

*Rocky Flats Legacy Management
Agreement*

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

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ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
and
THE STATE OF COLORADO

| | | |
|---------------------------------------|---|--|
| IN THE MATTER OF: |) | FEDERAL FACILITY AGREEMENT AND CONSENT ORDER |
| UNITED STATES DEPARTMENT OF ENERGY |) | |
| ROCKY FLATS SITE |) | CERCLA 8-96-21 RCRA(3008(h)) 8-96-01 |
| |) | |
| |) | STATE OF COLORADO DOCKET # 96-07-19-01 |
| |) | |

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

PART 1 PARTIES AND JURISDICTION

1. The Parties to this Agreement are the United States Environmental Protection Agency, Region 8 (EPA), the Colorado Department of Public Health and Environment (CDPHE or “State”), and the United States Department of Energy (DOE).
2. EPA enters this Agreement pursuant to sections 104 and 120(e) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9604, and 9620(e), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Pub. L. 99-499 (hereinafter jointly referred to as CERCLA); sections 6001, 3008(h), and 3004(u) and (v) of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6961, 6928(h), 6924(u) and (v), as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), Pub. L. 98-616 and the Federal Facility Compliance Act of 1992, Pub. L. No. 102-386 (hereinafter jointly referred to as RCRA); and Executive Orders 12088 and 12580.

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3. CDPHE enters into this Agreement pursuant to sections 104(d), 120(f), 121, and 310 of CERCLA, 42 U.S.C. § 9604(d), 9620, and 9810; section 3006 of RCRA, 42 U.S.C. § 6926; and the Colorado Hazardous Waste Act ("CHWA"), section 25-15-301et seq. C.R.S. Requirements of this Agreement that relate to RCRA and CHWA are a Compliance Order on Consent issued by CDPHE pursuant to section 25-15-308(2), C.R.S.
4. DOE enters into this Agreement pursuant to section 120(e) of CERCLA, 42 U.S.C. § 9620 (e); §§ 6001, 3008(h), and 3004(u) and (v) of RCRA, 42 U.S.C. §§ 6961, 6921(h), 6928(u) and (v); Executive Orders 12088 and 12580; and the Atomic Energy Act of 1954, as amended (AEA), 42 U.S.C. § 2011 et seq.
5. The Parties agree that they are bound by this Agreement and that the requirements of this Agreement may be enforced against DOE pursuant to Part 8 of this Agreement or as otherwise provided by law. DOE consents to and will not contest EPA or State jurisdiction for the purposes of executing and enforcing this Agreement or its requirements.
6. The activities undertaken pursuant to this Agreement are regulated under CERCLA, RCRA and CHWA, and other applicable State environmental law, and shall be implemented in accordance with all applicable statutes, regulations, and Executive Orders. If any new or amended statute or regulation pertinent to this Agreement becomes effective subsequent to the date of execution of this Agreement, any modifications to this Agreement made necessary by such changes in the law shall be incorporated by modification into this Agreement, and other modifications related to such changes in the law shall be subject to further negotiations. The Parties shall conduct periodic review of all applicable new and revised statutes and regulations and written policy and guidance in connection with the periodic review provided for in Part 11. Any reference in this Agreement to a statute shall include that statute's implementing regulations.

PART 2 STATEMENT OF PURPOSE

7. The purpose of this Agreement is to establish the regulatory framework for implementing the final response action selected and approved in the final CAD/ROD, and ensuring that it remains protective of human health and the environment. This Agreement is a single document that is both a CERCLA § 120 Interagency Agreement and a CHWA corrective action order; the requirements of this Agreement are enforceable by the Parties. This Agreement modifies and supersedes the Rocky Flats Cleanup Agreement. Specific objectives of this Agreement are as follows:
 - a) Coordinate all of DOE's post-CAD/ROD obligations under CERCLA, RCRA, and CHWA in a single agreement to streamline compliance with these three statutes;
 - b) Specify the performance standards identified in the final CAD/ROD;
 - c) Specify the requirements for legacy management of the Central OU, including monitoring, operation and maintenance of the final response action selected and approved in the final CAD/ROD;
 - d) Specify processes for review, implementation, monitoring, modification, creation, and termination, as appropriate, of response actions;

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- e) Serve as the enforceable mechanism for post-closure requirements in lieu of a post-closure permit under CHWA; and
 - f) Provide for public information and involvement.
8. The provisions of this Agreement reflect not only the agreement of the Parties, but also the unique circumstances of Rocky Flats. The Parties agree that, consequently, inclusion of a particular provision in this Agreement does not establish a precedent for other federal facilities.

PART 3 DEFINITIONS

9. If there is an inconsistency between CERCLA, RCRA, and CHWA with respect to the following definitions, the Agreement's definition controls. If there is no definition in this Agreement, but there is an inconsistency between the statutory definitions for CERCLA, RCRA, and CHWA, including their related regulatory definitions, the definitions in CERCLA and the NCP shall control. The following definitions are used for the purposes of this Agreement:
- a) Administrative Record shall refer to the compilation of documents which establishes the basis of all response action decisions for each OU at the Site, as required by section 113(k)(1) of CERCLA.
 - b) Rocky Flats Legacy Management Agreement ("RFLMA"), and "this Agreement" mean the body of this Agreement (pages 1 - 23 -) and all Attachments, modifications, approved documents, other approvals or determinations by EPA, the State, or both, as appropriate, final written resolution of any dispute, amendments to this document, and the Final CAD/ROD. Upon final approval, all requirements in such Attachments, Amendments, approved documents, State or EPA approvals, work description documents, and amendments are deemed incorporated into this Agreement. Approved documents, other approvals, and final resolutions of dispute need not be physically attached to this document. Appendices to this Agreement are related, but are separate documents that are appended for convenience only. Appendices do not constitute parts of this Agreement.
 - c) Approval, in relation to documents, means CDPHE and/or EPA formal consent that a document delivered for review pursuant to this Agreement contains the requisite information at the appropriate level of detail to comply with this Agreement.
 - d) ARAR stands for "applicable or relevant and appropriate requirement," as specified in CERCLA § 121 and the NCP.
 - e) Atomic Energy Act or AEA means the Atomic Energy Act of 1954, as amended, 42 U.S.C. § 2011 et seq.
 - f) Central Operable Unit or Central OU means the portion of Rocky Flats which was determined in the final CAD/ROD to require additional response actions. Generally speaking, the Central OU consists of the former industrialized area of Rocky Flats, the Original and Present Landfills, and land east of the former 903 Pad that contains relatively higher levels of residual contamination.

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- g) CERCLA means the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9601 *et seq.*, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Pub. L. 99-499, and the Community Environmental Response Facilitation Act (CERFA), Pub. L. No. 102-26; and the NCP and other implementing regulations.
- h) CDPHE means the Colorado Department of Public Health and Environment and/or any predecessor and successor agencies, their employees, and authorized representatives.
- i) Closure, in the context of RCRA/CHWA hazardous waste management units, means actions taken by an owner or operator of a treatment, storage, or disposal unit to discontinue operation of the unit in accordance with the performance standards specified in 6 CCR 1007, § 264.111 or § 265.111, as appropriate.
- j) Colorado Hazardous Waste Act (CHWA) means sections 25-15-101 to 25-15-327, C.R.S. as amended.
- k) Corrective Action (CA) means the RCRA/CHWA term for the cleaning up of releases of hazardous waste or hazardous constituents.
- l) Corrective Action Decision (CAD) means the CHWA decision by the State selecting a corrective measure alternative or alternatives to remediate a release of hazardous constituents or wastes.
- m) Days means calendar days unless business days are specified. Any submittal that, under the requirements of this Agreement, would be due on a Saturday, Sunday, or State of Colorado or federal holiday shall be due on the following business day.
- n) DOE or U.S. DOE means the United States Department of Energy and/or any predecessor or successor agencies (other than the U.S. Fish and Wildlife Service of the Department of the Interior), their employees, and authorized representatives.
- o) EPA or U.S. EPA means the United States Environmental Protection Agency and any successor agencies, its employees, and authorized representatives.
- p) Final CAD/ROD means the final remedial/corrective action decision for Rocky Flats selected and approved pursuant to paragraph 83 of RFCA.
- q) Final RCRA Facility Investigation-Remedial Investigation/Corrective Measures Study-Feasibility Study (RFI-RI/CMS-FS or RI/FS) means the combined RCRA-CERCLA document released July 14, 2006, that (i) describes the environmental conditions at Rocky Flats following completion of all accelerated actions and (ii) analyzes alternatives for final remedial actions to ensure that the residual contamination at the Rocky Flats Environmental Technology Site (RFETS or Site) does not present an unacceptable risk to human health or the environment.
- r) Individual Hazardous Substance Site (IHSS) means specific locations where solid wastes, hazardous substances, pollutants, contaminants, hazardous wastes, or hazardous constituents may have been disposed or released to the environment within the Site at any time, irrespective of whether the location was intended for the management of these materials.

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- s) Institutional controls means non-engineered instruments, such as administrative and legal controls, that minimize the potential for human exposure to contamination by limiting land or resource use.
- t) Legacy management means the physical controls, institutions, information and other mechanisms needed to ensure protection of people and the environment following implementation of cleanup actions. Legacy management includes, *inter alia*, land-use controls, monitoring, maintenance, and information management.
- u) Operable Unit (OU) means a grouping of IHSSs into a single administrative unit for purposes of efficiently managing cleanup activities.
- v) Periodic Review means the review required under 42 U.S.C. § 9621(c) to assure the continued protectiveness of CERCLA remedies selected that result in hazardous substances, pollutants, or contaminants remaining on-site.
- w) Peripheral Operable Unit or Peripheral OU means the portion of Rocky Flats which was determined in the final CAD/ROD not to require any additional remedial actions. Generally speaking, the Peripheral OU includes most of the former Buffer Zone surrounding the former Industrial Area.
- x) Post-Closure refers to regulatory requirements under RCRA and CHWA for regulated hazardous waste management units that do not meet the standards for clean closure. Post-closure requirements are found in 6 CCR 1007-3 § 265.117 through 265.121.
- y) Public Involvement Plan means the plan for providing information regarding implementation of this Agreement to the public, and for seeking public review and comment on proposed actions.
- z) RCRA means the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 *et. seq.*, as amended by the Hazardous and Solid Waste Amendments of 1984, the Federal Facility Compliance Act of 1992.
- aa) Record of Decision (ROD) means the CERCLA decision by DOE and EPA, or by EPA alone in the event EPA disagrees with a remedy proposed by DOE, selecting the response action or actions to remedy environmental and human health concerns at the Site.
- bb) Remedy performance standards are standards that the response actions selected and approved in the final CAD/ROD must attain and maintain. Remedy performance standards include narrative and numeric standards.
- cc) Requirements of this Agreement means provisions of this Agreement that specify:
 - i) actions DOE must perform to accomplish the activities regulated under this Agreement;
 - ii) dates by which it must perform such actions;
 - iii) standards which DOE must achieve through such actions; or
 - iv) the manner in which such actions must be reviewed, approved, performed and overseen to comply with this Agreement and applicable environmental laws.

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"Requirements of this Agreement" also includes all federal and state applicable or relevant and appropriate requirements (ARARs) incorporated in the final CAD/ROD.

- dd) Response Action means a "response action" under CERCLA, a corrective action, closure or post-closure requirement under RCRA or CHWA. "Response action" includes any requirement for institutional controls imposed under RCRA, CERCLA or CHWA.
- ee) Rocky Flats means the property owned by the United States Government, formerly known as the Rocky Flats Plant, Rocky Flats Site, or the Rocky Flats Environmental Technology Site, as identified in the map in Attachment 1. Rocky Flats is divided into the Central and Peripheral Operable Units.
- ff) the Site (except when used in the phrase "Rocky Flats Environmental Technology Site") means the areas that were listed on the National Priorities List on September 21, 1989 due to a release of hazardous substances from the Rocky Flats Plant. The Site includes Rocky Flats and certain adjacent properties.
- gg) State means the State of Colorado, its employees, and authorized representatives.
- hh) State environmental law means state laws regulating management or control of pollution.
- ii) Submittal means every document or other item to be provided to the State and/or EPA pursuant to this Agreement.

PART 4 LEGAL BASIS OF AGREEMENT

10. Based on information available as of the date of execution of this Agreement, EPA and CDPHE have determined the following:
 - a) From 1952 until 1992, the mission of the Rocky Flats Plant was production of component parts for nuclear weapons.
 - b) The Site was proposed for inclusion on the National Priorities List (NPL) on October 15, 1984, pursuant to section 105 of CERCLA, 42 U.S.C. § 9605. The listing became final September 21, 1989. In March 2003, EPA determined that the 259-acre National Wind Technology Center was not part of the NPL Site.
 - c) DOE is a "person" as defined in section 101(21) of CERCLA, 42 U.S.C. § 9601(21).
 - d) The Site is a "facility" as defined in sections 101(9) and 120 of CERCLA, 42 U.S.C. § 9601(9) and 9620.
 - e) DOE is the "owner" of Rocky Flats within the meaning of section 101(20)(A) of CERCLA, 42 U.S.C. § 9601(20)(A).
 - f) Hazardous substances have been released into the environment at the Site as the term "release" is defined in section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

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- g) The Site is subject to the requirements of CERCLA.
- h) DOE is a responsible party subject to liability pursuant to 42 U.S.C. § 9607 of CERCLA, with respect to present and past releases at the Site.
- i) Pursuant to § 6001 of RCRA, 42 U.S.C. § 6961, DOE is subject to, and must comply with RCRA and CHWA.
- j) DOE notified EPA of hazardous waste activity at the Rocky Flats Plant on or about August 18, 1980. On November 1, 1985, DOE filed RCRA and CHWA Part A and B permit applications with both EPA and CDPHE. On September 30, 1991, CDPHE issued a CHWA permit for a number of hazardous waste management units at Rocky Flats. On July 26, 2006, CDPHE terminated DOE's CHWA permit.
- k) Rocky Flats includes the Present Landfill and the former Solar Evaporation Ponds, regulated hazardous waste management units subject to the post-closure requirements of 6 CCR 1007-3, § 265.117-121.
- l) Certain wastes and constituents at Rocky Flats are hazardous wastes or hazardous constituents as defined by section 1004(5) of RCRA, 42 U.S.C. § 6903(5), 40 C.F.R., Part 261, section 25-15-101(9) of CHWA, and 6 CCR 1007-3, Part 261.
- m) Rocky Flats constitutes a “facility” within the meaning of sections 3004 and 3005 of RCRA, 42 U.S.C. §§ 6924 and 6925, and section 25-15-303 of CHWA.
- n) DOE is the owner and operator of Rocky Flats within the meaning of RCRA and CHWA.
- o) There is, or has been, a release of hazardous waste and/or hazardous constituents into the environment at Rocky Flats from Solid Waste Management Units and disposal of hazardous waste within the meaning of section 3004(u) of RCRA, and 6 CCR 1007-3, §§ 264.101 and 265.5. DOE is thus subject to the corrective action requirements of RCRA and CHWA at Rocky Flats.
- p) Investigation and cleanup of the Site was conducted pursuant to three different agreements: a 1986 Compliance Agreement, the 1991 Interagency Agreement, and the 1996 Rocky Flats Cleanup Agreement. All three agreements incorporated requirements of RCRA, CHWA and CERCLA. The 1996 RFCA provided an accelerated action framework for individual cleanup activities and the basis for final cleanup decisions through a final CAD/ROD. As described in the RI/FS for the final CAD/ROD, significant cleanup actions were conducted as accelerated actions under RFCA.
- q) Under the 1991 Interagency Agreement, the Site was divided into 16 Operable Units. Under the 1991 Agreement and RFCA, CAD/RODs were completed for OUs 1, 3, 11, 15 and 16. The selected remedy for OU 3 was no action based upon the conclusion that all IHSSs within OU 3 were already in a state protective of human health and the environment. When RFCA was signed, the remaining OUs were reconfigured to further streamline administrative processes for site cleanup. Former OUs 4, 8, 9, 10, 12, 13, and 14 became the Industrial Area OU. OU 2 was

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re-named the Buffer Zone OU. In 2004, the RFCA Parties further consolidated OUs by consolidating OUs 5, 6, and 7 with the Buffer Zone OU.

- r) DOE released the Proposed Plan for public comment beginning July 14, 2006. At the same time, it released the RI/FS and the Comprehensive Risk Assessment for informational purposes. The RI/FS evaluated the remaining two OUs at Rocky Flats: the Buffer Zone and the Industrial Area.
- s) Results of the RI analysis identified the area of Rocky Flats impacted by DOE activities. Based on this analysis, the RFCA Parties decided to reconfigure the OU boundaries to consolidate all areas of Rocky Flats that required final remedial actions into a final reconfigured Central OU. The boundary of this new Central OU also considers practicalities of future land management. The remaining portions of Rocky Flats have been consolidated into the reconfigured Peripheral OU.
- t) The Site met construction completion in September 2006 and the final CAD/ROD was issued on September 29, 2006. The response action selected and approved in the final CAD/ROD was no action for the Peripheral OU, and institutional and physical controls for the Central OU.
- u) The requirements imposed by this Agreement are necessary to protect the public health, welfare, and the environment.

PART 5 REGULATORY APPROACH

11. The Parties agree to follow a consultative process in implementing this 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. Consultation involves a cooperative approach to problem solving at the staff level. Consultation includes the responsibility to raise any concerns or suggestions regarding the implementation of this Agreement as soon as the concern or suggestion is identified, to maximize the chances of reaching agreement before a document must be submitted or a regulatory determination rendered. Consultation means timely participation at the staff or management level, as appropriate, to reach consensus among the regulators and DOE so that there is a clear understanding of the actions or direction to be taken based upon the outcome of the consultative process.
12. Each Party shall designate an individual to act as the Project Coordinator for activities regulated under this Agreement. The Parties' Project Coordinators will meet periodically to discuss the implementation of this Agreement.
13. The following activities are regulated under this Agreement:
 - a) response activities described in the final CAD/ROD and further specified in the Attachments, including post-closure and legacy management requirements such as ongoing maintenance, operation and monitoring of implemented remedies and information management activities; and

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- b) any additional response actions that may be required.
14. In making regulatory decisions regarding activities regulated by this Agreement, the State and EPA shall apply the statutory and regulatory requirements and their guidance or policy positions in effect at the time a decision is made.
15. The Parties recognize that the activities regulated under this Agreement are subject to regulation under CERCLA, RCRA, and/or applicable State environmental law, depending on the nature of the particular activity in question. To streamline implementation of this Agreement, the State shall exercise its authority under CHWA and RCRA, or other applicable State environmental law as appropriate, to approve, approve with modifications, or disapprove activities regulated under this Agreement to the extent such activities involve materials subject to regulation under state environmental law. The State shall approve, approve with modifications, or disapprove activities involving CERCLA hazardous substances, pollutants or contaminants that are not subject to regulation under state environmental law as provided in paragraph 16.
16. For purposes of implementing this Agreement, and except as provided in paragraph 17, the State shall carry out CERCLA authority to:
- a) approve, approve with modifications, or disapprove activities regulated under this Agreement involving CERCLA hazardous substances, pollutants or contaminants that are not regulated under state environmental law;
 - b) determine that activities or conditions at Rocky Flats constitute a release or substantial threat of release of hazardous substances to the environment; and
 - c) specify additional response actions to be taken by DOE.

The State and EPA have entered into a Memorandum of Understanding, set forth in Appendix 1, that defines the State-EPA relationship for purposes of this paragraph and the remainder of this Agreement. DOE may dispute State decisions under any provision of this Agreement that are made using the CERCLA authority described in this paragraph as provided in Part 7. Nothing in this paragraph constitutes a change to DOE's or EPA's status under CERCLA § 120(e) or Executive Order 12580, nor any limitation on DOE's authority under the AEA.

17. The activities identified in this paragraph are ones where CERCLA requires an EPA determination. For these activities, EPA shall consult with the State and the State may propose recommendations for EPA's consideration. CDPHE and EPA shall consult regarding the recommended decision prior to EPA's issuance of a final decision.
- a) A decision to concur or non-concur in a CERCLA periodic review; and
 - b) Deletion of any portion of the Site from the NPL.

Following consultation, EPA shall render a decision regarding any recommendation to proceed with deletion or concurrence in a periodic review, as appropriate.

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PART 6 REQUIREMENTS

18. The State and EPA shall have the right of entry to the Central OU at reasonable times for the purpose of determining compliance with the terms of this Agreement. The State and EPA shall give prior notice by phone or email before entering the Site. Nothing in this Agreement shall impair any other authority the State or EPA may otherwise have to enter and inspect the Central OU.
19. DOE shall implement the response actions identified in the final CAD/ROD, as specified in Attachment 2, to ensure the remedy performance standards are met. With the exception of some monitoring points that are located in the Peripheral OU, the requirements of this Agreement only apply to the Central OU.
20. DOE shall conduct legacy management activities to ensure the long-term protectiveness of the response actions that have been implemented at the Central OU. Legacy management activities include:
 - a) monitoring of environmental conditions (e.g., surface water or groundwater quality) and the performance or condition of response actions (e.g., physical systems for contaminant containment, including caps; contaminant treatment systems such as passive groundwater treatment barrier walls; contaminant monitoring devices such as groundwater monitoring wells; physical access restrictions such as fences or locks; and institutional controls);
 - b) operation and maintenance of response actions;
 - c) information management; and
 - d) institutional controls.
21. DOE shall conduct monitoring of environmental conditions and response actions, as provided in Attachment 2, to ensure that:
 - a) the performance standards specified in Attachment 2 are met and maintained;
 - b) engineered response actions are functioning as designed; and
 - c) there are no violations of institutional controls.
22. DOE shall operate and maintain response actions as provided in Attachment 2, to ensure that such response actions perform as intended.
23. DOE shall maintain information related to:
 - a) the release of hazardous substances, pollutants, contaminants, and hazardous wastes and constituents at the Site;
 - b) the response actions taken to address such releases; and

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- c) ongoing monitoring, inspection, operation and maintenance of the remedy, including information relating to additional remedial actions, if any.

Maintenance of information described in (a) – (c) above shall comply with the recordkeeping requirements of CERCLA, related EPA guidance and policy, DOE records retention schedules developed in accordance with the National Archives and Records Administration records management handbook, Disposition of Federal Records (NSN 7610-01-055-8704), and RCRA and CHWA requirements. Specifically, DOE shall maintain the CERCLA Administrative Record for the final CAD/ROD in conformance with the requirements of CERCLA section 113, including the requirement that the Administrative Record be available at or near the facility. Maintenance of all information described in (a) – (c) above shall be sufficient to enable reasonably prompt retrieval of any retained information, and to enable the Parties to implement the requirements of this Agreement, including the requirements for periodic review. Information described in (a) – (c) above shall be proposed for permanent retention in accordance with 36 CFR 1228.28(b).

24. DOE shall ensure compliance with all institutional controls specified in Attachment 2, so that the response action at the Central OU remains protective of human health and the environment. DOE shall develop procedures for implementing, monitoring, and maintaining compliance with institutional controls, consistent with Attachment 2.
25. DOE, in coordination with CDPHE, EPA and the public, has developed the Public Involvement Plan found in Appendix 2. DOE shall maintain and implement the Public Involvement Plan in a manner that complies with public participation requirements of NEPA, CERCLA, RCRA, and CHWA, as set forth in this paragraph. The purpose of the Public Involvement Plan is to ensure that educational, outreach, notice and information systems are responsive to the needs of the public, and allow for public input to decision-making processes under this Agreement. The Public Involvement Plan shall be reviewed in conjunction with the periodic review requirements of this Agreement and may be modified as appropriate in light of future circumstances at Rocky Flats.
26. DOE shall submit for State review and approval periodic reports on inspection, maintenance, and environmental monitoring. These reports shall meet the requirements specified in Attachment 2. All reports submitted pursuant to this paragraph shall be included in the site file or appropriate Administrative Record for the Site.
27. The Parties have established remedy performance standards to ensure protection of human health and the environment in accordance with CERCLA, RCRA and CHWA, and to meet ARARs as required by CERCLA. DOE shall comply with these remedy performance standards and other requirements contained in Attachment 2. If, on the basis of an environmental monitoring report or other information, the State believes that the remedy performance standards of Attachment 2 are not being met, or are likely not to be met, the State shall notify DOE and EPA. The State, EPA and DOE shall consult to determine an appropriate response. If the State and DOE are unable to agree on the appropriate response, the State shall make a determination specifying additional response actions to be taken by DOE. DOE and EPA may dispute State determinations under the appropriate provisions of Part 7.

