

## **ROCKY FLATS STEWARDSHIP COUNCIL**

**Monday, June 2, 2014, 8:30 AM – 10:40 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), Tim Plass (Alternate, 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), Pat O'Connell (Alternate, Jefferson County), Joyce Downing (Director, Northglenn), Shelley Stanley (Alternate, Northglenn), Joe Cirelli (Director, Superior), Emily Hunt (Alternate, Thornton), Bob Briggs (Director, Westminster), Mary Fabisiak (Alternate, Westminster), Jeannette Hillery (League of Women Voters), Sue Vaughan (League of Women Voters), Ann Lockhart (Director, Rocky Flats Institute & Museum), Arthur Widdowfield (Alternate, Rocky Flats Institute & Museum), Ken Freiberg (Alternate, Rocky Flats Institute & Museum), Roman Kohler (Rocky Flats Homesteaders), Nancy Newell (citizen).

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

**Attendees:** John Dalton (EPA), Vera Moritz (EPA), Charles Adams (CDPHE), Walter Avromenko (CDPHE), Carl Spreng (CDPHE), Scott Surovchak (DOE-LM), Linda Kaiser (Stoller), Bob Darr (Stoller), John Boylan (Stoller), Jody Nelson (Stoller), George Squibb (Stoller), Jeremiah McLaughlin (Stoller), David Ward (Stoller), Jon Lipsky (citizen), Mickey Harlow (citizen), Anne Fenerty (citizen), Tim Allport (citizen)

### **Convene/Agenda Review**

Board Chair Joyce Downing convened the meeting at 8:36 a.m.

Bob Briggs moved to approve the February 3, 2014, Board meeting and the checks. The motion was seconded by Jeannette Hillery. The motion to accept the minutes and checks passed 14-0.

Next, the Board discussed a resolution to change the November 3 meeting date to October 27. Joe Cirelli moved that the Board change the meeting date. The motion was seconded by Jeannette Hillery. The motion passed 14-0.

### **Public Comment**

Anne Fenerty provided a statement. She said that she had served on the Rocky Flats Citizens Advisory Board in 2002, and that she held a master's degree in organic chemistry. She said that when Rocky Flats became a Superfund site the proposed remediation was to follow RCRA requirements. Because of this, she said that Scott Surovchak's comments in an October 2013 *Boulder Weekly* article that the Original Landfill remediation did not need to follow RCRA was not true. She said that an independent consultant recommended a subtitle C cap, consisting six layers. She noted that DOE decided to call the Original Landfill a 'sanitary waste landfill' and

covered it with two feet of dirt instead. She said this is why the cap is cracking and why radionuclides are now being discharged from the landfill. She noted that if DOE had followed MARSSIM, which was accepted by EPA, NRC, and others, we would not now have contaminant flows.

She added that Scott Surovchak called Rocky Flats “nothing but a fancy machine shop” in the *Denver Post*. She noted that while Rocky Flats was machining plutonium bombs, it also handled up to 14 tons of the material—of which 1 microgram is potentially lethal – and housed four nuclear reactors. She said that the long list of carcinogens on the site included radionuclides, beryllium and VOC’s. She added that it is now known that cancers are caused by ionizing radiation such as X-rays, tars from tobacco and radioactive materials, and not caused by foods or behavior.

In terms of the Rocky Flats Wildlife Refuge, which surrounds the remaining Superfund site, she said that institutional and physical controls are known not to be permanent, and that burrowing animals will bring up pollution. She said that the Stewardship Council and others have prevented efforts to put signage to the entrance of the refuge. She closed by saying that Rocky Flats was too polluted to allow children recreate on it, and should remain closed permanently. Some Board members asked for copies of her remarks.

Mickey Harlow spoke next, also raising concerns about Scott Surovchak’s comments to the *Denver Post*. Mickey also raised concern about the site’s groundwater systems.

Anne and Mickey’s comments are posted on the Stewardship Council website at [http://www.rockyflatssc.org/public\\_comment.html](http://www.rockyflatssc.org/public_comment.html)

### **Executive Director’s Report**

David Abelson noted that the Arvada Center symposium focusing on Rocky Flats was scheduled for the upcoming weekend. He said that a few minor changes had been made to the agenda. He added that several groups would have informational tables set up during the event, such as the Rocky Mountain Peace and Justice Center, the Bulletin of Atomic Scientists, the Rocky Flats Institute and Museum, the Atomic Photographers guild, a nuclear worker advocacy group, and author Kristen Iverson.

