

**DRAFT ENVIRONMENTAL RESTORATION
RFCA STANDARD OPERATING PROTOCOL
FOR ROUTINE SOIL REMEDIATION
FY03 NOTIFICATION #03-03
IHSS 111.1, TRENCH 4**

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ACRONYMS

AL	Action Level
AOC	area of concern
BZ	Buffer Zone
BZ SAP	Buffer Zone Sampling and Analysis Plan
COC	contaminant of concern
DOE	Department of Energy
ER	Environmental Restoration
ER RSOP	Environmental Restoration RSOP for Routine Soil Remediation
ft.	feet
FY	Fiscal Year
IA	Industrial Area
IHSS	Individual Hazardous Substance Site
IMP	Integrated Monitoring Program
PCOC	potential contaminant of concern
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RSOP	RFCA Standard Operating Protocol
VOC	volatile organic compound

1.0 INTRODUCTION

This Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2002a) Fiscal Year (FY) 03 Notification includes the notification to remediate an Individual Hazardous Substance Site (IHSS) in the Rocky Flats Environmental Technology Site (RFETS) northeastern Buffer Zone (BZ) during FY03. The purpose of this Notification is to invoke the ER RSOP for the western 60 feet of IHSS 111.1, Trench T-4 to remove a portion of soil (commonly referred to as the "burrito"). Activities specified in the ER RSOP are not reiterated here; however deviations from the ER RSOP are noted where appropriate.

The location of IHSS 111.1, Trench T-4 is shown on Figure 1. A portion of the soil within the western 60 feet of Trench T-4 contains contaminant concentrations greater than RFCA Action Levels (ALs) and will be excavated in accordance with RFCA and the ER RSOP. The soil is contained within a geo-textile liner and only this portion of the trench will be removed.

2.0 IHSS 111.1, TRENCH T-4

Trench T-4 is located approximately 800 feet northeast of the inner east guard gate and approximately 200 feet north of the East Access Road. It is one of multiple trenches referred to as the East Trenches. Trench T-4 was approximately 125 feet long, approximately 20 feet wide, and approximately 10 feet deep. It was used primarily for the disposal of sanitary wastewater treatment plant sludge from approximately 1966 to 1967. Flattened empty drums and asphalt planking from the Solar Evaporation Ponds, both of which may be potentially contaminated with uranium and plutonium, also may have been disposed in the trench.

Trench T-4 was excavated in August 1996 to treat volatile organic compounds (VOCs) contributing to soil and groundwater contamination. The Trench T-4 excavation was approximately 148 feet long, 19 to 22 feet wide, and approximately 12 feet deep, except where the excavation proceeded to bedrock at 26 feet. Approximately 2,090 cubic yards of contaminated soil and debris were removed, screened for radionuclides, and processed using thermal desorption technology to remove VOCs. Treatment verification sampling indicated that current VOC contamination was less than RFCA Tier II ALs. Of this amount, approximately 250 cubic yards of soil exceeded RFCA Tier II ALs, but was less than RFCA Tier I ALs for radionuclides. The 250 cubic yards were segregated and placed into the western 60 feet of Trench T-4, which consists of a geotextile-grid liner approximately eight feet below ground surface with a second layer of geotextile-grid liner placed over the soil. Treated soil and topsoil approximately four feet deep were placed over it (DOE 1996). A cross-section of the western 60 feet of Trench T-4 is shown on Figure 2.