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28. If, on the basis of environmental monitoring conducted pursuant to Attachment 2 of this Agreement, the State determines that a surface water standard for any non-radiological contaminant (as described in Attachment 2 of this Agreement) has been exceeded at a Point of Compliance, DOE shall be subject to penalties under CHWA and RCRA. If, on the basis of environmental monitoring conducted pursuant to Attachment 2 of this Agreement, the State determines that a stream standard for any radiological contaminant (as described in Attachment 2 of this Agreement) has been exceeded at a Point of Compliance, it shall advise EPA so that EPA may determine whether DOE shall be subject to penalties under CERCLA.
29. Except as provided in paragraph 17, the State shall be responsible for review and approval of all documents received pursuant to this Agreement.
30. For documents subject to State review and approval, the State shall approve, approve with modifications, or disapprove any document submitted under this Agreement. All such State determinations shall be in writing. If the State disapproves or approves with modifications any such document, it shall provide a written explanation of the disapproval or approval with modifications. Within fifteen (15) days of receipt of the State's approval with modifications or disapproval of the document, DOE shall:
 - a) In the case of an approval with modifications only, submit a notice of acceptance of the document as modified and begin to implement the modified document;
 - b) In the case of a disapproval only, submit a revised document for State review and approval (DOE may not select this option if the State has included in its disapproval an alternate document that shall be implemented by DOE); or
 - c) Submit a notice of dispute of the disapproval or approval with modifications.
 - d) If DOE fails to do any of the above within the specified time, DOE shall be deemed to have failed to comply with this Agreement, and the State may bring an enforcement action, including an assessment of penalties.
31. Any report, document, or submittal provided to EPA and CDPHE pursuant to a schedule identified in or developed under this Agreement shall be delivered by any method that verifies receipt by the intended recipient, including email. Such reports, documents, or submittals shall be delivered to the addresses listed in Appendix 3. Documents sent to DOE shall be sent to the address listed in Appendix 3. Documents must be sent to the designated addresses in a manner designed to be received by the date due, unless otherwise specified by the Parties.
32. Any schedule established according to the provisions of this Agreement shall be changed upon receipt of a timely request for change, provided good cause, as defined in this Part, exists for the requested change. Any request for change by any Party shall be submitted in writing and shall specify:
 - a) the requirement that is sought to be changed; and
 - b) the good cause(s) for the change.

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33. Good cause for a change includes the following:

- a) any unforeseen or unexpected event arising from factors beyond the control of a Party that could not be avoided or overcome by due diligence and that causes a delay in, or prevents the performance of, any obligation under this Agreement;
- b) a delay caused by EPA or CDPHE's failure to meet any requirement of this Agreement;
- c) a delay caused by the initiation of judicial action;
- d) a delay caused by the need to perform other, unanticipated work under this Agreement; and
- e) anything else mutually agreed to by the Parties as constituting good cause.

34. The Parties recognize that in implementing approved response actions, field modifications may be necessary. DOE may implement field modifications that are consistent with the intent of the approved action after receiving oral approval from CDPHE. All such oral approvals shall be documented in a contact record. Notwithstanding Part 10 of this Agreement, no public notice is required for such field modifications.

PART 7 RESOLUTION OF DISPUTES

35. In order to ensure timely resolution of disagreements, staff representatives of the Parties shall work to resolve disagreements at the technical working level. Once it is determined that an impasse has been reached at the staff level, staff representatives will draft a written statement of the dispute. The staff level representatives will promptly provide a copy of the written statement of dispute to the Dispute Resolution Committee (DRC), which is comprised of the Director, Hazardous Materials and Waste Management Division, Colorado Department of Public Health and Environment; the Director, Federal Facilities Program, EPA Region 8; and the Director, Office of Site Operations, Office of Legacy Management, DOE. The DRC will have one month to meet and resolve the dispute or elevate it to the Senior Executive Committee (SEC). The SEC is comprised of the Director, Office of Environment, CDPHE; the Regional Administrator, EPA Region 8, and the Deputy Director, Office of Legacy Management, DOE.

36. The SEC members shall, as appropriate, confer, meet, and exert their best efforts to resolve the dispute and issue a written decision.

- a) If unanimous resolution of the dispute is not reached within 30 days, the matter shall proceed as follows:
 - i) for determinations the State makes based on State environmental law, the CDPHE Director of the Office of the Environment shall issue a written decision;
 - ii) for matters involving CERCLA determinations, the Regional Administrator for Region 8 shall issue a written decision.
- b) Following issuance of such a written determination under subsection (a), matters may be elevated to the final level of dispute resolution as follows:
 - i) DOE or EPA may request that the decision of the Director of the Office of the Environment be elevated to the Executive Director of CDPHE for final resolution, but only upon making a

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

written finding that the dispute involves an issue of significant state or national policy. Such written finding must be made and transmitted to the other parties within ten days of the expiration of the 30-day period for SEC dispute resolution. Upon request, and prior to making a final determination, the Executive Director shall consult with the Administrator of EPA and the Secretary of Energy. The Executive Director shall have 60 days within which to resolve the dispute. If the dispute is not resolved by consensus, the Executive Director shall issue a final written determination that shall then be subject to appeal in accordance with §§ 25-15-305 or 25-15-308, as appropriate;

- ii) The Executive Director of CDPHE or the Secretary of Energy may request that the decision of the Regional Administrator be elevated to the EPA Administrator, but only upon making a written finding that the dispute involves a significant issue of state or national policy. Such written finding must be made and transmitted to the other parties within ten days of the expiration of the 30-day period for SEC dispute resolution. Upon request, and prior to making a final determination, the Administrator shall consult with the Executive Director and the Secretary of Energy. The Administrator shall have 60 days within which to resolve the dispute. If the dispute is not resolved by consensus, the Administrator shall issue a final written determination. The State may appeal such written decision in accordance with applicable law, and may take any other action available to it under applicable law.
37. Within twenty-one days of resolution of a dispute pursuant to the procedures specified in this section, DOE shall incorporate the resolution and final determination into the appropriate plan, schedule or procedures and proceed to implement this Agreement according to the amended plan, schedule or procedures.
38. Resolution of a dispute pursuant to this Section of the Agreement constitutes a final resolution of any dispute arising under this Agreement. All parties shall abide by all terms and conditions of any final resolution of dispute obtained pursuant to this Section of this Agreement, subject to Part 9 (Reservation of Rights).
39. Time frames in this Part may be extended by mutual agreement of the Parties. It is the Parties' intention that the officials specified in this Part exercise their responsibilities personally, to the extent practicable. Nevertheless, each Party reserves the right to delegate those responsibilities.

PART 8 ENFORCEABILITY

40. The Parties agree that all Parties shall have the right to enforce the requirements of this Agreement.
41. All requirements of this Agreement shall be enforceable by any person, including the State, pursuant to sections 310(c) and 113(h)(4) of CERCLA, and any violation of such requirements of this Agreement will be subject to civil penalties under sections 109 and 310(c) of CERCLA. DOE agrees that the State and any of its agencies are "persons" within the meaning of section 310 of CERCLA.

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

42. Requirements of this Agreement that are requirements of RCRA and CHWA shall be enforceable by any person, including the State, pursuant to any rights existing under section 7002(a)(1)(A) of RCRA. DOE agrees that the State and any of its agencies are "persons" within the meaning of section 7002(a) of RCRA. Nothing in this paragraph shall be construed as contravening CERCLA § 113(h).
43. Requirements of this Agreement that are requirements of RCRA or CHWA may be enforced by CDPHE pursuant to § 25-15-308 or § 25-15-322, C.R.S.
44. EPA may impose stipulated penalties as described in paragraphs 45 through 52.
45. Prior to EPA imposing a stipulated penalty, the Parties shall use the consultative process as described in paragraph 11 of this Agreement to try to resolve any issue addressed in this section. In the event that DOE fails to submit a periodic review pursuant to the appropriate timetable or deadline in accordance with the requirements of paragraph 67 and Attachment 2 of this Agreement, or fails to comply with a term or condition of this Agreement which relates to the actual performance of monitoring and operation and maintenance required by Attachment 2 of this Agreement, or fails to comply with paragraph 27 of this Agreement, EPA may assess DOE a stipulated penalty in an amount not to exceed \$5,000 for the first week (or part thereof), and \$10,000 for each additional week (or part thereof) for which a failure set forth in this paragraph occurs. Stipulated penalties will accrue from the date of the missed deadline or the date the noncompliance occurs, as appropriate, until such failure is corrected.
46. Upon determining that DOE has failed in a manner set forth in paragraph 45, EPA shall so notify DOE in writing. If the failure in question is not already subject to dispute resolution at the time such notice is received, DOE shall have fifteen (15) days after receipt of the notice to invoke dispute resolution on the question of whether the failure did in fact occur or occurred as the result of an event constituting good cause. DOE shall not be liable for the stipulated penalty assessed if the failure is determined, through the dispute resolution process, not to have occurred or to have occurred as the result of an event constituting good cause pursuant to paragraph 33 of this Agreement. No assessment of a stipulated penalty shall be final until the conclusion of dispute resolution procedures related to the assessment of the stipulated penalty. DOE's invocation of dispute resolution shall toll the obligation to pay the assessed penalty, but shall not toll the accrual of the stipulated penalties. Collection of a stipulated penalty by EPA shall preclude EPA from seeking to also impose a statutory penalty arising from DOE's failure to meet the same requirement.
47. DOE's annual report to Congress required by section 120(e)(5) of CERCLA, 42 U.S.C. § 9620(e)(5), shall include, with respect to each final assessment of a stipulated penalty against DOE under this Agreement, each of the following:
 - a) The facility responsible for the failure;
 - b) A statement of facts and circumstances giving rise to the failure;

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

- c) A statement of any administrative or other corrective action taken at the relevant facility, or a statement of why such measures were determined to be inappropriate;
 - d) A statement of any additional action taken by or at the facility to prevent recurrence of the same type of failure; and
 - e) The total dollar amount of the stipulated penalty assessed for the particular failure.
48. Any stipulated penalty assessed by the EPA shall be payable to the Hazardous Substances Response Trust Fund from funds authorized and appropriated for that purpose. DOE shall request specific authorization and appropriation to pay such penalty in its budget submittal for FY+1, unless DOE has already submitted its final budget for that year to the Office of Management and Budget, in which case DOE shall request such specific authorization and appropriation in its FY+2 budget.
49. In no event shall paragraph 45 give rise to a stipulated penalty in excess of the amount set forth in section 109 of CERCLA, 42 U.S.C. § 9609.
50. This section shall not affect DOE's ability to obtain an extension of a timetable, deadline or schedule pursuant to paragraph 32 of this Agreement.
51. Nothing in paragraph 45 shall preclude EPA or CDPHE from any other sanction that may be available to them for violations of this agreement in lieu of stipulated penalties, nor preclude EPA or CDPHE from seeking injunctive relief to compel DOE to remedy violations of the requirements of this Agreement.
52. Nothing in this Agreement shall be construed to render any officer or employee of DOE personally responsible for the payment of any stipulated penalty assess pursuant to this Agreement.

PART 9 RESERVATION OF RIGHTS

53. The Parties each reserve any rights they may have to seek judicial review of a proposed decision or action taken with respect to any response action on the grounds that such proposed decision or action conflicts with RCRA, CHWA or CERCLA. The Parties agree to exhaust dispute resolution prior to seeking such judicial review.
54. Nothing in this Agreement shall be interpreted to affect DOE's authority under the AEA. Nor shall anything in this Agreement impair the State's ability to argue that the cleanup, deactivation and decommissioning of the former Rocky Flats Plant pursuant to the RFCA have altered the scope of DOE's authority under the AEA.

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

55. The Parties have determined that the activities to be performed under this Agreement are in the public interest. Except as provided in paragraph 56, EPA and CDPHE agree that compliance with this Agreement shall stand in lieu of any administrative and judicial remedies against DOE or its present or future contractors that are available to EPA and CDPHE regarding the currently known releases or threatened releases of hazardous substances, pollutants, contaminants, hazardous wastes, or hazardous constituents at the Central OU that are the subject of the activities being performed by DOE under this Agreement.
56. Nothing in this Agreement shall preclude EPA or the State from exercising any administrative or judicial remedies available to them under the following circumstances:
- a) DOE fails to comply with any requirement of the Agreement;
 - b) EPA or CDPHE determines that previously unknown conditions or new information, together with any other relevant information, indicates that previously implemented response actions are not protective of human health or the environment; or
 - c) upon CDPHE's or EPA's determination that such action is necessary to abate an imminent and substantial endangerment to the public health, welfare, or the environment.
57. This Agreement shall not be construed to limit in any way any rights that may be available by law to any citizen to obtain information about the work under this Agreement or to sue or intervene in any action to enforce State or federal law.
58. The Parties each reserve whatever rights they may have to challenge any decision regarding additional response action under all applicable laws.
59. Except as provided in paragraph 55, DOE is not released from any liability or obligation which it may have pursuant to any provisions of State and federal law, nor does DOE waive any rights it may have under such law to defend any enforcement actions against it.
60. EPA and the State reserve all rights to take any legal or response action for any matter not specifically part of the activities regulated under this Agreement.
61. The Parties agree that in any administrative or judicial proceeding seeking to enforce the requirements of this Agreement, the DOE may raise as a defense that any failure or delay was caused by the unavailability of appropriated funds. In particular, nothing herein shall be construed as precluding DOE from arguing either that the unavailability of appropriated funds constitutes good cause, or that no provisions of this Agreement or Order shall be interpreted to require the obligation or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. §§ 1301 or 1341, or the Atomic Energy Act, 42 U.S.C. § 2201. While the State disagrees that an Anti-Deficiency Act defense, or any other defense based on lack of funding exists, the Parties do agree and stipulate that it is premature at this time to raise and adjudicate the existence of such a defense.
62. Nothing in this Agreement shall be interpreted to affect EPA's authority under CERCLA to impose requirements necessary to protect public health and the environment.

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

63. In the event of any administrative or judicial action by the State or EPA, all Parties reserve all rights, claims, and defenses available under the law.

PART 10 AMENDMENT OF AGREEMENT AND MODIFICATION OF ATTACHMENTS

64. Except as provided in paragraph 70 (termination by State), the body of this Agreement (i.e., pages 1-- 23 -) may only be amended by mutual agreement of the Parties. Such amendments shall be in writing and shall have as their effective date the date on which they are signed by all Parties, unless otherwise agreed. Any dispute as to the need for a proposed amendment shall be resolved pursuant to Part 7 of this Agreement.

65. The State or EPA may, after consultation with one another, require DOE to submit a modification to any Attachment to the Agreement if either determines that such modification is necessary to ensure protection of human health or the environment. DOE may propose such modifications to Attachments to the Agreement as it deems appropriate. The State shall review and consult with EPA regarding any modifications proposed by DOE, and may approve the proposed modification if it finds the modification will ensure protection of human health and the environment.

66. The Parties shall provide public notice of all amendments to this Agreement, and any modifications of Attachments. Amendments or modifications that constitute a significant change from existing requirements of this Agreement shall be subject to public comment.

PART 11 PERIODIC REVIEW

67. DOE, EPA and CDPHE will, pursuant to CERCLA section 121(c), review the response action selected and approved in the final CAD/ROD no less often than every five years to assure that human health and the environment are being protected. The next five-year review will be conducted in 2007, as specified in more detail in Attachment 2. Because the CAD/RODs for OU 3 and the Peripheral OU determined that those OUs are suitable for unrestricted use, the periodic reviews required under this paragraph are limited to the Central OU. DOE shall prepare a report summarizing environmental conditions and provide other documentation as needed to support this review. To the extent that remedies have incorporated institutional controls, the Parties shall review the continuing effectiveness of such controls, and shall evaluate whether additional response action could be taken that would reduce the need to rely on institutional controls. In making such an evaluation, the Parties shall consider all relevant factors, including advances in technology and the availability of funds. If upon such review the Parties find that further response action by DOE is warranted to assure the protection of human health and the environment, DOE shall, consistent with sections 104 and 106 of CERCLA, implement response actions necessary to abate any release or threat of a release of a hazardous substance, in accordance with a schedule agreed upon by the Parties. The Parties agree that Part 10 of this Agreement shall not be construed as a limitation on the requirement for further response actions which might be required as a result of the periodic review mandated by CERCLA section 121(c). If the Parties are unable to agree whether additional response actions are required, the matter shall be resolved pursuant to Part 7.

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

68. Nothing in this Part shall be construed as a limitation on the State's ability to make a determination specifying additional response actions be taken pursuant to paragraph 27.

PART 12 DURATION/TERMINATION

69. Except as provided in the next paragraph, this Agreement shall remain in effect until:

- a) DOE and EPA jointly determine that the Central OU meets CERCLA requirements for unrestricted use and unlimited exposure; and
- b) CDPHE determines that the Central OU meets CHWA requirements for unrestricted use and unlimited exposure.

70. CDPHE may, in its sole discretion, terminate this Agreement upon 60 days' written notice to the other Parties. The written notice shall contain CDPHE's proposed schedule for CDPHE and DOE to enter into an enforceable mechanism for post-closure requirements in lieu of a post-closure permit, or for DOE to submit a post-closure permit application and for CDPHE to issue the permit, as may be required under the CHWA. CDPHE and DOE agree to work in good faith to reach a mutually agreeable schedule to have an enforceable mechanism or post-closure permit in place within the 60-day notice period. Termination of CDPHE's participation shall be effective on the 60th day after such notice, unless CDPHE agrees otherwise in writing before such date. Upon such termination of CDPHE's participation, this Agreement shall no longer be a CWHA corrective action order, and all RCRA/CHWA requirements shall be severed from this Agreement. Once termination of CDPHE's participation is effective pursuant to this paragraph, any requirements of this Agreement that are imposed pursuant to CERCLA shall remain enforceable as requirements of a CERCLA § 120 Interagency Agreement between EPA and DOE.

PART 13 SEVERABILITY

71. If any provision of this Agreement is ruled invalid, illegal, unconstitutional, or unenforceable, the remainder of the Agreement shall not be affected by such ruling.

PART 14 RECOVERY OF STATE COSTS

72. DOE agrees to reimburse CDPHE for:

- a) all non-discriminatory state environmental fees or assessments; and
- b) CERCLA administrative or oversight activities incurred which specifically relate to the implementation of this Agreement, to the extent such costs are reasonable, not inconsistent with the NCP, and are not covered by permit fees and other assessments, or by any other agreement between the Parties.

73. The amount and schedule of payment of these costs will be negotiated based on anticipated needs and in consideration of DOE's multi-year funding cycles. CDPHE reserves all rights it has to recover any other past and future costs in connection with CERCLA activities conducted under this Agreement. CDPHE shall annually provide DOE a written estimate of projected costs to be incurred

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

in implementing this Agreement for the upcoming two fiscal years, no later than the end of the first quarter of each fiscal year. DOE and CDPHE may choose to enter into a grant or other mechanism to provide for payment of CDPHE's costs relating to the implementation of this Agreement, including any fees or other assessments that would otherwise be imposed under 6 CCR 1007-3.

74. Unless DOE and CDPHE have entered into a grant or other reimbursement mechanism as described in the preceding paragraph, and DOE provides funding as specified in such grant or mechanism, DOE agrees to pay CDPHE, in full, and no later than 30 days after receipt of invoice, all document review fees and annual waste fees as required by 6 CCR 1007-3. DOE may contest charges in accordance with the dispute resolution procedures of part 7.

PART 15 OTHER CLAIMS

75. Nothing in this Agreement shall constitute or be construed as a bar or release from any claim, cause of action, or demand in law or equity by or against any person, firm, partnership, or corporation, including any DOE or predecessor agency contractor, subcontractor, and/or operator, either past or present, for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the Site.
76. This Agreement does not constitute any decision on pre-authorization of funds under section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2).
77. Neither EPA nor CDPHE shall be held as a party to any contract entered into by DOE to implement the requirements of this Agreement.

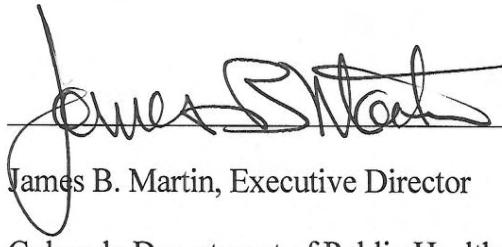
PART 16 PUBLIC COMMENT PERIOD/EFFECTIVE DATE

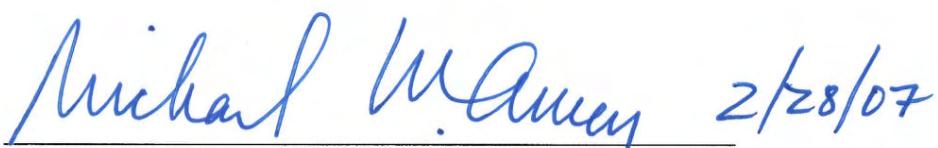
78. Within 15 days after all Parties have approved a draft version of this Agreement to be released for public review and comment, or as soon thereafter as possible, DOE shall notify the public of the availability of the Draft Agreement for review and comment during the period ending 45 days after notification is published. Such notification shall be published in at least two major newspapers, shall include information about the purpose of this agreement, how and where copies of the Draft Agreement will be made available for review, and the address to which comments may be submitted. Within 21 days after completion of the public comment period, DOE shall deliver to the other Parties copies of all comments received, and the Parties shall thereafter review the comments and confer for the purpose of addressing the comments and incorporating such changes in the Draft Agreement as may be appropriate based on their consideration of these comments. The final version of the Agreement shall become effective in accordance with the provisions of this Part.
79. The effective date of this Agreement shall be the date on which the last Party signs this Agreement.

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

PART 17 APPROVAL OF AGREEMENT

80. Each undersigned representative of a Party certifies that he or she is fully authorized to enter into this Agreement and to legally bind such Party to this Agreement.

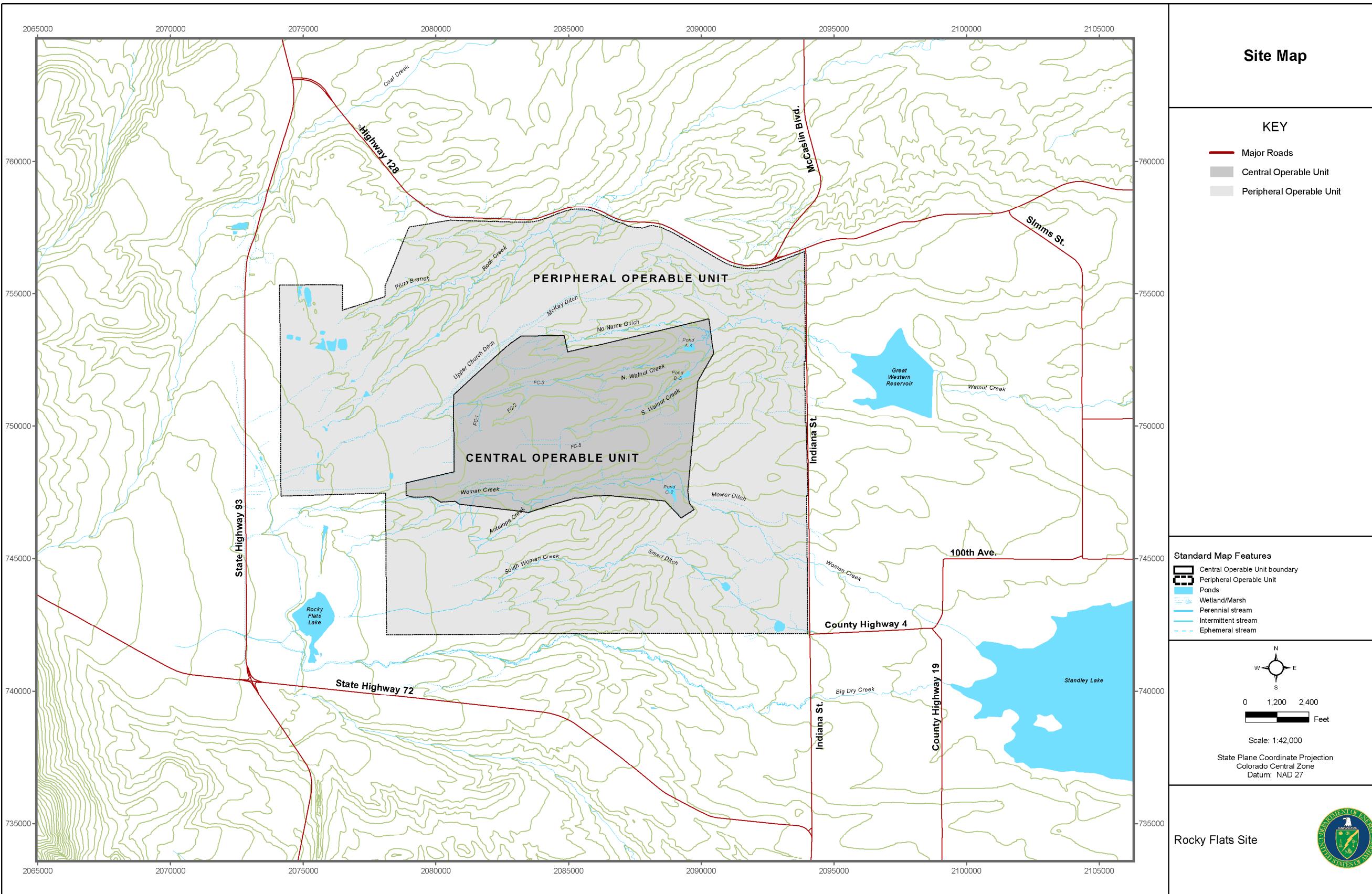
 3-14-07
James B. Martin, Executive Director
Colorado Department of Public Health and Environment

 2/28/07
Michael W. Owen, Director
Office of Legacy Management
U.S. Department of Energy