David said that he had been noticing an uptick in the interest level regarding Rocky Flats issues over the last couple of months. The Stewardship Council was receiving more requests from people to be added to the mailing list. He said there were likely various reasons for this, including the Candelas development, but believes that the primary energy behind it was likely Kristen Iverson’s book about Rocky Flats. He said that four members of the public attended the Executive Committee meeting, and that it was good to see more people are interested and engaging. Tim Plass recognized Jon Lipsky, who was in the audience and wanted to make sure people knew that he was involved in the raid on Rocky Flats. Tim also thanked Jon for his work.

David next spoke about worker compensation issues and the defense authorization bill, which includes DOE programs. There had been a bi-partisan amendment designed to bring additional

oversight to the EEIOCPA program. The intent was to establish an advisory board on toxic substances and worker health. This effort was now being called a 'sense of Congress', and would carry over to the Senate, where Senator Udall supports it in his committee. David said that it was hard to know how this would play out, but it was an important statement about transparency and the value of this compensation program. He noted that the Stewardship Council has consistently stood behind these worker health efforts.

David next updated the Board on the upcoming triennial review for the Stewardship Council. The Council was created under an Intergovernmental Agreement (IGA), which calls for a review of the organization every three years and requires each local government to reaffirm their commitment to participate. More information will be distributed prior to the September meeting. Each of the local governments will need to pass the same resolution, and the language will be provided by the Board's attorney, Barb Vander Wall. This process will need to be completed by February 2015. Mary Fabisiak asked David if he anticipated any significant changes as part of this process. He said he had not heard from any governments that were not planning on continuing. David Allen noted that the last Triennial Review resulted in some amendments to the IGA, and asked if there were likely to be any changes to it this year. Barb Vander Wall said that the intention was to keep the IGA the same and simply reaffirm it. She explained that two new governments were added to the IGA last time, and a previous rotating membership was made permanent, but no such changes are expected this year.

Rik Getty announced that the annual site tour was scheduled for June 11, and that he would send out an email for others interested in attending. The backup date was June 25. He would also be sending out an email with information about the visit and what to bring.

### **DOE 2013 Annual Update**

#### *Surface Water – George Squib*

George noted that a great deal of additional information was available on the Rocky Flats website. He began by displaying a map of surface water monitoring locations, and noted that the former Points of Compliance (POCs) at GS01 and GS03 were still being monitored. Points of Evaluation (POE's) are situated closer in to the former Industrial Area, and are upstream of the POC's. There are also monitoring locations at the former landfills. The POC regulatory framework is based on a 12-month rolling average, while results of a 30-day rolling average provide an indication when they should begin looking closer at certain areas. At the POE's, only the 12-month rolling average is used. At the landfills, samples are compared to the relevant standard. Certain results can lead to increased monitoring frequency, as well as possible consultation with the regulators if standards are exceeded more than three months in a row.

At the Original Landfill (OLF) during 2013, an increased sampling frequency was temporarily required for selenium. At the Present Landfill (PLF), increased sampling frequency was temporarily required for vinyl chloride, arsenic and selenium.

At the GS10 POE, reportable 12-month rolling average values for americium, plutonium, and uranium were observed during 2013. Additional sampling is being conducted both upstream and

downstream of GS10. Seep sampling in this area was not conclusive, and a decreased turnaround time on results has been implemented.

At the Walnut Creek POC (WALPOC), reportable 30-day average values for uranium were first observed during December 2013. The 12-month rolling average (7.5 µg/L) remains well below the remedy performance standard (16.8 µg/L). Additional sampling is being conducted upstream of WALPOC. Currently, Rocky Flats has a more stringent standard than the drinking water standard for uranium. George said that the site is working with a geochemical subcontractor to investigate further, and that a report would be coming out later in the summer or early fall. Lisa Morzel asked who the subcontractor was. George said it was Wrightwater Engineers. She also asked if the site was sending any samples to LANL related to this issue. George said that the site was now sending samples to Lawrence Berkeley for high resolution uranium analysis. He added they are seeing 75% natural uranium, which is consistent with typical results. Jon Lipsky asked which isotopes were analyzed. John said Plutonium 239 and 240, americium, and uranium total mass. David Allen asked if this was the first reportable condition at a POC. George said it was.

