ROCKY FLATS STEWARDSHIP COUNCIL

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Jefferson County -- Boulder County -- City and County of Broomfield -- City of Arvada -- City of Boulder
City of Golden -- City of Northglenn -- City of Thornton -- City of Westminster -- Town of Superior
League of Women Voters -- Rocky Flats Cold War Museum -- Rocky Flats Homesteaders
Steven Franks

Board of Directors Meeting – Agenda

Monday, September 12, 2016, 8:30 – 11:30 AM

Rocky Mountain Metropolitan Airport, Terminal Building, Mount Evans Room
11755 Airport Way, Broomfield, Colorado

8:30 AM Convene/Introductions/Agenda Review

8:35 AM Chairman's Review of July 18, 2016 Executive Committee meeting

8:40 AM Business Items

1. Consent Agenda (briefing memo attached)
   - Approval of meeting minutes and checks

2. Executive Director's Report

8:50 AM Public Comment

9:00 AM Host DOE Quarterly Meeting (briefing memo attached)
- DOE will brief the Stewardship Council on site activities for the first quarter of 2016 (January – March).
- DOE has posted the report on its website and will provide a summary of its activities to the Stewardship Council.
- Activities include surface water monitoring, groundwater monitoring, ecological monitoring, and site operations (inspections, maintenance, etc.).

10:00 AM Board Review of Stewardship Council Mission and Initial Review of 2017 Work Plan (briefing memo attached)
- The Board will first review the mission statement, and then review and edit the draft 2017 work plan.
- Formal approval of the work plan will take place at the October 31st meeting.

10:30 AM 2017 Budget – Initial Review (briefing memo attached)
- The Board will review, and modify as necessary, the draft 2017 budget.

- Formal budget hearings and adoption of the 2017 budget will take place at the October 31st meeting.

10:50 AM Public comment

11:00 AM Board Roundtable – Big Picture/Additional Questions/Issue Identification

11:10 AM EXECUTIVE SESSION

Discussion of Stewardship Council personnel contracts for 2017 (authorized pursuant to Section 24-6-402(4)(e) & (b), C.R.S., to determine positions relative to matters that may be subject to negotiation, and conferencing with the attorney on such matters, and after announcement at the public meeting of the specific topic for discussion and the statutory citation authorizing the executive session, and a 2/3 vote of the quorum present for the Board.)

Adjourn

Next Meetings: October 31st (4th Monday of month)
February 6, 2017

Acronym or Term	Means	Definition
Alpha Radiation		A type of radiation that is not very penetrating and can be blocked by materials such as human skin or paper. Alpha radiation presents its greatest risk when it gets inside the human body, such as when a particle of alpha emitting material is inhaled into the lungs. Plutonium, the radioactive material of greatest concern at Rocky Flats, produces this type of radiation.
Am	americium	A man-made radioactive element which is often associated with plutonium. In a mass of Pu, Am increases in concentration over time which can pose personnel handling issues since Am is a gamma radiation-emitter which penetrates many types of protective shielding. During the production era at Rocky Flats, Am was chemically separated from Pu to reduce personnel exposures.
AME	Actinide Migration Evaluation	An exhaustive years-long study by independent researchers who studied how actinides such as Pu, Am, and U move through the soil and water at Rocky Flats
AMP	Adaptive Management Plan	Additional analyses that DOE is performing beyond the normal environmental assessment for breaching the remaining site dams.
AOC well	Area of Concern well	A particular type of groundwater well
B	boron	Boron has been found in some surface water and groundwater samples at the site
Be	beryllium	A very strong and lightweight metal that was used at Rocky Flats in the manufacture of nuclear weapons. Exposure to beryllium is now known to cause respiratory disease in those persons sensitive to it
Beta Radiation		A type of radiation more penetrating than alpha and hence requires more shielding. Some forms of uranium emit beta radiation.

BMP	best management practice	A term used to describe actions taken by DOE that are not required by regulation but warrant action.
BZ	Buffer Zone	The majority of the Rocky Flats site was open land that was added to provide a "buffer" between the neighboring communities and the industrial portion of the site. The buffer zone was approximately 6,000 acres. Most of the buffer zone lands now make up the Rocky Flats National Wildlife Refuge.
CAD/ROD	corrective action decision/record of decision	The complete final plan for cleanup and closure for Rocky Flats. The Federal/State laws that governed the cleanup at Rocky Flats required a document of this sort.
CCP	Comprehensive Conservation Plan	The refuge plan adopted by the U.S. Fish and Wildlife Service in 2007.
CDPHE	Colorado Department of Public Health and Environment	State agency that regulates the site.
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	Federal legislation that governs site cleanup. Also known as the Superfund Act
cfs	cubic feet per second	A volumetric measure of water flow.
COC	Contaminant of Concern	A hazardous or radioactive substance that is present at the site.
COU	Central Operable Unit	A CERCLA term used to describe the DOE-retained lands, about 1,500 acres comprised mainly of the former Industrial Area where remediation occurred
CR	Contact Record	A regulatory procedure where CDPHE reviews a proposed action by DOE and either approves the proposal as is or requires changes to the proposal before approval. CRs apply to a wide range of activities performed by DOE. After approval the CR is posted on the DOE-LM website and the public is notified via email.
Cr	chromium	Potentially toxic metal used at the site.
CRA	comprehensive risk assessment	A complicated series of analyses detailing human health risks and risks to the environment (flora and fauna).

D&D	decontamination and decommissioning	The process of cleaning up and tearing down buildings and other structures.
DG	discharge gallery	This is where the treated effluent of the SPPTS empties into North Walnut Creek.
DOE	U.S. Department of Energy	The federal agency that manages portions of Rocky Flats. The site office is the Office of Legacy Management (LM).
EA	environmental assessment	Required by NEPA (see below) when a federal agency proposes an action that could impact the environment. The agency is responsible for conducting the analysis to determine what, if any, impacts to the environment might occur due to a proposed action.
EIS	environmental impact statement	A complex evaluation that is undertaken by a government agency when it is determined that a proposed action by the agency may have significant impacts to the environment.
EPA	U.S. Environmental Protection Agency	The federal regulatory agency for the site.
EEOICPA	energy employees occupational illness compensation program act	This act was passed by Congress in 2000 to compensate sick nuclear weapons workers and certain survivors. Unfortunately the program has been fraught with difficulties in getting benefits to these workers over the years.
ETPTS	east trenches plume treatment system	The treatment system near the location of the east waste disposal trenches which treats groundwater contaminated with organic solvents emanating from the trenches. Treated effluent flows into South Walnut Creek.
FC	functional channel	Man-made stream channels constructed during cleanup to help direct water flow.
FACA	Federal Advisory Committee Act	This federal law regulated federal advisory boards. The law requires balanced membership and open meetings with published Federal Register meeting dates.
Gamma Radiation		This type of radiation is very penetrating and requires heavy shielding to keep it from exposing people. Am is a strong gamma emitter.
GAO	Government Accountability Office	Congressional office which reports to Congress. The GAO did 2 investigations of

		Rocky Flats relating to the ability to close the site for a certain dollar amount and on a certain time schedule. The first study was not optimistic while the second was very positive.
g	gram	metric unit of weight
gpm	gallons per minute	A volumetric measure of water flow in the site's groundwater treatment systems and other locations.
GWIS	groundwater intercept system	Refers to a below ground system that directs contaminated groundwater toward the Solar Ponds and East Trenches treatment systems.
IA	Industrial Area	Refers to the central core of Rocky Flats where all production activities took place. The IA was roughly 350 of the total 6,500 acres at the site.
IC	Institutional Control	ICs are physical and legal controls geared towards ensuring the cleanup remedies remain in place and remain effective.
IGA	intergovernmental agreement	A cooperative agreement between local governments which sets up the framework of the Stewardship Council.
IHSS	Individual Hazardous Substance Site	A name given during cleanup to a discrete area of known or suspected contamination. There were over two hundred such sites at Rocky Flats.
ITPH	interceptor trench pump house	The location where contaminated groundwater collected by the interceptor trench is pumped to either the Solar Ponds and East Trenches treatment systems
L	liter	Metric measure of volume, a liter is slightly larger than a quart.
LANL	Los Alamos National Laboratory	One of the US government's premier research institutions located near Santa Fe, NM. LANL is continuing to conduct highly specialized water analysis for Rocky Flats. Using sophisticated techniques LANL is able to determine the percentages of both naturally-occurring and man-made uranium which helps to inform water quality decisions.
LHSU	lower hydrostratigraphic unit	Hydrogeology term for deep unweathered bedrock which is hydraulically isolated from the upper hydrostratigraphic unit (see

		UHSU). Data shows that site contaminants have not contaminated the LHSU.
LM	Legacy Management	DOE office responsible for overseeing activities at closed sites.
LMPIP	Legacy Management Public Involvement Plan	This plan follows DOE and EPA guidance on public participation and outlines the methods of public involvement and communication used to inform the public of site conditions and activities. It was previously known as the Post-Closure Public Involvement Plan (PCPIP).
M&M	monitoring and maintenance	Refers to ongoing activities at Rocky Flats.
MOU	Memorandum of Understanding	MOU refers to the formal agreement between EPA and CDPHE which provides that CDPHE is the lead post-closure regulator with EPA providing assistance when needed.
MSPTS	Mound site plume treatment system	The treatment system for treating groundwater contaminated with organic solvents which emanates from the Mound site where waste barrels were buried. Treated effluent flows into South Walnut Creek.
NEPA	National Environmental Policy Act	Federal legislation that requires the federal government to perform analyses of environmental consequences of major projects or activities.
nitrates		Contaminant of concern found in the North Walnut Creek drainage derived from Solar Ponds wastes. Nitrates are very soluble in water and move readily through the aquatic environment
Np	neptunium	A man-made radioactive isotope that is found as a by-product of nuclear reactors and plutonium production.
NPL	National Priorities List	A listing of Superfund sites. The refuge lands were de-listed from the NPL while the DOE-retained lands are still on the NPL due to ongoing groundwater contamination and associated remediation activities.
OLF	Original Landfill	Hillside dumping area of about 20 acres which was used from 1951 to 1968. It underwent extensive remediation with the

		addition of a soil cap and groundwater monitoring locations.
OU	Operable Unit	A term given to large areas of the site where remediation was focused.
PCE	perchloroethylene	A volatile organic solvent used in past operations at the site. PCE is also found in environmental media as a breakdown product of other solvents.
pCi/g	picocuries per gram of soil	A unit of radioactivity measure. The soil cleanup standard at the site was 50 pCi/g of soil.
pCi/L	picocuries per liter of water	A water concentration measurement. The State of Colorado has a regulatory limit for Pu and Am which is 0.15 pCi/L of water. This standard is 100 times stricter than the EPA's national standard.
PLF	Present Landfill	Landfill constructed in 1968 to replace the OLF. During cleanup the PLF was closed under RCRA regulations with an extensive cap and monitoring system.
PMJM	Preble's Meadow Jumping Mouse	A species of mouse found along the Front Range that is on the endangered species list. There are several areas in the Refuge and COU that provide an adequate habitat for the mouse, usually found in drainages. Any operations that are planned in potential mouse habitat are strictly controlled.
POC	Point of Compliance (surface water)	A surface water site that is monitored and must be found to be in compliance with federal and state standards for hazardous constituents. Violations of water quality standards at the points of compliance could result in DOE receiving financial penalties.
POE	Point of Evaluation (surface water)	These are locations at Rocky Flats at which surface water is monitored for water quality. There are no financial penalties associated with water quality exceedances at these locations, but the site may be required to develop a plan of action to improve the water quality.
POU	Peripheral Operable Unit	A CERCLA term used to describe the Wildlife Refuge lands of about 4,000 acres.

Pu	plutonium	Plutonium is a metallic substance that was fabricated to form the core or "trigger" of a nuclear weapon. Formation of these triggers was the primary production mission of the Rocky Flats site. Pu-239 is the primary radioactive element of concern at the site. There are different forms of plutonium, called isotopes. Each isotope is known by a different number. Hence, there are plutonium 239, 238, 241 and others.
RCRA	Resource Conservation and Recovery Act	Federal law regulating hazardous waste. In Colorado, the EPA delegates CDPHE the authority to regulate hazardous wastes.
RFCA	Rocky Flats Cleanup Agreement	The regulatory agreement which governed cleanup activities. DOE, EPA, and CDPHE were signors.
RFCAB	Rocky Flats Citizen Advisory Board	This group was formed as part of DOE's site-specific advisory board network. They provided community feedback to DOE on a wide variety of Rocky Flats issues from 1993-2006.
RFCLOG	Rocky Flats Coalition of Local Governments	The predecessor organization of the Rocky Flats Stewardship Council
RFETS	Rocky Flats Environmental Technology Site	The moniker for the site during cleanup years.
RFLMA	Rocky Flats Legacy Management Agreement	The post-cleanup regulatory agreement between DOE, CDPHE, and EPA which governs site activities. The CDPHE takes lead regulator role, with support from EPA as required.
RFNWR	Rocky Flats National Wildlife Refuge	The approximate 4,000 acres which compose the wildlife refuge.
RFSOG	Rocky Flats Site Operations Guide	The nuts-and-bolt guide for post-closure site activities performed by DOE and its contractors.
SEP	Solar Evaporation Ponds	In the 1950's when the site's liquid waste treatment capability was surpassed by the liquid waste generation rate, the site resulted to transferring liquid wastes to open-air holding ponds where solar energy was utilized to evaporate and concentrate the waste. The original SEPs were not impermeable and substantial quantities of uranium and nitrates made their way into

		groundwater. As a result the solar ponds plume treatment system was necessary to treat the contaminated groundwater before it emerged as surface water in North Walnut Creek.
SPPTS	solar ponds plume treatment system	System used to treat groundwater contaminated with uranium and nitrates. The nitrates originate from the former solar evaporation ponds which had high levels of nitric acid. The uranium is primarily naturally-occurring with only a slight portion man-made. Effluent flows into North Walnut Creek
SVOCs	semi-volatile organic compounds	These compounds are not as volatile as the solvent VOCs. They tend to be similar to oils and tars. They are found in many environmental media at the site. One of the most common items to contain SVOCs is asphalt.
TCE	trichloroethlyene	A volatile organic solvent used in past operations at the site. TCE is also found in environmental media as a breakdown product of other solvents.
U	uranium	Naturally occurring radioactive element. There were two primary isotopes of U used during production activities. The first was enriched U which contained a very high percentage (>90%) of U-235 which was used in nuclear weapons. The second isotope was U-238, also known as depleted uranium. This had various uses at the site and only had low levels of radioactivity.
UHSU	upper hydrostratigraphic unit	A hydrogeology term describing the surficial materials and weathered bedrock found at Rocky Flats. The UHSU is hydraulically isolated from the lower hydrostratigraphic unit (see LHSU). Groundwater in some UHSU areas of the site is contaminated with various contaminants of concern while groundwater in other UHSU areas is not impacted. All groundwater in the UHSU emerges to surface water before it leaves the site.

USFWS	United States Fish & Wildlife Service	An agency within the US Department of the Interior that is responsible for maintaining the nation-wide system of wildlife refuges, among other duties. The regional office is responsible for the RFNWR.
VOC	volatile organic compound	These compounds include cleaning solvents that were used in the manufacturing operations at Rocky Flats. The VOCs used at Rocky Flats include carbon tetrachloride (often called carbon tet), trichloroethene (also called TCE), perchloroethylene (also called PCE), and methylene chloride.
WCRA	Woman Creek Reservoir Authority	This group is composed of the three local communities, the Cities of Westminster, Northglenn, and Thornton, who use Stanley Lake as part of their drinking water supply network. Water from the site used to flow through Woman Creek to Stanley Lake but the reservoir severed that connection. The Authority has an operations agreement with DOE to manage the Woman Creek Reservoir.
WQCC	Water Quality Control Commission	State board within CDPHE tasked with overseeing water quality issues throughout the state. DOE has petitioned the WQCC several times in the last few years regarding water quality issues.
ZVI	zero valent iron	A type of fine iron particles used to treat VOC's in the ETPTS and MSPTS.

Business Items

- Cover memo
- June 6, 2016, draft board meeting minutes
- List of Stewardship Council checks

DOE Quarterly Report Briefing

- Cover memo
- Selection of the quarterly report

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MEMORANDUM

TO: Board of Directors
FROM: David Abelson
SUBJECT: Business Items – Additional information about the minutes
DATE: August 26, 2016

The attached minutes contain two comments that warrant additional information.

Public Comment – page 3: A citizen stated that because the Stewardship Council receives funding from the Department of Energy, the organization is "a DOE board that represented DOE interests."

> Additional information since the meeting: As a reminder, the Rocky Flats Stewardship Council has always been and remains an independent body, managed by an independent Board of Directors. The Stewardship Council is not, and has never been, a DOE board.

Annual Report, Surface Water Monitoring (page 11): There was discussion about the Rock Creek Drainage. One citizen stated in response to what constituents were present, "you name it."

> Additional information since the meeting: The final site closure documents, and specifically the Remedial Investigation/Feasibility Study (RI/FS), do not identify contaminants of concern in the Rock Creek Drainage Exposure Unit. This determination, which applies to both human and ecological receptors, was based on surface soil, subsurface soil, sediment, surface water and groundwater sampling for inorganics, organics and radionuclides. This information can be found in the Administrative Record: http://www.lm.doe.gov/CERCLA/SiteSelector.aspx

ROCKY FLATS STEWARDSHIP COUNCIL
Monday, June 6, 2016, 8:30 AM – 11:45 AM
Rocky Mountain Metropolitan Airport, Terminal Building, Mount Evans Room
11755 Airport Way, Broomfield, Colorado

Board members in attendance: Mark McGoff (Director, Arvada), Sandra McDonald (Alternate, Arvada), Lisa Morzel (Director, City of Boulder), Deb Gardner (Director, Boulder County), Mike Shelton (Director, Broomfield), Laura Weinberg (Director, Golden), Pat O'Connell (Alternate, Jefferson County), Shelley Stanley (Alternate, Northglenn), Joe Cirelli (Director, Superior), Jan Kulmann (Director, Thornton), Emily Hunt (Alternate, Thornton), Bruce Baker (Director, Westminster), Sharron Bird (Alternate, Westminster), Mary Fabisiak (Alternate, Westminster), Jeannette Hillery (Director, League of Women Voters), Sue Vaughan (Alternate, League of Women Voters), Roman Kohler (Rocky Flats Homesteaders), Arthur Widdowfield (Director, Rocky Flats Cold War Museum).

Stewardship Council staff members and consultants in attendance: David Abelson (Executive Director), Barb Vander Wall (Seter & Vander Wall, P.C), Rik Getty (Technical Program Manager), Erin Rogers (consultant).

Attendees: Eric Barnes (Wagner Barnes, Griggs), Scott Surovchak (DOE-LM), Bob Darr (Navarro), John Boylan (Navarro), Clay Carpenter (Navarro), George Squibb (Navarro), Kurt Franzen (Navarro), Linda Kaiser (Navarro), Carl Spreng (CDPHE), Vera Moritz (EPA), Shirley Garcia (City of Broomfield), Sandy Pennington (Superior Trustee), Trevor Bane (Rep. Polis), Stuart Feinhor (Rep. Polis), Susan Flack (Rocky Flats Museum), Ken Freiberg (Rocky Flats Museum), Bob Fiehweg (Fiehweg Environmental Consulting), Anne Fenerty (citizen), Larry Hankins (citizen), LeRoy Moore (Rocky Mountain Peace and Justice Center), W. Gale Biggs (citizen), Jon Lipsky (citizen), Ann Parker (citizen), Pat Mellen (citizen), Ted Ziegler (citizen), Kim Griffiths (citizen), Marian Whitney (citizen), Bonnie Graham Reed (citizen).

Convene/Agenda Review

Chair Lisa Morzel convened the meeting at 8:34 a.m. The first order of business was introductions of Board members and the audience. Lisa noted that the Executive Committee met on April 22 to review the agenda for this meeting. She also noted that approximately ten citizens attended the meeting. Lisa clarified that while these meetings were always open to the public, the purpose of the Executive Committee meetings was to review Board meeting agendas, and not engage in any policy decisions. She said that discussions related to the role of the Stewardship Council and related topics are discussed at full Board meetings.

Consent Agenda

The Board next addressed the consent agenda, which included approval of the minutes from the last meeting, as well as checks written since the last meeting. Mike Shelton moved to approve the April 2016 Board minutes and the checks. The motion was seconded by Jeanette Hillery. The motion to accept the minutes and checks passed 13-0.

Executive Director's Report

David Abelson began his update by providing some information about the Cook v Rockwell case which had just reached a settlement. This case had to do with the impact of Rocky Flats on property values for a specific area east and south of Rocky Flats. Only people who owned property as of June 7, 1989, are eligible for compensation. The suit had original addressed property values, as well as a request for medical monitoring. David explained that the medical monitoring claim was thrown out early in the process by the judge, as there was causal nexus between Rocky Flats and health impacts off-site. David observed that this case had taken 26 years to resolve. He also noted that he had been subpoenaed in the early 2000s due to his work on the case as a congressional staffer. David explained that the Rocky Flats contractors that were named in the suit, Dow and Rockwell, were indemnified by their contracts with DOE. Therefore, the federal government (DOE) must actually pay the settlement. The settlement was for $375 million, which came out to about $15,000 per household. David explained that, although there had been new development in areas that were located within the lawsuit class, none of the new homeowners would be part of the settlement because of the date restrictions. David clarified that the lawsuit was not related to cleanup and there were no claims for physical harm, only the effect on property values.

David then brought up what he saw as an interesting nexus with the Cook case, which was a new health study around Rocky Flats by a group called the Rocky Flats Downwinders. He noted that the group's founder had applied to be on the Stewardship Council board. David said that the Downwinders website stated that no health studies had ever been done around Rocky Flats, but this statement is not accurate. The State Health Department had conducted an in-depth dose reconstruction study and found that the increased cancer risk due to exposure from Rocky Flats was 2.5 in one million. David noted that the Downwinder survey was a purely opt-in online survey. David noted he does not know what it takes for such a study to be statistically valid, and whether this survey would meet that standard. He also said he did not know if the researchers were also screening for other cancer risk factors. David said he wanted to flag this issue because it was creating the impression among some that there had been no past analysis of health effects around Rocky Flats. He said additional information about offsite health risks was a good thing, but that it needed to be scientifically sound and statistically valid.

Public Comment

Marian Whitney said she had lived downwind of Rocky Flats since the early 1960's. She began by thanking the Stewardship Council for its work. She said she would like to see a group like this for the Rocky Flats National Wildlife Refuge. Marian said she was planning to organize some informational meetings to explore trails to and from Rocky Flats, and that people were welcome to come share ideas. She said there was one important ground rule which was that people had to provide a source for any information they shared. She noted that she had not run across anyone who thought it would be wise to let a child to go onsite at Rocky Flats. She concluded by saying that she had a lot to learn about these issues.

