

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

Board of Directors Meeting – Agenda

Monday, April 17, 8:30 – 11:00 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 March 6th Executive Committee meeting
- 8:40 AM Business Items (briefing memo attached)
1. Consent Agenda
 - o Approval of meeting minutes and checks
 2. Executive Director’s Report
- 8:50 AM Public Comment
- 9:00 AM Rocky Flats Cleanup (briefing memo attached)
- o Frazer Lockhart, the DOE site manager during the final years of cleanup, will brief the Stewardship Council on the history of the Rocky Flats cleanup.
- 10:30 AM Discussion of Stewardship Council New Member Application Process and Triennial Review (briefing memo attached)
- o Later this year, the Stewardship Council will appoint community members and organizations to the Board of Directors, and initiate the Triennial Review.
 - o The discussion will provide an overview of those steps and allow time for Board Q&A.
- 10:45 AM Public comment
- 10:55 AM Board Roundtable – Big Picture/Additional Questions/Issue Identification
Adjourn

Upcoming Meetings: June 5, September 11, October 30

Business Items

- February 6, 2017 draft board meeting minutes
- List of Stewardship Council checks

Rocky Flats History Briefing

- Cover memo
- Frazer Lockhart bio

LSO Application and Triennial Review

- Cover memo
- LSO application

ROCKY FLATS STEWARDSHIP COUNCIL
Monday, February 6, 2017, 8:30 AM – 11:30 PM
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), Megan Davis (Alternate, Boulder County), Mike Shelton (Director, Broomfield), David Allen (Alternate, Broomfield), Laura Weinberg (Director, Golden), Libby Szabo (Director, Jefferson County), Pat O’Connell (Alternate, Jefferson County), Joyce Downing (Director, Northglenn), Shelley Stanley (Alternate, Northglenn), Chris Hansen (Director, Superior), Sandy Pennington (Alternate, Superior), Jan Kulmann (Director, Thornton), Emily Hunt (Alternate, Thornton), Bruce Baker (Director, Westminster), Mary Fabisiak (Alternate, Westminster), Shannon 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), Ron Heard (Alternate, 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: Scott Surovchak (DOE-LM), Gwen Hooten (DOE-LM), Karen Edson (DOE-LM), Jeffrey Murl (DOE-LM), Jeremy Wehner (Navarro), Linda Kaiser (Navarro), Alan Smith (Navarro), Jody Nelson (Navarro), David Ward (Navarro), John Boylan (Navarro), George Squibb (Navarro), Carl Spreng (CDPHE), Lindsay Masters (CDPHE), Rob Beierle (CDPHE), Vera Moritz (EPA), Shirley Garcia (Broomfield), Christine Howly (Woman Creek Reservoir Authority), Bonnie Graham Reed (citizen), Gale Biggs (citizen), Jeff Gipe (citizen), Sally Gipe (citizen), Lynn Segal (citizen), Jon Lipsky (citizen), LeRoy Moore (RMPJC), Judith Mohling (RMPJC), Marian Whitney (citizen), Chris Pash (citizen), Janice Roberts (citizen), Bruce Roberts (citizen), Ted Ziegler (citizen), Diane Vigil (citizen), S Shank (citizen), Irene Rodriguez (The Independent Report), Dean Alie (citizen).

Convene/Agenda Review

Chair Joyce Downing convened the meeting at 8:30 a.m. The first order of business was introductions of Board members and the audience. Joyce noted that the Executive Committee met on January 18, 2017, to review the agenda for this meeting.

Election of Stewardship Council Officers for 2017

The next item was the election of officers for 2017. As provided in the bylaws, the Board must elect a Chair, Vice Chair, and Secretary/Treasurer each year. The terms commence at this meeting, and there are no limitations as to the number of terms one can serve.

Prior to the meeting, four people had expressed an interest in serving as officers for 2017. Joyce Downing volunteered to serve as Chair, Chris Hansen as Vice Chair and Jeannette Hillery and Lisa Morzel as Secretary/Treasurer. Chair Morzel asked if anyone else was interested in being considered for one of the positions. No one replied.

Bruce Baker moved to approve Joyce Downing as Chair. The motion was seconded by Emily Hunt. The motion passed 13-0.

Joyce Downing moved to approve Chris Hansen as Vice Chair. The motion was seconded by Jeannette Hillery. The motion passed 13-0.

Each candidate for Secretary/Treasurer was given the opportunity to say a few words. Jeannette Hillery said she liked following the fiscal matters of the Stewardship Council, and that she had been dedicated to this organization for several years. Lisa Morzel said she wanted to continue serving on the Executive Committee where important activities included setting meeting agendas, as well as overseeing checks and the budget. She said she had served since 1996 and would like to continue. She said her participation on the Rocky Mountain Greenway commission would provide good consistency and knowledge to both groups. A vote of the Board was then taken with Jeannette receiving 4 votes and Lisa receiving 9.

Joyce Downing moved to approve Lisa Morzel as Secretary/Treasurer. The motion was seconded by Laura Weinberg. The motion passed 13-0.

Barb Vander Wall noted that all 2017 Board members needed to sign the oaths of office which she had distributed. She said she would email the document to those who were not in attendance.

Consent Agenda

The Board moved on to the consent agenda, which included approval of the minutes from the last meeting and the checks written since the last meeting.

There were several corrections to the minutes. Mary Fabisiak pointed to the bottom of page 9 regarding remediation at OU2, OU3, and IHSS 199. She said the minutes were accurate, but she was not sure the answer provided was accurate. David Abelson said he would follow up. Lisa Morzel made a correction on page 10, 2nd paragraph. 'exposer' should be 'exposure'. On page 2, 3rd sentence, a comment by LeRoy Moore, reads 'before the monitors reach the point of exceedance'. This needed to be corrected. Shelley Stanley said the spelling of her name needed to be corrected on page 9.