Mickey Harlow noted that some of the samplers had been damaged during flooding and asked if there was any thought of increasing the size of the collection bottles. George said that they did that a couple years ago, and that they use 50 liter bottles now. She asked why samples were not collected during the storm event. George said that they did get samples at the beginning of the event, which is the time that the contamination would have moved the most with soil. He said they collected one year's worth of water in 12 hours. He added that collecting grab samples was not a normal protocol. Mickey said that CDPHE grabbed samples; however Scott Surovchak said that was not true. He added that access was restricted to much of the site during the flooding. George said that they focused on reaching the POC's first since they could access all of the samplers. He said they got time-paced samples out of Pond C2 throughout the whole event, and that data from that matched with other data they saw, which was below the standard. Mickey asked if the sampling numbers were available, and George said that they could be found in the annual report. Specific tables show where samplers were down, what they caught, estimated flow rates and volumes.

#### *Groundwater – John Boylan*

John next spoke about groundwater monitoring and operations issues during 2013. The objective of these activities is protection of surface water quality. 88 locations were sampled throughout the year, including:

- 64 wells and one surface location were sampled one-to-four times each
- Treatment system locations were sampled two-to-several times each
- Also non-routine and non-RFLMA sampling and locations (e.g., to support evaluation of groundwater treatment tests)

All RFLMA-required monitoring and evaluation was performed. All AOC well data was below RFLMA levels. Results were consistent with previous data. At the OLF and PLF Resource Conservation and Recovery Act (RCRA) wells, statistical evaluations were carried out per RFLMA and results were similar to previous years. A few analytes were higher in downgradient groundwater than in upgradient groundwater, and a few analytes in downgradient groundwater

were on an increasing trend. Several statistical results may not be valid due to abundance of non-detects, estimated concentrations, and/or changes to detection limits.

A large amount of work was conducted at groundwater treatment systems during the year. Two new air strippers were added and ongoing lagoon and microcell tests were conducted. There was also extra (non-routine) sampling in or near selected source areas. Evaluation wells were not scheduled in 2013; however, some evaluation wells were sampled due to a wetter spring than in 2012 (the last routinely-scheduled sampling round). Some evaluation wells were sampled after the heavy September precipitation, and results were generally consistent with previous data. The September precipitation event affected groundwater, as many areas showed higher water levels and treatment system flows increased. Hydrographs show a sharp rise of about 15 feet from the precipitation event. Wells in drainages did not show impacts of the event at all, while wells on top of the pediment surface showed large increases.

Lisa Morzel asked if the site was sampling this spring and what the results were looking like now. John said they were doing a great deal of sampling and that the results were still elevated. Mickey Harlow asked if the site had measured VOC's coming off the treatment cells and whether DOE was exempt from these requirements. John said they were not exempt, and that they do monitor before and after the air stripper treatment. The results have been negligible. The site was also still sampling boundary wells to ensure plumes were not moving. Wells near former buildings have been showing almost nothing. All of these sampling numbers are available in the Annual Report. John was also asked if there was a backup for the solar panels in place at plume treatment systems. He said that they were designed to run three days without charge.

#### *Site Operations – Jeremiah McLaughlin*

Jeremiah began with an update on the Original Landfill (OLF), where 12 monthly inspections were performed and eight settlement monuments and seven inclinometers were monitored in 2013. There was a localized slump after the heavy rains, which was addressed right away. Jeremiah noted that the site is working with a geotechnical engineer on further stability improvements, which they will implement if necessary. At the Present Landfill (PLF), four quarterly inspections were completed during the year, and nine settlement monuments and six side-slope monitors were surveyed. The annual Site Inspection took place in March. They looked for signs of significant erosion or adverse biological conditions, and also evaluated the effectiveness of institutional controls. Quarterly sign inspections were also conducted throughout the year, and all signs were found to be in good condition.

Shelley Stanley asked whether there were any changes in the seeps at the OLF after the heavy precipitation. Jeremiah said that they did flow a little longer and were not drying as fast. She also asked if they saw anything new upstream of GS10. He said they did not. Mickey Harlow commented that it seemed like there was quite a bit of maintenance required on the OLF, and that she would like to see how much was spent on this.

#### *Ecological Monitoring – Jody Nelson*

Activities during 2013 involved project assistance, revegetation monitoring, wetland mitigation monitoring, Preble's mouse mitigation monitoring, weed monitoring and control, and wildlife monitoring. Jody noted that there were no prairie dogs living in the Central Operable Unit

(COU). He also mentioned that about two-thirds of the nesting boxes they placed throughout the site appear to have been used.