Gale Biggs circulated a document to the Board. He said he wanted to remind the Stewardship Council that 25 years ago, CDPHE determined that the airborne pathway of plutonium was the

most dangerous, yet there was no longer any air monitoring at Rocky Flats. He also said that in 1974, Dr. Carl Johnson with the Jefferson County Health Department had wanted to measure contamination at Rocky Flats but was not allowed to. Instead, he took samples offsite at 25 locations, which had all been sampled by CDPHE as well. Dr. Biggs said that Johnson's concentration results were 44 times (some 100-285x) higher than CDPHE's, which used different sampling techniques. He said he had written five letters to EPA requesting that they establish airborne sampling at Rocky Flats. The responses noted that they were meeting the water and soil standards. Dr. Biggs reiterated that he believed air monitoring was the main problem.

Anne Fenerty said she had some questions regarding the Stewardship Council. She said that this was a DOE board that represented DOE interests, as they provide most of the funding. She noted that since the Stewardship Council was set up for no more than 14 members, it was difficult to get meaningful discussions.

Ted Ziegler said he was concerned about historical contamination in addition to plutonium. He noted the use of beryllium at the site and the risks for chronic disease. He said that the spraying of wastewater contributed to an enormous amount of beryllium and asbestos, which he said was just as toxic as plutonium. He said this needed to be independently tested. He said the area could not be considered safe until there was appropriate sampling.

Sandy Pennington introduced herself as a Trustee from the Town of Superior. She said that her first Rocky Flats meeting was in April. She was not happy with plans for a FLAP (Federal Lands Access Program) grant for the Rocky Flats National Wildlife Refuge. She said this plan was a change from what was found on the Greenway Commission website. She commended those who were taking these issues seriously. She noted that it appeared there was an agreement for additional testing before decisions are made, which was good. She noted that Stewardship Council members carried a great deal of weight on their local councils and boards. She asked everyone to be serious about sampling protocols so that the resulting data was unimpeachable. She also encouraged the Board seriously consider the matter of air testing, which she said was extremely critical because of future construction zone and visitors to the Refuge.

Bonnie Graham Reed spoke next and said that most people she had talked to did not know the history and believed that Rocky Flats was cleaned up. She pointed out that cleanup was in the central area of the site, and not in the buffer zone/Refuge areas. She said this should be public knowledge before people go out there, and it should also be on the signage. David Abelson offered some information that the USFWS went through a public process regarding language for signage at the Refuge. He said their language and analysis could be found on the USFWS website, as part of the step-down plan (part of CCP). Bonnie said that there should be signage offsite as well.

Receive Stewardship Council 2015 Financial Audit

Eric Barnes from Wagner, Barnes and Griggs was on hand to brief the Board on the results of the 2015 financial audit. He said that the Stewardship Council was not required by State law to seek an audit. Only budgets over $750,000 were subject to this requirement, and the Stewardship

Council was well below this threshold. He commended the Board on its consistent position that an independent audit was important for demonstrating that the board and staff were managing the finances in accordance with applicable laws and regulations.

Mr. Barnes noted that the auditor's job was to review the financial statements and provide an opinion on whether the financial statements were materially correct. He went through a quick review of the report. On Page 1, he noted that the 'Opinion' of the auditors regarding the RFSC financial statements was that they do fairly represent the financial status of the Board. He added that this was an 'unmodified' opinion, meaning that there were no qualifiers added to the opinion. Mr. Barnes noted that the Stewardship Council's main revenue source was the grant from DOE, which accounted for about 90% of the budget. He said that if the grant were to go away, the Stewardship Council would have trouble continuing to operate. Mr. Barnes noted that the primary expense for the Board was the management contract/personnel. He referred to Page 5 which showed budget to actual expenses, and reflected that the Stewardship Council was below budget by about $13,000. Mr. Barnes concluded by saying that no material problems were found, and that the Stewardship Council was found to be in compliance with all applicable laws and regulations. He added that the Board's accountant, Jennifer Bohn, and David Abelson had always done a great job with record keeping and answering his questions. He found them to be very open and accessible.

Roman Kohler moved to formally accept the audit. The motion was seconded by Joe Cirelli. The motion to accept the minutes and checks passed 13-0.

DOE Briefing on 2017 CERCLA Five-Year Review

CERCLA, one of the two federal laws guiding remediation activities of contaminated sites, requires that DOE review the remedies at Rocky Flats every five years. The remedies are all located within the Central Operable Unit (COU), which is not part of the Refuge. The broad purpose of the review is to ensure that the remediation goals are being met and that the remedies continue to protect human health and the environment. The last five-year review for Rocky Flats was completed in 2012.

David Ward (Navarro) was on hand to brief the Board on the status and plans for the 2017 Review. He said the process was just beginning. He began by reviewing the CERCLA history at Rocky Flats. He explained that several Remedial Action Objectives (RAOs) were established in the CERCLA decision document, called the Corrective Action Decision/Record of Decision (CAD/ROD) and then summarized each:

Groundwater RAO 1

- Meet groundwater quality standards at AOC wells
- Meet CWQCC surface water standards

Groundwater RAO 2

- Restore contaminated groundwater discharging directly to surface water as base flow, and that is a significant source of surface water, to its beneficial use of surface water

protection, wherever practicable in a reasonable timeframe. Compliance is measured at sentinel wells
- Prevent significant risk of adverse ecological effects

Groundwater RAO 3
- Prevent domestic and irrigation use of groundwater contaminated at levels above MCLs

Surface Water RAO
- Meet surface water quality standards

Soil RAO 1
- Prevent migration of contaminants to groundwater that would result in exceeding groundwater RAOs

Soil RAO 2
- Prevent migration of contaminants that would result in exceeding surface water RAOs

Soil RAO 3
- Prevent exposures that result in an unacceptable risk to the wildlife refuge worker
- Prevent significant risk of adverse ecological effects

David noted that the last Rocky Flats five-year review was the third one, and was completed in August 2012. That review can be found on the DOE-LM website at: http://www.lm.doe.gov/Rocky_Flats/Regulations.aspx

The fourth five-year review must be completed by August 2017. DOE, as the CERCLA federal lead agency under the Superfund law, was responsible for conducting the Review. DOE-LM, the LM support contractor (Navarro), CDPHE, and EPA staff would comprise the review team. The review must follow EPA's Comprehensive Five-Year Review Guidance, dated June 2001. EPA guidance and other information can be found at: http://www.epa.gov/superfund/cleanup/postconstruction/5yr.htm

David walked through the steps involved in the Review:
1. Notify the public -- Public notices issued when the review process begins and when the final report is released
2. Review key documents -- CAD/ROD and RAOs, monitoring and maintenance reports, new investigations, and technical memos
3. Assess protectiveness -- Review protectiveness
4. Review and analyze data -- Analyze contaminant data
5. Conduct interviews and site inspection -- May involve site workers, community members and Jefferson County to confirm environmental covenant
6. Write report -- Assess protectiveness of remedies

He said that the purpose of the five-year review was to determine whether the site remedy remained protective of human health and the environment. EPA will either concur with LM protectiveness determination or the agency may make an independent finding.

David explained that the review would address three questions to assess the protectiveness of a remedy:

Question A- Is the remedy functioning as intended? To answer this question, the review team will examine:

- The technical performance of the remedy against the RAOs
- Monitoring data
- System performance
- Operation and maintenance
- Effectiveness of physical and institutional controls

Question B - Are the exposure assumptions, toxicity data, cleanup levels, and RAOs still valid? To answer this questions, the review team will identify:

- If exposure scenarios have changed
- If toxicity factors or ARARs have changed
- If changes in exposure, toxicity factors/ARARs affect protectiveness of remedy
- If RAOs need updating

Question C - Has any other information come to light that could call into question the protectiveness of the remedy? To answer this question, the team will consider:

- Any new information not addressed or anticipated in the CAD/ROD that could call into question the protectiveness of the remedy (note: remedy selection decisions are not reopened, but are evaluated against new requirements, if any)

Once the review is complete, the protectiveness determination will be one of the following:

- Protective
- Protective in the short term
- Will be protective
- Protection deferred
- Not protective

David also reviewed the list of data sources that would be reviewed as part of the process:

- RFLMA 2012 through 2016 Annual Reports
    - The monitoring data set consists of validated data from January 1, 2012, through December 31, 2016
    - Data for monitoring locations specified in RFLMA will be used
- Site inspections – Annual RFLMA inspection results through March 2017 (expected date of next inspection) will be used
- The status of any issues or recommendations from previous five-year reviews will be reviewed and reported

The Rocky Flats Legacy Management Agreement (RFLMA) also specifies that certain evaluations be done as part of CERCLA periodic reviews. Besides the protectiveness questions, the scope will include:

- Reviewing whether new technologies may reduce the need to rely on institutional controls and recommending follow up
- Recommending continuing, discontinuing, or changing any remedy component
- Recommending changes to landfill inspection and monitoring frequencies

Finally, David shared the plans/requirements for 'community involvement and notification'. These include:

- Publication of notice that a review is being conducted
- Post fact sheet on the Rocky Flats website
- Provide status at RFSC meetings
- Notify public when the review report is completed
- Submit the draft Fourth Five-Year Review Report to EPA for approval and CDPHE for concurrence around expected date of June 2017
- Publish Notice of Completion in August 2017

He said that the public has had, and continues to have, the opportunity to provide input through the Stewardship Council, and that public input associated with the Five-Year Review was being accepted currently through the following mechanisms:

Mail:
Rocky Flats Site Fourth Five-Year Review Comments
U.S. Department of Energy Office of Legacy Management
11025 Dover Street, Suite 1000
Westminster, CO 80021

Email:
rfinfo@lm.doe.gov

Joe Cirelli began the questions by asking what it would take in the CERCLA review to determine that air monitoring should be added. David said that new information would be needed. He said that one of the seven RAO's would have to be determined to not be met. Jeannette Hillery asked about soils that would be disturbed onsite causing emissions of contaminants, and whether there was anything under the soil RAO that could trigger an air quality issue. David said that anything involving disturbance of soil goes through a separate regulatory review. Lisa Morzel asked if sampling was done when soil was disturbed. David said that it was not, based on past data. Lisa noted that the exposure assumptions may change once people begin recreating in the Refuge. She challenged the assumption that there was no vertical movement of contaminants in soil, and advocated for air monitoring to allay public concerns.

David Abelson asked what the process was for determining whether exposure scenarios had changed. David Ward said that could not be answered before the evaluation. Mary Fabisiak asked if the Original Landfill (OLF) report was expected to be finalized before the Five-Year Review. David said he did not know. Deb Gardner referred back to the flood in September, 2013. She said that it created a circumstance where soil could have been disturbed in way that brought contamination to the surface. David said that they would be looking at surface water and groundwater. Deb noted that the RAOs were 15 years old. She asked how the public could

recommend air monitoring and additional soil monitoring. Lisa Morzel asked where the dialogue with DOE about the Five-Year Review issues was supposed to take place, and whether they were expecting the Stewardship Council to accept and pass along comments. Sue Vaughan noted that it was clear that concerned individuals and groups would have to make some strong recommendations. She also noted that children were not part of the exposure scenario. Deb Gardner commented that it seemed like, despite what people were saying, DOE would do things the same way as it had for the last three reviews. She said that the public felt that this was insufficient, and that it did not ensure the remedy was protective. She added that unless the testing protocols were changed, they would not get information that would make the public feel safe.

Laura Weinberg said that the information in the presentation about the process seemed different than what they were hearing. She referred to Question B, which referenced looking at whether exposure assumptions were still valid. David Ward said that data would be evaluated against the seven RAOs, and if they were not being met, something would change. George Squibb explained that the results of surface water monitoring were indicative of the presence of contamination, and that this was used to infer whether there were impacts on other pathways. He emphasized that they were monitoring the pathway that presented the highest risk. Deb Gardner asked George if there was ever simultaneous air and water monitoring to prove that correlation. George said there was for a period of 15-20 years, including two-to-three years after closure. Scott Surovchak noted that this data was why the CAD/ROD focused on surface water quality. Mary Fabisiak asked whether the POC sample results in April indicated that there was some movement of plutonium and americium. George said that there were two results above the standard, although they were not confirmed by duplicate analyses, and they did not trigger a reportable condition.

Barb Vander Wall asked whether this meeting was the mechanism through which the parties were inviting comments for DOE to take into consideration and then address. She also asked if there would be a response to comments. David Ward said that comments would be included in the report, although they may not be responded to. Laura Weinberg asked for a timeline and a clarification of the Stewardship Council's role in terms of providing comments. David Abelson clarified that the Stewardship Council did not make recommendations as an entity, although one of its roles was to forward recommendations and opinions from constituents and citizens. He said that individual governments and Board members were free to make recommendations based on those affiliations. Lisa Morzel noted that in the past, cities and counties had written their own letters, which the Stewardship Council compiled and transmitted to DOE. Bob Darr said that public comment information would also be sent out via their email distribution, and posted on DOE's website. Lisa asked if there would be any news releases. Bob said that any general public notices had not been effective in the past, however members of the local media were included on the current distribution list. Joe Cirelli asked for Superior to receive copies of any letters prepared by other local governments. Deb Gardner asked for a timeframe for providing comments. David Ward said they were being collected currently.

Sandy Pennington encouraged the Board members to review the purpose of their organization. She said she understood it to be to serve as an intermediary between DOE and the public, and that since DOE did not plan to aggressively pursue public comment, she asked the Stewardship Council to host three-to-four public meetings. Ted Ziegler said that the 'no trespassing' signs had

been removed from the site, which he said was putting the 'cart before the horse'. He said that DOE was looking for excuses to not do additional sampling, even though many in the public were requesting it and would continue to do so. Scott said that the signs Mr. Ziegler was referring to were taken down because DOE no longer had jurisdiction in those areas. He said that they were replaced by USFWS signs. Larry Hankins said that he served as a radiological technician at the site and that he saw the historical testing as phony. He said they were directed to test the same spot every time, and not given any freedom to sample where they felt they should. Gale Biggs brought up the issue of the size of plutonium particles not matching the capabilities of the samplers that were used onsite. Mike Shelton asked if that held true for water samples as well. George Squibb said that water sampling did not involve any filtration, so this concern would not apply. Jon Lipsky referred to Section 7 of RFLMA, regarding public participation, and said that in this case the public was being told they could review the report after it was completed. He said he had emailed Vera Moritz with EPA several times about this issue and had not received a response. Gale Biggs added that he had attempted to get meteorological information from the site, and had submitted a Freedom of Information Act request. He said he received a simple response months later that said the information did not exist.

Host DOE Annual Meeting

DOE was on hand to brief the Board regarding site activities for calendar year 2015. The full Annual Report was posted on the DOE website. Activities included surface water monitoring, groundwater monitoring, ecological monitoring, and site operations (inspections, maintenance, etc.). Chair Lisa Morzel asked Board members to raise their hand during the presentation only if they had a question, not a statement.

Surface Water Monitoring – George Squibb
George began by providing an update on surface water activities during the 4th quarter, as well as the 2015 calendar year. He began with a quick review of the overall monitoring requirements and a map of locations and monitoring sites.

At the Original Landfill (OLF), which is above Woman Creek, routine composite sampling during the year at downstream location GS59 showed that arsenic, lead, and selenium concentrations were above applicable RFLMA standards. This triggered increased sampling frequency (monthly) per RFLMA evaluation protocols. Subsequent monthly sample results were below the standard, and the sampling frequency reverted to quarterly. Similar concentrations were detected at upstream location GS05. Shelley Stanley asked what the source of the contaminants at GS59 was. George said it was probably naturally-occurring because it was also detected upstream of the landfill.

At the Present Landfill (PLF) treatment system, routine quarterly sampling during the year of the system effluent showed that arsenic, selenium, and vinyl chloride concentrations were above applicable RFLMA standards, triggering increased sampling frequency (monthly) per RFLMA evaluation protocols. Monthly arsenic and selenium sample results were below the standard and the sampling frequency reverted to quarterly. Vinyl chloride measured above the standard for three consecutive monthly samples, triggering sampling of surface water from the former PLF

pond area outfall to No Name Gulch (location NNG01). Vinyl chloride was not detected in surface water at the PLF pond area and sampling frequency at the system effluent reverted to quarterly. Lisa asked what the source of the vinyl chloride at the PLF was. George said it came from the landfill.

George moved on to Point of Evaluation (POE) Monitoring. At location SW027, 12-month rolling averages for plutonium and americium were reportable during 2015, and remain at reportable levels through February 29, 2016. RFLMA Contact Record (CR) 2015-05 was issued on July 8, 2015. Mitigating actions include enhancing upstream erosion controls. However, plutonium and americium are not reportable at the downstream POC (WOMPOC). George reported that all other RFLMA POE analyte concentrations, as well as all POC analyte concentrations, remained below reportable levels throughout 2015.

Shannon Bird asked if anything was done to try to remove the source at SW027. George said that would not be a normal response because of the concentrations they were seeing. He added that part of the remedy was erosion control. He said that if they saw something really significant, they would look at the removal option. Shelley asked if water from SW027 flowed into Pond C2. George said it did. He said that Pond C2 had about three feet of water, and runs in flow-through mode. Shelley asked if they were seeing any elevated plutonium or americium in Woman Creek at the site boundary, or GS31. George said that they did, however concentrations were lower than upstream. Bruce Baker stated that the site only monitors for migration of elements from the COU, and that anything that was occurring on the Refuge was unknown. George said that was true, but they had a great deal of historical data about Refuge lands. He said that points along the Indiana Street border were monitored until the fall of 2013. This water flows to Woman Creek Reservoir, and then sampled again. He said there were a lot of components to the monitoring system so they were able to understand what was happening. Ann Fenerty said that there was a huge floodplain in the Refuge, and that she was concerned that this area was not being monitored for contamination. George referred to a site map. He explained how water flows through drainages, and then comes back together. He said that the monitoring program took all of this into account. He explained that during the 2013 storm, Rocky Flats had much less precipitation than surrounding areas, and that most of the water flowing through the site came from offsite areas. He clarified that the way the water flows determines why and where they monitor, and that the drainages were very well defined.

Ted Ziegler asked which elements were monitored for. George said it was location-specific, based on historical records and knowledge. He said they focused on metals and VOCs in the landfills. Other monitoring points focused on plutonium, americium, and uranium. Beryllium was monitored at Points of Evaluation, however most of these were non-detects, as were almost all metals. George explained that they added a system in which a second water monitor would kick in when the other was full. He said these were installed at WALPOC, WOMPOC and SW027. Because SW027 was more dry, they set the master sampler at a slower pace. Shelley asked what would happen if these monitors were disrupted with logs or some other blockage. George said they would still get a sample, but it would not be collected in the way they wanted. Mary Fabisiak asked if split samples were done from the same bottle of water. George said they were. He added that the lab holds the samples for a couple months in case they want to go back and look at another sample. He said they needed to mix it well to get good plutonium or

americium samples. He noted that they have strict protocols so that the results would be technically-defensible. Sandy Pennington asked if they ever monitored Rock Creek. George said they did, and it showed that it was not impacted by the site in any significant way. Mike Shelton asked about groundwater on the east side of the site. John Boylan said that there used to be many wells in that area, but no contamination was found in them. George noted that they know where the contamination is, and that the current monitoring network looks at whether the plumes were changing. Jon Lipsky asked about effects in Rock Creek from the West Spray Fields. Scott Surovchak said this area fed into tributaries for Walnut Creek and that data did not show any effects. Jon said he disagreed. George asked what constituents he was referring to. Jon said 'you name it'.

Groundwater Monitoring – John Boylan
John began by noting the quarter was a heavy sampling quarter per RFLMA monitoring requirements. Sampling locations included 10 RCRA wells, 27 sentinel wells, nine AOC wells, one surface water support location, and nine treatment system locations. Groundwater quality was generally consistent with previous results. Heavy spring precipitation continued to affect groundwater levels and treatment system flows, but the effects were waning. He added that all results were evaluated in the 2015 annual report.

4th quarter sampling identified a reportable condition for AOC Well 10304. Two consecutive routine samples contained TCE above the RFLMA level. 2nd quarter results were 15 µg/L (RFLMA value is 2.5 µg/L), and the 4th quarter was 72 µg/L. This reportable condition was documented in CR 2015-10, and had been anticipated in two major groundwater reports that documented closure conditions and decisions (Fate and transport modeling report, 2004 and Groundwater IM/IRA, 2005). The Contact Record response was to sample Woman Creek in the vicinity of the well to look for impacts to surface water quality. A sample collected in December at SW10200 showed no TCE detected. This location will be sampled each time well 10304 is sampled until that well is no longer reportable for TCE.

John moved on to a review of treatment system activities for the 4th quarter. He said that treatment system flows continued to decline after a wet spring, and more normal conditions were seen by the end of 2015

At the Mound Site Plume Treatment System (MSPTS), routine maintenance was conducted on the air stripper and other components. System reconfiguration was scheduled for mid-2016. At the East Trenches Plume Treatment System (ESPTS), activities included routine maintenance, adjusting timer settings, and monitoring of power levels. At the Solar Ponds Plume Treatment System (SPPTS), a contract was let for interim reconfiguration construction. This included emptying the original "Big Box" structure, and converting it to test a full-scale lagoon. Construction began in April 2016, and completion is expected in summer 2016.

John said that overall 2015 was an extremely wet year, resulting in abundant groundwater recharge. Water levels in some wells rose over 10 feet. Lisa asked how the higher groundwater levels compared with 2013. John said that this one was more significant. John showed a hydrograph that demonstrated how these well levels are tracked and analyzed. During 2015, all RFLMA-required monitoring and evaluations were performed. All AOC well data were below

RFLMA levels except for one location. Surface water support location results were consistent with previous OLF and PLF RCRA wells. Statistical evaluations were performed per RFLMA, and the results for 2015 were nearly identical to previous years. Concentrations of a few analytes were higher in downgradient groundwater than in upgradient groundwater. These are on an increasing trend, but below RFLMA levels. John also noted that several statistical conclusions may not be valid due to abundance of nondetects, estimated concentrations, and/or changes to detection limits. Sentinel wells were also evaluated for statistical trends, and the results were largely consistent with previous data

At the treatment systems, due to the precipitation, flows increased sharply. John said that they completed reconfiguring the ETPTS in January 2015, and found that ZVI was very effective at reducing load (as designed). The commercial air stripper was able to meet RFLMA targets.

In terms of plutonium and americium in groundwater, monitoring downgradient of former plutonium production facilities showed that every result was assigned a lab qualifier of "non-detect". This was consistent with previous results.

High-resolution uranium analyses were conducted in 2015 to evaluate natural vs. anthropogenic uranium. 21 samples were submitted for this specialized analysis. They were taken from wells around the former Solar Evaporation Ponds, and surface water locations contributing to Walnut Creek location (WALPOC). They were collected to support continuing geochemistry study. Additional samples would be analyzed periodically to support this study and other data needs. Shelley asked where the data from the geochemistry study was being reported. John said the Lawrence Berkeley National Lab data was attached to the Annual Report. He said the geochemistry study was using standard RFLMA data, as well as some from the AMP. Shelley asked about the GEMS database. George said that was not used for compliance data. He added that they were transitioning to a new water quality software.