 14 Mar '07
Robert E. Roberts, Regional Administrator
Region 8, Environmental Protection Agency

Attachment 1

Site Map



Attachment 2

Legacy Management Requirements

Document History

Rocky Flats Legacy Management Agreement
Attachment 2, Legacy Management Requirements

| Date | Description of Changes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|---|--------------------------------|-------------------------------------|--------------------------------|------------|---------|---------|----------------------|---------|---------|--------------------------|---------|--------------------|-------------|---------|---------|------------------|---------|---------|--------------|---------|---------|-------------------|---------|---------|-------------------|---------|---------|
| December 2012 | Modification per RFLMA Contact Record 2012-03. For simplicity, Document History table was revised to remove the detailed list of changes made in modifications through the last modification in September 2011. All prior modifications are documented in the Rocky Flats post-closure administrative record. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| December 2012 | Section 5.1 updated to note the date WALPOC and WOMPOC became Points of Compliance (POCs), replacing former POCs GS08, GS11, and GS31. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| December 2012 | Section 5.3.7 and Table 5 related to additional ecological sampling deleted for simplicity. The additional ecological sampling was completed and approved in 2008. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| December 2012 | Section 7.3 was based on the schedule for the second 5-year review report in 2007. The third 5-year review was completed in 2012. Section was modified to address the scheduling for completion of future reports. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| December 2012 | <p>Table 1 modified to make standards consistent with changes promulgated by the Colorado Water Quality Control Commission (WQCC) with an effective date of January 31, 2013, as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Analyte</th><th style="text-align: center;">Previous Standard (mg/L)</th><th style="text-align: center;">New Standard (mg/L)</th></tr> </thead> <tbody> <tr> <td>Acrylamide</td><td style="text-align: center;">7.80E-6</td><td style="text-align: center;">2.20E-5</td></tr> <tr> <td>Carbon tetrachloride</td><td style="text-align: center;">2.30E-4</td><td style="text-align: center;">4.30E-4</td></tr> <tr> <td>1,2-Dichloroethene (cis)</td><td style="text-align: center;">7.00E-2</td><td style="text-align: center;">1.40E-2 to 7.00E-2</td></tr> <tr> <td>1,4-Dioxane</td><td style="text-align: center;">3.20E-3</td><td style="text-align: center;">3.50E-4</td></tr> <tr> <td>Hexachloroethane</td><td style="text-align: center;">4.00E-4</td><td style="text-align: center;">5.00E-4</td></tr> <tr> <td>Nitrobenzene</td><td style="text-align: center;">3.50E-3</td><td style="text-align: center;">1.40E-2</td></tr> <tr> <td>Pentachlorophenol</td><td style="text-align: center;">2.70E-4</td><td style="text-align: center;">8.00E-5</td></tr> <tr> <td>Tetrachloroethene</td><td style="text-align: center;">6.90E-4</td><td style="text-align: center;">5.00E-3</td></tr> </tbody> </table> <p>Table 1 footnotes modified as follows:</p> <p>[c] and [h]: Deleted because footnotes referenced Temporary Modifications that expired at the end of 2009. Both footnotes marked as "Reserved."</p> <p>[e]: Revised to clarify that the WQCC promulgated standard for un-ionized ammonia applies to Segment 4a only.</p> <p>[i]: Clarified that nitrate and nitrite standards are "as nitrogen."</p> <p>[m]: Deleted because footnote referred to the March 22, 2012, effective date for the 1,4-Dioxane standard (3.20E-3 mg/L). Footnote marked as "Reserved."</p> <p>[n]: Added 1,2-Dichloroethene (cis) to this footnote, to note that the higher number in the range is to be used as the applicable or corresponding Table 1 standard in the flowcharts in Figures 7 through 11. Prior to this change, arsenic was the only Table 1 analyte noted in footnote [n] based on the WQCC promulgated standard that is a range of values.</p> | Analyte | Previous Standard (mg/L) | New Standard (mg/L) | Acrylamide | 7.80E-6 | 2.20E-5 | Carbon tetrachloride | 2.30E-4 | 4.30E-4 | 1,2-Dichloroethene (cis) | 7.00E-2 | 1.40E-2 to 7.00E-2 | 1,4-Dioxane | 3.20E-3 | 3.50E-4 | Hexachloroethane | 4.00E-4 | 5.00E-4 | Nitrobenzene | 3.50E-3 | 1.40E-2 | Pentachlorophenol | 2.70E-4 | 8.00E-5 | Tetrachloroethene | 6.90E-4 | 5.00E-3 |
| Analyte | Previous Standard (mg/L) | New Standard (mg/L) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acrylamide | 7.80E-6 | 2.20E-5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Carbon tetrachloride | 2.30E-4 | 4.30E-4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2-Dichloroethene (cis) | 7.00E-2 | 1.40E-2 to 7.00E-2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,4-Dioxane | 3.20E-3 | 3.50E-4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hexachloroethane | 4.00E-4 | 5.00E-4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrobenzene | 3.50E-3 | 1.40E-2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pentachlorophenol | 2.70E-4 | 8.00E-5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tetrachloroethene | 6.90E-4 | 5.00E-3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| December 2012 | Table 2 modified to remove former POCs GS08, GS11 and GS31, which have been replaced as POCs by WALPOC and WOMPOC as described in Section 5.1. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| December 2012 | Table 3 modified to remove landfill-specific vegetation and inspection requirements as recommended in the third 5-year review report. Table 3 was also modified to change Present Landfill reference from "pond" to "downstream" monitoring because the Present Landfill Pond dam was breached in 2012. | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Date | Description of Changes |
|---------------|--|
| December 2012 | Figure 1 modified to remove former POCs GS08, GS11, and GS31 and to change note regarding GS01 and GS03 consistent with change to Section 5.1. The footprint of the Present Landfill Pond and Pond A-3 changed to reflect dam breach and the map feature for these ponds changed to "wetland/marsh." The note regarding dam breach changed to delete reference to Present Landfill Pond and Pond A-3. Surface water sampling locations "Pond A4", Pond B5" and "Pond C2" changed to "A4 Pond", "B5 Pond" and "C2 Pond" consistent with Table 2 location codes. |
| December 2012 | Figure 3 modified to correct typo for former sewage treatment plant Building 988, previously labeled 998. |
| December 2012 | Figure 4 modified to show the location of the Original Landfill and the Present Landfill and to change the figure title accordingly. Figure 4 also modified to reflect Present Landfill Pond and Pond A-3 dam breach. |

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ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

1.0 PURPOSE AND BACKGROUND

The purpose of this attachment to the Rocky Flats Legacy Management Agreement (RFLMA) is to specify the legacy management requirements that will ensure the response action selected and approved in the final Corrective Action Decision and Record of Decision (CAD/ROD) for the Central Operable Unit (OU) remains protective of human health and the environment. The remedy specified in the final CAD/ROD is supported by a Comprehensive Risk Assessment, which is based on a specific land use. The remedy, therefore, relies on certain physical and institutional controls, which must be maintained to ensure long-term protectiveness. The remedy also includes engineered features—landfills and water treatment systems—which must be maintained to remain protective. Reduced levels of residual soil contamination remain at the site and may continue to affect surface water. Contaminated groundwater also exists at the site and may impact surface water quality. Continued routine monitoring for groundwater and surface water is therefore required. Air, soil, and ecological receptors have been extensively monitored for many years and routine monitoring is no longer required.

Legacy management requirements described in this attachment are intended to address the requirements of the following statutes:

- Resource Conservation and Recovery Act (RCRA);
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) including applicable or relevant and appropriate requirements (ARARs); and
- Colorado Hazardous Waste Act (CHWA).

Modifications to this attachment will occur in accordance with the provisions of Part 10 of RFLMA.

2.0 REMEDY PERFORMANCE STANDARDS AND REQUIREMENTS

Remedy performance standards and requirements are enforceable numerical values or narrative descriptions of conditions or restrictions, designed to protect existing or potential uses, against which remedy performance can be measured. These standards and requirements are derived from state surface water standards and from requirements established in the final CAD/ROD.

2.1 Surface Water Standards

Protection of surface water was a basis for making soil and groundwater response action decisions during the cleanup period so that surface water on site and leaving the site would be of sufficient quality to support all uses. The applicable surface water uses are consistent with the following Colorado Water Quality Control Commission (WQCC) surface water use classifications:

- Water Supply,
- Aquatic Life – Warm 2,
- Agriculture,
- Recreation N (North Walnut Creek, South Walnut Creek, and Pond C-2), and
- Recreation E (Woman Creek).

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The remedy performance standards for surface water at the Rocky Flats Site are found in Table 1 and are based on the tables found in the WQCC Regulation No. 31: Basic Standards and Methodologies for Surface Water (5 CCR 1002-31) and on the site-specific standards in the WQCC Regulations No. 38 (5 CCR 1002-38). If the numeric values from the basic standards and the site-specific standards differ, the site-specific standard applies. In addition to practical quantitation levels (PQLs) allowed by the WQCC regulations, site-specific PQLs may be proposed to Colorado Department of Public Health and Environment (CDPHE) for approval. Any changes to the standards will be discussed in the annual legacy management report.

The WQCC-designated groundwater use classification at the site is surface water protection. The numeric values for measuring potential effects of contaminated groundwater on surface water quality are the surface water standards in Table 1. Exceedances of water quality standards at a surface water POC may be subject to civil penalties under Sections 109 and 310(c) of CERCLA.

Criteria and strategies for comparing analytical results to these numeric values are established in Section 5 and in attached flowcharts.

2.2 Requirements of the Final CAD/ROD

Some response actions taken under Rocky Flats Cleanup Agreement decision documents specified conditions or restrictions that extend into the legacy management period. These requirements are captured in the final CAD/ROD and are specified in this attachment.

3.0 PHYSICAL CONTROLS

3.1 Engineered Remedies

DOE will maintain physical controls as necessary to protect engineered elements of the remedy, such as landfill covers, groundwater treatment systems, and monitoring equipment.

3.2 Signs

DOE will post signs legible from at least 25 feet at intervals around the perimeter of the Central OU, sufficient to notify persons that they are at the boundary of the Central OU. These signs will measure at least 11 inches by 14 inches and will include the following language: "U.S. Department of Energy – No Trespassing". In addition, signs listing use restrictions and providing contact information will be posted at access points to the Central OU.

4.0 INSTITUTIONAL CONTROLS

Institutional controls in the form of use restrictions are established in the CAD/ROD. These controls are embodied in an environmental covenant granted by DOE to the CDPHE or by a restrictive notice issued by CDPHE instead of an environmental covenant, and are listed in Table 4. The environmental covenant or restrictive notice is recorded in the land records in Jefferson County, Colorado. DOE will annually verify the environmental covenant or the restrictive notice is on file in accordance with Section 5.3.6.

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The use restrictions shall be implemented to meet the objective and rationale of the institutional control as provided in the CAD/ROD. DOE shall follow the RFLMA consultative process pursuant to Part 5 of RFLMA for any regulatory determination required regarding activities subject to the institutional control.

Results of consultation will be documented in contact records or written correspondence. Except for situations where immediate action is warranted, DOE will not implement the activity for which the regulatory determination is required until 10 calendar days after the contact record or written correspondence approving the activity is posted on the Rocky Flats website and notification of the posting is made to stakeholders in accordance with the RFLMA Public Involvement Plan.

DOE will employ administrative procedures to control all site modification, maintenance, or other activities requiring excavation within the Central OU in accordance with the institutional controls to prevent violation of the restrictions listed in Table 4. DOE shall ensure that all such site activities will not compromise the integrity or function of the remedy or result in uncontrolled releases of or exposures to subsurface contamination, in accordance with the land use restrictions in Table 4.

DOE will utilize work control procedures to help maintain the use restrictions and ensure protection of the integrity of the institutional controls. These procedures derive from U.S. Environmental Protection Agency (EPA) and State of Colorado regulation and guidance and DOE Orders and guidance. The DOE Integrated Safety Management System (ISMS) utilizes processes such as the job hazard analysis (JHA) to identify and mediate environmental, health and safety risks to ensure all work is done in a safe and environmentally protective manner.

4.1 Soil Disturbance Review Plan

Activities in the Central OU subject to Institutional Control 2 or 3, listed in Table 4, that are subject to regulatory review and approval will be reviewed and approved in accordance with this Soil Disturbance Review Plan:

4.1.1 Information in Soil Disturbance Review Plan

Prior to conducting any activity that is subject to this plan, DOE will submit the following information to CDPHE and EPA:

- A description of the proposed project, including the purpose, the location, and the lateral and vertical extent of excavation.
- Information about any remaining subsurface structures in the vicinity of the proposed project (or state that there are none if that is the case).
- Information about any former Individual Hazardous Substance Sites, Potential Areas of Concern, or other known or potential soil or groundwater contamination in the vicinity of the proposed project (or state that there is no known contamination).

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In consultation with EPA, CDPHE will review the information described above. CDPHE will approve the proposed activity only if it determines that the proposed activity will not result in an unacceptable release or exposure to residual subsurface contamination, and will not damage any component of the remedy. In making such determinations, CDPHE will ensure that the proposed project meets the rationale and objectives of the institutional controls.

Subsurface soils disturbed by activities implemented in areas that, based on the results of the Remedial Investigation/Feasibility Study, are or may be contaminated must be characterized. Characterization may rely on existing data, and be sufficient to implement the DOE work control procedures to establish controls for worker health and safety, potential migration of contamination and other project specific items identified through the evaluation of information in the Soil Disturbance Review Plan. Contaminated soils may be returned to the excavation, provided the rationale and objectives of the institutional controls are still met. Contaminated soils not returned to the excavation must be managed in accordance with regulatory requirements.

If an onsite or offsite borrow source is needed to fill an excavation, the source must be identified. This Soil Disturbance Review Plan also applies to any onsite borrow source.

DOE will document the elevation created by any soil-disturbing activity that does not return the soil surface to preexisting grade or higher, in order to ensure that the minimum 3-foot cover thickness above any contaminated subsurface feature in Figures 3 or 4 is maintained.

5.0 MONITORING REQUIREMENTS

Monitoring will provide measurements for remedy performance, safety, compliance with standards, and effectiveness of physical and institutional controls. Monitoring requirements are designed to provide data that meet designated monitoring objectives (as outlined in Table 2 and in attached flowcharts) and that support operational and regulatory decision making. Legacy Management operational documents relating to the monitoring and maintenance performed by DOE will be provided to CDPHE and EPA and will be available to the public.

Environmental sampling, analysis, and data management required by this attachment will conform to the Legacy Management CERCLA Sites Quality Assurance Project Plan (QAPP) and meet the quality assurance and quality control requirements in current EPA guidance. DOE will submit the QAPP to CDPHE and EPA within two months of execution of the RFLMA. DOE will ensure that laboratories generating data have procedures for assuring that the precision, accuracy, representativeness, completeness, and comparability (and sensitivity in the case of radiological analyses) of data are known and documented. DOE will also perform periodic assessments of analytical data, including laboratory audits. Upon request, all analytical data including QA/QC procedures, audits, and reports will be provided to CDPHE and/or EPA.

Standard EPA analytical methods will be used with the intent that detection limits will be less than the respective standards. If standard analytical methods cannot attain the standard, then alternative methods or PQLs will be proposed to CDPHE. The currently accepted PQLs are listed in Table 1.

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5.1 Monitoring Surface Water

Compliance with the surface-water standards in Table 1 will be measured at the Points of Compliance (POCs) downstream of the terminal ponds and consider groundwater in alluvium. Points of Evaluation (POEs) and additional performance monitoring locations serve to monitor the quality of surface water in the Central OU. The data evaluation methods described in the attached flowcharts will be used to evaluate sampling data collected at these locations. POCs, POEs and performance monitoring locations are shown in Figure 1; the monitoring location identification, description and sampling criteria are identified in Table 2.

- Points of Compliance (POCs): Located in Woman and Walnut Creeks. These locations are used to demonstrate compliance with the surface-water standards in Table 1. WALPOC, which replaced former POCs GS08 and GS11 on September 28, 2011, and WOMPOC, which replaced former POC GS31 on September 9, 2011, will also replace GS03 and GS01 respectively upon DOE notification to EPA and CDPHE certifying that WALPOC and WOMPOC have been functioning as POCs for at least 2 years. EPA or CDPHE may extend the 2-year period by requiring DOE to submit a modification to this attachment in accordance with RFLMA paragraph 65 if either determines that such modification is necessary to ensure protection of human health and the environment.
- Points of Evaluation (POEs): Located in the Central OU upstream of the ponds and POCs. These locations are used to evaluate water-quality in comparison to the surface-water standards in Table 1.
- Performance monitoring locations: Located downstream of specific remedies to determine the short and long-term effectiveness of these remedies where known contaminants may affect surface water.

5.2 Monitoring Groundwater

Groundwater is monitored in or near areas of groundwater contamination that might adversely affect surface water quality (Figure 2). Contaminated groundwater emerges to surface water before leaving the Central OU. DOE will maintain a network of groundwater monitoring wells to assess the potential effects of contaminated groundwater on surface water quality. These wells and sampling criteria are identified in Table 2 and shown in Figure 1 with the following well classifications:

- Area of Concern (AOC) Wells: Located within a drainage and downgradient of a contaminant plume or group of contaminant plumes. These wells are monitored to determine whether the plume(s) may be discharging to surface water.
- Sentinel Wells: Typically located near downgradient edges of contaminant plumes, in drainages, and downgradient of groundwater treatment systems. These wells are monitored to determine whether concentrations of contaminants are increasing, which could indicate plume migration or treatment system problems.
- Evaluation Wells: Typically located within plumes and near plume source areas, or in the interior of the Central OU. Data from these wells will help determine when monitoring of an area or plume can cease. A subset of these wells is located in areas that may experience significant changes in groundwater conditions as a result of closure activities.
- RCRA Wells: Dedicated to monitoring the Present Landfill and Original Landfill.

5.3 Remedy Monitoring and Maintenance

5.3.1 Original Landfill

Groundwater and surface water monitoring details, including criteria and analytes, are listed in Table 2. Table 3 summarizes the inspection and maintenance requirements contained in the approved *Original Landfill Monitoring and Maintenance Plan*, which is incorporated by reference as an enforceable requirement of the RFLMA.

5.3.2 Present Landfill

Groundwater and surface water monitoring details, including criteria and analytes, are listed in Table 2. Table 3 summarizes the inspection and maintenance requirements contained in the approved *Present Landfill Monitoring and Maintenance Plan and Post-Closure Plan*, which is incorporated by reference as an enforceable requirement of the RFLMA.

5.3.3 Groundwater Treatment Systems

Each system will be monitored, at a minimum, for untreated influent and treated effluent, and for impacts to surface water downstream of the effluent discharge point according to the sampling criteria in Table 2 and the decision rules in the attached flowcharts. The systems will be maintained to ensure the effluent meets Table 1 standards.

5.3.4 Residual Subsurface Contamination

The Central OU will be monitored for significant erosion annually and following major precipitation events. DOE will evaluate whether the erosion is in proximity to the subsurface features shown in Figures 3 and 4. Monitoring will include visual observation (and measurements, if necessary) of precursor evidence of significant erosion (cracks, rills, slumping, subsidence, sediment deposition, etc.).

5.3.5 Monitoring Physical Controls

The condition of signs and other physical controls maintained by DOE will be inspected on a quarterly basis.

5.3.6 Monitoring Institutional Controls

The effectiveness of the institutional controls described in Table 4 of this attachment and in the environmental covenant or restrictive notice required by Section 4.0 will be determined by inspecting the Central OU at least annually for any evidence of violations of those controls. DOE will also annually verify that the environmental covenant or restrictive notice for the Central OU remains in the Administrative Record and is recorded in Jefferson County.

5.4 Operational Monitoring

Operational monitoring is not a requirement of the CAD/ROD, but is a requirement of this Attachment. Operational monitoring provides information that will supplement CAD/ROD required monitoring.

5.4.1 Duplicate or Split Sampling

CDPHE and EPA will be allowed the opportunity to collect duplicate or split samples for any monitoring. This opportunity shall be coordinated in accordance with the consultative process and right of entry provisions in RFLMA.

5.4.2 Pre-discharge Pond Sampling

DOE will collect pre-discharge samples from Pond A-4, Pond B-5, and Pond C-2, and as needed from any other pond upstream of a POC temporarily functioning as a terminal pond when said pond is operated in batch and release mode. DOE will notify appropriate parties in accordance with Figure 13 in advance of pre-discharge pond sampling. Samples will be analyzed for POC constituents far enough in advance of a routine discharge to allow action to be taken if exceedances are suggested, but near enough to the time of discharge to be representative of the discharge composition. Figure 13 shows how actions are determined based on the results of pre-discharge samples. Ponds will be operated to maintain dam safety regardless of the status or results of pond sampling.

5.4.3 Adverse Biological Conditions

DOE will note evidence of adverse biological conditions (e.g., unexpected mortality or morbidity) observed during other monitoring and maintenance activities described above.

6.0 ACTION DETERMINATIONS

Whenever any of the following reportable conditions are observed, DOE shall follow the appropriate procedures in this section. Reportable conditions include:

- Exceedances of surface water standards at surface water and groundwater monitoring locations consistent with the attached flowcharts;
- Evidence of significant erosion in areas of residual subsurface contamination;
- Evidence of adverse biological conditions;
- Conditions affecting the effectiveness of the landfill covers;
- Evidence of violation of the institutional controls;
- Physical control failure that adversely affects the remedy; or
- Other abnormal conditions that adversely affect the remedy.

When reportable conditions occur (except in the case of evidence of violation of institutional controls as described below), DOE will inform CDPHE and EPA within 15 days of receiving the

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inspection reports or validated data. Within 30 days of receiving inspection reports or validated analytical data documenting a reportable condition, DOE will submit a plan and a schedule for an evaluation to address the condition. DOE will consult as described in RFLMA Paragraph 11 to determine if mitigating actions are necessary. Final plans and schedules for mitigating actions, if any, will be approved by CDPHE in consultation with EPA. DOE is not, however, precluded from undertaking timely mitigation once a reportable condition has been identified.

In the case of evidence of violation of institutional controls, DOE will notify EPA and CDPHE within 2 days of discovering any evidence of such a violation, and at that time will initiate the consultative process to address the situation. In no case will DOE notify EPA and CDPHE more than 10 days after the discovery of a situation that may interfere with the effectiveness of the institutional controls. DOE will notify EPA and CDPHE of the actions it is taking within 10 days after beginning the process to address the situation.

The RFLMA Parties will consult whenever reportable conditions are observed or at the request of one of the Parties when routine communication processes are not sufficient or appropriate. The objective of the consultation will be to determine a course of action to address the reportable condition and to ensure the remedy remains protective. Results of consultation will be documented in contact records and/or written correspondence.

Surface water and groundwater monitoring results will be evaluated as described in the following flowcharts:

- Figure 5 Flowchart—Points of Compliance
- Figure 6 Flowchart—Points of Evaluation
- Figure 7 Flowchart—Area of Concern Wells and SW018
- Figure 8 Flowchart—Sentinel Wells
- Figure 9 Flowchart—Evaluation Wells
- Figure 10 Flowchart—RCRA Wells
- Figure 11 Flowchart—Groundwater Treatment Systems
- Figure 12 Flowchart—Original Landfill Surface Water
- Figure 13 Flowchart—Pre-discharge Pond Sampling

Exceedances of water quality standards at a POC may be subject to civil penalties under Sections 109 and 310(c) of CERCLA. In addition, failure of DOE to notify the State and EPA of such exceedances or other reportable occurrences, or failure to undertake source evaluations or mitigating actions as described above, will be enforceable consistent with the terms of Part 8 of the RFLMA.

7.0 PERIODIC REPORTING REQUIREMENTS

In addition to notifications of reportable conditions described in Section 6, periodic reporting will provide CDPHE, EPA, and the public with updated information pertaining to the surveillance and maintenance of the remedy prescribed in the final CAD/ROD. Analytical data

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and other information will be clearly presented along with summaries and evaluations to help interpret the data. Reports will be posted on the LM website and available for regulatory and public review in accordance with the following schedule:

- Quarter ending March 31 will be posted by July 15
- Quarter ending June 30 will be posted by October 15
- Quarter ending September 30 will be posted by January 15
- Year and quarter ending December 31 will be posted by April 30

7.1 Quarterly Legacy Management Reports

The various reporting requirements may be combined into a summary report of surveillance and maintenance activities that occurred during the applicable quarter. The following topics will be included in quarterly reports:

- Surface water monitoring data;
- Groundwater monitoring data;
- Groundwater treatment system monitoring data;
- Ecological sampling data;
- Adverse biological conditions;
- Inspection reports; and
- Summary of maintenance and repairs.

7.2 Annual Legacy Management Reports

The various reporting requirements may be combined into a comprehensive report of all surveillance and maintenance activities that occurred during the applicable calendar year. Annual reports may include a summary for the previous quarter. The following will be included in annual reports:

- Discussion of surface water monitoring data;
- Discussion of groundwater monitoring data;
- Discussion of groundwater treatment system monitoring data;
- Discussion of ecological sampling data;
- Adverse biological conditions;
- Summary of actions taken in response to reportable conditions;
- Summary of maintenance and repairs;
- Inspection reports;
- Verification of the Environmental Covenant and evaluation of the effectiveness of institutional controls;

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- Original Landfill Monitoring Report (see Table 3 and Section 6.1 of the *Original Landfill Monitoring and Maintenance Plan*, as approved);
- Present Landfill Monitoring Report (see Table 3 and Section 6.1 of the *Present Landfill Monitoring and Maintenance Plan and Post-Closure Plan*, as approved);
- Assessments of analytical data, including laboratory audits; and
- Other conditions or actions taken that are pertinent to the continued effectiveness of the remedy.