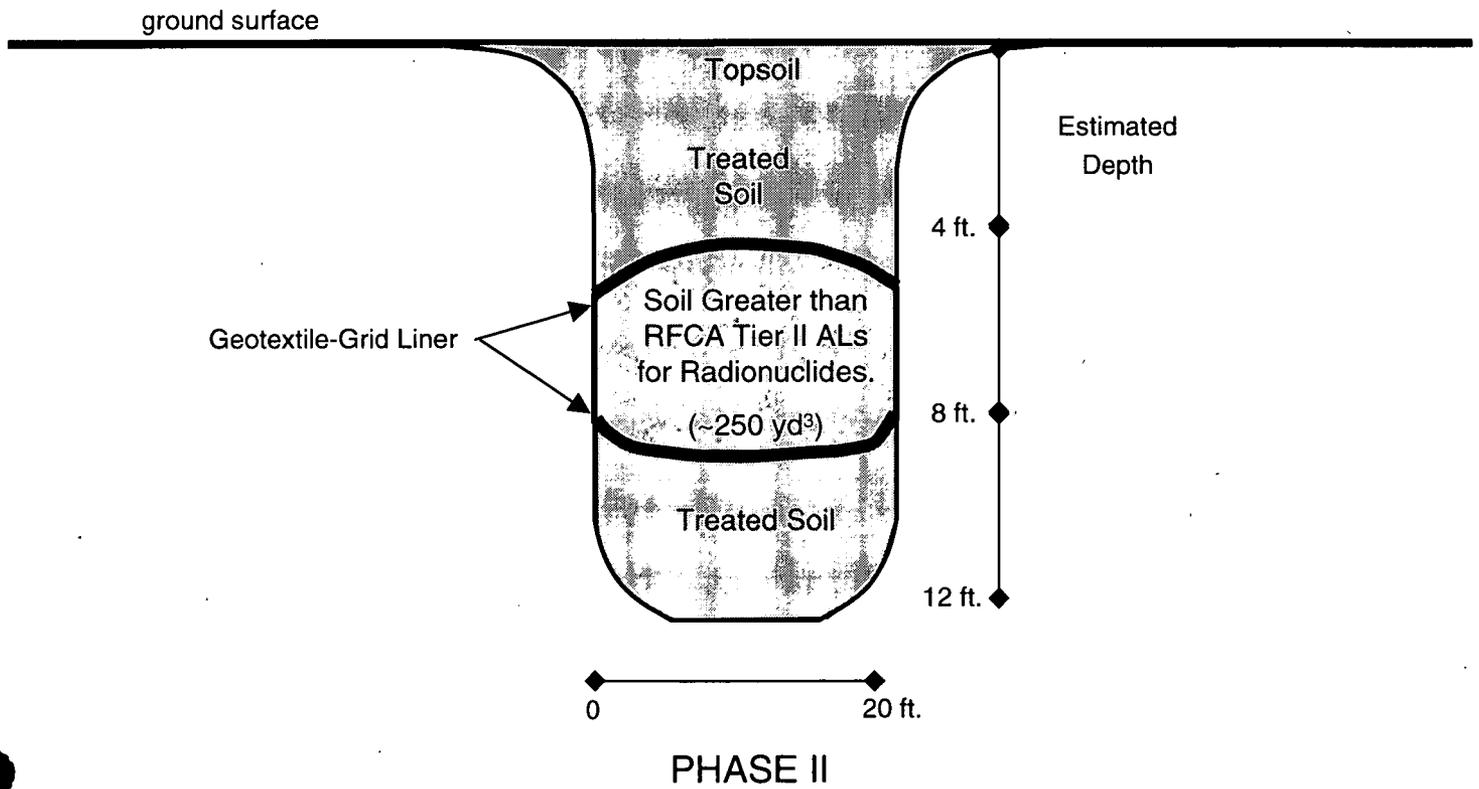