### **Receive Stewardship Council 2013 Financial Audit**

The representative from the auditing company was not able to attend, so the Board's accountant Jennifer Bohn was on hand to present the results of the 2013 audit. David Abelson noted that neither state law nor the Board's grant with DOE requires the Stewardship Council to seek an audit. However, an independent audit is an important check that confirms both the Board and staff are managing the finances in accordance with applicable laws and regulations. Therefore, the Stewardship Council enlists an independent company to review its financial records each year.

Jennifer noted that she had reviewed the report, as did Barb Vander Wall and David. She explained the auditors did not find any material deficiencies, and issued a clean audit. One adjustment that the auditors made had to do with funds received after year end. There were no changes from prior years.

Jon Lipsky asked what accounting system the Board uses, and whether it was subject to an audit by DOE. David Abelson answered that DOE does not require the Stewardship Council to do an audit because of the amount of the grant, and that the Stewardship Council does this voluntarily. DOE has a minimum threshold of \$300K in funding before requiring an audit and the local government threshold is \$500K. The Stewardship Council budget is about \$125K. Jon asked if records were available publicly. David said that they could be made available. The Stewardship Council was required to formally accept the audit at this meeting.

Bob Briggs moved to accept the 2013 audit. The motion was seconded by Roman Kohler. The motion passed 12-0.

### **Briefing/Discussion on Groundwater at Rocky Flats**

Throughout 2014, the Stewardship Council has been studying groundwater issues. This briefing was the second in a series of briefings and discussions, and was set up to focus on the groundwater monitoring network, contaminants, groundwater treatment systems, and decision-making flowcharts contained in the Rocky Flats Legacy Management Agreement.

George Squibb, the presenter, noted that this discussion was not in response to any issue, but was intended as education for the Board. He began by reviewing the last groundwater briefing to the Stewardship Council, which focused on the hydrogeology of the Rocky Flats area.

He explained that an iterative process was used to develop the Rocky Flats groundwater monitoring network. Characterization identified areas of contaminated groundwater, contaminants of concern (COCs), and flow directions. Primary well installation targets incorporated areas of contamination (known and suspected) and potential data gaps (particularly along flowpaths to surface water). The analytical suites were initially broad, but were narrowed

to reflect local conditions. Hydrogeologic data was also used (hydraulic conductivity, recharge rates, water levels, subsurface geology, etc).

Monitoring wells have been used at the site since 1954, and the last two decades before site closure were the most active in terms of adding new wells. The sampling frequencies vary depending on data needs (weekly, monthly, quarterly, semiannually, one-time, or as-requested). Analytical suites also vary:

- Radionuclides (tritium; isotopes of plutonium, americium, uranium, cesium, strontium, neptunium, radium, thorium, others)
- Metals (including some of potential special interest, such as beryllium), metalloids (including special interest, such as arsenic)
- Organics (VOCs, SVOCs, total petroleum hydrocarbons, others)
- Various nonmetals, halogens, cations, and anions (sulfate, sulfide, orthophosphate, fluoride, silica, chloride, etc.)
- Constituents of potential interest (nitrate, nitrite, ammonia, cyanide, total organic carbon, etc.)

Location-specific groundwater data drove monitoring practices, well installations/abandonments, and remediation. Wells were abandoned as appropriate, and the methods followed State of Colorado guidelines. Wells needing design improvement were also abandoned and then replaced. Depictions of groundwater contamination were developed using the monitoring data, including well evaluation reports, Operable Unit work plans and reports, Annual RCRA and RFCA reports, Groundwater IM/IRA, and RI/FS – which defined the ultimate contaminants of concern.

The primary objective of groundwater monitoring is to evaluate potential impact of groundwater on surface-water quality. Groundwater conditions change slowly in/near source areas (less-frequent sampling is appropriate). More frequent monitoring was needed at plume fronts in drainages and along pathways to surface water.

Input on the final monitoring network design was provided by community representatives, stakeholders, regulators, and site staff. There were extensive meetings in the years leading up to closure to determine the focus of the network (locations, analytical suites, data evaluation) from characterization to long-term stewardship.

Groundwater COCs were agreed to be VOCs, nitrate, and uranium. Additional constituents were monitored per agreements, such as metals at the OLF and PLF, SVOCs at the OLF, and plutonium and americium at 5 wells downgradient of former B371 and B771.

