

ROCKY FLATS STEWARDSHIP COUNCIL

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City of Golden -- City of Northglenn -- City of Westminster -- Town of Superior
League of Women Voters -- Rocky Flats Cold War Museum -- Rocky Flats Homesteaders
Karen Imbierowicz

Monthly Status Report – January 2010

Board meeting summary:

There was no meeting this month.

Legacy Management monthly site inspection summary:

December site activities included:

- Approximately 8.1 million gallons of water were discharged from terminal pond A-4 on North Walnut Creek over a two-week period in December. Pre-discharge water quality sampling by both DOE and CDPHE concluded plutonium, americium, uranium, and nitrate levels are well below the regulatory limits.
- During the A-4 pond discharge, DOE collected daily grab samples from points of compliance GS03 (Indiana Street) and GS11 (A-4 outlet) for water quality testing. Results from these samples are still pending, but are expected to be well below regulatory limits as the pre-discharge sample results indicated.
- DOE conducted routine maintenance at surface water sampling locations, and collected and processed six automated surface water sample suites.
- DOE performed routine maintenance at the Mound Site Plume Treatment System. Actions included raking gravel in the treatment cell weekly, and inspecting the influent and effluent piping. The system was flushed from the piping inside the vault.
- DOE reports that as of December, the Solar Ponds Plume Treatment System (SPPTS) is “functioning normally.” However, optimization efforts to improve treatment for nitrate and uranium contamination are ongoing.
- Some activities at the SPPTS included a plug flow test at treatment cell B, installation of foam thermal insulation (to help improve treatment performance in cold weather) at the tops of the ZVI treatment cell and SPIN vault, and collection of routine water samples for evaluation of system performance. Also, additional power supply components were installed to address system difficulties during cold and overcast conditions as all power at Rocky Flats is powered by solar arrays which in turn charge storage batteries. The main intent was to reduce the operating voltage from the current 48 volts to 36 volts, which slows the water delivery pump (still within required operational parameters) and results in using less power.
- DOE performed routine erosion control inspections in Preble’s Meadow Jumping Mouse (endangered species) habitat areas.

Energy Employees Occupational Illness Compensation Program Act (EEOICPA):

The GAO has issued a draft report to Congressional offices. RFSC staff will review the draft and report on it in the February update.

Site document update:

None at this time.

Legacy Management (LM) Records Center Opens:

As reported in past update, LM has built a centralized records depository in Morgantown, WV. According to LM's quarterly update, the documents to be stored, managed, and processed at the facility are "inactive, temporary DOE records from the Cold War nuclear sites. Records are retrieved in response to various requests for information." The records are currently stored at federal depositories throughout the country. They will be transferred to the new records center "for permanent storage as part of the facility mission."

LM notes the facility is a National Archives and Records Administration (NARA)-certified federal records storage facility with a 150,000 cubic foot storage capacity, including a controlled environment area for special media storage. The records warehouse floor space is approximately 31,000 square feet and the controlled environment area is 1,128 square feet.

LM's Quarterly Program Update Highlights East Trenches Groundwater Remediation:

Rocky Flats remains a CERCLA Superfund Site because of ongoing groundwater treatment. LM's update highlights repairs to the East Trenches Plume Treatment System (ETPTS).

As the attached update explains, contaminated sanitary sewage sludge was disposed in East Trenches T-3 and T-4 from 1964 to 1967. These trenches were the primary source for a volatile organic compound (VOC)-contaminated groundwater plume. Following remediation in 1996, the ETPTS was installed in 1999 to intercept and treat the contaminated groundwater emanating from the East Trenches area before the plume reaches South Walnut Creek.

Over time, mineralization causes the treatment media to become clogged and solidify, thereby requiring periodic replacement. The frequency of replacement varies, but the treatment media has been replaced roughly every four years since the system was put in operation.

For more information on the system, see the attached discussion in LM's report.

State Legislation: Another Rocky Flats Bill by Rep. McKinley?

State Rep. McKinley introduced House Bill 1127, "Concerning Information to be Provided to Visitors at Rocky Flats." This bill is the same one Rep. McKinley introduced last year. The fiscal note is for \$225,397, \$30,000 less than in 2009 for the same bill.

In 2005, a somewhat different version died in the House. The 2006 bill, which mirrors the current version, passed the House but died in the Senate. The 2009 bill died in the Ag Committee. The 2010 bill has been assigned to the State, Veterans, & Military Affairs Committee. A hearing on the bill is scheduled for March.

Stewardship Council update:

Next meeting: April 5, 2010



Program Update

October–December 2009

Welcome to the October–December 2009 issue of the U.S. Department of Energy (DOE) Office of Legacy Management (LM) Program Update. This publication is designed to provide a status of activities within LM. Please direct all comments and inquiries to LM@hq.doe.gov.

Goal 1

Rocky Flats Project Takes Advantage of Required Maintenance to Improve Performance

The first goal of the U.S. Department of Energy Office of Legacy Management (LM) is to protect human health and the environment through effective and efficient long-term surveillance and maintenance at LM sites. At LM's Rocky Flats Site, a key component in meeting that goal is ensuring that the four groundwater treatment systems continue to remove groundwater contamination before it can impact the site's surface waters. Effective and efficient operation also requires that LM continually evaluate the systems and look for cost-effective ways to improve their performance.