Lisa Morzel moved to approve the October 2017 Board minutes as amended and the checks. The motion was seconded by Bruce Baker. The motion to accept the minutes and checks passed 13-0.

Approval 2017 Meeting Dates and Notice Provisions Resolution

Each year the Board is required to adopt a resolution establishing the meeting dates for the given year. The Board was provided with a suggested schedule for 2017 in the meeting packets. The dates proposed were:

February 6 (first Monday of the month)
April 3 (first Monday of the month)
June 5 (first Monday of the month)
September 11 (second Monday of the month)
October 30 (fourth Monday of the month)

Lisa Morzel moved to approve the resolution and meeting notice provisions. The motion was seconded by Bruce Baker. The motion passed 13-0.

Executive Director's Report

David Abelson first welcomed Sandy Pennington, the new Alternate Member from Superior. Chris Hansen will be serving as Director for Superior moving forward. Next, David noted that the new DOE-LM Director was Carmelo Melendez. David said he would be meeting with him later in the week. Mr. Melendez has a long history in DOE, and served in the military. David said that he got a good report on the new Director from the Energy Communities Alliance, which had worked with him quite a bit in the past.

David noted that the Stewardship Council's annual audit process had commenced, and the results would be presented at the June meeting. David explained that, although not required by the Stewardship Council's DOE grant or Colorado law, the Board secures an annually audit. Since the Stewardship Council was created, the Board had always felt it was good practice to have a third party look at their financials. David said that they always get clean reports from the auditors and that he was expecting the same this year. He also noted that the annual notices for local government dues would be sent out soon. The Stewardship Council collects \$1,000 per year from each member government. Other organizations are not asked to pay dues.

David said that staff and the Executive Committee were in the process of reviewing how much information was included in Board packets. He noted that the packet for this meeting was 121 pages. He said staff would try to keep cover pages to 1-2 pages, but would make sure supporting information was easily accessible. He said they would love feedback as they are trying to find a good balance. Lisa Morzel said she did not want to lose hyperlinks within the memos. Finally, David noted that, due to conflicting work priorities, Erin Rogers was no longer able prepare the minutes for the Board, and that he was in the process of finding a replacement.

Public Comment

Marian Whitney she was following up on the discussion from the last meeting. She thanked DOE-LM for sharing information about plutonium moving in water. She noted that plants uptake minerals and pointed to information on the website about a study involving Savannah

River and the EPA. She said that, as a downwinder, she was concerned about future wildfires and that it was important not to get this material in our lungs.

LeRoy Moore pointed to an August 8, 2016, article by Phil Taylor about the Rocky Flats National Wildlife Refuge. In the article, David Abelson was quoted as saying that those raising safety concerns were using ‘fear-mongering’ and ‘scare tactics’. LeRoy questioned why David would say this. He said critics were pointing to the findings of studies, and these were not scare tactics. LeRoy’s comment can be found at:
http://rockyflatssc.org/public_comment/RFSC%20scare%20tactics%20LMoore%20020617.pdf

Ted Ziegler said it was no secret that there was contamination at Rocky Flats. He said he had asked many times for soil sampling, and had been given the brush-off by the agencies. He said they need to get to the source of contamination, and use split sampling with an independent lab. He said water sampling was not getting to the source. Ted pointed to burial of waste, implosion of buildings, spray fields, and trenches with contamination buried in them. He said that while the site was telling the public it is safe; it is not safe.

Lynn Segal said her mom died of leukemia, and while she cannot prove it was from nuclear testing, she was concerned. She said there should be no tourism, biking, or other access to Rocky Flats. She said if there was a need for an historical exhibit, they should do it online, and not onsite. She said the whole Denver area was probably subject to trouble from radiation and that she was not going to stand for it. She said that no one should be encouraged to come into this area. She said her father worked in pollution control and was not impressed with the HEPA setup used at Rocky Flats. She said she did not trust the testing, and particulates remain. She concluded by saying she did not want anything going on in this area.

Gale Biggs said that in 1989, he was appointed by Gov. Romer to a committee on Rocky Flats. He said he had been hearing everything was fine and wanted the truth. When the committee submitted its report, they were told there was no funding left to publish the findings. He said DOE heard about the report and suppressed it. He said that the workers the committee talked to were very honest, yet those at the director level and above made it seem like there were no problems. He said that since the site could not get rid of waste, they burned it in Building 771. He said Rocky Flats was not a clean site, and that it was very dangerous. Gale said that scientific studies have shown the dangers of plutonium, and that studies in Russia showed that it will move both horizontally and vertically in the soil. He said at Rocky Flats, they just dumped everything and put a layer of dirt on top and said it was fine, but it is not fine.

Host DOE Quarterly Meeting

DOE was on hand to brief the Board regarding site activities for the third quarter of 2016. The full report was posted on the Rocky Flats website. Activities included surface water monitoring, groundwater monitoring, ecological monitoring, and site operations (inspections, maintenance, etc.). DOE was also asked to provide an update on the CERCLA Five-Year Review

Surface Water Monitoring – George Squibb

George began with a quick review of the monitoring requirements, monitoring locations and constituents DOE is monitoring.

At the Original Landfill (OLF), when routine surface-water sampling was performed in Woman Creek, downstream of the OLF (GS59), the mean concentrations for all analytes were below the applicable surface-water standards.

At the Present Landfill (PLF), routine third-quarter sampling showed one analyte above the applicable RFLMA standard. The arsenic concentration was 14 µg/L, exceeding the standard of 10 µg/L. Per RFLMA evaluation protocols, the result should have triggered a sampling frequency increase from quarterly to monthly (although not consultation). George explained that monthly sampling was not conducted due to a data-entry error. In the following quarterly sample, arsenic was not detected. Because of this process error, additional peer review during the data evaluation process has been implemented. Mike Shelton asked how long the process takes for electronic validation. George said it was about a month. Chris Hansen asked what would trigger consultation. George said it would be after monthly samples showed results above standards. George noted that the January sample also came back high (13 mg/l), so they were going out that day to get a monthly sample.