7.3 CERCLA 5-Year Review

A statutory 5-year review is required under CERCLA for the Central OU because the selected remedy will result in hazardous substances, pollutants or contaminants remaining above levels that allow for unrestricted use and unlimited exposure. DOE will prepare the 5-year review report consistent with EPA-OSWER Directive 9355.7-03B-P (or subsequent EPA directives), as applicable to Rocky Flats. DOE will submit the 5-year review report to EPA upon a mutually agreeable schedule determined by the RFLMA Project Coordinators in accordance with the consultative process in RFLMA paragraph 11, so as to allow for EPA concurrence within 5 years of the preceding 5-year review report. DOE will conduct 5-year reviews in accordance with RFLMA Part 11, Periodic Reviews, until such time as EPA determines that CERCLA periodic reviews are no longer required. The 5-year review will evaluate site conditions and determine whether the selected remedy remains protective of human health and the environment. In doing so, the 5-year review will evaluate the components of the remedy (including, but not limited to, requirements for monitoring, maintenance and inspections, institutional controls, and reporting.) The 5-year review will determine whether such remedy components will be continued, modified, or discontinued. The public will be notified when the review will be conducted. Results of 5-year reviews will be made available to the public.

Table 1. Surface Water Standards

| Analyte | CAS Reference Number | Standards [a] (mg/L) | Basis [b] | PQLs [d] (mg/L) |
|----------------------------|----------------------|-------------------------|-----------|-----------------|
| Acenaphthene | 83-32-9 | 4.20E-01 | W+F, WS | |
| Acrolein | 107-02-8 | 3.50E-03 | W+F, WS | 2.50E-02 |
| Acrylamide | 79-06-1 | 2.20E-5 | WS | 3.20E-04 |
| Acrylonitrile | 107-13-1 | 5.10E-05 | W+F | 2.50E-02 |
| Alachlor | 15972-60-8 | 2.00E-03 | W+F, WS | |
| Aldicarb | 116-06-3 | 7.00E-03 | WS | |
| Aldicarb sulfone | 1646-88-4 | 7.00E-03 | WS | |
| Aldicarb sulfoxide | 1646-87-3 | 7.00E-03 | WS | |
| Aldrin | 309-00-2 | 4.90E-08 | W+F | 5.00E-05 |
| Ammonia, un-ionized [e] | 7664-41-7 | 1.00E-1 | AL | |
| Aniline | 62-53-3 | 6.10E-03 | WS | 1.00E-02 |
| Anthracene | 120-12-7 | 2.10E+00 | W+F, WS | |
| Aramite | 140-57-8 | 1.40E-03 | WS | 2.00E-02 |
| Arsenic, total recoverable | 7440-38-2 | 2.00E-5 to 1.00E-02 [n] | SS | |
| Atrazine | 1912-24-9 | 3.00E-03 | WS | |

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Table 1 (continued). Surface Water Standards

| Analyte | CAS Reference Number | Standards [a] (mg/L) | Basis [b] | PQLs [d] (mg/L) |
|---------------------------------|----------------------|----------------------|-------------|-----------------|
| Azobenzene | 103-33-3 | 3.20E-04 | WS | 3.00E-02 |
| Benzene [c] | 71-43-2 | 2.20E-03 | W+F | |
| Benzidine | 92-87-5 | 8.60E-08 | W+F | 4.00E-02 |
| alpha-BHC | 319-84-6 | 2.60E-06 | W+F | 3.00E-05 |
| beta-BHC | 319-85-7 | 9.10E-06 | W+F | 6.00E-05 |
| gamma-BHC [Lindane] | 58-89-9 | 8.00E-05 | AL | |
| Benzo(a)anthracene | 56-55-3 | 3.80E-06 | W+F | 2.00E-02 |
| Benzo(a)pyrene | 50-32-8 | 3.80E-06 | W+F | 1.00E-02 |
| Benzo(b)fluoranthene | 205-99-2 | 3.80E-06 | W+F | 1.00E-02 |
| Benzo(g,h,i)perylene | 191-24-2 | 3.80E-06 | W+F | 1.00E-02 |
| Benzo(k)fluoranthene | 207-08-9 | 3.80E-06 | W+F | 1.00E-02 |
| Benzotrichloride | 98-07-7 | 2.70E-06 | WS | 1.00E-02 |
| Benzyl chloride | 100-44-7 | 2.10E-04 | WS | 1.00E-03 |
| Beryllium | 7440-41-7 | 4.00E-03 | SS | |
| Boron, total | 7440-42-8 | 7.50E-01 | AG, SS | |
| Bromate | 15541-45-4 | 5.00E-05 | WS | 1.00E-03 |
| Bromodichloromethane | 75-27-4 | 5.50E-04 | W+F [f] | 1.00E-03 |
| Bromoform [Tribromomethane] | 75-25-2 | 4.30E-03 | W+F [f] | |
| Bromomethane [Methyl Bromide] | 74-83-9 | 9.80E-04 | W+F | 1.00E-03 |
| Butylbenzylphthalate | 85-68-7 | 1.40E+00 | W+F, WS | |
| Cadmium, dissolved | 7440-43-9 | 1.50E-03 | TVS [g] | |
| Carbofuran | 1563-66-2 | 4.00E-02 | WS | |
| Carbon tetrachloride | 56-23-5 | 4.30E-4 | W+F | 1.00E-03 |
| Chlordane | 57-74-9 | 8.00E-07 | W+F | 2.00E-04 |
| Chlorobenzene | 108-90-7 | 1.00E-01 | W+F, WS | |
| Chlorodibromomethane (HM) | 124-48-1 | 5.40E-02 | W+F | |
| bis(2-Chloroethyl)ether | 111-44-4 | 3.00E-05 | W+F | 1.00E-02 |
| Chloroform [Trichloromethane] | 67-66-3 | 3.40E-03 | W+F [f] | |
| bis(2-Chloroisopropyl)ether | 108-60-1 | 2.80E-01 | W+F, WS | |
| Chloromethane [Methyl chloride] | 74-87-3 | 5.60E-03 | W+F | |
| Bis(chloromethyl)ether (BCME) | 542-88-1 | 1.00E-07 | W+F | 1.00E-02 |
| 4-Chloro-3-methylphenol | 59-50-7 | 3.00E-02 | AL | |
| Chloronaphthalene | 91-58-7 | 5.60E-01 | W+F, WS | |
| 2-Chlorophenol | 95-57-8 | 3.50E-02 | W+F, WS | |
| Chloropyrifos | 2921-88-2 | 4.10E-05 | AL | 5.00E-03 |
| Chromium III, Total Recoverable | 16065-83-1 | 5.00E-02 | SS | |
| Chromium VI, dissolved | 18540-29-9 | 1.10E-02 | TVS [g] | 2.00E-02 |
| Chrysene | 218-01-9 | 3.80E-06 | W+F | 1.00E-02 |
| Copper, dissolved | 7440-50-8 | 1.60E-02 | TVS [g] | 2.50E-02 |
| Cyanide | 57-12-5 | 5.00E-03 | SS | |
| 4,4-DDD | 72-54-8 | 3.10E-07 | W+F | 1.10E-04 |
| 4,4-DDE | 72-55-9 | 2.20E-07 | W+F | 5.00E-05 |
| 4,4-DDT | 50-29-3 | 2.20E-07 | W+F | 1.20E-04 |
| Dalapon | 75-99-0 | 2.00E-01 | WS | |
| Demeton | 8065-48-3 | 1.00E-04 | AL | 1.00E-02 |
| Dibenzo(a,h)anthracene | 53-70-3 | 3.80E-06 | W+F | 1.00E-02 |
| Dibromochloromethane | 124-48-1 | 8.00E-02 | W+F, WS [f] | |

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Table 1 (continued). Surface Water Standards

| Analyte | CAS Reference Number | Standards [a] (mg/L) | Basis [b] | PQLs [d] (mg/L) |
|---|----------------------|-------------------------|-----------|-----------------|
| 1,2-Dibromo-3-chloropropane | 96-12-8 | 2.00E-04 | WS | 1.00E-03 |
| Di-n-butylphthalate | 84-74-2 | 7.00E-01 | W+F, WS | |
| Dichloroacetic acid | 79-43-6 | 7.00E-04 | WS | 5.00E-04 |
| 1,2-Dichlorobenzene | 95-50-1 | 4.20E-01 | W+F | |
| 1,3-Dichlorobenzene | 541-73-1 | 9.40E-02 | W+F, WS | |
| 1,4-Dichlorobenzene | 106-46-7 | 6.30E-02 | W+F | |
| 3,3-Dichlorobenzidine | 91-94-1 | 2.10E-05 | W+F | 2.00E-02 |
| 1,2-Dichloroethane | 107-06-2 | 3.80E-04 | W+F | 1.00E-03 |
| 1,1-Dichloroethene | 75-35-4 | 7.00E-03 | W+F, WS | |
| 1,2-Dichloroethene (cis) | 156-59-2 | 1.40E-2 to 7.00E-02 [n] | WS | |
| 1,2-Dichloroethene (trans) | 156-60-5 | 1.00E-01 | W+F, WS | |
| 2,4-Dichlorophenol | 120-83-2 | 2.10E-02 | W+F, WS | |
| Dichlorophenoxyacetic acid [2,4-D] | 94-75-7 | 7.00E-02 | WS | |
| 1,2-Dichloropropane | 78-87-5 | 5.00E-04 | W+F | 1.00E-02 |
| 1,3-Dichloropropylene | 542-75-6 | 3.40E-04 | W+F | 1.00E-02 |
| Dichlorvos | 62-73-7 | 1.20E-04 | WS | 1.00E-02 |
| Dieldrin | 60-57-1 | 5.20E-08 | W+F | 2.00E-05 |
| Di(2-ethylhexyl)adipate | 103-23-1 | 4.00E-01 | WS | |
| Diethylphthalate | 84-66-2 | 5.60E+00 | W+F, WS | |
| Diisopropyl methyl phosphonate | 1445-75-6 | 8.00E-03 | WS | 1.00E-02 |
| 2,4-Dimethylphenol | 105-67-9 | 1.40E-01 | W+F, WS | |
| Dimethylphthalate | 131-11-3 | 7.00E+01 | W+F, WS | |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | 2.70E-04 | WS | 5.00E-02 |
| 2,4-Dinitrophenol | 51-28-5 | 1.40E-02 | W+F, WS | 5.00E-02 |
| 2,4-Dinitrotoluene | 121-14-2 | 1.10E-04 | W+F, WS | 1.00E-02 |
| 2,6-Dinitrotoluene | 606-20-2 | 2.30E-01 | AL | |
| Dinoseb | 88-85-7 | 7.00E-03 | WS | |
| 1,4-Dioxane | 123-91-1 | 3.50E-4 | WS | 1.00E-02 |
| Dioxin (2,3,7,8 TCDD) | 1746-01-6 | 5.00E-12 | W+F | 1.00E-05 |
| 1,2-Diphenylhydrazine | 122-66-7 | 3.60E-05 | W+F | 1.00E-02 |
| Diquat | 85-00-7 | 2.00E-02 | WS | |
| Endosulfan | 115-29-7 | 5.60E-05 | AL | |
| Endosulfan, alpha | 959-98-8 | 5.60E-05 | AL | 2.00E-04 |
| Endosulfan, beta | 33213-65-9 | 5.60E-05 | AL | |
| Endosulfan sulfate | 1031-07-8 | 5.60E-05 | AL | 6.60E-04 |
| Endothall | 145-73-3 | 1.00E-01 | WS | |
| Endrin (technical) | 72-20-8 | 3.60E-05 | AL | 6.00E-05 |
| Endrin aldehyde | 7421-93-4 | 2.90E-04 | W+F | |
| Epichlorohydrin | 106-89-8 | 3.50E-03 | WS | 1.00E-02 |
| Ethylbenzene | 100-41-4 | 5.30E-01 | W+F | |
| Ethylene dibromide [1,2-Dibromomethane] | 106-93-4 | 5.00E-05 | WS | 1.00E-03 |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | 1.20E-03 | W+F | 1.00E-02 |
| Fluoranthene | 206-44-0 | 1.30E-01 | W+F | |
| Fluorene | 86-73-7 | 2.80E-01 | WS | |

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

Table 1 (continued). Surface Water Standards

| Analyte | CAS Reference Number | Standards [a] (mg/L) | Basis [b] | PQLs [d] (mg/L) |
|---|----------------------|----------------------|-----------|-----------------|
| Folpet | 133-07-3 | 1.00E-02 | WS | |
| Furmecyclox | 60568-05-0 | 1.20E-03 | WS | 1.00E-02 |
| Glyphosate | 1071-83-6 | 7.00E-01 | WS | |
| Guthion | 86-50-0 | 1.00E-05 | AL | 1.00E-01 |
| Heptachlor | 76-44-8 | 7.80E-08 | W+F | 5.00E-05 |
| Heptachlor epoxide | 1024-57-3 | 3.90E-08 | W+F | 1.00E-03 |
| Hexachlorobenzene | 118-74-1 | 2.80E-07 | W+F | 1.00E-02 |
| Hexachlorobutadiene | 87-68-3 | 4.40E-04 | W+F | 5.00E-03 |
| Hexachloroclohexane, Technical | 608-73-1 | 1.20E-05 | W+F | 1.00E-02 |
| Hexachlorocyclopentadiene | 77-47-4 | 5.00E-03 | AL | 1.00E-02 |
| Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-hcdd) | 19408-74-3 | 5.60E-09 | WS | 2.50E-05 |
| Hexachloroethane | 67-72-1 | 5.00E-4 | W+F | 1.00E-03 |
| Hydrazine/Hydrazine sulfate | 302-01-2 | 1.20E-05 | WS | 1.00E-02 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 3.80E-06 | W+F | 1.00E-02 |
| Isophorone | 78-59-1 | 1.30E-01 | W+F | |
| Lead, dissolved | 7439-92-1 | 6.50E-03 | TVS [g] | |
| Malathion | 121-75-5 | 1.00E-04 | AL | 1.00E-02 |
| Mercury, total | 7439-97-6 | 1.00E-05 | SS | 1.00E-03 |
| Methoxychlor | 72-43-5 | 3.00E-05 | AL | 1.80E-03 |
| 4,4-Methylene bis (N,N'-dimethyl)aniline | 101-61-1 | 7.60E-04 | WS | 1.00E-02 |
| Methylene chloride [Dichloromethane] | 75-09-2 | 4.60E-03 | W+F | |
| Mirex | 2385-85-5 | 1.00E-06 | AL | 1.00E-02 |
| Naphthalene | 91-20-3 | 1.40E-01 | W+F, WS | |
| Nickel, dissolved | 7440-02-0 | 1.23E-01 | TVS [g] | |
| Nitrate [i] | 14797-55-8 | 1.00E+01 | AG, SS | |
| Nitrite [i] | 14797-65-0 | 5.00E-01 | AL, SS | |
| Nitrobenzene | 98-95-3 | 1.40E-2 | W+F, WS | |
| Nitrophenol 4 | 100-02-7 | 5.60E-02 | WS, W+F | |
| Nitrosodibutylamine N | 924-16-3 | 4.30E-06 | W+F | 1.00E-02 |
| N-Nitrosodiethanolamine | 1116-54-7 | 1.30E-05 | WS | 1.00E-02 |
| Nitrosodiethylamine N | 55-18-5 | 2.30E-07 | W+F, WS | 1.00E-02 |
| Nitrosodimethylamine N | 62-75-9 | 6.90E-07 | W+F, WS | 2.00E-02 |
| n-Nitrosodiphenylamine | 86-30-6 | 3.30E-03 | W+F | 1.00E-02 |
| n-Nitrosodipropylamine | 621-64-7 | 5.00E-06 | W+F, WS | 1.00E-02 |
| N-Nitroso-N-methylethylamine | 10595-95-6 | 1.60E-06 | WS | 1.00E-02 |
| Nitrosopyrrolidine N | 930-55-2 | 1.60E-05 | W+F | 4.00E-02 |
| Oxamyl(vydate) | 23135-22-0 | 2.00E-01 | WS | |
| PCBs | 1336-36-3 | 6.40E-08 | W+F [j] | 5.00E-04 |
| Parathion | 56-38-2 | 1.30E-05 | AL | 1.00E-02 |
| Pentachlorobenzene | 608-93-5 | 1.40E-03 | W+F | 1.00E-02 |
| Pentachlorophenol | 87-86-5 | 8.00E-5 | W+F | 5.00E-02 |
| Phenol | 108-95-2 | 2.10E+00 | W+F, WS | |
| Picloram | 1918-02-1 | 4.90E-01 | WS | |
| Propylene oxide | 75-56-9 | 1.50E-04 | WS | 1.00E-02 |
| Pyrene | 129-00-0 | 2.10E-01 | W+F, WS | |

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

Table 1 (continued). Surface Water Standards

| Analyte | CAS Reference Number | Standards [a] (mg/L) | Basis [b] | PQLs [d] (mg/L) |
|--------------------------------|----------------------|----------------------|-----------|-----------------|
| Quinoline | 91-22-5 | 1.20E-05 | WS | |
| Selenium | 7782-49-2 | 4.60E-03 | AL | |
| Silver, dissolved | 7440-22-4 | 6.00E-04 | TVS [g] | 1.00E-03 |
| Simazine | 122-34-9 | 4.00E-03 | WS | |
| Sulfide | 18496-25-8 | 2.00E-03 | SS | |
| Styrene | 100-42-5 | 1.00E-01 | WS | |
| 1,2,4,5-Tetrachlorobenzene | 95-94-3 | 9.70E-04 | W+F | 1.00E-03 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 1.70E-04 | W+F | 1.00E-03 |
| Tetrachloroethene | 127-18-4 | 5.00E-3 | W+F, WS | |
| Toluene | 108-88-3 | 1.00E+00 | W+F, WS | |
| Toxaphene | 8001-35-2 | 2.00E-07 | AL | 2.50E-03 |
| Tributyltin (TBT) | 56573-85-4 | 7.20E-05 | AL | 1.00E-02 |
| 1,2,4-Trichlorobenzene | 120-82-1 | 3.50E-02 | W+F | |
| 1,1,1-Trichloroethane | 71-55-6 | 2.00E-01 | WS | |
| 1,1,2-Trichloroethane | 79-00-5 | 2.70E-03 | W+F | |
| Trichloroethene | 79-01-6 | 2.50E-03 | W+F | |
| 2,4,6-Trichlorophenol | 88-06-2 | 1.40E-03 | W+F | 1.00E-02 |
| Trichlorophenol 2,4,5 | 95-95-4 | 7.00E-01 | WS, W+F | |
| Trichlorophenoxypropionic acid | 93-72-1 | 5.00E-02 | WS | |
| Vinyl chloride | 75-01-4 | 2.30E-05 | W+F | 2.00E-04 |
| Xylene (total) | 1330-20-7 | 1.00E+01 | WS | |
| Zinc, dissolved | 7440-66-6 | 1.41E-01 | TVS [g] | |
| PHYSICAL PARAMETERS: | | | | |
| Dissolved oxygen (minimum) | | 5.0 mg/L | SS | |
| pH | | 6.5-9.0 | SS | |
| RADIONUCLIDES [I] | | | | |
| Americium 241 | 14596-10-2 | 0.15 (pCi/L) | BS | |
| Plutonium 239/240 | 10-12-8 | 0.15 (pCi/L) | BS | |
| Radium 226/228 | | 5 (pCi/L) [k] | BS | |
| Strontium 89/90 | 11-10-9 | 8 (pCi/L) | BS | |
| Tritium | 10028-17-8 | 500 (pCi/L) | SS | |
| Uranium, total | 7440-61-1 | 16.8 (μ g/L) | SS | |

NOTES:

[a] The values in this table reflect the promulgated Colorado WQCC classifications and standards. If relevant, effective date information is included in subsequent footnotes. Standards for chloride, dissolved iron, dissolved manganese, and sulfate are Secondary Drinking Water Standards, which are based on aesthetic considerations. They have been removed as site-specific standards since Segments 4a, 4b, and 5 waters will not be used for drinking water supply.

[b] Acronyms: AG = Agriculture; AL = Aquatic Life; BS = Basic Standard; SS = Site Specific Standard; TVS = Table Value Standard; WS = Water Supply; W+F = Water plus Fish

[c] Reserved.

[d] Whenever the practical quantitation level (PQL) for a pollutant is higher (less stringent) than a standard or temporary modification, "less than" the PQL will be used as the compliance threshold.

[e] Applies to Segment 4a.

[f] Per the Basic Standards, the Total Trihalomethane (TTHM) standard applies to the sum of the four TTHM compounds. For dibromochloromethane the TTHM value for water supply, 80 parts per billion, was applied.

[g] Table value standards for metals are based on a toxicity equation which uses a hardness value of 143 mg/L.

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

Table 1 (continued). Surface Water Standards

[h] Reserved.

[i] The listed nitrite value is the chronic aquatic life standard based on chloride levels in excess of 22 mg/L in Segment 4. Nitrate and nitrite standards are as nitrogen.

[jj] The total PCB standard in the Basic Standards is based on the sum of the Aroclor analytes.

[k] Per the basic standard, this value applies to the sum of the two radium isotopes.

[l] Radionuclides are measured in activity per volume units except for uranium, which is measured as a metal parameter in mass per volume units.

[m] Reserved.

[n] The second number in the range for arsenic and 1,2-Dichloroethene (cis) is applied as the corresponding or applicable Table 1 standard in the flowcharts in Figures 7 through 11.

The scientific notation used in this table indicates the power of ten by which the two-decimal-place number is multiplied (e.g., 2.52E-02 = 2.52 X 10-2 = 0.0252).