Shelley asked if they purged the wells and waited for recharge. John said it depended on the well behavior. He said that many go dry when a purge was attempted, but others allowed for that. She asked if they purged well 10304 that showed elevated TCE. John said he did not recall but would check. Bruce asked if they sampled for plutonium. John explained that there was no technical reason to sample for it, but it was done as a response to public concerns. Bruce stated that the contaminants tested in groundwater were less dangerous than those for surface water. John clarified that some of them were carcinogenic; however, most were metals or VOCs as opposed to radioactive materials.

Bonnie Graham Reed noted that it sounded like so much work was being done at the site and asked how many full time employees they had. Linda Kaiser said that there were about 14-15 full-time, with another 6-8 part-time. Ted Ziegler asked how many wells were monitored. John said that there were 88 in the RFLMA network.

Site Operations – Kurt Franzen
Kurt said that during quarterly sign inspections, all were found to be in good condition and noted that signs were a designated RFLMA physical control.

At the OLF. three monthly inspections were completed during the quarter. Also, one weather-related inspection occurred in October 2015 due to a precipitation event producing more than 1 inch of rain in a 24-hour period. Eight settlement monuments were monitored as well. Shelley asked what size the cracks were in the OLF. Kurt said they were two-six inches on top, and that it was more vertical than horizontal movement. Shelley also asked when the engineering report would be completed. Kurt said they were expecting it in December. A member of the audience asked who the geotechnical subcontractor was. Linda said it was Tetratech.

At the PLF, one quarterly inspection and one weather-related inspection for precipitation events producing more than one inch of rain in a 24-hour period were performed. No issues were observed during inspections. They also completed the annual settlement monument survey.

Former building areas 371, 771, 881, and 991 were inspected, including one weather-related inspection in October 2015 due to a precipitation event producing more than one inch of rain in a 24-hour period. Cracking was observed and filled along the roadway near former building 771. No other movement was observed.

Kurt noted that DOE had put together some answers to common questions about OLF conditions and would provide this to the Stewardship Council.

Site ecology – John Boylan
John provided an update on the numerous ecology activities performed during the quarter.

Activities included:

- Herbicide applications (Milestone, Escort, Rodeo)
    - Approximately 339 acres treated: 194 – spring, 145 – fall
- Habitat Enhancement Project
    - 15 fourwing saltbush
    - 15 skunkbush
    - 15 Rocky Mountain juniper (these drowned and died; more were planted recently)
- Interseeding/revegetation
    - Approximately 10 acres
- Forb nurseries

Ecological Monitoring activities included:

- Revegetation monitoring
    - 11 areas monitored
    - All continue to meet success criteria
- PMJM mitigation monitoring
    - Habitat continues to establish
    - One area met success criteria in 2015
- Wetland mitigation monitoring
    - Wetlands continue to establish

Wildlife monitoring activities included:

- Prairie dog monitoring

    - No active prairie dog towns within the COU
- Nest boxes
    - 14 of 21 boxes used in 2015 (house wrens, tree swallows)
- Active raptor nest observed in Woman Creek (red-tailed Hawks) and one attempted along Central Ave. (Swainson's Hawks)

Mary Fabisiak asked if there were any buried utilities along the former Central Avenue. John said there were manholes and sewers that were flushed and filled.

Public Comment

LeRoy Moore asked where he could find copies of the presentations. He was told that they were posted on the Rocky Flats DOE-LM website. He noted that he was not able to hear the presentations or discussions very well, and the presentation slides were hard to see. He suggested that they enlarge the projected presentation.

Big Picture Review

September 12, 2016

Potential Business Items

- Initial review of 2017 budget
- Initial review of 2017 work plan (language of mission statement/IGA)

Potential Briefing Items

- DOE quarterly update
- Actinide Migration

October 31, 2016

Potential Business Items

- Approve 2017 budget
- Approve 2017 work plan

Potential Briefing Items

- DOE quarterly update
- Briefing on soil sampling and air quality monitoring

Issues to watch:

- Original landfill
- Uranium exceedances
- Plutonium levels at SW027
- Groundwater treatment systems
- Plutonium movement in soil column

Board Roundtable – Big Picture/Additional Questions/Issue Identification

Lisa Morzel said that she encouraged the other local governments to provide input regarding the CERCLA 5-Year Review.

David Abelson noted that Bruce Baker had offered different venue for Stewardship Council meetings. Westview Recreation Center was in close proximity and has a room that was much larger. David and Mary Fabisiak visited, looked at various configurations and features, and came to the conclusion that none of the current issues with seating or sound issues would be any better than in the existing room.

Mark McGoff said that Arvada recently hosted the dedication of the Greenway Trail. Former Interior Secretary Salazar and the Governor were there along with the National Hiking Association, and other City representatives. He said it went well and that it was an impressive trail.

Mike Shelton said that Broomfield would be voting on the FLAP grant on the following Tuesday and that they would probably be asking for additional monitoring.

The meeting was adjourned at 11:45 a.m.

Respectfully submitted by Erin Rogers.

Rocky Flats Stewardship Council
Check Detail
May 20 through August 22, 2016

Type	Num	Date	Name	Item	Account	Paid Amount	Original Amount
Check		**05/26/2016**			**CASH-Wells Fargo-...**		**-3.50**
					Admin Services-Misc ...	-3.50	3.50
TOTAL						-3.50	3.50
Check		**06/27/2016**			**CASH-Wells Fargo-...**		**-3.50**
					Admin Services-Misc ...	-3.50	3.50
TOTAL						-3.50	3.50
Check		**07/28/2016**			**CASH-Wells Fargo-...**		**-3.50**
					Admin Services-Misc ...	-3.50	3.50
TOTAL						-3.50	3.50
Check	**1803**	**06/04/2016**	**Century Link**		**CASH-Wells Fargo-...**		**-28.88**
					Telecommunications	-28.88	28.88
TOTAL						-28.88	28.88
Bill Pmt -Check	**1804**	**06/04/2016**	**Energy Communities Allia...**		**CASH-Wells Fargo-...**		**-950.00**
Bill	2016-2017	06/30/2016			Subscriptions/Membe...	-950.00	950.00
TOTAL						-950.00	950.00
Bill Pmt -Check	**1805**	**06/04/2016**	**Jennifer A. Bohn**		**CASH-Wells Fargo-...**		**-399.00**
Bill	16-37	05/31/2016			Accounting Fees	-399.00	399.00
TOTAL						-399.00	399.00
Bill Pmt -Check	**1806**	**06/04/2016**	**Wagner Barnes & Griggs, ...**		**CASH-Wells Fargo-...**		**-4,010.35**
Bill	19611	04/12/2016			Annual Audit	-4,010.35	4,010.35
TOTAL						-4,010.35	4,010.35
Bill Pmt -Check	**1807**	**06/10/2016**	**Blue Sky Bistro**		**CASH-Wells Fargo-...**		**-290.00**
Bill	2359	06/06/2016			Misc Expense-Local ...	-290.00	290.00
TOTAL						-290.00	290.00
Bill Pmt -Check	**1808**	**06/10/2016**	**Crescent Strategies, LLC**		**CASH-Wells Fargo-...**		**-7,411.12**
Bill	5/31/16 Bill...	05/31/2016			Personnel - Contract	-7,150.00	7,150.00
					Telecommunications	-132.59	132.59
					TRAVEL-Local	-57.24	57.24
					Postage	-71.29	71.29
TOTAL						-7,411.12	7,411.12
Bill Pmt -Check	**1809**	**06/10/2016**	**Seter & Vander Wall, P.C.**		**CASH-Wells Fargo-...**		**-1,132.50**
Bill	73157	05/31/2016			Attorney Fees	-1,132.50	1,132.50
TOTAL						-1,132.50	1,132.50
Bill Pmt -Check	**1810**	**07/10/2016**	**Crescent Strategies, LLC**		**CASH-Wells Fargo-...**		**-7,379.89**
Bill	6/30/16 Bill...	06/30/2016			Personnel - Contract	-7,150.00	7,150.00
					Telecommunications	-139.62	139.62
					TRAVEL-Local	-64.80	64.80
					Postage	-15.99	15.99
					Meeting Expense	-9.48	9.48
TOTAL						-7,379.89	7,379.89
Bill Pmt -Check	**1811**	**07/10/2016**	**Jennifer A. Bohn**		**CASH-Wells Fargo-...**		**-199.50**
Bill	16-43	06/30/2016			Accounting Fees	-199.50	199.50
TOTAL						-199.50	199.50
Bill Pmt -Check	**1812**	**07/10/2016**	**Seter & Vander Wall, P.C.**		**CASH-Wells Fargo-...**		**-1,278.42**
Bill	73303	06/30/2016			Attorney Fees	-1,278.42	1,278.42
TOTAL						-1,278.42	1,278.42

Rocky Flats Stewardship Council
Check Detail
May 20 through August 22, 2016

Type	Num	Date	Name	Item	Account	Paid Amount	Original Amount
Check	**1813**	**07/10/2016**	**Century Link**		**CASH-Wells Fargo-...**		**-29.97**
					Telecommunications	-29.97	29.97
TOTAL						-29.97	29.97
Check	**1814**	**08/02/2016**	**Century Link**		**CASH-Wells Fargo-...**		**-28.79**
					Telecommunications	-28.79	28.79
TOTAL						-28.79	28.79
Bill Pmt -Check	**1815**	**08/02/2016**	**Crescent Strategies, LLC**		**CASH-Wells Fargo-...**		**-7,342.87**
Bill	7/31/16 Bill...	07/31/2016			Personnel - Contract	-7,150.00	7,150.00
					Telecommunications	-139.62	139.62
					TRAVEL-Local	-37.26	37.26
					Postage	-15.99	15.99
TOTAL						-7,342.87	7,342.87
Bill Pmt -Check	**1816**	**08/02/2016**	**Jennifer A. Bohn**		**CASH-Wells Fargo-...**		**-266.00**
Bill	16-52	07/31/2016			Accounting Fees	-266.00	266.00
TOTAL						-266.00	266.00

ROCKY FLATS STEWARDSHIP COUNCIL

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Jefferson County -- Boulder County -- City and County of Broomfield -- City of Arvada -- City of Boulder
City of Golden -- City of Northglenn -- City of Thornton -- City of Westminster -- Town of Superior
League of Women Voters -- Rocky Flats Cold War Museum -- Rocky Flats Homesteaders
Steven Franks

MEMORANDUM

TO: Stewardship Council Board
FROM: Rik Getty
SUBJECT: Quarterly Report Briefing
DATE: August 30, 2016

We have scheduled one hour for DOE to present its quarterly update for the first quarter of 2016 (January - March). The report, minus the figures, tables and appendices, is attached. The full report can be found at http://www.lm.doe.gov/Rocky_Flats/Documents.aspx (click on Quarterly Report of Site Surveillance and Maintenance Activities First Quarter Calendar Year 2016.)

This report addresses remedy-related surveillance, monitoring, and operations and maintenance activities conducted during the quarter. This report summarizes the following activities:

- Maintenance and inspection of the Original Landfill (OLF) and the Present Landfill (PLF)
- Maintenance and inspection of the four groundwater treatment systems
- Inspection of signs posted at the perimeter of the COU
- Erosion control and revegetation activities
- Water monitoring

Executive Summary – The following are highlights from the quarter:

- Present Landfill: No significant issues (e.g., erosion) were observed. Copies of the landfill inspection forms are presented in Appendix A.
- Original Landfill: Routine and one additional weather-related inspection were conducted. No significant issues (e.g., erosion, slumping) were observed during inspections, including additional movement. (As has been discussed with the Board, there was additional movement during the second quarter.) The completed inspection forms are presented in Appendix A.
- Mound Site Plume Treatment System: Routine maintenance included checking and adjusting flows, inspecting and flushing piping, monitoring water levels in the two treatment cells, and servicing the air stripper.

- East Trenches Plume Treatment System: Routine maintenance included checking the batteries and other power components, clearing accumulated snow off of the solar panels, and adjusting valves and settings to maintain air stripper operation.
- Solar Ponds Plume Treatment System: Routine maintenance activities focused primarily on the Phase III pilot-scale lagoons, as the system was being prepared for the interim reconfiguration project. This project includes removing the contents of the original treatment cell structure (Cells 1 and 2 within what is informally referred to as the Big Box) and the Phase II Cell, and converting the Big Box to a full-scale test lagoon. (See Contact Records 2015-08 and 2015-09 for more information -- http://www.lm.doe.gov/Rocky_Flats/ContactRecords.aspx)
- Present Landfill Treatment System: Cracking was discovered in the grout surrounding the lip of the north and south manhole covers. The grout was used to fill in the transition from the lip of the manhole cover to the concrete structure of the manhole itself (approximately 2 inches vertically). The cracking was minimal and it was determined that the condition did not affect the treatment system.
- Water quality -- Uranium: In January, the 30-day uranium concentration exceeded the standard at water monitoring point WALPOC, which is located on Walnut Creek at the eastern COU boundary. WALPOC data found in in Section 3.1.2.1.
- Water quality – Plutonium and Americium: Starting in late 2015 and into 2016, water quality for plutonium and americium exceeded the standards at SW027. There was little flow at SW027 from July 15, 2015, through March 24, 2016, so the 12-month rolling average during this period shows little change. The data is found in Section 3.1.3.2.
- Water quality locations GS10 & SW093: All analyte concentrations remained below the applicable water-quality standards throughout the quarter.

Please let me know if you have any questions.

LMS/RFS/S14430

Rocky Flats Site, Colorado, Quarterly Report of Site Surveillance and Maintenance Activities First Quarter Calendar Year 2016

July 2016

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Abbreviations

Am	americium
AOC	Area of Concern
CAD/ROD	Corrective Action Decision/Record of Decision
CDPHE	Colorado Department of Public Health and Environment
COU	Central Operable Unit
CR	Contact Record
CY	calendar year
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ETPTS	East Trenches Plume Treatment System
LM	Office of Legacy Management
M&M	monitoring and maintenance
MCL	maximum contaminant level
µg/L	micrograms per liter (sometimes expressed as ug/L)
mg/L	milligrams per liter
MSPTS	Mound Site Plume Treatment System
N	nitrogen
NREL	National Renewable Energy Laboratory
OLF	Original Landfill
pCi/L	picocuries per liter
PLF	Present Landfill
PLFTS	Present Landfill Treatment System
POC	Point of Compliance
POE	Point of Evaluation
Pu	plutonium
RCRA	Resource Conservation and Recovery Act
RFLMA	*Rocky Flats Legacy Management Agreement*
RFSOG	Rocky Flats Site Operations Guide
SID	South Interceptor Ditch
Site	Rocky Flats Site
SPPTS	Solar Ponds Plume Treatment System
VOC	volatile organic compound
ZVI	zero-valent iron

1.0 Introduction

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) is responsible for implementing the final response action selected in the *Corrective Action Decision/Record of Decision for Rocky Flats Plant (USDOE) Peripheral Operable Unit and Central Operable Unit* (CAD/ROD) (DOE, EPA, and CDPHE 2006), issued on September 29, 2006, and amended on September 21, 2011 (DOE, EPA, and CDPHE 2011), for the Rocky Flats Site, Colorado (the Site). DOE, the U.S. Environmental Protection Agency (EPA), and the Colorado Department of Public Health and Environment (CDPHE) are implementing the monitoring and maintenance requirements of the CAD/ROD as described in the *Rocky Flats Legacy Management Agreement* (RFLMA). Attachment 2 of the RFLMA (DOE 2012a) defines the surveillance and maintenance requirements of the Central Operable Unit (COU) remedy, the frequency for each required activity, and the monitoring and maintenance locations. The requirements include environmental monitoring; maintenance of the erosion controls, access controls (signs), landfill covers, and groundwater treatment systems; and operation of the groundwater treatment systems. The RFLMA also requires that the institutional controls, in the form of use restrictions as established in the CAD/ROD, be maintained.

This report is required in accordance with Section 7.0, "Periodic Reporting Requirements," of RFLMA Attachment 2. The purpose of this report is to inform the regulatory agencies and stakeholders of the remedy-related surveillance, monitoring, and maintenance activities conducted at the Site during the first quarter (January 1 through March 31) of calendar year (CY) 2016. LM provides periodic communications through several means, such as this report, web-based tools, and public meetings.

LM prepared the Rocky Flats Site Operations Guide (RFSOG) (DOE 2013) to serve as the primary internal document to guide work to satisfy the requirements of the RFLMA and to implement best management practices at the Site.

Several other site-specific documents provide additional detail regarding the requirements described in RFLMA Attachment 2, including all aspects of surveillance, monitoring, and maintenance activities, as well as data evaluation protocols.

Monitoring data and summaries of surveillance and maintenance activities for past quarters are available in the quarterly reports. Extensive discussion and evaluation of surveillance, monitoring, and maintenance activities are presented each calendar year in the annual report of Site surveillance and maintenance activities.

This report addresses remedy-related surveillance, monitoring, and operations and maintenance activities conducted at the Site during the first quarter of CY 2016. This report summarizes the following activities:

- Maintenance and inspection of the Original Landfill (OLF) and the Present Landfill (PLF)
- Maintenance and inspection of the four groundwater treatment systems
- Inspection of signs posted at the perimeter of the COU as physical controls
- Erosion control and revegetation activities
- Routine (in accordance with the RFLMA and the RFSOG) water monitoring

2.0 Site Operations and Maintenance

2.1 Landfills

2.1.1 Present Landfill

The PLF is inspected quarterly in accordance with the requirements of the *Present Landfill Monitoring and Maintenance Plan and Post-Closure Plan* (PLF M&M Plan) (DOE 2014) and Attachment 2 of the RFLMA (DOE 2012a). Settlement monuments are surveyed annually in December and results are reported in the annual report.

2.1.1.1 Inspection Results

The routine PLF inspection for the first quarter of CY 2016 was performed on February 29, 2016. An additional inspection was also required on March 29, 2016, due to precipitation greater than 1 inch in a 24-hour period. No significant issues (e.g., erosion) were observed during either inspection. Copies of the landfill inspection forms are presented in Appendix A.

2.1.1.2 Settlement Monuments

The 2015 annual survey of the PLF settlement monuments was performed on December 9, 2015. Survey data indicate that vertical settling at each monument is within the limits specified in the PLF M&M Plan (DOE 2014). The 2016 annual survey is scheduled to be completed in the fourth quarter of CY 2016.

2.1.2 Original Landfill

The OLF is inspected monthly in accordance with the requirements in the *Rocky Flats Site Original Landfill Monitoring and Maintenance Plan* (OLF M&M Plan) (DOE 2009a) and the RFLMA. It was expected that, after the first year, the inspection frequency might be reduced to quarterly for an additional 4 years. However, because of observed localized slumping and seep areas, and because of the investigation and repairs to the OLF cover completed in 2009, no change to the monthly inspection frequency was recommended in the *Third Five-Year Review Report for the Rocky Flats Site, Jefferson and Boulder Counties, Colorado* (DOE 2012b).

2.1.2.1 Inspection Results

Routine OLF inspections during the first quarter of CY 2016 were performed on January 25, February 16, and March 16, 2016. An additional weather-related inspection was required on March 29, 2016, due to precipitation events producing more than 1 inch of rain in a 24-hour period. This inspection was conducted because the National Renewable Energy Laboratory (NREL), adjacent to the Site, recorded 1.48 inches of precipitation. (NREL uses heated rain gauges, which the Site does not have.)

According to the Rocky Flats meteorological tower, the Site received 0.41 inch of precipitation during the first quarter of 2016. (NREL reported 4.71 inches of precipitation for the same time period.) No significant issues (e.g., erosion) were observed during inspections. The areas that

experienced movement and were repaired in 2015 did not move in the first quarter of CY 2016. The completed inspection forms are presented in Appendix A.

Earlier in January, site staff removed snow fencing installed at the top of the OLF hillside in response to a recommendation from a subcontracted geotechnical engineering firm. The fence was removed to eliminate retention of the snow and thereby reduce the amount of water infiltrating the soil and recharging groundwater just upgradient of the OLF.

2.1.2.2 Settlement Monuments

The OLF settlement monuments were surveyed on March 14, 2016. Survey data indicate that vertical settling at each monument is within the limits specified in the OLF M&M Plan (DOE 2009a). The survey results are presented in Appendix A.

2.1.2.3 Inclinometers

All inclinometer monitoring at the OLF has been discontinued.

As discussed in the quarterly report for the second quarter of CY 2009 (DOE 2009b), seven inclinometers were installed in boreholes at the OLF in 2008 as part of the geotechnical investigation of localized areas of instability. Since then, movement of the inclinometers was monitored approximately monthly until the majority of inclinometers were broken. (Inclinometers are deflected by lateral movement of the ground in which they are located, and if the deflection is enough to break the inclinometer tubes, then the inclinometer is no longer monitored. As stated in Section 3.3.1, "Monitoring Locations and Procedures," in the OLF M&M Plan: "Once an inclinometer tube breaks, it will no longer be monitored.")

2.1.2.4 Seeps

Seeps at the OLF were evaluated during the monthly inspections. Individual seep location flow rate estimates can be found in the monthly inspection reports for the OLF.

2.2 Subsidence Observed Near Former Buildings

Former building areas, including former Buildings 371, 771, 881, and 991, are routinely inspected (i.e., quarterly and during weather-related inspections) for evidence of subsidence. No significant issues were observed during recent inspections.

2.3 Groundwater Treatment Systems

Four groundwater treatment systems are monitored, operated, and maintained in accordance with requirements defined in the RFLMA and the RFSOG. Three of these systems (the Mound Site Plume Treatment System [MSPTS], the East Trenches Plume Treatment System [ETPTS], and the Solar Ponds Plume Treatment System [SPPTS]) include a groundwater intercept trench (collection trench), which is similar to a French drain with an impermeable membrane on the downgradient side. The fourth system, the PLF Treatment System (PLFTS), passively treats water from the northern and southern components of the Groundwater Intercept System and water that flows from the PLF seep.

2.3.1 Mound Site Plume Treatment System

The MSPTS was installed in 1998 to treat groundwater contaminated with low concentrations of volatile organic compounds (VOCs). Groundwater that is intercepted by the collection trench is routed to treatment cells that are filled with zero-valent iron (ZVI). Dissolved VOCs are treated by the ZVI in these cells, and the water then flows to an effluent manhole and subsequently is discharged to the subsurface. In 2011 a small air stripper, designed and built by Site staff, was installed within this effluent manhole. This solar/battery-powered air stripper has been revised and optimized in the years since then to more effectively polish the effluent from the ZVI-filled treatment cells, further reducing residual concentrations of VOCs. Refer to recent annual reports for additional information on this treatment system, including the air stripper.