At the SW027 Point of Evaluation (POE), the 12-month rolling averages for plutonium (Pu) and americium (Am) were reportable as of April 30, 2015, and June 30, 2015, respectively. As of the end of the third quarter 2016, 12-month rolling averages were:

- Pu 0.18 pCi/L; standard is 0.15 pCi/L
- Am is no longer reportable

George said there was no flow during the third quarter of 2016. Per RFLMA Contact Record (CR) 2015-05 (July 8, 2015), mitigating actions at SW027 included enhancing upstream erosion controls, which seems to be working well. Pu and Am concentrations in 2016 were significantly reduced from 2015 levels (2016 results were about 10% of 2015 levels), and concentrations at the downstream location WOMPOC were not reportable. George said the decrease also could be due to weather, as 2015 had more flow, which in turn moved more soils and sediments. No other RFLMA POE analyte concentrations were reportable during the third quarter of 2016. Shelley Stanley asked if SW027 was totally dry. George said it was.

All RFLMA POC analyte concentrations remained below reportable levels throughout the third quarter of 2016

George also noted that the 30-day uranium standard at WALPOC just became a reportable condition. A consultation with regulators was scheduled for the next day with a plan to develop a path forward by the beginning of March. He said this was a composite sample that had 32 grabs in it, and it had run from June 2016-January 2017. He said it had mostly been dry. They took another sample on January 30, and results would take about two weeks. That information will be included in the Contact Record. Shelley Stanley asked if they had isotopic results showing manmade vs. natural concentrations yet. George said they did not. He said that with every

WALPOC sample, they pull aside a small amount to send to a lab for that analysis; however, those results take about 2-3 months. Lisa Morzel asked what options were on the table for follow-up. George noted that the concentration found was only about half of the drinking water standard. He said that the Solar Ponds treatment system affects some of the results. He said in the past, there was a lot more runoff which lowered the concentrations. David Allen interjected that if the concentrations were to rise or remain elevated, Broomfield would ask DOE to turn off the flow. George said that there had been no water flowing out of North Walnut Creek to WALPOC in 6 months. Megan Davis asked David Allen if Broomfield was sampling with increased frequency at their monitors farther down the Creek. David said they were not seeing same results. Chris Pash said that this sampling was not enough to convince the public that it was safe, and asked why soil was not being sampled. George said the samples were well-mixed, and they were not just sampling the top of the water. He said they do not filter the samples, so if there was soil in the water, it would get tested. He said that dirt comes right from the surface soil. He said this was why samplers are at the perimeter of the site. Marian Whitney said that when water gets high and then recedes, this leaves debris on sides of creek and this would be blowing around. She said that there were other ways of presenting data and statistics, and that there was more to the picture. George said that because there were higher levels of plutonium at Rocky Flats, a lot of work had been done to look at risks and how best to conduct monitoring. He said he believed they were doing a good job monitoring. Marian said they needed to look at all the complexities/moving pieces. George said that was exactly what they did. He pointed to the recent geochemistry report as an example of a response to something they wanted to understand on a higher level. They also look at whether any new technologies could help with the issues they face.

Groundwater Monitoring – John Boylan

John said that the first and third quarters were light sampling periods for groundwater. 10 Resource Conservation and Recovery Act (RCRA) wells were sampled quartered to evaluate for impacts from the OLF and PLF. Third quarter results were consistent with previous data. All data will be evaluated as part of the 2016 annual report.

At the Solar Ponds Plume Treatment System (SPPTS), a reconfiguration project was underway. It was taken offline during the second quarter. The project was completed and flow-through Big Box lagoon was established in July. Insulated, floating tiles cover the water surface. Nitrate treatment is the worst when water temperatures are below approximately 50 °F. As the third quarter ended, the concentrations of nitrate in the lagoon effluent were decreasing. Starting in the early fourth quarter, nitrate was no longer detected. They resumed tests of uranium treatment in early October. This treats water leaving the lagoon, which was already treated for nitrate.

The Mound Site Plume Treatment System (MSPTS) also was subject to a reconfiguration project. The MSPTS was taken offline in June and the project was completed in September. Water is now pumped from a new lift station at MSPTS to the influent manhole at the East Trenches Plume Treatment System (ETPTS). The ETPTS air stripper treats combined waters. Several samples were collected before the project was confirmed as complete. VOCs in effluent from the air stripper meet all RFLMA standards

David Allen asked if they were looking at damage to the treatment system for the landfill. John said they were addressing this in a short-term approach, which included smoothing the surface and discouraging standing water. He said Jeremy would be discussing this more later in the meeting. David Abelson said that at closure, the projections were that these plumes would take 60-70 years to treat, and asked if there was an update on this estimate. John said he was not sure. Shelley Stanley asked if a Contact Record would be posted for work on the slump and she was told it would. She asked what happened April through July when the treatment system was offline. John said the water was not being treated, but it also was not being released. She asked if this would have had any impact on the slump. John said it would not because it was upgradient. She asked what happened to the sludge (media from treatment systems). John said it was first characterized, and then sent to an appropriate facility. John was asked if there were leftover contaminants, where that would go. He said this did not happen. He clarified that this was not treatment of radiological materials. He said VOCs and the other materials were destroyed by ZVI.

Gale Biggs said that all waste from Rocky Flats went to Utah. Scott Surovchak said that was not true. He said most of the waste from Rocky was solid waste that was sent to normal landfills. He said there was some that went to WIPP and some to Envirocare in Utah. Gale said the waste in Utah just dumped on the surface. Scott said that was also not true, and that Envirocare was operated as a landfill. Lisa Morzel asked what kind of maintenance the new interim test lagoon system needed. John said they dose it with a nutrient solution, and need to maintain the power infrastructure. Jon Lipsky asked whether characterization data for treatment system components was publicly available. John said he was not sure and that it might be added to the Annual Report. Scott said if it was not, a FOIA request could be made. Bruce Baker asked if any of the treatment systems worked on radioactive materials. John said that the one that does nitrate (SPPTS) also treats uranium. He said there were no actinide plumes to treat, and that everything else was organics. Bruce asked how uranium was treated. John said they used reducing conditions, which sorbs uranium. Ted Ziegler asked what the future plans were for soil sampling. There was no answer.