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

Table 2. Water Monitoring Locations and Sampling Criteria

| General Objective | Classification | Media | Location ID (1) | Location Description | Frequency | Analytes (4) |
|---|-----------------------|--------------|------------------------|---|--|---|
| Points of Compliance (POCs) | | | | | | |
| POC (5) | SW | WALPOC | | Walnut Creek near COU Boundary | Flow-paced (varies) | Pu, Am, U, nitrate, flow rate |
| POC (5) | SW | WOMPOC | | Woman Creek near COU Boundary | Flow-paced (varies) | Pu, Am, U, flow rate |
| POC (5) | SW | GS01 | | Woman Creek at Indiana Street | Flow-paced (varies) | Pu, Am, U, flow rate |
| POC (5) | SW | GS03 | | Walnut Creek at Indiana Street | Flow-paced (varies) | Pu, Am, U, nitrate (only when water flowing from upstream terminal pond), flow rate |
| Points of Evaluation (POEs) | | | | | | |
| POE (6) | SW | GS10 | | S. Walnut Creek at B-Series Bypass | Flow-paced (varies) | Pu, Am, U, dissolved Ag and Cd, total Be and Cr, flow rate |
| POE (6) | SW | SW027 | | SID at Pond C-2 | Flow-paced (varies) | Pu, Am,U, dissolved Ag and Cd, total Be and Cr, flow rate |
| POE (6) | SW | SW093 | | N. Walnut Creek at end of FC-3 | Flow-paced (varies) | Pu, Am, U, dissolved Ag and Cd, total Be and Cr, flow rate |
| Present Landfill (PLF) Area (2) | | | | | | |
| RCRA (10) | GW | 70193 | | Upgradient | Quarterly | VOCs, metals |
| RCRA (10) | GW | 70393 | | Upgradient | Quarterly | VOCs, metals |
| RCRA (10) | GW | 70693 | | Upgradient | Quarterly | VOCs, metals |
| RCRA (10) | GW | 73005 | | Downgradient | Quarterly | VOCs, metals |
| RCRA (10) | GW | 73105 | | Downgradient | Quarterly | VOCs, metals |
| RCRA (10) | GW | 73205 | | Downgradient | Quarterly | VOCs, metals |
| AOC (7) | GW | 4087 | | Below East Landfill Pond | Semiannual | VOCs, U*, nitrate |
| AOC (7) | GW | B206989 | | Below East Landfill Pond | Semiannual | VOCs, U*, nitrate |
| Treatment System (11) | GW | PLFSEEPINF | | Seep influent to treatment system | Quarterly | VOCs,U*, metals, instantaneous flow rate |
| Treatment System (11) | GW | GWISINFNORTH | | North GWIS influent to treatment system | Discontinued | VOCs, U*, metals, nitrate |
| Treatment System (11) | GW | GWISINFOUTH | | South GWIS influent to treatment system | Discontinued | VOCs, U*, metals, nitrate |
| Treatment System (11) | SW | PLFSYSEFF | | Treatment system effluent | Quarterly; Monthly (if required by decision) | VOCs, SVOCs, U, metals |
| Treatment System (11) | SW | NNG01 | | East of PLFSYSEFF | As required by decision rule | As required by decision rule |
| Original Landfill (OLF) Area (3) | | | | | | |
| RCRA (10) | GW | P416589 | | Upgradient | Quarterly | VOCs, metals, SVOCs |
| RCRA (10) | GW | 80005 | | Downgradient | Quarterly | VOCs, metals, SVOCs |
| RCRA (10) | GW | 80105 | | Downgradient | Quarterly | VOCs, metals, SVOCs |
| RCRA (10) | GW | 80205 | | Downgradient | Quarterly | VOCs, metals, SVOCs |
| AOC (7) | GW | 11104 | | Downgradient, downstream | Semiannual | VOCs, U* |
| OLF SW (12) | SW | GS05 | | Woman Creek at west property line (upstream) | Quarterly; Monthly (if required by decision) | VOCs, U, metals |
| OLF SW (12) | SW | GS59 | | Woman Creek 700 feet east of OLF (downstream) | Quarterly, Monthly (if required by decision) | VOCs, U, metals |

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

Table 2 (continued). Water Monitoring Locations and Sampling Criteria

| General Objective | Classification | Media | Location ID (1) | Location Description | Frequency | Analytes (4) |
|---|-----------------------|--------------|------------------------|--|------------------|---------------------|
| Mound Site Plume and Treatment System (MSPTS) | | | | | | |
| Evaluation (9) | GW | 00897 | | Source area | Biennial | VOCs |
| Sentinel (8) | GW | 15699 | | Downgradient of intercept trench | Semiannual | VOCs |
| Treatment System (11) | GW | MOUND R1-0 | | Treatment system influent | Semiannual | VOCs |
| Treatment System (11) | GW | MOUND R2-E | | Treatment system effluent | Semiannual | VOCs |
| Treatment System (11) | SW | GS10 | | S. Walnut Creek at B-Series Bypass | Semiannual | VOCs |
| East Trenches Plume and Treatment System (ETPTS) | | | | | | |
| Evaluation (9) | GW | 3687 | | Source area | Biennial | VOCs |
| Evaluation (9) | GW | 05691 | | Source area | Biennial | VOCs |
| Evaluation (9) | GW | 03991 | | East of source area | Biennial | VOCs |
| Sentinel (8) | GW | 04091 | | East of source area | Semiannual | VOCs |
| Sentinel (8) | GW | 95299 | | Downgradient of intercept trench | Semiannual | VOCs |
| Sentinel (8) | GW | 95199 | | Downgradient of intercept trench | Semiannual | VOCs |
| Sentinel (8) | GW | 95099 | | Downgradient of intercept trench | Semiannual | VOCs |
| Sentinel (8) | GW | 23296 | | Downgradient of intercept trench | Semiannual | VOCs, U* |
| Treatment System (11) | GW | ET INFLUENT | | Treatment system influent | Semiannual | VOCs |
| Treatment System (11) | GW | ET EFFLUENT | | Treatment system effluent | Semiannual | VOCs |
| Treatment System (11) | SW | POM2 | | S. Walnut Creek downstream of treatment system | Semiannual | VOCs |
| Solar Ponds Plume and Treatment System (SPPTS) | | | | | | |
| Evaluation (9) | GW | P210189 | | VOC plume source area | Biennial | VOCs, U*, nitrate |
| Evaluation (9) | GW | 79102 | | SPP source area - north | Biennial | VOCs, U*, nitrate |
| Evaluation (9) | GW | 79202 | | SPP source area - north | Biennial | VOCs, U*, nitrate |
| Evaluation (9) | GW | P208989 | | SPP source area - north | Biennial | VOCs, U*, nitrate |
| Evaluation (9) | GW | 79302 | | SPP source area - northeast | Biennial | U*, nitrate |
| Evaluation (9) | GW | 79402 | | SPP source area - northeast | Biennial | U*, nitrate |
| Evaluation (9) | GW | 79502 | | SPP source area - east | Biennial | U*, nitrate |
| Evaluation (9) | GW | 79605 | | SPP source area - east | Biennial | U*, nitrate |
| Evaluation (9) | GW | 00203 | | SPP source area - south | Biennial | VOCs, U*, nitrate |
| Evaluation (9) | GW | 22205 | | SPP downgradient plume - north | Biennial | VOCs, U*, nitrate |
| Sentinel (8) | GW | P210089 | | SPP downgradient plume - north | Semiannual | VOCs, U*, nitrate |
| Sentinel (8) | GW | 70099 | | Northwest of system | Semiannual | U*, nitrate |
| Treatment System (11) | GW | SPIN | | Treatment system influent | Semiannual | U*, nitrate |
| Treatment System (11) | GW | SPOUT | | Treatment system effluent | Semiannual | U*, nitrate |
| Treatment System (11) | SW | GS13 | | N. Walnut Creek at A-Series Bypass | Semiannual | U*, nitrate |
| Evaluation (9) | GW | B210489 | | Downgradient of treatment system | Biennial | U*, nitrate |
| Evaluation (9) | GW | 51605 | | Downgradient, adjacent to GS13 | Biennial | U*, nitrate |

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

Table 2 (continued). Water Monitoring Locations and Sampling Criteria

| Other Areas of Interest | | | | | | |
|--------------------------------|------------------------|----|---------|---|------------|-----------------------------|
| Drainages Below Impacted Areas | AOC (7) | GW | 10594 | N. Walnut Creek downstream of GS13 | Semiannual | VOCs, U*, nitrate |
| | AOC (7) | GW | 00997 | S. Walnut Creek upstream of Pond B-5 | Semiannual | VOCs, U*, nitrate |
| | AOC (7) | GW | 00193 | Woman Creek upstream of Pond C-2 | Semiannual | VOCs, U* |
| Former Building 371/374 | Sentinel (8) | GW | 37505 | North part of former B371 area | Semiannual | VOCs, U*, nitrate |
| | Sentinel (8) | GW | 37405 | North/northeast part of former B371/374 area | Semiannual | VOCs, U*, nitrate, Pu*, Am* |
| | Sentinel (8) | GW | 37705 | East/southeast of former B371/374 area at foundation drain confluence | Semiannual | VOCs, U*, nitrate, Pu*, Am* |
| Former Building 771/774 | Sentinel (8) | GW | 20705 | North/northwest of former B771 area | Semiannual | VOCs, U*, nitrate, Pu*, Am* |
| | Sentinel (8) | GW | 20505 | North of former B771/774 area | Semiannual | VOCs, U*, Pu*, Am* |
| | Sentinel (8) | GW | 20205 | North/northeast of former B771/774 area | Semiannual | VOCs, U*, Pu*, Am* |
| Former North-Central IA | Evaluation (9) | GW | P114689 | Southwest of former B559 area | Biennial | VOCs |
| | Evaluation (9) | GW | P115589 | West part of former B551 Warehouse area | Biennial | VOCs |
| | Evaluation (9) | GW | 70705 | East part of former B707 area | Biennial | VOCs, U* |
| | Evaluation (9) | GW | 33905 | North of former 231 Tanks area | Biennial | VOCs |
| | Evaluation (9) | GW | 21505 | West of former B776/777 area | Biennial | VOCs |
| | Sentinel (8) | GW | 52505 | West of former IHSS 118.1 area | Semiannual | VOCs |
| | Evaluation (9) | GW | 20902 | Northwest of former IHSS 118.1 | Biennial | VOCs |
| | AOC (7) | GW | 42505 | Terminus of FC-2 | Semiannual | VOCs |
| Former Building 559 | Evaluation (9) | GW | 55905 | North part of former B559 area | Biennial | VOCs, U*, nitrate |
| | Evaluation (9) | GW | 56305 | West part of former B559 area | Biennial | VOCs, U*, nitrate |
| Former IHSS 118.1 | Evaluation (9) | GW | 18199 | North of former IHSS 118.1 area | Biennial | VOCs |
| | SW Performance [SW018] | SW | SW018 | Upstream of FC-2 wetland | Semiannual | VOCs |
| Former Building 444 Complex | Evaluation (9) | GW | 40005 | West part of former B444 area | Biennial | VOCs, U* |
| | Evaluation (9) | GW | 40205 | South part of former B444 end | Biennial | VOCs, U* |
| | Evaluation (9) | GW | P419689 | Southeast of former B444 area | Biennial | VOCs, U* |
| | Sentinel (8) | GW | 40305 | East part of former B444 area | Semiannual | VOCs, U* |
| | Evaluation (9) | GW | P416889 | Southeast of former B444 area | Biennial | VOCs, U* |
| | Sentinel (8) | GW | 11502 | Southeast of former B444 area | Semiannual | VOCs, U* |
| Former Building 881 | Evaluation (9) | GW | 88205 | South part of former B881 area | Biennial | VOCs, U* |
| | Sentinel (8) | GW | 88104 | South part of former B881 area | Semiannual | VOCs, U* |
| | Sentinel (8) | GW | 00797 | South of former B881 area | Semiannual | VOCs, U* |
| Former Building 886 | Evaluation (9) | GW | 22996 | East/northeast part of former B886 area | Biennial | VOCs, U* |
| Former Building 991 | Sentinel (8) | GW | 99305 | East part of former B991 area | Semiannual | VOCs, U*, nitrate |
| | Sentinel (8) | GW | 99405 | Southeast part of former B991 area | Semiannual | VOCs, U*, nitrate |
| | Sentinel (8) | GW | 91305 | South of confluence of FC-4 and FC-5 | Semiannual | VOCs, U*, nitrate |
| Former Oil Burn Pit No. 1 | Evaluation (9) | GW | 33502 | Source area | Biennial | VOCs |
| | Evaluation (9) | GW | 33604 | Source area | Biennial | VOCs |
| | Sentinel (8) | GW | 33711 | Downgradient of source area | Semiannual | VOCs |
| Former Oil Burn Pit No. 2 | Evaluation (9) | GW | 91105 | Source area | Biennial | VOCs |
| | Sentinel (8) | GW | 91203 | Downgradient of source area | Semiannual | VOCs |
| Former SW056 | Sentinel (8) | GW | 45608 | Adjacent to French drain remnants and drain interruption | Semiannual | VOCs |
| OU1 Plume | Evaluation (9) | GW | 891WEL | Source area | Biennial | VOCs |
| | AOC (7) | GW | 89104 | Downgradient at Woman Creek | Semiannual | VOCs |
| 903 Pad/Ryan's Pit Plume | Evaluation (9) | GW | 00191 | East of former 903 Pad area | Biennial | VOCs |
| | Evaluation (9) | GW | 50299 | East of former 903 Pad area | Biennial | VOCs |
| | Evaluation (9) | GW | 90402 | Southeast of former 903 Pad area | Biennial | VOCs |
| | Evaluation (9) | GW | 00491 | Southeast of former 903 Pad area | Biennial | VOCs |
| | Evaluation (9) | GW | 07391 | Ryan's Pit source area | Biennial | VOCs, U* |
| | Evaluation (9) | GW | 90804 | Southeast part of 903 Pad/Ryan's Pit Plume | Biennial | VOCs |
| | Sentinel (8) | GW | 90399 | Southeast part of 903 Pad/Ryan's Pit Plume at SID | Semiannual | VOCs |
| | Sentinel (8) | GW | 90299 | Southeast part of 903 Pad/Ryan's Pit Plume at SID | Semiannual | VOCs |
| | AOC (7) | GW | 10304 | Southeast of 903 Pad/Ryan's Pit Plume at Woman Creek | Semiannual | VOCs, U*, nitrate |
| PU&D Yard Plume | Evaluation (9) | GW | 30900 | Source area | Biennial | VOCs |
| | Sentinel (8) | GW | 30002 | Downgradient at N. Walnut Creek | Semiannual | VOCs |

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

Table 2 (continued). Water Monitoring Locations and Sampling Criteria

| General Objective | Classification | Media | Location ID (1) | Location Description | Frequency | Analytes (4) |
|---|-----------------------|--------------|------------------------|---|---|---------------------|
| Pre-discharge | | | | | | |
| Pre-discharge (13) | SW | Pond A-4 | | A-Series terminal pond on N. Walnut Creek | Prior to routine discharge | Pu, Am, U, nitrate |
| Pre-discharge (13) | SW | Pond B-5 | | B-Series terminal pond on S. Walnut Creek | Prior to routine discharge | Pu, Am, U, nitrate |
| Pre-discharge (13) | SW | Pond C-2 | | C-Series terminal pond in Woman Creek | Prior to routine discharge | Pu, Am, U |
| Notes | | | | | Acronyms and Abbreviations | |
| (1) See Figure 1 for monitoring locations. | | | | | Ag: silver | |
| (2) Laboratory analytes are limited to those listed in Appendix C of the Present Landfill Monitoring and Maintenance Plan and Post-Closure Plan. | | | | | Am: americium-241 | |
| (3) Laboratory analytes are limited to those listed in Appendix C of the Landfill Monitoring and Maintenance Plan, RFETS Original Landfill. | | | | | AOC: Area of Concern | |
| (4) Analysis and evaluation for metals and VOCs will be performed for some or all of the analytes listed in Table 1. | | | | | B (followed by numerals): Building (e.g., B371) | |
| (5) Results for POCs are evaluated using Figure 5. POCs GS01 and GS03 will be replaced by WALPOC and WOMPOC per Section 5.1. | | | | | Be: beryllium | |
| (6) Results from POEs are evaluated using Figure 6. | | | | | Cd: cadmium | |
| (7) Results from AOC and SW018 are evaluated using Figure 7. | | | | | Cr: chromium | |
| (8) Results from Sentinel wells are evaluated using Figure 8. | | | | | FC: Functional Channel (e.g., FC-2) | |
| (9) Results from Evaluation wells are evaluated using Figure 9. | | | | | GW: groundwater | |
| (10) Results from RCRA wells are evaluated using Figure 10. | | | | | IA: Industrial Area | |
| (11) Results from Treatment System locations are evaluated using Figure 11. GWISINFNORTH and GWISINFSOUTH may be used for investigative purposes. | | | | | N/A: not applicable | |
| (12) Results from OLF SW locations are evaluated using Figure 12. | | | | | OLF: Original Landfill | |
| (13) Results from Pre-discharge locations are evaluated using Figure 13. | | | | | OU1: Operable Unit 1 | |
| * Samples of groundwater collected for U, Pu and Am analysis will be filtered in the field using a 0.45 um in-line filter. | | | | | PLF: Present Landfill | |
| | | | | | POC: Point of Compliance | |
| | | | | | POE: Point of Evaluation | |
| | | | | | PU&D: Property Utilization and Disposal | |
| | | | | | Pu: plutonium-239,240 | |
| | | | | | RCRA: Resource Conservation and Recovery Act | |
| | | | | | SID: South Interceptor Ditch | |
| | | | | | SPP: Solar Ponds Plume | |
| | | | | | SVOCs: semi-volatile organic compounds | |
| | | | | | SW: surface water | |
| | | | | | U: uranium | |
| | | | | | VOCs: volatile organic compounds | |

Table 3. Present and Original Landfill Inspection and Maintenance Requirements

Present Landfill

| Requirement | Description of activity | Frequency | Documentation/Reporting | Exit strategy |
|--|--|--|---|--|
| Final cover inspection and monitoring | <ul style="list-style-type: none"> - inspect/monitor slope stability, soil cover - visually inspect surface of landfill cover for cracks, depressions, heaving, and sinkholes - monitor settlement monuments and side slope stability monuments | <ul style="list-style-type: none"> - quarterly (settlement and stability monuments annually); evaluate frequency during CERCLA periodic review - additional weather-related inspections within 2 days after storm event of one inch or more of rain in a 24-hour period or significant melt of 10-inch or more snowstorm | <ul style="list-style-type: none"> - conditions affecting effectiveness of landfill cover to be reported per note 1 below - document on inspection checklist; submit to parties within one month of inspection; include in quarterly and annual reports | Consultative process or periodic CERCLA review |
| Inspection and monitoring of stormwater management system and erosion control features | <ul style="list-style-type: none"> - Visually inspect stormwater management structures (channels/lining, culverts, and outfalls); erosion control features (perimeter channels and natural drainages); and seep treatment system | <ul style="list-style-type: none"> - monthly for first year; evaluate frequency during CERCLA periodic review - additional weather-related inspections within 2 days after a storm event of one inch or more of rain in a 24-hour period or significant melt of a 10-inch or more snowstorm | <ul style="list-style-type: none"> - conditions affecting effectiveness of landfill cover to be reported per note 1 below - document on inspection checklist; submit to parties within one month of inspection; include in quarterly and annual reports | Consultative process or periodic CERCLA review |
| GW monitoring | Included in Table 2, Figure 1, and Figure 10 | Included in Table 2, Figure 1, and Figure 10 | Included in Table 2, Figure 1, and Figure 10 | Included in Table 2, Figure 1, and Figure 10 |
| Landfill seep and downstream monitoring | Included in Table 2, Figure 1, and Figure 11 | Included in Table 2, Figure 1, and Figure 11 | Included in Table 2, Figure 1, and Figure 11 | Included in Table 2, Figure 1, and Figure 11 |
| Maintenance and repairs | Perform minor or major repairs as needed; for major damage or repairs, consult with parties and develop appropriate actions for approval by CDPHE | <ul style="list-style-type: none"> - as needed | <ul style="list-style-type: none"> - minor/routine repairs and maintenance report on inspection form - conditions affecting effectiveness of landfill cover to be reported per note 1 below | Consultative process or periodic CERCLA review |
| Institutional and physical controls | Fence around perimeter of Central OU, signs at entry points to Central OU, warning signs in accordance with 6 CCR 1007-3 Part 265.14 | | <ul style="list-style-type: none"> - failure of physical controls to be reported per note 1 below - failure of institutional controls to be per note 2 below | Consultative process or periodic CERCLA review |

Table 3 (continued). Present and Original Landfill Inspection and Maintenance Requirements

Original Landfill

| Requirement | Description of activity | Frequency | Documentation/Reporting | Exit strategy |
|--|---|---|---|--|
| Final cover inspection and monitoring | <ul style="list-style-type: none"> - inspect/monitor slope stability and soil cover - visually inspect surface of landfill cover for cracks, depressions, heaving, sinkholes; visually inspect diversion berms; measure height and gradient if indicated (employ inclinometer monitoring results and topographic surveys as described in OLF M&M Plan.) - monitor settlement monuments | <ul style="list-style-type: none"> - Monthly, until CDPHE approves Quarterly frequency; topographic survey every other year; evaluate frequency during CERCLA periodic review. - Additional weather-related monitoring within 2 days after a storm event of one inch or more or rain in a 24-hour period or significant melt of a 10-inch or more snowstorm - Quarterly until CDPHE approves annual frequency. | <ul style="list-style-type: none"> - conditions affecting effectiveness of landfill cover to be reported per note 1 below - document on inspection checklist; submit to parties within one month of inspection; include in quarterly and annual reports | Consultative process or periodic CERCLA review |
| Inspection and monitoring of stormwater management system, seeps, and erosion controls | <ul style="list-style-type: none"> - Visually inspect/monitor stormwater management structures, seeps, and erosion controls | <ul style="list-style-type: none"> - Monthly, until CDPHE approves Quarterly, Semi-annual or Annual frequency; evaluate frequency during CERCLA periodic review - Additional weather-related inspections within 2 days after a storm event of one inch or more of rain in a 24-hour period or significant melt of a 10-inch or more snowstorm | <ul style="list-style-type: none"> - conditions affecting effectiveness of landfill cover to be reported per note 1 below - document on inspection checklist; submit to parties within one month of inspection; include in quarterly and annual reports | Consultative process or periodic CERCLA review |
| GW monitoring | Included in Table 2, Figure 1, and Figure 10 | Included in Table 2, Figure 1, and Figure 10 | Included in Table 2, Figure 1, and Figure 10 | Included in Table 2, Figure 1, and Figure 10 |
| SW monitoring | Included in Table 2, Figure 1, and Figure 12 | Included in Table 2, Figure 1, and Figure 12 | Included in Table 2, Figure 1, and Figure 12 | Included in Table 2, Figure 1, and Figure 12 |
| Maintenance and repairs | <ul style="list-style-type: none"> - Perform minor or major repairs and maintenance - For major damage or repairs, consult with parties and develop appropriate actions for approval by CDPHE | <ul style="list-style-type: none"> - as needed | <ul style="list-style-type: none"> - minor/routine repairs and maintenance, report on inspection form - conditions affecting effectiveness of landfill cover to be reported per note 1 below | Consultative process or periodic CERCLA review |
| Institutional and physical controls | - inspection for evidence that institutional controls were violated or physical controls damaged | - document on inspection forms | <ul style="list-style-type: none"> - failure of physical controls to be reported per note 1 below - failure of institutional controls to be reported per note 2 below | Consultative process or periodic CERCLA review |

Table 3 (continued). Present and Original Landfill Inspection and Maintenance Requirements

Note 1: For reportable conditions as defined in RFLMA Attachment 2, Section 6.0 (except in the case of failure of institutional controls), DOE will inform CDPHE and EPA within 15 days of receiving the inspection reports or validated data. Evaluation and planning for mitigating actions, if any, will be prepared and submitted as defined in RFLMA, Attachment 2, Section 6.0.

Note 2: In case of failure of institutional controls, DOE will notify EPA and CDPHE within 2 days of discovering evidence and will perform evaluation, consultation, and actions as defined in RFLMA, Attachment 2, Section 6.0.

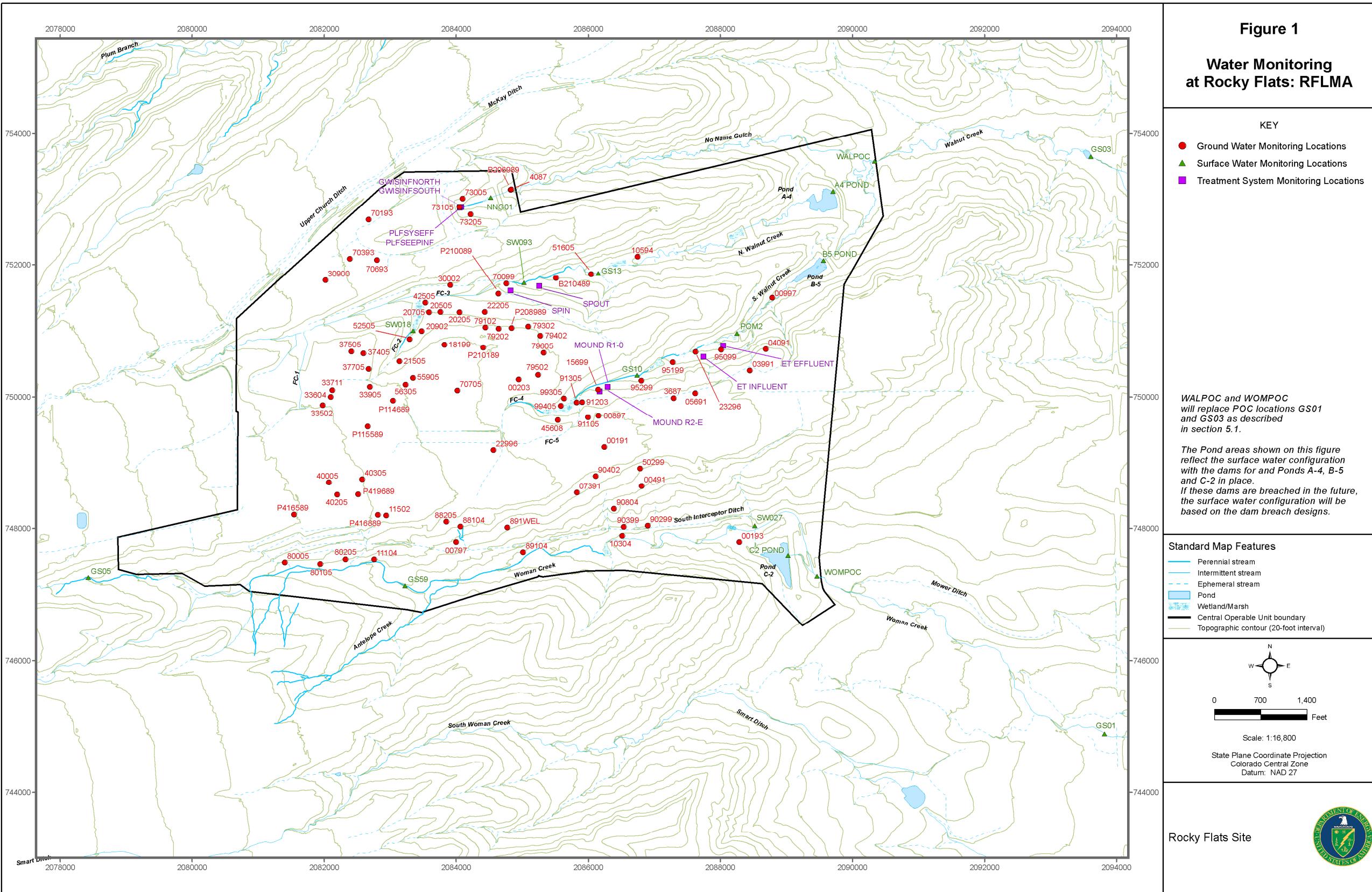
Table 4. Institutional Controls for the Central Operable Unit

| Controls | Use Restrictions |
|----------|---|
| 1 | The construction and use of buildings that will be occupied on a permanent or temporary basis (such as for residences or offices) is prohibited. The construction and use of storage sheds or other, non-occupied structures is permitted, consistent with the restrictions contained in controls 2 and 3 below, and provided such use does not impair any aspect of the response action at Rocky Flats. |
| | Objective: Prevent unacceptable exposures via the indoor air pathway. Rationale: The analysis of the indoor air pathway in the Comprehensive Risk Assessment indicated that subsurface volatile organic compounds were at levels in certain portions of the Central OU that could pose a risk of unacceptable exposure to the WRW if occupied structures were built in these areas. |
| 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, 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. |
| 3 | No grading, excavation, digging, tilling, or other disturbance of any kind of surface soils is permitted, except in accordance with an erosion control plan (including Surface Water Protection Plans submitted to EPA under the Clean Water Act) approved by CDPHE or EPA. Soil disturbance that will not restore the soil surface to preexisting grade or higher may not be performed without prior regulatory review and approval pursuant to the Soil Disturbance Review Plan in RFLMA Attachment 2. |
| | Objective: Prevent migration of residual surface soil contamination to surface water. Rationale: Certain surface soil contaminants, notably plutonium-239/240, were identified in the fate and transport evaluation in the Remedial Investigation as having complete pathways to surface water if disturbed. This restriction minimizes the possibility of such disturbance and resultant impacts to surface water. Restoring the soil surface to preexisting grade maintains the current depth to subsurface contamination or contaminated structures. |
| 4 | Surface water may not be used for drinking water or agricultural purposes. |
| | Objective: Prevent unacceptable exposure to local surface water contamination above the terminal ponds. Rationale: While the Comprehensive Risk Assessment did not evaluate the risks posed by the use of surface water for drinking or agricultural purposes, the nature and extent of contamination evaluation in the Remedial Investigation showed that certain contaminants were found at levels exceeding standards above the terminal ponds. This restriction reduces the possibility of unacceptable exposures to future users from this source. |
| 5 | The construction or operation of groundwater wells is prohibited, except for remedy-related purposes. |
| | Objective: Prevent unacceptable exposure to contaminated groundwater. Rationale: While the Comprehensive Risk Assessment did not evaluate the risks posed by the use of groundwater for drinking or agricultural purposes, the nature and extent of contamination evaluation in the Remedial Investigation identified areas in the Central OU where groundwater contaminants exceeded water quality standards or MCLs. This restriction reduces the possibility of unacceptable exposures to future users from this source. Additionally, it prevents the disruption of groundwater flow paths so as to avoid impacts on groundwater collection and treatment systems. |
| 6 | Digging, drilling, tilling, grading, excavation, construction of any sort (including construction of any structures, paths, trails or roads), and vehicular traffic are prohibited on the covers of the Present Landfill and the Original Landfill, except for authorized response actions. |
| | Objective: Ensure the continued proper functioning of the landfill covers. Rationale: This restriction helps ensure the integrity of the landfill covers. |
| 7 | Activities that may damage or impair the proper functioning of any engineered component of the response action, including but not limited to any treatment system, monitoring well, landfill cap, or surveyed benchmark, are prohibited. The preceding sentence shall not be construed to prohibit the modification, removal, replacement, or relocation of any engineered component of the response action in accordance with the action determinations in RFLMA Attachment 2. |
| | Objective: Ensure the continued proper functioning of engineered portions of the remedy. Rationale: This restriction helps ensure the integrity of other engineered components of the remedy, including monitoring and survey points. |

WRW = Wildlife Refuge Worker.

