ROCKY FLATS SITE
REGULATORY CONTACT RECORD 2016-02

Purpose: Mound Site Plume Treatment System reconfiguration project Soil Disturbance Review Report and Explanation of Significant Differences

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Contact Record Approval Date: June 15, 2016

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Regulatory Contact(s)/Affiliation(s): Carl Spreng, Colorado Department of Public Health and Environment (CDPHE); Vera Moritz, U.S. Environmental Protection Agency (EPA)

Date of Consultation Meeting: January 14, January 20, and February 18, 2016

Consultation Meeting Participants: Scott Surovchak, DOE; Carl Spreng, CDPHE; Vera Moritz, EPA; Linda Kaiser, John Boylan, George Squibb, Jody Nelson, Michelle Hanson, David Ward, Navarro

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Introduction:
During the Rocky Flats Legacy Management Agreement (RFLMA) consultation on February 18, 2016, the Colorado Department of Public Health and Environment (CDPHE), the U.S. Environmental Protection Agency (EPA), and the U.S. Department of Energy (DOE) (jointly referred to as the RFLMA Parties) agreed the Mound Site Plume Treatment System reconfiguration project represents a significant change to the *Corrective Action Decision/Record of Decision for the Rocky Flats Plant (USDOE) Peripheral Operable Unit and Central Operable Unit, Jefferson and Boulder Counties, Colorado* (CAD/ROD) signed September 29, 2006 (available at http://www.lm.doe.gov/Rocky_Flats/Regulations.aspx). It was also determined that the RFLMA process of documenting the RFLMA Parties' decisions as contact records in the Administrative Record, posting those contact records on the Rocky Flats public website, and notifying area stakeholders by email of the posting fulfills the process outlined in Title 40 *Code of Federal Regulations* Section (40 CFR) 300.435(c)(2)(i) for announcing an Explanation of Significant Differences (ESD) except for providing a notice of availability of the ESD in a local newspaper. Therefore, a notice of this contact record and ESD will be posted in the *Denver Post* to fulfill this ESD requirement.

Lead and Support Agencies: As outlined in the RFLMA the Parties follow a consultative process for implementing the agreement. As stated in the agreement:

> "Consultation" and "the consultative process" mean the responsibility of one Party to meet and confer with another Party and any appropriate contractors in order to reach agreement, to the extent possible, regarding a proposed course of action.

This contact record/ESD addresses the components of CAD/ROD as it concerns the contaminated groundwater collected and treated by the Mound Site Plume Treatment System (MSPTS). As agreed in the RFLMA and a Memorandum of Understanding between CDPHE and EPA, CDPHE is the lead agency with EPA as the support agency for this course of action.

This contact record/ESD documents a significant difference to the selected remedy in the CAD/ROD for the MSPTS and was prepared in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and with 40 CFR 300.435(c)(2)(i). The EPA Superfund Identification Number for Rocky Flats is CO7890010526.

This contact record/ESD will be available on the Rocky Flats public website at http://www.lm.doe.gov/Rocky_Flats/Sites.aspx. This contact record/ESD also will become part of the Rocky Flats site Administrative Record, which is available on the CERCLA Administrative Records search webpage at http://www.lm.doe.gov/CERCLA/SiteSelector.aspx 24 hours a day, 7 days a week. (On that webpage, select **Rocky Flats Site** from the drop-down list and then click the **Search the Administrative Record** button.) Also available on the Rocky Flats public website is a Rocky Flats Site Fact Sheet that provides a brief summary of contamination and site history.

Basis for the Document:
As discussed in RFLMA Contact Record (CR) 2015-04 dated July 8, 2015, the MSPTS described in the CAD/ROD includes a groundwater intercept trench, treatment components, and a subsurface discharge gallery. Groundwater collected in the trench flows by gravity through two plastic treatment cells (approximately 10 feet in diameter and 11.5 feet tall) filled with zero-valent iron (ZVI) treatment media. The ZVI is obtained from a source in Detroit, Michigan, and is trucked to the site for installation. Periodically, exhausted ZVI media must be removed and replaced, which is costly and labor intensive and requires the use of heavy construction equipment. The initial estimate of the frequency of media replacement was every 5–10 years. The most recent MSPTS media replacement was performed in 2010–2011. Based on historical operations of the MSPTS and analytical data from the water being treated, it may be more appropriate to perform routine media replacement every 4–5 years.