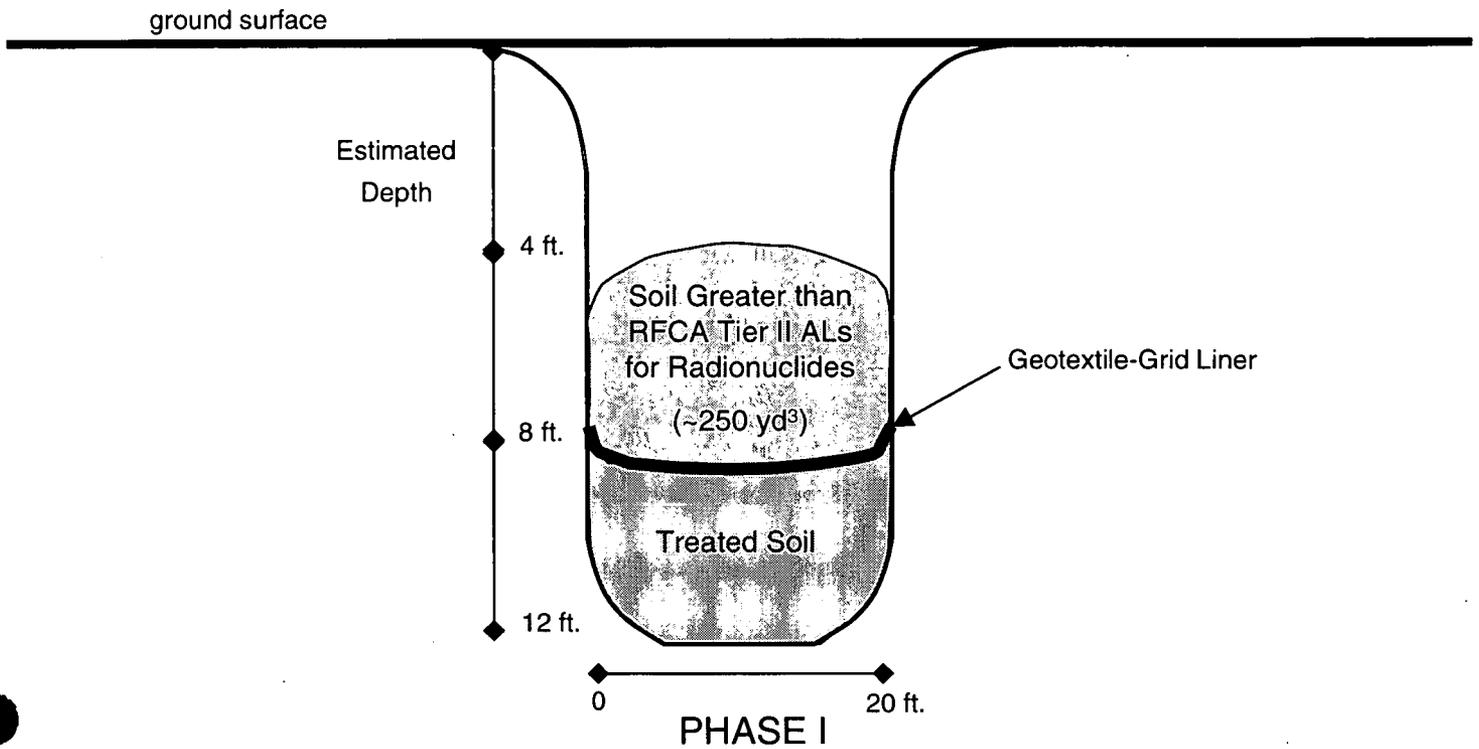
2.1 Contaminants of Concern