The network was designed around several types of wells:

- Evaluation wells
  - Closest to source areas
  - Monitored biennially (second quarter, even-numbered years)
- Sentinel wells
  - Along downgradient plume edges and pathways to surface water
  - Monitored twice annually (second and fourth quarters)

- AOC wells, Surface Water Support location
  - Downgradient of plume(s), within drainage
  - Monitored twice annually (second and fourth quarters)
  - Have reportable-condition criteria
- RCRA wells
  - RCRA identified as “applicable or relevant and appropriate requirement” to groundwater monitoring at both landfills
  - Upgradient and downgradient at PLF and OLF
  - Monitored quarterly
  - Results can trigger consultation
- Groundwater treatment systems
  - Influent, effluent, and surface-water performance locations
  - Monitored twice annually (second and fourth quarters)

Treatment system locations were designed where contaminated groundwater was detected at or near surface water and fed by a source area. They knew systems were appropriate at: PLF, South Walnut Creek downgradient of Mound source area (former seep SW059), South Walnut Creek downgradient of East Trenches source area, and North Walnut Creek downgradient of Solar Ponds source area. Also, modeling evaluated whether treatment was needed in other areas.

As designed, each system incorporates a groundwater intercept component. Except for PLFTS, each system has required modification since closure. They were originally designed to reduce contaminant loads. Effluent is compared with RFLMA Table 1 standards. Each system treats a very low flow of water.

John outlined how each system works.

#### Mound Site Plume Treatment system; East Trenches Plume Treatment System

- Dissolved chlorinated solvents
- ZVI reacts chemically with solvent molecules
- Results of complete treatment: chlorine, carbon dioxide, water (ethene, ethane also possible)
- Result of incomplete treatment: partially-dechlorinated compounds
- Air strippers added to assist ZVI-based treatment

#### Present Landfill Treatment System

- Also chlorinated solvents, treated via cascade aeration

#### Solar Ponds Plume Treatment System

- Nitrate and uranium
- Sawdust: carbon source for denitrifying bacteria
- ZVI: removes uranium Large mass in a tank versus small amounts in “microcells”
- Testing lagoons for treating nitrate
  - Nearly-stagnant water with abundant denitrifying bacteria
  - Influent dosed with nutrients
  - Bacteria convert the nitrate (NO<sub>3</sub>) to nitrogen gas (N<sub>2</sub>)

RFLMA Attachment 2 defines well classes and objectives and presents data evaluation protocols (flowcharts). Evaluation protocols incorporate use of statistics (calculation of trends, calculation of 85th-percentile concentrations, and comparison of upgradient versus downgradient concentrations). Flowchart notes address monitoring frequencies, concentrations for comparison, and statistical approaches. Annual reports are required which present results of statistical evaluations plus other charts, tables, and information.

Tim Plass asked what the spacing of wells was. John said it could be as little as 100-150 feet, but that it varied. Mickey Harlow asked about movement of plutonium in groundwater. John said that when some wells were installed, contaminated soil was pulled down into the boreholes and plutonium and/or americium were found in the wells. Since then, these contaminants have not been seen. He added that surface water is also monitored for plutonium and americium. He said they were not blind to the potential for colloidal movement, but that they were just not seeing it happen.

### **Public Comment**

There was none

### **Member Updates**

Bob Briggs mentioned a Jazz Festival in Westminster on June 14. Ann Lockhart noted that Rocky Flats Institute and Museum volunteers developed an exhibit for the Arvada Center which will be on display for three months. Sandra McDonald introduced herself as the new Stewardship Council alternate director from Arvada.

### **Updates/Big Picture Review**

#### **September 8, 2014**

##### *Potential Business Items*

- Initial discussion of 2015 budget and workplan
- Continue IGA triennial review

##### *Potential Briefing Items*

- DOE quarterly update
- DOE groundwater briefing

#### **October 27, 2014 (4<sup>th</sup> Monday)**

##### *Potential Business Items*

- Approve 2015 budget and work plan
- Continue IGA triennial review

##### *Potential Briefing Items*

- DOE quarterly update
- Risk Assessment briefing
- What are key questions people have about Rocky Flats (David will consult with Scott, Vera & Carl about this)

Lisa Morzel said that she would like to hear from John Boylan regarding a groundwater levels update. David Abelson told other Board members that if they had other requests like this to let him know.

Issues to watch:

- Americium, plutonium and uranium levels upstream of pond B-3 and U levels at WALPOC
- AMP sampling
- Original landfill

The meeting was adjourned at 10:45 a.m.

*Respectfully submitted by Erin Rogers.*