Routine maintenance activities continued at the MSPTS through the first quarter of CY 2016. These activities included checking and adjusting flows, inspecting and flushing piping, monitoring water levels in the two treatment cells, and servicing the air stripper. In addition, accumulated snow was brushed off the solar panels as necessary.

The air stripper operated throughout the quarter except for one instance in early February when snow covering the panels led to insufficient power. The snow was brushed off and power was restored. (Snow covering the photovoltaic panels affects operation of the air stripper but not the ZVI-filled treatment cells.) Air-stripper maintenance mainly consisted of monitoring the water pressures and nozzle spray patterns, maintaining the fan assembly that provides powered ventilation, and cleaning the pump, lines, and nozzles as warranted.

Refer to Section 3.1.9.1 for information on water-quality monitoring.

2.3.2 East Trenches Plume Treatment System

The ETPTS was installed in 1999 to treat groundwater contaminated with low concentrations of VOCs, and was based on the design of the MSPTS. In its original configuration, groundwater that was intercepted by the ETPTS collection trench was routed to treatment cells filled with ZVI. Dissolved VOCs were treated by the ZVI in these cells, and the treated effluent then flowed to an effluent manhole and was subsequently discharged to the subsurface. Following tests at the MSPTS that started in 2011, a small air stripper that was designed and built by Site staff was installed in the influent manhole in 2013. This component pre-treated (i.e., removed a portion of the VOCs from) water that was then routed to the ZVI-filled treatment cells. A reconfiguration project was undertaken in 2014–2015, and since that project was completed the ETPTS no longer relies on ZVI for treatment. Instead, a full-scale, commercial air stripper using only solar/battery power treats the VOCs in collected groundwater. No changes were made to the groundwater intercept trench, effluent manhole, or discharge gallery. Reconfiguration of the ETPTS was completed in January 2015. Refer to the annual reports for 2014 and 2015 (DOE 2015a, 2016 respectively) and the first-quarter 2015 report (DOE 2015b) for more information on the reconfiguration project.

Routine maintenance at the ETPTS in the first quarter of 2016 included checking the batteries and other power components, clearing accumulated snow off the solar panels, and adjusting valves and settings to maintain air stripper operation. A generator was plugged into the power

facility occasionally to assist in charging the batteries. (An electrical outlet was installed as a part of the reconfiguration project to allow for a generator to be used as a backup to the solar panels.)

Other maintenance activities included greasing the blower motor and cleaning bird droppings and dust off the solar panels.

Refer to Section 3.1.9.2 for information on water-quality monitoring.

2.3.3 Solar Ponds Plume Treatment System

The SPPTS was installed in 1999 to treat groundwater contaminated with nitrate and uranium, and it is based on the design of the MSPTS and ETPTS. In its original configuration, groundwater that was intercepted by the SPPTS collection trench was routed to a larger treatment cell filled with sawdust and a small percentage of ZVI, and thence to a smaller treatment cell filled with gravel and ZVI. Nitrate was treated in the first cell and uranium in the second. Effluent from the treatment cells is routed to an effluent manhole, from which it is piped to a subsurface discharge gallery. Several upgrades to the SPPTS have been installed and modified over the years, and numerous treatability studies have been conducted to improve its effectiveness. The SPPTS now incorporates additional treatment cells as well as pilot-scale nitrate treatment using a lagoon approach. Refer to recent annual reports for additional information on this treatment system and the upgrades and studies conducted here.

Routine maintenance activities at the SPPTS through the first quarter of CY 2016 focused primarily on the Phase III pilot-scale lagoons, as the system was being prepared for an upcoming interim reconfiguration project scheduled to mobilize in the second quarter of CY 2016. This project will include removing the contents of the original treatment cell structure (Cells 1 and 2 within what is informally referred to as the Big Box) and the Phase II Cell, and converting the Big Box to a full-scale test lagoon. Because this test lagoon will be populated with denitrifying bacteria from the pilot-scale lagoons, maintaining the health of these bacteria was important. This interim reconfiguration project was approved in RFLMA Contact Records (CRs) 2015-08 and 2015-09.

In addition, staff performed inspections of the solar/battery systems that power the pumps, the operation of the pumps, and influent and effluent flow conditions. Snow was brushed off the solar panels as warranted. The vaults continued to be inspected frequently for accumulations of groundwater, which was pumped out as necessary. Also, in preparation for the interim reconfiguration project, the water pooled across the surface of the overburden in the Big Box was drained.

Refer to Section 3.1.9.3 for information on water-quality monitoring.

2.3.4 Present Landfill Treatment System

Routine maintenance activities continued at the PLFTS through the first quarter of CY 2016. These activities generally consisted of inspecting the system for potential problems. Cracking was discovered in the grout surrounding the lip of the north and south manhole covers. The grout was used to fill in the transition from the lip of the manhole cover to the concrete structure of the manhole itself (approximately 2 inches vertically). The cracking was minimal and it was determined that the condition did not affect the treatment system. The grout will be inspected in

the second quarter to determine if any maintenance actions are needed. No other deficiencies were noted in first quarter of 2016.

Refer to Section 3.1.9.4 for information on water-quality monitoring.

2.4 Sign Inspection

"U.S. Department of Energy – No Trespassing" signs are required to be posted at defined intervals around the perimeter of the COU to notify persons that they are at the boundary of the COU. Signs listing the institutional controls and providing contact information are also required to be posted at access points to the COU. The signs are required by the remedy as physical controls, are inspected quarterly, and are maintained by repairing or replacing them as needed. Physical controls protect the engineered components of the remedy, including landfill covers, groundwater treatment systems, and monitoring equipment, which are also inspected routinely during monitoring and maintenance activities.

The signs were inspected on February 11, 2016, and they met the requirements.

2.5 Erosion Control and Revegetation

Maintenance of the Site erosion-control features required continued effort throughout the first quarter of CY 2016, especially following high-wind or precipitation events. Erosion wattles and matting loosened and displaced by high winds or rain were repaired. Erosion controls were installed and maintained for the various projects that were ongoing during the first quarter of CY 2016.

3.0 Environmental Monitoring

This section summarizes the environmental monitoring conducted in accordance with RFLMA Attachment 2. RFLMA Attachment 2, Table 1, "Surface Water Standards," establishes the concentrations that determine reportable conditions in accordance with RFLMA Attachment 2, Section 6.0, "Action Determinations." Reportable conditions require DOE to consult with CDHPE and EPA to determine the appropriate actions.

3.1 Water Monitoring

This section includes:

- A discussion of analytical results for the Point of Compliance (POC), Point of Evaluation (POE), PLF, and OLF surface-water monitoring objectives.
- Summaries of Area of Concern (AOC) well, Sentinel well, Evaluation well, and Resource Conservation and Recovery Act (RCRA) well groundwater monitoring; treatment-system monitoring; and Surface Water Support monitoring at the Site.

RFLMA Attachment 2 and the RFSOG offer details about the monitoring locations, sampling criteria, and evaluation protocols for the water monitoring objectives mentioned in the following

sections. Appendix B provides analytical water-quality data for the first quarter of CY 2016. The annual report for CY 2016 will provide a more detailed interpretation and discussion.

3.1.1 Water Monitoring Highlights

During the first quarter of CY 2016, water monitoring successfully met the targeted monitoring objectives as required by the RFLMA and was in conformance with RFSOG implementation guidance. The routine RFLMA network consists of 8 automated gaging stations, 11 surface-water grab-sampling locations, 8 treatment-system locations, and 88 monitoring wells (DOE 2015a). Additional locations are occasionally sampled in support of investigations in response to reportable conditions. During the quarter, 39 flow-paced composite samples, 15 surface-water grab samples, 16 treatment-system samples, and 10 groundwater samples were collected (in accordance with RFLMA protocols) and submitted for analysis.[1]

Groundwater monitoring results will be evaluated as part of the annual report for CY 2016.

Reportable 30-day average uranium concentrations occurred in January 2016 for surface water at RFLMA POC monitoring station WALPOC, which is located on Walnut Creek at the eastern COU boundary. WALPOC data are evaluated in Section 3.1.2.1 of this report.

All other RFLMA POC analyte concentrations remained below the applicable water-quality standards throughout the first quarter of CY 2016.

Reportable conditions for plutonium and americium were observed at RFLMA POE SW027 starting in CY 2015 and extending through the first quarter of CY 2016. Since there was very little flow at SW027 from July 15, 2015, through March 24, 2016, the 12-month rolling average after June 2015 through the first quarter of CY 2016 also shows very little change. These data are presented and discussed further in Section 3.1.3.2. All other analytes were not reportable through the first quarter of CY 2016.

All analyte concentrations at RFLMA POE locations GS10 and SW093 remained below the applicable water-quality standards throughout the first quarter of CY 2016.

3.1.2 POC Monitoring

The following sections include summary tables and plots showing the applicable 30-day and 12-month rolling averages for the POC analytes.

3.1.2.1 Monitoring Location WALPOC

Monitoring location WALPOC is on Walnut Creek at the eastern COU boundary. Figure 1 through Figure 4 show no occurrences of reportable 12-month rolling or 30-day averages during the quarter for plutonium and americium (in picocuries per liter [pCi/L]) or nitrate + nitrite as nitrogen (in milligrams per liter [mg/L]). The methods for calculating the 30-day and 12-month rolling averages are detailed in the annual report.

[1] Composite samples consist of multiple aliquots ("grabs") of identical volume. Each grab is delivered by the automatic sampler to the composite container at each predetermined flow volume or time interval. During the first quarter of CY 2016, the 39 flow-paced composites comprised 2873 individual grabs.

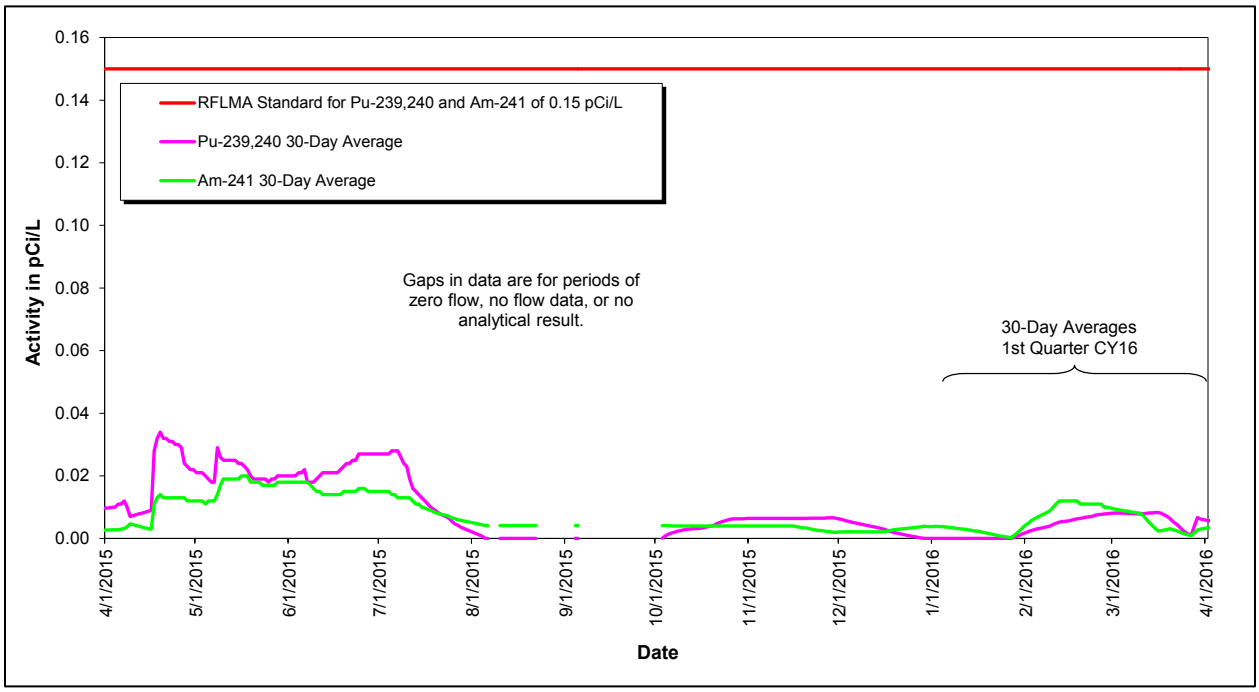


Figure 1. Volume-Weighted 30-Day Average Plutonium and Americium Activities at WALPOC: Year Ending First Quarter CY 2016

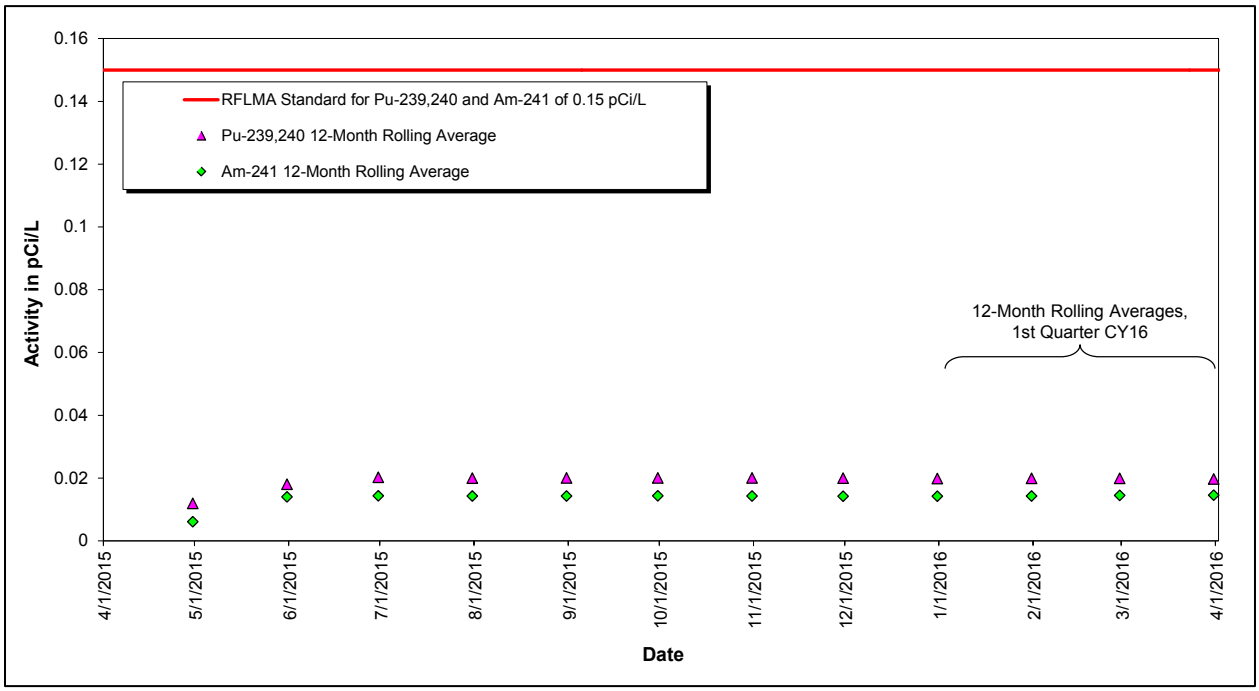


Figure 2. Volume-Weighted 12-Month Rolling Average Plutonium and Americium Activities at WALPOC: Year Ending First Quarter CY 2016

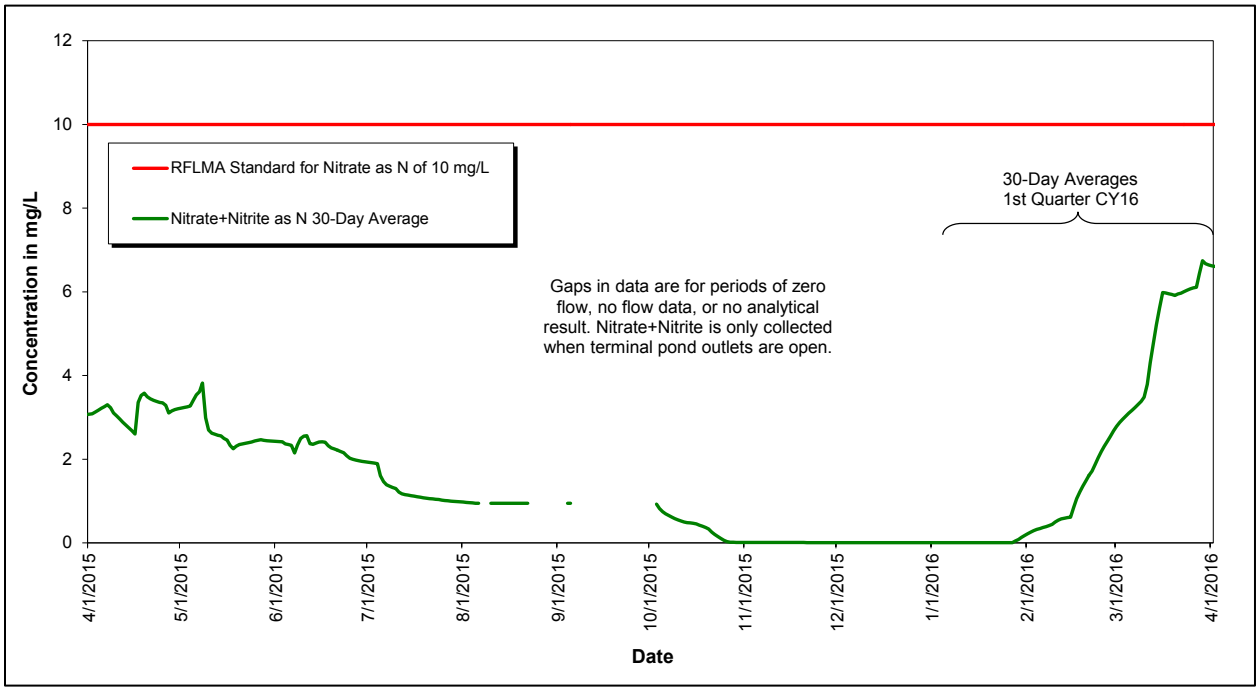
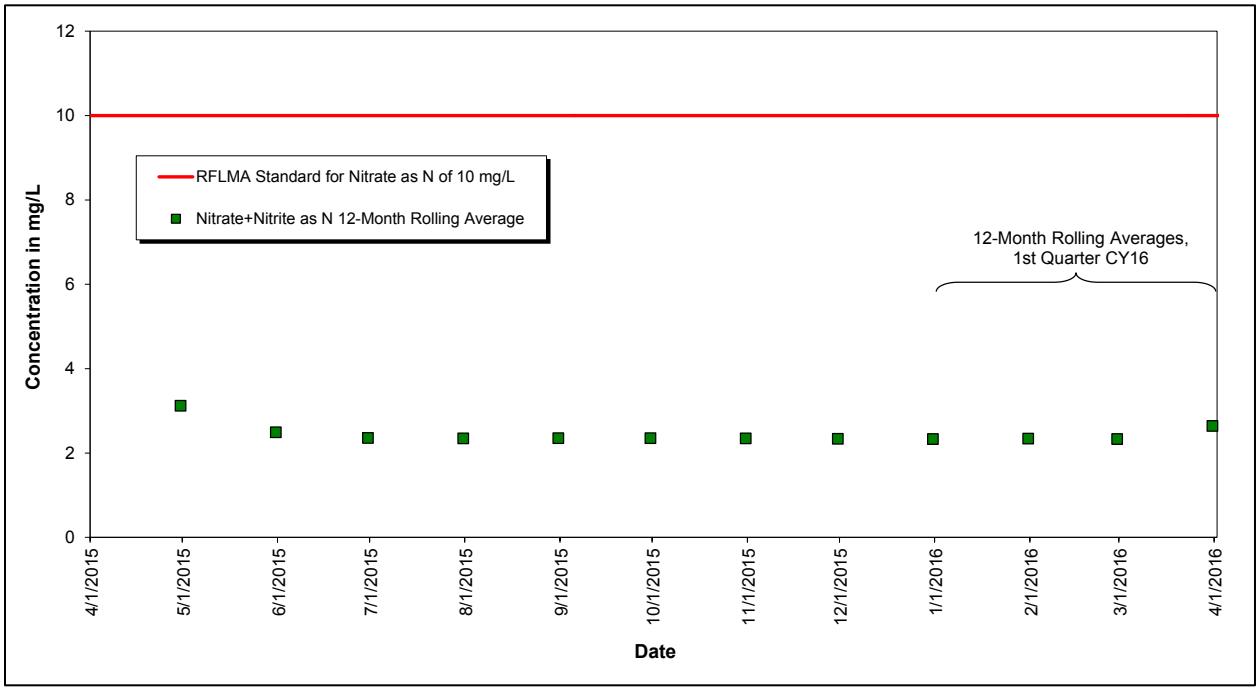


Figure 3. Volume-Weighted 30-Day Average Nitrate + Nitrite as Nitrogen Concentrations at WALPOC: Year Ending First Quarter CY 2016



Note: Nitrate + nitrite as nitrogen 12-month averages are conservatively compared to the nitrate standard only.

Figure 4. Volume-Weighted 12-Month Rolling Average Nitrate + Nitrite as Nitrogen Concentrations at WALPOC: Year Ending First Quarter CY 2016

Figure 5 shows that the 30-day average for uranium exceeded the RFLMA standard of 16.8 micrograms per liter (µg/L) for a while during the quarter, triggering a Reportable Condition under the RFLMA. The 12-month rolling average remains well below the RFLMA water-quality standard (Figure 6).

