of the RI/FS describes the steps in the AOI process.

Based on the protocols in the RFCA Attachment 5 (as modified in 2003), environmental media were characterized and the results compared to the risk-based action levels established in RFCA. Some contaminated soil and sediment were excavated and shipped offsite as waste; other contaminated media remained in situ in accordance with the action levels and decision framework. At the completion of the accelerated actions, a comprehensive risk assessment was performed to allow DOE, CDPHE, and EPA to evaluate the final site configuration and select the remedy. The CRA Methodology and Data Description (RI/FS Appendix A, Volume 2) includes a summary of the methodology used to identify contaminants of concern (COCs) and ecological contaminants of potential concern (ECOPCs) and to estimate risks to human and ecological receptors on site.

Closeout reports for each site building and area provide characterization results and information on cleanup decisions for that area.

Comment #4

How can the protectiveness of the RFS remedy be reasonably certain when USDOE utilizes process knowledge and professional judgment terms that are inconsistent with RCRA definitions?

DOE Response to Comment #4

Use of these terms in documents relating to the remedy at Rocky Flats is consistent with their usage in state and federal guidance.