Site Operations – Alan Smith

Because signs are designated as a physical control in RFLMA, they are inspected quarterly. In August, two signs missing information were replaced.

At the OLF, three monthly inspections were performed. Eight settlement monuments were monitored. Vertical settling at each monument was within limits. There was a newly discovered small crack at the end of berm 4 and four small cracks reopened on the east side below berm 5. All cracks were outside the waste footprint. The OLF cover east of the waste footprint was regraded to fill cracks and promote runoff after spring slumping. The Eastern ends of berms 4, 5, 6, and 7 were regraded to increase drainage grade toward East Perimeter Channel. The East Perimeter Channel was regraded and cleaned out. New erosion controls and seeding were also done. Bruce asked Alan to clarify buffer zone trails were not part of this responsibility. Alan said that was correct. Shelley asked if they had to bring in soil to repair cracks on the OLF. Alan said they did not, as it was just smoothed out.

One quarterly inspection PLF was performed; no issues were identified. Former Building Areas 371, 771, 881, and 991 are routinely inspected (quarterly and during weather-related inspections) for subsidence. The quarterly inspection on August 23 indicated no new subsidence

Site ecology – Jody Nelson

Jody provided an update on the numerous ecology activities performed during the quarter. Activities included:

- Weed mapping
- Wetland mitigation monitoring
- Conducted prairie dog surveys
- Conducted forb nursery monitoring. John said this was really starting to work and they would be expanding it.
- Conducted photopoint monitoring
- Conducted revegetation monitoring
- Conducted Preble's meadow jumping mouse mitigation monitoring
- Irrigated habitat enhancement plants
- Treated approximately 57 acres along the roadsides with herbicides for weed control

Lisa Morzel asked if they checked for plague in the prairie dogs. Jody said the prairie dog population was actually located in the Refuge, and he just tries to count them using binoculars. Lisa said she was interested in how different species will interact in the adjacent open space. She asked if Jody was looking at this at all. He said he was not. David Abelson asked about a timeline for completing revegetation and species stabilization. Jody said that for the general revegetation that was done at closure, all success criteria have been met. There were 60 revegetation units/parcels. He said the long-term timeline depends on how much disturbance occurs in the future because of sampling, monitoring and any further remediation efforts. Jody was asked what would happen if prairie dogs came back to the COU and got into areas they should not be in. Jody said they would deal with USFWS or the Division of Wildlife to figure out how to deal with them. He was asked if plague was dangerous to humans. He said he was not an expert, but it was very rare. He said it was transmitted by fleas on prairie dogs. He was asked if the plants used for revegetation were native. He said they were and they used volunteers to collect seeds. Lynn Segal asked if the goal of revegetation was to bring wildlife back. Jody said their goal was to make the COU compatible with the Refuge. He added that populations of birds, elk, deer have increased. Marian Whitney noted that vegetation holds soil in place and that was a good thing for Rocky Flats. She thanked Jody for his efforts.

CERCLA Five-Year Review

Rather than provide a briefing, DOE asked if there were any questions about this effort. Chris Hansen noted that information about water infiltration into the landfill came after public comments were submitted on the Five-Year Review. He said Superior would like to revise their comments and make sure addressing the landfill was a priority moving forward and incorporated into the CERCLA Review. Scott Surovchak said that everything in that report had been discussed for quite a while and it was not new information. He said that all information would be considered in the Five-Year Review process. Sandy Pennington said that the attorney for Superior would like to amend their comments for the record. She said they were concerned that

comments were due at the end of December, but the landfill memo came out in January. Scott said they can always provide input, but a new letter would not be incorporated into the report.

Briefing/Discussion on Original Landfill

Jeremy Whener began by letting everyone know that the Path Forward Report had been posted to Rocky Flats website (http://www.lm.doe.gov/Rocky_Flats/Documents.aspx) He then gave a refresher on previous efforts related to the landfill.

The Original Landfill Final Interim Measures/Interim Remedial Action was completed in 2005. It contained a number of Remedial Action Objectives (RAOs), including:

- Prevent direct contact with landfill soil and commingled waste
- Control erosion caused by storm-water run-on and runoff

Remedy components necessary to address RAOs included:

- Remaining uranium-contaminated surface soils removal (completed July 2004)
- Landfill cover to prevent direct contact with landfill soil or debris
- Landfill cover that adequately controls erosion caused by storm-water run-on and runoff

Jeremy then reviewed conditions at the OLF in 2015:

- Movement in previous years was sufficient to weaken soils
- Multiple precipitation events from mid-February through mid-July
- Cracking and slumping in areas along eastern and western edges of the Original Landfill (OLF) (mostly outside waste footprint)
- Most of the landfill area did not experience cracking, slumping, or movement
- Maintenance completed September 22, 2015, to re-establish surface-water management

2016 events included:

- Heavy precipitation, including snowstorms late-February through April (heavy, wet snowstorms with slow water release and high percentage of infiltration)
- Movement area was smaller with less vertical displacement
- Movement area was regraded to enhance storm-water runoff
- Most of the landfill area did not experience cracking, slumping, or movement

The Path Forward Report consists of an engineering evaluation of technical alternatives that maintain cover stability, as required by the Corrective Action Decision/Record of Decision and Rocky Flats Legacy Management Agreement, and minimize future maintenance needs.