Two of the East Trenches, T-3 and T-4, were used to dispose of contaminated sanitary sewage sludge at Rocky Flats from 1964 to 1967. These trenches were the primary source for a volatile organic compound (VOC)–contaminated groundwater plume and were remediated in 1996.

The East Trenches Plume Treatment System (ETPTS) was installed in 1999 to intercept and treat the contaminated groundwater emanating from the East Trenches area before the plume reaches South Walnut Creek. The ETPTS consists of a 1,200-foot-long groundwater intercept trench and two treatment cells.

Contaminated groundwater enters the intercept trench and is gravity-fed into the treatment cells, which are filled with zero-valent iron (ZVI) that causes a chemical reaction that breaks up the VOC compounds into harmless constituents. The treated water is discharged on the downgradient side of the treatment cells and eventually enters South Walnut Creek.

Over time, mineralization causes the ZVI treatment media to become clogged and solidify, so it has had



The East Trenches Plume Treatment System prior to the media replacement project.

Legacy Management Goals

Goal 1: Protect human health and the environment through effective and efficient long-term surveillance and maintenance.

Goal 2: Preserve, protect, and make accessible legacy records and information.

Goal 3: Support an effective and efficient work force structured to accomplish Departmental missions and assure continuity of contractor worker pension and medical benefits.

Goal 4: Manage legacy land and assets, emphasizing protective real and personal property reuse and disposition.

Goal 5: Improve program effectiveness through sound management.

See page 14 for a map of LM sites.

See page 15 for a more detailed version of LM's goals.

Continued on page 2



Continued from page 1

Rocky Flats Project Takes Advantage of Required Maintenance to Improve Performance



During media removal you can see the mineralized ZVI that has become crusted and turned orange, while the black ZVI in the center of the cell shows little sign of contact with water flow.

to be replaced. The frequency of replacement varies, but the ETPTS has been replaced roughly every four years since the system was put in operation. This mineralization may also cause the plumbing from the treatment cells to plug up, potentially requiring excavation and replacement.

During the ETPTS media replacement project, site personnel discovered that the water had been bypassing a significant portion of the media, causing some portions of the media to mineralize and block the flow of water to other portions. Because the water would then flow around those blocked portions rather than flowing through the media evenly, some of the media had little contact with the contaminated water and the effectiveness of the treatment was reduced. In addition, mineralized media can adhere to the cell walls, requiring a jack hammer to remove it.

In order to resolve these performance issues, new designs were incorporated into several elements of the treatment system during media replacement.

Originally, the collected water flowed from the intercept trench into the top of the first cell, flowed down through the media, and was then piped to the top of the second cell, where it again flowed down through the media and out the bottom of the cell to the discharge gallery. This

“series, down-flow” configuration promoted solidification of the media at the top of each cell, which forced the water to flow downward along the sides of the cell, bypassing media in the center of the cell.

To reduce the potential for flow to shortcut through or around the media, the predominant flow configuration is now “up-flow,” with water entering at the base of each cell and exiting at the top. Furthermore, because when operated in series, the media in the first cell becomes clogged much more quickly than that in the second, the system is now operated primarily in a “parallel” flow configuration: the influent water now flows into the bottom of both cells in parallel, rising through the media as the cell fills and exits out the top of the cells. Additionally, the media configuration was redesigned so that the lowermost several feet of media in each cell consists of thin, alternating layers of gravel and ZVI. This is intended to more gradually remove the dissolved constituents (predominantly calcium, iron, and carbonate) that cause clogging and promote a more even flow through the pure ZVI media above the layered media.

Better flow will increase the contact between the contaminated water and the media, resulting in improved treatment performance and increasing the

Continued on page 6



New ZVI media is placed into one of the treatment cells. The new liner in the cell is also visible.



Continued from page 2

Rocky Flats Project Takes Advantage of Required Maintenance to Improve Performance

useful life of the media. The total thickness of the media was also increased. This media design and up-flow operation also eliminates the time-consuming maintenance requirement to rake the top of the media on a weekly basis.

The redesign also included replacing the existing plumbing adjacent to and between the treatment cells. Originally the pipes and some valves were buried underground, which requires a relatively large excavation and trench boxes in order to repair pipes or reconfigure valves. The new design incorporated an additional vault to act as the central valve box and pipe liners that will allow the liners to be easily replaced from within the vault when the pipes start to clog with mineralization.

LM also took advantage of new technology to improve monitoring capabilities by replacing the existing flow meters with more accurate equipment. The new meters will allow LM to more closely track system operation and treatment volume, and to better evaluate the effects of the new parallel cell configuration. A user-friendly system operations “dashboard” that works with the existing telemetry was created to improve site personnel’s ability to remotely monitor data such as flows, water levels, and line pressures and evaluate system operation and maintenance needs.

Finally, a liner was installed in each cell to prevent the media from adhering to the cell walls, easing future media replacement efforts.

Rocky Flats also was able to recycle the old ZVI, which combined with the reduced amount of new media needed and the anticipated improvement in treatment performance, make the ETPTS media replacement and system upgrade project an excellent example of LM’s first goal: to protect human health and the environment through effective and efficient long-term surveillance and maintenance. ❖



A contractor installs the plumbing that distributes the water to be treated in the cell.



A feature of the new vault installed as part of the system improvements is that the plumbing configuration can be easily changed and new pipe liners installed.



The newly installed vault is visible between the cells at the completion of the media replacement project.