As stated in the CAD/ROD and the Final Mound Site Plume Decision Document (March 1994) the MSPTS was initially designed to simply reduce contaminant load to surface water. However, with the subsequent implementation of the RFLMA, effluent from the MSPTS was evaluated against the surface water quality standards listed in RFLMA Attachment 2, Table 1. Because the MSPTS system effluent typically contains one or more volatile organic compound (VOC) constituents at levels above RFLMA standards, the RFLMA Parties have consulted on ways to optimize treatment to further reduce the potential VOC contaminant load to surface water (RFLMA CR 2010-07 dated November 2, 2010). In 2011, a solar-powered pump was installed in

the existing MSPTS effluent manhole to circulate water from the bottom of the manhole through a spray nozzle (also situated within the effluent manhole) to further treat the effluent using the air-stripping process (RFLMA CR 2011-01 dated January 14, 2011). This has been extremely effective, but significant maintenance is required to maintain high treatment effectiveness, and even then at least one VOC typically exceeds the corresponding RFLMA Table 1 standard. In addition, the presence of this air stripper does not substantially affect the requirement to replace the ZVI media periodically, since the upstream media removes most of the VOCs treated at the MSPTS.

The positive results of the MSPTS effluent manhole air stripper, together with additional testing at the MSPTS and East Trenches Plume Treatment System (ETPTS), eventually led DOE to install a commercial air stripper, adapted to the existing solar/battery power facility, at the ETPTS in 2014–2015. Like the MSPTS, the ETPTS was initially designed to reduce VOC load but was subsequently evaluated against the stricter requirements of the RFLMA standards. Even with fresh ZVI media, these targets were typically not met. A commercial air stripper at the ETPTS replaced the ZVI-based treatment, as documented in RFLMA CR 2012-02 dated October 25, 2012; RFLMA CR 2014-01 dated January 21, 2014; and RFLMA CR 2014-04 dated February 19, 2014. In contrast to the water quality of the ZVI-treated effluent, following completion of the air-stripper installation in January 2015, concentrations of VOCs in ETPTS effluent have met all corresponding RFLMA Table 1 standards (*Annual Report of Site Surveillance and Maintenance Activities at the Rocky Flats Site, Colorado, Calendar Year 2015* [April 2016]). The more effective contaminant treatment resulting from this change will better protect the water quality in South Walnut Creek, including when groundwater flows increase due to significant precipitation events like those in September 2013 and during the wet spring of 2015.

Information on the status of operation and performance of the MSPTS and ETPTS is provided in RFLMA quarterly and annual site surveillance and maintenance reports. RFLMA contact records and site surveillance and maintenance reports are available on the Rocky Flats public website at http://www.lm.doe.gov/rocky_flats/Sites.aspx.

Description of Significant Differences:
The significant difference is the change in the location of groundwater treatment of the Mound Site plume from the MSPTS to the ETPTS. The remedy selected in the CAD/ROD for Mound Site Plume VOC-contaminated groundwater was a passive system using a groundwater intercept trench and treatment for VOC removal at the intercept location. This approach was used at both the ETPTS and the MSPTS. This contact record/ESD changes the treatment of VOC contaminated groundwater collected at the MSPTS to the existing commercial air stripper located at the ETPTS. Therefore, this action will incorporate the water intercept components of two systems (the MSPTS and ETPTS) and treat the combined water with one, more effective treatment component (the air stripper at the ETPTS). This will require the construction of an approximately 1600-foot water transfer line from the MSPTS to the ETPTS influent manhole (see Figure 1), which will transport water collected at the MSPTS to the ETPTS for treatment.