Contaminants of concern (COCs) at IHSS 111.1, Trench T-4 were determined based on process knowledge and data collected during the previous investigation that included the source removal of Trench T-4 (DOE 1992 and 1996). A detailed location map of the

western 60 feet of Trench T-4 is shown on Figure 3. The COCs are radionuclides above RFCA Tier II ALs in the soil demarcated by the geotextile-grid liner located within the western 60 feet of Trench T-4.

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Figure 2 - Cross-Section of the Western 60 Feet of Trench T-4



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2.2 Project Conditions

The following conditions are present at this site:

- Trench T-4 (IHSS 111.1) encompasses approximately 0.07 acre of land, however, the western 60 feet of Trench T-4 containing radionuclides in soil above RFCA Tier II ALs encompasses approximately 0.03 acre of land;
- Trench T-4 is surrounded by other trenches, including Trench T-10 (IHSS 111.7) to the south-southeast, Trench T-11 (IHSS 111.8) to the south-southwest, and Trench T-3 (IHSS 110) to the west;
- The area is relatively flat and covered by grasses; and
- The area to the north slopes down towards Central Avenue Ditch.

2.3 Remediation Plan

This RSOP Notification remediation plan for IHSS 111.1, Trench T-4 includes the following objectives:

- Remove soil contained within the geo-textile liner within the western 60 feet of Trench T-4;
- Collect confirmation samples from beneath the geo-textile liner, if breached, in accordance with the Buffer Zone Sampling and Analysis Plan (BZSAP) (DOE 2002b); and
- Backfill the excavation with clean fill, and then grade and seed the area.

Potential confirmation sampling locations are shown in Figure 4. It is anticipated that after excavation there will be areas at the site with concentrations of radionuclides, organics and metals greater than background mean plus two standard deviations or method detection limits, but below RFCA ALs.

2.4 Stewardship Evaluation

Based on the COCs (Section 2.1) and the ER RSOP (DOE 2002a), it is anticipated that soil with contaminant concentrations above RFCA Tier II ALs contained within the geo-textile liner within eight feet of the surface will be excavated. Figure 3 shows the potential excavation area. The following sections present the stewardship evaluation.

2.4.1 Proximity to Other Contaminant Sources

IHSS 111.1, Trench T-4 is part of the East Trenches that are located in the RFETS northeastern BZ on the north side of the East Access Road. The trench is surrounded by other trenches, including Trench T-10 (IHSS 111.7) to the south-southeast, Trench T-11 (IHSS 111.8) to the south-southwest, and Trench T-3 (IHSS 110) to the west. The soil in

Trench T-3 was treated using thermal desorption technology at the same time as Trench T-4 and proposed for No Further Action (DOE 2000). Trenches T-10 and T-11 had few operational differences from Trenches T-3 and T-4 (DOE 1992).

2.4.2 Surface Water Protection

Surface water protection includes the following considerations:

Is there a pathway to surface water from potential erosion to streams or drainages?

Trench T-4 is in a relatively flat-lying area not prone to erosion. In addition, approximately four feet of treated soil and topsoil cover the waste material in the western 60 feet of Trench T-4. Surface runoff from the area flows into the Central Avenue Ditch and then into Pond B-5. Water from Pond B-5 is monitored prior to discharge.

Do characterization data indicate there are contaminants in surface soil?

Approximately four feet of treated soil and topsoil cover the waste material in the western 60 feet of Trench T-4.

Do monitoring results from Points of Evaluation (POEs) or Points of Compliance (POCs) indicate there are surface water impacts from the area under consideration?

The soil in Trench T-4 was treated for VOCs in 1996 using thermal desorption technology. VOC residual contaminant concentrations are below RFCA Tier II ALs and radionuclides residual contaminant concentrations above RFCA ALs are confined to the western 60 feet of Trench T-4. Furthermore, the POEs and POCs downstream of T-4 also monitor contaminants from the Central Avenue Ditch, which receives runoff from the eastern part of the Industrial Area (IA). Therefore, it is not possible to determine the exact source of the contaminants.

Is the IHSS Group in an area with high erosion potential, based on the 100-Year Average Erosion Map?

IHSS 111.1 is not located in an area with a high erosion potential. The 100-Year Average Erosion Map (Figure 11, DOE 2002a) indicates that IHSS 111.1 is located in an area designated as "No Disposition or Detachment".

2.4.3 Monitoring

Monitoring includes the following considerations:

Do monitoring results from POEs or POCs indicate there are groundwater impacts from the area under consideration?

The soil in Trench T-4 was treated for VOCs in 1996 using thermal desorption technology. The soil has no impact on the VOC concentrations in groundwater.

Can the impact be traced to a specific IHSS Group?

Impacts on groundwater quality could be from multiple sources, but not currently from IHSS 111.1, Trench T-4.

Are additional monitoring stations needed?

No; there are sufficient monitoring wells in the area.

Can existing monitoring locations be deleted if additional remediation is conducted?

No. Even though other trenches in the East Trenches area may not require remediation, monitoring will still be required to evaluate groundwater quality.