MCL = maximum contaminant level.

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT



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Figure 1. Water Monitoring at Rocky Flats

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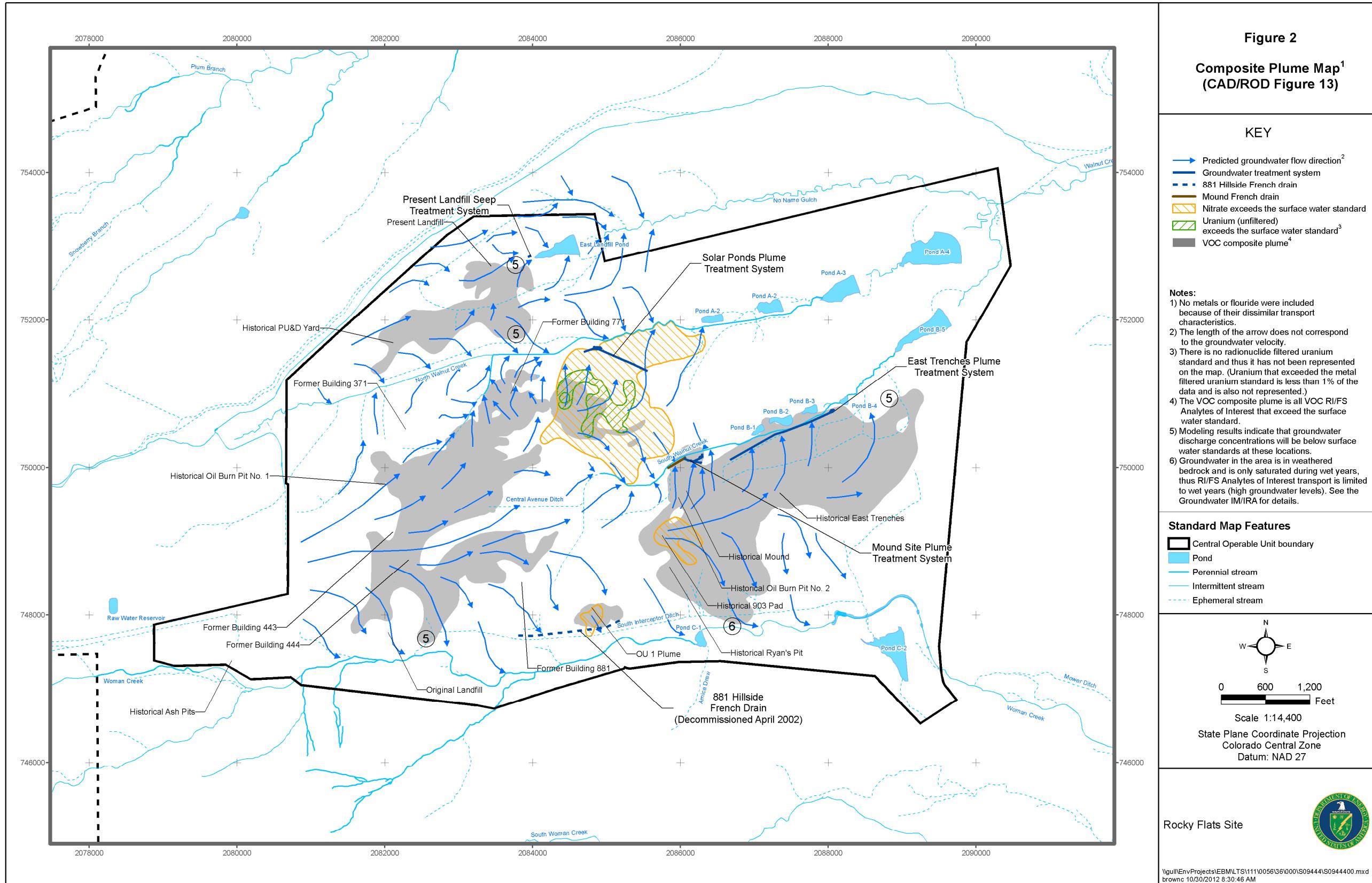
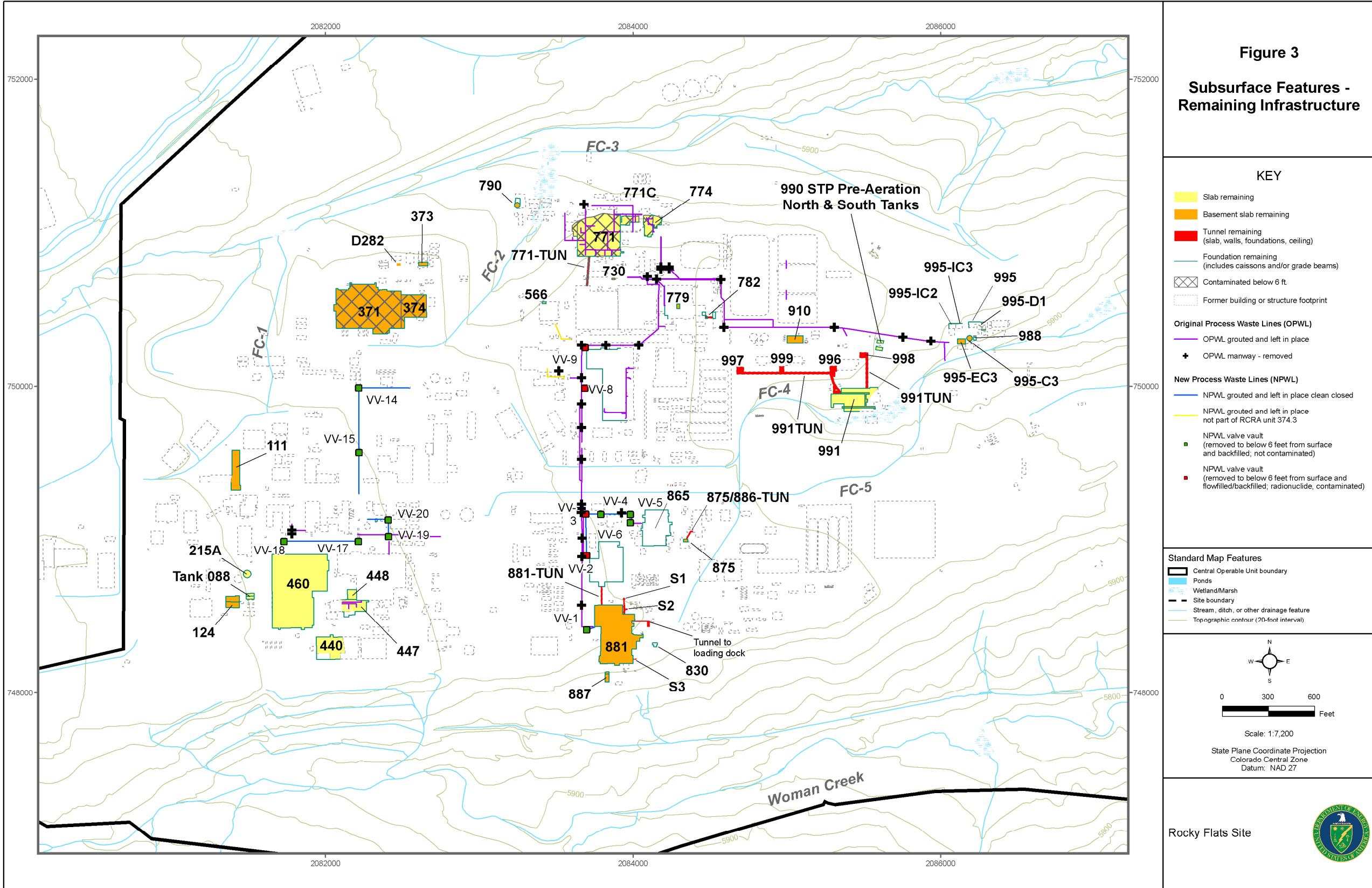


Figure 2. Composite Plume Map

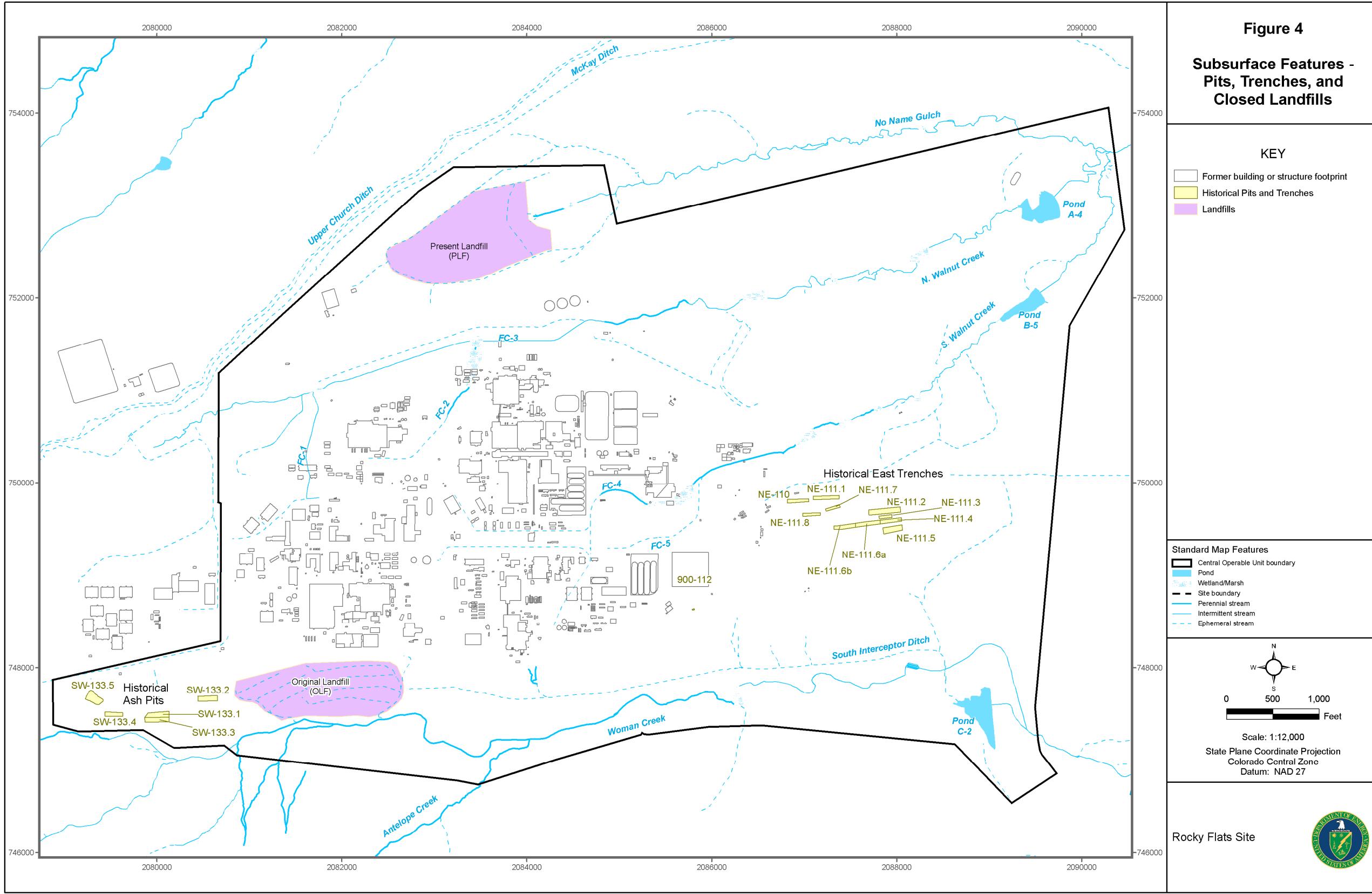
ROCKY FLATS LEGACY MANAGEMENT AGREEMENT



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Figure 3. Subsurface Features—Remaining Infrastructure

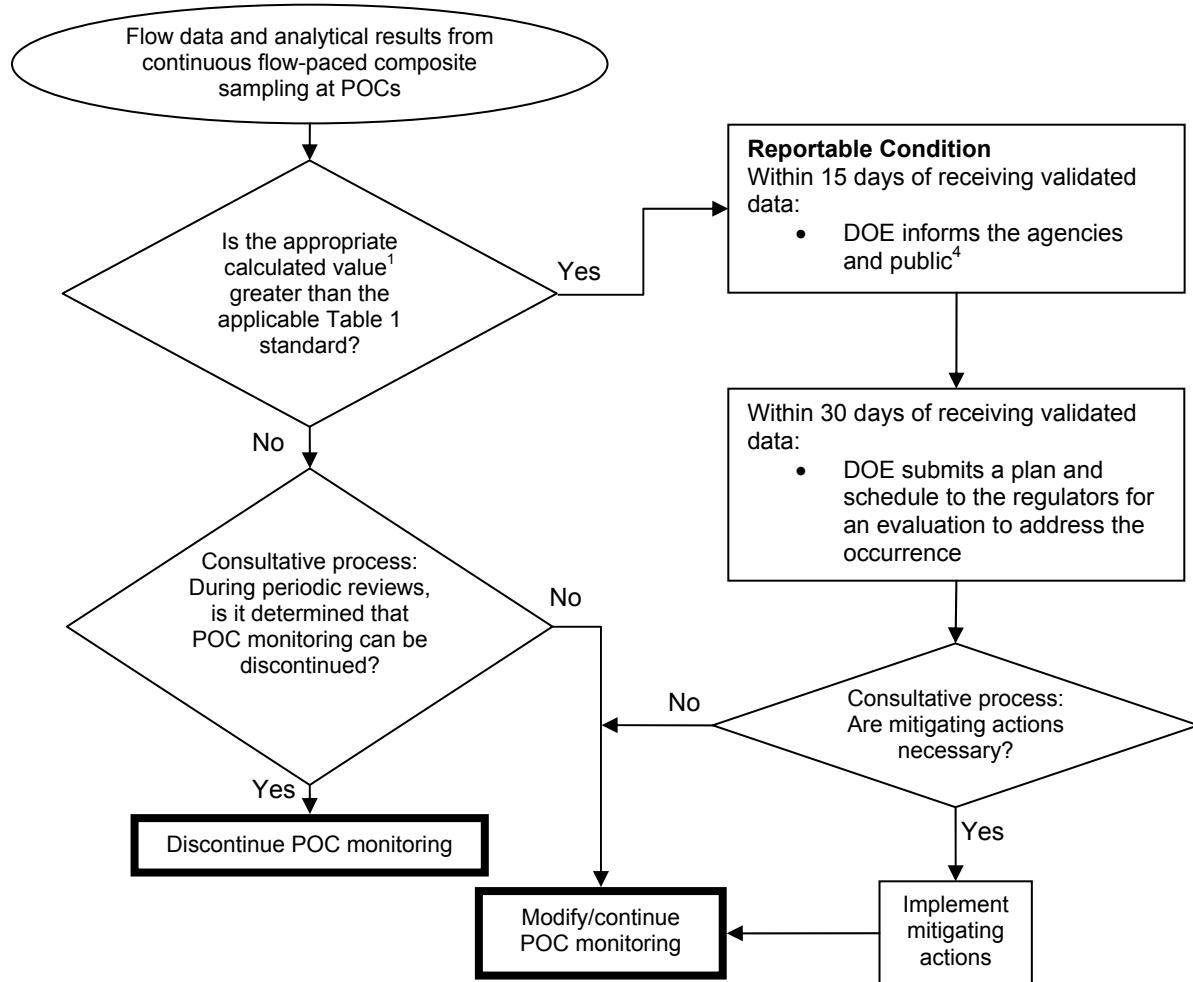
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Figure 4. Subsurface Features—Pits, Trenches, and Closed Landfills

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Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.

¹Calculated values for determining Reportable Condition and exceedances of remedy performance standards at POCs.

- Reportable conditions (according to Section 6.0):
 - plutonium, americium, uranium, nitrate → 30-day average²
- Reportable Conditions and evaluation of compliance with remedy performance standards in Table 1:
 - plutonium, americium, uranium, nitrate → 12-month rolling average³ for POCs inside COU; 30-day average for GS01 and GS03.

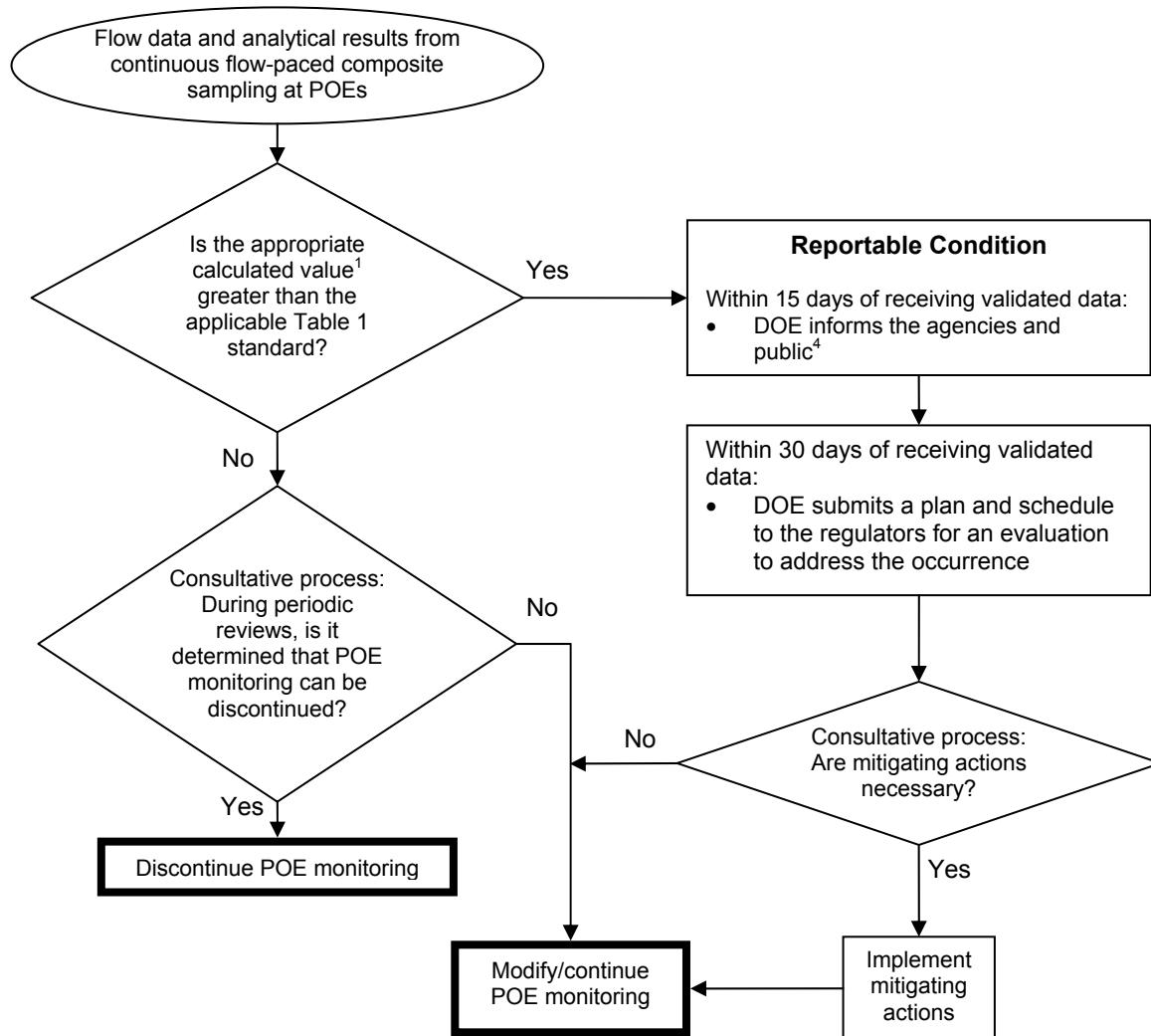
² The 30-day average for a particular day is calculated as a volume-weighted average of a “window” of time containing the previous 30 days with measurable flow. Each day has its own discharge volume (measured with a flow meter) and activity/concentration (from the sample carboy in place at the end of that day). Therefore, there are 365 30-day moving averages for a location that flows all year. At locations that have intermittent flows, 30-day averages are reported as averages of the previous 30 days of greater than zero flow. For days where no analytical result is available, either due to failed laboratory analysis or non-sufficient quantity (NSQ) for analysis, no 30-day average is reported.

³ The 12-month rolling average for the last day of a particular month is calculated as a volume-weighted average of a “window” of time containing the previous 12 months. Each 12-month “window” includes daily discharge volumes (measured with a flow meter) and daily activities/concentrations (from the sample carboy in place at the end of that day). Therefore, there are twelve 12-month rolling averages for a given calendar year. Days with no flow or no analytical result, either due to failed laboratory analysis or NSQ for analysis, are not included in the average. When no flow has occurred in the previous 12 months, no 12-month rolling average is reported.

⁴ Agencies: EPA, CDPHE, and USFWS
Public: Cities of Broomfield, Northglenn, Thornton, and Westminster; Rocky Flats Stewardship Council (RFSC)

Figure 5. Points of Compliance

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT



Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.

¹ Calculated Values by analytes (see Table 2 for reference)

- plutonium, americium, uranium → 12-month rolling average²
- dissolved Cd and Ag, total Be and Cr → 85th percentile of 30-day averages³ for previous calendar year

² The 12-month rolling average for the last day of a particular month is calculated as a volume-weighted average of a "window" of time containing the previous 12 months. Each 12-month "window" includes daily discharge volumes (measured with a flow meter) and daily activities/concentrations (from the sample carboy in place at the end of that day). Therefore, there are twelve 12-month rolling averages for a given calendar year. Days with no flow or no analytical result, either due to failed laboratory analysis or NSQ for analysis, are not included in the average. When no flow has occurred in the previous 12 months, no 12-month rolling average is reported.