Criteria were developed to evaluate options:

- Potential for enhanced stability of the hillside
- Implementability and constructability
- Cost
- Regulatory acceptance
- Minimize future maintenance
- Stakeholder acceptance

Eleven options were evaluated. Selected options intended to reduce the significant slumping and cracking by:

- Limiting the movement of groundwater through the landfill
- Reducing surface-water infiltration
- Stabilizing the hillside

These six options selected for further consideration:

- Install temporary groundwater intercept system to divert groundwater before it enters the OLF (Phase 1 in process)
- Develop east buttress that includes a drainage layer
- Reconfigure erosion control and water diversion system
- Improve use of vegetation to remove water and stabilize soils
- Implement use of soil nails in localized areas
- Construct a slurry wall on the pediment

Several recent actions have been taken:

- Land use history research (preferential groundwater flow paths through utility corridors). Not clear whether there was still gravel/sand in place from those lines, and these areas become preferential pathways for water. Looks like this is happening and is a significant contributor to these issues. They will be installing wells down to bedrock outside of landfill area and are looking to locate the utility lines.
- Geoprobe piezometers provided additional soil lithology information and groundwater level monitoring
- Groundwater modeling update
- Maintenance completed October 12, 2016, to re-establish surface-water management
 - Regraded to fill cracks and enhance runoff
 - Installed aboveground drain pipes
- East Subsurface Drain Upgrade
 - Previously existing drain was clogged
- Temporary Groundwater Intercept System
 - Design complete
 - Subcontractor procurement in process
 - Effectiveness after implementation will be evaluated

Bruce Baker asked what they were doing with wells. Jeremy said they pump to keep groundwater levels consistent, so when it is wet, they pump some water off. Bruce asked if this would be ongoing. Jeremy said it is a temporary setup now, but if it works, they will make it more permanent. Mary Fabisiak asked what kind of utilities had been in the area. Jeremy said storm drains, and footing drains under building. She asked where the water was pumped to. He said it went into the east subsurface drain. He was asked which monitoring sites were downstream of this. George said if there was a flow, it would go into the SID, and be sampled at SW027. George said he did not think the pumped water would get that far. Jeremy said they had performed one set of spot samples, and nothing was above standards. Jeremy was asked if they were updating the groundwater model. He said that were updating the sitewide model, as well as

the one more specific to this area. He was asked if the study recommended replacing inclinometers. He said it did, but that would come later after things were stabilized.

David Abelson commented that the system being put in place could be very long-term, decades or more. He asked if DOE was prepared to sign on to this long of a plan. Scott Surovchak said they were still looking at options and at what would work best. He said that an evaluation of cost-effectiveness was built into the process. Scott was asked if the Board could see a specific design so it could be analyzed. Scott said it was a pretty simple plan involving two wells that was well-described by Jeremy. He said they want it in place before the end of March. He said it would probably be an ongoing, iterative process moving forward, as conditions will be different each year.

Emily Hunt asked if a geophysical evaluation was completed for the entire landfill. Scott said no because they were not seeing impacts in other locations. Chris Hansen asked about a second pipe that was mentioned for future use. Jeremy said it was a discharge location for water coming out of the wells. Lisa asked if the six options were listed in order of priority. Scott said they were somewhat in order, but they were not locked in. Jeremy was asked when they will decide if they need additional options. He said they initially thought it would be two years, but they need to have a wet year to really test it.

Laura Weinberg asked what the success criteria were for evaluating this work. Jeremy said groundwater levels need to be stabilized, and slumping should stop. Pat O'Connell asked if the movement was in fill material or in the natural underlying materials. Jeremy said they were not exactly sure, but are thinking it is in weathered bedrock material/fat clay. They will continue additional geotechnical work. Scott added that a weak organic layer was identified in a 2008 report. Bruce asked what volume of water they were expecting to pump. Jeremy said they did not know, but were guessing about 30 gpm from each well. He expects it will probably be lower than that. Judith Mohling commented that the options seemed complicated and temporary, and asked if they were thinking of longer-term options. Scott said they have a 75-year planning baseline in LM. He said plans remain iterative, as they need to see what works. Bonnie Graham Reed asked if they were comfortable that these options would protect the public that visit the Refuge. Scott said they were. He pointed to a lot characterization work, and groundwater and surface water samples. He said they were just seeing normal metals. He said the biggest issue was the state landfill closure requirements. David Abelson noted that the OLF was a pretty good distance from the Refuge boundary. Bonnie asked what the cost was for this work. Linda Kaiser provided a rough guess of \$200,000-\$300,000.

Public Comment

There was none.

Big Picture Review

Lisa Morzel said she would like and update on the Five-Year Review and not just a question opportunity like today. She would like to hear how public comments will be addressed and to have questions answered.

David Abelson said that an idea came out of the Executive Committee meeting about scheduling additional meetings to explore issues more deeply, when there was not enough time in normal meetings. He said they would not be Board meetings. He asked for input, and overall Board members thought it was a good idea. He said he would work with the executive committee to get more clarity and think about logistics. Sue Vaughan suggested they consider webinars. Sandra Pennington said that when new members come onboard, they may not have sufficient background knowledge about the issues. She said that was the fundamental need.

Board Roundtable – Big Picture/Additional Questions/Issue Identification

Mike Shelton said that Broomfield’s CERCLA 5 Year Review letter was in the Board packet.

Sandy suggested that the Board read all of the responses, because taken together, they were valuable.

Murph Widdowfield said that the Cold War Museum continues to put on many programs. He said they were very active and working hard.

Lisa Morzel said that access to Rocky Flats was still being discussed as part of Rocky Mountain Greenway meetings. She said there would be soil sampling once the communities get together about potential access locations. She said that the USFWS had committed to sample wherever trails will be located.

April 3, 2017

Potential Business Items

Potential Briefing Items

- Original Landfill – Briefing on independent analysis

June 5, 2017

Potential Business Items

- Receive 2016 audit

Potential Briefing Items

- DOE quarterly update (LSO)
- DOE-USFWS Visitor Center (both LSO & non-LSO)
- USFWS Refuge Update (non-LSO)

Issues to watch:

- Uranium exceedances
- Plutonium levels at SW027
- Pu/Am levels at SW093
- Groundwater treatment systems

- Plutonium movement in soil column

The meeting was adjourned at 11:41 a.m.

