Overview of the Second Quarter 2011 Surveillance and Maintenance Report for the LM Rocky Flats Site
Surface Water Monitoring and Operations

Second Quarter 2011
Pond Operations – Second Quarter 2011

- Terminal Pond Discharges:
  - None

- Transfers:
  - A-3 in flow-through to A-4

- Pond Levels:
  - As of July 1, 2011, Ponds A-3, A-4, B-5, and C-2 and the Landfill Pond were holding approximately 18.9 MG (19.1 percent of capacity)

  October 14, 2011, Pond Levels
  - Landfill (14.0 percent)
  - A-3 (0.0 percent)
  - A-4 (9.1 percent)
  - B-5 (10.7 percent)
  - C-2 (8.7 percent)
Hydrologic Data – Second Quarter 2011

- Precipitation
  - 6.23 inches total precipitation
  - 113 percent of WY 1993–2010 average

- Flow rates (percentage of average)
  - GS01 (24 percent)
  - GS03 (4 percent)
  - GS10 (26 percent)
  - SW027 (0.1 percent)
  - SW093 (36 percent)
Performance Monitoring – Second Quarter 2011 Original and Present Landfills

- **Original Landfill (OLF):** surface water quality results were all below standards for the quarter; analytical data for the June 14 through October 5, 2011, composite samples are not available.
- **Present Landfill (PLF):** surface water quality results were all below standards for the quarter.
Selected Surface Water Monitoring Locations

- Indiana Street
- Walnut Creek
- Woman Creek
- N. Walnut Creek
- S. Walnut Creek
- Pond A-4
- Pond B-5
- Landfill Pond
- Pond C-2
- Pond A-4
- GS51
- GS11
- GS08
- GS03
- GS10
- GS51
- GS31
- SW027
- SW093
- Central OU Boundary
- Indiana Street
POC GS01

- Plutonium and Americium
- Total Uranium

Gaps in data are for periods of zero flow, no flow data, or no analytical result.

RFLMA Standard for Pu-239,240 and Am-241 of 0.15 pCi/L
Pu-239,240 30-Day Average
Am-241 30-Day Average

RFLMA Standard for Total Uranium of 16.8 ug/L
Total Uranium 30-Day Average
POC GS03

- Plutonium and Americium
- Total Uranium

Gaps in data are for periods of zero flow, no flow data, or no analytical result.

RFLMA Standard for Pu-239,240 and Am-241 of 0.15 pCi/L
Pu-239,240 30-Day Average
Am-241 30-Day Average

RFLMA Standard for Total Uranium of 16.8 ug/L
Total Uranium 30-Day Average

Gaps in data are for periods of zero flow, no flow data, or no analytical result.
POC GS03

- Nitrate + Nitrite as Nitrogen

Gaps in data are for periods of zero flow, no flow data, or no analytical result. Nitrate+Nitrite is only collected during terminal pond discharges.
POC GS08

- Plutonium and Americium
- Total Uranium
POC GS08

- Nitrate + Nitrite as Nitrogen

![Graph showing concentrations over time](image)

**RFLMA Standard for Nitrate of 10 mg/L**

**Nitrate+Nitrite as N 12-Month Rolling**

Missing 12-month rolling averages are for periods of zero discharge, no flow data, or no analytical results during the previous 12 months.
POC GS11

- Plutonium and Americium

- Total Uranium

Missing 12-month rolling averages are for periods of zero discharge, no flow data, or no analytical results during the previous 12 months.
POC GS11

- Nitrate + Nitrite as Nitrogen

![Graph showing concentration over time with notes on 12-month rolling averages and missing results during previous 12 months.]

RFLMA Standard for Nitrate of 10 mg/L
Nitrate+Nitrite as N 12-Month Rolling Averages, 2nd Quarter CY11

Missing 12-month rolling averages are for periods of zero discharge, no flow data, or no analytical results during the previous 12 months.
POC GS31

- Plutonium and Americium

- Total Uranium

The graphs show the activity in pCi/L and the total uranium in ug/L for the specified periods. Dates range from 7/1/10 to 7/1/11.

- Plutonium and Americium: The activity is depicted with red and green markers, respectively, showing the rolling averages.
- Total Uranium: The total uranium is shown with black markers, also indicating the rolling averages.