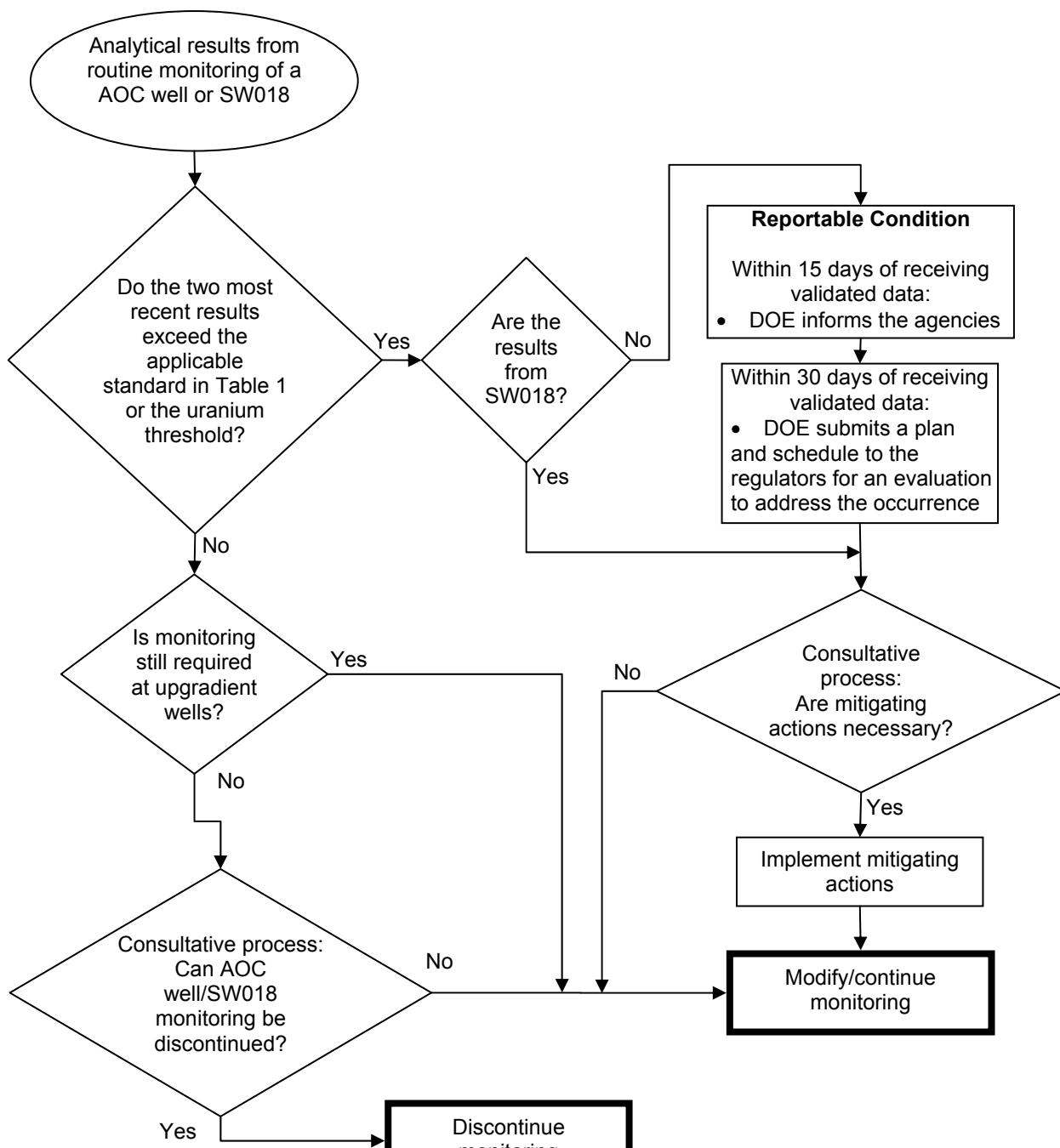
³ The 30-day average for a particular day is calculated as a volume-weighted average of a "window" of time containing the previous 30 days with measurable flow. Each day has its own discharge volume (measured with a flow meter) and activity/concentration (from the sample carboy in place at the end of that day). Therefore, there are 365 30 day moving averages for a location that flows all year. At locations that have intermittent flows, 30-day averages are reported as averages of the previous 30 days of greater than zero flow. For days where no analytical result is available, either due to failed laboratory analysis or NSQ for analysis, no 30-day average is reported.

⁴ Agencies: EPA, CDPHE, and USFWS

Public: Cities of Broomfield, Northglenn, Thornton, and Westminster; Rocky Flats Stewardship Council (RFSC)

Figure 6. Points of Evaluation

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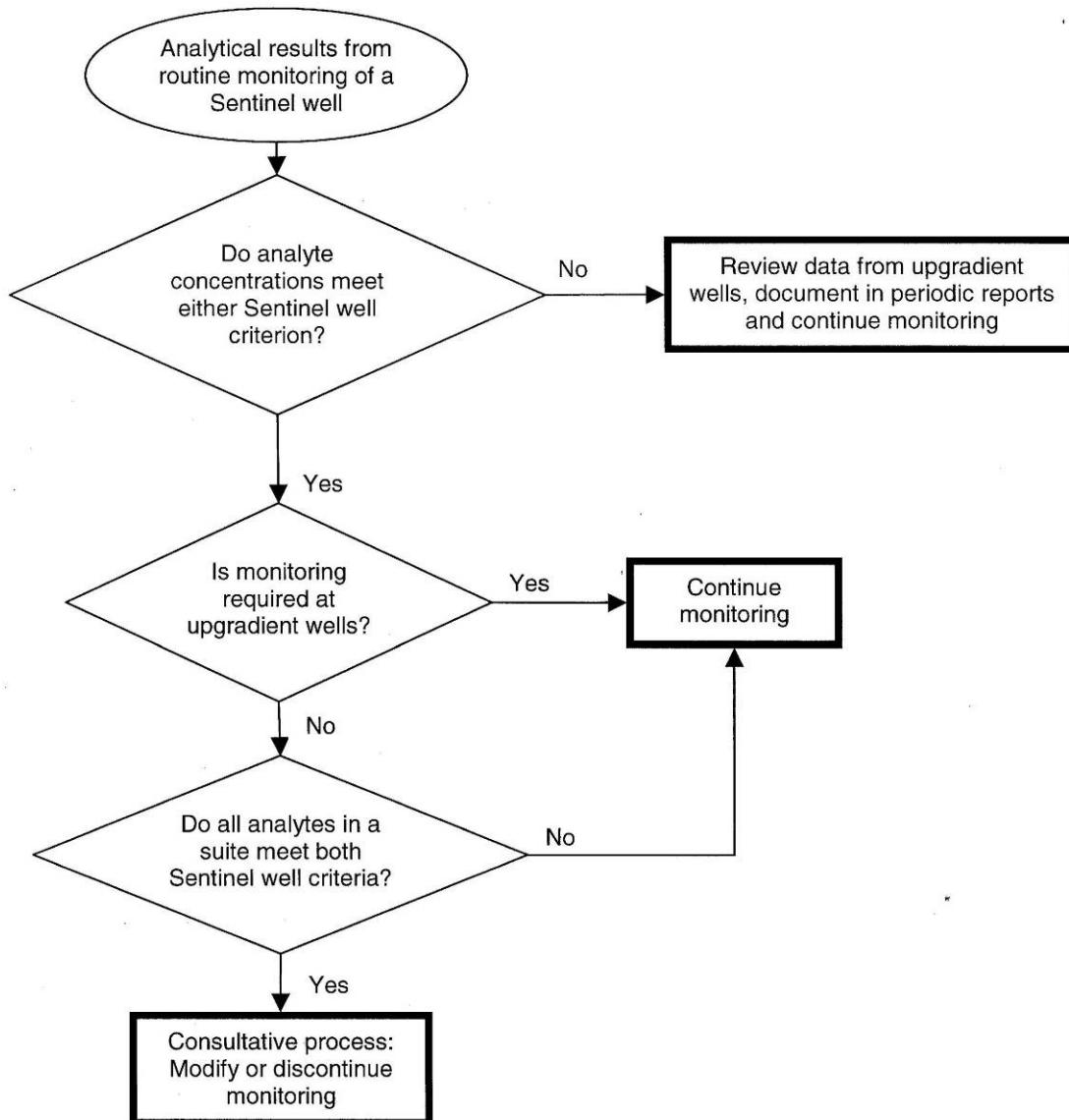


Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.

- AOC wells and location SW018 are sampled twice each year; see Table 2.
- Decisions related to uranium in groundwater are based upon a 120 ug/L threshold for AOC wells (basis: a grand mean of results from Site-wide high-resolution uranium analyses performed in the late 1990s through mid-2000s), rather than the standard in Table 1.

Figure 7. Area of Concern Wells and SW018

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT



Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.

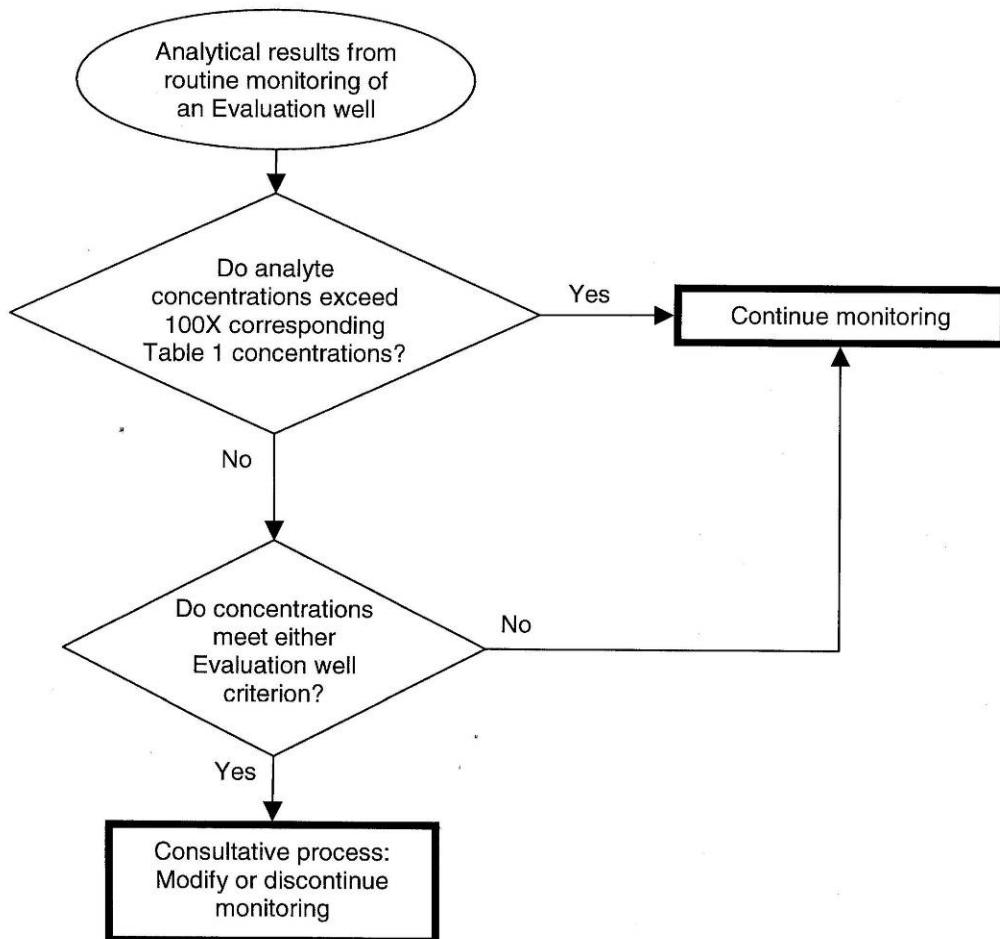
- Sentinel wells are sampled twice each year; see Table 2.
- Decisions related to uranium are based upon a 120 ug/L threshold for AOC wells (basis: a grand mean of results from Site-wide high-resolution uranium analyses performed in the late 1990s through mid-2000s), rather than the standard in Table 1.

Sentinel Well Criteria

1. The 85th percentile concentration of an analyte is *less than or equal to* the corresponding concentration in Table 1 or, for uranium, the 85th percentile concentration does not exceed 2x120 ug/L or the highest calendar year 2005 concentration, whichever is higher.
2. Analyte concentrations exhibit an indeterminate or statistically-significant *decreasing* trend at the 95% confidence level.

Figure 8. Sentinel Wells

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Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.

- Evaluation wells are listed in Table 2.

Evaluation Well Criteria:

1. The 85th percentile concentration of an analyte is *less than or equal to* the corresponding concentration in Table 1, or, for uranium, 240 ug/L or highest pre-CY05 concentration, whichever is higher.
2. Analyte concentrations exhibit an indeterminate or statistically-significant *decreasing* trend at the 95% confidence level.

Figure 9. Evaluation Wells

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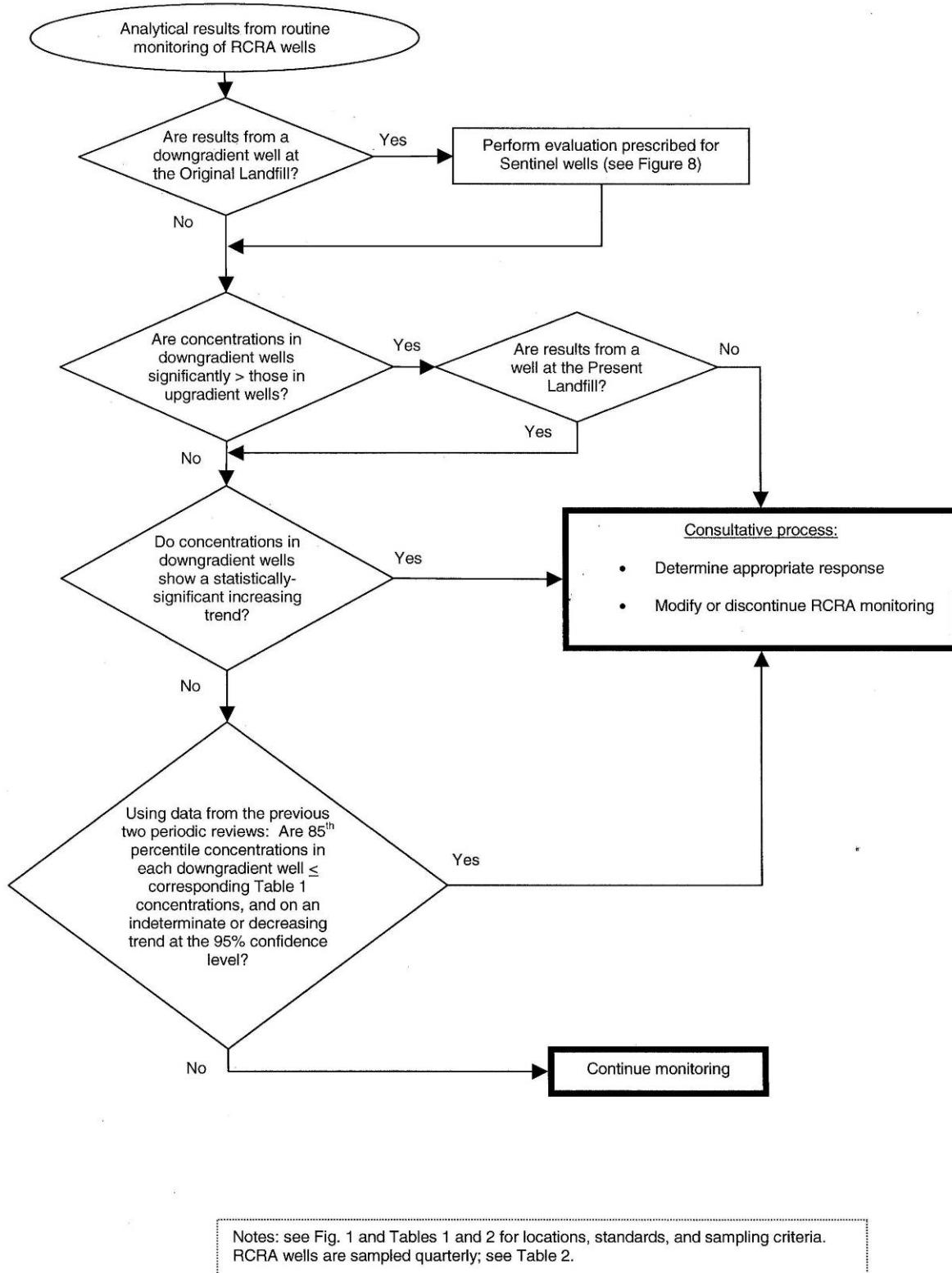


Figure 10. RCRA Wells

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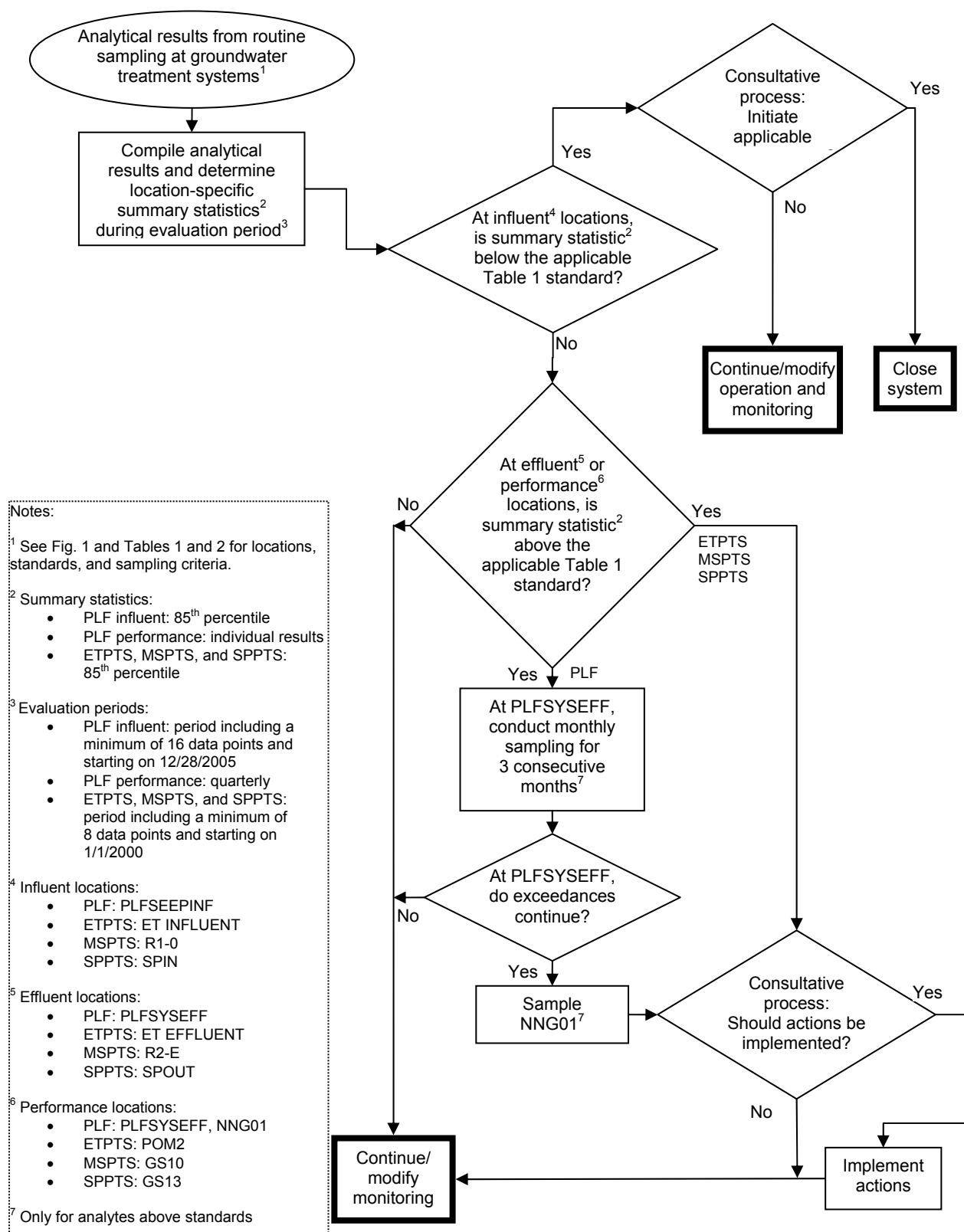


Figure 11. Groundwater Treatment Systems

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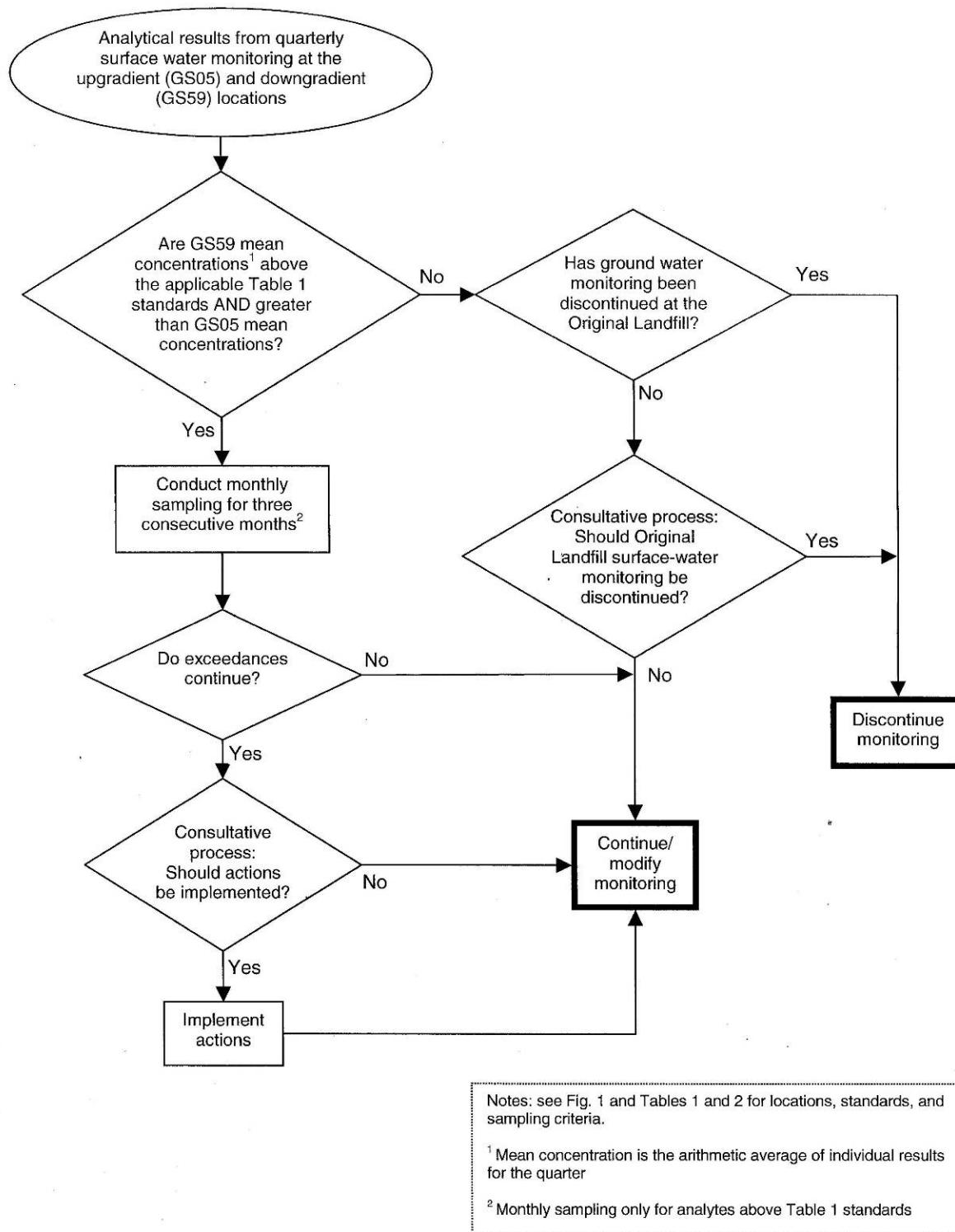


Figure 12. Original Landfill Surface Water

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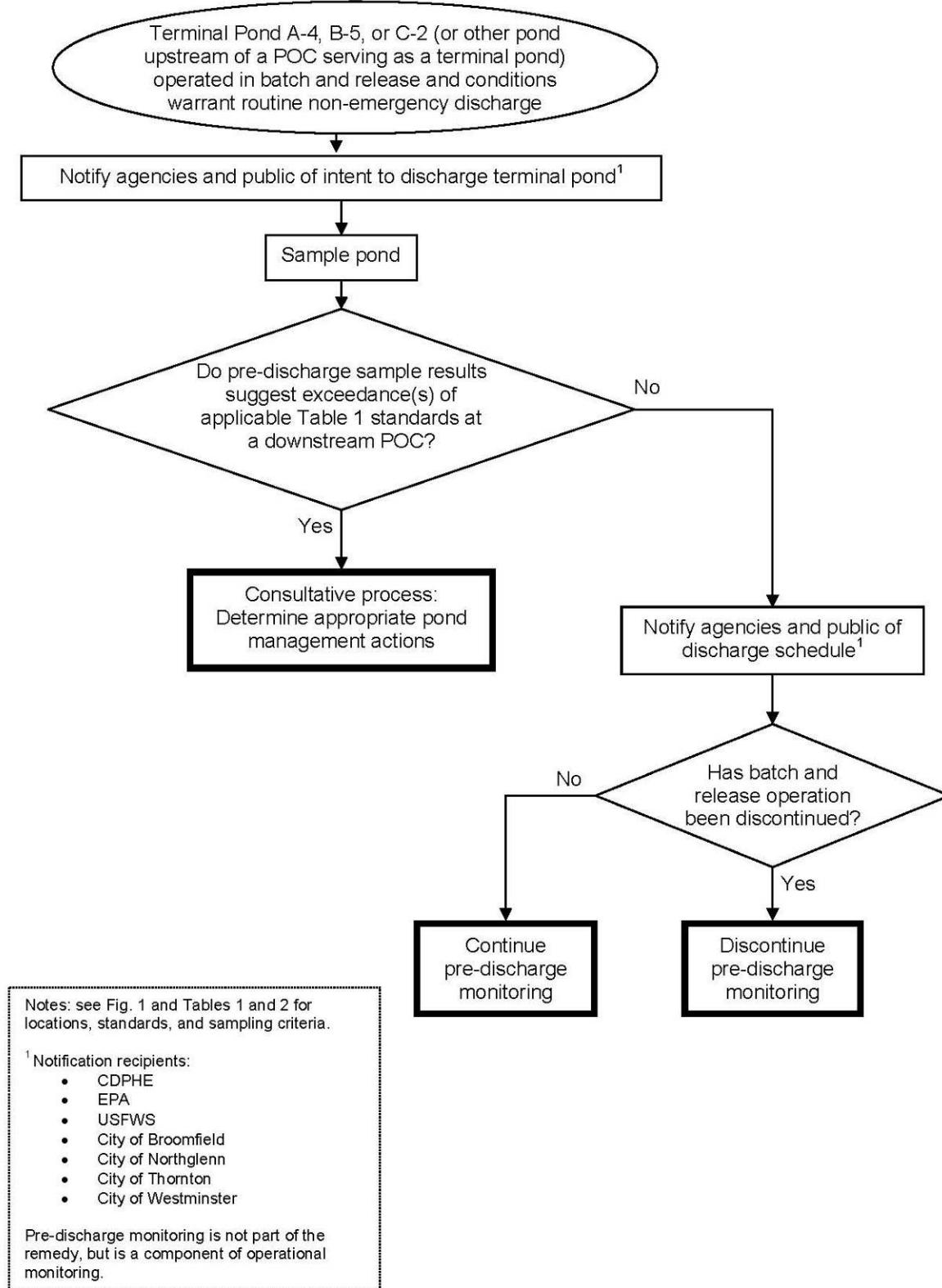


Figure 13. Pre-discharge Pond Sampling

Appendix 1

State/EPA Memorandum of Understanding

**ROCKY FLATS LEGACY MANAGEMENT AGREEMENT
APPENDIX 1:**

**MEMORANDUM OF UNDERSTANDING BETWEEN
THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
AND
THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY - REGION 8
FOR
ROCKY FLATS**

1 INTRODUCTION

1.1 Parties to the Agreement

This Memorandum of Understanding (MOU) is entered into by the United States Environmental Protection Agency, Region 8 (EPA), and the Colorado Department of Public Health and Environment (CDPHE). EPA and CDPHE are referred to jointly as the Parties.