Respectfully submitted by Erin Rogers.

Rocky Flats Stewardship Council
Check Detail 2017
January 22 through April 1, 2017

Type	Num	Date	Name	Account	Paid Amount	Original Amount
Check		01/30/2017		CASH-Wells Fargo-Operating		-3.50
				Admin Services-Misc Services	-3.50	3.50
TOTAL					-3.50	3.50
Bill Pmt -Check	1839	02/03/2017	Seter & Vander Wall, P.C.	CASH-Wells Fargo-Operating		-1,876.93
Bill	74211	12/31/2016		Attorney Fees	-1,876.93	1,876.93
TOTAL					-1,876.93	1,876.93
Bill Pmt -Check	1840	02/03/2017	Jennifer A. Bohn	CASH-Wells Fargo-Operating		-437.00
Bill	17-01	01/31/2017		Accounting Fees	-437.00	437.00
TOTAL					-437.00	437.00
Bill Pmt -Check	1841	02/03/2017	Crescent Strategies, LLC	CASH-Wells Fargo-Operating		-8,325.61
Bill	1/31/17 Billing	01/31/2017		Personnel - Contract	-7,750.00	7,750.00
				Telecommunications	-132.61	132.61
				TRAVEL-Local	-24.61	24.61
				Postage	-15.99	15.99
				Supplies	-10.00	10.00
				TRAVEL-Out of State	-392.40	392.40
TOTAL					-8,325.61	8,325.61
Check	1842	02/03/2017	Century Link	CASH-Wells Fargo-Operating		-26.88
				Telecommunications	-26.88	26.88
TOTAL					-26.88	26.88
Check	1843	03/06/2017	Century Link	CASH-Wells Fargo-Operating		-29.02
				Telecommunications	-29.02	29.02
TOTAL					-29.02	29.02
Bill Pmt -Check	1844	03/06/2017	Blue Sky Bistro	CASH-Wells Fargo-Operating		-290.00
Bill	2521	02/06/2017		Misc Expense-Local Government	-290.00	290.00
TOTAL					-290.00	290.00
Bill Pmt -Check	1845	03/06/2017	Crescent Strategies, LLC	CASH-Wells Fargo-Operating		-9,299.25
Bill	2/28/17 Billing	02/28/2017		Personnel - Contract	-7,750.00	7,750.00
				Telecommunications	-136.72	136.72
				TRAVEL-Local	-84.53	84.53
				Postage	-15.99	15.99
				TRAVEL-Out of State	-1,312.01	1,312.01
TOTAL					-9,299.25	9,299.25
Bill Pmt -Check	1846	03/06/2017	Jennifer A. Bohn	CASH-Wells Fargo-Operating		-522.50
Bill	17-13	02/28/2017		Accounting Fees	-522.50	522.50
TOTAL					-522.50	522.50
Bill Pmt -Check	1847	03/06/2017	Seter & Vander Wall, P.C.	CASH-Wells Fargo-Operating		-1,184.70
Bill	74245	01/31/2017		Attorney Fees	-1,184.70	1,184.70
TOTAL					-1,184.70	1,184.70
Bill Pmt -Check	1848	04/01/2017	Crescent Strategies, LLC	CASH-Wells Fargo-Operating		-8,452.39
Bill	3/31/17 Billing	03/31/2017		Personnel - Contract	-7,750.00	7,750.00
				Telecommunications	-139.27	139.27
				TRAVEL-Local	-40.13	40.13
				Postage	-15.99	15.99
				Subscriptions/Memberships	-507.00	507.00
TOTAL					-8,452.39	8,452.39

Rocky Flats Stewardship Council
Check Detail 2017
January 22 through April 1, 2017

Type	Num	Date	Name	Account	Paid Amount	Original Amount
Bill Pmt -Check	1849	04/01/2017	Erin Rogers	CASH-Wells Fargo-Operating		-625.00
Bill	3/26/17	02/06/2017		Personnel - Contract	-625.00	625.00
TOTAL					-625.00	625.00
Bill Pmt -Check	1850	04/01/2017	HUB International	CASH-Wells Fargo-Operating		-3,385.61
Bill	02020687R3	05/01/2017		Insurance	-3,385.61	3,385.61
TOTAL					-3,385.61	3,385.61
Bill Pmt -Check	1851	04/01/2017	Jennifer A. Bohn	CASH-Wells Fargo-Operating		-807.50
Bill	17-14	03/31/2017		Accounting Fees	-807.50	807.50
TOTAL					-807.50	807.50
Bill Pmt -Check	1852	04/01/2017	Seter & Vander Wall, P.C.	CASH-Wells Fargo-Operating		-2,609.11
Bill	74390	02/28/2017		Attorney Fees	-2,609.11	2,609.11
TOTAL					-2,609.11	2,609.11
Check	1853	04/01/2017	Century Link	CASH-Wells Fargo-Operating		-27.17
				Telecommunications	-27.17	27.17
TOTAL					-27.17	27.17

ROCKY FLATS STEWARDSHIP COUNCIL

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League of Women Voters ~ Rocky Flats Cold War Museum ~ Rocky Flats Homesteaders

MEMORANDUM

TO: Board
FROM: David Abelson
SUBJECT: Frazer Lockhart briefing on Rocky Flats cleanup
DATE: April 5, 2017

Frazer Lockhart, the former DOE site manager, will brief you on the history of the cleanup. In preparation for the meeting, the following are a few facts about the cleanup. Frazer's bio follows this memo.