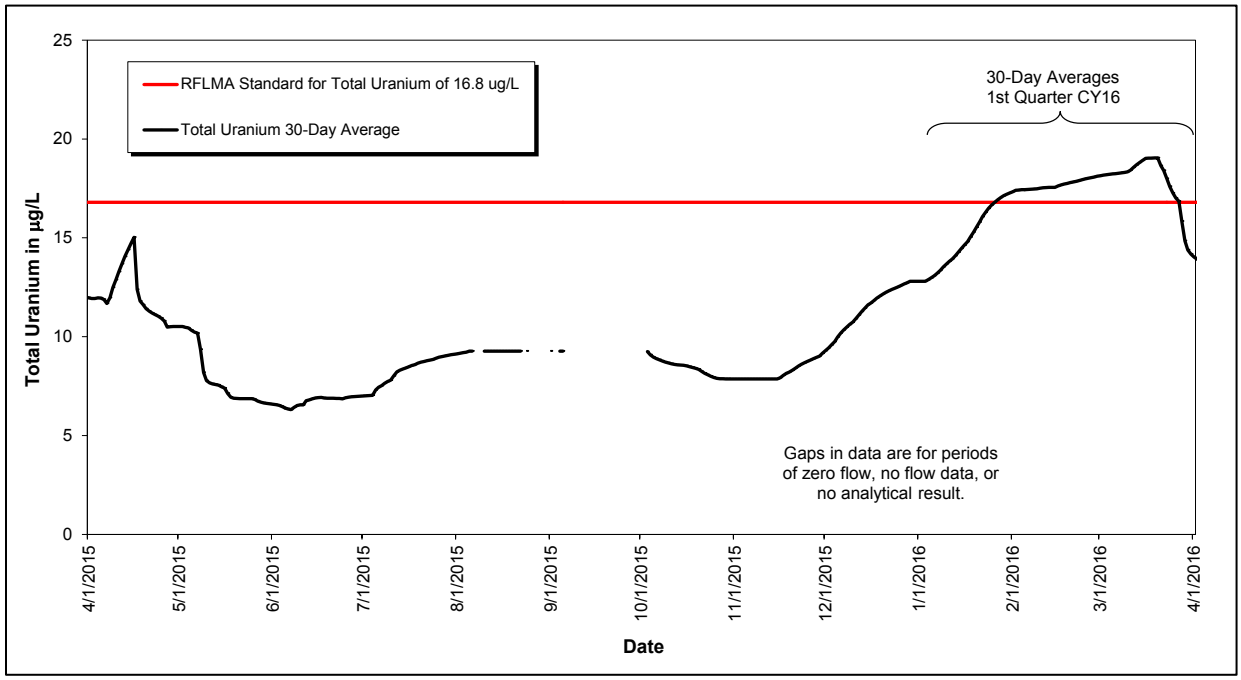


Figure 5. Volume-Weighted 30-Day Average Total Uranium Concentrations at WALPOC: Year Ending First Quarter CY 2016

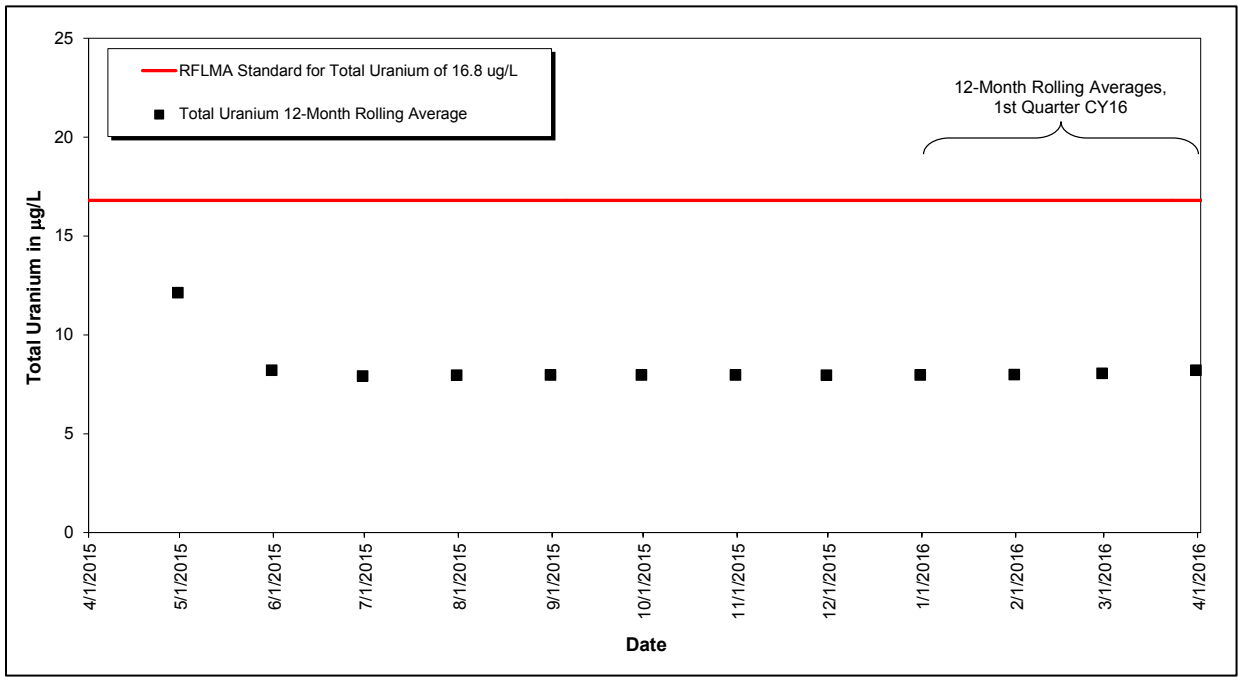


Figure 6. Volume-Weighted 12-Month Rolling Average Total Uranium Concentrations at WALPOC: Year Ending First Quarter CY 2016

The evaluation of the WALPOC uranium data was performed in accordance with RFLMA Attachment 2, Figure 5, "Points of Compliance," and resulted in a calculated 30-day average concentration for uranium of 16.9 µg/L on January 27, 2016. This value exceeds the RFLMA Attachment 2, Table 1, standard of 16.8 µg/L. Validated results were received on February 24, 2016, and notification to the regulatory agencies and the public—in accordance with RFLMA Attachment 2, Figure 5—was made by email on March 2, 2016. Representatives from CDPHE and DOE had previously discussed this result on March 1, 2016, and developed a path forward.

RFLMA Contact Record 2016-01, "Reportable condition for evaluation purposes for uranium at Walnut Creek Point of Compliance (WALPOC)," provides a discussion of the monitoring results and recaps the outcome of the RFLMA Parties consultation regarding the evaluation steps to be taken. This contact record is available on the Rocky Flats website at: http://www.lm.doe.gov/Rocky_Flats/ContactRecords.aspx.

The RFLMA Parties agreed on the evaluation steps described below and agreed that no mitigating actions are necessary at this time, for the following reasons taken directly from Contact Record 2016-01:

- The remedy remains protective. The remedy standard for total uranium at the WALPOC sampling location is the calculated 12-month rolling average. Using the most recent validated data, the calculated 12-month rolling average at WALPOC for total uranium on January 31, 2016, is 8.0 µg/L and remains well below the 16.8 µg/L remedy performance standard.
- WALPOC has been a RFLMA monitoring location for approximately 4.5 years. During that period, the Site experienced one of its driest years (2012), its wettest month (September 2013), and one of its wettest springs (2015), according to precipitation data collected since 1990. Because uranium concentrations are influenced by changing environmental conditions, varying uranium concentrations at WALPOC are anticipated. While significant uranium concentration variability can be seen in both individual sample results and in the 30-day averages, the observed variability is not outside of anticipated ranges and remains well below the 30 µg/L drinking water standard (i.e., the maximum contaminant level [MCL]).
- Measured concentrations of total uranium at WALPOC include both naturally occurring and anthropogenic uranium. Previous high-resolution isotopic uranium analyses for WALPOC samples show signatures that are between 68−82 percent naturally occurring uranium. The variable concentrations discussed above and these signatures do not suggest the existence of a new source and suggest the majority of the uranium in the samples is naturally occurring.
- 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) report that can be found at http://www.lm.doe.gov/Rocky_Flats/Documents.aspx.
- Although the recent 30-day average result was above the 16.8 µg/L Site standard, it remains well below the 30 µg/L drinking water standard (i.e., the MCL). While the MCL is not applied at the Site, the fact that the uranium concentration triggering this reportable

condition was well below that level indicates that the remedy remains protective of human health and the environment.

However, the RFLMA Parties also agreed that further evaluation should be completed to help confirm the foregoing conclusions and to aid in developing future mitigating actions if they become necessary. The following steps, as outlined in Contact Record 2016-01, serve as the plan and schedule for the WALPOC evaluation:

- Flow-paced composite samples routinely being collected at WALPOC will continue to be analyzed on a 2-week turnaround.
- On March 7, 2016, DOE provided CDPHE with a split sample from the WALPOC composite sample collected during the period of February 16, 2016, to March 3, 2016, which was the first sample collected after the March 1, 2016, consultation. This split sample was analyzed for uranium at the State's Radiochemistry Laboratory. The CDPHE result is given alongside the routine RFLMA result in Table 1.

The composite sampling results for uranium from composite samples collected at WALPOC during CYs 2015–2016 are shown below in Table 1.

Table 1. CY 2015–2016 Composite Sampling Results at WALPOC

Start Date and Time	End Date and Time	Uranium Result (µg/L)
1/6/2015 13:19	1/29/2015 11:24	11.60
1/29/2015 11:24	2/17/2015 12:13	14.40
2/17/2015 12:13	2/24/2015 13:30	17.00
2/24/2015 13:30	3/9/2015 14:28	14.20
3/9/2015 14:28	3/11/2015 12:10	10.00
3/11/2015 12:10	3/18/2015 10:51	10.90
3/18/2015 10:51	3/26/2015 12:30	14.30
3/26/2015 12:30	4/7/2015 11:21	16.10
4/7/2015 11:21	4/17/2015 14:45	14.50
4/17/2015 14:45	4/20/2015 12:25	10.60
4/20/2015 12:25	4/28/2015 11:13	9.01
4/28/2015 11:13	5/5/2015 10:50	11.30
5/5/2015 10:50	5/8/2015 12:17	9.46
5/8/2015 12:17	5/9/2015 14:35	6.77
5/9/2015 14:35	5/18/2015 14:00	5.70
5/18/2015 14:00	5/26/2015 13:51	7.12
5/26/2015 13:51	6/8/2015 13:00	6.29
6/8/2015 13:00	6/12/2015 16:16	5.88
6/12/2015 16:16	7/7/2015 12:50	7.86
7/7/2015 12:50	9/24/2015 12:55	9.27
9/24/2015 12:55	11/16/2015 11:05	7.86
11/16/2015 11:05	11/30/2015 13:36	10.20
11/30/2015 13:36	1/4/2016 12:08	12.80
1/4/2016 12:08	1/28/2016 13:30	17.30

Table 1 (continued). CY 2015–2016 Composite Sampling Results at WALPOC

Start Date and Time	End Date and Time	Uranium Result (µg/L)
1/28/2016 13:30	2/16/2016 11:40	17.60
2/16/2016 11:40	3/3/2016 10:34	19.00 (CDPHE 16.0)
3/3/2016 10:34	3/21/2016 12:16	19.10
3/21/2016 12:16	3/28/2016 11:26	16.10
3/28/2016 11:26	3/30/2016 12:23	11.90
3/30/2016 12:23	4/4/2016 11:23	12.50
4/4/2016 11:23	4/14/2016 11:09	13.50
4/14/2016 11:09	4/20/2016 12:29	9.05
4/20/2016 12:29	4/28/2016 10:52	7.53
4/28/2016 10:52	5/5/2016 15:07	10.50
5/5/2016 15:07	In progress	[a]

Notes:
Some recent results from 2016 are not yet validated and are subject to revision.
[a] Sample in progress

3.1.2.2 Monitoring Location WOMPOC

Monitoring location WOMPOC is on Woman Creek at the eastern COU boundary. Figure 7 through Figure 10 show no occurrences of reportable 12-month rolling or 30-day averages for the quarter. The methods for calculating the 30-day and 12-month rolling averages are detailed in the annual report.

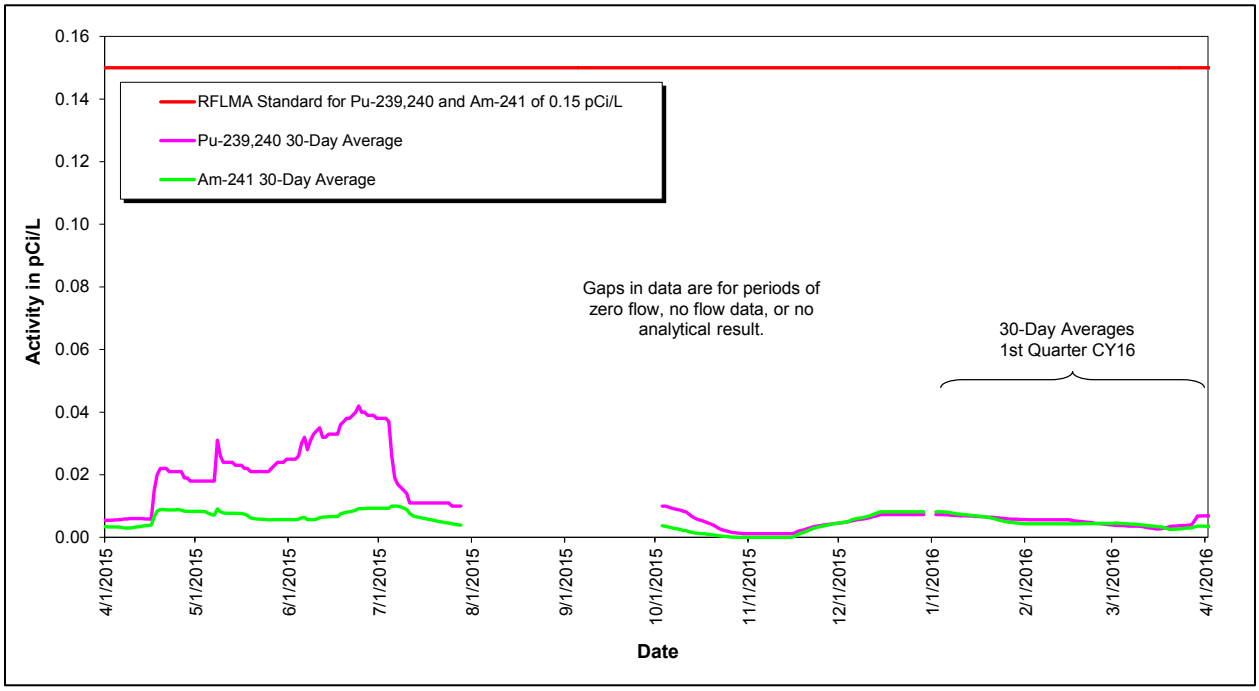


Figure 7. Volume-Weighted 30-Day Average Plutonium and Americium Activities at WOMPOC: Year Ending First Quarter CY 2016

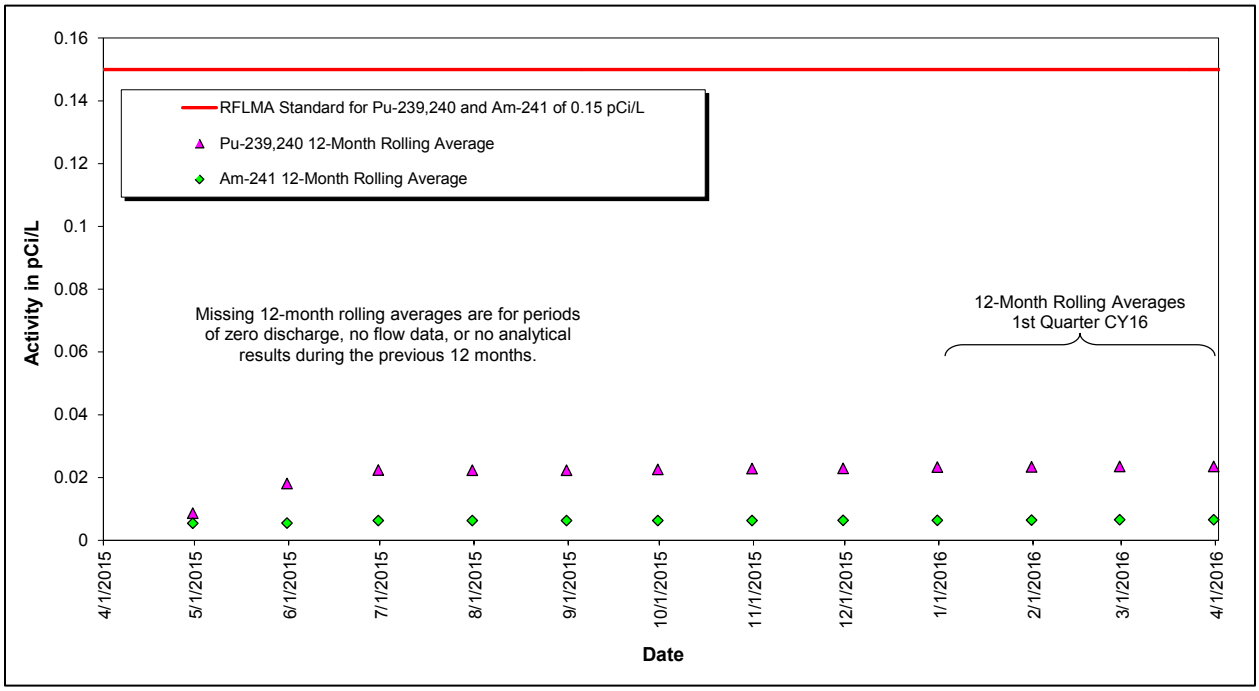


Figure 8. Volume-Weighted 12-Month Rolling Average Plutonium and Americium Activities at WOMPOC: Year Ending First Quarter CY 2016

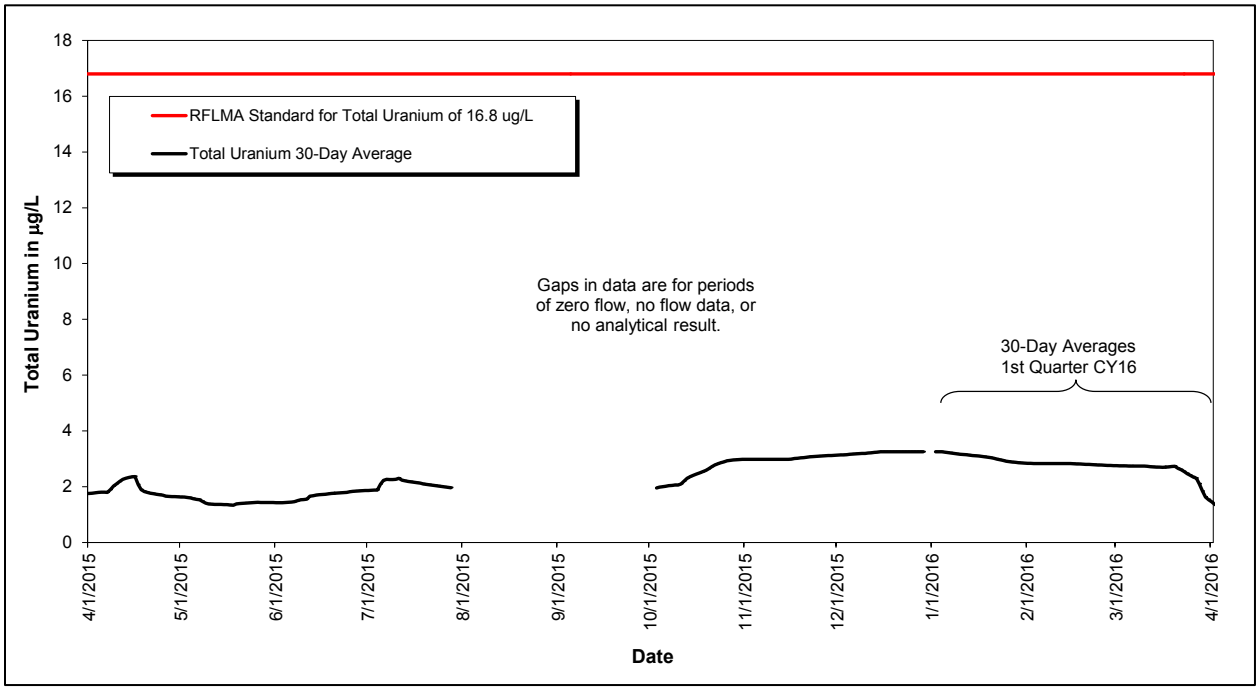


Figure 9. Volume-Weighted 30-Day Average Total Uranium Concentrations at WOMPOC: Year Ending First Quarter CY 2016

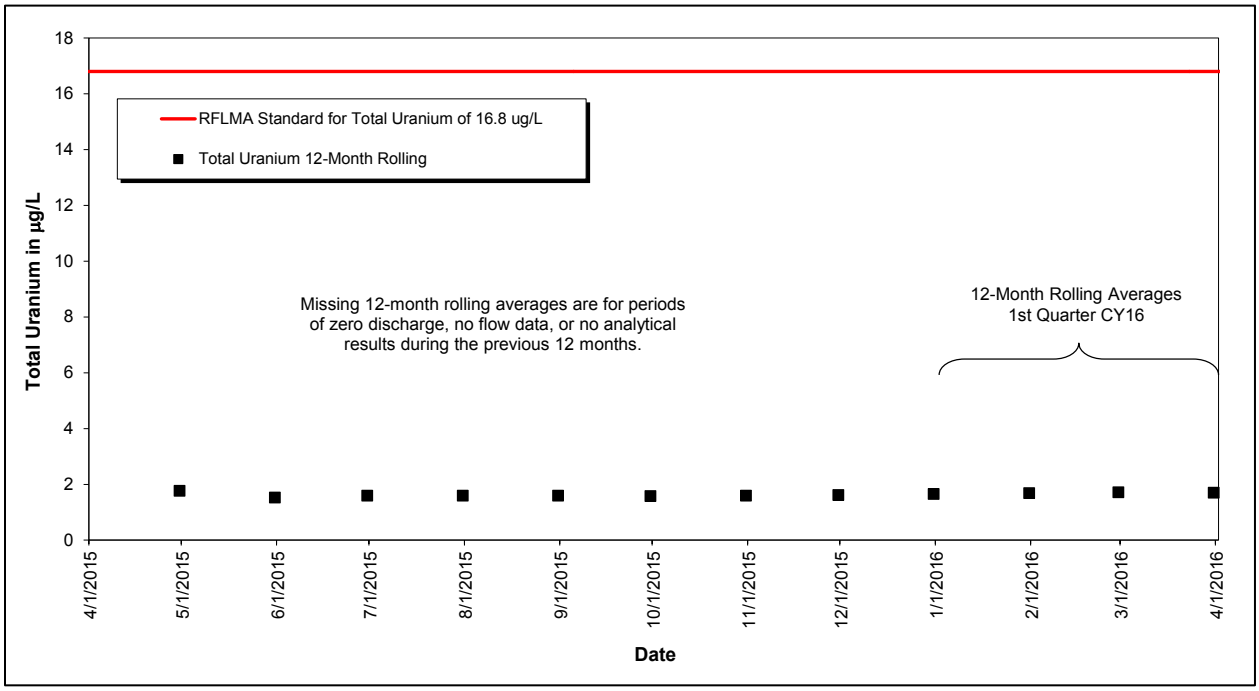


Figure 10. Volume-Weighted 12-Month Rolling Average Total Uranium Concentrations at WOMPOC: Year Ending First Quarter CY 2016

3.1.3 POE Monitoring

The following sections include summary plots showing the applicable 12-month rolling averages for the POE analytes.

3.1.3.1 Monitoring Location GS10

Monitoring location GS10 is on South Walnut Creek just upstream of the B-Series ponds. Figure 11 and Figure 13 show no occurrences of reportable 12-month rolling averages for plutonium, americium, or total uranium values during the quarter. Figure 12 and Figure 14 show sampling data from 2005 through the first quarter of CY 2016. The method for calculating the 12-month rolling averages is detailed in the annual report.