2.4.4 Stewardship Actions and Recommendations

The current stewardship actions and recommendations for IHSS 111.1, Trench T-4 are as follows:

- Use Best Management Practices to reduce erosion into surface water drainage (Section 7.2 of the ER RSOP).
- Implement near-term institutional controls until final closure and stewardship decisions are implemented, including the following:
 - Signs and barriers;
 - Restrictions on soil excavation; and
 - Soil excavations controlled through the Site Soil Disturbance Permit process.
- Implement long-term stewardship actions, including the following:
 - Continuing Federal ownership and control over the Site; and
 - Land use restrictions to prevent soil excavation that could access or disturb residual contamination. Specific land use restrictions will be discussed in the Site Long-Term Stewardship Plan and evaluated along with other institutional controls for implementation in the final remedy selection process.

These recommendations may change based on in-process remediation activities and other future RFETS remediation decisions.

2.5 Accelerated Action Remediation Goals

ER RSOP remedial action objectives include the following:

1. Provide a remedy consistent with the RFETS goal of protection of human health and the environment;
2. Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls; and
3. Minimize the spread of contaminants during implementation of accelerated actions.

The accelerated action remediation goals for IHSS 111.1, Trench T-4 include the following:

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- Excavate soil from within geo-textile liner located within the western 60 feet of the trench and dispose of offsite;
- Conduct confirmation sampling if geo-textile liner is breached; and
- Reclaim the site to enable use as a wildlife refuge.

2.6 Treatment

Not applicable.

2.7 Project-Specific Monitoring

Environmental monitoring, including downstream surface water and downgradient groundwater monitoring, will be conducted as part of the Integrated Monitoring Program (IMP) to ensure that contaminant concentrations are not increasing and that water quality standards are being met (DOE 2001).

Project-specific surface water, groundwater, and air monitoring during remediation will be planned through the IMP process. Additional air monitoring will be conducted in accordance with Work Controls in order to document the absence of airborne activity.

2.8 Intended Waste Disposition

It is anticipated that the soil excavated from Trench T-4 will be classified and disposed of as low level waste.

2.9 Administrative Record Documents

DOE, 1992, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado, June.

DOE, 1996, Completion Report for the Source Removal at Trenches T-3 and T-4 (IHSS's 110 and 111.1), Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 1999, Annual Update for the Historical Release Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2000, Annual Update for the Historical Release Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2001, Rocky Flats Environmental Technology Site, Integrated Monitoring Plan, Golden, Colorado.

DOE, 2002a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, Colorado, January.

DOE, 2002b, Buffer Zone Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

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2.10 Projected Schedule

Remediation of IHSS 111.1, Trench T-4 will begin in the third or fourth quarter of FY03.

3.0 PUBLIC PARTICIPATION

ER RSOP Notification #03-03 activities will be discussed at the November 2002 ER/Decontamination and Decommissioning Status meeting. This Notification is available at the Rocky Flats Reading Rooms.

4.0 REFERENCES

DOE, 1992, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado, June.

DOE, 1996, Completion Report for the Source Removal at Trenches T-3 and T-4 (IHSS's 110 and 111.1), Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 1999, Annual Update for the Historical Release Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2000, Annual Update for the Historical Release Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2001, Rocky Flats Environmental Technology Site, Integrated Monitoring Plan, Golden, Colorado.

DOE, 2002a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, Colorado, January.