The cleanup focused on four primary activities:

1. Stabilizing hazardous materials
2. Decontaminating and demolishing buildings
3. Shipping special nuclear materials and waste to off-site receiver sites
4. Remediating soils, treating groundwater (ongoing activity), and protecting surface water quality

Cleanup actions included:

1. Demolishing 800+ buildings and facilities, and removing foundations to 6' below grade
2. Consolidating 21 metric tons of weapons-grade nuclear materials and 100 metric tons of plutonium residues
3. Excavating and/or consolidating 275,000 cubic meters of radioactive wastes
4. Analyzing, and remediating as necessary, 360 individual hazardous substance sites

How Clean is Clean? Factors include:

1. Cleanup meets or exceeds federal and state standards
2. The vast majority of site can support residential and/or industrial use
3. Water leaving the federal property meets all applicable standards. The plutonium standard is 100 times cleaner (more protective) than the applicable federal drinking water standard.
4. DOE calculates that the risk to a refuge worker is 2×10^{-6} , or 2 in one million. Visitors to the refuge face a far lower risk. These levels are also protective of wildlife.

Importantly, the primary reason for designating Rocky Flats as a national wildlife refuge was to protect the site from future development.

Short Bio for Frazer Lockhart

from DOE-EMAB <https://energy.gov/em/contributors/frazer-lockhart>

Frazer Lockhart is an Assistant Vice President at Stoller Newport News Nuclear, a Colorado-based firm, which provides complex nuclear facility management and high-consequence operations expertise with full service environmental remediation, radiological characterization, deactivation and demolition, waste management, and site closure services to federal agencies and a variety of private and public clients.

Mr. Lockhart previously worked at the Department of Energy (DOE) for twenty-nine years. During his time at DOE, he served in a number of leadership positions at DOE Headquarters (HQ) and in the field. His most recent with DOE HQ, Office of Environmental Management focused on high level liquid wastes in Idaho, Hanford and Savannah River. From 2009 to 2011, Frazer supported the DOE Recovery Act Program by serving as the senior Federal Project Director to ensure that \$6 billion in Recovery Act projects and operations were executed with appropriate rigor and compliance to regulations. Prior to the Recovery Act he served from 2007 to 2009 as an Acquisition Planning Manager for major procurements greater than \$400 million, and development of a strategic schedule.

Mr. Lockhart spent most of his career at the Rocky Flats Environmental Technology Site, a former nuclear weapons production facility. He held multiple assignments at Rocky Flats in building operations, facility oversight, weapons production, environmental remediation, project management and strategic planning. He led development of an integrated 10-Year Plan for substantial completion of the site mission for \$7 billion within ten years, providing landmark improvement from the \$30 billion, 70 year baseline. Frazer was named Site Manager for the Rocky Flats closure in 2003 and successfully completed the project ahead of schedule and under budget, earning recognition as the Project Management Institute Project of the Year in 2006, and earning Mr. Lockhart and his team recognition as Service to America Medal Winners in 2007.

Prior to joining DOE, Mr. Lockhart worked as a master planner and project manager at Fitzsimons Army Medical Center in Colorado. He received his Bachelor's degree in Mining Engineering from the Colorado School of Mines and his Masters in Engineering Management from the University of Missouri-Rolla. Mr. Lockhart is a certified Project Management Professional and also served as a member of the U.S. Army and U.S. Army Reserves and is a retired Colonel.

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MEMORANDUM

TO: Board
FROM: David Abelson
SUBJECT: New Member Application and Triennial Review
DATE: April 5, 2017

New Member Application

In early September, the Board will begin the process of appointing community members to the Board of Directors for 2018-2019. I will discuss the process and timeline during the meeting.

In short, the Stewardship Council's Intergovernmental Agreement (IGA) provides that up to four organizations/individuals may be appointed to the Board. The current members are the League of Women Voters, Rocky Flats Cold War Museum, and Rocky Flats Homesteaders. Steven Franks resigned his seat last fall.

Attached to this memo is the draft application. In past years, we have posted the application on the Stewardship Council's website, emailed it to our email distribution list, and purchased an advertisement in the Denver Post. Individual governments and members also circulated the application via their communication channels.

Triennial Review

The Stewardship Council's IGA contains a triennial review provision. That provision in short provides each government must express no later than February 13, 2018, its intent to continue the IGA. Failure to do so results in the cessation of the Rocky Flats Stewardship Council.

The applicable language from the IGA provides:

10. Term, Withdrawal and Dissolution. This IGA shall commence on the date of its full execution by all the Parties, and shall remain in effect until the earliest of
- a. termination or rescission by the unanimous written agreement of all Parties, or
 - b. decrease of the number of Parties to fewer than six, or
 - c. **lack of a unanimous triennial determination by the Parties that the Stewardship Council should continue for an additional three (3) years. Every third calendar year, commencing from the effective date of this IGA until termination of the Stewardship Council, the Parties agree to consider whether to continue the Stewardship Council's existence.**

At this meeting, we will start discussing whether to continue the organization—I assume the answer is yes—and address any questions the Board has about the IGA renewal process.

Please let me know what questions you have. Thanks.

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Membership Application, 2018-2019

Draft #1, April 2017

Background

The Rocky Flats Stewardship Council formed in February 2006 with the goal of providing ongoing, local government and community engagement on the post-closure management of Rocky Flats, the former nuclear weapons plant northwest of Denver. The \$7 billion cleanup was completed in October 2005 and represents an important legacy for our communities. Cleanup significantly reduced the many risks. Ongoing management by the Department of Energy (DOE) remains vital to ensuring the long-term protection of human health and the environment.

The Stewardship Council is an independent body organized under Colorado law. In late 2004, the United States Congress approved legislation authorizing the creation of Local Stakeholder Organizations (LSO) at Rocky Flats and two sites in Ohio. The Stewardship Council's central focus is serving as the DOE-designated LSO for Rocky Flats. Our mission is to provide continuing local engagement on activities at Rocky Flats, and to help ensure local government and community interests are known and understood with regards to management of residual contamination. Our work also includes tracking issues related to former site employees, and working with the United States Fish and Wildlife Service on the development and management of the Rocky Flats National Wildlife Refuge.