Missing 12-month rolling averages are for periods of zero discharge, no flow data, or no analytical results during the previous 12 months.
Point of Evaluation (POE) Monitoring – Second Quarter 2011

12-month rolling averages at POE SW027 continue to exceed the standard for Pu-239,-240 (0.15 pCi/L) through January 31, 2011

• The continued exceedance is primarily due to lack of runoff since April 2010 to include in the average
• Pu sample results from April through October 2010 (one result) were well below the standard
• There was no flow from October 2010 through May 17, 2011; there has been no subsequent flow since May 21, 2011
• The composite sample started on February 17, 2011, is still in progress
POE Monitoring – Plutonium at POE SW027

RFLMA Standard for Pu-239,240 and Am-241 of 0.15 pCi/L

Pu-239,240 12-Month Rolling
Am-241 12-Month Rolling

Missing 12-month rolling averages are for periods of zero discharge, no flow data, or no analytical results during the previous 12 months.
POE Monitoring – Second Quarter 2011

- 12-month rolling averages at POE GS10 exceed the standard for uranium (16.8 ug/L) for the period April 30 through June 30, 2011
  - Validated results to calculate the April 30 value were received on June 14, 2011; notification in accordance with RFLMA was made on June 16, 2011
  - RFLMA Contact Record 2011-04, “Reportable Condition for Uranium at Point of Evaluation GS10,” provides a discussion of the monitoring results and recaps the outcome of the RFLMA parties’ consultation regarding the evaluation steps to be taken
  - The site is contracting with Los Alamos National Laboratory (LANL) for isotopic analyses and is performing additional sampling in the GS10 drainage
POE Monitoring – Uranium at POE GS10

Gaps in data are for periods of zero discharge or no analytical result.

RFLMA Standard for Total Uranium of 16.8 ug/L

Total Uranium 12-Month Rolling
Questions?
Groundwater Monitoring and Operations

Second Quarter 2011
RFLMA Monitoring

- Second quarter is heavy sampling quarter
  - All Sentinel wells
  - All AOC wells
  - All RCRA wells
  - Treatment system locations
  - Surface water support location

- Results reviewed in accordance with the RFLMA Attachment 2 decision flowcharts

- Results will be discussed and statistically evaluated in the 2011 Annual Report
Additional RFMLA Groundwater Topics

- Boundary wells
  - Both were sampled in second quarter
  - Boundary wells removed from RFLMA network late in quarter

- Sentinel well 33703
  - Replaced with 33711 due to kinked casing in original well
Additional (Non-RFLMA) Monitoring

- Several locations associated with treatment systems
  - SPPTS: continued sampling to support optimization and evaluation of system performance
  - MSPTS: sampling to evaluate and optimize air stripper

- Several locations for high-resolution uranium isotopic analysis by LANL
  - Wells near SPPTS
  - Well at former Building 991 that consistently produces samples with elevated concentrations of natural uranium
SPPTS Activities

- Maintenance of Phase III Cell A (inert media dosed with liquid carbon source)
MSPTS Air Stripper Optimization

- Tested several nozzle configurations
- Tested pump settings
- Samples collected to evaluate effectiveness of different settings
MSPTS Air Stripper Optimization
MSPTS Air Stripper Optimization
Questions?
Site Operations

Second Quarter 2011
PLF Inspections and Surveys

- The quarterly inspection was completed on May 31
- No areas of concern were observed
OLF Inspections

- Monthly inspections at the OLF were completed on April 29, May 31, and June 30, 2011
OLF Features
OLF Seeps

- Seep 7 exhibited minor surface expression after the May 2011 precipitation. Seeps 4 and 8 also produced active seepage throughout the quarter. This is typical for the OLF cover during this period.

- Wetland vegetation on the OLF cover was prominent in the vicinity of Seeps 2 through 8 throughout the second quarter.
OLF Settlement Monuments

- Settlement monuments were surveyed on June 25, 2011; data are within the expected range per the *Original Landfill Monitoring and Maintenance Plan*.
OLF Inclinometers

- Inclinometers were measured April 5 and 26, May 26, and June 30, 2011
  - Readings showed very little deflection
  - May 11 and 18 saw precipitation events of more than 1 inch

- Previously, in localized slumping area on western side of OLF, deflection was noted after large precipitation events

- Will review in Annual Report
OLF Slumps

- Berm 1 crack was filled and compacted in 2010; no new cracking appeared in second quarter 2011
OLF Topographic Survey

- Per the OLF Monitoring and Maintenance Plan, survey conducted approximately every 2 years
  - Aid in periodically evaluating subsidence and consolidation, slope stability, and precipitation run on and runoff management structures

- Survey field work completed March 21, 2011

- Geotechnical engineer review

- Maintenance required for approximately 700 feet of diversion berm
  - Add several inches of soil to maintain minimum berm height
  - Recountour and fill minor depressions in localized areas to minimize potential for ponding in berm channels
  - Work completed August 2011
Questions?
CAD/ROD Amendment

- Proposal released for public review and comment June 3 through August 2, 2011
  - Public meetings June 16 and July 13 and 20
- Clarifies description of institutional controls (ICs) for excavation and soil disturbance
- Any future modification or termination of ICs will follow regulations and guidance in effect at that time
CAD/ROD Amendment (continued)

- Formalizes regulatory review and approval process already applied by RFLMA parties
  - Work subject to ICs must meet CAD/ROD objective and rationale
  - Soil Disturbance Review Plan
- Environmental Covenant granted by DOE to CDPHE modified to incorporate CAD/ROD amendment
- Approved September 21, 2011
- Posted on Rocky Flats website http://www.lm.doe.gov/Rocky_Flats/Regulations.aspx