DOE, 2002b, Buffer Zone Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

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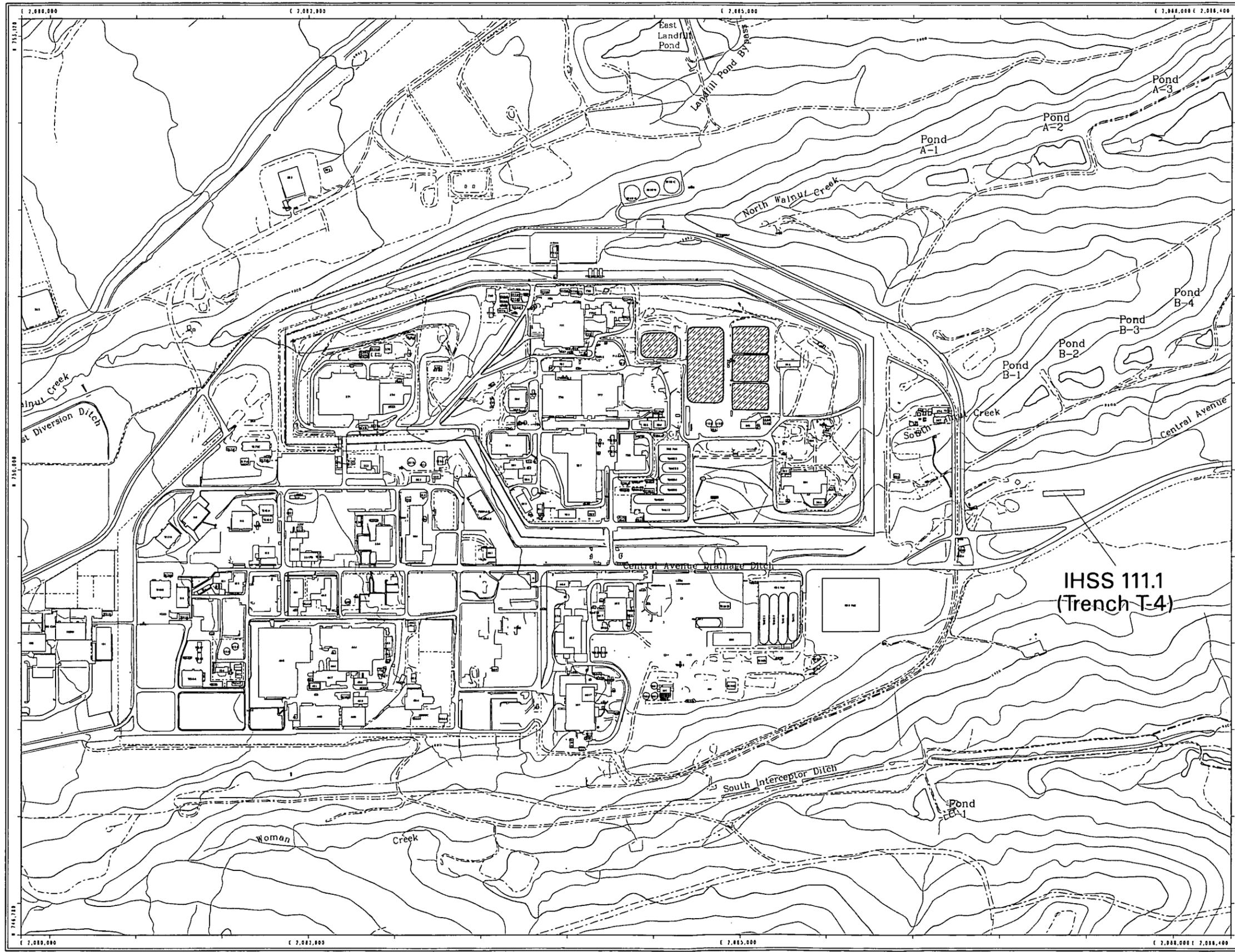


Figure 1
IHSS Location Map

EXPLANATION

- IHSS
- Standard Map Features**
- Buildings and other structures
- Solar Evaporation Ponds (SEPs)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Topographic Contour (20-Foot)
- Rocky Flats Environmental Technology Site boundary
- Paved roads
- Dirt roads

DATA SOURCE BASE FEATURES:
Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by ECA/RSZ, Las Vegas. Digitized from the orthophotograph. 1/95
Topographic contours were derived from digital elevation model (DEM) data by Mission Knudson (MK) using ESRI Arc TIN and LATTICE to process the DEM data to create 5-foot contours. The DEM data was captured by the Remote Sensing Lab, Las Vegas, NV, 1994 Aerial Flyover at ~10 meter resolution. DEM post-processing performed by MK, Winter 1997.