The Stewardship Council Board of Directors includes elected officials from ten municipal governments neighboring Rocky Flats, and up to four non-governmental parties. The current membership is listed on the masthead (see above). Currently, 13 members are serving on the Board of Directors.

In Fall 2017, the member governments will appoint members for the four non-governmental seats. Terms start at the February 2018 meeting and run for two years.

Membership

In determining membership, the Stewardship Council is committed to balancing those with knowledge of Rocky Flats with adding new perspectives and engaging new constituencies. In 2005, following the passage of the aforementioned federal legislation, DOE identified the following characteristics to guide membership of the non-governmental members:

1. Impacted by and interested in a majority of the scope topic areas of the Stewardship Council
2. Willingness to invest time and energy on all of the topic areas
3. Some familiarity with Rocky Flats history, the cleanup process, etc.
4. Represent a broad constituency with a wide diversity of viewpoints
5. Bring new ideas to the table

In developing a broad constituency, there are various potential membership categories:

1. Academic institution
2. Business
3. Former Rocky Flats worker
4. Historic preservation
5. Landowner/asset holder
6. Public interest/environmental group
7. Student
8. Technical expertise
9. Other

Application Deadline: Thursday, October 5, 2017 (email and mail only). Interviews will take place on Monday, October 30, 2017, in the morning.

Please provide the following information:

Name:

Name of organization (as applicable):

Address:

Telephone:

Email:

Title (as applicable):

Membership category:

Number of individuals/groups your organization represents:

Please address the following questions:

1. Time Commitment: On average, Board members spend 5-10 hours per month working on Stewardship Council/Rocky Flats issues. They also attend five Board meetings per year. Board meetings are Monday mornings from 8:30 – 11:30 AM. Members who lack a solid foundation on Rocky Flats issues will likely need to spend time developing a strong understanding of the history of the site and cleanup, and monitoring activities since closure in 2006. How much time will you/your organization be able to commit? Are there any time constraints you/your organization may face?
2. Assignment of Director and Alternate Director(s): Meeting attendance is vitally important so each organization must appoint a Director, and up to two Alternate Directors to serve in the absence of the Director. If you are applying on behalf of an organization, please indicate who will serve as the Director and Alternate Director(s)? Attach a short bio for each person.

Persons applying for membership as individuals are not permitted to appoint Alternate Directors. Please attach your bio.

3. Statement of Interest: Write a statement explaining your organization's interest/individual interest in serving, and membership category. Please discuss any relevant experience, education, expertise, or special skills that would serve the Stewardship Council's mission, including any Rocky Flats experience.

4. Conflict of Interest Statement: To maintain public trust and accountability, all applicants must identify any conflict of interest or a potential conflict of interest. In the context of Rocky Flats and the Rocky Flats Stewardship Council, “conflict of interest” is broadly defined as (1) having a direct financial interest in any issue related to the management of Rocky Flats and/or (2) currently being engaged in a lawsuit against the Department of Energy, the Department of the Interior, Jefferson County, Boulder County, the City and County of Broomfield, the cities of Arvada, Boulder, Golden, Northglenn, Thornton, and Westminster, and the Town of Superior. Any such conflicts or potential conflicts must be identified.

Signature

Signature*

Print name/date

Print name/date

*If you are submitting the application on behalf of an organization, both the Director and one Alternate Director must sign the application.

If you have any questions, please contact:

David Abelson

Executive Director, Rocky Flats Stewardship Council

(303) 412-1200

dabelson@rockyflatssc.org

Appendix

- Meeting Protocols
- Acronym List

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Rocky Flats Stewardship Council – Meeting Overview and Protocols

The central purpose of the meeting of the Rocky Flats Stewardship Council Board of Directors is for the Board and public to learn about current site activities and monitoring results, to be briefed on any issues or challenges DOE and the regulatory agencies are facing, and other issues that come before the Board. The Board reserves time at each meeting to address governance-related issues. Those issues are identified in the meeting agenda, and could include the budget, work plan, minutes, and related items.

All meetings of the Board of Directors are open to the public. From time-to-time, and in accordance with § 24-6-402(4), Colorado Revised Statutes, the Board may go into executive session. Public notice of the executive session is provided in the meeting agenda.

Public Engagement Protocols: Time is allotted at each meeting for the public to address the Board of Directors and presenters. The following procedures apply to all meetings of the Board of Directors. The Chair reserves the right to modify these procedures.

1. **Public comment periods:** The public comment periods are identified on the meeting agenda. The goal is to have two public comment periods—one near the start of the meeting and another near the end. The public comment periods are not a Q&A with the Board.
2. **Time limit:** The Board requests that comments be to the point. If individual comments are too long and/or if there are a number of people who wish to speak, the Chair reserves the right to enact a time limit.
3. **Additional public comment:** As time allows, and as called on by the Chair, the public is allowed to ask questions or express an opinion during presentations. The Board will have the first opportunity to ask questions or make comments.

No personal attacks: All people speaking at the meeting must refrain from personal attacks and address the issues at hand.

Public Comment on Stewardship Council Website: The Stewardship Council website includes a section for public comment. To have your comment posted, you must email a copy of your comments to David Abelson (dabelson@rockyflatssc.org).

Noise: In order to help reduce background noise, sidebar and backroom conversations should be taken into the hall.

To be added to the Stewardship Council's email distribution list, please email David Abelson (dabelson@rockyflatssc.org).

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.

Rocky Flats Acronym List
 Prepared by Rik Getty, Rocky Flat Stewardship Council
 October 2014

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).

Rocky Flats Acronym List
 Prepared by Rik Getty, Rocky Flat Stewardship Council
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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 Acronym List
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		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.

Rocky Flats Acronym List
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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	trichloroethylene	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.

Rocky Flats Acronym List
 Prepared by Rik Getty, Rocky Flat Stewardship Council
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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.