Because the MSPTS itself will no longer perform water treatment but will still perform water collection, the associated MSPTS effluent monitoring location will no longer be applicable. Essentially, combining the two treatment systems into one will require a monitoring change in RFLMA, as identified in RFLMA CR 2015-04 dated July 8, 2015. The MSPTS effluent

monitoring location will be changed from MOUND R2-E to the combined ETPTS and MSPTS effluent monitoring location, currently labeled ET EFFLUENT.

Based on DOE's evaluation of the combined ETPTS and MSPTS influent VOC concentrations and flow rates, the amounts and types of VOCs that the air stripper will volatilize to the air will remain below the requirements of an Air Pollutant Emission Notice (APEN) under the Colorado Air Quality Regulations. Therefore, an APEN will not be required.

Discussion:
The design of the infrastructure required to implement the MSPTS reconfiguration project is complete. The design routes the collected groundwater at the MSPTS to the ETPTS influent manhole (see Figure 1). The existing MSPTS ZVI-filled treatment cells will be emptied and modified for optional groundwater storage. The existing MSPTS effluent manhole will be replaced with a lift station and pump. Water intercepted by the MSPTS groundwater intercept trench will flow to this new lift station, and will then be pumped in batches to the ETPTS influent manhole through an approximately 1600-foot-long transfer line. The combined MSPTS and ETPTS influents will then flow to the ETPTS Influent Tank, from which the water will be pumped (in batches) to the ETPTS air stripper for treatment (as is currently the case with ETPTS influent).

Additional solar and battery power will be added to the existing ETPTS power facility to enable the air stripper to operate for longer periods, thereby treating the greater volume of water represented by the combined ETPTS and MSPTS influents. The additional batteries will be installed within the existing conex, which houses the existing batteries and acts as the platform for the main solar panel array. The additional solar resources will include two pole-mounted solar panel arrays. Each of these pole-mounted arrays will require a concrete foundation (see Figure 1) set in an excavation that will be approximately 4 feet by 4 feet and 9 feet deep. Piping, valves, instrumentation, and other necessary components will be installed at the existing MSPTS. These components will require an excavation approximately 6 to 10 feet deep, 10 feet wide, and 20 feet long. The MSPTS lift station installation will require an excavation approximately 10 feet by 10 feet and 10 feet deep. The existing MSPTS solar array will not be disturbed; however, the battery box and associated concrete pad will be removed (to make way for the planned excavations and other work) and replaced with new components. All of these excavations are in pre-disturbed areas.

The transfer line between the MSPTS lift station and the ETPTS influent manhole will require excavating a trench approximately 1600 feet long, 2 feet wide, and 4 to 6 feet deep. Other, less intrusive appropriate installation methods, such as horizontal directional drilling, may be used. This trench will be installed as near to the southern edge of the ETPTS access road as practicable. Depths will vary to ensure the proper gradient is maintained. Pipe cleanouts will be installed every 200 feet, and a bollard will be installed adjacent to the transfer line at each cleanout for protection.

As described above, this excavation work will exceed the 3-foot depth limit specified in RFLMA institutional control (IC) 2 (RFLMA, Attachment 2, Table 4, Control 2) as shown in Table 1 below, and so the required Soil Disturbance Review Plan is being submitted with this contact record for regulatory approval.

Table 1. IC 2 from RFLMA, Attachment 2, Table 4, "Institutional Controls for the Central Operable Unit"

Controls	Use Restrictions
IC 2	Excavation, drilling, and other intrusive activities below a depth of three feet are prohibited, without prior regulatory review and approval pursuant to the Soil Disturbance Review Plan in RFLMA Attachment 2.
	Objective: Prevent unacceptable exposure to residual subsurface contamination. **Rationale:** Contaminated structures, such as building basements, exist in certain areas of the Central OU [Operable Unit], and the Comprehensive Risk Assessment did not evaluate the risks posed by exposure to this residual contamination. Thus, this restriction eliminates the possibility of unacceptable exposures. Additionally, it prevents damage to subsurface engineered components of the remedy.

The required Soil Disturbance Review Plan is in Attachment 1.