Scale = 1 : 8180
1 inch represents approximately 682 feet



State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site
GIS Dept. 303-866-7707

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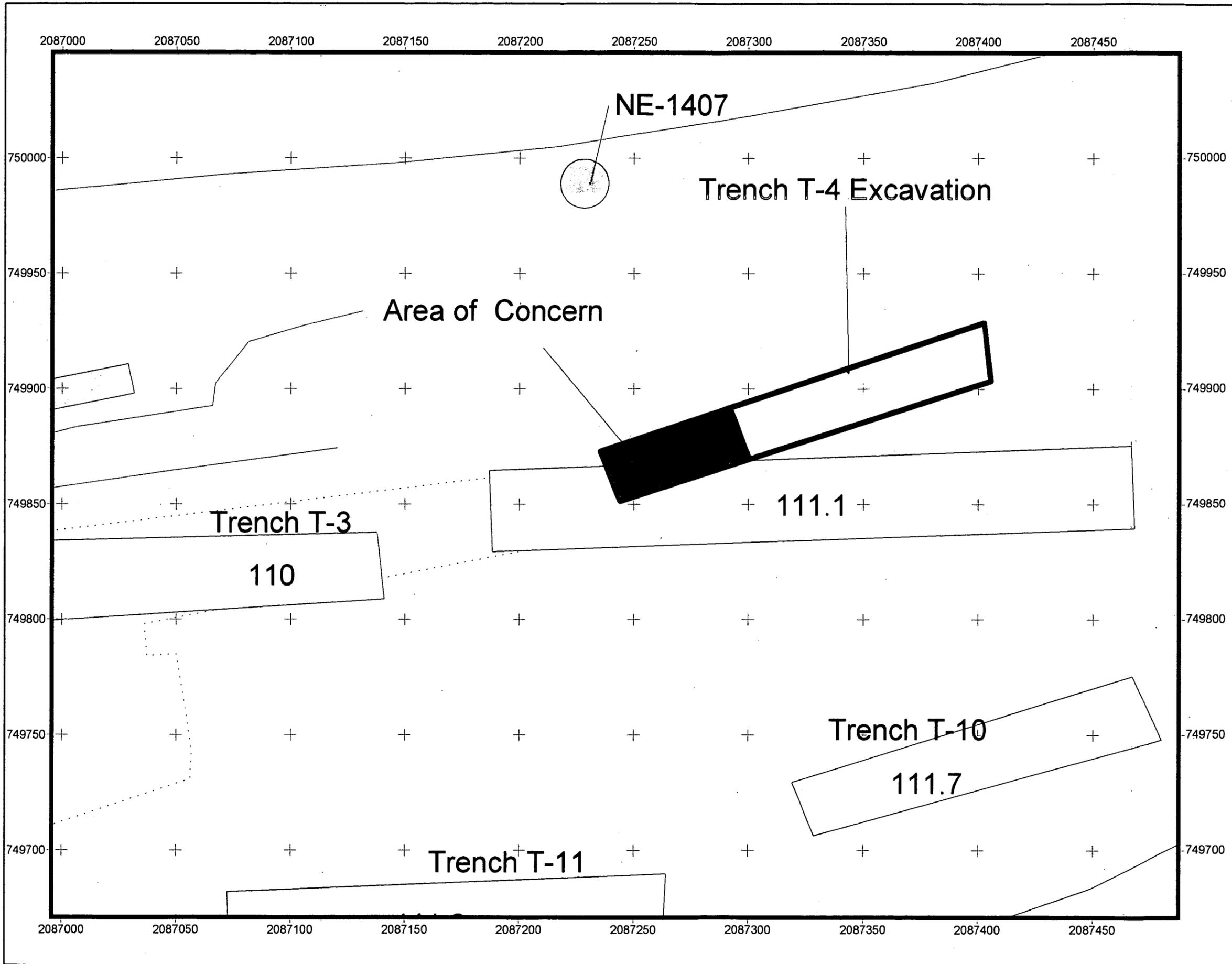
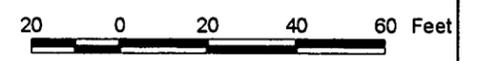
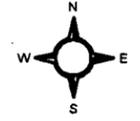


Figure 3
Location Map For
IHSS 111.1, Trench T-4

KEY

-  IHSS location
-  PAC location
-  Trench T-4
-  Area of Concern
-  Paved area
-  Dirt road
-  Stream, ditch, or other drainage feature

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Scale = 1:
State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:



File: W:\projects\fy2003\Trench T-4\T-4 Location Map
Date: 9/3/02