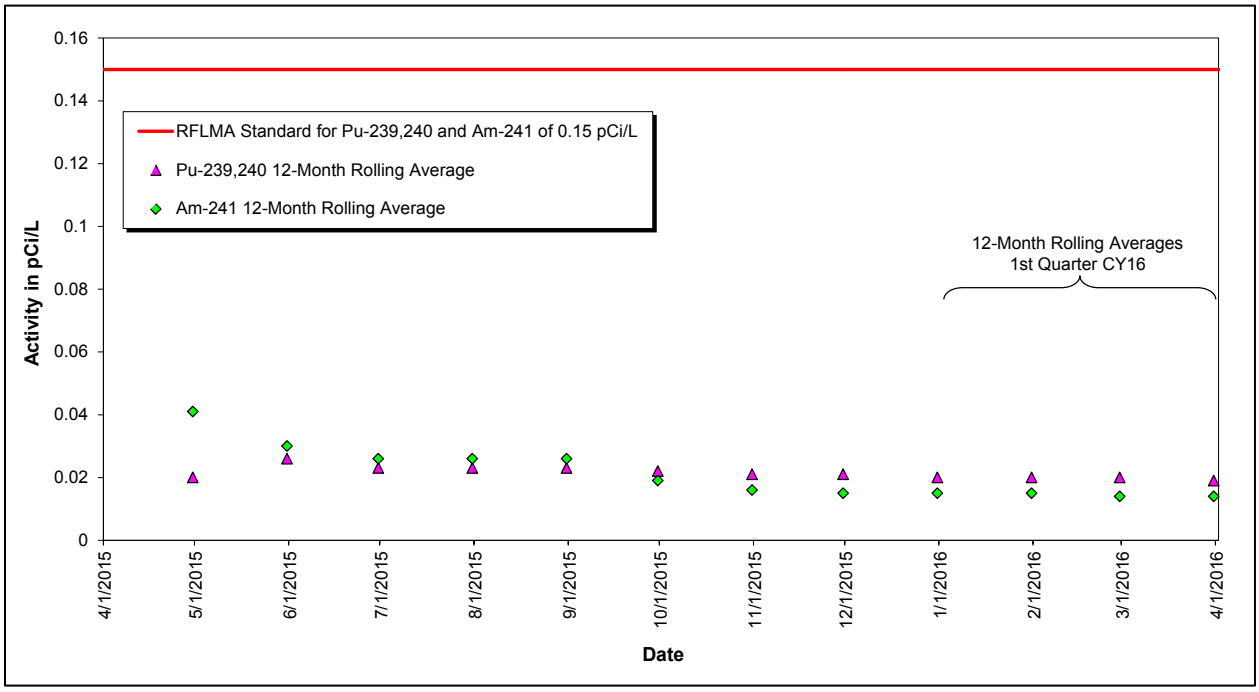


Figure 11. Volume-Weighted 12-Month Rolling Average Plutonium and Americium Activities at GS10: Year Ending First Quarter CY 2016

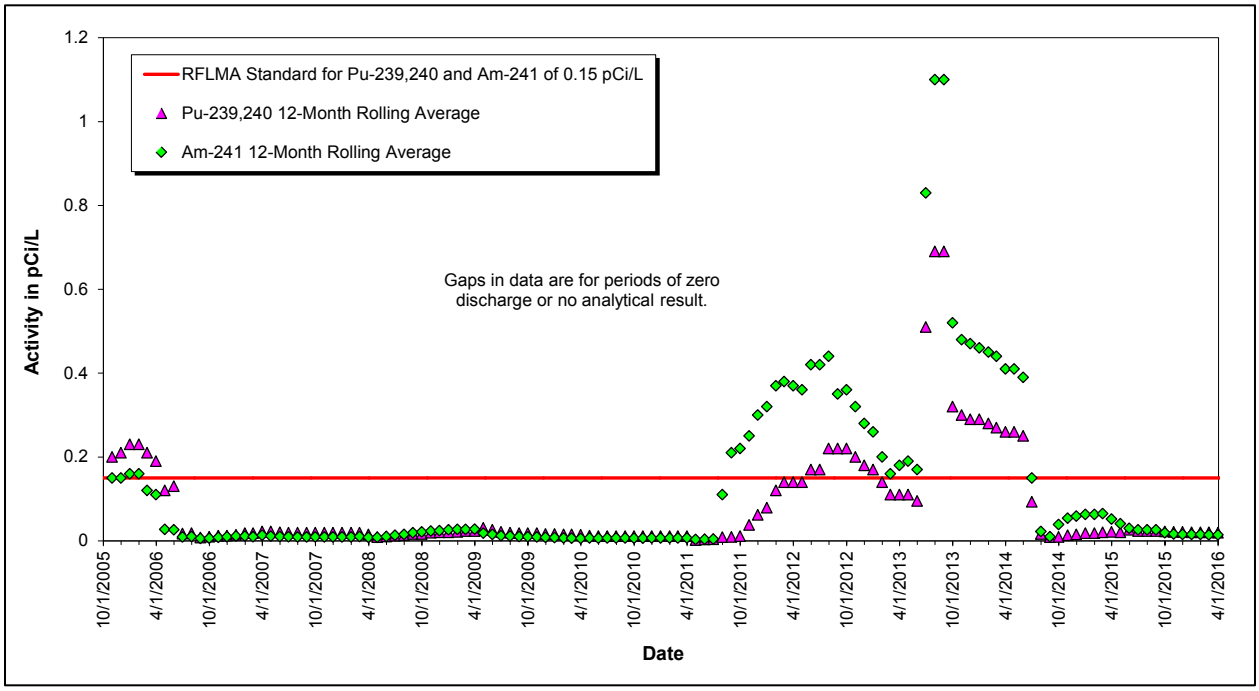


Figure 12. Volume-Weighted 12-Month Rolling Average Plutonium and Americium Activities at GS10: Postclosure Period Ending First Quarter CY 2016

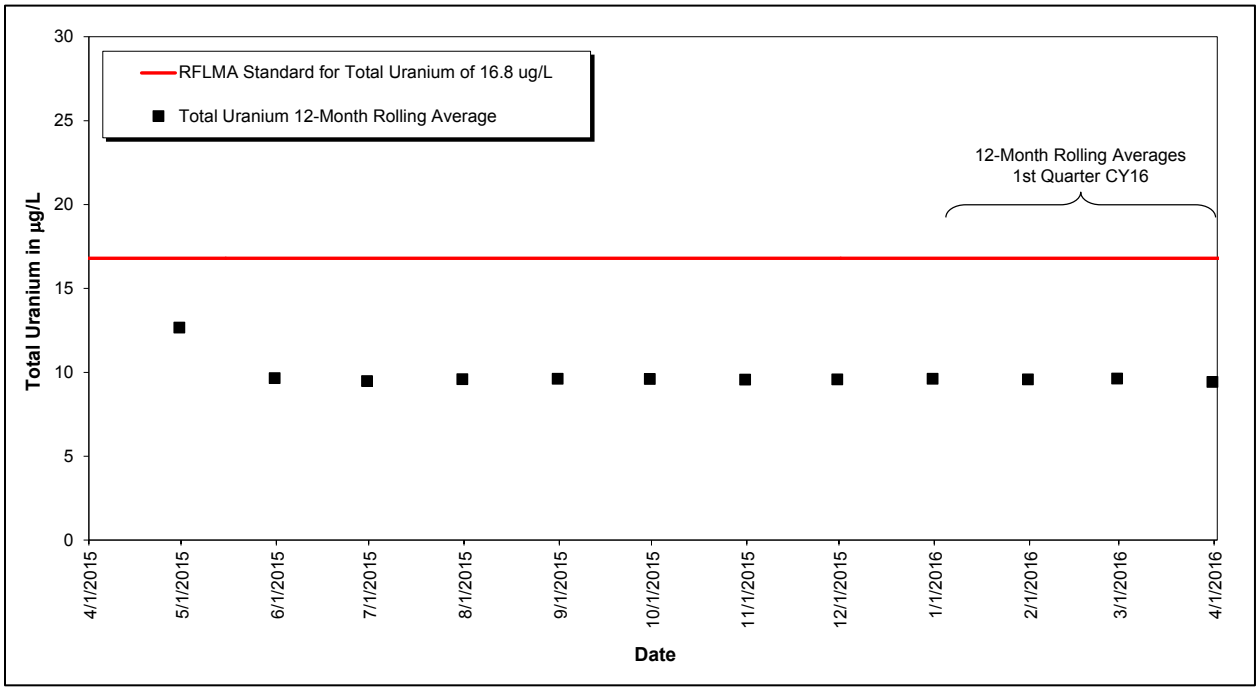


Figure 13. Volume-Weighted 12-Month Rolling Average Total Uranium Concentrations at GS10: Year Ending First Quarter CY 2016

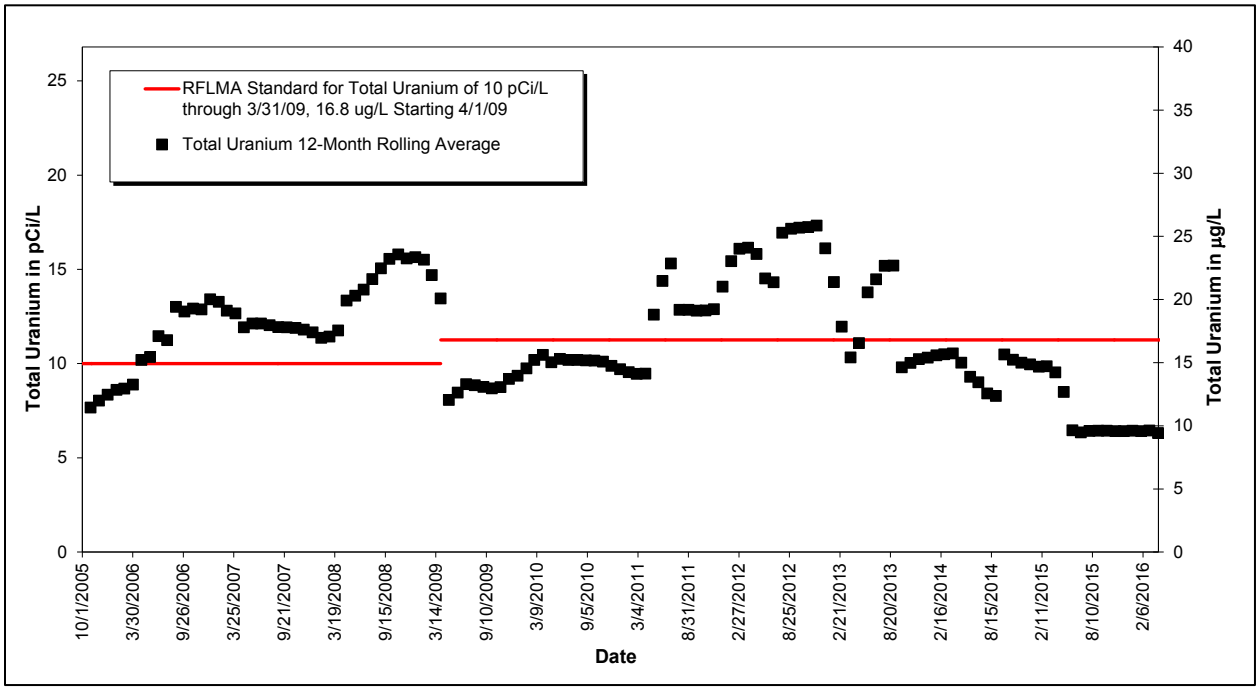


Figure 14. Volume-Weighted 12-Month Rolling Average Total Uranium Concentrations at GS10: Postclosure Period Ending First Quarter CY 2016

3.1.3.2 Monitoring Location SW027

Monitoring location SW027 is at the end of the South Interceptor Ditch (SID) at the inlet to Pond C-2. Figure 15 and Figure 17 show the 12-month rolling averages for plutonium, americium, and total uranium values during the quarter. Figure 16 and Figure 18 show water-quality data for plutonium, americium, and uranium from 2005 through the first quarter of CY 2016. The method for calculating the 12-month rolling averages is detailed in the annual report.

Figure 15 shows that the 12-month rolling average for plutonium and americium exceeded the RFLMA standard of 0.15 pCi/L, starting with the April 30, 2015, and June 30, 2015, evaluation dates, respectively. There was very little flow at SW027 for the period July 15, 2015, through March 24, 2016. Therefore, the 12-month rolling average after June 2015 through the first quarter of CY 2016 also shows very little change. All other analytes were not reportable through the first quarter of CY 2016.

Table 2 lists the americium, plutonium, and uranium results for composite samples collected during CY 2015 and 2016.

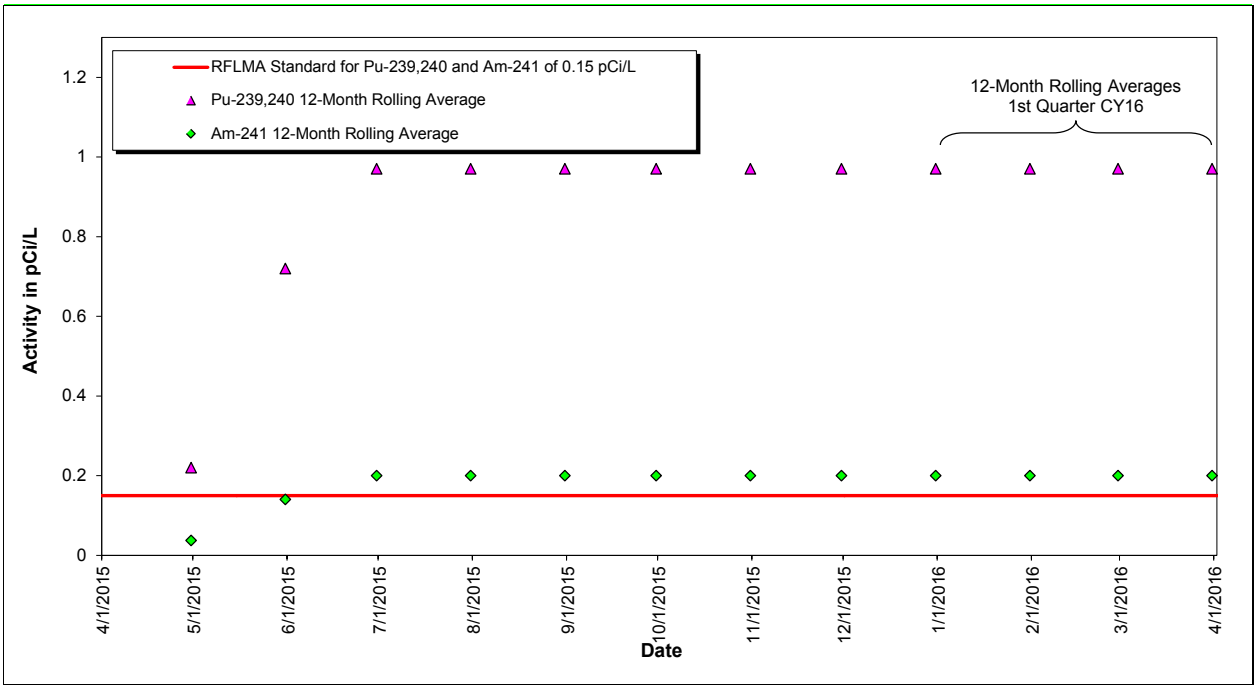


Figure 15. Volume-Weighted 12-Month Rolling Average Plutonium and Americium Activities at SW027: Year Ending First Quarter CY 2016

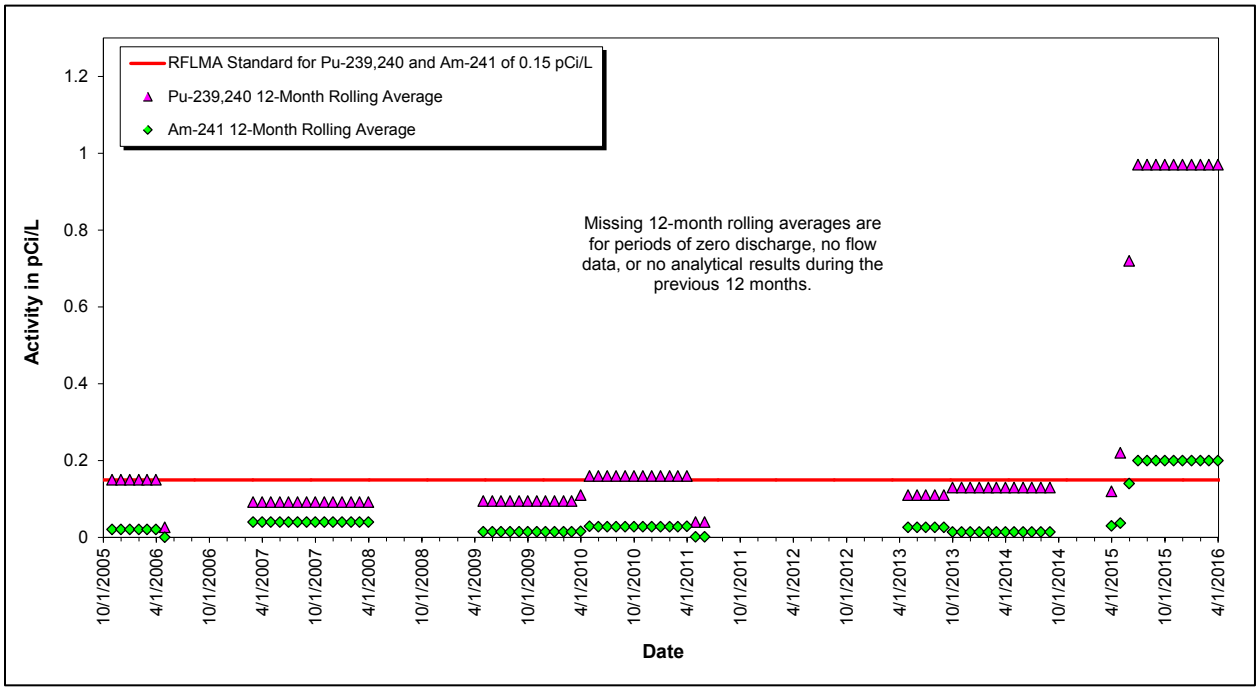


Figure 16. Volume-Weighted 12-Month Rolling Average Plutonium and Americium Activities at SW027: Postclosure Period Ending First Quarter CY 2016

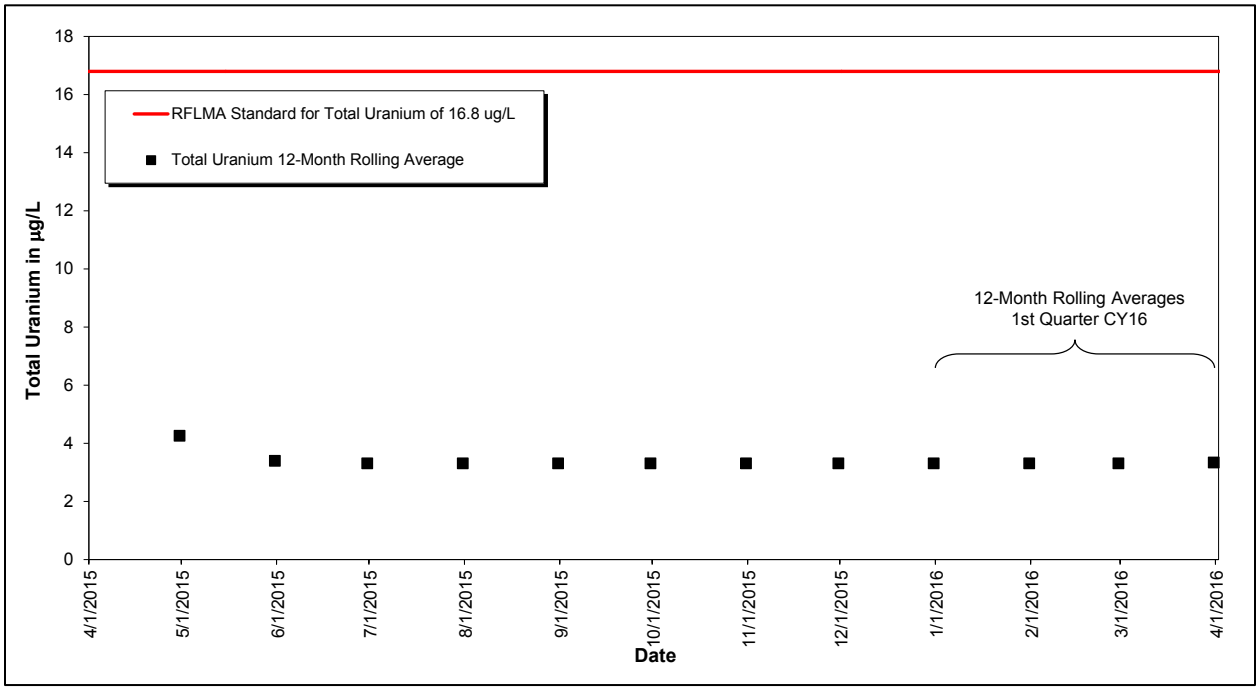


Figure 17. Volume-Weighted 12-Month Rolling Average Total Uranium Concentrations at SW027: Year Ending First Quarter CY 2016

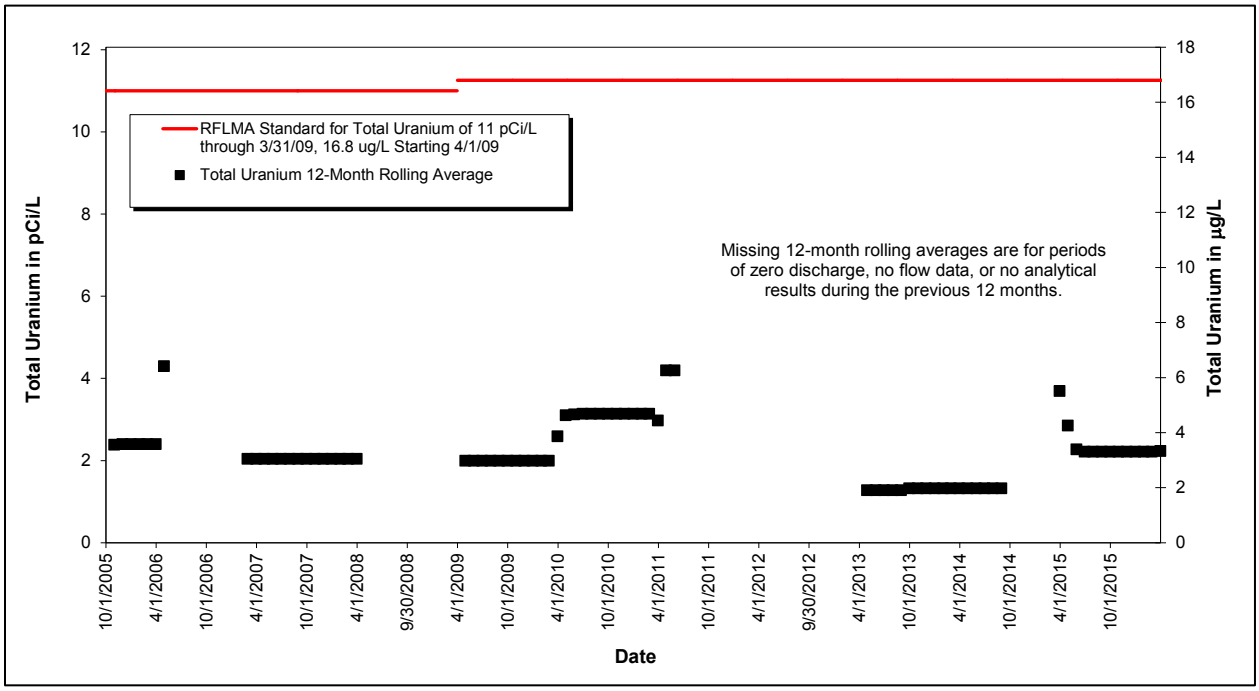


Figure 18. Volume-Weighted 12-Month Rolling Average Total Uranium Concentrations at SW027: Postclosure Period Ending First Quarter CY 2016