The MSPTS is expected to be shut down for several weeks to accomplish the work. Any water that interferes with the construction activities will need to be managed during the performance of the project. Treated water that is present within the treatment cells when the MSPTS is taken offline will be pumped out to the MSPTS effluent discharge gallery. Groundwater seeping into the excavation at the MSPTS will be pumped to the ground upgradient (generally south) of the MSPTS so that it may infiltrate and be recollected by the MSPTS groundwater intercept trench. If water that collects in the MSPTS intercept trench needs to be managed to reduce the water level in the trench, it will be transferred to the East Trenches Plume Treatment System as discussed in RFLMA CR 2011-01 or pumped upgradient of the MSPTS intercept trench. The ETPTS will also be shut down, for a shorter period, to complete electrical work and to connect the transfer line into the EPTTS influent manhole. The ETPTS groundwater intercept trench will store this water during that outage.

Rainfall and storm water run-on water that enters the trench excavated for the transfer line will be pumped to ground in a manner that is consistent with the site's approved erosion control plan. Groundwater seeping into that portion of the excavation that is generally upgradient (south) of the ETPTS intercept trench will be either (1) pumped to ground upgradient of the ETPTS intercept trench in a manner consistent with the site's approved erosion control plan or (2) containerized and decanted in the ETPTS Influent Tank for treatment.

Resolution: CDPHE has reviewed information regarding the proposed soil disturbance and excavation and, after consulting with EPA, has approved this proposed activity. CDPHE has determined that the proposed activity will not compromise or impair the function of the remedy or result in an unacceptable release or exposure to residual subsurface contamination. CDPHE has also determined that the proposed project meets the rationale and objectives of IC 2. EPA has determined the modified remedy continues to satisfy the requirements of CERCLA Section 121.

Considering the changes that have been made to the selected remedy, CDPHE and EPA have determined the remedy remains protective of human health and the environment, complies with federal and state requirements that were identified in the CAD/ROD as applicable or relevant and appropriate to the remedial action at the time the CAD/ROD was signed and is cost-effective. In addition, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for the site.

The work will not start until after CDPHE's approval, and in any case DOE will not begin the approved soil disturbance until 10 calendar days after this contact record is posted on the Rocky Flats site public website and stakeholders are notified of the posting in accordance with the RFLMA Public Involvement Plan.

Closeout of Contact Record: This contact record will be closed when the work is completed and post-construction revegetation and erosion controls are in place.