- 1.2 The purpose of this MOU is to define the roles of the Parties with respect to oversight of post-cleanup activities at Rocky Flats pursuant to the Rocky Flats Legacy Management Agreement (RFLMA). The RFLMA is a joint Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) § 120 Interagency Agreement and Colorado Hazardous Waste Act ("CHWA")/ Resource Conservation and Recovery Act ("RCRA") corrective action order. The RFLMA establishes the regulatory framework for implementing the final response action at Rocky Flats and ensuring that the final response action remains protective of human health and the environment.

2 DUTIES AND RESPONSIBILITIES

- 2.1 CDPHE has the overall lead regulatory responsibility at Rocky Flats in accordance with the RFLMA among CDPHE, EPA and the Department of Energy (DOE). EPA will operate in a support role to CDPHE throughout the implementation of the RFLMA, except for five-year reviews and delisting decisions (see Section 2.6 below). It is the intent of the Parties to foster, to the maximum extent practicable, an EPA/CDPHE partnership.
- 2.2 The Parties agree to follow a consultative process in implementing this 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. Consultation involves a cooperative approach to problem solving at the staff level. Consultation includes the responsibility to raise any concerns or suggestions regarding the implementation of this Agreement as soon as the concern or suggestion is identified, to maximize the chances of reaching agreement before a document must be submitted or a regulatory determination rendered.
- 2.3 EPA and CDPHE agree that the assigned project managers will consult and coordinate regarding oversight of the implementation of the RFLMA. The project managers shall maintain frequent contact through verbal and/or written communication. A Party which changes its project manager shall notify the other Party in writing in a timely manner of the change.

- 2.4 EPA will forward comments on work plans, reports, or documents within two weeks of their receipt from the facility. CDPHE will compile a consistent set of comments and attempt to resolve any of EPA's comments that are inconsistent with CDPHE's comments within two weeks of receiving them.
- 2.5 CDPHE will inform EPA of upcoming site visits, inspections, meetings, or other events and of notifications and documents CDPHE receives as lead regulatory authority.
- 2.6 EPA shall consult with CDPHE regarding five-year reviews and delisting determinations. CDPHE may prepare recommendations for EPA's consideration. CDPHE and EPA shall consult regarding the recommended decision prior to issuance of a final decision.
- 2.7 The Parties shall consult regarding any matter subject to dispute resolution under the RFLMA.
- 2.8 This MOU only addresses the relationship of the Parties with regard to Rocky Flats. This MOU creates no rights or causes of action for anyone not a party to it.

3 COMMUNITY RELATIONS

- 3.1 The Parties will coordinate community relations activities, including the issuance of fact sheets, press releases, community interviews, and the conduct of press conferences. The Parties will:
 - 3.1.1 Notify the other party in advance that a press conference is being conducted, or a major fact sheet or press release is being drafted for any Rocky Flats activity. Notification will include proposed conference date or press release date, content, and key points of contact.
 - 3.1.2 Transmit draft press releases to the other party. Except in the case of an emergency, a 24-hour comment period will be provided.
 - 3.1.3 Notify the other party of final press release issuance and, whenever practicable, transmit a copy of the final press release prior to release to the media.

4 ENFORCEMENT

The Parties agree that enforcement action for violations of the RFLMA that are CHWA violations will be the responsibility of CDPHE under state authorities. CDPHE shall advise EPA of any matter that it believes may constitute a violation of CERCLA, and shall consult with EPA regarding a course of action. This MOU does not limit the enforcement authority of EPA or CDPHE. By entering into this MOU, neither EPA nor

CDPHE waive any right, authority, or claim it may have under Federal or State law, but expressly reserve all of the rights, authorities, and claims it may have thereunder, except that EPA agrees to exhaust any applicable remedies pursuant to the Dispute Resolution process, prior to exercising any reserved rights for disputes.

5 DISPUTE RESOLUTION

The parties will resolve any disputes through the dispute resolution provisions in Part 7 of the RFLMA.

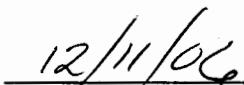
6 MODIFICATION/TERMINATION

This MOU may be modified in writing, with mutual consent of the Parties. This MOU can be terminated by mutual consent of the Parties.

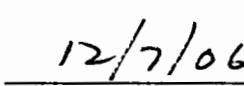
7 SIGNATURES



Gary W. Baughman, Division Director
Hazardous Materials and Waste Management Division
Colorado Department of Public Health and Environment


12/11/06

Date


Max H. Dodson
12/7/06

Date

Max H. Dodson
Assistant Regional Administrator
Ecosystem Protection and Remediation
U.S. Environmental Protection Agency, Region 8

Appendix 2

Public Involvement Plan



Rocky Flats Site, Colorado, Legacy Management Public Involvement Plan

May 2011



**U.S. DEPARTMENT OF
ENERGY**

Legacy
Management

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**Rocky Flats Site, Colorado,
Legacy Management Public Involvement Plan**

May 2011

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| Figure 1. Rocky Flats Site Location Map | 3 |
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Appendix

Appendix A Information Contacts

Abbreviations

| | |
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| CAD | Corrective Action Decision |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| DOE | U.S. Department of Energy |
| EPA | U.S. Environmental Protection Agency |
| GEMS | Geospatial Environmental Mapping System |
| LM | Office of Legacy Management |
| RFCA | Rocky Flats Cleanup Agreement |
| RFLMA | Rocky Flats Legacy Management Agreement |
| RFSC | Rocky Flats Stewardship Council (Local Stakeholder Organization) |
| ROD | Record of Decision |

1.0 Introduction

The Rocky Flats Site (Rocky Flats) is managed by the U.S. Department of Energy (DOE) Office of Legacy Management (LM). The LM mission is to effectively and efficiently manage the environmental and human legacy issues related to the U.S. Government's Cold War nuclear weapons program for current and future generations.

This Legacy Management Public Involvement Plan follows DOE and U.S. Environmental Protection Agency (EPA) guidance on public participation and outlines the methods of public involvement and communication used to inform the public of site conditions and activities. Additional communications or notifications to stakeholders not specified in this plan may be addressed in other documents. This plan will be updated as appropriate to address public involvement activities.

2.0 Site Description and Background

The Rocky Flats Plant was established in 1951 to produce plutonium and uranium components used in nuclear weapons. From 1953 until 1992, the mission of the Rocky Flats Plant was the production of nuclear weapons components.

Nuclear weapons production continued at Rocky Flats until 1989. Rocky Flats officially became a closure site in 1992 following the collapse of the former Soviet Union. The final mission of the Rocky Flats Closure Project was the safe cleanup and closure of the entire former nuclear weapons production site in compliance with the Rocky Flats Cleanup Agreement (RFCA).

The site consisted of approximately 6,200 acres in northern Jefferson County, Colorado, approximately 16 miles northwest of Denver and near or adjacent to the communities of Boulder, Broomfield, Westminster, Arvada, Superior, and Golden. It is situated on a plateau at the eastern edge of the Front Range of the Rocky Mountains at an elevation of about 6,000 feet.

The site was divided into three geographic areas, each fenced and protected by security forces. The Industrial Area, consisting of 384 acres, was located in the center of the property. There were more than 800 structures in the industrial area that included approximately 150 permanent buildings and 90 trailers, plus temporary structures, sheds, tanks, and annexes to larger buildings. The Protected Area was located within the northern portion of the industrial area and contained a complex of plutonium production facilities. This area was heavily fenced and guarded. The Buffer Zone, the remaining 5,800 acres, surrounded and protected the industrial area from potential encroachment.

Cleanup and closure was completed in October 2005, at a total cost of approximately \$7 billion. DOE retains approximately 1,300 acres in the Central Operable Unit, which includes the former industrial area, for long-term legacy management. The bulk of the former Buffer Zone, approximately 4,000 acres, transitioned to a National Wildlife Refuge under the auspices of the U.S. Fish and Wildlife Service in July 2007.

3.0 Regulatory Framework

Because environmental investigations indicated that operations at Rocky Flats resulted in the release of materials defined as hazardous substances, contaminants, and pollutants by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as well as hazardous wastes and waste constituents as defined by the Resource Conservation and Recovery Act (RCRA) and the Colorado Hazardous Waste Act (CHWA), Rocky Flats was listed on EPA's National Priorities List in 1989.

The RFCA, signed in 1996, provided the environmental regulatory framework for the cleanup and closure of Rocky Flats. RFCA was negotiated among DOE, EPA, and the State of Colorado. RFCA initiated the Remedial Investigation/Feasibility Study, a comprehensive environmental investigation conducted at Rocky Flats to identify the nature and extent of contamination and to determine the best cleanup solutions. The Corrective Action Decision/Record of Decision (CAD/ROD) determined the final action or remedy for the site.

The *Rocky Flats Legacy Management Agreement* (RFLMA), signed in 2007, provides the regulatory framework to implement the terms of the CAD/ROD. The parties to RFLMA are DOE and the regulatory authorities, the State of Colorado (Department of Public Health and Environment) and EPA. RFLMA provides that DOE shall maintain and implement the Legacy Management Public Involvement Plan in a manner that complies with the National Environmental Policy Act, CERCLA, RCRA, and CHWA.

A periodic review of the remedy is required by CERCLA. This review will take place at least every 5 years and will determine whether the remedy at Rocky Flats remains protective of human health and the environment or if DOE needs to take additional actions. Reviews were completed in 2002 and 2007 and the next review will be conducted in 2012. Completed reviews are available on the LM website.

4.0 Community Profile

Rocky Flats is located in the highly populated Denver Metropolitan area, which has an estimated population of 3 million residents within a 50-mile radius of the site. Figure 1 shows a location map of the site and vicinity.

The site was a self-contained concentration of industrial buildings surrounded by ranch land, preserved open space, mining areas, and a low-density residential area. However, mixed residential and commercial developments have been constructed or are planned for future construction close to the site. Along the Front Range, Jefferson and Boulder Counties have been taking steps to add to their open space purchases as well.

Recreational activities in the surrounding area include hiking, biking, boating, and fishing. The Boulder open space area also has horseback riding trails just northwest of the site.

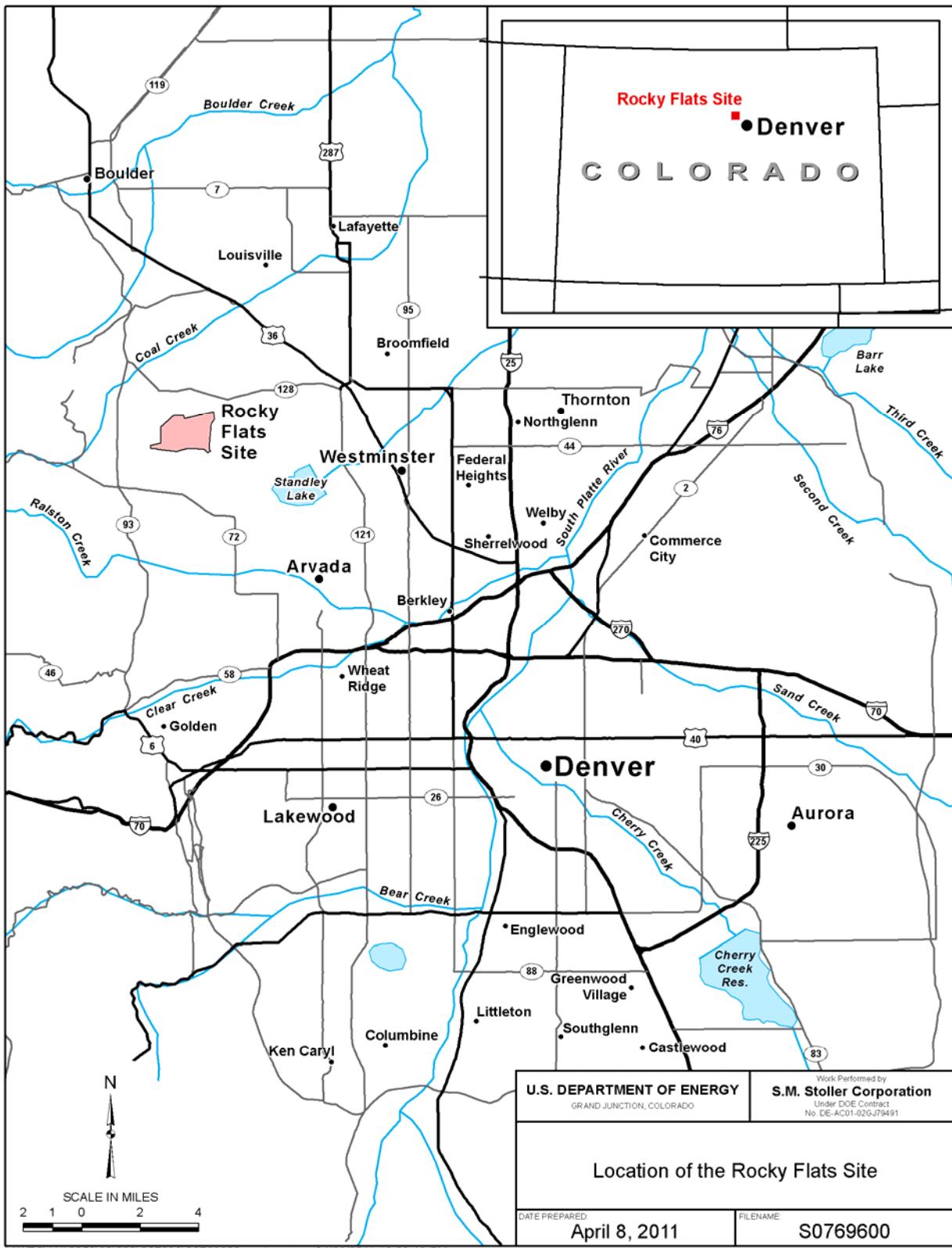


Figure 1. Rocky Flats Site Location Map

5.0 Stakeholders

DOE recognizes that stakeholders may be any individuals, groups, host communities, and other entities in the public and private sectors that are interested in or affected by any of DOE's activities and decisions. At Rocky Flats, stakeholders include, but are not limited to:

- Residents of Boulder County, City and County of Broomfield, Jefferson County, City of Arvada, City of Boulder, City of Golden, City of Northglenn, Town of Superior, and City of Westminster.
- Local governments.
- State agencies.
- Elected State of Colorado officials.
- Federal agencies.
- Congressional delegations.
- Local media.
- Local educational institutions.
- Environmental organizations.
- Business owners.
- Service organizations.
- Retired Rocky Flats workers.
- Other interested individuals.

6.0 Roles and Responsibilities

The LM mission is to fulfill DOE's post-closure responsibilities at former nuclear sites and ensure the future protection of human health and the environment. The primary goals of the office are to:

- Protect human health and the environment.
- Preserve, protect, and share records and information.
- Meet commitments to the contractor workforce.
- Optimize the use of land and assets.
- Sustain management excellence.

At Rocky Flats, LM is responsible for the management of land retained by DOE and for compliance with the long-term requirements outlined in the RFLMA. Legacy management refers to all activities necessary to ensure protection of human health and the environment in perpetuity following completion of cleanup, disposal, or stabilization at a site or portion of a site. These activities include maintaining all engineered and institutional controls designed to contain or to prevent exposure to residual contamination and waste; recordkeeping activities; inspections to evaluate the condition of surface features; groundwater and surface water monitoring;

maintenance of other barriers and contained structures; access control; emergency response; and posting signs.

7.0 Public Participation

Public participation activities are conducted to actively inform the public about Rocky Flats activities and the preparation of documents to provide opportunities for open, ongoing, two-way communication. LM will actively seek, consider, and in a timely manner respond to the views of its stakeholders, ensuring that they have an opportunity to provide input to LM's decision-making process.

The primary methods of providing information to the public are the LM public website and electronic communications. Engaged stakeholders, defined as those members of the public who have indicated their interest in receiving LM communications and have provided LM with an e-mail address, will be notified by e-mail of availability of LM documents, scheduled meetings, postings to the LM website, and other information of interest to the public.

When site conditions warrant entering the consultative process with the regulatory authorities as described in the RFLMA, LM will initiate a contact record of discussions between LM and the regulatory agencies. Contact records will be made available to the public on the LM website as early in the process as is practicable following signature approval by the parties. Engaged stakeholders will be notified of contact record postings by e-mail. Additional dialogue with the public will also be established as warranted by the nature of the conditions or by the level of interest.

The Rocky Flats Stewardship Council (RFSC) is a Local Stakeholders Organization that was legislated by Congress in 2005 and established by LM in 2006 to support and enhance two-way communication between LM and the public. LM may, at its discretion, utilize the RFSC to host public meetings, distribute LM communications, solicit public input, and otherwise provide an additional forum for public communication.

The following are general descriptions of LM's public participation activities.

7.1 Public Meetings

LM will conduct periodic public meetings to discuss implementation of the remedy and other site activities. These meetings will provide information about activities being conducted at the site and will present the results of site inspections, monitoring, and maintenance. The RFSC currently supports LM public communication by hosting meetings on a quarterly basis where LM reports on monitoring and maintenance activities.

Additional public meetings may be conducted as warranted. LM will post notification of such public meetings on the LM website and distribute electronic notification to engaged stakeholders and the local media. LM may also utilize paid advertising in local media to publicize public meetings of broad community interest.

LM also welcomes direct communication concerning Rocky Flats at any time. Stakeholders may contact the LM site manager or Rocky Flats Public Affairs representative (contact information is in Appendix A). Direct communication may include technical discussions and briefings as requested. Attendance at such technical discussions and briefings is not restricted, and they are open to any interested stakeholder.

7.2 Internet Website

LM will maintain a webpage at http://www.lm.doe.gov/land/sites/co/rocky_flats/rocky.htm for Rocky Flats and will post site documents and make available online key documents associated with the remedy. DOE will notify engaged stakeholders by e-mail of document availability when posted.

LM designed the Geospatial Environmental Mapping System (GEMS) to provide dynamic mapping and environmental monitoring data display for LM sites. Stakeholders can use GEMS to view a map of a site, photographs, and water-quality and water-level data. Water-quality and water-level data are available in table and graph formats. A GEMS site for Rocky Flats is accessible through a link on the LM Rocky Flats webpage.

7.3 Administrative Record

In accordance with Title 40 *Code of Federal Regulations* Part 300.810 and the RFCA, DOE established and maintains an Administrative Record for Rocky Flats. The Administrative Record includes the documents that formed the basis for the selection of the final action, or remedy, such as guidance documents, evaluations, and data; notices of public comment periods; public comments; decision documents; and enforcement orders. LM also established and maintains a post-closure Administrative Record file to document ongoing remedy related decisions and activities under RFLMA.

An electronic, digitized copy of the Administrative Record is available on the LM Rocky Flats website. Copies of documents in the Administrative Record may also be obtained by accessing a link on the Administrative Record webpage or contacting the Rocky Flats Public Affairs representative (contact information located in Appendix A).

7.4 Documents for Public Review and Comment

LM will provide opportunities for stakeholders to review and comment on documents as required by RFLMA and as appropriate for those activities not regulated by RFLMA. These documents will be posted on the LM Rocky Flats website and collected and maintained in a site file or appropriate Administrative Record. The RFLMA explains how DOE will fulfill its operation, monitoring, and maintenance obligation at the site. An Annual Report and three quarterly reports addressing site monitoring and maintenance activities at Rocky Flats will be posted on the LM website. Engaged stakeholders will be notified of document availability by e-mail distribution.

7.5 News Releases and Community Advisories

LM will issue news releases or community advisories regarding LM documents or significant monitoring and maintenance activities. These news releases or advisories will be distributed to news media and other engaged stakeholders and will be posted on the LM website.

7.6 Publications

LM will prepare fact sheets and other informational documents as needed to describe LM monitoring and maintenance activities. These documents will be posted on the LM Rocky Flats webpage.

7.7 Speakers Bureau

The LM representative or designee will give presentations on Rocky Flats as requested.

7.8 Contact Database

LM maintains a contact database of stakeholders associated with LM sites.

7.9 Site Tours

LM will conduct stakeholder and media tours of the Central Operable Unit on a limited basis.

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Appendix A

Information Contacts

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| <i>DOE Office of Legacy Management</i> | |
|---|---|
| Scott Surovchak Rocky Flats Site Manager U.S. Department of Energy Office of Legacy Management 11025 Dover St., Suite 1000 Westminster, CO 80021 (720) 377-9682 E-mail: scott.surovchak@lm.doe.gov | Bob Darr Rocky Flats Public Affairs S.M. Stoller Corporation 11025 Dover St., Suite 1000 Westminster, CO 80021 (720) 377-9672 E-mail: bob.darr@lm.doe.gov |
| <i>Colorado Department of Public Health and Environment</i> | |
| Carl Spreng Rocky Flats Project Manager Colorado Department of Public Health & Environment 4300 Cherry Creek Drive South Denver, CO 80246-1530 (303) 692-3358 E-mail: carl.spreng@state.co.us | Marilyn Null Community Involvement Specialist Colorado Department of Public Health & Environment 4300 Cherry Creek Drive South Denver, CO 80246-1530 (303) 692-3304 E-mail: mknnull@cdphe.state.co.us |
| <i>U.S. Environmental Protection Agency</i> | |
| Vera Moritz Rocky Flats Coordinator U.S. Environmental Protection Agency Region 8OC 1595 Wynkoop Street Denver, CO 80202-1129 (303) 312-6981 E-mail: moritz.vera@epa.gov | John Dalton Community Involvement Coordinator U.S. Environmental Protection Agency Region 8OC 1595 Wynkoop Street Denver, CO 80202-1129 (303) 312-6633 1-800-227-8917, ex. 6633 E-mail dalton.john@epa.gov |
| <i>U.S. Fish and Wildlife Service</i> | |
| Steve Berendzen Refuge Manager U.S. Fish and Wildlife Service Rocky Mountain Arsenal, Building 111 Commerce City, CO 80022 (303) 289-0350 E-mail: steve_berendzen@fws.gov | Bruce Hastings Deputy Project Leader U.S. Fish and Wildlife Service Rocky Mountain Arsenal, Building 121 Commerce City, CO 80022 (303) 289-0533 E-mail: bruce_hastings@fws.gov |
| <i>Rocky Flats Stewardship Council</i> | |
| David Abelson Executive Director Rocky Flats Stewardship Council P.O. Box 17670 Boulder, CO 80308-0670 (303) 412-1200 E-mail: dabelson@rockyflatssc.org Website: www.rockyflatssc.org | |

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Appendix 3

List of Addresses

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

Appendix 3 List of Addresses

DOE Office of Legacy Management

U.S. Department of Energy
Office of Legacy Management
11025 Dover St., Suite 1000
Westminster, CO 80021

U.S. Environmental Protection Agency

U.S. Environmental Protection Agency
Region 8
1595 Wynkoop
Denver, CO 80202-1129

Colorado Department of Public Health & Environment

Colorado Department of Public Health & Environment
4300 Cherry Creek Drive South
Denver, CO 80246-1530