Table 2. CY 2015–2016 Composite Sampling Results at SW027

Start Date and Time	End Date and Time	Am-241 Result (pCi/L)	Pu-239, 240 Result (pCi/L)	Uranium Result (µg/L)
3/6/2014 11:59	3/9/2015 13:00	NSQ	NSQ	NSQ
3/9/2015 13:00	3/11/2015 12:57	0.030	0.116	5.92
3/11/2015 12:57	4/17/2015 17:50	0.030	0.139	4.04
4/17/2015 17:50	5/6/2015 12:42	0.040	0.251	3.78
5/6/2015 12:42	5/9/2015 12:43	0.169	0.887	3.45
5/9/2015 12:43	5/14/2015 9:56	0.034	0.306	3.07
5/14/2015 9:56	5/19/2015 14:13	0.068	0.432	3.17
5/19/2015 14:13	5/26/2015 16:32	0.109	0.501	3.55
5/26/2015 16:32	6/5/2015 10:37	1.260	5.590	2.19
6/5/2015 10:37	6/12/2015 14:51	0.321	1.520	3.05
6/12/2015 14:51	1/5/2016 12:40	NSQ	NSQ	NSQ
1/5/2016 12:40	3/30/2016 11:30	0.007	0.041	7.24
3/30/2016 11:30	4/20/2016 11:30	0.027	0.161	5.61
4/20/2016 11:30	4/21/2016 12:36	0.072	0.393	5.27
4/21/2016 12:36	6/3/2016 11:00	[a]	[a]	[a]
6/3/2016 11:00	In progress	[b]	[b]	[b]

Notes:
[a] Analysis pending
[b] Sample in progress

Abbreviations:
NSQ = nonsufficient quantity for analysis

Contact Record 2015-05 describes the plan and schedule to address the reportable condition for plutonium and americium. The plan and schedule for evaluation and the status of actions related to the plan are described below:

- Evaluation of the steps taken in 2010, when it was anticipated that the 12-month rolling average for plutonium would exceed the standard at SW027 as reported in CR 2010-06, "Monitoring Results at Surface Water Point of Evaluation (POE) SW027." This includes a review of "Status Report of Steps Taken Regarding Monitoring Results at Surface Water Point of Evaluation (POE) SW027," August 31, 2010, and "Calendar Year (CY) 2011 Status Report of Actions Taken in Point of Evaluation SW027 Drainage," January 2012.
- On June 17, 2015, Rocky Flats personnel walked the SID drainage area and identified opportunities to enhance the revegetation and erosion controls previously implemented in 2010 and 2011 (Figure 1 of CR 2015-05). Also during that June 2015 inspection, limited areas in the SID showed evidence of local erosion and sediment deposition. Based on these general observations, a geotechnical engineer was scheduled to inspect the areas and provide recommendations.
- During the June 17, 2015, inspection, locations were identified for immediate installation of new wattles (Figure 2 of CR 2015-05); installation was completed on June 22, 2015.
- On June 29, 2015, geotechnical engineers, CDPHE, and Rocky Flats personnel walked down the SID to evaluate potential use of water and sediment management devices or

structures. The geotechnical engineers provided several recommendations for water and sediment management in the SID, most of which will be implemented in the longer term as appropriate. Recent implementation of selected recommendations include the following:

  - — Additional erosion control methods were implemented in the SW027 drainage, predominantly on the hillside above GS51. These measures included adding matting, wattles, GeoRidge berms, and organic mulch. Several areas in the SID also received erosion matting. This work was completed on August 20, 2015. These erosion control measures are periodically inspected to confirm adequate performance.
  - — Additional erosion control matting was installed at various locations in the SID on March 10, 2016.

- Sampling will continue as currently scheduled when surface-water runoff is available.
- The status of the above items will be reported in quarterly or annual reports, depending on when the activities occur.

Downstream of SW027, monitoring at WOMPOC continues to show plutonium and americium concentrations that are not reportable, as explained in Section 3.1.2.2. Recent analytical results from WOMPOC are given in Table 3.

Table 3. CY 2015–2016 Composite Sampling Results at WOMPOC

Start Date and Time	End Date and Time	Am-241 Result (pCi/L)	Pu-239, 240 Result (pCi/L)	Uranium Result (µg/L)
3/9/2015 15:47	3/11/2015 13:28	0.003	0.006	1.30
3/11/2015 13:28	3/18/2015 12:44	0.002	0.006	1.58
3/18/2015 12:44	4/1/2015 10:53	0.002	0.005	2.28
4/1/2015 10:53	4/13/2015 13:13	0.005	0.007	2.72
4/13/2015 13:13	4/17/2015 13:22	0.005	0.005	1.75
4/17/2015 13:22	4/20/2015 11:08	0.011	0.030	1.55
4/20/2015 11:08	4/27/2015 11:12	0.006	0.011	1.30
4/27/2015 11:12	5/5/2015 10:25	0.006	0.010	1.62
5/5/2015 10:25	5/8/2015 13:22	0.003	0.016	1.37
5/8/2015 13:22	5/9/2015 16:04	0.017	0.084	1.23
5/9/2015 16:04	5/18/2015 16:25	0.006	0.015	1.28
5/18/2015 16:25	5/26/2015 16:49	0.003	0.018	1.65
5/26/2015 16:49	6/8/2015 15:22	0.008	0.057	1.50
6/8/2015 15:22	6/12/2015 16:52	0.021	0.045	1.85
6/12/2015 16:52	7/7/2015 14:41	0.008	0.011	2.36
7/7/2015 14:41	8/20/2015 11:58	0.003	0.010	1.85
8/20/2015 11:58	11/16/2015 14:02	0.000	0.001	2.98
11/16/2015 14:02	1/5/2016 13:11	0.008	0.007	3.25
1/5/2016 13:11	2/16/2016 13:27	0.004	0.006	2.83
2/16/2016 13:27	3/3/2016 11:47	0.005	0.001	2.63
3/3/2016 11:47	3/21/2016 11:30	0.000	0.006	2.84
3/21/2016 11:30	3/28/2016 13:51	0.004	0.003	2.01

Table 3 (continued). CY 2015–2016 Composite Sampling Results at WOMPOC

Start Date and Time	End Date and Time	Am-241 Result (pCi/L)	Pu-239, 240 Result (pCi/L)	Uranium Result (µg/L)
3/28/2016 13:51	3/30/2016 11:48	0.005	0.011	1.24
3/30/2016 11:48	4/4/2016 14:32	0.003	0.007	0.89
4/4/2016 14:32	4/14/2016 10:14	0.085	0.165	1.73
4/14/2016 10:14	4/21/2016 12:17	0.015	0.022	1.16
4/21/2016 12:17	4/28/2016 10:04	0.008	0.007	1.21
4/28/2016 10:04	5/5/2016 16:09	0.001	0.015	1.49
5/5/2016 16:09	5/26/2016 12:43	[a]	[a]	[a]
5/26/2016 12:43	In progress	[b]	[b]	[b]

Notes:
[a] Analysis pending
[b] Sample in progress

3.1.3.3 Monitoring Location SW093

Monitoring location SW093 is on North Walnut Creek, 1300 feet upstream of former Pond A-1. Figure 19 and Figure 21 show no occurrences of reportable 12-month rolling averages for plutonium, americium, or total uranium values during the quarter. Figure 20 and Figure 22 show sampling data from 2005 through the first quarter of CY 2016. The method for calculating the 12-month rolling averages is detailed in the annual report.

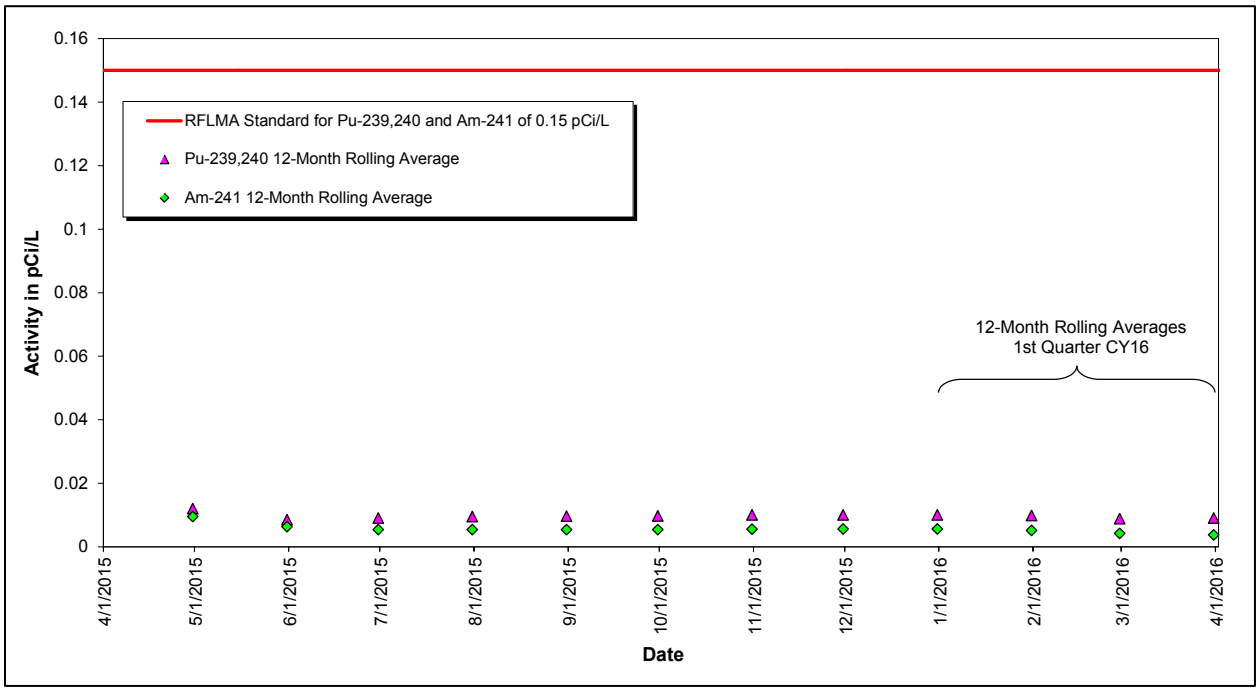


Figure 19. Volume-Weighted 12-Month Rolling Average Plutonium and Americium Activities at SW093: Year Ending First Quarter CY 2016

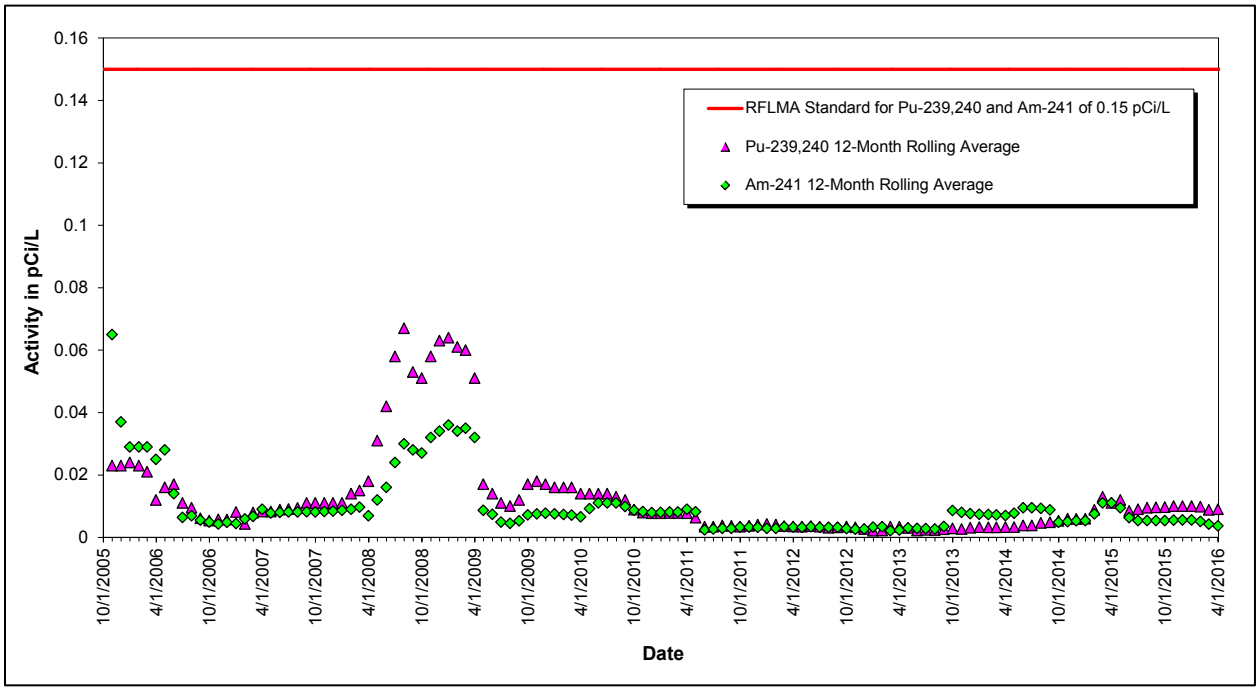


Figure 20. Volume-Weighted 12-Month Rolling Average Plutonium and Americium Activities at SW093: Postclosure Period Ending First Quarter CY 2016

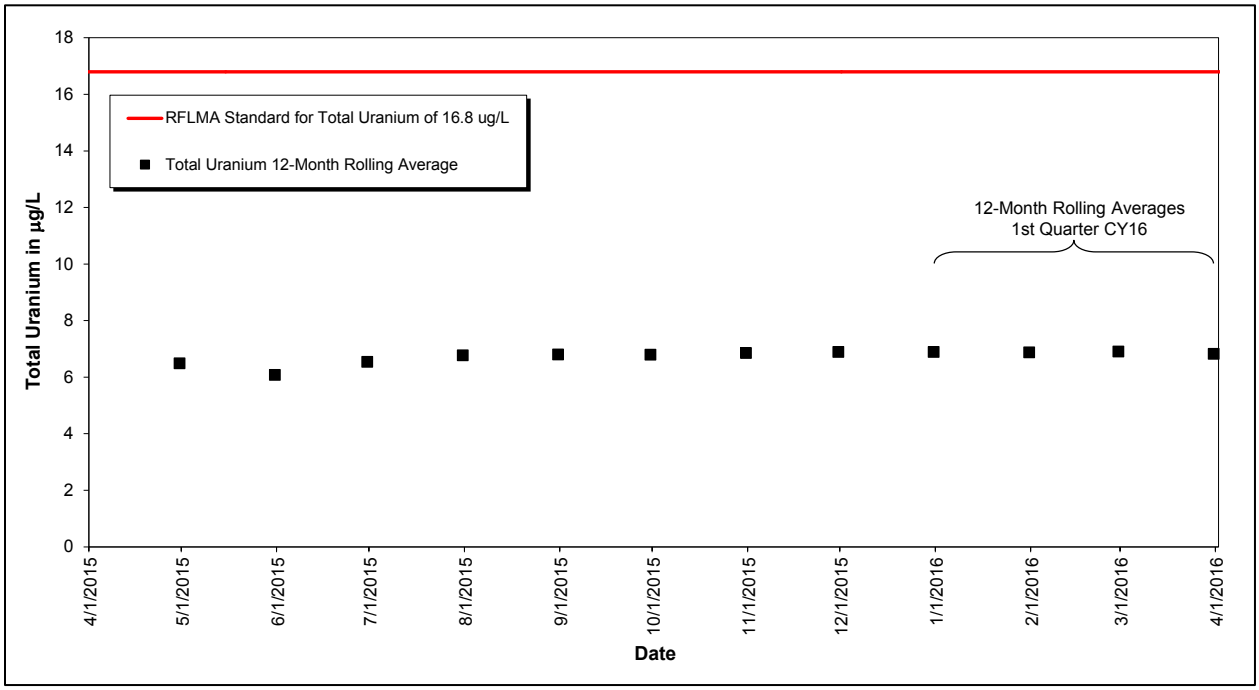


Figure 21. Volume-Weighted 12-Month Rolling Average Total Uranium Concentrations at SW093: Year Ending First Quarter CY 2016

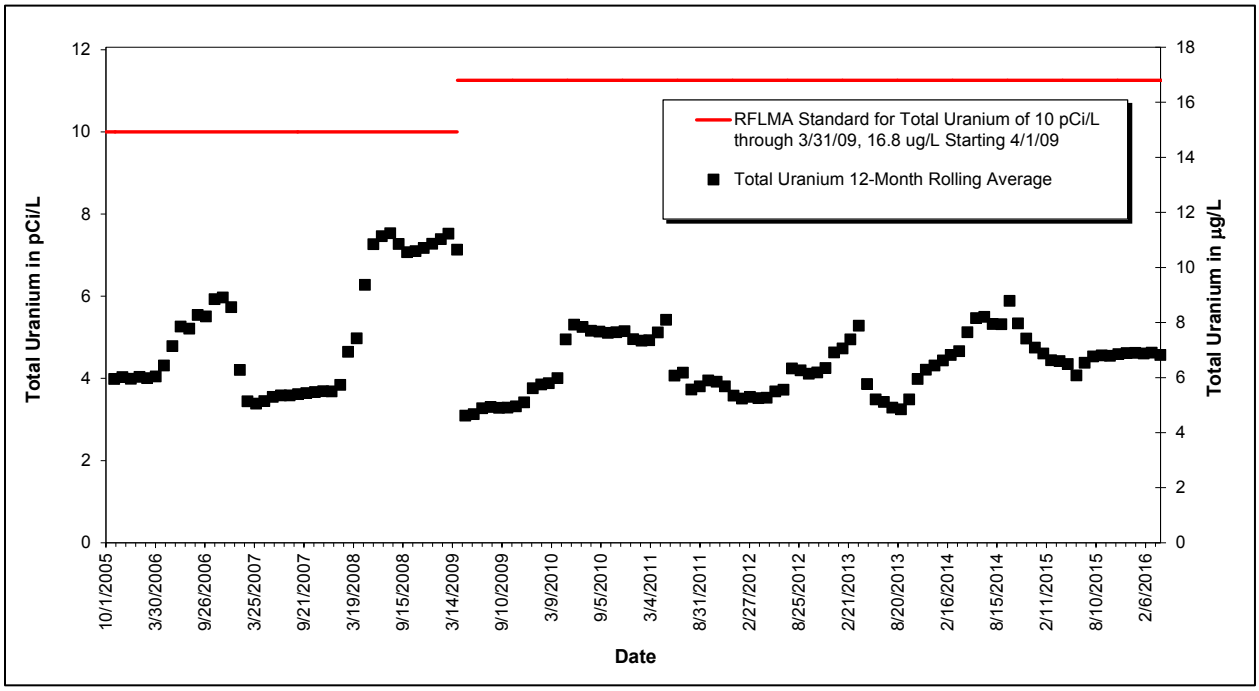


Figure 22. Volume-Weighted 12-Month Rolling Average Total Uranium Concentrations at SW093: Postclosure Period Ending First Quarter CY 2016

3.1.4 AOC Wells and Surface Water Support Location SW018

Neither the AOC wells nor Surface Water Support location SW018 were scheduled for RFLMA monitoring in the first quarter of CY 2016.

3.1.5 Sentinel Wells

None of the Sentinel wells were scheduled for RFLMA monitoring in the first quarter of CY 2016.

3.1.6 Evaluation Wells

None of the Evaluation wells were scheduled for RFLMA monitoring in the first quarter of CY 2016.

3.1.7 PLF Monitoring

All RCRA groundwater monitoring wells at the PLF were sampled during the first quarter of CY 2016. Analytical results (Appendix B) were generally consistent with those of past samples and will be discussed and statistically evaluated as part of the annual report for CY 2016. Section 3.1.9.4 discusses monitoring the PLFTS.

3.1.8 OLF Monitoring

All RCRA groundwater monitoring wells at the OLF were sampled during the first quarter of CY 2016. Analytical results (Appendix B) were generally consistent with those of past samples and will be discussed and statistically evaluated as part of the annual report for CY 2016.

During the first quarter of CY 2016, when routine surface-water sampling was performed in Woman Creek downstream of the OLF (GS59), the mean concentration for one analyte was above the applicable surface-water standard:

- The mean concentration of selenium for the quarter was 5.26 µg/L (the RFLMA standard is 4.6 µg/L). In accordance with RFLMA protocols, sampling frequency was increased to monthly for the second quarter.

3.1.9 Groundwater Treatment System Monitoring

As described in Section 2.3, contaminated groundwater is intercepted and treated in four areas of the Site. The MSPTS, ETPTS, and SPPTS include a groundwater intercept trench. Groundwater collecting in the trenches is routed through a pipe and then, at the MSPTS and SPPTS, into one or more treatment cells, where it is treated and then discharged to the subsurface; at the newly reconfigured ETPTS, the water is pumped through an air stripper for treatment, followed by discharge to the subsurface. The PLFTS treats water from the northern and southern components of the Groundwater Intercept System and water that flows from the PLF seep.

3.1.9.1 Mound Site Plume Treatment System

None of the MSPTS monitoring locations were scheduled for routine RFLMA sampling in the first quarter of CY 2016.

3.1.9.2 East Trenches Plume Treatment System

None of the ETPTS monitoring locations were scheduled for routine RFLMA sampling in the first quarter of CY 2016.

3.1.9.3 Solar Ponds Plume Treatment System

None of the SPPTS monitoring locations were scheduled for routine RFLMA sampling in the first quarter of CY 2016. However, nonroutine samples were collected, some to support the Adaptive Management Plan (DOE 2015c) and others to support continued testing of treatment components (pilot-scale lagoons). The associated results will be discussed in the annual report for 2016, together with additional information regarding these tests.

3.1.9.4 PLF Treatment System

Breaching of the PLF dam was completed in June 2012, and since then any PLFTS effluent flows through the remaining wetland area. This flow configuration is now essentially equivalent to the historical open valve configuration.