Contact Record Prepared by: David Ward and John Boylan, Navarro

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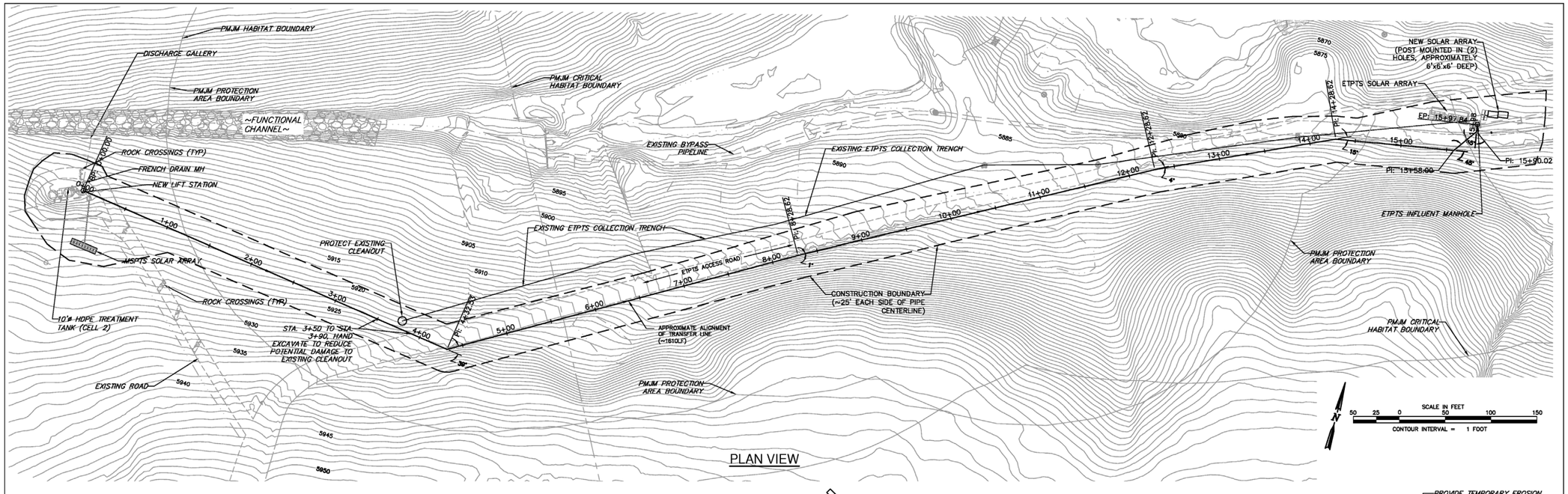
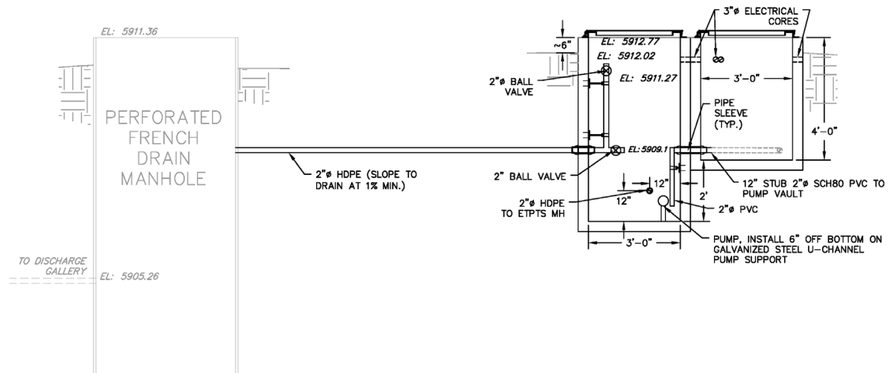
Distribution:
Carl Spreng, CDPHE
Scott Surovchak, DOE
Vera Moritz, EPA
Linda Kaiser, Navarro
Rocky Flats Contact Record File
Rocky Flats Administrative Records



PLAN VIEW



LIFT STATION PUMP VAULT TO FRENCH DRAIN SECTION
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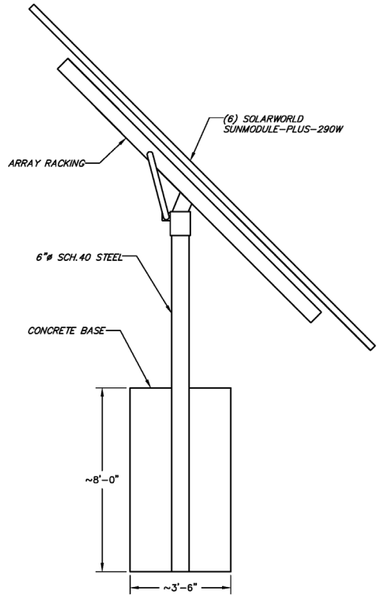

SOLAR ARRAY SECTION (TYP.)
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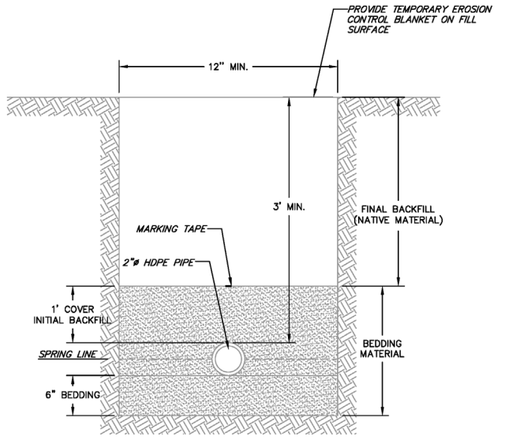

TRENCH DETAIL (TYP.)
SCALE: N.T.S.

REDUCED DRAWINGS ARE NOT TO SCALE

REVISION NO.	DATE	DESCRIPTION	DRAWN BY	CHECKED BY	PROJECT A/E	APPROVAL

U.S. DEPARTMENT OF ENERGY | Legacy Management
GRAND JUNCTION, COLORADO

NAVARRO
Work Performed Under DOE Contract No. DE-LM0000421
Navarro Research and Engineering, Inc.
Contractor to the U.S. Department of Energy Office of Legacy Management

PROJECT LOCATION: ROCKY FLATS SITE
JEFFERSON COUNTY, CO
REFERENCE

APPROVALS		
DRAWN BY	S. PITTON	3/17/16
CHECKED	S. PITTON	3/17/16
PROJECT MANAGER	S. PITTON	3/17/16
CONSTRUCTION MANAGER	D. BRENNECKE	3/17/16
PROJECT ENGR	J. BOYLAN	3/17/16
SITE MANAGER/LEAD	L. KAISER	3/17/16

MSPTS 2015 RECONFIGURATION

FIGURE 1

PROJECT NO. LTS-111-0056-10-007D
DRAWING NO.
SHT. 1 OF 1

Attachment 1

Rocky Flats Legacy Management Agreement (RFLMA)
Soil Disturbance Review Plan (SDRP)

Proposed Project: Mound Site Plume Treatment System (MSPTS) reconfiguration project.

This SDRP provides information required by RFLMA Attachment 2, "Legacy Management Requirements," Section 4.1, "Soil Disturbance Review Plan," regarding the work proposed by DOE.

(1) Description of the proposed project, including the purpose, the location, and the lateral and vertical extent of excavation.

The MSPTS is being reconfigured such that intercepted groundwater will be transferred to the ETPTS for treatment, rather than being treated at the MSPTS. This is because the commercial air stripper installed in 2014–2015 at the ETPTS is much more effective at removing contaminants than is the ZVI originally used to treat the water (and still in use at the MSPTS). The reconfiguration project will require excavating around the MSPTS treatment cells and effluent manhole to make plumbing modifications and to replace the effluent manhole with a lift station; excavating and installing a water transfer line from this lift station to the ETPTS influent manhole; and excavating at the ETPTS solar/battery power facility to install two new pole-mounted solar arrays. Excavations will range from approximately 4 feet to 6 feet deep for lift station and pipe trench and 9 feet deep for the solar array foundations. See Figure 1, attached, for additional information.

(2) Information about any remaining subsurface structures in the vicinity of the proposed project.

Other than components of the MSPTS and ETPTS, there are no remaining subsurface structures in the vicinity, so cover assumptions will not be violated.

(3) Information about any former Individual Hazardous Substance Sites (IHSSs), Potential Areas of Concern, or other known or potential soil or groundwater contamination in the vicinity of the proposed project.

This construction area was not an IHSS. In the *Facility Investigation - Remedial Investigation/Corrective Measures Study - Feasibility Study Report for the Rocky Flats Environmental Technology Site* (June 2006), the figures in Section 3, "Nature and Extent of Soil Contamination," do not indicate soil contamination in this area. Groundwater in some (not all) of the areas involved in this construction work is impacted by the Mound Site and East Trenches plumes. Any groundwater that is encountered in an excavation will be managed as described in CR 2016-02.

(4) Resurvey any new surface established in subsurface soil, unless sufficient existing data is available to characterize the surface (or state that the excavated soil will be replaced and the original contours restored).

The lift station at the MSPTS will be installed in the approximately 10-foot × 10-foot × 10-foot deep excavation, and the surrounding area will be graded to approximately 6 inches below the top of the vault walls. The excavations for the new pole-mounted PV solar arrays at the ETPTS power facility will be filled with concrete and the surrounding surface will be returned to the existing grade or higher. All excavations for pipe and valve installations will be returned to grade. Therefore the area will be returned to its approximate original contours.