During collection of the January 19, 2016, sample at the system influent (monitoring location PLFSEEPINF), the flow rate was 1.59 gallons per minute. The routine quarterly effluent sample

of the PLFTS (monitoring location PLFSYSEFF) collected on January 19, 2016, showed results for vinyl chloride that were above the applicable surface-water standard from RFLMA Attachment 2, Table 1, "Surface Water Standards." The individual result was as follows:

- The vinyl chloride concentration was 0.21 µg/L, exceeding the practical quantitation limit of 0.2 µg/L.

In accordance with RFLMA evaluation protocols, the vinyl chloride result triggered an increase in sampling frequency from quarterly to monthly. Subsequent sampling at the increased frequency continued to show vinyl chloride slightly above the applicable standard.

The next two sample results for vinyl chloride were also above the applicable standard (0.29 µg/L and 0.27 µg/L). Vinyl chloride was not detected in the subsequent sample and, in accordance with the RFLMA data evaluation protocols, sampling frequency returned to monthly.

All other analyte concentrations were below the RFLMA standards for the quarter.

3.1.10 Predischarge Monitoring

Predischarge samples are collected prior to opening the valves to initiate a discharge period at Ponds A-4, B-5, and C-2 on North Walnut Creek, South Walnut Creek, and Woman Creek, respectively.

No predischarge samples were collected at Ponds A-4, B-5, or C-2 during the first quarter of CY 2016. All three ponds have been operated in a flow-through configuration since September 2011.

4.0 Adverse Biological Conditions

No evidence of adverse biological conditions (e.g., unexpected mortality or morbidity) was observed during monitoring and maintenance activities in the first quarter of CY 2016.

5.0 Ecological Monitoring

During the first quarter of CY 2016, very few ecological field activities were conducted because it was winter. Observations of prairie dog towns on the Rocky Flats National Wildlife Refuge and in the COU continued to document that no active prairie dog towns are present within the COU.

6.0 References

DOE (U.S. Department of Energy), 2009a. *Rocky Flats Site Original Landfill Monitoring and Maintenance Plan,* LMS/RFS/S05516, Office of Legacy Management, September.

DOE (U.S. Department of Energy), 2009b. *Rocky Flats Site Quarterly Report of Site Surveillance and Maintenance Activities, Second Quarter Calendar Year 2009*, LMS/RFS/S05823, Office of Legacy Management, October.

DOE (U.S. Department of Energy), 2012a. Attachment 2, "Legacy Management Requirements," in *Rocky Flats Legacy Management Agreement*, Rocky Flats Environmental Technology Site, Golden, Colorado.

DOE (U.S. Department of Energy), 2012b. *Third Five-Year Review Report for the Rocky Flats Site, Jefferson and Boulder Counties, Colorado*, LMS/RFS/S07693, Office of Legacy Management, July.

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DOE (U.S. Department of Energy), 2015c. *Surface Water Configuration Adaptive Management Plan for the Rocky Flats, Colorado, Site,* LMS/RFS/S07698, Office of Legacy Management, May.

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DOE, EPA, and CDPHE (U.S. Department of Energy, U.S. Environmental Protection Agency, and Colorado Department of Public Health and Environment), 2006. *Corrective Action Decision/Record of Decision for Rocky Flats Plant (USDOE) Peripheral Operable Unit and Central Operable Unit*, EPA/541/R-06/197, September 29.

DOE, EPA, and CDPHE (U.S. Department of Energy, U.S. Environmental Protection Agency, and Colorado Department of Public Health and Environment), 2011. *Corrective Action Decision/Record of Decision Amendment for Rocky Flats Plant (USDOE) Central Operable Unit,* September 21.

Draft 2017 Work Plan

- Cover memo
- Draft work plan

Draft 2017 Budget

- Cover memo
- Draft budget

ROCKY FLATS STEWARDSHIP COUNCIL

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MEMORANDUM

TO: Board
FROM: David Abelson & Rik Getty
SUBJECT: Initial review of 2017 work plan
DATE: September 1, 2016

At this meeting the Board will begin reviewing its 2017 work plan (draft plan attached). Any changes to the draft plan will be incorporated into a revised draft that will be reviewed, modified as necessary, and approved at the October 31st meeting. There are a few changes we have proposed in the attached plan. We believe they are self-explanatory.

At the meeting, the first item for discussion will be the Stewardship Council mission statement. As you will recall, earlier this year questions emerged about the mission statement; the Board agreed to table that conversation until it reviews the draft work plan.

Mission Statement
The mission statement is included in the Stewardship Council's Intergovernmental Agreement (IGA). It reads as follows:

> The mission of the Rocky Flats Stewardship Council is to provide continuing local oversight of activities at the Rocky Flats site and to ensure local government and community interests are met with regards to long-term stewardship of residual contamination and refuge management. The mission also includes providing a forum to track issues related to former site employees and to provide an ongoing mechanism to maintain public knowledge of Rocky Flats, including educating successive generations of ongoing needs and responsibilities regarding contaminant management and refuge management.

Importantly, the statement was drafted in early 2005 as the Rocky Flats Coalition of Local Governments, our predecessor organization, was establishing the Stewardship Council. At that time, it was hard to predict exactly what role the Stewardship Council would serve, and any parameters Congress and/or DOE would develop that would shape our role as the Local Stakeholder Organization (LSO) for Rocky Flats.

To us the word that creates confusion is found in the first sentence – "oversight." Were we to draft the mission statement now, with more than 10 years of experience working as the Stewardship Council and serving as the LSO for Rocky Flats, we would recommend that "oversight" be changed to "engagement" as "engagement" better reflects our actual work. (The edit would be to replace "oversight of" with "engagement on.")

Please note, since the mission statement is found in the IGA, formally changing the mission statement requires each of the 10 governments to adopt a resolution. That change cannot be made by the Stewardship Council Board of Directors.

<u>Recommendation</u>: Given the accuracy of the mission and the steps it would take to change two words, we recommend that we do not change the mission statement at this time, but revisit the question in late 2017 when the member governments adopt resolutions to continue the organization for another three years (the triennial review).

ROCKY FLATS STEWARDSHIP COUNCIL

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City of Golden -- City of Northglenn -- City of Thornton -- City of Westminster -- Town of Superior
League of Women Voters -- Rocky Flats Cold War Museum -- Rocky Flats Homesteaders
Steven Franks

2017 Work Plan

DRAFT #1, September 12, 2016

Mission:

The mission of the Rocky Flats Stewardship Council is to provide continuing local oversight of activities at the Rocky Flats site and to ensure local government and community interests are met with regards to long-term stewardship of residual contamination and refuge management. The mission also includes providing a forum to track issues related to former site employees and to provide an ongoing mechanism to maintain public knowledge of Rocky Flats, including educating successive generations of ongoing needs and responsibilities regarding contaminant management and refuge management.

Background:

The Stewardship Council occupies two roles: (1) serving as the Local Stakeholder Organization (LSO) for Rocky Flats, and (2) engaging USFWS on the management of the Rocky Flats National Wildlife Refuge. To help ensure the Board and public understand when the Stewardship Council acts in its capacity as the Rocky Flats LSO and when it engages on issues beyond its scope as the LSO, the plan includes headers indicating "LSO" and "Non-LSO" activities.

Local Stakeholder Organization (LSO)

Legacy Management approved the LSO Plan for Rocky Flats on December 21, 2005. That Plan identifies how the main responsibilities Congress identified in the legislation authorizing the creation of LSO (Section 3120 of the Fiscal Year 2005 Defense Authorization bill) are to be carried out at Rocky Flats. These responsibilities are summarized as follows:

- Solicit and encourage public participation in appropriate activities relating to the closure and post-closure operations of the site.
- Disseminate information on the closure and post-closure operations of the site to the State and local and Tribal governments in the vicinity of the site, and persons and entities having a stake in the closure or post-closure operations of the site.
- Transmit to appropriate officers and employees of DOE questions and concerns of governments, persons, and entities referred to in the preceding bullet.

In fulfilling these responsibilities, the Stewardship Council has been tasked with helping DOE meet its public involvement obligations identified in the Legacy Management Public Involvement Plan (LMPIP) for Rocky Flats.

Rocky Flats National Wildlife Refuge (non-LSO activity)
"The Rocky Flats National Wildlife Refuge Act of 2001" established that Rocky Flats shall become a national wildlife refuge following EPA certification that the site has been cleaned to the agreed-upon regulatory standards. In July 2007 DOE conveyed jurisdictional responsibility over nearly 4000 acres to the Department of the Interior for the Rocky Flats National Wildlife Refuge. Additional lands were conveyed in 2014.

In April 2005, USFWS published the Rocky Flats Comprehensive Conservation Plan (CCP), the conservation plan for the Rocky Flats National Wildlife Refuge. The CCP describes the desired future conditions of the Refuge and provides long-range guidance and management direction. Per the CCP, in the coming years USFWS anticipates developing the following "step-down" management plans, which provide specific guidance for achieving the objectives established in the CCP:

1. Vegetation and Wildlife Management Plan
2. Integrated Pest Management Plan
3. Fire Management Plan (completed)
4. Visitors Services Plan
5. Health and Safety Plan
6. Historic Preservation Plan

In 2015, the USFWS began opening the Rocky Flats National Wildlife Refuge for guided tours. The agency will further open the Refuge in 2017 as it completes building the trail system.

Deleted: will not conduct a prescribed fire in 2017.

Work Plan Elements

The Work Plan is divided into the following five sections:

1. DOE Management Responsibilities (LSO activity)
2. Former Rocky Flats Workforce (LSO activity)
3. Outreach (LSO activity with two exceptions noted)
4. Rocky Flats National Wildlife Refuge (non-LSO activity)
5. Business Operations (LSO activity)

DOE Management Responsibilities

LSO Activity

Overview:
One of the key roles of the Stewardship Council continues to be to understand and engage the various issues regarding the cleanup and post-closure management of Rocky Flats, and to provide a forum to foster discussions among DOE, the regulatory agencies, and community members.

2017 Activities:

1. Review information regarding the long-term stewardship and management of the Rocky Flats site, including but not limited to the results of the operational and performance monitoring data of site operations and DOE status reports.
2. Continue to identify key questions about the cleanup and ongoing management, and evaluate for remedy effectiveness and impacts to human and ecological receptors.
3. Track the progress made in treating contaminated groundwater at the groundwater treatment systems. Attention to the significant changes to the Mound Site and Solar Ponds groundwater plume treatment systems will be a focus during 2017 to ensure that the systems are effectively removing contaminants from groundwater.
4. Track the ongoing investigation into the source(s) of elevated actinide levels found in surface water. Of particular note are the cyclic uranium levels in North Walnut Creek at point of compliance WALPOC, elevated levels of actinides at point of evaluation GS10 on South Walnut Creek, and elevated plutonium levels at point of evaluation SW027 in the Woman Creek drainage.
5. Track the geotechnical progress made in addressing surface slumping at the Original Landfill (OLF).
6. Track issues related to additional sampling off-site and in the Rocky Flats Refuge. (Note: while the analysis might be conducted by local governments and USFWS, the issue is an LSO issue as it goes to the historic use of Rocky Flats as a weapons plant and associated residual contamination.)
7. Continue to participate in Adaptive Management Plan (AMP) meetings, including technical evaluations of data; track implementation of AMP results, which could include breaching the terminal ponds on Woman and Walnut Creeks.
8. Continue participating in DOE, CDPHE and/or EPA assessment(s) of remedy operations and effectiveness, including the CERCLA five-year review.
9. Work with DOE on implementing its Legacy Management Closure Public Involvement Plan (LMPIP), including the meetings DOE identified in the LMPIP.
10. Review DOE budgets for implementation of DOE responsibilities.
11. As needed, evaluate legal and regulatory issues regarding implementation of RFLMA and related site documents, and provide information to the Stewardship Council and to the community.
12. Work with DOE and the regulators to understand technical data regarding implementation and effectiveness of cleanup remedies and long-term controls, and provide information to the Stewardship Council and to the community.
13. Transmit to appropriate officers and employees of the DOE questions and concerns of governments, persons and entities regarding Rocky Flats.
14. Continue to work with DOE on the development of the visitor center.
15. Support the Rocky Flats Cold War Museum to educate successive generations about the history of Rocky Flats, particularly about residual contamination and continued need for long-term stewardship.
16. Track the development of Jefferson County Parkway as it relates to Rocky Flats.

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Former Rocky Flats Workforce

LSO Activity

Overview:

One of DOE's primary post-closure responsibilities is to manage the health and pension benefits of former site workers. Many of these workers are the constituents of the Stewardship Council governments. Further, the Rocky Flats Homesteaders, which represents more than 1800 former site workers, sits on the Board of the Stewardship Council. For these and other reasons, as noted in the Stewardship Council's IGA, worker issues will continue to be an important focus of the Stewardship Council.

2017 Activities:

1. Track issues related to the implementation of the Energy Employee Occupational Illness Compensation Program Act (EEOICPA). Respond as needed.
2. Forward worker concerns, as necessary.

Deleted: to the Administration and to members of the Colorado Congressional delegation.¶

Outreach

LSO Activity with two exceptions noted

Overview:

As the LSO for Rocky Flats, a core responsibility for the Stewardship Council is providing a forum to educate people about Rocky Flats and the ongoing management needs. As part of this mission it remains essential that the Stewardship Council maintain close communications with DOE, EPA, CDPHE, and Congress.

Deleted: mechanism

The local communities have developed over the period of many years a very good working relationship with the two primary regulatory agencies that oversee the site, EPA and CDPHE. It is imperative that the Stewardship Council continue this tradition of partnership with these agencies.

The Colorado congressional delegation likewise plays a critical role in addressing Rocky Flats issues. The Stewardship Council shall remain an important mechanism for addressing questions and concerns of the delegation, and for providing ongoing interface with the delegation on the numerous site-specific issues and concerns.

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Deleted: issues of concern to the delegation

Deleted: community

2017 Activities:

1. Hold quarterly Board meetings and provide opportunity for comment and dialogue.
2. Communicate with other local officials, DOE, state and federal regulators, the Colorado congressional delegation, and other stakeholders about the Stewardship Council's mission and activities, as appropriate.
3. Seek input and involvement on issues related to DOE and USFWS responsibilities at Rocky Flats. (Note: Any work on this item involving DOE is an LSO activity; all other work on this item is a non-LSO activity.)
4. Evaluate Congressional action affecting DOE and USFWS and administrative action that could affect Rocky Flats. (Note: Any work on this item involving DOE is an LSO activity; all other work on this item is a non-LSO activity.)

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5. Maintain communication with federal and state legislators, as appropriate, and track federal and state legislation as needed.
6. Provide opportunities at meetings and in between meetings for education and feedback.
7. Work with DOE to disseminate information on the cleanup and post-closure operations of Rocky Flats.
8. Participate in local, regional and national forums.
9. Implement mechanisms for the Stewardship Council and the general public to be informed of the results of the monitoring data and other relevant information, recognizing that not all communication between DOE and Rocky Flats constituencies will flow through the Stewardship Council. Options include:
    - Periodic reports
    - Email updates
    - White papers
    - Letters

Rocky Flats National Wildlife Refuge

Non-LSO Activity

Overview:

One of the Stewardship Council's roles is to engage on issues related to the development and management of the future Rocky Flats National Wildlife Refuge. In 2015, USFWS began taking steps to open the Rocky Flats National Wildlife Refuge. Activities were limited to 2-3 guided tours during spring/summer 2015 (birds of Rocky Flats, wildflower walk, photography, etc.). Public access will increase in 2017.

Deleted: In 2015, USFWS also proposed and then withdrew a plan to manage the prairie ecosystem using prescribed fire. The agency will not pursue a prescribed fire in 2016, but may use spot spraying and mowing.

In addition, USFWS and DOE are working in partnership to develop a visitor's center. That center will be sited on refuge lands, with USFWS taking lead on the public engagement process. As the LSO for Rocky Flats, the Stewardship Council will work with DOE on that agency's role in developing the visitor center. (That work with DOE is an LSO activity.) USFWS will take lead on public engagement; Stewardship Council members will be involved in that process.

Deleted: is in the process of developing its outreach plan, so it is too soon to know how the agency will engage governments and community members, or any role the Stewardship Council occupy on this issue.

The items identified in this part of the work plan only concern USFWS.

2017 Activities:

1. Track agency and Congressional action affecting funding for USFWS and Rocky Flats National Wildlife Refuge. Engage as needed.
2. Track issues related to the development of the Rocky Flats visitor center.[1] Engage as needed.
3. Be apprised of the Rocky Flats National Wildlife Refuge site conservation plan, with an emphasis on the proposed trail plan.
4. Track issues related to the development of a trail network connecting Rocky Flats National Wildlife Refuge, Rocky Mountain Arsenal National Wildlife Refuge, Two Ponds National Wildlife Refuge, and Rocky Mountain National Park.

Deleted: Review

[1] As noted above, as the LSO for Rocky Flats, the Stewardship Council will work with DOE on that agency's role in developing the visitor center. The item identified in this part of the work plan only concerns USFWS' role.

Business Operations

LSO Activity

Overview:

Business Operations refers to organizational management responsibilities – conducting the annual audit, submitting financial reports to DOE, adopting annual Work Plan and annual budget, etc.

2017 Activities:

1. Work with DOE to ensure the Stewardship Council continues to meet the needs as the LSO for Rocky Flats.
2. Operate Stewardship Council in compliance with state and federal regulations.
3. Conduct financial audit.
4. Prepare and adopt the annual work plan and the annual budget.
5. Submit financial reports to DOE.
6. Review and renew as necessary consulting agreements.
7. Provide annual report on activities.
8. Appoint community members for 2018-2019.

ROCKY FLATS STEWARDSHIP COUNCIL

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Jefferson County -- Boulder County -- City and County of Broomfield -- City of Arvada -- City of Boulder
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Steven Franks

MEMORANDUM

TO: Board
FROM: David Abelson
SUBJECT: Initial review of 2016 budget
DATE: September 1, 2016

Attached for your review is the first draft of the Stewardship Council's fiscal year 2017 budget. As a unit of local government under the Colorado Constitution, the Stewardship Council must review the budget at this meeting and hold budget hearings at a second meeting prior to adopting a final budget. The budget hearings will be held at the October 31st meeting, at which time the Board will adopt the budget.

Budget Overview
Following the Board's direction, since the Stewardship Council's inception, the budget is for more than the anticipated costs (approximately 16% above projected costs). Over-budgeting gives the Board latitude in how it manages expenditures without requiring supplemental budgeting should expenditures increase. Over the past few years, organizational costs have remained relatively level, with the exception of 2015.

Please let me know what questions you have.

ROCKY FLATS STEWARDSHIP COUNCIL

2017 Budget -- DRAFT #1 September 12, 2016

			2017 Budget Amounts	2017 Anticipated Expenditures	2016 Budget	2016 Actual/ Projected Expenses*	2016 Budget vs. 2016 Projected Expenses	Actual 2015 Expenses
A.	**Personnel**		**$ 93,000.00**	$ 85,800.00	$ 93,000.00	$ 85,800.00	$ (7,200.00)	$ 84,300.00
	Executive Director and Technical Advisor ($7750/month)							
B.	**Fringe Benefits**		**$ -**	$ -	$ -	$ -	$ -	$ -
	Staff are contract employees							
C.	**Travel**		**$ 6,700.00**					
	Out of State	$ 5,500.00		$ 5,000.00	$ 5,500.00	$ 3,966.67	$ (1,533.33)	$ 6,255.70
	National DOE-related trips							
	Local Travel	$ 1,200.00		$ 1,000.00	$ 1,200.00	$ 720.12	$ (479.88)	$ 987.32
	$100/month for 12 months							
D.	**Computer Equipment**		**$ 500.00**	$ -	$ 500.00	$ -	$ (500.00)	$ -
	Purchase misc. hardware, software							
E.	**Supplies**		**$ 1,200.00**	$ 700.00	$ 1,200.00	$ 284.58	$ (915.42)	$ 569.00
	Supplies ($100/month)							
F.	**Contractual**		**$ 40,100.00**					
	Attorney & Accounting Services							
	Legal Services ($1400/ month)	$ 16,800.00		$ 16,000.00	$ 16,800.00	$ 15,778.96	$ (1,021.04)	$ 25,101.01
	Accounting ($850/month)	$ 10,200.00		$ 5,800.00	$ 10,200.00	$ 4,920.25	$ (5,279.75)	$ 5,044.50
	Audit Report	$ 6,500.00		$ 4,200.00	$ 6,500.00	$ 4,010.35	$ (2,489.65)	$ 4,000.48
	Admin. Services							

	Misc. Services: bank fees, etc.	$	1,000.00		$	100.00	$	1,000.00	$	1,061.48	$	61.48	$	986.92
	Minutes Preparation (6 meetings) (also includes web site management)	$	3,600.00		$	3,300.00	$	3,600.00	$	3,450.00	$	(150.00)	$	3,250.00
	Local Government Expenses Miscellaneous expenses not covered by DOE funds (includes meeting expenses and non-LSO activities)	$	2,000.00		$	1,500.00	$	2,000.00	$	1,384.13	$	(615.87)	$	1,440.00
G.	**Construction**			**$ -**	$	-	$	-	$	-	$	-	$	-
	None													
H.	**Other**			**$ 14,600.00**										
	Printing & Copy	$	2,000.00		$	250.00	$	2,000.00	$	-	$	(2,000.00)	$	1,386.29
	Postage $125/month for 12 months	$	1,500.00		$	250.00	$	1,500.00	$	247.18	$	(1,252.82)	$	1,179.88
	Liability Insurance													
	Property Contents/General Liability	$	500.00		$	500.00	$	500.00	$	500.00	$	-	$	500.00
	Board Members	$	3,500.00		$	3,500.00	$	3,500.00	$	3,385.61	$	(114.39)	$	3,204.33
	Telephone, email, etc.	$	2,700.00		$	2,100.00	$	2,700.00	$	1,986.69	$	(713.31)	$	1,927.10
	Website													
	Hosting	$	500.00		$	-	$	500.00	$	-	$	(500.00)	$	-
	Web master	$	1,500.00		$	-	$	1,500.00	$	-	$	(1,500.00)	$	-
	Subscriptions/Memberships													
	ECA membership	$	950.00		$	950.00	$	950.00	$	950.00	$	-	$	950.00
	Conference registration fees	$	800.00		$	400.00	$	800.00			$	(800.00)	$	-
	Newspapers	$	650.00		$	450.00	$	650.00	$	488.80	$	(161.20)	$	462.80
J.	**Indirect Costs**			**$ -**			$	-	$	-	$	-	$	-
	N/A													
TOTAL PROPOSED BUDGET				**$ 156,100.00**	**$**	**131,800.00**	**$**	**156,100.00**	**$**	**128,934.82**	**$**	**(27,165.18)**	**$**	**141,545.33**

REVENUE FOR 2016

Local government contributions	$ 10,000.00
Department of Energy grant	$ 130,000.00
RFCLOG carry-over	$ 16,100.00
TOTAL	$ 156,100.00

*2016 Actual/Projected Expenses = actual January through July; projected September through December